



**UK AIRPROX BOARD**



# **Analysis of Airprox in UK Airspace**

**Report Number 1**

**January 1998 to December 1998**

Report by the UK Airprox Board,  
'Analysis of Airprox in UK Airspace'  
(January 1998 to December 1998)

produced jointly for

The Chairman,  
Civil Aviation Authority

and the

Chief of the Air Staff,  
Royal Air Force

## FOREWORD

This book is about promoting safety in the air. If you are involved either in flying aircraft, or in assisting or controlling their safe passage through the skies over the United Kingdom (UK), then it is aimed at you. In it you will find full assessments on 159 UK Airprox incidents reported during last year that have been compiled by the UK Airprox Board (UKAB).

The UKAB is a new organisation, formed in January 1999 to subsume the work of two former Airprox assessment groups – the Joint Airprox Assessment Panel (JAAP) and the Joint Airprox Working Group (JAWG). Unlike its two predecessors, the UKAB structure means that all Airprox incidents are now handled under one roof. Moreover, instead of reports being published in several documents, at different intervals, they will now be presented in one book, produced three times a year. This makes it easier to acquire the big picture and gives transparency to the whole reporting and assessment process.

Of the 159 incidents recorded in this first UKAB Report 108 carried no risk of actual collision, mainly because of the prompt reactions and professionalism demonstrated by those involved, both in the air and on the ground. But other incidents were more serious. There were 30 in which the safety of aircraft had been compromised and 18 encounters where an actual risk of collision had existed. In 3 cases insufficient information was available to determine a risk assessment category.

It would be a mistake to dismiss the 108 'no risk' incidents and concentrate solely on the 'risk bearing' encounters. Every Airprox situation begins with some form of breakdown in the normally successful techniques and methods used to keep aircraft safely apart. If we can expose and recognise the most common reasons for things going wrong, they become lessons that can help us to prevent the same mistakes being repeated.

So I encourage you to read about all of the experiences reported in this book. By finding out what happened to others – seeing what went wrong and why - and by absorbing the lessons to be learned, you will become better equipped and better prepared to prevent the same thing happening to you.

Gordon McRobbie  
Director, UKAB

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## **INTRODUCTION**

### **Background**

For many years aircraft pilots reported Airprox to the Joint Airprox Working Group (JAWG) for assessment. Ten years ago a second assessment panel was formed, the Joint Airprox Assessment Panel (JAAP) specifically to assess Airprox incidents raised by Air Traffic Control Officers. Both panels worked independently analysing incidents, deciding what caused them to happen and assessing the risk levels involved. Importantly, they put forward a series of successful recommendations that resulted in improved safety. Building on that success, the Civil Aviation Authority (CAA) and the Ministry of Defence (MOD) have rationalised both panels into one body, which will deal with all Airprox reported within UK airspace.

### **UKAB**

This new organisation is called the UK Airprox Board (UKAB) comprising a Director and a unique mix of 14 civilian and military members, each of whom is an acknowledged expert within his or her field of aviation. These are hands-on practitioners providing a level of first hand 'know how' that covers:

- All of the Air Traffic Control disciplines (civil and military controllers)
- Commercial Air Transport flying (Airline pilots)
- General Aviation flying, both fixed wing and rotary (Company pilots and instructors)
- Military flying - by the RN, Army and the RAF, plus UK-based USAF ac and foreign military (pilots)

The Director acts as Chairman at Board meetings and reports jointly and directly to the Chairman CAA and Chief of the Air Staff, Royal Air Force.

### **UKAB's Role**

The UKAB has the following roles in promoting improved safety standards in the air:

- The start point for an investigation process into each incident, carried out by a number of bodies, including the Military and the Safety Regulation Group (SRG) of the CAA.
- Analysis of what happened and determining the main causal factors.
- Assessment of risk levels involved.
- Making recommendations where appropriate to prevent incident recurrence.
- Communicating findings and lessons learned widely by publishing and distributing full reports three times a year.

### **Safeguarding Anonymity**

The only information neither revealed nor published in reports are names. Safeguarding anonymity is a deliberate policy to encourage an open and honest reporting environment. Furthermore, the UKAB has no legal powers and does not apportion blame or liability; its sole purpose is to assess what took place in the interests of enhancing flight safety.

## **Airprox Definition**

The internationally agreed definition of an Airprox is a situation in which, in the opinion of a pilot or a controller, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised.

## **Risk Categories**

Risk level assessments are made on the basis of what actually took place and not on what may or may not have happened. There are four categories, agreed at international level, as follows:

<b>A</b>	<b>Risk of collision</b>	An actual risk of collision existed
<b>B</b>	<b>Safety not assured</b>	The safety of the aircraft was compromised
<b>C</b>	<b>No risk of collision</b>	No risk of collision existed
<b>D</b>	<b>Risk not determined</b>	Insufficient information was available to determine the risk involved, or Inconclusive or conflicting evidence precluded such determination

## **Report Period**

The last JAWG report covered incidents raised by pilots up to the end of April 1998, while the final JAAP report, covering controller raised Airprox, stopped at December 1997. This first UKAB report brings the situation into alignment by publishing case findings on:

- a. Controller raised Airprox for the whole of 1998.
- b. Pilot raised Airprox from May to December 1998 inclusive.

The next section in this Report covers statistics. Graphs and tables in it are based on total Airprox numbers assessed in each of the years 1990 to 1998 inclusive, except where labelled 'Pilot only'. In these instances, data from Controller raised incidents - on risk levels - is not available.

## **Main Airprox Causes**

Each Airprox encounter is unique, but experience shows that a number of common causes can be identified. Historical data has been recorded in three broad groups - incidents caused by Pilots, Controllers and anything outside these two. Lists which follow set out the top ten causes for each of these groups. A breakdown in 'Lookout' dominates the Pilots' 'top ten' list of causal factors, followed by a need for more consideration in judging the separation taken from other aircraft. Third place is taken by lapses in navigation. While the remaining causes attributed to pilots are noteworthy, they reveal no particular trends.

There were significantly fewer Airprox causes attributed to Controllers and only two main areas worth drawing attention to, involving lapses in otherwise high professional standards. Individual case histories provide detailed background, but as a general observation many incidents from these causal groupings happen, ironically, because the people concerned were trying to be too helpful. Although not identified as a cause factor in its own right, this perfectly understandable human condition can on occasions undermine efficiency when work loads mount.

The third group of causes contains all other reasons for Airprox to occur. Most of these were straightforward conflicts in the FIR, that is to say encounters between aircraft when all parties have been going about their business as they should, saw each other and avoided with no risk of collision but felt that a report needed to be raised. The remainder is self-explanatory.

## **'TOP 10' CAUSES**

### **Attributed to Pilots**

- Late sighting of conflicting traffic
- Failure to see conflicting traffic
- Inadequate avoiding action / flew too close
- Penetration of CAS/SRZ/ATZ without clearance
- Failure to adhere to prescribed procedures
- Not obeying orders/ following advice/ from ATC
- Climbed/descended through assigned level
- Penetration of airfield avoidance area (AAA)
- Penetration of prohibited/restricted/danger area
- False/mistaken impression of loss of separation

### **Attributed to Controllers**

- Failure to separate/poor judgement
- Failure to pass or late passing of traffic information
- Lack of co-ordination between controllers
- Failure to adhere to prescribed procedures/operating instructions
- Inadequate avoiding action/lack of positive control
- Undetected readback error
- Other ATC cause
- Inappropriate instructions from ATC
- Incorrect pronunciation / ambiguous instructions
- Inadequate supervision

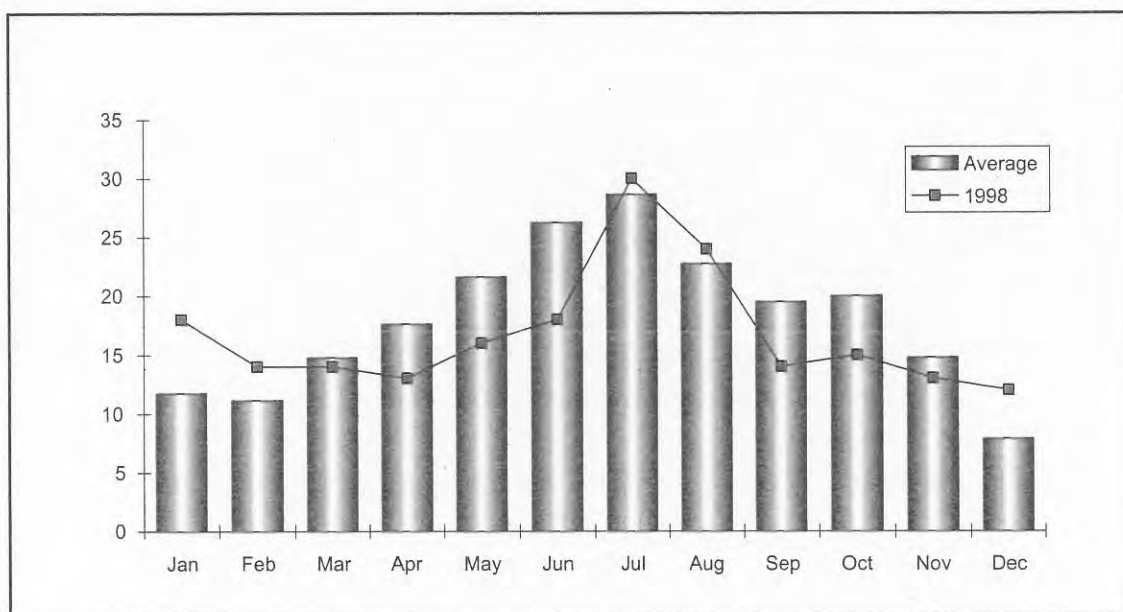
### **Attributed to Other Causes**

- FIR conflict
- Sighting report
- Conflict in other type of airspace
- Controlled airspace conflict in VMC
- Ground procedures. Inadequate/ambiguous controller orders
- Inaccessible
- Conflict on boundary of ATZ/CTR/SRZ/AAA
- False/mistaken impression of loss of separation
- Aeronautical information flow breakdown
- Airborne procedures inadequate

## STATISTICS

A steady increase in the volume of flying taking place in UK airspace has brought with it a feeling that 'more flying' somehow might translate into 'more risk'. The graphs and tables set out in the pages that follow address this point. They show the results of risk assessment findings covering the three main aviation groups who fly in UK airspace - namely Commercial Air Transport, General Aviation aircraft and the Military.

The first graph below shows a breakdown of Airprox incidents between January and December 1998, together with comparable average monthly figures since 1990 the date when reports raised by controllers began.



*Figure 1: Airprox Figures for 1998 Against Monthly Averages Since 1990*

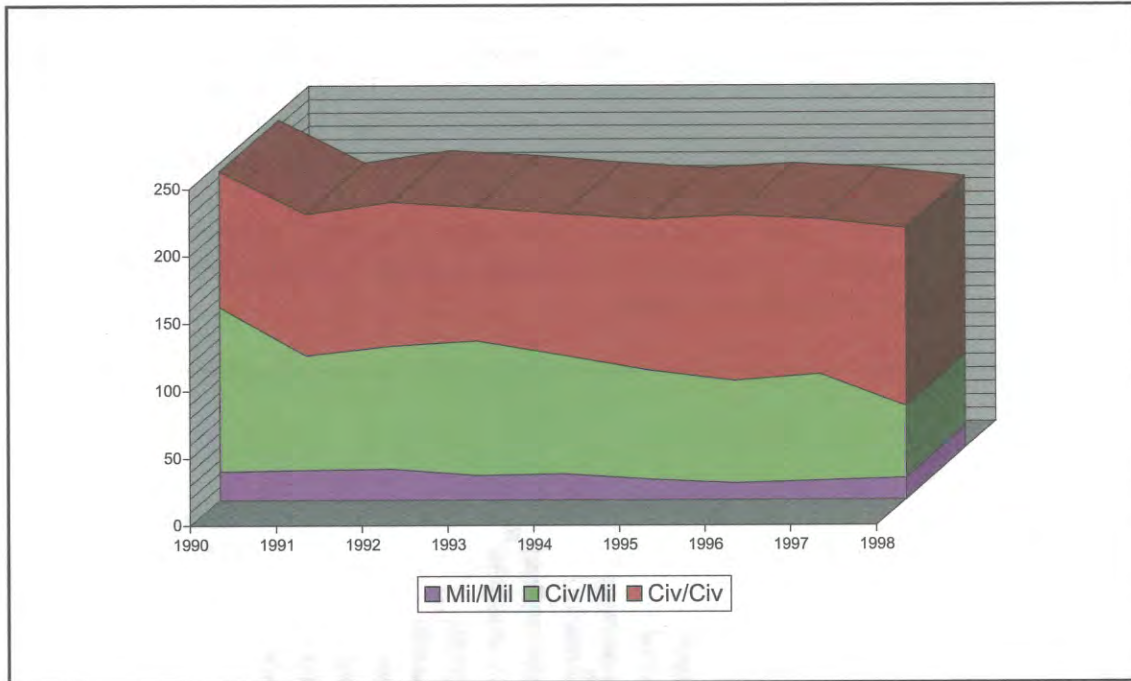
The pillars on this graph represent average monthly Airprox incidents reported by both pilots and controllers since 1990; before 1990 only pilot records were logged. The dimension of each monthly column relates directly to the running average number of incidents. As might be expected, incidents occur more frequently in summer months than in winter. Airprox figures for January to December 1998 are over-laid for comparison.

*Table 1: Airprox Data Used to Compile the Graph at Fig 1*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	11.75	11.13	14.75	17.63	21.63	26.25	28.63	22.75	19.50	20.00	14.75	7.88
1998	18	14	14	13	16	18	30	24	14	15	13	12



## THE CIVIL/MILITARY AIRPROX PICTURE



**Figure 2: Airprox Incidents Involving Civil, Military And Civil/Military Encounters**

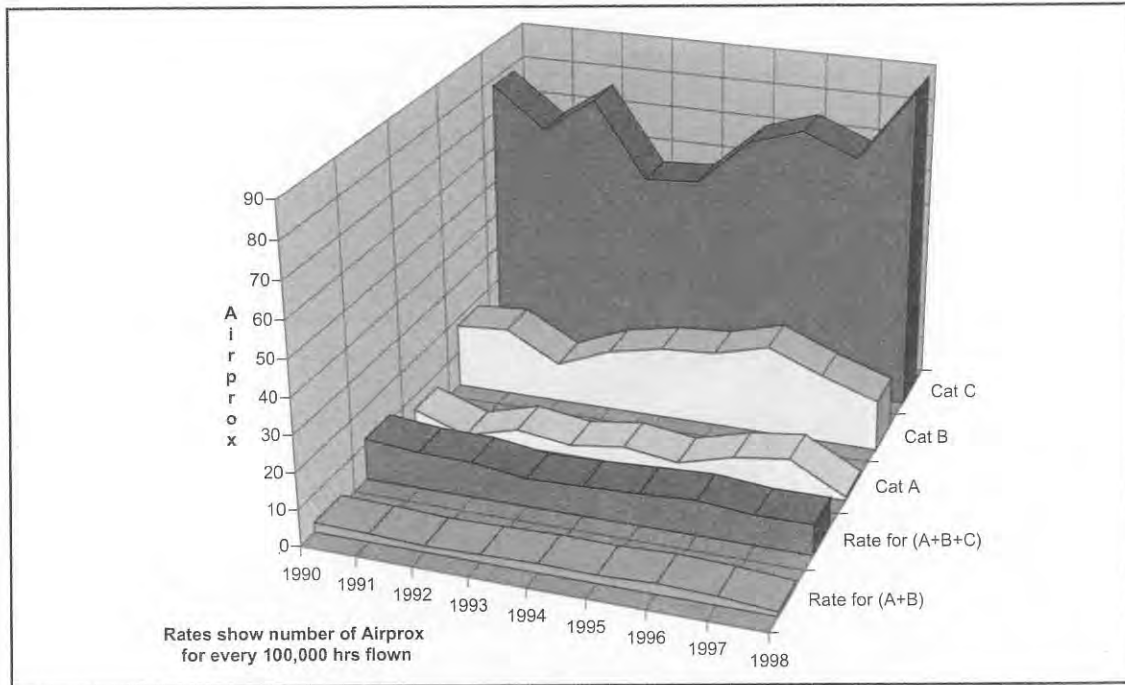
This graph serves two purposes. It depicts the total number of Airprox incidents each year since 1990 and it shows the comparative ratios between Civil and Military aircraft involvement. 'Civil' includes both Commercial Air Transport and General Aviation aircraft, while 'Military' covers aircraft flown by the RN, Army and RAF, plus UK-based USAF and foreign military ac.

Compared with the figure for 1990, incident totals have been consistently less frequent over the period, with the final sum for 1998 being the lowest on record. A comparison of the two separate aircraft classification groups reveals that Civ/Civ encounters significantly outnumbered purely Mil/Mil ones. When the number of mixed meetings - Civ/Mil - are taken into account, however, they comprise a large proportion of the overall totals each year. Many of the incidents in this middle group occurred outside Controlled Airspace and did not involve public transport flights.

**Table 2: Airprox Incidents by Aircraft Classification**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Mil/Mil	21	22	23	18	19	15	12	14	16
Civ/Mil	122	85	91	100	88	81	76	79	53
Civ/Civ	101	105	107	99	105	112	123	115	132

## THE COMMERCIAL AIR TRANSPORT AIRPROX PICTURE



**Figure 3: CAT Airprox Incidents Within UK Airspace – by Category and Incident Rate**

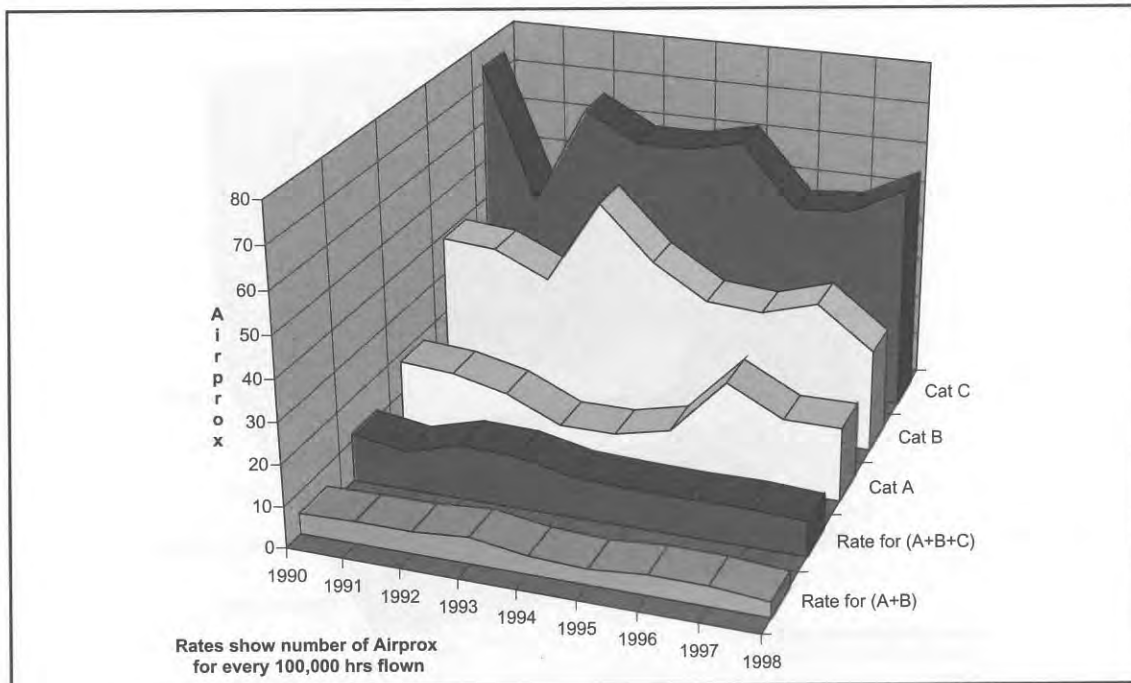
This graph shows the total reported volume of Commercial Air Transport Airprox incidents by risk level classification, together with the resulting rate per 100,000 flying hours in UK airspace. Cat C (No risk of collision) incidents dominated the period and, while numbers reduced generally during the early years, they rose again after 1994 and reached a peak in 1998. There were far fewer Cat B (Safety of aircraft had been compromised) cases and these followed a more steady profile, rising gradually until 1996, followed by two years of significant improvement. Cat A incidents (Actual risk of collision existed) numbered the least of all Categories by a considerable margin and the rise to 9 cases in 1997 was followed by a noticeable reduction in 1998 to a single instance.

By relating these statistics to the amount of flying that took place the number of Airprox incidents per 100,000 flying hours can be calculated as a 'rate'. When plotted out, rate figures reveal trends, showing whether things are getting worse, or getting better, or staying much as before – regardless of any increase in the volume of flying taking place. The profile for risk bearing incidents (A+B) remained stable over the period, tapering in 1998 to the lowest rate recorded.

**Table 3: CAT Airprox Data**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Hours flown in (Ks)	893	874	946	968	1004	1061	1114	1179	1249
Rate for (A+B)	2.69	2.29	1.69	2.07	2.49	2.26	2.87	2.37	1.20
Rate for (A+B+C)	11.42	9.95	9.83	7.85	8.17	8.86	9.61	8.23	8.33
Risk Cat A	6	1	5	3	5	3	7	9	1
Risk Cat B	18	19	11	17	20	21	25	19	14
Risk Cat C	78	67	77	56	57	70	75	69	89

## THE GENERAL AVIATION AIRPROX PICTURE



**Figure 4: Pilot Reported General Aviation Airprox Incidents within UK Airspace – by Category and Incident Rate**

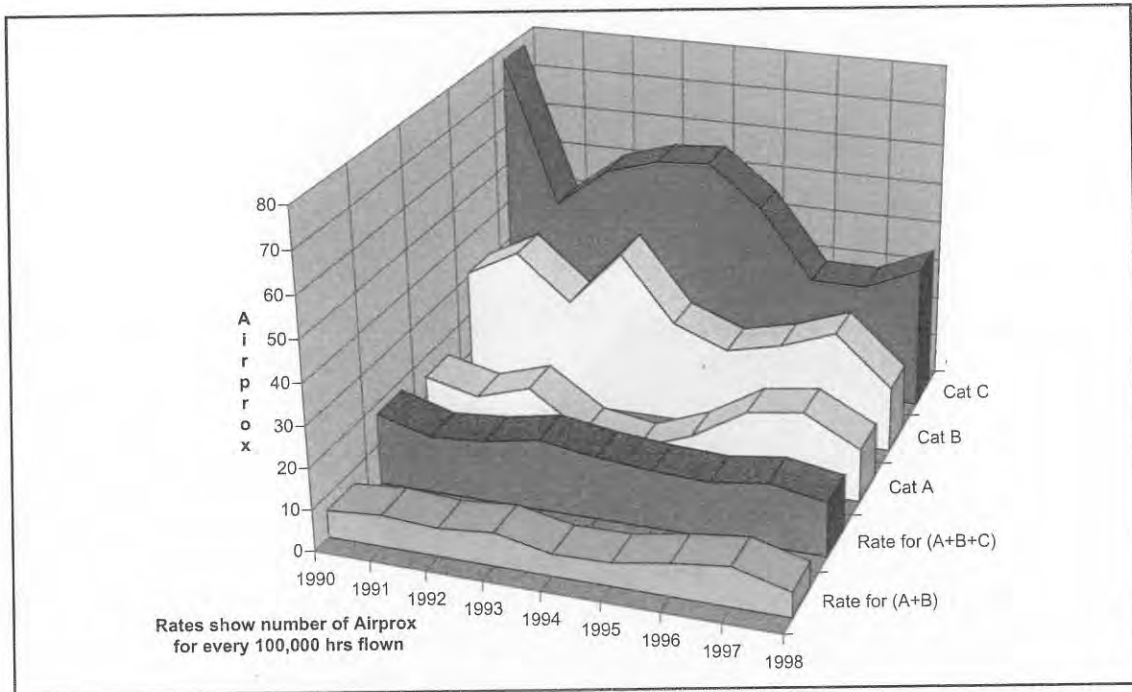
This graph shows *Pilot* only reported General Aviation Airprox incidents by risk level and rate per 100,000 flying hours. Statistics for *Controller* reported incidents by risk level are not available.

Most of the Airprox recorded were either Cat C (No risk of collision) or Cat B (Safety of aircraft had been compromised), with a decrease evident overall in both groups. There were far fewer Cat A incidents by comparison and, while there was a steady decrease in numbers mid-period, figures then rose again sharply to a high in 1996 before settling back at levels similar to those experienced in 1990 and 1991. Relating this data to the volume of flying that took place provides 'rate' figures of incidents per 100,000 flying hours. These rates show a gradual decline.

**Table 4: General Aviation Airprox Data**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Hours flown (in Ks)	1121	1013	848	939	1075	1115	1123	1090	1145
Rate for (A+B)	5.08	5.43	5.42	6.50	4.47	3.86	4.99	4.86	3.76
Rate for (A+B+C)	11.69	9.48	13.21	12.78	9.95	9.42	9.17	9.27	8.56
Risk Cat A	18	17	14	8	8	11	25	18	18
Risk Cat B	39	38	32	53	40	32	31	35	25
Risk Cat C	74	41	66	59	59	62	47	48	55

## THE MILITARY AIRPROX PICTURE



**Figure 5: Pilot Reported Military Airprox Incidents in UK Airspace – by Category and Incident Rate**

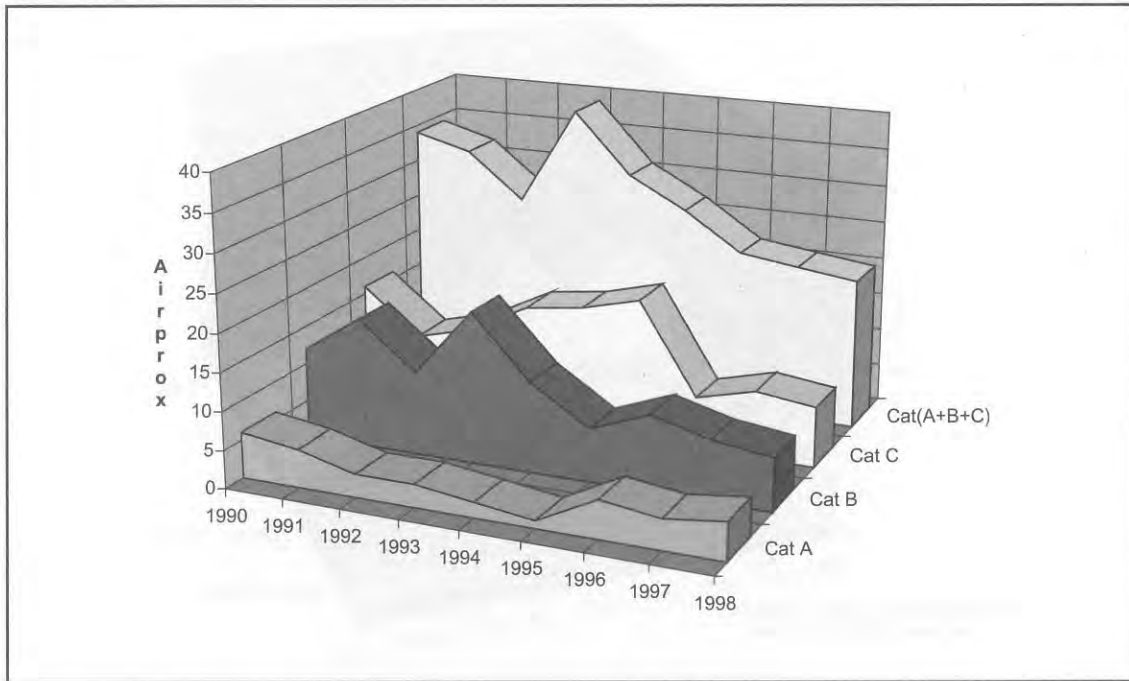
This graph shows *Pilot* only reported Military Airprox incidents by risk level and rate per 100,000 flying hours. Statistics for Controller reported incidents by risk level are not available. In common with the previous two aircraft groups most of the incidents involving Military aircraft were either Cat C or Cat B. Furthermore, in both of these categories, numbers have virtually halved since 1990. There were far fewer Cat A encounters by comparison, but a reduction in numbers mid-period was not sustained. Instead figures rose after 1994 to peak at 20 cases in 1997 before falling again in 1998. Relating these statistics to flying hours (but see Note) shows the risk bearing profile rising during the latter part of the period, but then reversing again in 1998. A similar pattern can be seen for the total rate profile, which ends up, nonetheless, at the lowest level recorded.

**Table 5: Military Airprox Data**

Military	1990	1991	1992	1993	1994	1995	1996	1997	1998
Hrs flown (in K) (1)	704	656	632	595	562	539	518	501	486
Rate for (A+B)	6.53	7.62	6.80	8.07	5.34	5.57	7.92	9.58	5.97
Rate for (A+B+C)	17.47	13.87	14.87	17.31	15.30	14.10	13.51	15.37	13.17
Risk Cat A	15	12	16	7	5	10	18	20	13
Risk Cat B	31	38	27	41	25	20	23	28	16
Risk Cat C	77	41	51	55	56	46	29	29	35

Note: (1) Hours shown represent the combined total hours flown by the RN, Army and RAF, not all of which were flown in UK airspace.

## ENCOUNTERS BELOW 2000 FEET



**Figure 6: Pilot Reported Airprox Incidents below 2000 ft in UK Airspace involving General Aviation and Military Aircraft**

It has not been possible to determine the number of flying hours associated specifically with the Airprox incidents below 2,000 feet, between General Aviation and Military Aircraft, therefore no 'rate' figure calculation can be done. Nonetheless, a number of useful points emerge simply by plotting the risk category volumes against the total number of incidents recorded below 2,000 feet.

For example, a steady decline in Cat A figures sustained until 1995 after which the trend began to show a reversal, settling at much the same levels recorded at the start of the period. The overall gradient for Cat B incidents declined, but not smoothly. Peaks are evident. Moreover, unlike previous groups looked at, here the difference in the number of Cat B and Cat C incidents is far less obvious with two noticeable reversals during the period 1993 and 1995. As with the profile for Cat B cases, Cat C cases showed a reduction in numbers during the period and although the profile was far from linear final figures expose a cut of 50%.

The total risk profile smooths out the more dynamic peaks and troughs of the individual categories to some extent but reveals a clear decline in volume, nonetheless, by roughly one third.

**Table 6: Airprox Incidents below 2000 ft in UK Airspace**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Risk Cat A	6	5	3	3	2	1	5	4	5
Risk Cat B	12	17	11	20	12	7	10	8	7
Risk Cat C	16	10	12	16	17	19	7	9	8
Risk Cat D	34	32	26	39	31	27	22	21	20

## GLOSSARY OF ABBREVIATIONS

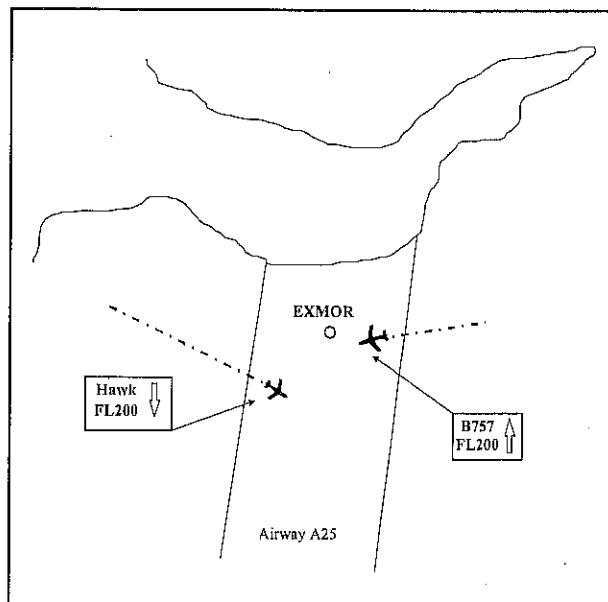
AAA	Airfield Avoidance Area	CAT	Clear Air Turbulence
AAI	Angle of Approach Indicator	CAVOK	Visibility, cloud and present weather better than prescribed values or conditions
ac	Aircraft	CMATZ	Combined MATZ
ACAS	Airborne Collision Avoidance System	C/S	Callsign
ACC	Area Control Centre	CSC	Chief Sector Controller
ACN	Airspace Co-ordination Notice	CTA	Control Area
A/D	Aerodrome	CTR/CTZ	Control Zone
ADA	Advisory Area	DAAvn	Director Army Aviation
ADC	Aerodrome Control(ler)	DAT	Defence Air Traffic
ADCC	Air Defence Control Centre	D & D	Distress & Diversion Cell
ADF	Automatic Direction Finding Equipment	DF	Direction Finding (Finder)
ADNC	Air Defence Notification Centre	DFTI	Distance from Touchdown Indicator
ADR	Advisory Route	DH	Decision Height
ADRU	Air Defence Radar Unit	DI	Direction Indicator
AEF	Air Experience Flight	DME	Distance Measuring Equipment
AEW	Airborne Early Warning	DUA	Dedicated User Area
AFIS(O)	Airfield Flight Information Service (Officer)	EAT	Expected Approach Time
A/G	Air / Ground Operators	ERS	En Route Supplement
agl	Above Ground Level	FIC	Flight Information Centre
AGI	Air Ground Incident	FIR	Flight Information Region
AIAA	Area of Intense Aerial Activity	FIS	Flight Information Service
AIC	Aeronautical Information Circular	FISO	Flight Information Service Officer
AIS	Aeronautical Information Services	FMS	Flight Management System
a(m)sl	Above (mean) sea level	FONA	Flag Officer Naval Aviation
ALFENS	Automated Low Flying Enquiry & Notification System	FPS	Flight Progress Strip
AOB	Angle of Bank	GAT	General Air Traffic
APC	Approach Control(ler)	GCA	Ground Controlled Approach
APR	Approach Control Radar	GCI	Ground Controlled Interception
ARA	Airspace Restricted Area	GMC	Ground Movement Controller
ARP	Aerodrome Reference Point	HISL	High Intensity Strobe Light
ASR	Airfield Surveillance Radar	HLS	Helicopter Landing Site
ATC	Air Traffic Control	HMR	Helicopter Main Route
ATCC	Air Traffic Control Centre	HPZ	Helicopter Protected Zone
ATCO	Air Traffic Control Officer	HTZ	Helicopter Traffic Zone
ATCRU	Air Traffic Control Radar Unit	ICF	Initial Contact Frequency
ATIS	Automatic Terminal Information Service	IFF	Identification Friend or Foe
ATM	Aerodrome Traffic Monitor	IFR	Instrument Flight Rules
ATS (U)	Air Traffic Service (Unit)	IFTA	Instrument Flying Training Area
ATSA	Air Traffic Service Assistant	ILS	Instrument Landing System
ATSOCAS	ATSs Outside Controlled Airspace	IMC	Instrument Meteorological Conditions
ATSI	Air Traffic Services Investigations	JOI	Joint Operating Instruction
ATZ	Aerodrome Traffic Zone	KHz	Kilohertz
AWAC	Airborne Warning and Control	LARS	Lower Airspace Radar Service
AWR	Air Weapons Range	LAS	Lower Airspace Service
Awy	Airway	LATCC	London Area & Terminal Control Centre
BGA	British Gliding Association	LFA	Low Flying Area
BHAB	British Helicopter Advisory Board	LFC	Low flying Chart
BHPA	British Hang Gliding and Paragliding Association	LFS	Low Flying System
BINA ERS	British Isles/N America En Route Supplement	LHS	Left Hand Seat
BMAA	British Microlight Aircraft Association	LJAO	London Joint Area Organisation
CAA	Civil Aviation Authority	LOA	Letter of Agreement
CALF	Chart Amendment - Low Flying	LTMA	London TMA
CANP	Civil Air Notification Procedure	MATO	Military Air Traffic Operations
CAS	Controlled Airspace	MATS	Manual of Air Traffic Services
		MATZ	Military Air Traffic Zone
		mb	Millibar/s

MCTA	Military Control Area	TA	Traffic Alert (TCAS)
MCTZ	Military Control Zone	TANS	Tactical Air Navigation System
MEDA	Military Emergency Diversion	TBC	Tactical Booking Cell
MHz	Megahertz	TC	Terminal Control
MRSA	Mandatory Radar Service Area (Military Area)	TCAS	Traffic Alert & Collision Avoidance System
MSA	Minimum Safe Altitude	TDA/TRA	Temporary Danger or Restricted Area
MSD	Minimum Separation Distance	TFR	Terrain Following Radar
MTA	Military Training Area	TMA	Terminal Manoeuvring Area
MTRA	Military Temporary Reserved Airspace	TTA	Tactical Training Area
NATS	National Air Traffic Services	UAR	Upper Air Route
NDB	Non - Directional Beacon	UAS	Upper Airspace Service
NM	Nautical Mile(s)	UASRA	Upper Airspace Special Rules Area
NOTAM	Notice to Airmen	UDA	Upper Advisory Area
NVG	Night Vision Goggles	UDF	Ultra High Frequency Direction Finder
OAC	Oceanic Area Control	UDR	Upper Advisory Route
OACC	Oceanic Area Control Centre	UKAB	UK Airprox Board
OAT	Operational Air Traffic	UIR	Upper Flight Information Region
ODL	Opposite Direction Level	UKLFHB	UK Military Low Flying Handbook
OJTI	On-the-Job Training Instructor	USL	Under-slung Load
PAR	Precision Approach Radar	UTC	Co-ordinated Universal Time
PFL	Practice Forced Landing	VCR	Visual Control Room
PI	Practice Interception	VDF	Very High Frequency Direction Finder
PIC	Pilot in Command	VFR	Visual Flight Rules
PINS	Pipeline Inspection Notification System	VMC	Visual Meteorological Conditions
PTC	Personnel & Training Command	VOR	Very High Frequency Omni Range
QDM	Magnetic heading (zero wind)	VRP	Visual Reporting Point
QFE	Altimeter setting to give height above aerodrome or runway threshold	WIP	Work in Progress
QGH	Controlled descent through cloud	WRDA	Weapons Range Danger Area
QNH	Height above sea level (altitude)		
QSY	Frequency change		
QTE	True bearing		
RA	Resolution Advisory (TCAS)		
RAS	Radar Advisory Service		
RHS	Right Hand Seat		
RIS	Radar Information Service		
RNAS	Royal Naval Air Station		
RPS	Regional Pressure Setting		
RSO	Range Safety Officer		
RTF	Radio Telephony		
RVSM	Reduced Vertical Separation Minimum		
RWY,Rwy	Runway		
RVR	Runway Visual Range		
SAP	Simulated Attack Profile		
SC	Sector Controller		
SCH	Set Clearance Height		
ScOACC	Scottish and Oceanic Area Control Centre		
SID	Standard Instrument Departure		
SIF	Selective Identification Feature		
SMF	Separation Monitoring Function		
SRA	Surveillance Radar Approach		
SSR	Secondary Surveillance Radar		
STAR	Standard Instrument Arrival Route		
STC	Strike Command		
STCA	Short Term Conflict Alert		
SVFR	Special VFR		

## AIRPROX REPORT 4c/98

Occ No. 98/00033

Date: 6 January 1998  
Time: 0955 UT  
Aircraft: B757/Hawk  
Operators: British Airline/British Military  
Position: 3nm South of EXMOR  
ALT/HT/FL: FL 200  
Airspace Type: Airway A25 – Class A  
Reporter: LATCC Berry Head SC  
Reported Separation: 3.5nm horizontal/vertical not known  
Recorded Separation: 3.95nm horizontal/100 feet vertical



### THE INCIDENT

The B757 was enroute from Bristol Lulsgate to Tenerife, under the control of the LATCC Berry Head (BHD) Sector controller (SC) and was in the climb to FL270 to join Airway A25 at EXMOR. The Hawk was one of a pair of aircraft, which had just completed a practice intercept sortie for the benefit of a student Fighter controller (FC), and was returning to Yeovilton from the exercise area to the West of A25. It was in the descent from FL230 to FL150 and was under the control of the student FC who was being supervised by a mentor controller, who was also under training (u/t) and was being monitored by a supervising mentor instructor controller.

Prior to the incident the B757 had been transferred to the BHD SC by Bristol Approach, the pilot having been cleared to join controlled airspace at EXMOR and to climb to FL130. On contacting the SC at 0951, the B757 pilot was further cleared to climb to FL270. Meanwhile, the Hawk pilot had completed his intercept exercise and commenced a recovery to Yeovilton at FL230, being instructed, at 0952 by the student FC, to turn onto a heading of 080°. Shortly afterwards, the Hawk pilot requested descent to FL150 to which the student FC replied, at 0953.30, "negative maintain Flight Level two three zero (FL230) have er two contacts West of you at ten at Flight Level one

correction East of you Flight Level one five zero (FL150) tracking North West once clear of those I'll descend you". The student FC then instructed the Hawk pilot to turn right heading 120° and, at 0954.20, when the aircraft was clear of the reported traffic, instructed the pilot to descend to FL150.

The Hawk was, at this point, approximately 5 miles West of the airway's western boundary and the B757 was just about to enter the airway from the East as it climbed through approximately FL185 on a South-westerly track towards its airway joining point at EXMOR. About this time the supervising instructor FC pointed out the presence of the B757 to the u/t mentor who also noted other traffic at FL70 in the airway. However, only traffic information on the aircraft at FL70 was given to the Hawk pilot by the student FC until, at 0955.20, he instructed the pilot, "(callsign) starboard West traffic avoidance". This instruction was queried by the Hawk pilot who asked, "(callsign) confirm starboard west?". The student FC confirmed the instruction with, "confirmed starboard West" and followed this at 0955.50 with, "stranger North of you heading South indicating Flight Level one nine zero (FL190)". Note:- This level does not equate with that shown in the radar pictures and may have been due to a mismatch in timings on the RTF recordings as against the



radar pictures but is more likely due to an error on the part of the student FC.

Earlier, as the B757 passed FL180 in the climb, the BHD SC had observed the Hawk's radar return indicating FL230 and approaching the airway therefore, as a precaution, he instructed the B757 pilot to stop his climb at FL220. The controller followed this with traffic information on the Hawk. At the same time the BHD Chief SC attempted to co-ordinate with the Yeovilton FC on the direct line but, as his call was routed through a number of assistants, he was unable to talk to the controllers concerned until after the incident had occurred.

Radar pictures, timed at 0955, show the B757 in Airway A25 approaching the EXMOR reporting point and passing FL196 in the climb. The Hawk is passing right to left through the 12 o'clock position to the B757, range 7nm and descending through FL221. The B757 then commences a left turn to follow the airway thus keeping the Hawk in its 12 o'clock position as the Hawk descends through the level of the B757. At 0955.21, the B757 is passing FL199 in the climb as the Hawk passes FL200 in descent at a range of 3.95nm. Four seconds later, the radar pictures show horizontal separation as 3.17nm but with the Hawk now 900 feet below the B757, which is at FL200. Horizontal separation continued to reduce as vertical separation increased, but the vertical separation was still less than the 5000 feet minimum, which is required by a military controller when using this SSR Mode C method. Minimum horizontal separation was recorded as 1.4nm, but with vertical separation at that time recorded as 4500 feet.

Subsequently, the Hawk pilot continued the turn onto West, exited controlled airspace and levelled at FL150 before being repositioned for another airways crossing and an uneventful recovery to Yeovilton. The B757 pilot was cleared to continue his climb to FL330 and the aircraft continued enroute without further incident.

The BHD SC reported that he observed the Hawk to the West of Airway A25 heading East

at FL230 and that although these aircraft normally turn away before the airway, he stopped the B757 at FL220 as a precaution. As the B757 entered the airway its height readout became garbled with a slow moving low level contact. Simultaneously, the Hawk's height readout indicated that it was descending, so he asked the CSC to co-ordinate his traffic with Yeovilton's observed squawk. At the same time he was informed of a TCAS Traffic Advisory (TA) by the B757 pilot. The SC was unable to assess the vertical separation between the two aircraft due to the garbling of the B757's secondary radar return.

The military authorities report that, although the climbing B757 had been pointed out to the u/t mentor by the supervising mentor instructor, there appears to have been little recognition of the potential for the B757 to turn southbound on A25 by either the student FC or the u/t mentor. This may have been due to an over reliance on the local method of indicating traffic joining controlled airspace at EXMOR whereby such departures from Bristol are notified to Yeovilton where an assistant manually inserts 'EXMO' within the SSR data block associated with the relevant aircraft. At the time of the incident the data block edit facility was unserviceable and consequently the B757's data block did not show it to be joining controlled airspace at EXMOR. The supervising mentor instructor eventually exhorted the u/t mentor to initiate urgent avoiding action but, by the time an instruction was issued by the student FC, the message passed was in a non-standard format and in any case too late to be effective. It is probable that avoiding action should have been mandated at the time that the supervising mentor instructor drew the attention of the u/t mentor to the presence of the B757 as it was already too late to achieve any co-ordination agreement with LATCC.

The pilot of the Hawk aircraft reported that at the time of the occurrence he was intermittent IMC and that he never saw the B757.

The B757 pilot reported that whilst turning left over EXMOR and passing FL200, he was instructed to stop climb at FL220 because of

unknown traffic. He received a TCAS TA on a contact ahead and slightly to the right. This contact was not seen visually but from the TCAS indications it disappeared below with what appeared to be a high rate of descent.

## **SUMMARY OF CAA ACTION**

The AIRPROX occurred as a result of the Supervising controller not ensuring that the student Fighter controller achieved the required separation from the B757 when carrying out a radar crossing of Airway A25 with the Hawk.

The military authorities reported that the error was compounded by the u/t mentor's lack of

familiarity with local area traffic patterns and the late intervention by the supervising mentor instructor. Although it was not considered that there was any risk of collision between the subject aircraft, the incident was regarded most seriously and a number of corrective measures have been taken. The number of simulated exercises in the Fighter Control syllabus replicating similar scenarios to this occurrence has been increased and the requirement to use standard RT phraseology in such situations has been reinforced. Rectification of the SSR data block edit facility is being actively progressed. Finally it was observed that this had been a salutary lesson to all those military personnel involved.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

The Panel agreed that, whilst the incident occurred because of the student FC's error, which was not corrected by the u/t mentor, the final responsibility lay with the supervising instructor; he was the only qualified 'Yeovilton FC'.

The supervisor, at least, should have recognised that the B757 was a potential confliction to the Hawk and was very probably going to turn to the South to follow Airway A25. Indeed, even in the unlikely event of the civil aircraft continuing on a westerly track, the required separation between the Hawk and the B757 would still have been eroded. The comments about the unserviceability of the data block edit facility at Yeovilton should be viewed in the light of the foregoing. Perhaps over-reliance should not be placed on this facility.

The Panel was concerned at the reported difficulty that the LATCC CSC had in contacting the FC controller concerned. It so happens that a member of the Panel is a current Berry Head CSC and he confirmed that this is a problem. A full explanation of the Yeovilton switchboard arrangements was provided to the Panel, together with the SSR code allocation plan. It was agreed that better information could be made available to the Berry Head Sector controllers which could facilitate their co-ordination with Yeovilton, although direct controller to controller connection is unlikely to be possible in view of there being only a single telephone line between the units.

### **2 Causal Factors**

The Yeovilton supervising instructor FC did not ensure that the student and u/t mentor achieved the required separation between the Hawk and the B757.

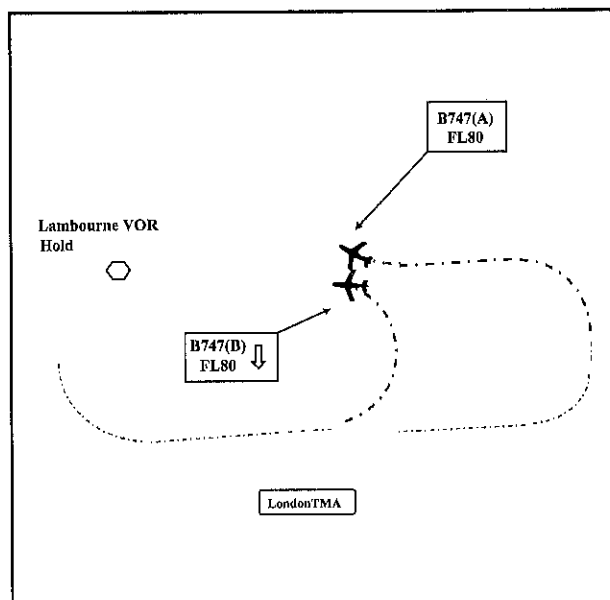
### **3 Risk Classification** C

### **4 Recommendations** The Panel had no recommendations to make.

## AIRPROX REPORT 2c/98

### Occ No. 98/00078

*Date:* 8 January 1998  
*Time:* 1437 UTC  
*Aircraft:* B747/B747  
*Operators:* Foreign Airlines  
*Position:* 4nm East of Lambourne VOR  
*ALT/HT/FL:* FL80  
*Airspace Type:* London TMA – Class A  
*Reporter:* LATCC Terminal Control - Heathrow INT N Director  
*Reported Separation:* 0.5nm horizontal/400 feet vertical  
*Recorded Separation:* 0.62nm horizontal/400 feet vertical



### THE INCIDENT

The two aircraft involved in this AIRPROX were B747s, inbound to Heathrow under the control of the LATCC Heathrow Intermediate North (INT N) Director. B747(A) from Kansai in Japan and B747(B) from Beijing, China, were in the Lambourne (LAM) hold and in descent to FL80 at the time of the incident. The controller involved had been in position for less than four minutes and he assessed his workload as light to medium. Due to equipment unserviceabilities the INT N Support position was unmanned at the time, however it was the judgement, both of the controller and the Group Supervisor, that the traffic loading did not warrant the position being activated.

The B747(A) was at FL110 and the B747(B) was at FL120 when, at 1433, shortly before a controller change-over occurred, the pilot of the B747(A) was cleared by the off-going controller to descend to FL80. At 1434.26, the relief controller took over the position and then at 1434.55, as one of his initial actions, he mistakenly instructed the pilot of the B747(B) to descend, also to FL80. At this point the B747(B) was in the turn outbound from LAM VOR while the B747(A), flying approved two minute legs, was at the opposite end of the holding pattern, turning inbound and passing FL90 in descent and the two aircraft were

laterally separated by 17nm. By 1436, the B747(A) had levelled at FL80, 11nm East of, and inbound to the VOR, while the B747(B) was passing FL100 in descent and heading outbound 6nm South East of the VOR. The B747(B) was flying a standard one minute holding pattern and was thus about to turn inbound towards the B747(A). The radar picture timed at 1437.05 shows the B747(B) turning inbound approximately 7nm South East of the VOR and passing FL91 in descent with the B747(A) in its 2 o'clock position, range 3.7nm, crossing right to left and level at FL80.

Meanwhile the controller, who was not monitoring the aircraft in the LAM hold on radar, did not realise that he had issued an unsafe clearance. Consequently, at 1437.14, standard separation was compromised as the B747(B) descended through FL90 in the inbound turn. The B747(A) was now in its 2 o'clock position (from the B747(B)) at a range of 2.8nm, still level at FL80. At 1437.19, the pilot of the B747(A) called, "Director.....maintain flight level eight zero have traffic on the left side". This was the first indication to the controller that separation had been eroded. He responded to the pilot of the B747(A) with, "(callsign) roger 'avoiding action' turn right forty degrees right forty degrees immediately". This instruction was based upon the pilot's transmission as the controller was not able to assess the situation

from the radar display because of label overlap and the red flashing high severity alert from the Short Term Conflict Alert (STCA). As the pilot of the B747(A) was acknowledging the avoiding action at 1437.29 he received a TCAS warning, transmitting to the controller, "*callsign now oh there is traffic resolution we obeyed it we are making our descent to er flight level seven zero*". At 1437.42, the B747(A) descended out of FL80 with the B747(B) now in its left 10 o'clock position range 0.9nm, descending through FL84. Meanwhile, the controller gave traffic information to the pilot of the B747(B) but received no acknowledgement. The vertical separation of 400 feet was now maintained as both aircraft descended, with minimum lateral separation of 0.62nm being recorded on the Separation Monitoring Function (SMF) at 1437.50, before the avoiding action turn took effect and the two aircraft began to diverge.

Although FL70 was not a flight level normally available to the INT Director co-ordination on the B747(A) was effected on his behalf by another controller standing close by. On reaching FL70, the pilot of the B747(A) was given a heading for the approach which then progressed without further incident as did that of the B747(B).

The controller stated later that he could offer no explanation as to why he had descended the B747(B) to a level that was already occupied. He agreed that the handover that he received had been adequate and had included details of both aircraft involved in the incident. He confirmed that both aircraft's flight progress strips (fps) were in position and were correctly annotated although not immediately adjacent to one another on the display. He said he remembered resting his hand on the B747(A)'s fps when passing the descent instruction to the pilot of the B747(B) and that the fact that this fps was in position should have made him realise that there was traffic to affect the descent clearance of the B747(B). He added that he thought, with hindsight, that perhaps he had intended to descend the B747(B) to FL100 but inexplicably had said FL80.

The pilot of the B747(A) reported that he was level at FL80 and holding when he first sighted the other aircraft 3nm to the left and descending towards him. He reported taking avoiding action of turning right and descending, and estimated the minimum horizontal separation to be 1nm with the other aircraft descending from above. He assessed that had he not taken avoiding action there would have been a collision.

The pilot of the B747(B) reported that they were descending to FL80 in the hold and that when passing FL86 in a left turn, they received a TCAS warning of an aircraft at one to two o'clock range 4km and showing FL80. They continued in the left turn and observed on TCAS that the other aircraft was coming nearer. On passing FL84 the crew of the B747(B) saw the other aircraft "*coming straight towards us*" and received a TCAS Resolution Advisory (RA). The pilot reported then taking avoiding action by increasing the turn from 15° to 30° and promptly halting the aircraft's descent. He reported the minimum level he descended to was 8250 feet at which point the other aircraft was approximately 1km to starboard and about 250 feet lower. Note:- Radar pictures show the B747(B) descending to FL80 and maintaining this level.

#### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Heathrow INT N Director who inexplicably cleared the B747(B) to the same level as the B747(A) without the required horizontal separation being provided. Consequently, it was assessed that the Director must take full responsibility for the occurrence.

It is open to conjecture whether the presence of a Support Controller would have assisted in detecting the error earlier, thereby possibly preventing or minimising the loss of separation. Nevertheless, the pilots of both B747s received and reacted to TCAS RAs and the vertical separation did not reduce below 400 feet.

## REVIEW BY AIRPROX PANEL

### 1 Discussion

The Panel discussed a number of possible explanations which might have accounted for the controller's error. These included the 2 minute holding pattern being flown by B747(A), which is not a regular event at Lambourne, and which may have taken the aircraft beyond the controller's routine scan of his radar display. He still had his fps of course, but, for reasons unknown to the Panel, the strips for the two B747s were not immediately adjacent to one another; this might also have been a factor. Another consideration was that the preceding transmission on the frequency had also included "FL80" and this might have triggered a slip of the tongue. These explanations could only be viewed by the Panel as conjecture.

Both aircraft had been in the hold for some time. The pilot of B747(B) did not, apparently, detect the controller's error when the descent instruction was issued. The B747(A) pilot, however, seemed, to the Panel, to be very alert to the developing situation. He made his warning call to the controller before he received his TCAS alert. Furthermore, the other B747 was in his 7 o'clock position and would not have been easy to see unless the pilot was looking out for it.

### 2 Causal Factors

The Heathrow INT North Director cleared B747(B) to the level of B747(A) without the required horizontal separation.

### 3 Risk Classification B

### 4 Recommendations The Panel had no recommendations to make.

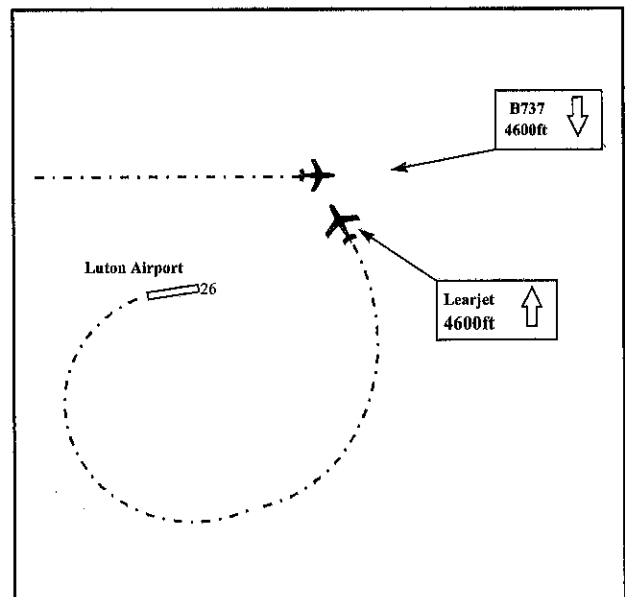
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## AIRPROX REPORT 1c/98

### Occ No. 98/00097

**Date:** 9 January 1998  
**Time:** 1741 UTC  
**Aircraft:** B737/Learjet  
**Operators:** British Airline/Executive  
**Position:** 4nm North East of Luton Airport  
**ALT/HT/FL:** Altitude 4600 feet  
**Airspace Type:** London TMA – Class A  
**Reporter:** Luton ATC - Approach Radar Controller  
**Reported Separation:** 1.5nm horizontal/Nil feet vertical  
**Recorded Separation:** 1.2nm horizontal/Nil feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were receiving an Approach Radar Control service from Luton ATC. The B737 was inbound to Luton from Glasgow and was in descent to altitude 3000 feet on a radar heading of 090° to position it right hand downwind for runway 26. The Learjet had departed from runway 26 at Luton on a Daventry (DTY) 2B Standard Instrument Departure (SID) enroute to Manchester and had been cleared to climb to altitude 6000 feet. The routing for this SID requires a left turn outbound and an aircraft would normally be expected to route just to the East of Luton Airport before turning onto a northerly track for Daventry.

At about 1739.30, the Learjet pilot contacted the Luton Approach controller and reported climbing to altitude 4000 feet on the SID. Shortly afterwards, the B737 pilot reported on frequency, in descent to altitude 5000 feet and on a radar heading of 090° in accordance with his release from LATCC Terminal Control (TC). It is normal practice to position 'inbound' aircraft right-hand downwind for runway 26 with the intention of clearing them to descend to altitude 3000 feet once they have passed to the North of the airport; whilst obtaining (from TC) early climb clearance to altitude 6000 feet for outbound aircraft to provide vertical separation.

Thus at about 1740.30, the B737 pilot was given descent to altitude 3000 feet and the Learjet pilot was cleared to climb to altitude 6000 feet. The radar picture timed at 1740.27 shows the B737 5nm North North West of the airport heading East and passing altitude 6700 feet in descent. The Learjet is shown 3nm South South East of the airport in a left turn passing altitude 3600 feet in the climb. The controller now became aware that the track of the Learjet was taking it further East than expected and so she asked the Learjet pilot to "*(callsign) turn will you tighten up your turn fractionally for me on to a course for Daventry*". The pilot replied "*wilco*". The controller then repeated her instruction to the B737 pilot to descend to altitude 3000 feet and followed this with an instruction to the Learjet pilot "*(callsign)*

*left left now heading two nine zero tighten up the turn really a bit much please*". The Learjet pilot replied "*roger we're turning left*" and at that point, at about 1741.50, the B737 pilot transmitted, "*(callsign) is that him on our right*". The controller replied "*affirm*". The radar picture timed at 1741.54 shows the Learjet climbing through altitude 4500 feet on a northerly heading, with the B737 in its 11 o'clock position, range less than 2nm, crossing left to right in descent, passing altitude 4600 feet. The next radar picture timed at 1742.06 shows the Learjet at altitude 4600 feet turning left and passing about 1nm behind the B737 which is at altitude 4500 feet.

Subsequently, the B737 pilot asked the controller, "*(callsign) just out of interest how close was that aircraft?*". The controller replied, "*he was two miles I did lose separation for about a mile there*". The pilot responded, "*yeah he had us very.....(unintelligible words).....*".

Just before leaving the frequency the Learjet pilot called the controller saying, "*(callsign) sorry for any hassle there*". Then finally, "*yeah I think we were a touch fast er sorry about that*".

The controller had noticed the Learjet going very wide in the turn and not following the SID therefore she instructed the pilot to tighten the turn. When this was observed not to be effective, a further heading instruction was given. Later the controller stated that, as the incident progressed, she considered that the Learjet would still be able to turn inside the track of the B737 but that with hindsight she should have passed avoiding action instructions and traffic information to the pilots of both aircraft.

The B737 pilot reported that during the intermediate approach phase into Luton they heard an aircraft on a DTY 2B SID being asked to tighten its turn and that they then noticed an aircraft out of their right hand window that seemed close. The aircraft was turning away from them but they took gentle deviation action to ensure no danger. The pilot stated that they were in good visual contact with the Learjet at all times and there was no risk of collision.

The Learjet pilot reported that the P2 was the handling pilot and that as far as he could recall they were complying with the DTY 2B SID. On being asked to tighten the turn the autopilot was disengaged to achieve a better rate of turn and at this point the P2 reported visual with another aircraft at approximately 45° but with no assessment of range given, although he stated that they were not concerned by its proximity. He assessed the risk as small but stated that at no time did ATC give traffic information or avoiding action.

The radar recordings show that the Learjet passed about 4nm East of Luton during its climb which was further East than would normally be expected. This routing was confirmed by the Luton Noise and Track Keeping equipment which also showed that the Learjet's speed was about 60kts in excess of

the maximum allowed speed of 250kts when below FL100.

### **SUMMARY OF CAA ACTION**

The Airprox was caused by the Luton Approach controller who did not ensure that horizontal separation was maintained between the B737 and the Learjet whilst clearing them through each others level.

Although, in mitigation, the Learjet made a wide turn on departure and thus tracked East of its expected SID routing it was considered that, on realising the problem, the Approach controller should have taken more positive and effective action to control the situation.

### **REVIEW BY AIRPROX PANEL**

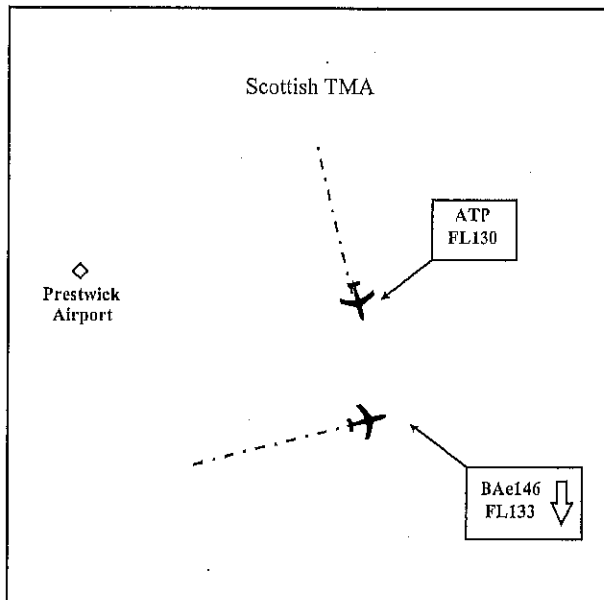
- 1 Discussion**      The Panel commented upon the speed of both aircraft. In the one and a half minutes or so before the AIRPROX, the B737's ground speed had reduced from 334 to 294 kts and that of the Learjet had increased from 308 to 314 kts (the surface wind was reported as being 200°/10 kts). Whereas the B737 pilot may have been allowed to keep his speed up (although the Panel had no information which indicated that this was the case), pilot members pointed out that avoiding action would have been slower to take effect at these speeds. It was difficult to see what advantage the Learjet pilot hoped to gain by his high speed but it certainly caused him to deviate from the SID track and greatly reduced his rate of climb; at 250 kts or less the Learjet could have climbed well above the B737.

However, whilst the consequences of the Learjet's excessive speed contributed to the AIRPROX, the Panel agreed that the Approach controller needed to have taken more positive steps to remedy the situation and to have passed avoiding action instructions and traffic information to the crews of both aircraft.
- 2 Causal Factors**      The Luton Approach controller did not ensure that horizontal separation was maintained between the B737 and the Learjet.
- 3 Risk Classification**      B
- 4 Recommendations**      The Panel had no recommendations to make.

## AIRPROX REPORT 15c/98

### Occ No. 98/00138

*Date:* 13 January 1998  
*Time:* 1154 UTC  
*Aircraft:* BAe146/ATP  
*Operators:* Foreign Airline/British Airline  
*Position:* 15nm East of Prestwick  
*ALT/HT/FL:* FL130  
*Airspace Type:* Scottish TMA - Class D  
*Reporter:* ScACC - 'TMA In' and 'TMA Out' controllers  
*Reported Separation:* 2nm horizontal/300 feet vertical  
*Recorded Separation:* 2.8nm horizontal/400 feet vertical



### THE INCIDENT

Both aircraft involved in this AIRPROX were receiving a service from ScACC, the BAe146 from the 'TMA In' controller and the ATP from the 'TMA Out' controller. The BAe146 was in descent inbound to Edinburgh from Dublin and the ATP was in the climb enroute to Manchester from Glasgow.

Prior to the incident, the 'TMA Out' controller was working both of these aircraft and, as their tracks were in conflict, he cleared the BAe146 pilot to descend to FL140 and the ATP pilot to climb to FL130. His original intention was to wait for the aircraft to cross before descending the inbound and climbing the outbound. However, in order to sequence the BAe146 with other Edinburgh inbounds, he transferred this aircraft to the 'TMA In' controller while it was still in descent to FL140, but emphasised that it was not to be cleared for further descent until the two aircraft had passed clear of each other. When the BAe146 pilot contacted the 'TMA In' controller, it was emphasised that his cleared level was FL140. He was also turned onto a heading of 090°. Shortly afterwards, the 'TMA In' controller noticed the aircraft descending, with its Mode C indicating FL136, and so he told the pilot to climb immediately to FL140. The BAe146 pilot

responded and apologised on the RTF and said it was his error.

Radar pictures, timed at 1153.10, show the ATP in the climb passing FL117 with the BAe146 in its right 2 o'clock position range 9.2nm, crossing right to left and descending through FL161. Subsequent radar pictures show the BAe146 descending through FL141 as it moves across to the 12 o'clock position relative to the ATP, which is climbing through FL126, at a range of 3.3nm. The BAe146 continues to descend, passing through its cleared level as the ATP approaches its cleared level of FL130. Minimum separation occurs at 1154.40 when the ATP is passing FL129 in the climb and the BAe146 is passing FL133 in descent. Horizontal separation at this point is 2.8nm.

In his written report, the BAe146 pilot stated that, on descent, FL140 was selected and armed on the autopilot. The 1000 feet to go call was made and the system checked, but then between FL150 and FL140 the altitude capture disarmed for reasons unknown and this went unnoticed by the crew until they were alerted by the controller and climbed back up to FL140. They did not see any other aircraft as they were IMC.

The ATP pilot stated in his report that ATC had advised him of a BAe146 at a range of 3nm



which had descended through its cleared level of FL140. However, nothing was seen as they were IMC and no avoiding action was taken.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the crew of the BAe146 who allowed the aircraft to descend below their cleared level of FL140 to FL133 and into conflict with the ATP.

The BAe146 autopilot altitude capture can be disarmed as the aircraft flares to capture the selected altitude if the crew; alter the pitch rate control, select another pitch mode, change the barometric setting on the left hand altimeter or use "SYNC". The main problem seems to stem

from crew interaction with the pitch rate control of the autopilot during the flare phase, to soften the aircraft's levelling off manoeuvre. However, there is no obvious indication to the crew that the altitude capture has been disarmed and it is this aspect that has become a feature of level bust errors involving this type of aircraft.

**Following the Panel Safety Recommendation J98-1 about this problem, which was made following their review of AIRPROX 1/97, the CAA has decided to investigate this problem further and review potential measures that would reduce the likelihood of further incidents of this type.**

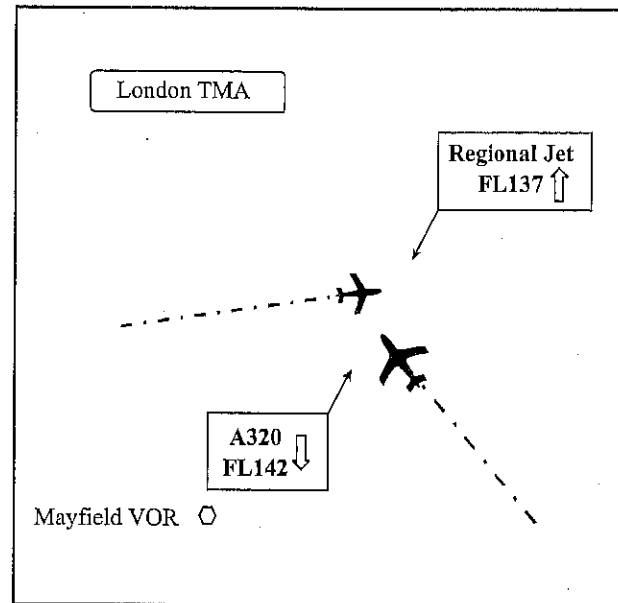
### **REVIEW BY AIRPROX PANEL**

- 1 Discussion** The Panel accepted the Summary of CAA Action. It would seem, from the BAe146 Captain's report, that at the critical moment, and whilst the pilot flying was identifying beacons, the pilot not flying was writing up the technical log. The Panel believes that this was not an appropriate stage of the flight to be performing this task as it took one of the pilots out of the monitoring loop and the failure of the autopilot to capture the cleared flight level went unnoticed.
- 2 Causal Factors** The BAe146 crew allowed their aircraft to descend below their cleared level and thus to conflict with the ATP.
- 3 Risk Classification C**
- 4 Recommendations** The Panel had no recommendations to make.

## AIRPROX REPORT 3c/98

Occ No. 98/00246

Date: 20 January 1998  
Time: 1544 UTC  
Aircraft: A320/Canadair Regional Jet (CRJ)  
Operators: Foreign Airlines  
Position: 11nm North East of Mayfield VOR  
ALT/HT/FL: FL140  
Airspace Type: London TMA – Class A  
Reporter: LATCC Area and Terminal Controllers (AC & TC)  
Reported Separation: 0.5nm horizontal/500 feet vertical  
Recorded Separation: 0.5nm horizontal/500 feet vertical



### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of LATCC, the A320 with the Terminal Control (TC) South East (SE) Sector and the Canadair Regional Jet (CRJ) with the Area Control (AC) Dover/Lydd Sector controller. The A320 was inbound to Heathrow from Paris Charles de Gaulle Airport. The CRJ had departed from Gatwick enroute to Salzburg on a WIZAD Standard Instrument Departure (SID) and was climbing to FL210.

Both sectors were being operated by trainee controllers along with their mentors, who assessed their workload, respectively, as moderate for the SE Sector and light for the Dover/Lydd Sector.

At 1539.20, the A320 pilot, on transfer from the Dover/Lydd Sector, contacted the SE Sector and reported descending to FL150 and was instructed by the trainee to maintain that level on reaching. Half a minute later, the CRJ pilot also made contact with the SE Sector and reported climbing to FL100 on a radar heading of 080°. He was initially told to continue on the heading, and then, at 1541.05, was instructed to climb to FL120. This climb was in accordance with the standing agreement for traffic routing via Dover.

At 1542.43, the SE trainee instructed the CRJ pilot to contact the Dover/Lydd Sector and, at this point, radar pictures show the CRJ level at FL120 with the A320 in its one o'clock position at a range of 14nm descending through FL159, and on a heading crossing from right to left. However, the SE mentor had missed this transmission and he continued to believe that the CRJ was still under his Sector's control. Note:- The LATCC TC MATS Part 2 states, under the heading of 'Transfer of Control and Standing Agreement Traffic' that, "Any potential conflicts with traffic within or entering the offering sector's airspace, whether in communication with that sector or not, are notified to the receiving sector". No such notification took place.

At 1542.50, the CRJ pilot contacted the trainee Dover/Lydd Sector controller and reported maintaining FL120 and heading 080°. The controller acknowledged this and, at 1543, instructed the pilot to climb to FL210. At 1543.26, the SE trainee, having forgotten that he had transferred control of the CRJ, instructed the A320 pilot to descend to FL130 in the mistaken belief that the CRJ was maintaining FL120. The mentor, also believing that the CRJ was still on frequency, and maintaining FL120 (although the flight progress strip (fps) indicated correctly that the aircraft had been transferred) did not detect anything

being awry. The radar picture, timed at 1543.34, shows the A320 at FL150 with the CRJ in its left 11 o'clock position, crossing from left to right, range approximately 7nm, and passing FL124 in the climb.

Very shortly afterwards, the SE mentor noticed the CRJ climbing and, at 1543.40, the trainee transmitted to the A320 pilot, "*(callsign) sorry maintain flight level one five zero please*". Radar recordings for this time confirm that the A320 pilot had not commenced his descent to FL130 and was still level at FL150. Simultaneously, the Dover/Lydd trainee noticed the potential confliction and transmitted to the CRJ pilot, "*(callsign) stop your climb flight level one four zero*". The Dover/Lydd trainee then repeated the message, "*(callsign) confirm stop your climb flight level one four zero*", to which the pilot replied, "*stopping climb one four zero (callsign) and we have the traffic*". Then, at 1544, the Dover/Lydd trainee instructed the pilot, "*(callsign) turn left zero six zero*". This was followed, at 1544.10, by the Dover/Lydd mentor taking control of the frequency from the trainee and giving avoiding action as, "*(callsign) avoiding action descend to flight level one three zero*". The pilot replied that they were clear of the traffic and level at FL140 to which the controller replied, "*(callsign) roger then maintain flight level one four zero*".

Meanwhile, at 1543.45, the A320 pilot requested confirmation of his instruction with, "*er confirm we maintain level one five zero (callsign)*" and the SE trainee responded with, "*affirm please*". This was followed by an exchange of incomplete transmissions and then, at 1544.05, the A320 pilot reported, "*we have the traffic in sight er ahead of us*". The SE trainee responded by repeating the instruction to climb to FL150 to which the A320 pilot replied, "*..we will climb again to 150*". Radar pictures, timed at 1544.04, show the aircraft 2nm apart with the A320 descending through FL147 and the CRJ climbing through FL137. However, subsequent radar pictures show the A320 pilot continue his descent with both aircraft continuing to converge until, at 1544.17, the A320, which was at FL142 still descending, passed approximately 0.5nm down the right

hand side of the CRJ, which was at FL137. The A320 then passed behind the CRJ and horizontal separation was restored with the minimum vertical separation being 400 feet. Prior to leaving the frequency, the CRJ pilot reported that, as a result of a TCAS RA, he would be filing a report. It was reported that in TC, the Short Term Conflict Alert (STCA) only activated after the remedial action had been taken by ATC and only with a high severity alert.

The SE trainee and mentor agreed that the A320 had been descended to FL130 on top of the CRJ at FL120; the mentor not realising, and the trainee having forgotten that he had already transferred the CRJ. When his mentor noticed the CRJ climbing, the trainee told the A320 pilot to maintain FL150. The SE Co-ordinator had then called the Dover Chief Sector controller (CSC) to warn about the confliction.

The Dover/Lydd mentor recalled that the A320 had been transferred to the SE Sector sometime earlier, descending to FL150, and that when the CRJ pilot called climbing to FL120, further climb was given to FL210 since his trainee assumed that the aircraft had been transferred clear of conflictions. As traffic levels were light he was not paying particular attention to the radar display but was monitoring the RTF and strip display. He was alerted to a potential problem when his trainee told the CRJ pilot to stop climb at FL140 but that when he looked at the radar he saw the A320 was still at FL150 and therefore thought that an AIRPROX had been averted until he saw the A320 start to descend. He then took control, gave an avoiding action descent and later a left turn after being contacted by the SE Co-ordinator through the Dover/Lydd CSC. This action took the CRJ towards another aircraft and triggered an STCA warning.

In his written report, the A320 pilot stated he was descending at 3000ft/min when at FL153 their clearance was amended to FL150. His reaction to this was to ask for a confirmation, to start reducing the rate of descent and to look outside as they were VMC. As they were passing FL150 he saw an aircraft below at 11 to 12 o'clock, crossing left to right, range 1 to 2nm.

He then decided, that as they were passing safely behind the other aircraft and, in consideration for his passengers, to only change attitude smoothly. This obviously contributed to the reduced vertical separation, however he stated that had they been IMC, he would have reacted positively to reduce the high rate of descent to comply with the ATC instructions and that consequently the vertical separation would have been normal. He estimated minimum separation as 1nm horizontally and 500 feet vertically and stated that no avoiding action was required as they were passing behind.

The CRJ pilot reported the first sighting at a range of about 5nm, and that following a TCAS RA he initiated an immediate descent. He assessed the minimum separation as less than 0.5nm horizontally and about 500 feet vertically, and the risk as 'high'.

## **SUMMARY OF CAA ACTION**

The AIRPROX occurred when the TC SE trainee controller transferred the CRJ to the Dover/Lydd Sector in potential confliction with the A320. Although the SE trainee made the initial error, and the onus was on the SE mentor to monitor his trainee's actions, the mentor made what he thought was a timely intervention by telling the trainee to instruct the A320 pilot to maintain FL150, which if followed may have averted the incident. However the A320 pilot continued his descent despite having transmitted that he would return to FL150. It was this action which exacerbated the loss of separation and led to the AIRPROX.

It was assessed that although the Dover/Lydd Sector trainee controller was entitled to assume that the CRJ had been transferred clear of conflict for the climb, it would have been prudent for both the Dover/Lydd Sector trainee and mentor controllers to have scanned the radar display for any possible conflictions.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

The South East mentor did not register the transfer of the CRJ by his trainee, or notice the fps being annotated. So, although he thought that he was monitoring his trainee closely he could not have been doing so adequately. The Panel thought that the explanation for this may have been that he had fallen prey to one of the pitfalls of the monitoring aspect of mentoring and had lost his concentration. This is more likely if a mentor has confidence in his trainee.

Members went on to consider the part played by the Dover/Lydd mentor in the AIRPROX. He had reported candidly that, in light traffic conditions, he was not paying particularly close attention to his radar (perhaps the comment above concerning the mentoring role also applies to him). It was recognised by the Panel that the Dover/Lydd Sector controllers were entitled to receive the CRJ "clean" on transfer from the South East Sector but, after some discussion, it was agreed, on balance, that they had contributed to the cause of the AIRPROX. Although the South East Sector trainee had initiated the incident, the Panel believed that the Dover/Lydd mentor had the responsibility for identifying the CRJ on transfer and that this could only be accomplished by looking at his radar. This, the Panel thought, would have reminded him about the presence of the A320 which had been under the control of the Dover/Lydd Sector until shortly before the event.

The Panel believed that the A320 pilot's recollection of the event was incorrect. The aircraft was not descending at 3000 fpm when at FL153 his clearance was

amended to FL150. The radar recording confirmed that the A320 had been level at FL150 for at least 30 seconds and that the first instruction to maintain FL150 was given to the pilot before the A320 commenced descent to FL130.

## 2 Causal Factors

- (i) The South East mentor allowed his trainee to transfer the CRJ to the Dover/Lydd Sector whilst in potential conflict with the A320.
- (ii) The Dover/Lydd mentor did not notice the conflict between the CRJ and the A320.
- (ii) The A320 pilot disregarded the instruction to cancel his descent clearance to FL130 and maintain FL150

## 3 Risk Classification C

4 Recommendations The Panel had no recommendations to make.

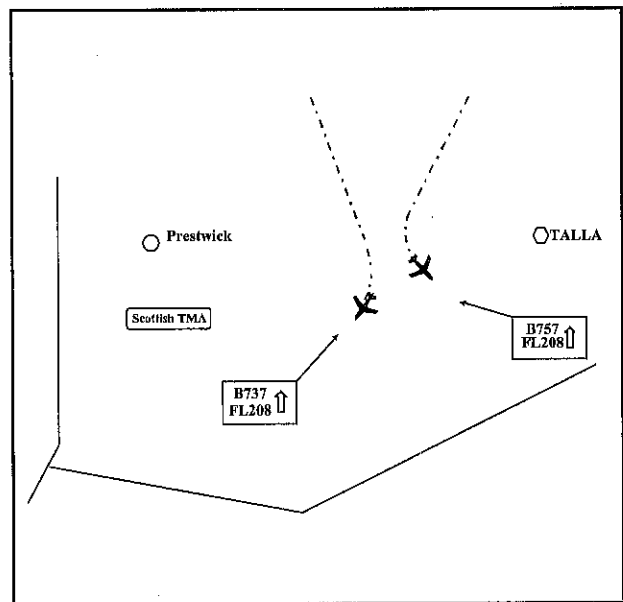
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## AIRPROX REPORT 20c/98

### Occ No. 98/00306

*Date:* 25 January 1998  
*Time:* 1316 UTC  
*Aircraft:* B757/B737  
*Operators:* British Airlines  
*Position:* 15nm West South West of TALLA  
*ALT/HT/FL:* FL208  
*Airspace Type:* Scottish TMA - Class D  
*Reporter:* ScACC - TMA Out - P and E controller  
*Reported Separation:* 2.5nm horizontal/100 feet vertical  
*Recorded Separation:* 2.8nm horizontal/nil feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the Scottish 'TMA Out' Sector controller who was carrying out the combined duties of both Executive (E) and Planning (P) controller. The B737 had departed from Glasgow on a Standard Instrument Departure (SID) enroute to Heathrow and was in the climb to FL250. The B757 had departed from Edinburgh, on a SID enroute to Heathrow and also in the climb to FL250.

At 1309, the B757 pilot, on initial contact with the 'TMA Out' controller, reported passing altitude 3600 feet on the SID. He was identified, released from speed restriction and instructed to fly a heading of 220°. Immediately afterwards, the B737 pilot, also on initial contact, reported passing altitude 2400 feet on his SID. He too was identified and released from speed restriction. The controller then instructed the B757 pilot to climb to FL250 and followed this by instructing the B737 pilot also to climb to FL250, and to turn left direct to

Manchester. About two minutes later the controller transmitted to the B737 pilot, "(callsign) your present heading is now a radar heading what is that please". The pilot replied with a heading of 160°. The two aircraft were now on converging headings and both climbing to FL250.

At 1314.40, when the B757 pilot was instructed to turn left onto a heading of 160° the aircraft were 8nm apart, and converging, with the B757 climbing through FL175 and the B737 climbing through FL160. The aircraft continued to converge and with horizontal separation of 6nm and vertical separation of 1100 feet, which was reducing, the Short Term Conflict Alert (STCA) activated. The controller responded to this alert at 1315.10 by instructing the B737 pilot, "(callsign) turn left now head one seven zero please". The B737 pilot responded, "er that would be right for us one seven zero (callsign)", and the controller replied, "yes that's correct the other hand yes right please". To this the B737 pilot replied, "yes we wouldn't want to turn left I can see the traffic". The controller replied to the B737 pilot, "yes he's turning as well", and then, using an incorrect callsign, instructed the B757 pilot, "(incorrect callsign) could you increase the left turn please head one five zero". On receiving no reply to this incorrectly addressed transmission, the controller called the B757 pilot again, using the correct callsign. The B757 pilot replied, "sorry (callsign) say again", whereupon the controller responded, "increase the left turn please head one four zero I expected you to turn harder than that". The B757 pilot replied, at 1315.50, "Yep okay we're making it steeper now thank you (callsign)". The controller then called the B737 pilot, "(callsign) are you still visual with the traffic", to which the pilot replied, "er (callsign) yes er not a problem". As the B757 pilot tightened his turn, the aircraft pulled slightly ahead of the B737 and their tracks started to diverge, but not before separation reduced to 2.4nm and 300 feet. The B737 was climbing at a higher rate than the B757 and as both aircraft climbed through FL208 horizontal separation was 2.8nm. Both aircraft then continued enroute without further incident.

After the occurrence, the 'TMA Out' controller reported that, with the aircraft converging at a distance of 15nm, he turned the B757 on to a heading of 160° to parallel with the B737 but that the B757 did not take the turn and at that point the STCA activated. He then turned the B737 on to a heading of 170°, as there was still plenty of radar separation available, and instructed the B757 pilot to increase his turn onto a heading of 140°. He believed that the B737 pilot had stated that he had the B757 in sight. He also thought that the B757 appeared to be extremely slow in taking the turn but that the B737 pilot was still happy as he had the traffic in sight. Therefore he gave no avoiding action.

The controller stated later that he had been aware that the aircraft were on converging tracks and that they were likely to conflict if no action was taken, but his plan had been to parallel the flights before the minimum 5nm radar separation was compromised. He put the AIRPROX down to an error of judgement on his part as he had believed the aircraft were further apart when he had instructed the B757 pilot to turn onto a parallel heading, and had anticipated the aircraft making a tighter turn. It was evident during the interview that he recognised the pitfalls of the technique that he had employed and had since modified it. He had also made a conscious decision not to employ the words 'avoiding action'. He had considered the option but being aware that the crew of the B737 were visual with the B757, and judging that there was no actual risk of collision, he rejected it.

The pilot of the B737 in his written report stated that during the climb on a radar heading of 170° he was instructed to turn left onto a heading of 190°. As he replied, pointing out that this turn would require a right turn, he looked left out of the cockpit and saw a B757 in his 10 o'clock position, high and turning left at a range of approximately 5-6nm. At all times subsequently he had good visual contact with the B757 and assessed that risk was minimal since both aircraft involved were turning as instructed.

In his written report, the B757 pilot remembered being given a left turn which was initiated straightaway using the auto pilot heading select mode. This instruction was followed soon after by another further left turn and a comment from the controller that they were not turning as fast as had been expected. The pilot reported that the auto pilot was working and performing normally with about 12° of bank whilst completing the turn.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Scottish 'TMA Out' controller who did not provide the required horizontal separation between the B757 and the B737 whilst clearing them to climb to the same level.

The controller adopted a potentially flawed control technique which required close monitoring and a positive intervention in order to prevent an unsafe situation developing. Subsequent to this AIRPROX, a Scottish Airways Operational Notice has been issued drawing controllers attention to this flawed technique and stating that horizontal separation must be applied before vertical separation is eroded.

The controller's argument for not employing the standard phrase 'avoiding action' was understood. Nevertheless, it was considered that its use should have resulted in more urgency from the pilot when the turn instructions were issued which 'ipso facto' would have brought about a more speedy resolution of the conflict and minimised the loss of separation.

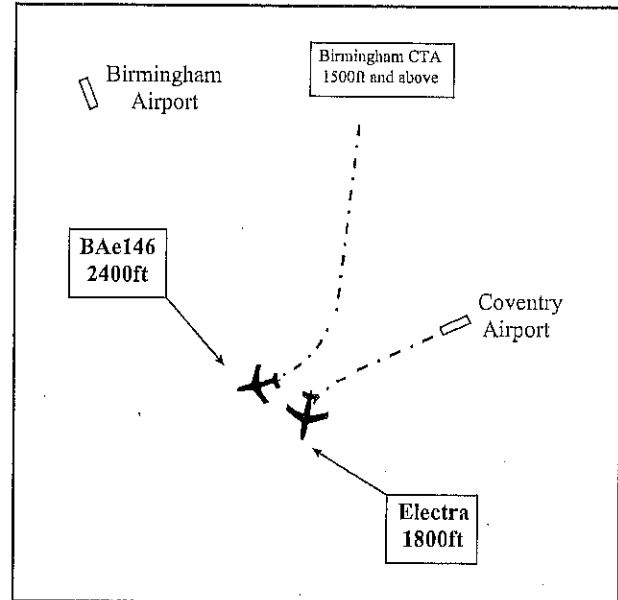
### **REVIEW BY AIRPROX PANEL**

- 1 Discussion The Panel agreed with the Summary of CAA Action. The controller was, it would seem, endeavouring to give an expeditious service to the two aircraft but his technique and judgement let him down. Additionally, had he used the standard phrase "avoiding action", it should have ensured that the B757 pilot made a tighter turn.
- 2 Causal Factors The Scottish 'TMA Out' controller did not provide standard separation between the B757 and the B737.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

## AIRPROX REPORT 26c/98

Occ No. 98/00407

Date: 30 January 1998  
Time: 2034 UTC  
Aircraft: BAe146/Lockheed L188  
Electra  
Operators: British Airlines  
Position: Coventry Airport  
ALT/HT/FL: 1800 feet altitude  
Airspace Type: Birmingham CTA – Class D  
Reporter: Birmingham ATC  
Reported Separation: 1.5nm horizontal/500 feet  
vertical  
Recorded Separation: 1nm horizontal/600 feet  
vertical



### THE INCIDENT

The BAe146 was inbound to Birmingham Airport from Belfast City Airport and was being vectored by the Birmingham Approach Radar controller for an ILS approach to runway 33. The Electra had departed from East Midlands Airport on a training flight and was carrying out a practice asymmetric go around from a procedural ILS approach to runway 23 at Coventry Airport, under the control of a Coventry controller who was carrying out the duties of both Aerodrome and Approach controller.

Note:- Coventry Airport is situated beneath the lateral limits of the Birmingham CTA, at a range of 10nm from Birmingham Airport. The base of the CTA in the vicinity of Coventry is 1500 feet amsl. In order for Coventry ATC to operate within the circuit up to and including 2000 feet (Birmingham QNH), a Letter of Agreement exists between the two units whereby airspace, known as 'the Coventry Corner', is delegated to Coventry under certain conditions, one of which is use by day only. With the exception of 'the Coventry Corner', no aircraft shall be cleared by Coventry ATC to enter or operate within the Birmingham CTA without specific instruction from, or the agreement of, Birmingham ATC. This incident occurred during the hours of darkness, therefore agreement for 'the Coventry Corner' was not in force.

Coventry procedures require aircraft of the Electra's weight (ie more than 5700kg) to fly circuits at 1500 feet aal which equates to 1781 feet amsl. This consequently puts aircraft in the Coventry circuit within the Birmingham CTA. The noise abatement procedures (applicable to the Electra) require circuit traffic on runway 23 to climb straight ahead; then, after passing 500 feet aal turn left onto track 200°M, complete the left turn downwind. The missed approach procedure, however, for the ILS runway 23, stipulates altitudes and DME distances, which ensure that aircraft do not enter the Birmingham CTA.

At 2031, when the Electra pilot reported at the Outer Marker for an ILS approach to runway 23 he was cleared by the Coventry controller for a low approach and go around. The pilot reported that the go around would be for a visual circuit but did not indicate that it would be flown simulated asymmetric, and hence wider than normal. The controller instructed him to report downwind.

Meanwhile, the BAe146 was being vectored to a right base leg for an ILS approach to runway 33 at Birmingham. Radar pictures, timed at 2033.19, show the Electra climbing out on its missed approach and indicating passing 1300 feet with the BAe146 in its 2 o'clock position range 2nm and on a closing heading indicating



2400 feet. The aircraft continue to close as the Electra climbs out from the go around until 2034.02, when the Electra reaches 1800 feet with the BAe146 is in its 2 o'clock position range approximately 1nm as it commences a right turn inbound to Birmingham at an indicated 2400 feet. Separation then increases as the BAe146 continues its right turn inbound to Birmingham and the Electra commences a left turn in the circuit at Coventry and descends to circuit height.

The Coventry controller said he did not consider telephoning Birmingham to co-ordinate the Electra's visual circuit as he did not think that there was a problem, even though he was aware that its circuit height of 1500 feet aal could take it into the Birmingham CTA. He assumed that it would turn left after passing 500 feet which would take it away from Birmingham's airspace. Although the Aerodrome Traffic Monitor was operating he believed he had no reason to look at it whilst the Electra was in the circuit and therefore he did not notice the wider than expected circuit pattern.

The Birmingham Approach controller recalled that she observed a contact at Coventry having gone around with an unverified mode 'C' readout of 2000 feet. She did consider passing traffic information to the inbound BAe146 but calculated that as the conflicting aircraft was behind it the pilot would not have seen it.

The Electra pilot stated in his written report that he saw conflicting traffic soon after his go around and was keeping an eye on it. As he was operating in the Coventry circuit at 1500 feet QFE he was under the impression that Coventry ATC would have liaised with Birmingham ATC over his circuit detail. However, his student drifted 150 feet high to a

height of 1650 feet and that because he gauged that the conflicting traffic would become a factor, he took control and executed a descending turn to the left away from the traffic. He estimates first sighting the traffic at a range of 4-5nm and minimum separation as 2-3nm and 500-700 feet. He said at no time did he consider there was a risk of collision. Note:- The Electra's company have since received a letter from the Coventry Manager ATS stating that, *"In the instance of the circuit detail at height 1500ft, the Aerodrome controller is required to co-ordinate this with the Birmingham Approach Radar controller."* The letter also states that, *"The commander of the aircraft would be reasonably expected to carry out a conventional circuit pattern, unless he advises the controller otherwise, eg asymmetric climb out"*.

The pilot of the BAe146 reported being unable to contribute anything to the investigation of the incident.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Coventry Aerodrome/Approach controller who did not co-ordinate the Electra's 1500 feet circuit with Birmingham Approach. It was noted that even if the 'Coventry Corner' had been activated, the Electra would have routed outside the confines of this airspace. Furthermore, the loss of separation was greater than that which would otherwise have occurred because the Electra had climbed 150 feet above the circuit height.

A Supplementary Instruction has been issued at Coventry to remind controllers of the requirement to co-ordinate 1500 feet circuit traffic with Birmingham.

### **REVIEW BY AIRPROX PANEL**

#### **1 Discussion**

It seemed clear to the Panel that the Coventry controller was required, at night, to co-ordinate the Electra's circuit at 1500 feet with Birmingham because, at that height, the aircraft would enter the Birmingham CTA when downwind. If he had co-ordinated, the AIRPROX might have been prevented and, for some Panel

members, the failure to do this was the cause of the incident. This view accords with the Summary of CAA Action.

Other members, however, argued that had the Electra pilot followed the published noise abatement procedures for Coventry, the aircraft would not have gone as far as it did to the South West and, despite there being no co-ordination, the AIRPROX would not have occurred. There would merely have been an infringement of the CTA. Furthermore, because the Electra pilot had not told the Coventry controller that he was going to carry out a practice asymmetric go around, and thus not follow the published procedures, neither the Coventry nor the Birmingham controller could have expected the Electra to end up where it did. Co-ordination might not have prevented the incident in these circumstances. It was further argued that by day, in the absence of the knowledge that the Electra was practice asymmetric, co-ordination would not have been called for and yet the aircraft would have left 'the Coventry Corner' and infringed the Birmingham CTA.

The opposing views as to cause were not resolved despite a lively debate. However, the majority opinion was that the pilot's non-compliance with procedures was the crucial factor.

**2 Causal Factors** The Electra pilot did not comply with the published procedures and conflicted with the BAe146.

**3 Risk Classification** C

**4 Recommendations** The Panel had no recommendations to make.

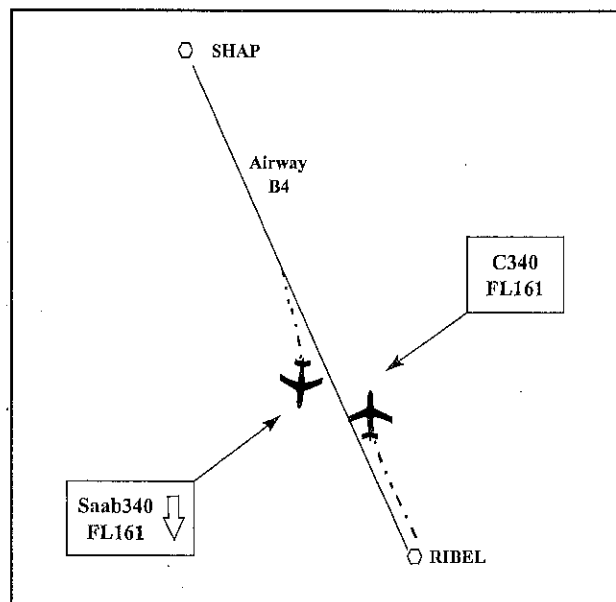
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## AIRPROX REPORT 38c/98

### Occ No. 98/00479

**Date:** 3 February 1998  
**Time:** 1752 UTC  
**Aircraft:** Saab 340/Cessna 340  
**Operators:** British Airline/British Executive  
**Position:** 13nm North of RIBEL  
**ALT/HT/FL:** FL160  
**Airspace Type:** Airway B4 – Class A  
**Reporter:** ScACC – TMA Inbound Sector Controller  
**Reported Separation:** 1.63nm horizontal/100 feet vertical  
**Recorded Separation:** 1.25nm horizontal/Nil feet vertical



## THE INCIDENT

The aircraft involved in this AIRPROX were a Saab 340 en route from Edinburgh to Manchester and a Cessna 340 en route from Staverton to Glasgow. The Saab was southbound, in descent from FL170 to FL150 and under the control of the Manchester Area Control Centre (MACC) North Sector Radar controller. The Cessna was on airway B4, northbound and level at FL160 under the control of the Scottish Area Control Centre (ScACC) TMA 'Inbound' Sector controller.

At 1743.40, the Saab pilot contacted the Manchester controller on handover from ScACC and reported level at FL170 routeing direct to ROSUN. This aircraft had previously been co-ordinated into the sector on a non-standard routeing from TLA to ROSUN within airway B4, which meant it was on a reciprocal track with the Cessna which was already on the Manchester controller's frequency.

At 1751.10, the Manchester controller instructed the Cessna pilot to contact ScACC and shortly afterwards the Saab pilot requested descent. At 1751.30, the Manchester controller instructed the Saab pilot to, "*(callsign) descend flight level one five zero*". At this stage the two aircraft were still on reciprocal tracks, head on, 12nm apart with the Saab cleared to descend through the level of the Cessna.

After the Saab pilot commenced his descent, both the Manchester and the ScACC controller received a Short Term Conflict Alert (STCA) on the conflict. Both controllers reacted to this alert at about 1752.25 at which time radar pictures showed the northbound Cessna level at FL161 with the Saab in its 12 o'clock range 4nm and on a near reciprocal track descending through FL165.

The ScACC controller, who had not long obtained contact with the Cessna pilot, observed the Saab's Mode C indicating FL167 descending and instructed the Cessna pilot, "*(callsign) avoiding action turn right immediately heading zero four zero, traffic twelve o'clock three miles opposite direction indicating flight*

*level one six four descending*". The pilot replied, "*copy we're visual with the traffic in the right turn this time say again the heading please*". The controller responded with, "*zero four zero keep it going right onto zero nine zero*".

Meanwhile, the Manchester controller observed the Saab descending through FL163 in close proximity to the Cessna so he instructed the Saab pilot, "*(callsign) turn right heading two zero zero*", and, following the pilot's acknowledgement, transmitted, "*...mmediate right please*" (clipped transmission). He did not pass traffic information as the two aircraft had already passed and it seemed unlikely that the Saab pilot would have seen the other aircraft. He then telephoned the ScACC TMA Inbound controller to acknowledge that he had caused the error.

Radar pictures show the two aircraft converging as the Saab descends until, at about 1752.50, it passes through the level of the Cessna at FL161. The aircraft then pass one another at a range of approximately 1.25nm.

The Manchester controller later recalled that the workload was very low and that, during the period preceding the AIRPROX, he had been engaged in various conversations and had not been paying full attention to his task. He made it clear that he was not happy '*sitting doing nothing*' and felt that the procedures should allow more flexibility for watch managers to bandbox sectors if the workload permitted. He admitted that when he descended the Saab to FL150 he had overlooked the presence of the Cessna at FL160 and that it was poor technique to have transferred the Cessna to ScACC when he did as he had mentally dismissed it once he had transferred the flight. He also said that he had placed little reliance on the flight progress strip (fps) display when operating, tending to rely on radar derived information. At the time of the AIRPROX he had discarded the 'DCS' fps on the Saab and the 'POL' fps on the Cessna, thus the potential conflict did not show up under any strip designator. As he did not place much reliance on his strip display, when he was asked why he had not observed the potential conflict on his radar, he could offer no certain

explanation. However he wondered whether one or both aircraft had been in a blind spot as the AIRPROX had occurred close to the boundary of the composite radar picture display in use on his console. Note: subsequent investigation showed that the Saab's radar return had disappeared for just one sweep as it crossed the composite boundary. Its reappearance coincided with the start of a high severity STCA warning.

In his written report, the Saab pilot said that neither he nor his first officer saw the other aircraft and so could not assess the risk.

In his written report, the Cessna pilot said he first sighted the Saab at a distance of approximately 8nm, slightly above in his one o'clock position. He took the avoiding action, passing the other aircraft at a range of 1nm at a similar level. However, he assessed that there was no risk of collision due to the early sighting in VMC and the controller's avoiding action.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Manchester North Sector Radar controller who did not take

account of the Cessna 340 at FL160, when issuing descent clearance to the Saab 340 pilot to descend from FL170 to FL150. Although the controller's attention was at least partially diverted at the time of the AIRPROX, which he attributed to the low workload, this was not considered a reasonable mitigation. It is important that controllers take care not to allow a reduction in concentration at any time.

It was noted that the ScACC controller's reaction to the incident was textbook employing the words 'avoiding action' and issuing traffic information.

Although no responsibility for the AIRPROX was apportioned to the Manchester North East Co-ordinator as he had his own specific tasks on the sector, it was disappointing that an ATC error had been made and gone undetected on a sector which has the benefit of two pairs of eyes and ears. It is most important that controllers take every opportunity to cross check their colleagues' actions. Future Team Resource Management initiatives should emphasise this point.

### **REVIEW BY AIRPROX PANEL**

**1 Discussion** The Panel did not attach too much importance to the fact that the Saab 340 was on a non-standard routing and thus on a reciprocal track with the Cessna 340. A substantial proportion of flights from Edinburgh to Manchester route this way and it is, therefore, a regular occurrence.

The Manchester controller's various shortcomings, on the day, are recounted in the description of the incident and they are not laboured further by the Panel. Suffice to say that, whilst the Panel is alert to problems which can arise from the low traffic/low arousal scenario, it did not feel that this could explain such a poor performance. Very much in the controller's favour, however, is that he was utterly candid about the circumstances.

**2 Causal Factors** Through inattention to the task, the Manchester North Sector Radar controller did not provide standard separation between the Saab 340 and the Cessna 340.

**3 Risk Classification** C

**4 Recommendations** The Panel had no recommendations to make.

## AIRPROX REPORT 43c/98

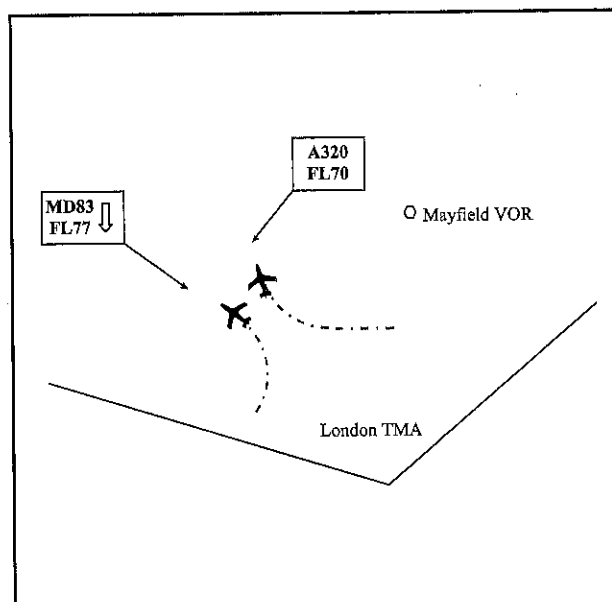
### Occ No. 98/00686

**Date:** 15 February 1998  
**Time:** 1158 UTC  
**Aircraft:** MD83/A320  
**Operators:** Foreign Airline/British Airline  
**Position:** 6nm south west of Mayfield VOR  
**ALT/HT/FL:** FL70  
**Airspace Type:** London TMA - Class A  
**Reporter:** LATCC Terminal Control (TC), Gatwick Intermediate Director  
**Reported Separation:** 0.75nm horizontal/600 feet vertical  
**Recorded Separation:** 0.78nm horizontal/700 feet vertical

### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the LATCC TC Gatwick Intermediate Director and were inbound to Gatwick Airport. The A320 had departed from Turin and was level at FL70 on a radar heading of 270°. The MD83 had departed from Madrid and was entering the WILLO hold in descent to FL80.

At 1153.51, the A320 pilot established initial contact with the Gatwick Intermediate Director and was instructed to reduce speed, to descend to FL80 and to take up the hold. One minute later the pilot was instructed to leave the hold heading 270° and then at 1156.21 was instructed to descend to FL70. Immediately afterwards, at 1156.30, the MD83 pilot made his initial contact with the Intermediate Director and was instructed to maintain FL90 and to hold at WILLO. The pilot acknowledged this with, "Okay maintain nine zero er (callsign)", followed about twenty seconds later by the query, "Gatwick (callsign) confirm er to hold at er HOLLY". The controller replied with, "(callsign) make it a left turn to WILLO hold at WILLO descend flight level eight zero". The MD83 pilot responded, "...kay down eight zero and to hold at WILLO (callsign)".



At 1158.10, the controller instructed the A320 pilot to turn right heading 350° and this was acknowledged. Radar pictures, timed at 1158.18, show the A320 at FL70 still heading 270° with the MD83 in its 10 o'clock position range 2.4nm and in a left turn descending through FL80. Subsequent radar pictures show the A320 commencing its right turn at FL70 as the MD83 closes from the left and continues in its descending left turn until, at 1158.48, it is passing FL77 and horizontal separation is about 0.8nm.

Meanwhile, the Gatwick Intermediate Director was on the telephone co-ordinating other traffic with the TC Co-ordinator South East and when he saw the radar return from the MD83 indicating passing FL76 he responded by instructing the pilot at 1158.50, "(callsign) con....turn left now left heading two zero zero". Vertical separation between the aircraft continued to reduce but as they were now in diverging turns away from one another horizontal separation began to increase.

With standard separation now restored the Intermediate Director instructed the A320 pilot to turn right onto a heading of 090° and followed this with a turn instruction to the MD83 pilot, onto first 090° then 080°. The MD83 pilot then reported, "Maintaining level seven zero and er we now have that traffic er three hundred feet er

*below us". The controller responded with, "(callsign) affirm yes I turned you away from that erm I thought I cleared you to flight level eight zero somebody's made a mistake it's either me or you I do not know". The MD83 pilot replied, "Okay er we were to clear to level seven zero".*

In his written report, the MD83 pilot recalled that they were cleared to FL70 and that this clearance was read back by them. He reported that on leaving FL80 they received a Traffic Alert and Collision Avoidance System (TCAS) Traffic Advisory (TA) and that immediately they made visual contact with an aircraft in their 2 o'clock position, below at FL70. He expected to visually confirm its descent and so continued his descent to FL75 and maintained this level keeping visual contact, and separation, with this aircraft in their 4 o'clock. He reported that the controller believed that he had cleared them to descend to FL80 and that he (the pilot) had answered that he understood a clearance to FL70 and had read this back. In conclusion, he stated that he had maintained, visually and with TCAS, a safe distance and vertical separation of 500 feet, and that the controller gave correct orders and kept the situation under control at all times. The problem had arisen from a "communication congestion".

Although a tape copy of the RTF and a written transcript, which confirmed that the clearance given was to FL80 and that the MD83 pilot had read this back correctly, were sent to the MD83 company no further report was received from them.

The A320 pilot reported that he was given a right turn towards a downwind heading for runway 26L at Gatwick and that about 40° into the turn he received a TCAS TA with traffic in the 10 o'clock position, 900 feet above and descending, range about 1nm. He quickly visually acquired the other aircraft which was maintaining a westerly track and descending. Lateral separation increased, due to his turn, as vertical separation continued to decrease, with the lowest separation being 300 feet at the point which the other aircraft went out of TCAS range. It was at this time behind, and no longer visible

to him. He did not take avoiding action since the two aircraft were on diverging headings with lateral distance increasing as vertical separation was reducing. He assessed there was no risk of collision, but that separation was less than he would normally expect, being 800 feet at 1nm and 500 feet at 2nm.

The Gatwick Intermediate Director reported that the A320 was at FL70 and turning right and that the MD83 was in a left turn to enter the hold when he instructed the MD83 pilot to descend to FL80. When he noticed that the MD83 was passing FL76 in descent he immediately instructed the pilot to turn left heading 200°. He did not give avoiding action as the tracks of the two aircraft were diverging and the heading of 200° was used to restore standard separation as quickly as possible.

Although there was another aircraft on frequency at the time, the pilot of which was given descent to FL70, there is no evidence, on the RTF recordings, of any confusion by the crew of the MD83 mistaking this clearance as being addressed to them since the message was promptly answered and read back correctly by the crew of the aircraft to which it was addressed.

#### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the crew of the MD83 who inexplicably believed that they were cleared to FL70 and so descended below their cleared level of FL80 and into conflict with the A320

The clearance to descend to FL80 for the crew of the MD83 was correctly read back by them with no ambiguity or evidence of conflicting transmissions.

## REVIEW BY AIRPROX PANEL

- 1 Discussion At the time, the MD83 pilot seemed convinced that he had been cleared to descend to FL70. From the evidence to hand, the Panel was equally convinced that this had not been the case. A number of theories, which might have explained the pilot's mistake, were considered by the panel but none was convincing. It was, therefore, regrettable that the company had not responded to requests for more information.
- 2 Causal Factors The MD83 pilot descended his aircraft below his cleared level and conflicted with the A320.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

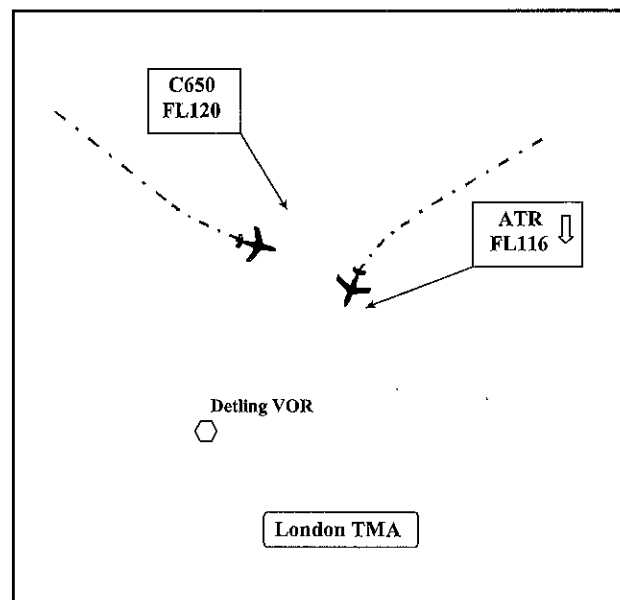
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### AIRPROX REPORT 7c/98

#### Occ No. 98/01139

*Date:* 12 March 1998  
*Time:* 1040 UTC  
*Aircraft:* ATR42/Cessna C650  
*Operators:* British Airline/Foreign Commercial  
*Position:* 8nm North East of DETLING  
*ALT/HT/FL:* FL120  
*Airspace Type:* London TMA – Class A  
*Reporter:* LATCC Terminal Control – South East Sector  
*Reported Separation:* 2nm horizontal/Nil feet vertical  
*Recorded Separation:* 1nm horizontal/400 feet vertical



### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of LATCC Terminal Control (TC). The ATR42 was inbound to Gatwick from Rotterdam and was in descent to FL100. The Cessna C650 was enroute from Luton to Istanbul and was level at FL120. The ATR42 was receiving a service from the TIMBA Sector controller (SC) who was designated as the inbound controller and the C650 was receiving a service from the BIGGIN Sector controller

(SC) who was designated as the outbound controller. ATC workload for both sectors was described as being between medium to heavy.

At 1033, the ATR42 pilot contacted the TIMBA SC and reported descending to FL130 enroute to TANET. This was in accordance with the standing agreement for traffic being transferred from the Clacton sector. Then, at 1035, the C650 pilot contacted the BIGGIN SC reporting on course for DETLING at 7000 feet. The BIGGIN controller acknowledged this and

shortly afterwards, at 1036.10, instructed the pilot to climb to FL120 on a heading of 125°.

At about 1039, co-ordination took place between the BIGGIN and TIMBA controllers which resulted in the BIGGIN controller agreeing to the ATR42 being descended to FL100, that is through the level of the C650. As a result the TIMBA controller instructed the ATR42 pilot, "(callsign) descend flight level one hundred". At this point the two aircraft were approximately 15nm apart and on intersecting headings. Subsequently, both controllers realised that a potential confliction existed between the two aircraft and began to take action.

At 1039.35, the BIGGIN controller instructed the C650 pilot, "(callsign) climb Flight Level one seven zero with a good rate please". However, it would appear that the pilot did not fully understand the implications of this instruction as he replied, "Direct to DETLING er one seven zero (callsign)". The controller responded with, "(callsign) fly heading one zero five degrees", and then at 1039.55 with, "(callsign) expedite your climb please". He followed this at 1040.05 with, "Turn left immediately heading zero nine zero degrees expedite your climb". The pilot acknowledged with, "Heading zero nine zero and expedite er (callsign)". The controller responded, "Also expedite flight level one seven zero".

Meanwhile, at 1039.45, the TIMBA controller instructed the ATR42 pilot to "(callsign) expedite descent please through level one one zero", and followed this, at 1040, with "(callsign) turn left heading one seven zero". Then, at 1040.25, the controller passed traffic information to the ATR42 pilot saying, "(callsign) traffic just passing behind you now right to left in your four o'clock thousand above".

Radar pictures timed at 1039.42 show the ATR42 in descent passing FL128 with the C650, level at FL120, in its one o'clock position crossing from right to left at a range of 9.5nm. Subsequent pictures show the two aircraft holding in the same relative positions as they continue to close. At 1040.17, the ATR42 is

descending through FL120 with the C650 still in its one o'clock position at a range of 3.5nm and level at FL120. Subsequent pictures show the left turns given to both aircraft taking effect as the C650 passes behind the ATR42 which has now descended below the C650. The LATCC Separation Monitoring Function (SMF) recorded a minimum separation of 1nm horizontal and 400 feet vertical.

The LATCC Group Supervisor reported that his attention was drawn to the incident by the South East Co-ordinator after the Short Time Conflict Alert (STCA) flashed a red high severity alert. However, by this time the situation was improving and no action was required.

The BIGGIN controller assessed his workload as medium, although he added that it was starting to build up prior to the incident. He stated that during the co-ordination he inexplicably overlooked the presence of the C650 at FL120 when agreeing the ATR42's descent to FL100 and it was only as he was annotating the flight progress strip (fps) for the ATR42 that he realised, from the display, the potential confliction. He believed that the C650 would be able to climb above the level of the ATR42 without the loss of lateral separation and that when subsequently he instructed the C650 pilot to turn left he only passed a small heading change because if there was further traffic through TANET he might create another confliction.

The TIMBA controller assessed his workload as medium to heavy. He stated that, whenever possible, he would scan ahead on the radar display for conflicting traffic but on this occasion, for whatever reason, he did not notice the potential confliction. He added that he would not have been able to recognise the problem from his fps display as a fps for the C650 was not provided for his sector. However, he believed such a fps should not be necessary, especially as the BIGGIN SC's fps display is visible from the TIMBA SC's position. In any case, once the co-ordination had been agreed, he did not consider it absolutely necessary to check for conflictions. He subsequently realised the potential confliction between the



two aircraft whilst carrying out a regular scan of his radar display and assessed that the best way to resolve the problem was to tell the ATR42 pilot to expedite his descent, although he did not use the term 'avoiding action'. Subsequently, he overheard the BIGGIN controller instructing the C650 pilot to turn left and so gave the ATR42 pilot a left turn also. He then concluded that the C650 would pass behind the ATR42 and did not pass traffic information.

The ATR42 pilot reported that he was not aware of the AIRPROX as such but that he recalled the controller requesting him to expedite his descent and then requesting a left turn. As the turn was a large one, he guessed that there was a problem and so told the First Officer, who was the handling pilot, to select high bank. He did not see the C650 and could make no

assessment of risk. No report was received from the C650 pilot.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the BIGGIN Outbound Sector controller who did not take account of the C650 at FL120 when agreeing co-ordination with the TIMBA Sector controller for the ATR42 to descend through the C650's level to FL100.

Once the potential of the situation was realised, the BIGGIN Sector controller did not take effective action, including the use of standard phraseology, to resolve the confliction. Therefore, it was considered that the Biggin Sector controller must take full responsibility for the AIRPROX.

### **REVIEW BY AIRPROX PANEL**

#### **1 Discussion**

The Panel had no difficulty in agreeing with the cause of the AIRPROX as cited in the Summary of CAA Action. It believed, however, that having made his initial mistake, the Biggin controller had in fact detected the problem in time for it to be rectified and, had the C650 pilot climbed to FL170 when instructed to do so, the AIRPROX could have been avoided.

Unfortunately, no report was ever received from the C650 pilot so the Panel could only theorise on why he had not climbed when originally instructed to do so. Having listened to the RTF recording of the incident, members thought that the pilot's command of standard English appeared to be quite good, but with the qualification that he may not have grasped as much as he perhaps gave the impression of doing.

The C650 pilot did, eventually, initiate the climb just before the controller repeated his instruction. This caused the Panel to think that whilst there was some comprehension on the flight deck as to what was required, something had occurred to introduce a delay. From the RTF recording, it seemed to members that more than one of the controller's transmissions had interrupted a discussion on the flight deck. It appeared reasonable to assume, therefore, that there was a degree of uncertainty in the pilots' minds as to what they were being instructed to do and that this took them some time to resolve before the climb was started.

It might just have been that the non-standard term "good rate" may not have been understood. Alternatively, the pilot's reply of, "direct to Detling ...er... one seven zero ....", could imply that the pilot had, initially, misunderstood the controller's instruction to climb to FL170 as being a heading for Detling and, as a consequence, they became distracted by a matter of navigation.

Whilst, therefore, the Panel concluded that the C650 pilot's delay in commencing his climb, for a reason that could not be firmly established, contributed to the cause, it remained the case that the Biggin controller's non-recognition of the potential conflict, from his flight progress strips, had led to the AIRPROX.

- 2 Causal Factors
- (i) The Biggin Sector controller did not take account of the C650 when he agreed to the descent of the ATR42.
  - (ii) The C650 pilot did not climb to FL170 when first instructed.

3 Risk Classification B

4 Recommendations The Panel had no recommendations to make.

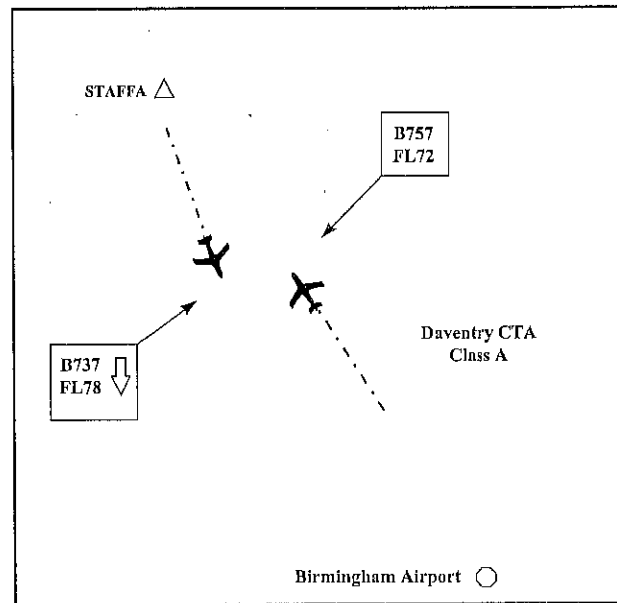
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**AIRPROX REPORT 9c/98**

**Occ No. 98/01166**

*Date:* 14 March 1998  
*Time:* 1020 UTC  
*Aircraft:* B757/B737  
*Operators:* British Airline/Foreign Airline  
*Position:* 17nm north west of Birmingham Airport  
*ALT/HT/FL:* FL70  
*Airspace Type:* Daventry CTA – Class A  
*Reporter:* Birmingham ATC - Approach Radar controller  
*Reported Separation:* 3nm horizontal/1000 feet vertical  
*Recorded Separation:* 1.9nm horizontal/800 feet vertical



**THE INCIDENT**

Both aircraft involved in this AIRPROX were under the control of the Birmingham Approach Radar controller. The B757 had departed from Runway 33 at Birmingham on a Whitegate 2D Standard Instrument Departure (SID) enroute to New York and was climbing to FL100 via airway B3. The B737 was inbound to Birmingham from Dublin, also on Airway B3 but on a near reciprocal heading, and had been cleared to descend to FL70.

At 1016, the B757 pilot contacted the Birmingham Approach controller, reporting on the SID passing 2200 feet having been cleared initially to FL60. The controller acknowledged this transmission and 30 seconds later gave the B757 pilot a radar heading of 330°. Shortly afterwards in response to a request from the pilot the controller lifted the speed restriction on the B757.

At 1018:10, the B737 pilot contacted the Approach controller and reported descending to FL70. The controller responded with an

instruction to turn right on to a heading of 160°, and immediately followed this, at 1018:20, with an instruction to the B757 pilot to climb to FL100. The B757 pilot acknowledged with, *"Flight level one hundred ..... and we're looking for a left turn when available for a direct track .....(two words unintelligible)"*. The controller replied, *"Okay there's opposite direction traffic descending through your level"*. Radar pictures timed at 1018:36 show the two aircraft on near reciprocal headings at a range of 17nm with the B757 climbing through FL50 and the B737 descending through FL118.

Subsequent radar pictures then show the two aircraft closing on their reciprocal tracks and in their respective climb and descent profiles until at 1019:53 when the B757 pilot reported, *".....we're visual the traffic and just levelling shortly with a TCAS message"*. The controller responded with, *"(callsign) okay on radar you're actually separated from him now you can keep climbing"*. The radar pictures confirm that around this time B757 levels at FL72 with the B737 in the 9 o'clock position passing down the left-hand side range 1.9nm and descending through FL80. At 1020:10, the B737 pilot reported, *"and .....levelling seven zero we have visual the seven five on our left"*. The controller responded *"(callsign) roger he's a thousand feet below descend flight level five zero"*. However, Radar pictures show that at this time the B737 was indicating FL78 in descent and the B757 pilot then queried with the controller, *"and..... just confirm the separation there"*. The controller replied, *"okay you were passed him and three miles"*. The pilot acknowledged this, and then said, *"We have to react to that TCAS"*. The controller replied, *"yeah that's copied I'm just saying that on radar you're separated especially once you're passed each other opposite direction like that"*. The B757 then continued enroute and the B737 was positioned for an ILS approach to land.

The controller believed that the headings given to the subject aircraft would ensure that lateral separation would be maintained as they passed although he intended monitoring the situation to confirm it. He stated that he then concentrated

his attention on traffic to the South of the airport and only looked back at the subject aircraft when the B757 pilot reported his TCAS warning. When he then looked at the radar he believed that the aircraft had passed approximately 3nm horizontally separated (which was the minimum required), and still with vertical separation. This was why he then gave the B737 pilot further descent and told the B757 pilot that he could continue climbing. It was only with hindsight that he realised that lateral separation was compromised but he could offer no explanation for this misjudgement, because he usually aimed to achieve 5nm separation. He thought that cancelling the B737's speed restriction may have resulted in the aircraft making a wider turn than he expected to establish itself on the assigned heading of 160°.

The question was raised, during the investigation, whether the presence of an Approach Procedural controller might have helped prevent the incident. Although the position was not manned at the time of the incident, a controller was available should it have been considered necessary. The Approach Radar controller commented that whilst, in his opinion, the workload did not warrant the position being manned, nevertheless another pair of eyes might have noticed the conflict and drawn it to his attention.

The B757 pilot reported that on passing FL70 in the climb he received a TCAS Traffic Advisory (TA) of an aircraft at 11 o'clock range 10nm and descending. Shortly afterwards the warning became an RA with a descend instruction. He then stopped the climb and descended the aircraft to approximately FL69 until "clear of conflict" was posted on the TCAS. The other aircraft was seen and he assessed the severity of risk as "low".

The B737 pilot reported first sighting the B757 at a range of 5nm and passing with a minimum separation of 3nm horizontal and 1000 feet vertical. He assessed there was no risk of collision.

## SUMMARY OF CAA ACTION

The AIRPROX was caused by the Birmingham Approach Radar Controller who misjudged the horizontal separation between the subject aircraft when he cleared the B757 pilot to climb through the level of the descending B737.

Good operating technique in this situation is to wait until aircraft are established on their assigned radar headings with horizontal separation established before dispensing with vertical separation. It was assessed that had

the Birmingham controller waited for B737 to take up its radar heading of 160° before clearing the B757 to climb, the prescribed horizontal separation would have been achieved.

Finally, the controller did not comply with ATC standard operating procedures when he issued further climb instructions to the B757 which were contrary to the TCAS Resolution Advisory (RA) actions received by the pilot and notified to the controller.

## REVIEW BY THE AIRPROX PANEL

- 1 Discussion The Panel accepted the Summary of CAA Action.
- 2 Causal Factors The Birmingham Approach Radar controller did not provide prescribed horizontal separation between the B757 and the B737 when clearing both aircraft to climb.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

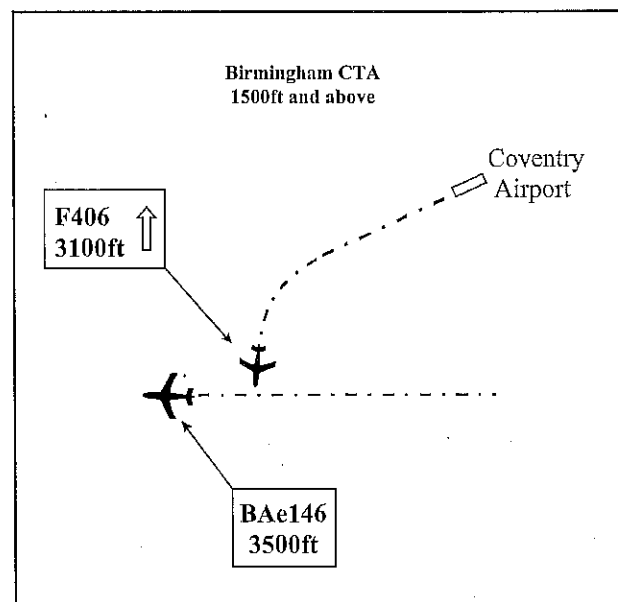
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## AIRPROX REPORT 10c/98

### Occ No. 98/01192

*Date:* 16 March 1998  
*Time:* 2013 UTC  
*Aircraft:* Rheims F406/BAe146  
*Operators:* Foreign Exec/Foreign Airline  
*Position:* 2nm South West of Coventry Airport  
*ALT/HT/FL:* Altitude - 3100 feet  
*Airspace Type:* Birmingham CTA – Class D  
*Reporter:* Birmingham ATC - Approach Radar Controller  
*Reported Separation:* 1.5nm horizontal/300 feet vertical  
*Recorded Separation:* 1.8nm horizontal/400 feet vertical



## THE INCIDENT

The aircraft involved in this AIRPROX were under the control of the Birmingham Approach Radar controller. The BAe146, which had departed from Munich, was level at an altitude of 3500 feet and being vectored for an ILS approach to runway 33 at Birmingham. The Rheims F406 had departed from runway 23 at Coventry and was climbing to FL60 enroute to Cologne.

At 2006, the F406 pilot requested, and received, clearance to taxi from the Coventry Aerodrome controller. At Coventry this controller was, as is normal at this time of night, carrying out the duties of both Aerodrome (ADC) and Approach (APC) Control. Whilst backtracking runway 23, the F406 pilot received his airways clearance from the Coventry controller as, *"London clears (callsign) to join controlled airspace on a Daventry two three departure routing bravo three golf one to Cologne climbing flight level six zero climb when instructed by radar flight level one hundred and squawk zero three seven five"*. The pilot readback the clearance with all information correct.

At 2010.30, the Coventry controller called Birmingham Approach on the telephone to request release on the F406 and received the following clearance, *"Is released off runway two three to two thousand five hundred feet only please"*. The Coventry controller acknowledged with, *"released two thousand five hundred"*. The controller then, at 2011, transmitted to the F406 pilot, *"(callsign) after departure noise abatement then on track to Daventry climbing altitude two thousand five hundred feet"*. The pilot responded, *"After departure first two point five altitude thereafter ?????(unintelligible word) Daventry (callsign)"*. The F406 pilot was then cleared for take off.

Notes:-

(i) The Coventry Manual of Air Traffic Services (MATS) Part 2 requires controllers to ensure that; 'where zone clearances issued by Birmingham Approach apply a specified level as

a clearance limit and where an airways clearance has been given to a higher level, should contain the phraseology: *".....maintain altitude.....feet, until instructed by Birmingham Radar"* '.

(ii) The noise abatement procedure for runway 23 at Coventry is, 'As soon as practicable after take off, but not below 500 feet aal, departing aircraft are to turn initially on to track 210°M, thereafter completing the turn .....'.

Meanwhile, the Birmingham Approach controller was directing the BAe146 pilot for a right-hand feed for an ILS to runway 33 at Birmingham which would take the aircraft on a base leg about 2.5nm South of Coventry Airport. At 2010.50, the Birmingham controller instructed the BAe146 pilot, who was maintaining FL50, *"(callsign) descend to altitude three thousand five hundred feet QNH one zero three zero"*. The pilot acknowledged and read back this correctly.

The first transmission to the Coventry controller by the F406 pilot after take off was at 2013.20 and was, *"(callsign) two point five and turning"*. The controller replied with, *"(callsign) roger thanks er airborne time one two contact Birmingham radar one one eight decimal zero five ....."*. Radar pictures, timed at 2013.10, show the F406 climbing through an altitude of 1900 feet with the BAe146, on a slightly converging track, in its left 10 o'clock position range 1.5nm and level at altitude 3500 feet.

At 2013.40, the F406 pilot contacted the Birmingham controller with, *"Birmingham radar goodday (callsign) passing three for six zero"*. The controller responded with *"(callsign) negative maintain three thousand feet"*. The radar pictures, timed at 2013.37, show the BAe146 still at an altitude of 3500 feet as the F406, passing altitude 2800 feet in the climb, is turning left behind the BAe146 at a range of 1.6nm. Subsequent radar pictures show the F406 climbing through the level of, and passing behind, the BAe146 which is clearing away to the West. Separation as the F406 passed directly behind the BAe146 was 1.8nm horizontal and 400 feet vertical.

The Coventry controller believed that in the period leading up to the occurrence traffic loading and overall workload were both light. He also, mistakenly, believed that the zone clearance he issued to the F406 pilot was, "released to two thousand five hundred feet altitude only", and that this was read back. However, he notes that the aircraft had not followed the noise abatement procedure, but instead had flown straight ahead heading 230° to altitude 2500 feet before turning left. He later stated that in his opinion the incident was caused by the pilot's poor understanding of English. He also felt that action should be taken to simplify the departure clearances but that he had to stress the noise abatement procedures to pilots as, in his experience, unless he did so the procedures were regularly ignored. He accepted that he failed to use the phraseology detailed in the MATS Pt2 which is specifically designed to prevent incidents such as this.

The Birmingham ATC Watch Manager's report stated that no traffic information or avoiding action was passed to the F406 pilot as it was too late to do so by the time the pilot called.

In his written report, the F406 pilot stated that, prior to departure, the Coventry controller told him, "Due to noise abatement climb on runway heading to 2500 feet before starting turn to Daventry". He acknowledged this and proceeded accordingly. In the clearance, received from the Coventry controller, he did not

hear a phrase like 'stop climb at' or 'maintain 2500 feet when reaching'.

The BAe146 pilot reported that the F406 was observed on TCAS passing about 3nm behind but that no avoiding action was necessary as the ATC radar vectors had kept them clear.

### **SUMMARY OF CAA ACTION**

The AIRPROX occurred when the F406 pilot climbed above the 2500 feet altitude departure clearance limit imposed by the Birmingham Approach controller. However, it was not passed on by the Coventry controller clearly enough. This misled the F406 pilot into believing he had to climb straight ahead to altitude 2500 feet, before turning towards the Daventry VOR.

Had the correct phraseology, as laid down in the Coventry MATS Pt2, been employed by the Coventry controller, there is little doubt that the incident would have been prevented. The reasons why the Coventry controller chose to ignore his local operating instructions, which had been introduced as a result of previous incidents, is unclear. Nevertheless, it is a matter of safety concern when any procedure is ignored. Therefore, it was considered that the Coventry controller must accept full responsibility for the occurrence.

### **REVIEW BY AIRPROX PANEL**

#### **1 Discussion**

The Panel concurred with the Summary of CAA Action. It concluded that the form in which the zone clearance was issued by the Coventry controller was capable of being misunderstood, indeed it could have been interpreted in more than one way. The F406 pilot's readback was different from what the controller intended and should have alerted the controller that the clearance had not been correctly understood and that clarification and a correct readback was required. As it was, the pilot did exactly what he had read back to the Coventry controller.

#### **2 Causal Factors**

- (i) The Coventry controller did not pass the zone departure clearance using the correct phraseology as required by Coventry MATS Pt 2.

- (ii) The Coventry controller then did not detect, from the F406 pilot's readback, that the zone clearance had not been understood with the consequence that the F406 pilot exceeded his initial vertical clearance limit.

### 3 Risk Classification C

4 Recommendations The Panel had no recommendations to make.

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## AIRPROX REPORT 5c/98

**Occ No.** 98/01403

**Date:** 21 March 1998

**Time:** 1429 UTC

**Aircraft:** Enstrom/Robinson

**Operators:** Private/Commercial

**Position:** Woodford Aerodrome

**ALT/HT/FL:** 1000 feet

**Airspace Type:** Manchester CTR – Class D

**Reporter:** Woodford ATC Aerodrome  
Controller

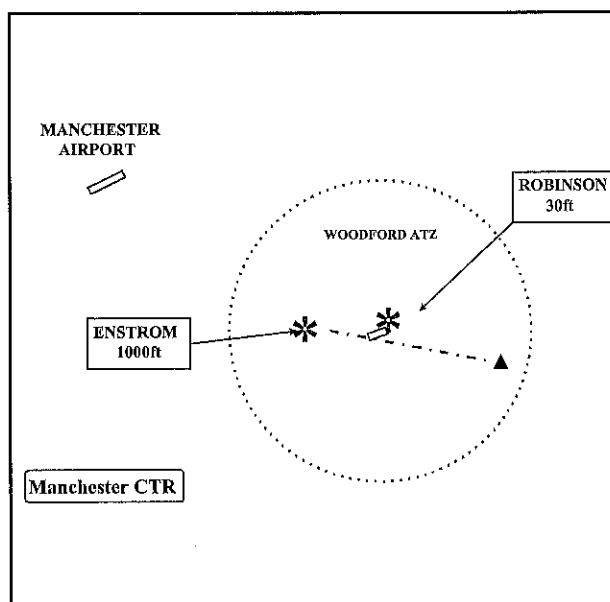
**Reported Separation:** 300 feet vertical

**Recorded Separation:** not applicable

## THE INCIDENT

At the time of this AIRPROX the Enstrom helicopter was enroute from a private landing site situated 2.2nm East South East of Woodford Aerodrome to Barton at an altitude not above 1000 feet. It was receiving an approach service from the Sector controller Manchester Approach (SCMA) 1 who was a trainee being monitored by a mentor. The Robinson helicopter was operating in the circuit at Woodford on a training flight and had just lifted off, having been given take off clearance by the Woodford Aerodrome controller.

Note:- Woodford Aerodrome is situated within the Manchester CTR and Woodford ATC must obtain authority from Manchester Approach for aircraft to operate within the Woodford ATZ and an associated Entry/Exit lane which runs from the southern boundary of the Woodford ATZ to the southern boundary of the Manchester CTR. At the time of the incident control of this



airspace was delegated by Manchester Approach to Woodford ATC and this information was correctly displayed to the SCMA 1 trainee and mentor on the appropriate flight progress strip (fps) display.

At 1424.30, the Enstrom pilot called Manchester Approach saying, ".....Enstrom helicopter is sat on the ground two miles east of Woodford we'd like a VFR clearance to Barton". The Manchester controller replied with the QNH, a squawk and a request for confirmation of the Enstrom's position relative to Woodford. The Enstrom pilot then amended his position to, "We're two miles just South East of Woodford". The controller replied with information on a banner towing aircraft to the East of Manchester to which the Enstrom pilot responded, "Roger.....are we cleared to lift". The controller replied, "Lift off at your discretion the

*er wind at Manchester is zero six zero at four knots and not above a thousand feet for the moment".* The pilot acknowledged this instruction.

At 1426.20, the Manchester Approach controller called the Manchester Aerodrome controller on the intercom giving him information on the Enstrom and asking if he wished to work the aircraft as it was a potential conflict to the banner towing aircraft. The Aerodrome controller replied in the affirmative and, at 1427.25, the Approach controller instructed the Enstrom pilot, *"Er just hold in your present position and er contact Manchester one one eight decimal six two for er clearance to cross their take off path"*. The Enstrom pilot contacted Manchester Tower at 1427.45 and after an exchange of information asked the Aerodrome controller, *"say again where to route to"*. The controller responded at 1428.30 with *".....you may track northbound now not above fifteen hundred feet on the QNH one zero three eight"*. Radar pictures timed at 1428.34 show the Enstrom approximately 0.75nm South East of Woodford and with no other contacts visible on radar within the Woodford ATZ. Subsequent radar pictures show the Enstrom apparently turning left to pass just to the South of Woodford before resuming its original heading.

Meanwhile, at about the time that the Enstrom was approaching Woodford from the South East, the Robinson pilot was given clearance to take off by the Woodford Aerodrome controller.

The Woodford Aerodrome controller reported that just after he had given take off clearance to the Robinson pilot an unidentified Enstrom helicopter flew through the Woodford ATZ at about 500 feet. He stated that the two helicopters were separated vertically by about 300 feet and that horizontal separation was difficult to judge.

The SCMA 1 controller's mentor stated at interview that both he and his trainee were aware that Woodford had control of their own ATZ. He also stated that when the Enstrom pilot reported his position he realised that it was

under this airspace which was delegated to Woodford but that he expected the trainee to either co-ordinate with Woodford or to transfer the aircraft to Woodford's control. Although the trainee did neither, he decided, because of her training stage, not to prompt her but to wait and see if she took the appropriate action. Subsequently, as the mentor was telling his trainee to co-ordinate with Woodford, the Woodford controller called on the land line to request details of a helicopter that had just passed through his ATZ. This call occurred approximately one and a half minutes after the Enstrom had been transferred by the trainee to Manchester Aerodrome control.

The Manchester Aerodrome controller reported that he was aware that the Woodford airspace had been delegated to Woodford ATC but that when the Enstrom pilot contacted him, he assumed that the Approach controller had already co-ordinated its routing through this airspace. He therefore cleared the pilot to route northbound to Barton.

The pilot of the Robinson reported that, when climbing through a height of 30 feet at a speed of approximately 20kts, he was given traffic information by ATC but that he did not see the other aircraft.

The pilot of the Enstrom reported that he called Woodford on their Tower frequency but that he did not receive a reply and then called Manchester Approach before lift off. He further reported that when overhead Woodford he sighted a Robinson helicopter at a distance of 1nm hovering over runway 25/07 and that he passed 700 feet above it having taken no avoiding action. He assessed that there had been no risk involved.



## SUMMARY OF CAA ACTION

The AIRPROX occurred because the Manchester Approach controller cleared the Enstrom pilot to proceed through Woodford airspace without the permission of Woodford ATC.

It was assessed that the Manchester mentor controller made an error of judgement in allowing a situation to continue, for training

purposes, without taking the appropriate action and must therefore take responsibility for the incident.

A Manchester Operational Notice issued as a result of this incident draws attention to the site from which the Enstrom was operating and the requirement to co-ordinate with Woodford.

## REVIEW BY AIRPROX PANEL

- 1 Discussion The Panel accepted the Summary of CAA Action.
- 2 Causal Factors The Manchester Approach controller mentor did not ensure that the u/t controller co-ordinated the Elstrom departure with Woodford ATC.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

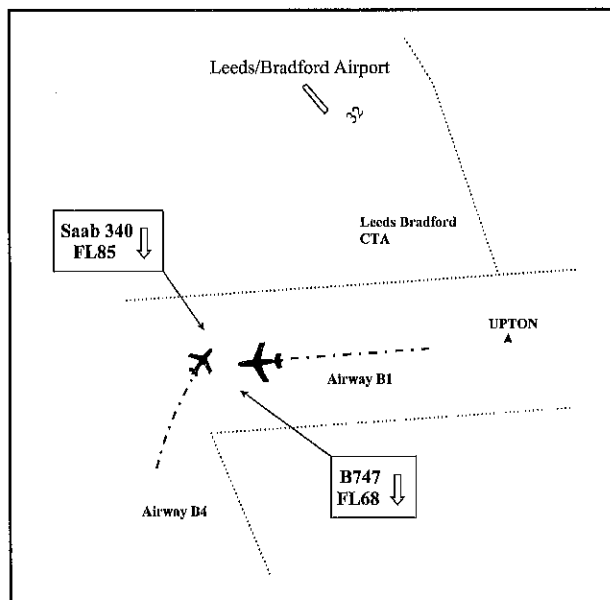
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## AIRPROX REPORT 46c/98

### **Occ No. 98/01930**

*Date:* 16 April 1998  
*Time:* 1030 UTC  
*Aircraft:* Saab 340/B747  
*Operators:* British Airline/Foreign Airline  
*Position:* 20nm South of Leeds/Bradford Airport  
*ALT/HT/FL:* FL80  
*Airspace Type:* Airway B1 - Class A  
*Reporter:* Leeds/Bradford ATC  
*Reported Separation:* Nil horizontal/1000 feet vertical  
*Recorded Separation:* Nil horizontal/1700 feet vertical



## THE INCIDENT

Immediately prior to this AIRPROX both aircraft involved were under the control of the Manchester Area Control Centre (MACC) TMA North East Sector Controller. However, they

had been transferred to their respective approach controllers by the time the incident had occurred. The B747, which was inbound to Manchester from Islamabad, was receiving a service from the Manchester Approach Radar Controller and was westbound on airway B1 in

descent to FL70. The Saab 340, which was receiving a service from the Leeds Approach Radar Controller, had departed from Paris and was in descent to FL60 on a direct track across airway B1 inbound to Leeds Bradford.

The B747 pilot had been cleared for a ROSUN 1D Standard Arrival Route (STAR) to runway 24 at Manchester and established contact with the MACC NE controller at 1020, reporting that he was maintaining FL200. The controller acknowledged this and issued descent clearance to FL120. At 1025, the Saab 340 pilot made his initial call to the MACC NE controller, reporting in descent to FL120 and requesting a direct routing to Leeds. The pilot was at that time following the standard inbound route to Leeds which took him northbound on airway B4 to Pole Hill. At 1025.20, the controller cleared the pilot to descend to FL110 and advised that a decision regarding the route would be notified.

Meanwhile, the MACC TMA NE Sector Co-ordinator had telephoned Leeds Approach and obtained an inbound level of FL60 at the LBA NDB, for the Saab 340, together with approval for the flight to route direct to the NDB. The aircraft was to be released at the southern edge of airway B1. The co-ordinator had also contacted Manchester Approach and agreed FL70 as the inbound release level for the B747, with a release point at UPTON. The details of each release were correctly entered on the relevant flight progress strip (fps) for the flights concerned.

At 1025.50 the MACC NE controller cleared the B747 pilot to descend to FL80 and then at 1029.40 further cleared the pilot to descend to FL70. In the meantime, the Saab 340 pilot had been cleared to route direct to Leeds Bradford and, at 1029.50, reported level at FL110 and requesting further descent. The NE controller replied that he would call the pilot in "about three miles". At 1030.25 the B747 pilot was transferred to the Manchester Approach controller. The two aircraft were now on converging courses, but with vertical separation applied. The radar pictures timed at 1030.55 show the B747 heading West on airway B1 and

passing FL72 in descent, with the Saab 340, level at FL110, in its 10 o'clock position at a range of 10nm and converging.

At 1031.05, the NE controller instructed the Saab 340 pilot to descend to FL60, and then at 1031.35 transferred the aircraft to Leeds Approach. Vertical separation had now been compromised with the aircraft on converging courses. The Saab pilot called the Leeds Approach Controller at 1031.45, and reported passing FL101 for FL60. The Leeds controller queried with the Saab pilot his cleared level and, on having FL60 confirmed, the controller instructed the pilot, "*(callsign) roger stop your descent flight level eight zero*". The pilot acknowledged this and, at 1032.40, the controller instructed him to turn right to a heading of 070°. The pilot responded to this with, "*Right zero seven zero (callsign) we've er we've got the er (named company) seven four seven underneath*". Then about twenty seconds later the pilot asked what was the level of the B747. He was told FL70.

Meanwhile, the MACC NE controller had realised his mistake and, in conjunction with the NE Co-ordinator, began to try to rectify the situation. The co-ordinator contacted the Leeds controller who had already identified the confliction and stopped the descent of the Saab 340. The NE controller contacted the Manchester Approach controller and asked that the B747 be descended, however the pilot had already been instructed to descend to an altitude of 5000 feet and therefore the approach controller agreed to "*push him down*". At 1032.30, the Manchester Approach controller asked the B747 pilot, "*(callsign) can you give me a good rate of descent please down to five thousand feet*". The pilot responded with, "*Do that*". Radar recordings show that at the time of this call the two aircraft were about 1.5nm apart converging with the height readout indicating the Saab 340 passing FL90 and the B747 passing FL70. Shortly afterwards, the two radar responses coincided as the Saab 340 passed directly over the B747 with between 1600 feet and 1800 feet of vertical separation. Once the two aircraft had passed each other, their tracks

quickly diverged and both flights continued without further incident.

The MACC TMA NE Radar Controller later recalled that at the point where B4 and B1(E) meet, the Saab 340 which was level at FL110, on a direct track to Leeds Bradford, requested descent. He could not explain why he descended the Saab 340 to FL60 in direct conflict with the B747 and then transferred the Saab 340 to Leeds. He recognised the error almost immediately afterwards and, with the NE Co-ordinator, took steps to rectify the situation. In the event, vertical separation was not lost and the two aircraft were never closer than approximately 2000 feet.

The MACC NE Sector Co-ordinator later recalled that traffic levels were light to moderate on the sector and that the Saab 340 had been transferred to Leeds Approach at the southern edge of airway B1 with no mention being made of the B747. It was his belief that transfer of communication would not take place until the potential conflict had passed. On completion of several telephone calls, he glanced at the fps display and realised that the Saab 340 had been descended to FL60, with the B747 in its 12 o'clock at about 5nm. His concern was heightened further by noticing that box D of the fps had a red line through it and he confirmed

that the radar controller had actually transferred communication to Leeds.

In his written report, the Saab 340 pilot recalled that, following transfer to Leeds approach, they were instructed, as they passed FL86, to stop descent at FL80. As they levelled at FL80 the first officer saw a B747 pass from right to left directly beneath them. He assessed separation as nil horizontal and 1000 feet vertical and that no further actions were required thanks to the quick intervention of the radar controller at Leeds. The risk of collision was assessed as low.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the MACC TMA NE Sector controller who issued the Saab 340 pilot with a descent clearance to FL60, through the level occupied by the B747 without the required lateral separation being provided.

Although the controller recognised his error almost immediately and promptly initiated a recovery plan, it was primarily the timely and commendable action taken by the Leeds Approach controller which positively ensured the maintenance of standard separation.

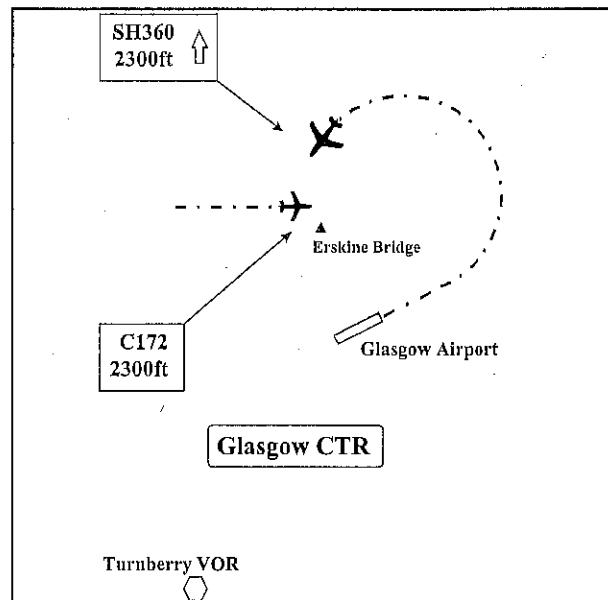
### **REVIEW BY AIRPROX PANEL**

- 1 Discussion On the face of things, this was a strange mistake for the MACC TMA NE SC to have made. The Panel thought that a possible explanation was that he had inadvertently reacted to the inbound level obtained from Leeds, and thus written on the fps, and adopted this as the next level to which he could descend the Saab 340.
- 2 Causal Factors The MACC TMA NE SC cleared the Saab 340 pilot to descend through the level of the B747 without providing lateral separation.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

## AIRPROX REPORT 6c/98

Occ No. 98/01902

Date: 19 April 1998  
Time: 1011 UTC  
Aircraft: SD360/C172  
Operators: British Airline/Private  
Position: 3nm North of Glasgow  
Airport  
ALT/HT/FL: 2000 feet  
Airspace Type: Glasgow CTR – Class D  
Reporter: Glasgow ATC - Aerodrome  
Controller  
Reported Separation: 1.5nm horizontal/500 feet  
vertical



### THE INCIDENT

The SD360 had departed from Glasgow's runway 05 enroute to Belfast on a Turnberry 5B Standard Instrument Departure (SID) which was amended, as the aircraft climbed out, to a non-standard left turn direct to Turnberry VOR. At the time of the AIRPROX the aircraft was under the control of the Glasgow Aerodrome controller. The C172 was on a VFR round-robin flight from Edinburgh and was returning from the Loch Lomond area when the pilot, who was not receiving an ATC service, became unsure of his position.

At 1006, the SD360 pilot was given, by the Aerodrome controller, his departure clearance for a Turnberry 5B SID and this was followed at 1008.30 by clearance for take off from runway 05. At 1010.10, in order to facilitate the departure of following jet traffic, the Aerodrome controller instructed the SD360 pilot to, "(callsign) change of er plan now it's a left turn when ready direct for Turnberry".

Meanwhile, the C172 was heading 090° at altitude 2000 feet, approaching Erskine Bridge, a Visual Reference Point (VRP) 3nm North of as seen by the Radar Director who called the Aerodrome controller to ask if he knew of any traffic in that area. The Aerodrome controller was not aware of any traffic, and so no information on this unknown contact was passed on to the SD360 pilot.

At 1010.50 the Aerodrome controller asked the SD360 pilot, "(callsign) are you turning left now". The pilot replied, "(callsign) is just about to start coming left.....quite heavy this morning so it just needs a bit more height". A few seconds later the pilot reported "turning now". Then, at 1012.00, the controller asked the pilot, "(callsign) if you can remain to the West of the airfield until erm before you set course for Turnberry". The SD360 pilot acknowledged this and then, at 1012.20, asked the controller, "(callsign) did you know about the light single out here". The controller replied, "er we saw something intermittently have you just passed it". The pilot responded with "affirm he was about five hundred below us". On being asked if he could identify the aircraft, the SD360 pilot replied, "Cessna er blue and white .....". The controller then asked if the pilot wished to file a report on the traffic to which he replied "(callsign) er negative no I saw him in good time and he was well clear I just thought it was a bit of a surprise to see him out here".

The unknown contact was then tracked as it flew through the departure track for runway 05 some 4nm from the airport thus delaying further departing traffic. It was subsequently traced to Edinburgh and identified as the C172.

The Radar Director reported seeing unknown traffic, on radar, approaching Dumbarton from

the West and asked the Aerodrome controller if he could see anything in that direction. Dumbarton is 7nm North West of Glasgow Airport and after being advised by the Radar controller of a primary contact, the Aerodrome controller searched the Dumbarton area with binoculars but could see nothing. He was just about to tell the SD360 pilot that there might be traffic in his vicinity when the pilot reported sighting traffic. It was stated later that the reason traffic information was not passed previously to the SD360 pilot was that some doubt existed as to whether the radar return was an aircraft.

In his written report, the SD360 pilot recalled that during climbout at 2300 feet, while turning left from runway 05, a C172 was sighted range 1.5nm and 600 feet below. As no traffic information had been passed he asked ATC if they were aware of a light aircraft in that position. He assessed that there was no collision risk but that he relaxed the turn in order to maintain the separation distance.

In his written response, the C172 pilot stated that he had been operating over Loch Lomond and had intended returning to Edinburgh by remaining just North of the Glasgow Control Zone. However, he encountered a bank of low

cloud and became unsure of his position and by the time he realised where he was he had infringed the Glasgow Zone. It was as he realised this that he saw the other aircraft at a range of 1nm. He reported taking no avoiding action as he estimated holding course as the safest option. He assessed the minimum separation as 100 feet vertical and 800 meters horizontal. He realised that he should have contacted Glasgow when he became aware of his position but as he was concentrating on clearing their zone he never did so.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the C172 pilot who inadvertently infringed the Glasgow Control Zone when he became unsure of his position having diverged from track after to encountering poor weather.

When the incident occurred both pilots had the other aircraft in sight in good VMC in time to have taken avoiding action if required. Nevertheless, the C172 pilot was given an appropriate reminder about the dangers of penetrating controlled airspace without an ATC clearance.

### **REVIEW BY AIRPROX PANEL**

#### **1 Discussion**

The Panel concluded from the Radar Director's occurrence report that, at the time, he seemed suspicious that there was an unknown aircraft in the control zone and that it would conflict with the SD360. He was sufficiently concerned to ask the Aerodrome controller, "I don't know what is coming up on Erskine Bridge unless you can remind me".

The Panel believed, therefore, that there were sufficient grounds for traffic information to have been given to the SD360 pilot in accordance with the guidance to controllers contained in MATS Part 1 concerning unknown aircraft in Class D airspace viz "Pass traffic information unless the primary function of sequencing and separating IFR flights is likely to be compromised". It seemed to the Panel that, in the circumstances, the primary function would not have been compromised.

#### **2 Causal Factors**

The C172 pilot infringed the Glasgow CTR and conflicted with the SD360.

### 3 Risk Classification C

4 Recommendations The Panel had no recommendations to make.

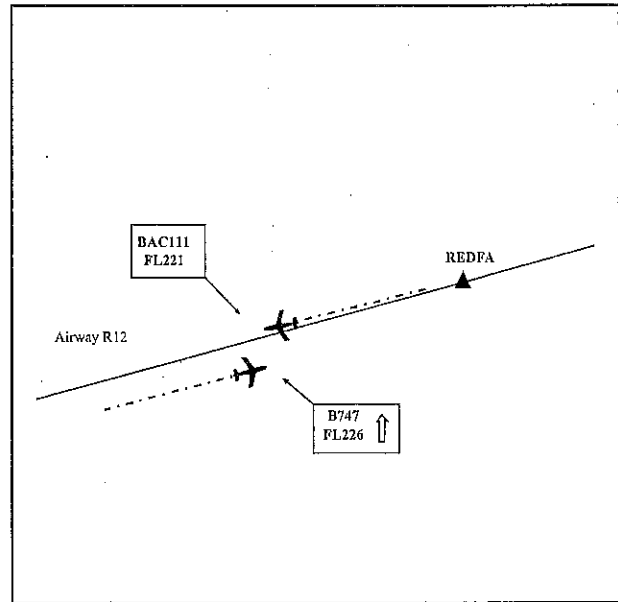
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#### AIRPROX REPORT 47c/98

##### Occ No. 98/02074

*Date:* 26 April 1998  
*Time:* 1135 UTC  
*Aircraft:* BAC1-11/B747  
*Operators:* British Airline/Foreign  
*Airline*  
*Position:* 10nm South West of REDFA  
*ALT/HT/FL:* FL220  
*Airspace Type:* Airway R12 - Class A  
*Reporter:* LATCC AC Clacton East  
Sector Controller  
*Reported Separation:* 3nm horizontal/500 feet  
vertical  
*Recorded Separation:* 3nm horizontal/500 feet  
vertical



#### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the LATCC Clacton East Sector which was manned by a trainee under the supervision of a mentor. The trainee was an experienced controller who had only recently returned to watch keeping duties. The BAC1-11 was westbound on airway R12 at FL220 and inbound to Birmingham from Amsterdam. The B747 had departed from London Heathrow en route to Singapore and was eastbound on airway R12 in the climb to FL330. The traffic loading, at the time of the incident, was described by the mentor as moderate.

The B747 pilot established RTF contact with the controller at 1127, reporting passing FL110 for FL170, and was cleared to continue the climb to FL230. This clearance was given with the knowledge that the BAC1-11 was due to enter the sector at REFSO at FL220 at 1132 and that the B747 was estimating REDFA at 1134. The BAC1-11 pilot then established RTF contact with the controller at 1128, reporting passing

FL205 for FL220, and he was instructed to maintain that level and given his arrival instructions for Birmingham.

The mentor and trainee were aware at this point of the potential conflict between the two aircraft and discussed the various options for solving the problem. At 1129, the course of action decided upon was to instruct the pilots of both aircraft to continue on their respective headings.

At 1132.12, the B747 pilot was cleared to climb to FL330. Then, at 1133.28, the BAC1-11 crossed the FIR boundary, level at FL220, at which time the B747 was in the half past eleven position to the BAC1-11 at a range of 24nm and climbing through FL210. The two aircraft were now on reciprocal headings with their tracks offset by 2.5nm to 3nm and the B747 was climbing at slightly over 1000 feet a minute. The aircraft continued on their respective headings and the B747 climbed through the level of the BAC1-11 at 1134.34 when the aircraft were 8.4nm apart. Minimum separation

occurred at 1135.04 as the B747 passed South abeam the BAC1-11 at a range of 3nm and 500 feet above it in the climb.

In his written report the mentor stated that he discussed the potential conflict, and the available solutions, with the trainee and that they elected to lock the two aircraft on their respective headings. Subsequently their workload increased and they were distracted by other potential conflicts. When the incident was observed on radar it was assessed that neither traffic information nor avoiding action was appropriate.

The pilots of both aircraft were unaware that an incident had occurred and could therefore provide no details relevant to the investigation.

### SUMMARY OF CAA ACTION

The AIRPROX was caused by the LATCC Clacton East Sector mentor controller who did not ensure his trainee provided appropriate lateral separation when clearing the B747 pilot to climb to FL330 through the level of the BAC1-11 at FL220.

### REVIEW BY AIRPROX PANEL

- 1 Discussion The Panel accepted the Summary of CAA Action.
- 2 Causal Factors The Clacton East Sector mentor allowed his trainee to clear the B747 pilot to climb through the level of the BAC 1-11 without providing standard lateral separation.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

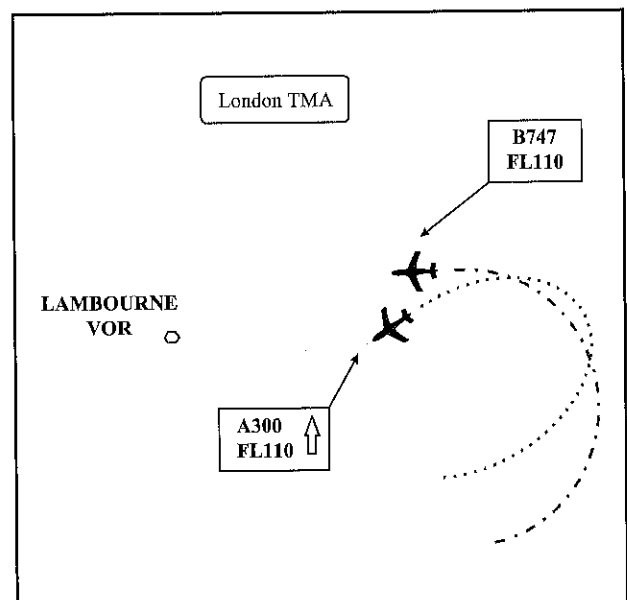
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### **AIRPROX REPORT 13c/98**

#### **Occ No. 98/02099**

*Date:* 28 April 1998  
*Time:* 1108 UTC  
*Aircraft:* A300/B747  
*Operators:* Foreign Airlines  
*Position:* 10nm East of Lambourne VOR  
*ALT/HT/FL:* FL110  
*Airspace Type:* London TMA - Class A  
*Reporter:* LATCC Terminal Control - Lambourne Sector Controller  
*Reported Separation:* 1.29nm horizontal/nil feet vertical  
*Recorded Separation:* 1.29nm horizontal/nil feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were Heathrow inbound under the control of LATCC Terminal Control (TC) and established in a temporary hold (10nm East of the Lambourne VOR) because of the presence of severe Cumulonimbus (Cb) cloud activity near Lambourne. The A300 was receiving a service from the Heathrow Intermediate Director (North) at FL100 and the B747 was receiving a service from the Lambourne Sector controller at FL110.

Prior to the incident both aircraft were under the control of the Lambourne controller and being descended in the hold, by stages, until at 1106 the A300 pilot was cleared to descend to FL100 and, as was normal practise, was handed over to the Heathrow Director. The Lambourne controller then cleared the B747 pilot down to FL110.

The radar pictures, timed at 1107.09, show the two aircraft on near parallel tracks in a left-hand hold with the A300 at FL101 and the B747 in its right 2 o'clock position range approximately 3nm, descending through FL130. The aircraft, both in a left turn, now gradually converge with the B747 descending to level at FL110 virtually directly above the A300 which initially holds at FL101 but then starts to climb. The radar pictures timed at 1108.55 show the aircraft within 0.3nm of each other, the B747 at FL111 and the A300 at FL105.

Meanwhile, the Heathrow Director had seen the height readout on the A300 indicating a climb and so at 1108.45 asked the A300 pilot, *(callsign) confirm you're maintaining flight level one hundred*". The A300 pilot responded with, *"er yes sir"*. The Director then instructed the pilot, *"Roger descend now please there's traffic above you flight level one one zero"*, and after the acknowledgement again instructed, *"(callsign) you show you're still climbing confirm descend flight level one hundred"*. The word descend was emphasised. The A300 pilot replied, *"er descending"*. However, the radar pictures timed at 1109.19 show the A300 having climbed to FL109 with the B747 at a distance of

less than 1nm also at FL109. At 1109.20 the Director instructed the A300 pilot, *"(callsign) avoiding action turn left heading one nine zero descend flight level one hundred"*, and followed this with, *"roger there's traffic in your right er three o'clock range of one half of a mile"*.

While the Heathrow Director was concerned with the A300, the Lambourne controller had received a Short Term Conflict Alert (STCA) between the A300 and the B747 and asked the B747 pilot to confirm he was maintaining FL110. The B747 pilot replied at 1109.00, *"Affirmative and we had a er TCAS warning and we climbed er er two hundred feet and now we're proceeding to er Lambourne"*. The Lambourne controller saw the A300 climbing and thinking that it might still be on his frequency he gave avoiding action to both aircraft. He instructed the A300 pilot to descend to FL100 and continued to the B747 pilot, *"(callsign) turn right avoiding action forty degrees"*. The B747 pilot acknowledged this instruction. Of course, the A300 pilot could not as he had previously changed frequency as instructed.

The radar pictures timed at 1109.26 show both aircraft at FL110 with horizontal separation just over 1nm. However the avoiding action by both controllers now took effect as the B747 turned right and the A300 turned left and descended back to its correct level.

In his written report, the A300 pilot said that, whilst in a left turn in the hold, the aircraft suddenly climbed 500 feet, whereupon he disengaged the autopilot and endeavoured to return to FL100. The aircraft then climbed another 400 feet due to continued strong up-draughts from the thunderstorm activity in the area. He immediately complied with the ATC instruction to regain FL100. After the flight, upon searching back in the aircraft's logbook he found that there was a known problem with the altitude hold on the autopilot.

In his written report, the B747 pilot confirmed he climbed the aircraft after receiving a TCAS RA warning and that he assessed that there had been a dangerous reduction of separation



although the other aircraft was not sighted visually.

The Heathrow Director said that he was assisted by a Support controller who noticed that the A300 was slightly above FL100. Despite the pilot confirming that he was maintaining FL100, the A300 continued to climb and came into conflict with the B747 at FL110. The Support controller then passed avoiding action and traffic information.

## SUMMARY OF CAA ACTION

The AIRPROX was caused by the A300 pilot who did not prevent the aircraft from climbing above his cleared level of FL100 and into conflict with the B747 which was holding at FL110. The cause of the level deviation was the severe up-draught turbulence from the adjacent thunderstorm activity and apparently aggravated by a known technical problem with the A300's autopilot altitude hold.

## REVIEW BY AIRPROX PANEL

### 1 Discussion

From the A300 Captain's written report it would seem that the initial height gain of 500 feet was associated with an aircraft autopilot fault and that, before the cleared level could be regained, the strong up-draught then took the aircraft up to the level of the B747.

The Panel was somewhat surprised by the statement that the fault with the altitude hold function of the autopilot was found by the Captain after the event, on searching through the aircraft's technical log. It thought that a problem of this nature would have featured as an "open" entry on the first page of the log and that a warning sticker would have been justified on the instrument panel.

Additionally, the Panel gained the impression, from the RTF exchanges, that the controller's warning to the A300 pilot concerning his initial height gain came as something of a surprise on the flight deck, merely drawing a reaction of "er, yes sir". Members, therefore, also speculated that there might have been a lack of CRM.

The intervention of the Heathrow Director and Support controller was commendable but, despite their actions, the rather extreme height gain by the A300 meant that vertical separation with the B747 was, at one point, lost. However, before the A300 reached FL110, the B747 pilot had temporarily climbed 200 feet, in reaction to a TCAS RA, before descending again to FL110 after some measure of horizontal separation became established. Notwithstanding the actions of the controllers and of the B747 pilot, the Panel thought that there had been a serious loss of separation.

2 Causal Factors The A300 crew allowed their aircraft to climb above the cleared flight level and into conflict with the B747.

3 Risk Classification B

4 Recommendations The Panel had no recommendations to make.

## AIRPROX (P) REPORT No 44/98

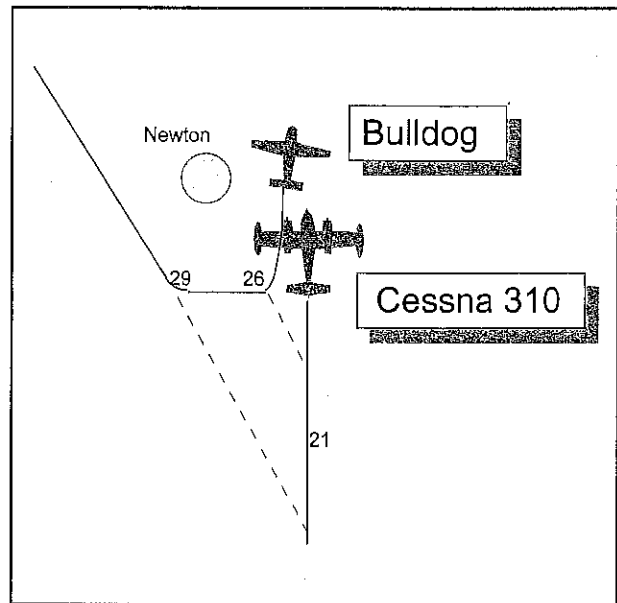
Date/Time: 02 May 1133 (Saturday)  
Position: N5258 W0059 (Newton - elev 182 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Bulldog Cessna 310  
Operator: HQ PTC Civ Pte  
Alt/FL: 1900 ft 2200 ft  
(QFE 1013mb) (1020 mb)  
Weather VMC CLNC VMC CLBC  
Visibility: 30 km 10 km

### PART A: SUMMARY OF INFORMATION REPORTED TO JAS

**THE BULLDOG PILOT** reports heading 010° at 100 kt having just left high key for a PFL at Newton. With no warning a Cessna 310, white and red, overtook on his right about 100 ft away and 10-20 ft below on a parallel track at high speed. There was a high risk of collision with no time for avoiding action. He reported the Airprox to Newton TWR on 375.425.

**THE CESSNA PILOT** reports flying a transit from Elstree to Leeds and believed that at the time of the incident he was receiving an ATS from Waddington although subsequent investigation indicated he called Waddington after the Airprox. He was heading 010° at 160 kt and maintaining 2200 ft on 1020 mb. He did not see the other ac.

**HQ MATO** reports that the Bulldog pilot was conducting VFR circuit training at RAF Newton and under the control of Newton TWR (TWR) on 375.425. Having left the circuit to position for a PFL on RW 01, at 1132:46 he called "rejoin PFL" which was acknowledged by TWR. After the Bulldog left high key, positioning for low key, it was overtaken by a red and white twin-engined ac. The Bulldog pilot queried TWR "did er that twin piston call you?", to which TWR replied "negative and I've got VHF on". Thereupon the Bulldog pilot reported the Airprox stating "Right, we've just had a near miss with a twin piston which shot past us and overtook us, probably within a hundred feet of us, South to North at about nineteen hundred



feet". The Bulldog pilot reported that the estimated horizontal separation was 100 ft and that the unknown ac was 10-20 ft below the Bulldog which was at about 1900 ft Newton QFE (1013 mb). The reported ac was subsequently identified as a Cessna 310 which was en-route from Elstree to Leeds Bradford and in receipt of a FIS from East Midlands.

The Newton ATZ is promulgated at UK AIP ENR 2-2-3-4 as a 'circle radius 2 NM centred on 525800N 0005922W', extending 2000 ft above the aerodrome elevation of 182 ft amsl and active from 0900 to 1700 daily; there is no MATZ. The ATZ is shown on both civil and military aeronautical charts. In climbing to high key for the PFL, the Bulldog had effectively left the visual circuit and was above the ATZ prior to the occurrence. The Bulldog was the only ac on the TWR UHF frequency; TWR was also monitoring the published VHF frequency, 119.125; no calls had been received from the C310 pilot.

The C310 pilot reports that he was flying at 2200 ft on a QNH of 1020 mb and that the Bulldog was not seen; given the Newton QFE of 1013 mb and airfield elevation of 182 ft, flight at that altitude would have placed the C310 just a few feet vertically inside the ATZ. However, the radar recording indicates that the ac did not enter the ATZ.

There are no contributory military ATC factors within this Airprox.

JAS Note: LATCC radar recordings show the incident; the C310 maintains a northerly track at a steady Mode C reading of 2100 ft throughout. The ac converge towards a position S of Newton with the Bulldog in a descent, tracking 150°. As the Bulldog passes 2900 ft the Cessna is in its 12 o'clock just over 2 NM away. The Bulldog then turns onto E until it has descended to 2600 ft at which point the Cessna is just under 1 NM in its 2 o'clock, 500 ft below. The Bulldog then turns left onto a similar track to the Cessna, descending in front of it, and the returns merge with no discernible lateral separation at 2100 ft. Fifteen seconds later the Bulldog shows 1900 ft Mode C with the Cessna just ahead and to the right.

**HQ PTC** comments that although this Airprox seems to have occurred just above the Newton ATZ, that may be due to luck rather than good judgement. From the Bulldog pilot's point of view, he had the opportunity to see the Cessna while approaching high key; however, it may well be that it was under the nose and he would have been concentrating his lookout towards the airfield which was away from the direction of the approaching confliction. This incident again highlights the need for an all-round lookout even when close to home and concentrating on another activity.

## **PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS**

Information available to the Working Group included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the appropriate operating authorities.

There was some discussion about rights of way and lookout which was inconclusive because the geometry of the incident changed from a convergence to an overtake with the Bulldog in a descent. When manoeuvring, it was clearly the responsibility of the Bulldog pilot to clear the area into which he was flying; however,

members accepted that in this case, while sitting in the LHS, he would have had to bank considerably to the right to have seen the Cessna before he turned his back on it. Nonetheless members agreed that this is what is required for survival under 'see and avoid' and it was clear that the Bulldog pilot did not see the C310 until it overtook him. They concluded that his non-sighting of the C310 approaching the airfield was part of the cause of the Airprox.

Members agreed that the C310 pilot was ill advised to be crossing the Trent valley at such a low altitude. It was pointed out that the valley encompasses Nottingham/Tollerton and Newton ATZs, and then the Syerston and Winthorpe gliding sites with Newark in between, none of which it was sensible to cross below 2500 ft without talking to the airfields concerned or being in solid radar cover. However, at his transit altitude any radar service offered to the C310 pilot would have been severely limited. In the event he nearly collided with the Bulldog. While the Bulldog should have been visible to the C310 pilot throughout, it was descending from above and to the left, and members accepted that its lack of relative angular motion would not have attracted the Cessna pilot's attention. However, it was clearly his responsibility to see and avoid, and certainly in the latter stages of the incident the Bulldog should have become increasingly visible to him. Members concluded that the non-sighting of the Bulldog by the C310 pilot was also part of the cause.

Given the effective non-sighting of each other's ac and the closeness of the encounter as confirmed by the radar recordings, the Group agreed unanimously that there had been a very real risk of collision in the incident.

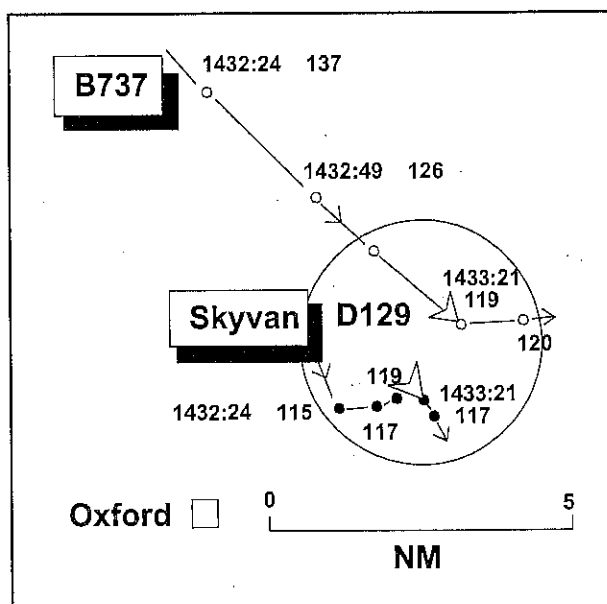
## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: A

Cause: Effectively a non-sighting by both pilots.

### **AIRPROX (P) REPORT No 43/98**

Date/Time: 03 May 1433 (Sunday)  
Position: N5152 W0113 (10 NM W Westcott)  
Airspace: EG D129 (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: Shorts Skyvan B737  
Operator: Civ Comm CAT  
Alt/FL: FL 120 ↓ FL 100  
Weather VMC CAVOK VMC CAVOK  
Visibility: 40 km 10 km



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE SKYVAN PILOT** reports that he was heading 030° at 105 kt having climbed to FL 120 within EG D129 to carry out a paradrop. The visibility was 40 km in VMC. He was in contact with London Mil on 133-90 and squawking 6315 with Mode C. Cockpit workload was high as he prepared for the imminent despatch of his parachutists. During the final run-in, and shortly before the parachutists were to be despatched, he heard ATC transmit "c/s turn R 180°". He was aware that the ac to which this instruction had been addressed was an Islander based at Weston-on-the-Green (WOG) and he knew it was not airborne at that time. He heard the controller repeat the instruction and was about to ask if it was intended for him when the controller said, "c/s (his ac) turn R 180°-expedite-traffic same level 1 NM ahead". He began to turn as instructed, giving due regard for the 18 parachutists and the open rear door, and when some way through the turn was further instructed to "descend to FL 80". He promptly complied and, though he did not see the other ac, he heard one of his passengers say "wow, did you see that - that was close." ATC then

allowed him to climb to FL 120 for his paradrop and advised him that the other ac was a B737 inbound to Heathrow which had been cleared to descend to FL 130.

**THE B737 PILOT** reports that he was heading 160° at 260 kt 20 NM W of the Bovingdon VOR while in descent through FL 127 for FL 100 as cleared by the LATCC SC. The visibility between layered cloud was about 10 km. ATC instructed him to level at FL 120 and to turn L immediately about 40°. The other ac, a Shorts Skyvan, was seen at his 2 o'clock about 0.75 NM away and 1000 ft below as it tracked from R to L at about FL 110. He felt there had been a possible risk of collision.

**HQ MATO** reports that the Shorts Skyvan was operating within EG D129 on a parachute-dropping sortie and was under a FIS from LJAO Central. The ac had just levelled at FL 120 and was turning L on to heading 030° when, at 1432:41, avoiding action to descend and turn

hard R was issued against traffic heading S at the same level. The other traffic was a B737 in descent for Heathrow and under a Radar Control Service from LATCC TC NW.

The Skyvan had been placed under FIS by the LJAO Central sector controller at about 1420 on departure from RAF Weston-on-the-Green as it climbed to FL 120 to conduct a sport parachutists drop. In accordance with instructions issued by the LJAO controller, the Skyvan pilot had selected SSR Mode A code 6415 with Mode C. As the Skyvan approached FL 120, the LJAO controller noted the B737 approaching EG D129 from the NNW and in descent for Heathrow. In the knowledge that WOG activity was known to TC NW, the LJAO controller expected the B737 to level at FL 130 in order to remain above the danger area. However, detecting no reduction in rate of descent of the ac, he realised that there was now a risk of collision between it and the Skyvan. Consequently, at 1432:41 he issued avoiding action instructions to the Skyvan. Initially, an instruction to "*descend now to FL 80*" was incorrectly addressed to another ac c/s, as was an immediate supplementary "*hard right turn heading south.*" (It should be noted that the callsign used is the registration of an Islander, also based at WOG, which had been operating in EGD 129 prior to the Skyvan). Immediately afterwards the LJAO controller repeated the turn instruction, this time correctly addressed to the Skyvan. Thereupon, the LJAO controller was interrupted by a landline conversation with the TC Midlands Co-ordinator during which the latter stated "*he's taking, yes he's taking avoiding action on the (B737)*". At 1433:02 the LJAO controller advised the Skyvan "*traffic N one mile southbound same level*" to which the Skyvan pilot responded "*c/s copied, not visual, keep me informed*". The LJAO controller then abruptly terminated the conversation with TC Midlands Co-ordinator, explaining that he was too busy, and at 1433:18 instructed the Skyvan to "*descend FL 80*". However, 14 sec later, by which time it had become apparent that the B737 was turning away from the Skyvan, this was countermanded when the Skyvan pilot was told "*traffic is now clear. You're cleared to resume your climb FL 120*".

The lateral limit of EG D129 is a circle radius 2 NM centred on 515246N 0011320W, which extends vertically from SFC to 12,000 ft amsl. Above FL 85, EG D129 is embedded within Class A airspace and consequently specific procedures for the notification of activity have been agreed between the Joint Services Parachute Centre (WOG), LATCC TC Ops and HQ MATO. These were reviewed and revised after a previous incident, the subject of Airprox (P) 110/96. In accordance with the revised procedures, published in the LATCC MATS Pt 2 and HQ MATO SOPs for LJAO, staff at WOG are required to notify intended activity above FL 85 to the LJAO Supervisor, giving a minimum of 30 min warning. The latter is then required to relay the information to the TC NW Co-ordinator together with the appropriate LJAO-allocated SSR codes. Subsequently, LJAO Central sector is to provide a service to the para-dropping ac within EG D129. However, on 3 May 98 WOG staff had notified LATCC TC directly and the TC NW Sector controllers opted to work the ac themselves. This continued throughout the morning but on shift change the oncoming watch requested that LJAO Central assume responsibility for the continuing task. Thus, although there had been a departure from the agreed procedures, it is clear that the TC NW Co-ordinator was aware of the activity within EG D129. Moreover, since the maximum notified level had remained at FL 120 from commencement of activities in the morning, the TC NW Co-ordinator had, presumably, approved para-dropping activity above the danger area, but within its lateral limits. At the time of the incident, 1433, the WOG QNH was 1022 mb, hence FL 120 would have equated to 12,243 ft amsl. Thus, the reported incident occurred just above the vertical boundary of the danger area.

A sequence of radar videoprints shows the B737 (SSR code 4230) crossing the boundary of EG D129 at 1432:53 with Mode C indicating 121. The following frame, timed at 1433:00, shows the B737 with Mode C indicating 116 which equates to 11,843 ft amsl. In the last frame, timed at 1433:26, the B737, with Mode C indicating 120, is shown about to cross the eastern boundary of EG D129. It is evident,

therefore, that the B737 was permitted to make a slight incursion into the danger area. This is supported by the SMF data printout, which shows the ac crossing the lateral limit of EG D129 whilst the Mode C dips slightly below FL 120. The SMF also indicates that the ac were 1.38 NM apart when at the same altitude.

(Note (1): The SMF recorded separation may differ slightly from the true separation and radar recordings because it is based on processed and predictive radar data).

Though the HQ MATO SOPs require the LJAO controller to provide a RIS to para-dropping ac operating within EG D129 and radar control to para-dropping ac outside, at the time of the incident he was providing a FIS. This resulted from a disparity between local orders and the SOPs which has now been addressed. Moreover, it is evident that the LJAO controller did not appreciate that FL 120, the level to which the Skyvan had been cleared to climb, was above the notified limit of EG D129. Although the LJAO controller exceeded his remit under both FIS and RIS by issuing avoiding action together with the traffic information, it is considered that this was prudent under the circumstances in view of the closing speed of the B737. Though his initial instructions to the Skyvan were incorrectly addressed, the delay occasioned by this error was minimal and therefore not considered to be relevant to the outcome. Although the pilot of the Skyvan did not see the B737, nevertheless he was aware of the impending danger and promptly took the avoiding action instructed.

**ATSI** reports that the Airprox occurred during a period of light to moderate workload. The LATCC TC Bovingdon and TC NW Departures were combined and being operated by a low hours trainee under the supervision of a qualified mentor. All of the relevant ATC equipment was serviceable.

The Skyvan was carrying out a parachute dropping sortie up to FL 120 in the WOG Danger Area (EG D 129). In accordance with published procedures, detailed in the LATCC TC MATS Pt. 2, this activity had been notified to

the TC NW Sector by LJAO. LJAO are required to provide a RIS to parachute dropping ac within EG D 129 above FL 85 and assign one of their SSR codes to such flights. The SSR code assigned to the Skyvan, together with its maximum operating level, were correctly recorded on an engraved FPS specifically designed for this purpose. This FPS was displayed under the 'COWLY' designator; however, strips on flights inbound to Heathrow, such as the B737's, are displayed under the 'BNN' (Bovingdon) designator, where there was not a ready reminder that EG D129 was active. Nevertheless, both the trainee and mentor confirmed that the activity status of the Danger Area had been covered during the hand-over about 15 min prior to the incident.

The crew of the B737 contacted TC NW at 1430:50, heading 135° and descending to FL 150. This was in accordance with the Standing Agreement for the transfer of ac from TC COWLY. Having assessed that the lowest available level at BNN was FL 90, the trainee TC NW SC, at 1431:30, cleared the B737 to FL 90. At that stage the flight was descending through FL 160, about 8 NM NW of EG D129, where the Skyvan was climbing through FL 107 for FL 120. The trainee spoke openly and admitted that, in issuing the clearance to FL 90, he had forgotten that EG D129 was active. Unfortunately, the error was not noticed by the mentor. The latter indicated that he had been well aware of the requirement to monitor his 'low hours' trainee closely. He had been seated immediately to the left of the trainee and had been using a 'training box'. He recalled that, at the time his trainee had issued the critical clearance, he had been concerned and distracted by the fact that he had observed a northbound Gatwick departure which, because of its relatively low rate of climb, was likely to enter the TC NW Sector's airspace but for which the sector did not have strips; he had been trying to obtain these because he had anticipated that his trainee might have to work this flight or be required to co-ordinate its passage through their sector.

The trainee's error remained undetected until the STCA activated, at which point a colleague

on an adjacent sector also shouted a warning. Once alerted, at 1432:48, the trainee instructed the B737 to stop its descent at FL 120. By that stage the subject ac were about 3.25 NM apart with the B737 descending through FL 126 and the Skyvan climbing through FL 117. The mentor then took control of the RT and instructed the B737: "... turn left immediately heading zero nine zero turn left immediately heading zero nine zero traffic in your twelve o'clock range two miles." The TC mentor certainly conveyed the necessary urgency when giving this instruction but did not use the words 'avoiding action'; he said that he realised at the time that the situation warranted this phraseology but the words just had not come out. The crew of the B737 reported visual contact with the Skyvan but were unable to arrest their descent until they reached FL 118. In the meantime, the LJAO controller providing the Skyvan with a service had also been alerted by the activation of the STCA and had instructed the flight to turn R onto heading 180° and to descend to FL 80.

The Skyvan reached FL 119 and was in a L turn, towards the B737, before responding to the avoiding action instructions issued by the LJAO controller. Both flights were at FL 118 briefly, when about 1.7 NM apart, before the B737 eased back up to FL 120 and the Skyvan continued its descent. Thereafter, horizontal separation continued to reduce for a short time before the Skyvan executed a tight R turn to the S and the B737 took up its easterly heading. From the radar recording, it is estimated that the flights closed to a range of 1.3 NM, with a vertical separation of 200 ft, before lateral separation quickly increased again as they diverged.

Both the mentor and the trainee felt that the presence of an additional engraved 'EG D129 Activity' FPS under the 'BNN' designator would have provided a useful additional reminder that the Danger Area was active. It emerged that a second engraved FPS had been provided precisely for this purpose following the investigation of an Airprox (P) which occurred on 31 August 1996. That incident involved the same parachute dropping ac; (the Skyvan) and

a Boeing 757 inbound to Heathrow. It is disappointing to note that the second engraved FPS was not being used on this occasion and the impression was gained during the interviews that this situation was not uncommon. The LATCC TC MATS Pt 2, TC NW Section, makes only the following reference to the engraved strips, on page NWE 7-2, Para. 1.2.4, entitled "Penetration of CAS outside the lateral limits of EGD129". :-"TC NW and the Midlands Co-ordinators are to ensure that the appropriate engraved strips are displayed on the relevant TC NW and TC Midlands sectors". There is no reference to displaying one of the strips under the 'BNN' designator and, since the Skyvan was remaining within the lateral confines of EG D129, this paragraph did not apply to this situation.

**ATSI** make the following recommendations:

1) In recognition of the increasingly congested nature of controlled airspace around EG D129, a review should be carried out to determine whether it is still appropriate for this danger area to extend vertically into, and be operated at, CAS levels.

2) If EG D129 is to continue operating as it does at present, the feasibility of electronically highlighting either the area itself, or the parachute dropping aircraft, on the radar display should be considered.

Note (2): A recording of the LATCC radars confirms the ATSI analysis.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, and reports from the appropriate ATC and operating authorities.

The Board quickly concluded that the trainee LATCC controller, having not taken into account that EG D 129 was active, caused the Airprox by issuing a descent clearance to the B737

which took it through the level occupied by the parachuting Skyvan. The trainee's mentor, once alerted to the situation by activation of the STCA, issued instructions which resolved the conflict and removed any risk of collision, but not before loss of standard separation. Members emphasised the importance of controllers using the correct phraseology, in particular the words "avoiding action," to convey the necessary sense of urgency to pilots.

ATCO members stressed that while on this occasion traffic levels were reported as moderate, the Bovingdon Sector is one of the busiest in the London TMA; the VOR is used for navigation by transiting ac as well as those inbound to Heathrow, and by others climbing from and descending to airfields within the TMA. Flight level availability is therefore frequently at a premium, making space for blocking strips on the controller's display board very limited. However, members were disappointed that a second engraved strip, introduced as a result of a similar Airprox in 1996, was not in position under the BNN designator. The Board assumed that this shortcoming would be addressed separately by LATCC management.

Members felt it was also regrettable that the mentor in this case had missed the unsafe clearance while attending to another operational task. This served to demonstrate that mentors can seldom allow themselves to be distracted, even briefly, especially with 'low hours' trainees. In the event of an unavoidable break in monitoring, a mentor should immediately check on any of the trainee's actions taken during the break.

Discussion moved to the Drop Zone and its relation to adjacent CAS. With regard to the ATSI proposal to review the status of EG D 129 and its relationship to adjacent CAS, the MATO adviser reminded the Board that the designated area existed as a parachuting zone well

before its upper levels were subsumed by controlled airspace and he strongly opposed any changes which might compromise the integrity of the long-established parachuting activity at Weston-on-the-Green. To resolve the anomaly in the way the operating limit of the danger area was classified, MATO proposed that the upper limit should be expressed as a flight level instead of an altitude. The Board accepted this proposal which MATO said would take effect from late January 1999. The MATO adviser endorsed the ATSI recommendation to highlight the parachuting ac on radar in order to improve its conspicuity to the LATCC controller. The Board also unanimously approved this proposal. ATCO members pointed out that the facility was already available with the radar equipment currently in use. The Director undertook to make a formal recommendation to the appropriate authorities to examine the feasibility of this proposal.

Members also strongly endorsed a suggestion that the dropping ac should operate on the LATCC frequency while above FL 85; it was accepted that co-ordination would be required between Weston-on-the-Green and the pilot of the dropping ac before despatch could be approved. An ATCO member opined that were this proposal to be implemented, LATCC controllers might be under some pressure in busy periods to limit the parachuting activity to the base of CAS. However, the Board agreed that the suggestion had merit and the Director was asked to make a formal recommendation to the appropriate authority to examine its feasibility.

The Board acknowledged the ATSI recommendation for a review of the status of EG D129 and noted the reservations tabled by the MATO adviser; members agreed that this recommendation should be addressed by the ATS department as directed by the ATSI report.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C



Cause: The LATCC trainee SC did not take into account that EG D 129 was active when issuing descent clearance to the B737.

Recommendation: The UKAB recommends that:

(1) LATCC examines the feasibility of electronically highlighting on radar displays, either EG D 129, or aircraft engaged in parachute dropping within EG D 129, or both.

(2) HQ MATO examines with LATCC what safety advantages might accrue if parachute dropping aircraft in EG D 129 were to operate on a LATCC R/T frequency, when flying above FL 85. AIRPROX (P) REPORT No 44/98

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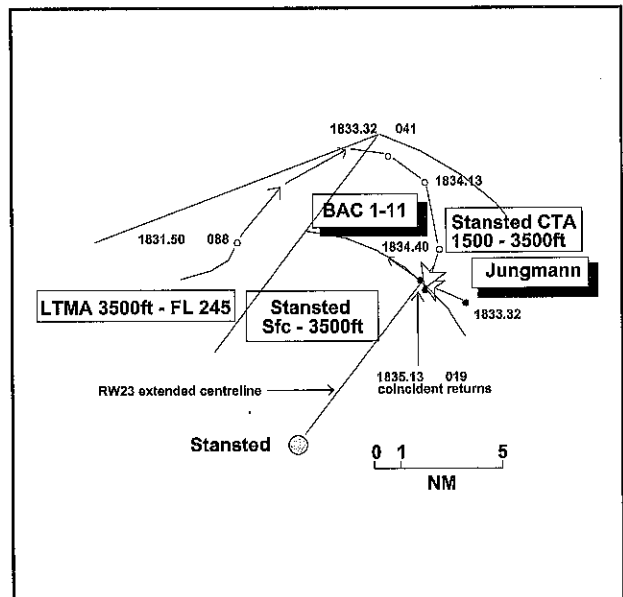
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### AIRPROX (P) REPORT No 45/98

Date/Time: 04 May 1835  
Position: N5159 E0023 (8 NM NE Stansted)  
Airspace: CTA/FIR (Class: D/G)  
Reporting Aircraft Reported Aircraft  
Type: BAC 1-11 Jungmann  
Operator: CAT Civ Pte  
Alt/FL: 2000 ft 1500 ft  
(QNH 1016 mb) (QNH 1017 mb)  
Weather VMC VMC CAVK  
Visibility: >10 km 8 km

### PART A: SUMMARY OF INFORMATION REPORTED TO JAS

**THE BAC 1-11 PILOT** reports that he was establishing on the ILS to RW 23 at Stansted, heading 230° at 140 kt and level at 2000 ft (QNH 1016) while under radar control from the Stansted Director on 126-95. He was squawking 6077 with Mode C. The visibility was in excess of 10 km in VMC. When about 7 NM from touchdown and about to intercept the glidepath, he saw a high wing single engined monoplane with a tail wheel at his 10 o'clock position about 0.5 NM away as it tracked from L to R about 300 ft below him. He maintained altitude and turned 20° to port to pass behind the other ac which then crossed 0.25 NM ahead of him; he was over the village of Thaxted at the time. He felt there had been a medium to low risk of collision and reported an Airprox to the Stansted Director. ATC confirmed that there



was a primary return in his vicinity and told him that the base of CAS at that position was 1500 ft. He believed the other ac to have been above this altitude.

**THE JUNGSMANN PILOT** reports that he was heading 310° at 90 kt and cruising at 1500 ft QNH. The ac was not fitted with radio or SSR. There was no cloud and the visibility was about 8 km in VMC. His route to his destination, a private site near Puckeridge VRP to the W of Stansted, took him over the village of Great Sampford which is situated at 8.5 NM final for RW 23 at Stansted. The base of the Stansted CTA at this position is 1500 ft (QNH). He states that he is extremely familiar with the area,

having operated from Audley End, Andrewsfield, High Cross, Stapleford and Takeley aerodromes for many years. He has also flown from Stansted as a training captain with a major carrier. He saw the other ac, a BAC 1-11, at his 3 o'clock position about 3.5 NM away, in a descent and turning. It continued descending and passed about 300 - 400 ft above and 1.5 NM behind him. Although he thought it appeared to be a little too close for comfort, at no time did he consider that a collision was imminent; he therefore did not feel that avoiding action was necessary. He surmised that the other ac was probably positioning onto a visual final for RW 23 and would have expected it to maintain 2000 ft altitude until about 6 NM from touchdown in accordance with the Stansted rules for visual approaches by jet ac. With reference to his own altitude, he was not certain what QNH he had set but believed it was 1017; he would have obtained it from the Stansted ATIS. He further states that his altimeter had been calibrated in 1994 and found to have no error at that altitude.

**LATCC TC** reports that the BAC 1-11 was being controlled from the Stansted Final Director's position at LATCC TC by a trainee controller under supervision. The ac was turned onto finals for RW 23 at about 9 NM. A primary return was observed crossing ahead of the ac but, as the base of CAS was 1500 ft in its vicinity and the unknown ac was not in communication with either Stansted radar or Essex radar, it was assumed the ac was outside CAS; traffic information was therefore not passed. The pilot of the BAC 1-11 then said he could see the other ac and estimated it was no more than 200 ft below him; he stated his intention to file an Airprox report.

**LATCC INVESTIGATIONS** comments that the BAC 1-11 had been positioned downwind for RW 23 at 2000 ft and at 1833:04 was instructed to turn onto a base leg heading 140°. At this point an unknown primary return was observed to the NE of the airfield; it was on a northerly track which would take it through the extended centreline of the RW at about 8 NM from touchdown. This point coincides with the

northeasterly boundary of the Stansted CTZ, with the CTA above it having a base of 1500 ft.

The BAC 1-11 was turned R onto a closing heading of 220° and subsequently reported established at a range of 8.5 NM from touchdown at 1834:43. (JAS Note: This is based on DME positioned to give distance from touchdown and puts the ac at a position 0.5 NM E of the village of Great Sampford with about 1.3 NM to run to the CTZ boundary). Nine sec later, the pilot reported that there was a light ac one mile ahead crossing from L to R and about 200 ft below. The Director advised the pilot of the BAC 1-11 that there was a radar return in his vicinity which had about 0.5 NM to run to the extended centreline; however, the base of CAS in that position was 1500 ft and the unknown ac should be below that altitude. The pilot replied that he considered the other ac was very close to the base of CAS and that he would be filing an Airprox report; he described the ac as being "ridiculously close" to him. Investigations carried out by the Deputy Watch Manager determined that it is standard operating procedure for Stansted Directors not to pass traffic information on unknown traffic outside the zone.

**ATSI** comments that technically the Stansted controller complied with the rules. However, under the circumstances and having seen a primary radar return under the 'stub' so close to the Stansted Zone boundary, it may have been prudent to restrict the 1-11's altitude to 2500 ft to establish on the ILS and/or to have informed the pilot of the unknown ac.

JAS Note (1): Radar photographs and a video recording of the LATCC radars at 1831:50 show the BAC 1-11 as it positions downwind for RW 23 about 8 NM NNW of Stansted. At 1833:32 the ac is turning base leg 11.5 NM NNE of the airfield and descending through 4100 ft Mode C; the base of CAS in this part of the Stansted CTA is 1500 ft (QNH). At the same time a primary return, believed to be the Jungmann, appears 8.8 NM NE of Stansted moving slowly NW; at this point it is about 1.75 NM SE of the 23 extended approach track and tracking tangentially to the Stansted CTZ boundary

which is an arc of 8 NM radius measured from the centre of the airfield. The BAC 1-11 closes onto the ILS localiser and at 1834:45 is 8.3 NM from touchdown indicating 1900 ft Mode C (equivalent to 1951 ft on QNH 1016); the ac then diverges slightly to the S of the localiser as the primary return passes about 800 m ahead of it. At 1835:13 the BAC 1-11 passes about 1 NM behind the primary return which at this point is crossing the RW 23 extended line at a range of 7.5 NM from touchdown (0.3 NM outside the CTZ boundary). Following the Airprox the primary return continues on a northwesterly track remaining almost coincidental with the CTZ boundary line.

JAS Note (2): In a later telephone conversation the Stansted Final Director confirmed that on his radar video map, the unknown return was tracking tangentially to the Stansted CTZ 8 NM boundary line and appeared to him to be outside it, albeit only marginally. In such circumstances returns were assumed to be clear of the CTA 1500 ft base; therefore traffic information was not required to be passed.

## **PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS**

Information available to the Working Group included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, a radar video recording, a report from the air traffic controller involved, and a report from the appropriate ATC authority.

Members agreed that, notwithstanding that Stansted operating procedures did not require

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: Confliction on the boundary of controlled airspace.

the provision of traffic information on returns outside the zone, given the unknown traffic's very close proximity to CAS in this incident, it would have been helpful had the controller done so.

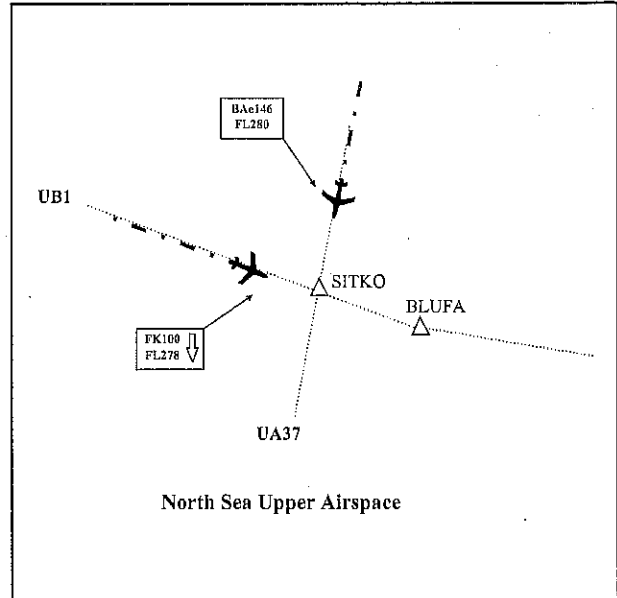
It was pointed out that the level of the BAC 1-11, as indicated by Mode C on the radar recording, was 1951 ft (QNH) and that the Jungmann pilot's maximum estimate of vertical separation was 400 ft; technically, and by his own admission, the Jungmann's altitude could therefore have been in the region of 1551 ft and above the CTA base. However, given the accuracy tolerances of Mode C and the difficulties of estimating vertical separation, it was not clear to what extent, if any, he might have compromised CAS. Nonetheless, the Group was unanimously critical of his decision to fly at 1500 ft coincident with the base of the CTA and while tracking so close to the CTZ eastern boundary. Members felt that this was all the more surprising given the pilot's professed familiarity with the area and his knowledge of the instrument procedures at Stansted.

The Group concluded that the Airprox was the result of a confliction near the boundary of controlled airspace. With regard to risk, members understood the BAC 1-11 pilot's concern at seeing a light ac in closer proximity than he would normally expect. However, they were satisfied that the Jungmann pilot was always in a position to avoid the BAC 1-11, and that sufficient lateral and vertical separation existed to preclude the possibility of a collision.

## AIRPROX REPORT 8c/98

### Occ No. 98/02201

*Date:* 5 May 1998  
*Time:* 0730 UTC  
*Aircraft:* FK100/BAe146  
*Operators:* British Airline/Foreign Airline  
*Position:* SITKO  
*ALT/HT/FL:* FL280  
*Airspace Type:* Upper ATS Route UAR  
UA37 – Class B  
*Reporter:* LATCC Area Control - North  
Sea BEENO Sector  
Controller  
*Reported Separation:* 2.5nm horizontal/400 feet  
vertical  
*Recorded Separation:* 1.59nm horizontal/400 feet  
vertical



BAe146 in its left 10 o'clock position range 10nm and crossing left to right at FL280.

### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the LATCC Area Control (AC) BEENO Sector controller (SC); the North Sea sector having been split. The BAe146 was inbound to London City Airport from Gothenburg and was level at FL280 on Upper ATS Route (UAR) UA37. The FK100 was enroute from Newcastle to Amsterdam and was in descent from FL290 to FL230 on UAR UB1.

At 0711.50, the BAe146 pilot contacted the BEENO SC reporting level at FL280. The controller acknowledged this call with a request for an SSR Ident Squawk and followed it with notification of the Standard Arrival Route (STAR) to be flown for London City. At 0726, the FK100 pilot contacted the BEENO SC reporting level at FL290. The controller responded with, "(callsign) roger descend when ready Flight Level two three zero level by BLUFA".

The two aircraft were now on crossing tracks with the FK100 cleared to descend through the level of the BAe146. Radar pictures show that the FK100 pilot did not commence his descent until shortly before 0730 when he had approximately 25nm to run to BLUFA. The radar picture timed at 0730.07 shows the FK100 in descent passing FL288 with the

The two aircraft continued to converge until the controller became aware of the conflict when he received a Short Term Conflict Alert (STCA). The controller responded to the STCA by trying to give avoiding action to the FK100 pilot, however another aircraft was at that time attempting to make contact on the frequency and the controller tried to transmit over this aircraft. In his transmission, the controller used an incorrect callsign consisting of the FK100 company name, another company name and a combination of the numerals from the FK100 and another aircraft. At 0730.25 he transmitted, "(incorrect callsign) turn right turn right immediately one five degrees please", but received no reply. He then tried again this time with the correct company callsign but the same incorrect numerals as before, "(incorrect callsign) avoiding action turn right one five degrees", and again he received no reply. Finally, he received a response to a transmission and initially he used the same incorrect callsign as before but which he corrected midway through the message, "... (incorrect callsign) ... (correct callsign) ... expedite descent through flight level two seven zero". The FK100 pilot acknowledged this at 0730.40. The radar picture timed at 0730.38 shows the FK100

passing FL278 with the BAe146 still in its left 10 o'clock position, range now 4.3nm and crossing left to right at FL280.

At 0730.45, the controller again transmitted over the same aircraft as before, which was trying to make initial contact. This time he called the BAe146 pilot with the instruction, "*(callsign) turn left one zero degrees*", but received no acknowledgement. At 0731, the controller called the FK100 pilot but stopped in mid transmission "*(callsign) exped....*". The pilot replied, "*(callsign)er you're breaking up*". The controller then replied to that, "*(callsign) my apologies er contact Amsterdam now one two three decimal seven*". Before leaving the frequency the FK100 pilot reported, "*(callsign) we were visual with the traffic crossing above*". The controller then asked the pilot if he wished to file a report, to which he replied, "*negative*". The radar picture timed at 0731.10 shows the radar returns of the two aircraft having merged, but with the FK100 now more than 1200 feet below the BAe146. No further relevant transmissions are made to the BAe146 pilot.

The controller described his workload as light to medium. When he passed descent clearance to the FK100 pilot he was aware of the presence of the BAe146 but believed that the FK100 would pass ahead with no loss of lateral separation, although he intended to monitor the situation. He had believed that the BAe146 was in fact a turbo prop aircraft and that therefore it was faster than he had expected. With hindsight he agreed that he should have cleared the FK100 to descend "*now*" rather than "*when ready*". He also stated that the heading instructions passed to both aircraft would not have been effective in controlling the situation, even if they had been acted upon straight away.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

The Panel was aware that the BEENO SC, due to other ATC commitments, had for some time only been able to spend some 25 percent of his time operating solo on the three sectors for which he held validations. Whilst members agreed that this is not a desirable state of affairs, they could not make any direct connection between it and the circumstances of this AIRPROX. It would seem that, in straightforward circumstances, and fairly light workload, the controller's

The FK100 pilot reported that, whilst in descent, he heard requests to other aircraft with similar callsigns to take avoiding action and that he was then requested to expedite descent, which he complied with. He stated that from the transmissions heard he had felt that a conflict may have been detected by the controller and whilst maintaining a good lookout in VMC he sighted another aircraft at approximately 10 o'clock range 3nm. This aircraft, which he identified as a BAe146, passed about 1000 feet above.

The pilot of the BAe146 reported sighting the FK100 at a range of about 6nm but that no avoiding action was required. He assessed that there was no risk.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the LATCC BEENO Sector controller who did not ensure that prescribed lateral separation was maintained when clearing the pilot of the FK100 to descend through the level of the BAe146.

It was considered that the remedial action taken by the Sector controller was not effective in resolving the confliction even taking into account the callsign confusion aspects of the incident.

Although the remedial action taken by the controller was hampered on two occasions by part simultaneous transmissions, it is considered that the use of an anti blocking device would not have been of benefit as in each case an aircraft had already started to transmit before the controller attempted to contact another flight.

technique and judgement had been at fault and that he then became flustered as the situation deteriorated.

The Panel disagreed that an anti-blocking device would have been of no benefit in this case. From their understanding of such a system the controller would have been able to detect that another aircraft was transmitting and, therefore, ensure that he repeated his instruction when the frequency became clear.

2 Causal Factors The BEENO SC did not maintain prescribed separation between the FK100 and the BAe146.

3 Risk Classification C

4 Recommendations The Panel had no recommendations to make.

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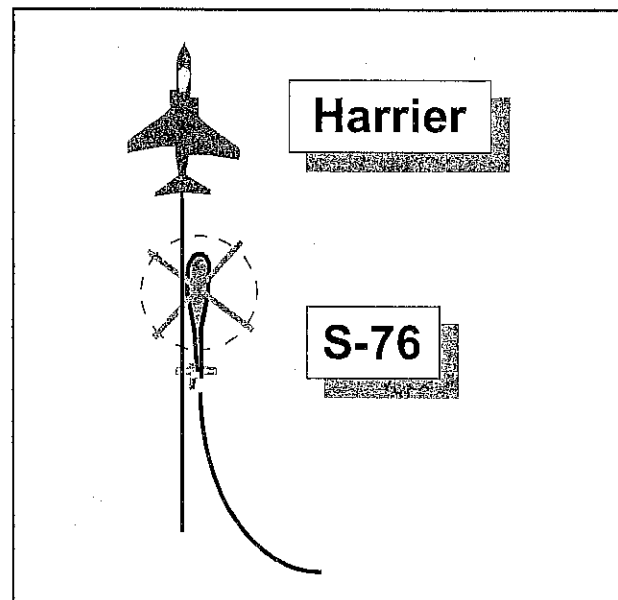
#### AIRPROX (P) REPORT No 46/98

Date/Time: 06 May 1436  
Position: N5239 E0142 (1 NM NW of N Denes - elev 6 ft)  
Airspace: ATZ/FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: S76 Harrier  
Operator: CAT HQ STC  
Alt/FL: 1000 ft ↑ 2450 ft  
(RPS 993 mb) (Rad Alt)  
Weather VMC CAVK VMC CLBC  
Visibility: 14 NM+ 40 km

#### PART A: SUMMARY OF INFORMATION REPORTED TO JAS

**THE S76 PILOT** reports heading 350° at 80 kt during initial climb-out from N Denes. Anglia Radar had just cleared him to FL 50 when N Denes advised him of a fast jet approaching his overhead. He was passing 800 ft at the time, climbing at 2000 ft/min and levelled at 1000 ft. About 10 seconds later a Harrier passed 500-1000 ft directly overhead. Although the risk of collision was low, the jet had not been seen by Anglia and if N Denes had not warned him so that he could stop his climb, it would have been very close indeed.

**THE HARRIER PILOT** reports heading 360° at 330 kt and maintaining 2500 ft on the Coltishall



QFE; he was receiving a RIS from Coltishall having pulled up from low level for a practice diversion, simulating a birdstrike. He was squawking with Mode C. He was looking for a contact inbound to N Denes called to him by Coltishall but did not see any helicopter traffic and was unaware of any incident until advised after landing. His HUD video/RT recording confirmed his height and track at 2500 ft over N Denes.

**THE N DENES ADC/APC** reports that as the S76 was turning onto N during its departure, he saw a Harrier about 1 NM SW of the airfield,

tracking N at about 1000-1500 ft and inside the ATZ. He passed traffic information to the S76 pilot who could not see it. The Harrier was not on frequency.

**ANGLIA RADAR** reports that the Harrier was not seen on radar until after the event when a primary return was seen and Coltishall confirmed that the ac was not squawking. The S76 made a standard call departing N Denes and the trainee controller asked the pilot to squawk ident, moving the labels of one overflyer and another helicopter inbound to N Denes so that he could see it. The ident squawk was seen with no other traffic in the vicinity and the ac was cleared to climb. After a pause the pilot advised that he had been overflown by a Harrier 500 ft above and would file an Airprox. A primary return was then seen N of the S76; this was the first time the controller saw it.

JAS Note (1): The Harrier's mission recording shows the ac pulling up to 2500 ft and turning onto N to the SW of Gt Yarmouth where the pilot calls Coltishall for a PD. The pilot is given the Coltishall QFE (999 mb) and sets it at 1435:38 (Z). The pilot is asked to squawk 1736 which he acknowledges and is later advised that no squawk is observed. He requests a RIS and is advised of rotary traffic 1000 ft below. He crosses the N Denes ATZ at a height of 2460-80 ft above Coltishall (whose elevation is 60 ft greater than N Denes') and passes 1.2 NM W of N Denes airfield at 1436:15. The pilot then accepts Coltishall's offer of a PAR for controller training and is invited to descend to 1500 ft at 1436:26 as the ac reaches the N edge of the ATZ. When clear of it, the Harrier descends and passes 2000 ft overhead Hemsby, some 2 NM N of the ATZ. There is no sign of any other ac on this part of the recording. A recording of LATCC radars shows a primary-only return following the Harrier's low level route and turning N to cross N Denes at 1436:15. It crosses a 0255 squawk (the helicopter inbound to N Denes), and the 0254 squawk of the reporting S76 at 1436:31 while the latter shows temporarily level at 1200 ft Mode C. This equates to 820 ft on the Harrier's QFE. There is one other return, climbing through FL 110 and

tracking ESE, which crosses 1 NM S of N Denes while the Harrier passes the Airprox position.

JAS Note (2): UK AIP AD3-1-3 defines the N Denes ATZ as a 2 NM radius around the centre of RW 10/28 up to 2000 ft aal. It was active at the time of the Airprox.

HQ MATO also investigated the incident. Their report confirms much of the foregoing detail. In particular it confirms that Coltishall Approach (APP) identified the Harrier, applied a RIS at the pilot's request and instructed the pilot to fly at 2500 ft on the Coltishall QFE (999 mb). APP immediately passed traffic information to the Harrier pilot on traffic observed in the vicinity of North Denes, "*traffic 12 o'clock 5 miles crossing left-right rotary indicating 1000*". APP observed the S76, squawking 0254 and indicating 1100 ft Mode C (1013 mb) and instructed the Harrier pilot to descend to 1500 ft QFE as his ac passed the S76. At this point, both ac were passing the ATZ boundary.

As the Harrier pilot had declared a practice emergency, APP was endeavouring to provide as expeditious a recovery as feasible. Although APP passed traffic information to the Harrier pilot, it apparently referred to the helicopter inbound to North Denes squawking 0255 and not the subject S76. However, the S76 was subsequently displayed departing North Denes and was seen by APP who may have believed it was the same ac. The instruction for the Harrier pilot to descend from 2500 ft QFE was not given until the Harrier was overhead the S76, 2 NM N of North Denes. The timings on the Coltishall tape transcript correspond with those on the Harrier's on-board Head-Up Display (HUD) video recording and APP advised the Harrier pilot to "descend report level 1500 ft" at 1436:26. The HUD video shows that the Harrier pilot commenced his descent within a few seconds and passed 2000 ft QFE at 1436:55. The Harrier did not, therefore, infringe the North Denes ATZ. However, APP might have been well advised to identify the Harrier to Anglia Radar.

**HQ STC** comments that it is notoriously difficult to assess ac altitude visually from the ground and in this case the N Denes controller was slightly mistaken in his assessment. However, he should be commended for his vigilance in visually monitoring his area of responsibility and acting accordingly when he assessed that a confliction was likely. In this instance the Harrier did not infringe the N Denes ATZ and there was no risk of collision. PART B:

### SUMMARY OF THE WORKING GROUP'S DISCUSSIONS

Information available to the Working Group included reports from the pilots of both ac, recordings of the relevant RT frequencies, radar and HUD video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Group discussed whether or not the Anglia Radar controller should have seen the Harrier's radar return and delayed the S76's climb. The Harrier's primary-only return is clearly seen approaching from the S before the incident, and is traffic to the arriving helicopter which is wearing an Anglia squawk but which by then may have left Anglia's frequency. Therefore prior to the reporting S76's call, there may have been no reason for the Anglia controller to have been paying attention to the N Denes area. The Group was briefed that at the moment the S76 pilot calls, the Cromer radar recording shows the arriving and departing helicopter squawks superimposed, with the Harrier's return entering the merge of these tracks and its trail dots extending to the S. The departing S76 squawks ident in response to Anglia's request as the arriving helicopter's return goes off the screen leaving what looks like an Anglia squawk northbound with a long trail behind it. While to an experienced controller, the spacing of the

trail would have indicated it was not a helicopter, the controller was U/T and his picture may have been complicated by the label of the high level traffic passing to the S. Immediately after that, during the period the controller was confirming the identity of the S76 and clearing it to climb, the Harrier's returns overlaid the helicopter's, and thus the spacing and the existence of 2 returns, was not apparent again until the Harrier drew well ahead of the S76 after the incident. Members could only conclude that had the Harrier's SSR been working, the task of the controllers would have been greatly eased and the outcome would doubtless have been different.

Similarly, the timing of the Harrier pilot's call to Coltishall, and the delay in identifying it due to its lack of SSR, meant that there was little opportunity before the event for Coltishall either to have turned the Harrier away from the N Denes overhead or to have advised Anglia of its presence. Members agreed that these actions would have been desirable in an ideal situation, but that since the Harrier was, and was known to be, 500 ft above the ATZ, they were not essential.

Members initially considered that the cause of the incident was a confliction of flightpaths which was resolved by the S76 pilot with the timely assistance of the N Denes controller. However, the view eventually prevailed that the ac were in fact never in confliction and would not have been even if the helicopter had continued climbing. The Group ultimately concluded that the incident was a sighting report with no risk of collision. Members nevertheless endorsed HQ STC's commendation of the N Denes controller's actions in spotting the Harrier and passing a warning.

### PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: Sighting report.



**AIRPROX (P) REPORT No 47/98**

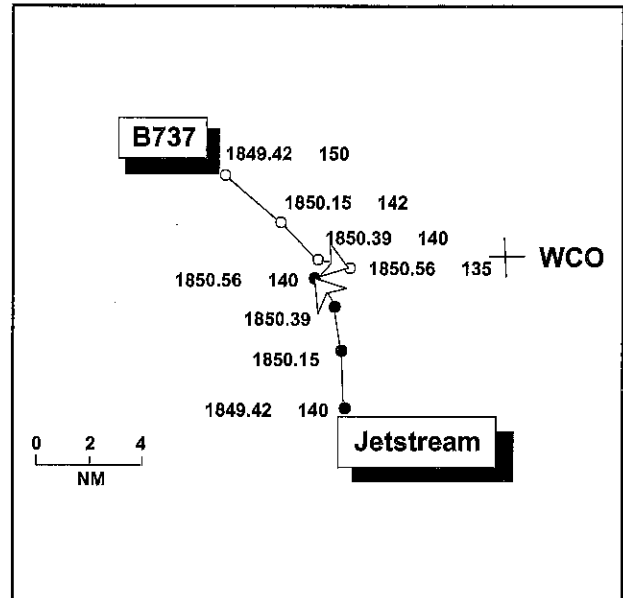
Date/Time: 10 May 1850 (Sunday)  
Position: N5151 W0109 (7 NM W WCO)  
Airspace: LTMA (Class: A)  
Reporting Aircraft    Reporting Aircraft  
Type: B737                      Jetstream  
Operator: CAT                      CAT  
Alt/FL: ↓ FL 140                      FL 140  
Weather VMC                      VMC  
Visibility: 25 km                      >10 km

**BOTH PILOTS FILED**

**PART A: SUMMARY OF INFORMATION REPORTED TO JAS**

**THE B737 PILOT** reports that he was on a radar heading of 130° at 280 kt and descending to FL 140 under the control of LATCC on 119-775. He was squawking 5152. The visibility was 25 km in VMC. When 22 NM N of BNN at FL 140, ATC instructed him to *“turn left 080° descend to FL 130 avoiding action”*. He complied and the other ac was seen heading in the opposite direction at the same level 1 to 2 NM away on his starboard side. He felt that the safety of his ac had been compromised albeit he believed there was a low risk of collision. The pilot advocates the fitting of TCAS to all ac as soon as possible; in his opinion had his ac been so equipped, the incident would have been avoided.

**THE JETSTREAM PILOT** reports that he was heading 355° at 230 kt and cruising at FL 140 under the control of LATCC on 133-07. The visibility was over 10 km in VMC. He was squawking 6252. ATC instructed him to turn L immediately onto 290°, indicating that this was avoiding action. He complied and the other ac was then seen as it turned L through a southeasterly heading about 1 NM ahead of him at the same level. The avoiding turn kept him clear of the traffic; he believed the other pilot had seen him and was already taking avoiding action. He considered there had been a medium to high risk of collision.



**ATSI** reports that the TC NW sector was banded at the time of the incident; the controller concerned was therefore carrying out both the NW DEPS and BNN functions. He described his workload as reducing from moderate to light as the incident occurred.

The Jetstream pilot contacted the NW sector at 1845, reporting at FL 100 heading towards NORRY. He was instructed to continue on the heading (355°) and to climb to FL 140, the standing agreed level for transfer to the Cowley sector. The SC stated that he intended transferring the flight to the next sector before it levelled off but before he could do this, the pilot reported reaching FL 140 at 1848. It was then transferred, on the radar heading, to the Cowley Sector. Shortly afterwards, the B737 pilot contacted the NW Sector on transfer from the Cowley Sector; he reported heading 140° and passing FL 180 for FL 150, the standing agreed level for transfer from the Cowley to the NW Sector, and about one minute later, he reported levelling at FL 150. The SC said that he checked his FPS and radar display and, not noticing the potential conflict with the Jetstream, cleared the B737 to descend to FL 140, a level just vacated by a preceding Heathrow inbound. At this time the subject ac were on conflicting tracks about 15 NM apart.

The SC explained that it would have been standard practice for the FPS on the Jetstream, once the ac had been transferred, to be placed under the BNN designator to highlight any potential conflicts with Heathrow inbounds via BNN. On this occasion he had inadvertently discarded the Jetstream's FPS, presumably whilst clearing other "dead" strips from his board, thereby removing the ability to recognise the conflict from the strip display. He could offer no explanation why he had not seen the Jetstream on the radar display or why he had not remembered its presence having transferred it to the Cowley Sector only about one minute previously. The realisation of a conflict between the 2 ac was not triggered even when the B737 pilot reported level at FL 140 at 1850. At around this time another controller plugged into the position prior to taking over the sector. He said that whilst scanning the radar display during the handover, he noticed the subject ac both at FL 140. He immediately advised his colleague who gave the B737 an avoiding action L turn onto heading of 080° followed by a warning to the pilot of traffic in his twelve o'clock at the same level. A radar photograph at 1850:23 shows the 2 ac about 5 NM apart, the B737 being 100 ft higher. Having received an acknowledgement from the pilot, the SC instructed the B737 pilot to descend immediately to FL 130 and shortly afterwards he reported having passed the traffic. The Cowley SC, who was not interviewed, stated in his report that he had observed the B737 at FL 140, 2 NM head on to the Jetstream. He immediately gave the latter flight an avoiding action L turn heading 290° and passed traffic information; the pilot reported the other ac in sight.

The instructions to both pilots, which were passed without consultation between the controllers involved, ensured that both ac were turning as they passed within 1 NM of each other. The NW SC said that the STCA activated at about the same time as the oncoming SC warned him of the conflict. He commented that he only received a high severity alert. Surprisingly, in his opinion, a low severity alert, which would have shown the problem earlier, had not activated. The operation of STCA

during this incident is being investigated by the appropriate department within National Air Traffic Services.

JAS Note: Pictures of the LATCC radar show the subject ac as they converge on a point about 7 NM WSW of WCO, the B737 heading SE and the Jetstream heading N. At 1849:12, the ac are on conflicting tracks about 10 NM apart with the B737 descending through FL 150 in the Jetstream's 1030 position. At 1850:39 the ac are head on just under 2 NM apart and both indicating FL 140. Both then immediately commence L turns and at about 1850:47, pass each other starboard to starboard by about 1 NM; by this time the B737 is in the order of 200 to 300 ft below the Jetstream.

#### **PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS**

Information available to the Working Group included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, and a report from the appropriate ATC authority.

The ATSI adviser said that the Airprox occurred because the LATCC TC NW SC overlooked the presence of the Jetstream when clearing the B737 to descend to the same level; the Group quickly concurred with this assessment. The adviser believed that the inadvertent removal of the Jetstream's FPS by the SC when discarding "dead" strips was the main contributory factor to this error. The clearing up of "dead wood" after a busy session is a necessary action; however, and as acknowledged by the SC, care should always be exercised not to discard active strips as their presence on the display board is an essential reminder to the controller of potential conflicts. The Group noted that clearing of "dead" strips had apparently taken place in preparation for handover and discussed whether the SC had fallen prey to some degree to a lessening of concentration as workload reduced and end of shift approached. It seemed to some members that this recognised and understandable "danger" time might well have been a factor in this case.

The Group commended the oncoming TC controller for quickly spotting the confliction and alerting his colleagues to the developing situation; they also commended both the TC NW and Cowley SC's for their prompt and correct avoiding instructions once the confliction was recognised. With reference to phraseology, the ATSI adviser pointed out that when giving avoiding instructions, the words "avoiding action" should precede the message in order to impart the necessary sense of urgency to the pilot. An ATCO member said that while this was indeed the requirement of the MATS Pt 1, he felt it might sometimes be prudent to give executive instructions first followed immediately by the words "avoiding action"; he believed that, provided that the controller's voice intonation imparted the necessary urgency of the instruction, this would trigger the pilot to commence an immediate change of heading/level. The Group understood this point but accepted the ideal and unequivocal requirement of the MATS Pt 1.

Members were concerned that in this incident the STCA had apparently failed to alert the controller to the developing confliction. The ATM P & D adviser explained that in such a dynamic ATC environment, the use of filters within the STCA system was necessary to minimise nuisance alerts. In this case, the

initial high rate of descent of the B737 was such that the system detected that vertical separation would be established before lateral separation was compromised; as the input criteria were therefore outside the parameters of the equipment, no alert was signalled. However, in the moments leading up to the confliction, the B737's rate of descent decreased markedly and suddenly; this change in flight profiles immediately brought the ac within the operative parameters of the STCA which, because of the now very close proximity of the ac, skipped the low severity alert stage and went straight to red. The adviser said that in the light of this incident, NATS was re-examining the filter parameters of the STCA in order to minimise the possibility of similar circumstances occurring again. The Group also noted the B737 pilot's comments about the fitting of TCAS and were reminded that the equipment was to be mandated for such ac in Europe with effect from 1 January 2000.

Turning to risk, members agreed that this was potentially a very serious incident. However, due to the alertness of the oncoming TC NW SC which enabled timely avoiding action instructions to be given to both ac, members agreed that the lateral separation achieved was sufficient to preclude the possibility of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: The TC NW SC cleared the B737 to descend to a level already occupied by the Jetstream.

## AIRPROX (P) REPORT No 48/98

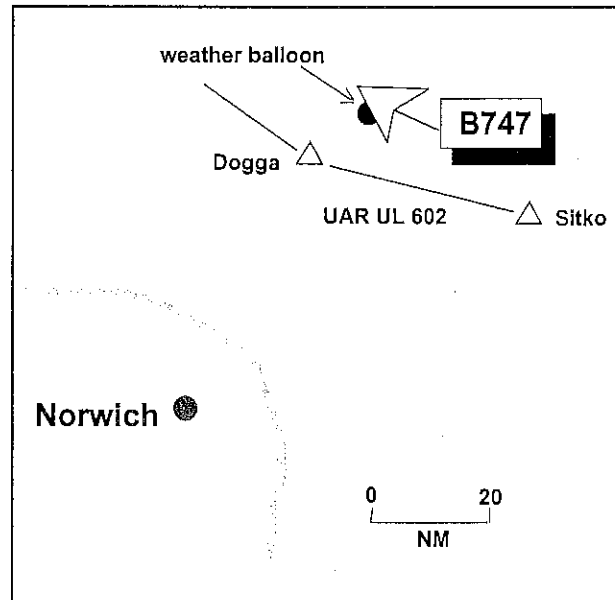
Date/Time: 10 May 0643 (Sunday)  
Position: N5336 E0212 (65 NM NE Norwich)  
Airspace: UAR UL 602 (Class: B)  
Reporting Aircraft Reported Aircraft  
Type: B747 Weather balloon  
Operator: CAT  
Alt/FL: FL 282 ↑  
Weather VMC  
Visibility:

### PART A: SUMMARY OF INFORMATION REPORTED TO JAS

THE B747 PILOT reports that he was climbing through FL 282 in VMC on UAR UL 602 about 15 NM NE of DOGGA, having departed from Amsterdam for Montreal. An object believed to be a weather balloon was seen to pass about 500 ft below his port wing; he was not able to take avoiding action due to the late sighting. He reported an Airprox to Scottish on being transferred to their frequency. The pilot does not give an assessment of risk.

JAS Note (1): JAS was later advised by the B747's operating company that the pilot could not remember any significant details of the balloon as he had only a fleeting glimpse of it as it went by. However, he did recall that it seemed to be under-inflated.

JAS Note (2): Enquiries by AIS (Mil) revealed that weather balloons are launched at regular intervals from Hemsby on the Norfolk coast up to the 20 mb level (in the region of 80,000 to 100,000 ft) where they automatically deflate and return to earth by parachute. On 10th May a launch took place at 0545 and, while such balloons no longer carry radar reflectors for tracking purposes, it has been calculated that, with the upper winds reported at the time (south-westerly at about 25 kt), the balloon in question would have completed its task and been descending into the Airprox area at about the reported time. Given the pilot's description of the object he saw having a deflated appearance, it seems probable that it was the descending weather balloon from Hemsby.



JAS Note (3): Pictures of the LATCC radar at 0643 show the B747 climbing through FL 282 and tracking west about 10 NM NE of DOGGA, slightly N of the centreline of UAR UL 602.

### PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS

Information available to the Working Group included a report from the pilot of the B747 and a radar video recording.

An airline member said that in his experience it was extremely difficult to judge one's distance from objects such as balloons because they could vary enormously in size and there was usually nothing available by way of reference with which to compare them in the air. He commended AIS(Mil) for their efficient tracing action; the Group concurred and accepted the premise that the object seen by the B747 crew was most likely the descending weather balloon. Members concluded that the Airprox was the result of the conflicting flight paths of the B747 and the balloon in the Class B airspace of the upper air routes.

While noting that the B747 pilot had not been able to take avoiding action due to his late sighting of the balloon, members were satisfied

that it had passed sufficiently far below the ac to ensure that there had not been a risk of collision.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: Confliction in Class B airspace

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### **AIRPROX (P) REPORT No 49/98**

Date/Time: 15 May 1100

Position: N5357 W0109 (1 NM E Rufforth - elev 65 ft)

Airspace: FIR (Class: G)  
Reporting Aircraft Reporting Aircraft

Type: K7M Glider Robin 2160

Operator: Civ Club Civ Club

Alt/FL: 2000 ft 2000 ft ↓  
(QFE) (QNH 1023 mb)

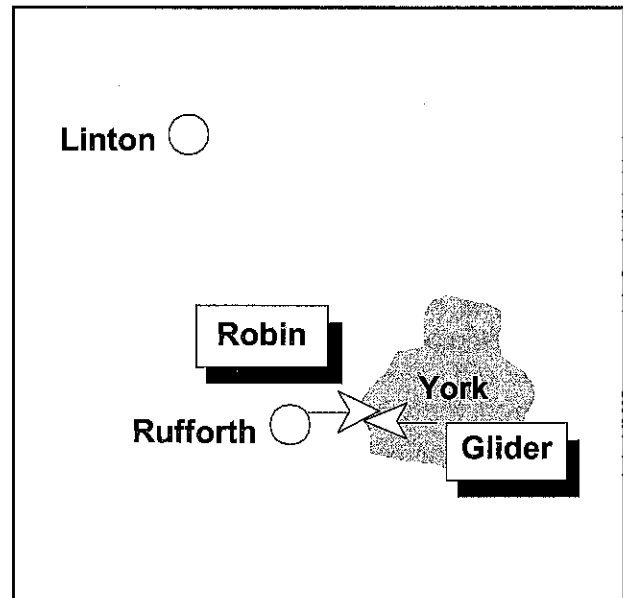
Weather: VMC CAVOK VMC CAVOK

Visibility: 8 km >15 km

**BOTH PILOTS FILED**

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE GLIDER PILOT** reports that he was heading W at 45 kt at 2000 ft (Rufforth QFE) 1 NM E of Rufforth airfield. There was no cloud and the visibility was 8 km. He was in contact with Rufforth ground on 129-975. He first saw the other ac, a single engined low wing type with a fixed tricycle undercarriage, as it passed him on a reciprocal heading to his R 50 ft away and 25 ft above. He was unable to take avoiding action due to the late sighting and believed the risk of collision had been very high. As the ac had approached from the opposite direction at a similar level, he believes his view of it would have been obscured by his front seat air experience passenger's head. Subsequently, he discovered that his passenger had seen the other ac before he had



but said nothing. He reported an Airprox to Linton ATC by telephone.

**THE ROBIN 2160 PILOT** reports that he was on a local flight from Sherburn-in-Elmet and descending through 2000 ft (QNH 1023) on a heading of 090° at 105 kt on the W side of York. The visibility was over 15 km in VMC. He was receiving a FIS from Linton on 129-15 and squawking with Mode C selected. Linton ATC had advised him of general gliding activity at Rufforth and he and his passenger were looking out for this. He had previously seen the Rufforth tug ac descending back into its circuit and was counting gliders on the ground as well as scanning for those airborne. However, despite this lookout the other ac, a red/white 2 seat mid-wing glider, appeared at his one o'clock on a reciprocal track about 100 ft below.

There was no time for avoiding action and it passed about 50 ft away down his starboard side with a high risk of collision. He believed the glider had been in his blind spot below the nose of his ac. He reported an Airprox to AIS (Mil) by telephone.

Note: A replay of the Claxby radar at 1055 shows a return at the Airprox position tracking E at 1800 ft Mode C (equivalent to 2070 ft on QNH 1023). No other primary returns can be seen at this time; however, at 1057 a slow moving return, believed to be the glider, appears on a westerly heading a short distance in trail of the Robin.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, and a radar video recording.

Advice from the gliding specialist revealed that forward lookout from the K7's cabin was

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: A

Cause: A late sighting by both pilots.

restricted due to the cockpit configuration. The Board noted that whereas air experience passengers should occupy the rear seat, (to avoid inhibiting the pilot's forward visibility), it was accepted that a pilot under instruction would normally take the front seat. In either circumstance the importance of briefing passengers to report the presence of other ac to the captain was emphasised. A GA member thought pilots with local knowledge of Rufforth and its gliding activities should be urged to avoid the area whenever possible.

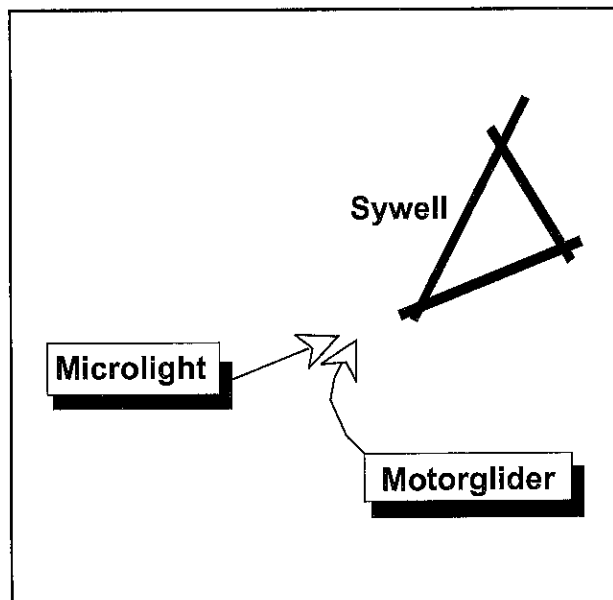
Notwithstanding the good flying conditions reported by both pilots, neither saw the other until very late and the Board concluded that this was the cause of the Airprox. With regard to risk, members noted that, owing to their very late sightings, neither pilot was able to take avoiding action and both reported a high risk factor in the encounter. The Board agreed that under these circumstances the ac had avoided colliding only by chance; it was therefore concluded that there had been an actual risk of collision.

**AIRPROX (P) REPORT No 51/98**

Date/Time: 171415 May (Sunday)  
Position: N5218 W0048 (Sywell airfield - elev 429 ft)  
Airspace: ATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Microlight Motorglider  
Operator: Civ Trg Civ Pte  
Alt/FL: 300 ft 700 ft ↓  
(QFE 1013 mb) (QFE)  
Weather VMC VMC  
Visibility: 35 km 25 NM

**PART A: SUMMARY OF INFORMATION REPORTED TO JAS**

**THE MICROLIGHT PILOT** reports heading 070° at 52 kt and descending through 300 ft while on finals for RW 07 at Sywell with whom he was in contact on 122.7. The visibility was 35 km in VMC. The airfield was busy with several ac carrying out RH circuits and he was the first of 3 on final approach, No 2 being a C172 and No 3 a Yak 52. He had called "finals to land" at 0.75 NM and received a "land at your discretion" response which he acknowledged. During the final stages of the approach he heard another pilot report seeing "a glider in the circuit". The motorglider then appeared out of the blind spot at his 3 o'clock position about 400 m away and slightly above tracking directly towards him. At this point he was in the very late stages of the descent at a height of about 300 ft and the ac was being flown by a student pilot on a training exercise. On seeing the motorglider he took control of the ac from the student, applied full power and raised the nose to the climbing attitude. The motorglider then passed some 50 ft below him from R to L and 20 m away. He assessed the risk of collision as very high and believed that without his avoiding action, there would have been an almost definite collision. Once the immediate danger had passed, he made a go-around call to Sywell and this was followed by similar calls from the 2 following ac. The only radio call made by the motorglider pilot was on initial contact when 13 NM out tracking in from Hinton-in-the-Hedges. Following its



unannounced arrival on a very tight R base, it then landed on RW 07 and taxied clear. He reported an Airprox to Sywell on 122.7 and confirmed it later by telephone.

**THE MOTORGLIDER PILOT** reports that he was on a flight from Hinton to Sywell in VMC; it was a clear day with visibility of at least 25 NM. Radio and visual contact dictated a RH circuit at Sywell. As he turned onto base leg, he heard an ac call for a straight in approach for long finals for RW 07 and at that time became aware of a flex-wing ac well below him which was on the threshold of RW 07 on what seemed to him to be a LH circuit. As he came onto finals at about 700 ft and 60 kt, there was in his opinion more than adequate separation both from the flex-wing and from the incoming ac which he could see behind his motorglider. He assumed that the flex-wing was landing on RW 07 and was surprised when it did not, instead carrying out what he presumed was a practice go-around. Having had previous experience of flex-wing ac, he was fully aware of their capabilities and could see no problems with the situation he described. He assessed that there was no risk of collision.

**THE SYWELL AIRPORT MANAGER AND DUTY FISO ON THE DAY** submitted a joint report. The airport manager was on duty in the TWR with the FISO and both were very busy

with local, circuit and transit traffic on frequency. The reported motorglider called for joining instructions at 1358 reporting his position as some 15 NM SW of Sywell, outbound from Hinton-in-the-Hedges. Aerodrome information was passed and acknowledged. No further transmissions were received from this ac despite several calls from the FISO in an effort to establish contact.

At 1415 there were 3 ac, at normal separation, on final approach to RW 07 and a RH circuit was in operation. The leading ac was the reporting microlight who had reported "final to land". At this moment an unidentified voice from another ac in the circuit called "Glider on a low R base". The Airport Manager looked up and saw the ac which he initially took to be a glider, but which subsequently proved to be the motorglider, turning onto final approach for RW 07, apparently below and he believed just ahead of the microlight. The motorglider landed at 1416 and the microlight elected to go around from a very late stage on his approach due to the RW being occupied by the motorglider. The second ac on finals also elected to go around. Despite RT calls made to the motorglider before and after landing, no replies or acknowledgement were received. When booking in, the motorglider pilot offered no explanation for his lack of radio contact and seemed unaware of "cutting in" on other traffic. Satisfactory two-way communication was established with him prior to his departure at 1515.

Due to the position of the Control Tower relative to the RW and approaching traffic, it was difficult to estimate the vertical and horizontal separation between the microlight and the motorglider at their closest proximity. However, in their opinion it was considerably less than would normally be expected. None of the pilots made any formal report or complaint at the time but the following day the microlight pilot asked for an Airprox report form.

JAS Note: Sywell has a notified ATZ of 2 NM radius active up to 2000 ft above aerodrome level from 0800 to 1700 in Summer.

## **PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS**

Information available to the Working Group included reports from the pilots of both ac, and a report from the Aerodrome operators involved.

A GA member, familiar with Sywell, said that it was often an extremely busy airfield. In his experience it was invariably necessary to enter the circuit pattern following a standard overhead join rather than position on a direct approach into the circuit. In his opinion the motorglider pilot, albeit having received initial aerodrome information from Sywell at 15 NM which effectively gave notice of his intention to enter the ATZ to land, did not subsequently integrate himself appropriately into the circuit. Despite repeated attempts to contact him nothing further was heard until he appeared on a tight base leg position for RW 07; in this context members noted the airport manager's comments that no difficulty was experienced in communicating with the pilot on RT when he departed later that afternoon.

The group had some difficulty understanding the actions of the motorglider pilot. In their opinion, he would have had plenty of time at his slow ground speed to assimilate the airfield circuit state by intelligent monitoring of the air/ground frequency as he tracked in. In the event, he arrived in the circuit virtually unannounced and, members believed, misjudged his position with respect to the microlight which was in the late stages of final approach and at a much lower relative speed. The Group concluded that the motorglider pilot's inappropriate integration with the circuit traffic pattern was the cause of the Airprox.

The Group took note of the microlight pilot's assessment of separation distances, the supporting evidence of the Airport Manager and Duty FISO, and the vulnerable stage of the microlight's flight, and concluded that there had been a possible risk of collision.



## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: B

Cause: The motorglider pilot did not integrate himself into the established circuit traffic pattern.

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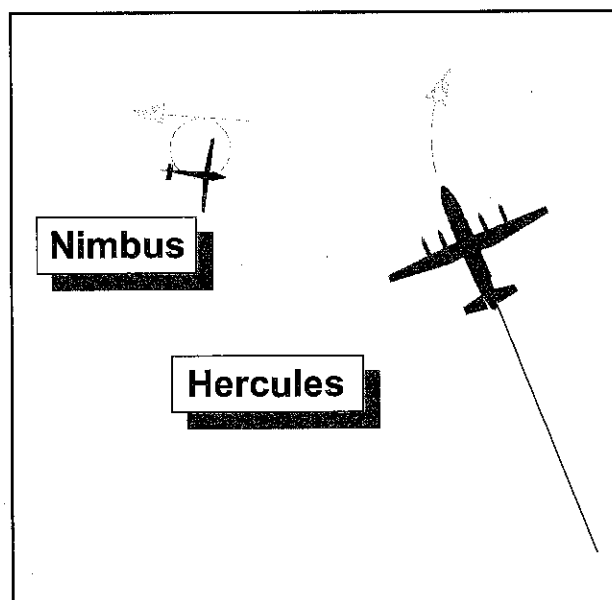
### AIRPROX (P) REPORT No 50/98

Date/Time: 19 May 1413  
Position: N5414 W0134 (4 NM SSE of Leeming)  
Airspace: MATZ/FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Hercules Nimbus glider  
Operator: HQ STC Civ Pte  
Alt/FL: 3000 ft 3000 ft  
(Rad Alt) (amsl)  
Weather VMC HAZE VMC CLOC  
Visibility: 10-15 km 50 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE HERCULES PILOT** reports heading 335° at 180 kt and cruising at 3000 ft while receiving a FIS from Leeming. He saw a glider apparently stationary in his 11 o'clock 2000 ft away and turned hard right at 2g in avoidance, passing 300 yd from it. It had been very inconspicuous against the hazy background and the glider was on a constant bearing; he considered the risk of collision had been high.

**THE NIMBUS PILOT** reports that while searching for wave lift he was occasionally orbiting but heading predominantly W, and drifting slowly eastwards at about 13 kt. (He provided a list of positions, headings and heights with time from his logger.) During one orbit he saw a Hercules approaching along the line of the A1; it passed about 1 NM ahead of him from right to left and 200 ft above with no risk of collision. He pointed out that his glider has a 25 m span, much larger than most gliders, so he may have seemed to the Hercules pilot to have been closer than he was.



His logger recorded a height of 3151 ft amsl at the reported time of the Airprox.

Note: The Hercules can be seen on LATCC radar recordings tracking 345° towards the Airprox position where it makes an extremely sharp right turn and loses 200 ft. As it starts the turn at 2700 ft Mode C there is a single, very adjacent primary-only return in a position 4 NM due S of Leeming. The point at which the Hercules turns is 1 NM E of the glider's GPS logged position at that time (1413:28). In the minute before the Airprox an intermittent primary-only return can be seen further to the W, where the glider pilot said he was. 2700 ft Mode C equates to 2970 ft on the Leeming QFE.

**HQ MATO** reports that the C130 pilot contacted Leeming Zone on 292.7 at 1410:51, following a hand-over from Linton-on-Ouse. The crew was conducting a VFR transit at 3000 ft and advised

Zone that they intended *"to enter low level about 20 NM north-west of your field, due west of Bishop Auckland"*. Zone had identified the ac from the assigned Linton squawk and placed the flight under FIS, as specified in the hand-over. In response to a request for co-ordination against unrelated traffic inbound to Teesside descending to 4000 ft, Zone requested that the C130 crew remain at 3000 ft Barnsley RPS (1024 mb), to which they acceded. At 1413:00, Zone reiterated an instruction to the C130 crew to squawk 0401. A further request for co-ordination was made by Teesside, who asked if the C130 could turn left to facilitate the maintenance of horizontal separation against their ac and thereby permitting a continuous descent. No other conflicting traffic was evident on the Leeming radar display, therefore Zone requested *"just to keep you clear of Teesside inbound traffic request you turn left to head 330..."*. At 1413:11, as the C130 passed 4 NM south of Leeming heading North the crew replied *"roger coming left 330, we just had avoiding action against a glider"*. Zone queried the height of the glider, which the crew reported at *"about 3200 ft"*. When Zone instructed the C130 crew to resume their own navigation, the crew advised that they would be filing *"an airmis on that glider"* after landing. Without further comment, the C130 crew initiated a descent into LFA 12 and changed to their en-route frequency at 1418:57.

When flying at an altitude of 3000 ft RPS 1024 mb (QFE 1023), the C130 would have been marginally inside the Leeming MATZ. In all probability the glider was above the MATZ at the time of the Airprox.

Notwithstanding the FIS provided, Zone did not observe any radar returns in the vicinity of the C130 before the crew reported manoeuvring to avoid the glider. Therefore, no warning about the presence of the glider was feasible before the Airprox, albeit that a faint radar return was seen in the area for a brief period shortly afterwards which tracked toward Sutton Bank. Zone had requested that the C130 crew maintain 3000 ft and manoeuvre to facilitate the expeditious descent of traffic inbound to Teesside, nonetheless the C130 crew remained

wholly responsible for their own lookout and separation from other observed traffic. There are no contributory Military ATC factors associated with this Airprox.

**HQ STC** comments that slow moving gliders are extremely difficult to see visually, especially when viewed against a hazy background and on a constant relative bearing. To compound the situation, the Hercules crew might reasonably have expected not to encounter traffic while operating marginally inside the Leeming MATZ and receiving a FIS from Leeming Zone. On seeing the glider the Hercules crew reacted appropriately in taking immediate action, although it is probable that an unexpected sighting of a glider with a greater than usual wingspan has led them to believe the miss distance to be less than actually existed. The Hercules crew are to be commended for their lookout and timely actions in negating the possibility of collision.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

There was a difference of opinion between the 2 pilots as to how close the ac had come to each other. For several reasons the Board thought the distance was probably closer to the glider pilot's estimate: he had had the benefit of more time to watch the Hercules and assess its distance; the intermittent primary returns seen on radar and the glider pilot's logger confirmed his impression of his position; and the Hercules' position could be determined from the radar recording. The Board was advised that loggers available to glider pilots were extremely accurate GPS based devices which recorded height and position every 10 sec and such records, being acceptable as competition evidence, could be accepted in this instance with confidence. Members agreed that the Hercules crew had done well to spot the glider

when they did and since to them it looked close, were sensible to have taken prompt avoiding action. The Board accepted that a glider with such a large span could have looked closer than it might have been and concluded that the cause of the Airprox report was a mistaken impression amongst the Hercules crew as to how close the glider actually was. Since he had had more time to assess the situation the glider pilot's assessment of risk seemed to members to be more likely and they agreed that there had not in fact been a risk of collision.

The Board discussed whether or not the glider pilot would have been wiser to have called

Leeming to give ATC a 'heads up' as to where and at what height he was operating. The general opinion was that if he was going to be in an area for a few minutes it would have been helpful and might have prevented this incident. The Board also discussed the topic of glider radar conspicuity and were advised that the lightweight transponder which had seemed promising at one stage was a long way from entering service. Lightweight reflectors were also discussed and the BGA adviser undertook to obtain latest information for the Board on their feasibility.

**PART C: ASSESSMENT OF RISK AND CAUSE**

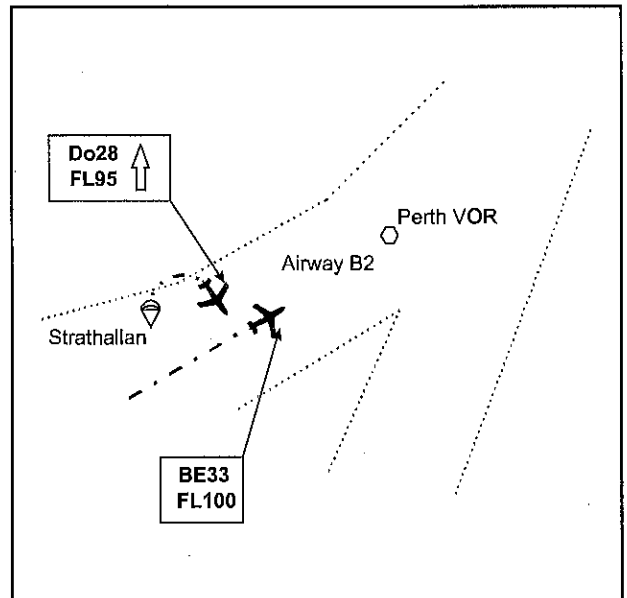
Degree of Risk: C

Cause: Mistaken impression by the Hercules pilot of lack of separation from the glider.

**AIRPROX REPORT 33c/98**

**Occ No. 98/02744**

*Date:* 24 May 1998  
*Time:* 1113 UTC  
*Aircraft:* Do28/BE33  
*Operators:* British Private/Foreign  
Commercial  
*Position:* 5nm South West of Perth  
*ALT/HT/FL:* FL100  
*Airspace Type:* Airway B2 – Class A  
*Reporter:* ScACC Forth Low  
Controller  
*Reported Separation:* 1nm to 2nm horizontal/500  
feet vertical  
*Recorded Separation:* 2.6nm horizontal/600 feet  
vertical



**THE INCIDENT**

The aircraft involved in this AIRPROX were under the control of the ScACC Forth Low controller. The BE33 was enroute from Staverton to Wick on Airway B2 and was

maintaining FL100. The Do28 was on a parachute dropping detail from Strathallan and was engaged in a drop from FL90.

At 1101.20, the Do28 pilot made contact with the Forth Low controller requesting a climb in

Airway B2 to FL100 for a parachuting detail flight. The controller cleared the climb, but initially to FL90 only and required the pilot to report before dropping the parachutists. At 1105.50, the BE33 pilot contacted the Forth Low controller, reporting at FL100 and was identified northbound on Airway B2 and told to maintain FL100.

The next relevant transmission was at 1112.30 when the Do28 pilot reported at FL90. The controller replied, "*Roger (callsign) You're clear for the drop traffic just above you at flight level one hundred*". The pilot responded by asking, "*er can I climb for this drop sir*", and was told, "*er there is IFR traffic just directly above you at flight level one hundred at the moment*". The pilot replied to this, "*Yeah I'll er just run in at this level*". About twenty five seconds later the controller, having seen the aircraft's mode C indicate a climb, asked the Do28 pilot, "*And (callsign) just confirm you are maintaining flight level nine zero*". The pilot replied with his callsign and the controller responded with, "*Okay just be advised you are indicating flight level nine five and conflicting with this traffic*". The pilot then said, "*er sorry sir my instrument says nine one at the .....*".

Just over four minutes later the Do28 pilot reported, "*Scottish (callsign) drop complete and descending clear of bravo two*". Then, while descending, the pilot requested, from the controller, checks on his height which seemed to indicate that the aircraft's altimeter was under reading by up to 300 feet. The minimum separation was assessed as 500 feet vertical and between 1nm and 2nm horizontal.

In his written report, the Do28 pilot stated that when he asked for clearance to continue his climb to FL100 this was denied and he acknowledged the instruction and advised ATC that he would drop at FL90. After completing the drop there was discussion with ATC as to the flight level he had flown. Immediately prior to the drop he had been concerned with accurately positioning the aircraft over the precise opening point for the parachutists, with flying the aircraft at the correct speed for their exit and was in radio communication with the

ground station at the parachute centre. There was some turbulence at the time and the parachutists on board were leaving in groups of five causing rapid weight difference and shift in the aircraft. In the circumstances, it was possible that the aircraft drifted upwards but at the time of the discussion with ATC his altimeter was set at 1013 and was indicating a little over FL91. He reported that the other aircraft was not seen and that he was unaware of any conflict. Another pilot who flew the aircraft afterwards observed a difference in the height given by ATC and that indicated by the pilot's altimeter, and he suggested that the altimeter in question may have been sticking intermittently.

The BE33 pilot stated in his written report that he was aware of the parachute dropping aircraft from the radio exchanges and that he heard the Do28 pilot being queried about his altitude. The other aircraft was not sighted and as he had tried unsuccessfully to locate it, he suspected that it was directly beneath his aircraft.

#### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the pilot of the Do28 who climbed his aircraft above his cleared level of FL90 and into conflict with the BE33 at FL100.

Both altimeters in the Do28 were subsequently removed and checked for calibration. The reputedly sticking altimeter has been sent to the manufacturer for overhaul and any necessary repair. Finally, it was noted that the Do28 pilot doing the parachute drop did not have an Instrument Rating which he is required to hold to enable him to fly in Airway B2 Class A airspace. The pilot, the operator and the parachute club have been reminded that pilots operating aircraft in Class A airspace require a valid Instrument Rating.

## REVIEW BY AIRPROX PANEL

- 1 Discussion The Panel accepted the Summary of CAA Action. Whatever the cause - altimeter error, turbulence or trim change as the parachutists left the aircraft, it seemed clear that the Do28 pilot had exceeded his cleared flight level.
- 2 Causal Factors The Do28 pilot exceeded his cleared flight level and conflicted with the BE33.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

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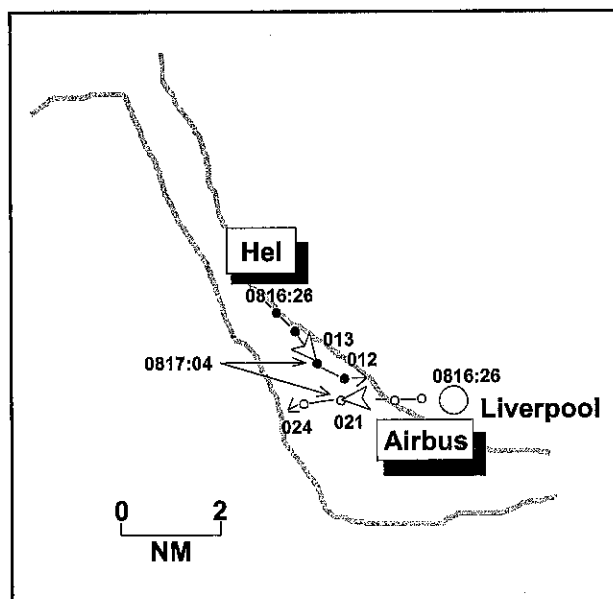
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### AIRPROX (P) REPORT No 53/98

Date/Time: 26 May 0817  
Position: N5320 W0253 (2.3 NM W Liverpool airport - elev 81 ft)  
Airspace: CTZ (Class: D)  
Reporting Aircraft Reported Aircraft  
Type: Airbus A320 SA 365 Helicopter  
Operator: CAT CAT  
Alt/FL: 1500-2000 ft ↑ 1000 ft  
(QNH 1004 mb) (QNH 1005 mb)  
Weather IMC IN CLOUD VMC CLBC  
Visibility: 10 NM

#### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE AIRBUS PILOT** reports that he was climbing through 1500 - 2000 ft (QNH 1004) and heading 277° at 155 kt on departure from RW 27 at Liverpool. Cockpit workload was high as he followed the NAN 2T departure SID in IMC with heavy rain showers all around. He was in contact with Liverpool Tower on 118.1 and squawking 5227 with Mode C. Passing 1500 ft, thrust reduction and configuration changes were in progress when a TCAS TA signalled traffic at 12 o'clock at close range; this also coincided with a frequency change call from ATC. The TCAS warning was difficult to interpret because the turning point designator and weather clutter obscured the screen. No RA was triggered and the other ac was not seen; only after they had passed the traffic was it apparent that they had passed above it by an



estimated 700 ft. No information had been passed to him regarding the traffic prior to departure and he felt there had been a high risk of collision. The pilot comments that the position of the other ac could have had serious implications had his rate of climb been less. Furthermore, in an emergency situation it could also have jeopardised his company procedures which required him to turn R onto 285° after passing 700 ft.

**THE HELICOPTER PILOT** reports that he was returning to Liverpool following an off-shore support flight in the Liverpool Bay gas field. Anti collision lights, strobe lights and one landing light were on. The visibility, 500 - 1000 ft below cloud, was 10 NM in VMC. On entering the

Liverpool Zone at 90 kt flying level at 1000 ft QNH 1005 (Note (1): the RT transcript shows that the pilot was passed and read back 1004) he was informed of traffic about to depart from RW 27 and was given a clearance limit of the North airfield and instructed to report Liverpool airfield in sight. This he did at a range of 5 - 6 NM and began to reduce speed. Liverpool APC repeated the clearance limit to the North airfield and instructed a frequency change to Liverpool Tower on 118.1. When 3 - 4 NM from the RW 09 threshold he saw the departing traffic, an Airbus, climbing through about 200 ft agl. He kept the ac in sight until it entered cloud at 1500 - 2000 ft and at no time came closer to it than 2 NM. He informed ADC that he was visual with the Airbus and reported the North airfield; at this time he was about 2 NM from the threshold of RW 09 and heading about 180° at 1000 ft having reduced speed to 80 kt. He then asked for and received clearance to cross RW 27 to land on the high speed turn off.

The pilot comments that none of his actions were unusual operating practice and at no time did he perceive any risk of conflict with the departing Airbus.

**LIVERPOOL ATC** reports with RT transcript that the helicopter, having received traffic information from APC on the departing Airbus, was transferred to the Tower frequency (118.1) when about 5 NM NW of the airfield. The pilot was instructed to report at the disused North airfield (1.5 NM NW of the main airfield) which was the normal circuit joining point for VFR traffic arriving from the NW. No joining instructions were issued at that time because final positioning was dependent upon the position of the departing Airbus. The latter became airborne and the ADC then saw the helicopter, which had not reported at the North airfield and had continued on its southerly heading. Traffic information was not passed to the pilot of the Airbus due to its phase of flight and because both ac were visible to the controller who judged that at their relative positions and speeds the helicopter would pass well behind the Airbus. The pilot of the Airbus then reported that he had come close to an ac on climbout and that his TCAS had activated;

he was advised that the traffic was joining the circuit under VFR. The helicopter pilot requested clearance to cross the RW 27 climbout track and to join on a LH circuit for a landing on the RW 27 high speed turn off. The pilot was satisfied that he would pass well behind the Airbus and below its vortex wake.

The pilot of the Airbus later contacted APC while en-route to advise that he was considering filing an Airprox report but would discuss the incident on his return to Liverpool.

Note (2): Radar pictures show the helicopter at 0816:26 as it tracks SE following the E bank of the river Mersey about 4 NM from Liverpool airport. The Airbus appears just W of the airfield at this time, initially as a primary return only, following its departure from RW 27. At 0817:04 the Airbus, now identified by its 5227 squawk, is tracking W 2 NM from the airfield and climbing through 2100 ft Mode C with the helicopter at its 2.30 position just under a mile away indicating 1300 ft Mode C. A few seconds later the ac pass starboard to starboard about 0.75 NM apart with the helicopter now descending and turning onto E; vertical separation at this point is in the order of 1000 ft.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, and reports from the air traffic controllers involved.

Several members questioned whether this incident actually constituted an Airprox. The Airbus pilot filed a report on the basis of a TCAS TA and, as he did not see the helicopter at any time, he could only speculate on its relative position to him on the basis of the TCAS information. An airline member, however, endorsed the Airbus pilot's actions, pointing out that a TCAS event shortly after take-off was an unwelcome addition to the already high cockpit workload. He felt strongly that the helicopter's initial VFR routeing down the E coast of the

Mersey inevitably took it towards the departure track of the westerly RW, and that its presence should have been notified to the Airbus pilot prior to his departure. ATCO members, while understanding the Airbus pilot's concern, commented that the circumstances of this incident reflected a typical VFR scenario in the vicinity of any airport where IFR/VFR movements were being integrated. The helicopter pilot was locally based and following a standard VFR procedure with which he was very familiar; having received traffic information from Liverpool ATC, he saw the departing Airbus at some distance and ensured his separation from it. Liverpool ATC fulfilled their obligations to the inbound helicopter by passing traffic information on the outbound ac and giving the pilot an appropriate clearance limit. The controller was under no remit to pass traffic information to the Airbus pilot on the VFR helicopter.

ATCO members pointed out that normally pilots are required to squawk standby when close to

an airfield, as in the case of circuiting traffic. On this occasion, however, the helicopter had retained its squawk, thereby allowing the TCAS equipped Airbus to trigger a 'warning'. The latter's pilot did not see the helicopter, which was well clear, and clearly did not become aware of its presence until alerted by the TCAS. Members believed that without this trigger it was unlikely that an Airprox report would have been submitted and, while they accepted that in other scenarios it has frequently been demonstrated that TCAS plays a vital role in resolving conflicts, on this occasion its operation led the Airbus pilot to believe the helicopter was closer to him than it actually was. Radar recordings indicate that the helicopter in fact passed some 1000 ft below and 0.75 NM to the N of the Airbus. During this time both the helicopter pilot and Liverpool ATC were in control of the situation and were in a position to take remedial action should it have become necessary. The Board concluded that there had not been a risk of collision.

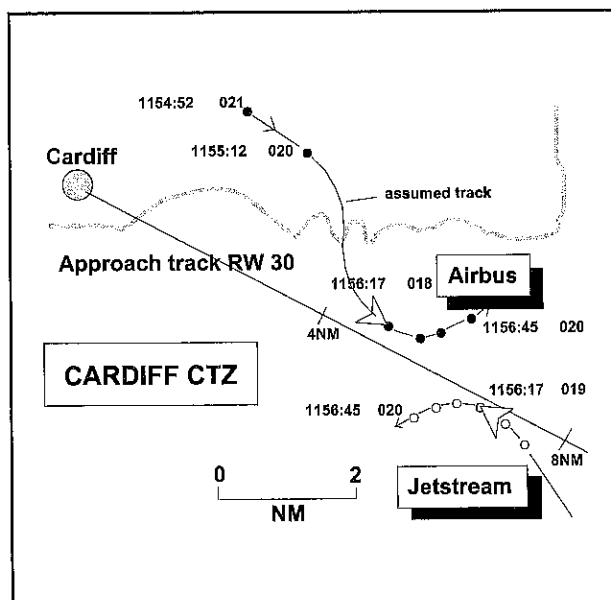
**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: Mistaken impression by the Airbus pilot of lack of separation from the helicopter.

**AIRPROX (P) REPORT No 54/98**

Date/Time: 26 May 1156  
Position: N5121 W0312 (6 NM SE Cardiff airport)  
Airspace: CTZ (Class: D)  
Reporting Aircraft Reported Aircraft  
Type: Jetstream A320 Airbus  
Operator: CAT Civ Trg  
Alt/FL: 1700 ft 2000 ft  
(QNH 1005 mb) (QNH 1004 mb)  
Weather VMC VMC  
Visibility: 28 km 15 km



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE JETSTREAM PILOT** reports that he was in contact with Cardiff APC on 125-85 who had cleared him to 1700 ft (QNH 1005) and to join the ILS for RW 30 at Cardiff. The visibility was 28 km in VMC. When at a range of about 4 NM from touchdown, established on the glidepath and heading 300° at 140 kt, he saw an Airbus in his 1 o'clock (in a R base leg position for RW 30) turning L towards him and beginning to climb; at the same time the controller, having realised that the Airbus was turning L, instructed him (the Jetstream pilot) also to turn L 90° onto heading 210° in avoidance. Continuous visual contact was maintained with the Airbus which passed down his starboard side at a similar level about 0.5 NM away on a reciprocal heading. There had been a medium risk of collision, in his opinion.

**THE A320 PILOT** reports that he was conducting a visual single engine training circuit to RW 30 at Cardiff and had been asked to report turning base leg. (Note: He learned subsequently that he had been cleared to call before turning base.) He called base in a gap in the RT, which was acknowledged; shortly afterwards ATC instructed him to continue downwind. A L turn was then commenced away from finals and traffic was seen on the ILS at a range of about 3 - 4 NM. TCAS signalled the other traffic as he turned but this was disregarded, as his ac was in single engine configuration and he could see the other ac which had also started a L turn. He assessed the risk of collision as low. In his opinion, had he continued the approach to final he would have been well inside the other traffic and could have landed or gone around as required.

**ATSI** reports that the Cardiff ADC, who was providing a service to the Airbus, considered her workload at the time of the incident to have been "medium to high". Cardiff ATC has no separate Ground Movement Control (GMC) frequency, consequently, in addition to Air Control duties, the ADC was also responsible for ac manoeuvring on the ground and the issue of ATC departure clearances. These combined

demands resulted in a high RT loading, evident from the appropriate recording. Meanwhile, a "fair" traffic loading and workload was reported by the Cardiff APR who was providing a service to the Jetstream at the time of the incident. The 1150 met report for Cardiff Airport included: Surface wind 280/06, visibility 28 km, Cloud "scattered" at 2000 ft and "broken" at 5000 ft.

The Airbus was engaged in crew training, a regular event for this operator at Cardiff Airport. The flight was operating on a VFR flight plan and conducting visual circuits to RW 30. Following a series of "touch and goes", the ac made a full-stop landing, taxied back to the holding point and, at 1148, reported ready to depart again for further circuits. The ADC instructed the flight to line-up, confirmed the "clearance same as before", which implied RH visual circuits, and imposed a level restriction of not above 2000 ft on the Cardiff QNH. Both the APR and the ADC understood that, as previously, the latter would retain control of the flight in the circuit and consequently would be responsible for its integration with other traffic unless the assistance of the APR was required.

After clearing the Airbus for take-off, the ADC attended to a number of other flights, mainly VFR. At 1152, the pilot of the Airbus reported turning downwind RH for a full-stop landing. As on previous circuits, to provide flexibility, the ADC responded with "*.....roger report before turning right base*". The reply from the pilot, however, was "*.... roger report turning right base .....*", omitting the word "before" which was not picked up by the controller; she later attributed this omission mainly to the level of workload at the time.

Meanwhile, the Jetstream had contacted the Cardiff APR following transfer from Area Control. The flight was inbound to Cardiff from Jersey and operating on an IFR flight-plan. Approaching the airport from the S, the Jetstream was issued descent and radar vectoring instructions by the APR to position for an ILS approach to RW 30. By 1152:30, the ac was on a L base-leg and had been cleared to an altitude of 1700 ft. Aware that the Airbus was in the circuit, the APR issued an earlier than



normal range check, at 15 NM, on the Jetstream to the ADC. The ADC reported that although she acknowledged this check, the demands of other flights caused her to postpone her decision on the order of traffic until the Airbus made its next call downwind.

At 1155:00, the Jetstream was given a L turn onto a heading to intercept the ILS localiser, the APR adding that *"you may see...Airbus traffic downwind right-hand in the visual circuit"*. The radar recording shows that at this point the Airbus was about 3 NM E of the airport at 1900 ft downwind, while the Jetstream was just S of the final approach centreline, about 10 NM from the airport and at an altitude of 1700 ft. About 30 sec later, the Airbus announced that it was *"turning base"*. Though surprised by the report, the ADC accepted its implication, replying *"C/s roger"*, and advised the APR that the Airbus would be ahead of the Jetstream, requesting that the latter be slowed down. However, after the APR pointed out that the required vortex spacing would not be achieved, the ADC decided that the Jetstream should have priority and, at about 1155:40, she instructed the Airbus to *"continue downwind please for the Jetstream eight mile final"*. Although the direction of turn had not been stipulated, the pilot's response of *"turning back to the left"* was not challenged by the ADC who considered the manoeuvre could be accomplished without risk to the Jetstream. It became increasingly clear, however, that this was not a practical option, as the radius of turn of the Airbus would bring it close to the final approach track and into conflict with the Jetstream. The pilot of the latter had, meanwhile, queried his position in traffic with the APR, as he had seen the Airbus turn base-leg. Confident that the Airbus was being broken off the approach with a turn to the R and away from the Jetstream, the APR advised the pilot he was number one. However, following some rapid intercom exchanges it became clear to the APR that the Airbus was turning L and into conflict with the Jetstream. She immediately advised the latter's pilot of the circumstances and instructed the flight to turn L on to a heading of 210 to break off the approach; although reporting visual with the other ac, the pilot elected to take the turn. The ADC issued

traffic information to the Airbus on the Jetstream and the pilot advised he was visual and *"clear"* of the traffic. The radar recording indicates that the two ac passed starboard to starboard both in L turns, and at their closest point were about 1 NM apart at the same level. The Jetstream subsequently completed a visual approach and a safe landing. The Airbus, meanwhile, repositioned behind the Jetstream but the prospect of a late landing clearance caused the pilot to go-around, the ac finally landing after another circuit.

Note: Pictures of the LATCC radars show the Airbus first painting on radar at 1154:52 about 2.5 NM to the ENE of the airfield at 2100 ft Mode C on a downwind track for RW 30. Following a further return at 1155:12, the return fades from radar and next appears at 1156:17, some 5 NM SE of the airfield at 1800 ft Mode C; at this point it appears to be in a L turn through about 115°, 0.3 NM to the N of the RW 30 extended approach track. At the same time the Jetstream, identified by its 1232 squawk, is slightly L of the final approach track at a range of about 7 NM indicating 1900 ft Mode C with the Airbus at its 1 o'clock position 2 NM away. The Jetstream immediately commences a L turn, while the Airbus also continues its L turn, and a few seconds later, about 6 NM SE of Cardiff airport, the ac pass starboard to starboard at about the same altitude just over 1 NM apart. By 1156:45 the ac tracks are diverging rapidly with both Mode Cs indicating 2000 ft.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, video recordings, and a report from the appropriate ATC authority.

Members agreed that following the uncorrected and incomplete readback by the Airbus pilot, the unexpected base leg turn (contrary to ATC instructions) precipitated an unwelcome chain of events. Despite these initial errors, ATCO

members felt the situation was retrievable provided correct and expeditious remedial action was quickly taken by ATC. Had the ADC anticipated the vortex wake limitations, she should have realised that by turning in ahead of the Jetstream the Airbus would compromise the laid down minimum arrival spacing; an immediate instruction to 'go around' would have been appropriate and would have ensured that the Airbus turned R, thus taking it away from the Jetstream. Furthermore, it was clear that the ADC did not fully appreciate the configuration of the Airbus or its radius of turn when instructing its pilot to..."continue downwind". It emerged that she thought the A320 could safely turn L to regain the downwind track without compromising the final approach track; whether this perception was based on visual or ATM

derived information is unclear but, whatever the case, members felt that the instruction was ill-judged and inevitably led to the loss of lateral separation with the Jetstream, thereby prompting the latter's pilot to file an Airprox report. The Board concluded that the ADC was unsuccessful in integrating circuit traffic under her control with the approaching IFR Jetstream and this had caused the Airprox. However, in mitigation, it was noted that the incident occurred while the ADC was subject to a high Tower workload. With regard to risk, members noted that the lateral separation indicated by the radar recording was in the order of 1 NM and that both pilots had seen each other in time to ensure that neither ac would collide. It was concluded, therefore, that there had not been a risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

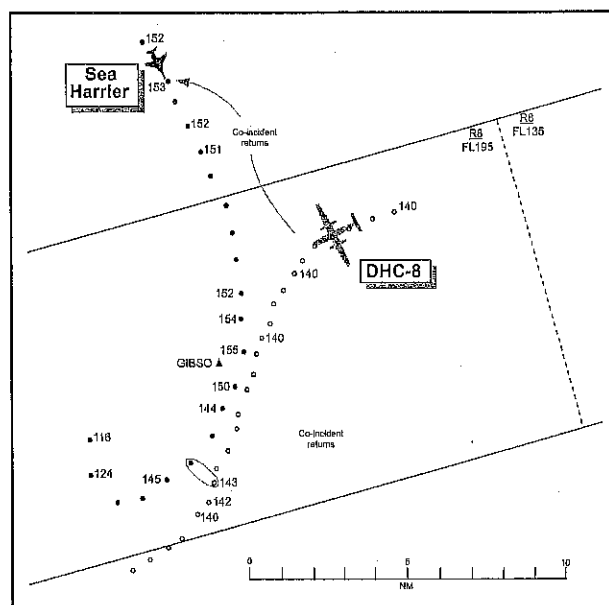
Cause: The aerodrome controller did not safely integrate circuit and instrument traffic.

**AIRPROX (P) REPORT No 55/98**

Date/Time: 28 May 0859  
Position: N5050 W0230 (GIBSO)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: DHC-8 Sea Harrier  
Operator: CAT HQ FONA  
Alt/FL: FL 140 FL 145  
Weather VMC CLNC VMC CLOC  
Visibility: 20 km+

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE DHC-8 PILOT** reports heading 240° at 220 kt on a radar heading from London Mil from whom he was receiving a RAS. London had advised of traffic 5 NM to the N but he then received a TCAS TA followed by a RA to 'climb >2500 ft/min' as the traffic descended astern of



him indicating 200 ft above, descending. The RA quickly changed to 'descend >3000 ft/min' and then cleared. He informed London Mil who

advised that they had not been able to co-ordinate the traffic with another agency.

**THE SEA HARRIER PILOT** reports flying a radar test flight at 320 kt on a N/S racetrack, checking the radar performance against various targets. While heading 220° and receiving a RIS from Yeovilton at FL 145, his radar detected the DHC-8 at 30 NM heading 250° at 14000 ft. He continued at FL 150-155 and when about 7 NM from the contact it turned left onto 200° maintaining FL 140. He saw the ac at 6 NM, 1000 to 1500 ft below, and passed 1.1 NM behind it and 600-1200 ft above it, assessing the separation visually as he was no longer tracking it on radar. There was no risk of collision and no avoiding action was necessary. His HUD/RT recording showed the incident as described.

**HQ MATO** reports that the DHC-8 crew was receiving an ATS from London Radar Sector 31 (SEC31), in transit to Plymouth City Airport and squawking 3317 with Mode C. The flight was placed under RAS at 0856:01 in accordance with the crew's request when the ac exited Airway R8 westbound into Class G airspace maintaining FL 140. SEC31 had observed another ac squawking 0211, subsequently identified as the Sea Harrier, manoeuvring to the NW of the DHC-8 at a similar level. Consequently, SEC31 contacted Yeovilton ATC for co-ordination at 0857. The call was answered initially by the Yeovilton assistant; concerned that the co-ordination might become protracted, at 0857:06 SEC31 elected to pass advisory avoiding action and traffic information to the DHC-8 crew, *"avoiding action turn left heading 200 traffic was right 2 o'clock range of 10 miles crossing right-left indicating FL 150"*. Yeovilton Supervisor (SUP) then responded to the call for co-ordination against the Sea Harrier, which at this point was 10 NM N of GIBSO. Yeovilton SUP advised that the Sea Harrier was *"operating in the block FL 60-240 Radar Information at the moment"*. At 0858, SEC31 advised that an avoiding action turn had already been given, whereupon Yeovilton SUP responded *"...if I can I'll try and get mine to manoeuvre to the north"*, and the call was then terminated. At 0858:10, updated traffic

information was passed to the DHC-8 crew, *"previously reported traffic still to the north of you range of 5 miles still indicating FL 150, it's a Sea Harrier fast moving present heading is the best form of avoiding action"*. The DHC-8 crew responded *"...yes we've got him on the screen"*. The Sea Harrier continued to track toward the DHC-8 and SEC31 passed further traffic information at 0858:43, *"previously reported traffic still to the north of you by 2 miles...Sea Harrier...operating in a block unable to co-ordinate it"* and advised a turn onto 240°. The DHC-8 crew acknowledged the turn and added, *"we got a TCAS climb"*, which SEC 31 acknowledged. At 0859:20, the DHC-8 crew advised that the *"...resolution advisory's clear now..."* and that they would be filing an Airprox. The Sea Harrier pilot reports that although no traffic information was passed about the DHC-8, it was acquired on AI radar at a range in excess of 30 NM, and visual contact was gained at 6 NM.

The LATCC Burrington radar recording clearly illustrates this Airprox which occurred at 0859:10, 4 NM S of GIBSO. The Sea Harrier, identified from the 0211 squawk, is shown tracking 170° at FL 152 Mode C converging with the DHC-8 at the time that avoiding action and traffic information was passed by SEC31. The Sea Harrier continues to close on a steady heading toward the DHC-8, which is shown heading 200° and level at FL 140 Mode C. At 0858:40, when traffic information was passed by SEC31 for the last time; the Sea Harrier is at FL 154, 2 NM N of the DHC-8. At 0859:03, 4 seconds before the DHC-8 crew report a TCAS climb RA, the Sea Harrier is indicating FL 144 Mode C, 400 ft above the DHC-8. The Sea Harrier then starts a right turn to pass down the starboard side of the DHC-8 at a range of 0.5 NM. The DHC-8 indicates a maximum of FL 143 Mode C, after the crew reported climbing in response to the TCAS RA when the Sea Harrier is passing abeam, but at this point its Mode C is obscured by label clutter. The Sea Harrier then climbs to FL 145 Mode C before hauling off to the west and descending. By interpolation, the minimum vertical separation is 100 ft Mode C, when the DHC-8 climbed toward the descending Sea Harrier.

Despite the prudent action of SEC31 in issuing the avoiding action, the controller was unable to effect standard horizontal separation between the slow DHC-8 and the more agile Sea Harrier. Nonetheless, SEC31 conscientiously passed accurate traffic information in order to facilitate visual acquisition by the DHC-8 crew. It is unclear from the DHC-8 pilot's report if the Sea Harrier was acquired visually. However, the controller was thwarted when she endeavoured to effect co-ordination and was therefore unable to prevent this occurrence.

**RNAS YEOVILTON ATC** reports that the Harrier was under a RIS in a block between FLs 60-240. When it was near GIBSO the London Radar controller called requesting co-ordination. The supervisor took the call but the approach controller was very busy at the time providing avoiding action to other traffic under RAS and co-ordinating recoveries with Merryfield, and was unable to take the call. The London Radar controller undertook to avoid the Sea Harrier.

**HQ FONA** comments that it is clear that the pilot of the Sea Harrier did not appreciate that the DHC-8 could be operating as GAT, albeit beneath controlled airspace, and consequently did not appreciate the ramifications of the controlling agency attempting to maintain standard separation. Local action has been taken to highlight this problem to local aircrew.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: The Sea Harrier pilot flew close enough to the DHC-8 to cause its pilot concern for the safety of his aircraft.

recordings and reports from the appropriate ATC and operating authorities.

The Board agreed immediately that the cause of this incident was that the Sea Harrier pilot had flown close enough to the DHC-8 to cause its pilot concern for the safety of his aircraft. While the Board agreed there was no risk of a collision in the incident, as the Sea Harrier pilot was in command of the situation, the DHC-8 pilot was not to know that at the time. Members fully understood the latter's high concern - being unable to see the fast-jet, receiving rapidly changing RAs from his TCAS and with his controller advising that not only was the other ac not on frequency but that he could not co-ordinate with its controller. There was total agreement that civil commercial traffic should never be used as a radar target for a close range closure and that the Sea Harrier pilot should have broken off at 6 NM when he identified the DHC-8 as an airliner. While the RAF and USAFE have rules that make this clear to their aircrew, the Board noted that at the time of the incident the RN did not. The Board was advised that this lacuna was being filled, and RN fixed wing aircrew had been briefed accordingly.

LATCC controller members of the Board commented on the difficulty experienced by SEC31 in co-ordinating with Yeovilton, which was not uncommon. Yeovilton ac operated widely in the area south of G1 necessitating frequent co-ordination by LATCC controllers, civil and military, who often were unable to communicate satisfactorily with the Station's controllers. The Director advised the members that the proper course was to take the matter up with Yeovilton through their management at LATCC.

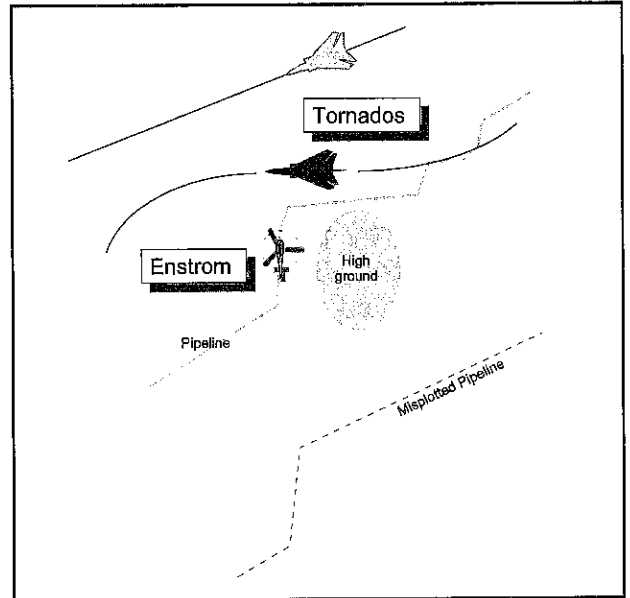
**AIRPROX (P) REPORT No 56/98**

Date/Time: 27 May 1520  
Position: N5203 W0309 (2 NM S of Hay-on-Wye)  
Airspace: FIR/LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Enstrom 480 Tornado GR  
Operator: Civ Comm HQ STC  
Alt/FL: 750 ft 250-500 ft  
(QNH 1002 mb) (Rad Alt)  
Weather VMC CLBC VMC  
Visibility: 20 km+ 10 km+

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE ENSTROM PILOT** reports heading N at 80 kt on a pipeline patrol at 750 ft in a valley and in contact with London Information. He had strobes on and was squawking 0036. PINS had been filed. He saw a Tornado appear from behind high ground ahead and to the right; it was crossing right to left and banked away to the right just before passing 400 m ahead of him at the same level. He then saw another on a similar track but further away. He considered the risk of collision was high with no time for avoiding action and reported the incident to London Information.

**THE TORNADO PILOT** reports participating in a 2 v 1 sortie which passed through mid Wales at the time of the incident; they were operating in the 250-500 ft agl band. Pre-flight, all NOTAM activity for the sortie had been briefed, including PINS which was active. Aware of this, the formation was briefed to be particularly vigilant. Over mid Wales, all 3 crews saw a helicopter, thought to be heading about 340°, passed well clear of it (over 1 NM) and thought no more of it, not noting the position of the sighting. The crew submitting the report was almost immediately detached overseas and did not have access to any sortie documentation during the subsequent investigation; therefore the position of the helicopter they encountered could not be confirmed and the possibility remained that it was not the reporting helicopter. In retrospect the formation leader



acknowledged that once the helicopter had been spotted, it might have been wise to have increased the separation afforded to it.

Note (1): LATCC radar recordings do not show the Airprox clearly. While the helicopter and one of the Tornados are shown, the Tornado turns from SW to NW passing some 2.3 NM in front of the helicopter. It is probable that the Tornado involved in the Airprox does not appear on the recording.

**HQ STC** comments that due to the discrepancy in the range estimation of the crews involved in this Airprox, the investigation is centred on 2 possibilities. First, that the crews are reporting different events and that the Tornado crew did not see the Enstrom, or more likely, that there was a difference in perception of range and collision risk. It is likely that the Tornado crews did in fact see the Enstrom but considered the separation to be more than adequate. The Enstrom crew on the other hand acquired a late visual with the Tornado and were confronted with a high speed, high energy ac in what they deemed to be close proximity. In either case this Airprox is a timely reminder to all users of the low flying system to be especially vigilant in hilly terrain and for fast jet operators to give other users a wide berth.

Note (2): It appeared at first from the given Airprox position that the helicopter was some 2 NM off the pipeline which is one of those displayed on the LFC. However, the pilot described precisely where he was on the pipeline and supplied 1:50,000 charts of its track through the area S of Hay on Wye. From these it is apparent that the pipeline's position is misplotted on the LFC by some 2 NM and its shape is representational only. This might have been a factor in the Airprox if the formation was aiming to avoid overflying it, but this was not the case. The pipeline's position is plotted from information supplied by the company. No 1 AIDU is being advised to seek more accurate information on the pipeline's location from the company, the protection of whose helicopters depends on the accuracy of the information given.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

The Board discussed the misplotted pipeline and concluded its relevance in this instance was limited. Whereas low flying ac are not barred from crossing it, accurate plotting could assist crews to see any notified helicopter inspection. Moreover, for military aircrew to have confidence in the PINS system, pipelines should be plotted accurately. For this particular incident, members considered it probable that the helicopter seen by the Tornado crews was the reporting Enstrom, but they probably would not have seen the helicopter any earlier than

the helicopter pilot saw the Tornado because of the intervening terrain. However, once 'visual' it would have been clear that the Tornado would cross ahead of the Enstrom. The former then paid little attention to the helicopter and, with no collision course involved dismissed it as a priority (being busy with an evasion exercise). Members believed that whatever the exercise or activity, fast jet aircrew should always show consideration for more vulnerable aviators, and indicate a sighting whenever possible, by pulling up or away or by giving a wing rock. Because the Tornados' report gave the impression that they could have avoided the helicopter by a larger margin, the Board concluded that the cause of the Airprox report was that the Tornado pilot flew close enough to the helicopter to cause its pilot concern for the safety of his ac.

In assessing the risk, members were hampered by the differing estimates of miss distance and the lack of conclusive radar evidence. As to the latter, the fast jet seen on radar was probably a 'bounce' ac; the others would have been seen had they been squawking (as was the helicopter, at similar levels). The message here is that the LFS squawk should be used by all ac using the LFS. Since the Enstrom 480 is somewhat smaller than the JetRanger more usually encountered on pipeline patrols, it may have seemed at a fleeting glance to have been further from the Tornado than was the case. However, although the Board had no way of resolving the differences in the pilots' estimates, members agreed that both pilots saw each other's ac in time to put a minimum of 400 yd between them and that there was in the event no risk of the ac actually colliding. At the same time, they agreed that it must have been a startling experience for the helicopter crew.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: The Tornado pilot flew close enough to the helicopter to cause its pilot concern for the safety of his ac.

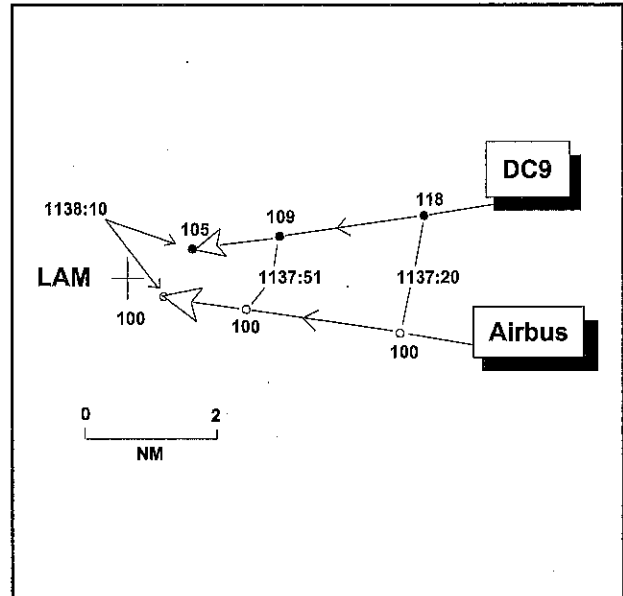
**AIRPROX (P) REPORT No 59/98**

Date/Time: 29 May 1138  
Position: N5138 E0011 (1 NM E Lambourne VOR)  
Airspace: LTMA (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: A320 Airbus DC9  
Operator: CAT CAT  
Alt/FL: FL 100 ↓ FL 110  
Weather VMC VMC  
Visibility:

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE A320 PILOT** reports that he was heading 270° at 220 kt in VMC from Lambourne while maintaining his cleared level of FL 100. He was under the control of the Heathrow Director on 119-72 and squawking 3147 with Mode C. The other ac, believed to be an MD 80 which had been in sight since abeam TRIPO, had been instructed to hold at Lambourne. ATC instructed an immediate descent to FL 90 and advised him that the other ac had descended below its cleared level.

**THE DC9 PILOT** reports that ATC cleared him to hold over LAM, advising him that there would be a short delay. He noticed that the holding data in the GPS computer was not identical to that in the approach chart. While reducing his rate of descent to level the ac at FL 110 he noticed that the FO was having some difficulty reprogramming the equipment and he assisted him with this. During this time the ac had descended through FL 110 and at FL 107 he heard the altitude warning sound. He immediately responded by increasing thrust and climbing to regain FL 110. The controller had also observed that the ac had descended below its cleared level and instructed an immediate climb back to FL 110 which was acknowledged by the FO. He remained in VMC throughout the incident and the only other ac seen was the reporting Airbus. After landing he reported the incident to ATC, and when back at his base completed an incident report for his own Company.



Note (1): The pilot's company reports that following this incident a safety notice concerning level busts was issued to all pilots. A Company investigation concluded that human factors issues contributed to the cause.

**LATCC INVESTIGATIONS** reports, with RT transcripts, that the incident occurred overhead the Lambourne VOR at 1138 UTC. The controllers concerned were the Heathrow N Support controller and the Heathrow Intermediate controller. The Intermediate N and Intermediate S positions were 'band-boxed' onto the N position. Traffic loading was described as light to moderate with no reported unserviceabilities. Both ac were inbound to Heathrow via the Lambourne VOR.

The Airbus pilot established contact with the Intermediate Director at 1135 reporting descending to FL 100. He was instructed to leave Lambourne on heading 270°. At 1136:30 the DC 9 pilot also contacted the Director advising descending to FL 110; he was instructed to hold at Lambourne and to expect a short delay. The pilot acknowledged this instruction at 1137:02 when about 9 NM E of Lambourne at FL 122, with the Airbus due S of him by 2.1 NM passing FL 101 for FL 100. The DC 9 continued its descent and at 1137:52 was observed by both Heathrow Directors to have descended below its cleared level of FL 110.

The Support controller instructed the DC 9 pilot to ...*"c/s maintain flight level one one zero, confirm"*... to which the reply was unintelligible. Immediately afterwards the Intermediate Director instructed the Airbus pilot to descend immediately to FL 90 for avoiding action. The pilot acknowledged, advising that the other ac was in sight and observed to be climbing.

Minimum separation occurred at 1138:10 overhead the VOR when the DC 9 reached FL 105 before arresting its descent. At the time the Airbus was 0.75 NM to the S of it and 500 ft below. Standard vertical separation was restored 12 sec later. The ATC watch manager reported that the pilot of the DC 9 later contacted the ATC supervisor to report that he had descended below his cleared level.

Note (2): Photographs of the LATCC radar confirm the LATCC Investigations account of the incident.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

This incident provoked little discussion amongst members as it was clear that the cause of the Airprox was the DC9's continued descent below its cleared level which eroded vertical separation from the airbus below it at FL 100.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: The DC9 descended below its cleared level while both pilots were distracted in the cockpit

The Board noted the DC9 pilot's admission of his error and welcomed his company's action in highlighting the incident to other company pilots.

It was noted that the error occurred while both pilots were distracted in the cockpit while reprogramming holding data; a member opined that this was not a good stage of flight to engage in such activity and wondered why any error had not been detected prior to departure during the course of pre-flight planning. Members observed that the crew did not receive an altitude warning until the ac had already descended 300 ft below its cleared level. Without having details of the specific fit of the FMS in this particular ac, members could only speculate on what other indications the crew might have had to warn them that their cleared level was about to be compromised; a pilot member said that in some systems a light would illuminate to indicate that the ac was approaching its set level. However, members felt that while useful as attention-getters, such warning devices did not absolve the crew from monitoring the ac's flight profile, particularly during descent into a stack where accurate level keeping is vital to maintain safety standards.

The Board assessed that there had not been a risk of collision as the 'level bust' was foreseen and acted upon quickly by the Heathrow controllers. Moreover, the DC9 had been continuously visible to the pilot of the Airbus for some time prior to the incident and he would have been in a position to take action to avoid it had it become necessary.



## AIRPROX REPORT 18c/98

### Occ No. 98/02950

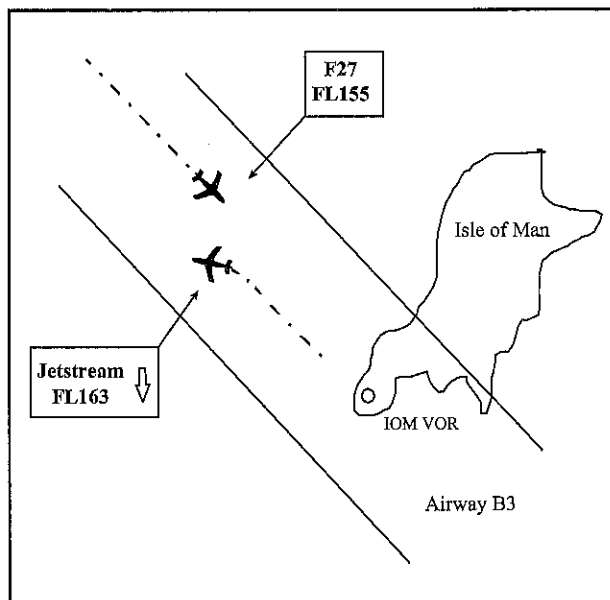
*Date:* 3 June 1998  
*Time:* 0813 UTC  
*Aircraft:* FK27/Jetstream  
*Operators:* British Airline/British Military  
*Position:* 10nm North West of Isle of Man  
*ALT/HT/FL:* FL155  
*Airspace Type:* Airway B3 - Class A  
*Reporter:* ScACC - Antrim P and E Controller  
*Reported Separation:* 4nm horizontal/800 feet vertical  
*Recorded Separation:* 3nm horizontal/700 feet vertical

### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the ScACC Antrim Sector Controller who was carrying out the combined duties of both Planning (P) and Executive (E) controller. The FK27 was enroute from Belfast City to Leeds on Airway B3 and was level at FL155. The Jetstream was enroute from Yeovilton to Belfast Aldergrove also on Airway B3 and was in descent to FL160.

The workload on this sector was low and the controller involved was operating as a mentor to a trainee controller. The trainee was part way through her college based training and was on the unit for RTF familiarisation rather than training in ATC techniques and had attended the student ATCO Area On the Job Training (OJT) Course.

At 0800, the FK27 pilot contacted the Antrim Sector, reporting passing FL79 and climbing to FL110 on a heading of 145°. The aircraft was identified and cleared to continue the climb to FL155, which was the correct quadrantal level for its intended track after leaving controlled airspace. The FK27 pilot was then cleared direct to the IOM VOR.



At 0807.20, the Jetstream pilot established contact with the Antrim Sector, reporting at FL200 and requesting descent. This request was acknowledged and the pilot was told to standby for descent. At 0808.30 the trainee controller instructed the Jetstream pilot, "(callsign) descend flight level one seven zero (FL170)". The Jetstream pilot read back, "Descend flight level one six zero (FL160) (callsign)". This error in the read back was not noticed either by the trainee or mentor controller.

The mentor first became aware of the developing situation when he observed the Jetstream's SSR Mode C return indicating FL168 and at 0813.30 he told his trainee to confirm the aircraft's level to which the response from the Jetstream pilot was, "ah we're just about to level one six zero (FL160) (callsign)". The mentor then prompted the trainee controller to instruct the Jetstream pilot to climb to FL170, and this she did straight away. The radar photograph, timed at 0813.50, shows the subject aircraft about to pass each other with the FK27, which was indicating FL156, approximately 3nm north of the Jetstream which was indicating FL163. The mentor then took control of the RTF and transmitted at 0813.52 to the Jetstream pilot, "(callsign) roger you were cleared to one seven zero (FL170) and er you did acknowledge that

turn left now avoiding action please heading of two seven zero". The Jetstream pilot replied, "Er negative (callsign) we were cleared to flight level one six zero (FL160) and we acknowledged one six zero (160)". Subsequently both aircraft continued enroute without further incident.

The Antrim mentor controller reports that after listening to the RTF recordings he heard that the Jetstream pilot was cleared to FL170 but actually read back FL160, and that neither he nor his trainee picked this up. He further reports that on noticing the Jetstream passing FL166 he queried the pilot's level.

At interview the mentor stated that he believed, at the time, that a correct readback had been received from the pilot and found it difficult to understand that FL160 had been said instead of FL170. He said, as far as he could recollect, there were no distractions to prevent either him or his trainee understanding the pilot's reply. He agreed that the RTF recording of the trainee's instructions and the pilot's response revealed that they were both clear and unambiguous. However he commented that, in his opinion, the quality of the RTF received through the headset at the operational position was not of the same clarity as the recording and that this could explain why the pilot's incorrect readback was not noted. Note:- It is understood that the differential quality of the recorded versus deskside RTF, as heard through headsets, is an issue which has since been addressed by the unit's technical committee and management, to the satisfaction of both.

The mentor further stated that he allowed his trainee to make the first call to the Jetstream, after assessing the situation as he saw it, deciding that this was more expedient than trying to make the transmission himself. He commented that splitter boxes, which allow the mentor to override immediately the trainee's access to the RTF, are not available at ScACC, having been withdrawn some time ago due to their unreliability. He stated that he did not pass traffic information as the two aircraft were about to pass with no risk of collision, although with less than the requisite 5nm separation. For the

same reason he did not consider it necessary for the term 'avoiding action' to be used when the Jetstream was instructed to climb back to FL170 by the trainee. He added that he only used the term subsequently, when he took over the transmissions, as a precaution rather than a necessity.

The Jetstream's military authority reported that the aircraft, with a crew of two, was on a routine transit flight to Belfast and that when the controller issued the descent clearance to FL170 with approximately 20nm to run to IOM the non-handling pilot clearly read back FL160, firmly in the belief that this was the level that he had heard. The handling pilot commenced the descent to FL160 and supports the assertion that this level was in accordance with the clearance. Both crew reported that they were convinced that the descent clearance was for FL160 and that the non-handling pilot took care to clearly enunciate his reply.

The captain of the FK27 stated that he was unable to furnish any details of the incident as he and his crew were unaware of an AIRPROX incident.

### **SUMMARY OF CAA ACTION**

Whilst initial misinterpretation of their clear and unambiguous descent clearance to FL170 by the Jetstream crew precipitated the event, the AIRPROX occurred because the ScACC Antrim Sector Mentor Controller did not ensure that the descent instruction of FL170 was correctly read back by the Jetstream pilot.

The question of immediate availability of the RTF transmit switch to the mentor could, arguably, have affected the resolution of the situation if the trainee had not reacted immediately to the prompting of her mentor. An Operational Notice has been issued since this incident to remind staff, performing OJT instructional duties that they must be able to intervene immediately to rectify any errors, either controller or pilot initiated.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

The Panel listened to the RTF recording of the AIRPROX, although it recognised that the quality of reproduction which it heard may not have been the same as that experienced by the controller nor, indeed, by the pilots. Nevertheless, it found that the trainee controller's instruction to descend to FL170 was clear and unambiguous and, equally, the pilot's reply seemed to be delivered without hesitation or any indication of doubt as to what he had heard. After discussion, the Panel concluded that there was no obvious explanation for the readback/hearback problem but it could not discount that the quality of the RTF, heard by the controllers, had played a part.

Members observed that the mentor had noticed the Jetstream's Mode C readout indicating FL168. However, this early detection of the level deviation had been nullified by his decision to tell the trainee to confirm the aircraft's level and then to, again, have the trainee relay the instruction for the Jetstream pilot to climb to FL170. When the mentor did take over the RTF, and give avoiding action, it was then rather too late. So, although the trainee responded quickly to the mentor's promptings, it would have been more effective if the mentor had made the transmission himself at the outset. If it was the absence of a splitter box which caused him not to do so, then, in the interests of flight safety, there is a good argument for the re-introduction of splitter boxes at ScACC of a modern and reliable design.

### **2 Causal Factors**

- (i) The Jetstream pilot misunderstood his cleared flight level.
- (ii) The Antrim Sector controllers did not detect the error in the pilot's readback.

### **3 Risk Classification** C

### **4 Recommendations** The Panel recommends to the CAA that modern, reliable and effective splitter boxes should be provided at ScACC for the purposes of controller training.

## AIRPROX (P) REPORT No 58/98

Date/Time: 04 Jun 1621  
Position: N5230 W0222 (8 NM S of Cosford)  
Airspace: LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Hawk Tornado GR  
Operator: HQ PTC HQ STC  
Alt/FL: 250 ft 400 ft  
(agl) (Rad Alt)  
Weather: VMC CLNC VMC CLBC  
Visibility: 40 km 25 km

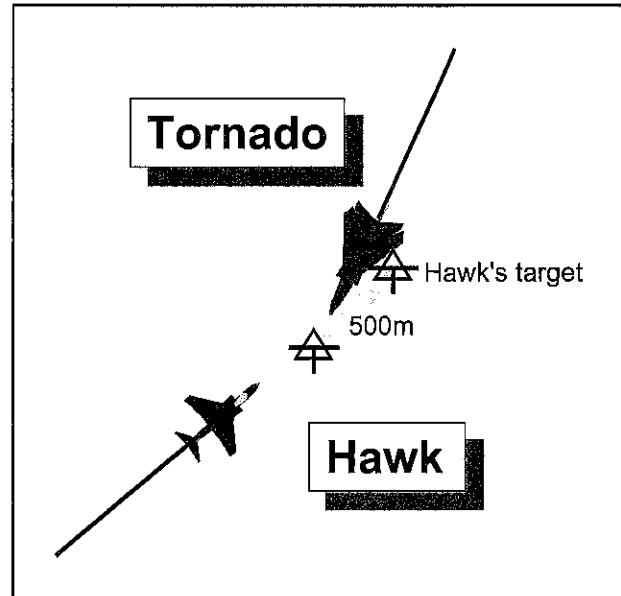
### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE HAWK PILOT** reports heading 048° at 420 kt on an IP-target run and while looking for the target he saw a Tornado about 200 yd away tracking about 240°. He pulled 9.3g into the vertical and missed it. The risk of collision had been high.

**THE TORNADO NAVIGATOR** reports heading 205° at 450 kt on an IP-target run. He saw a bright light in their 1 o'clock which looked at first like a light on the ground but after a couple of seconds he realised it was a Hawk nose light and told his pilot. The light was on a collision course and he was about to call an avoidance manoeuvre to the pilot, who as yet had not seen the Hawk, when the Hawk broke left and up, passing 2000 ft away and 500 ft above. His pilot saw it as it passed abeam; it may have been behind his canopy arch at first. There was no risk of collision as he had seen the Hawk from about 6 km away.

Note: LATCC radar recordings show the Tornado tracking SSW through the Airprox position. The Hawk is not seen and is not squawking until after the incident when it pulls up and adopts a London Radar squawk for its return to Valley.

**HQ PTC** comments that there were more distractions from lookout than normal with both ac on "IP to tgt" runs. With the advantage of an earlier sighting and without the burden of flying instruction, it might have been prudent for the



Tornado to have pulled off and gone for a re-attack. Had the outcome been more serious, then the question might be asked why such a reduced air force could not deconflict its use of simulated targets? The difference in perceived miss-distances might reflect relative experience levels.

**HQ STC** comments that cockpit workload during an IP-to-target run is extremely high. Coincident with the increased workload, aircrew attention is also focused on target acquisition. Both of these factors impact the crew's ability to lookout and in this Airprox the crews of both ac were engaged on an IP-to-target run. The need for aggressive lookout during all phases of flight cannot be overstated. As an aside, the Tornado crew felt the collision risk to be low due to an early sighting whilst the Hawk crew overstressed the ac to avoid a collision. The lesson here is to take early avoiding action.

### PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

Two fast jets head-on are at a greatly increased risk of collision (compared with other directions of approach) because of the reduced time available for avoiding action and some likelihood of pilots not seeing the other ac at all until it is too late. It is in recognition of this that the LFS flow system has been designed to reduce the frequency of head-on encounters. Members agreed that the Tornado crew should have taken action as soon as they recognised the Hawk's nose light for what it was (this is why the Hawk flies with it on) instead of subordinating flight safety to the job in hand.

The Hawk pilot had no such advantage when approaching the camouflaged, unlit Tornado and was more likely to see it late and have to react quickly; the Board concluded that the Airprox was a confliction of flightpaths which was resolved by the Hawk pilot.

Although there were hair raising elements to the incident, members accepted that there was no risk of a collision because the Tornado crew were always in a position to take avoiding action.

**PART C: ASSESSMENT OF RISK AND CAUSE**

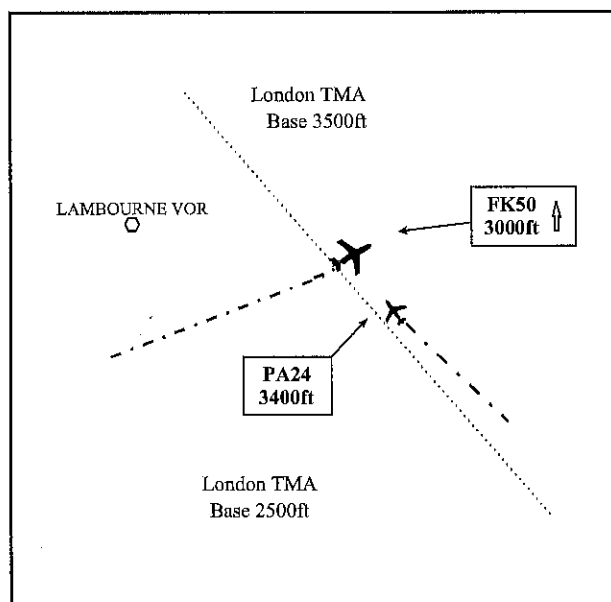
Degree of Risk: C

Cause: Confliction of flightpaths resolved by the Hawk pilot.

**AIRPROX REPORT 11c/98**

**Occ No. 98/03045**

*Date:* 5 June 1998  
*Time:* 1349 UTC  
*Aircraft:* FK50/PA24  
*Operators:* Foreign Airline/Private  
*Position:* 8nm South East of Lambourne  
*ALT/HT/FL:* Altitude 3000 feet  
*Airspace Type:* FIR - Class G  
*Reporter:* LATCC Terminal Control (TC) North East Sector Controller  
*Reported Separation:* 1nm horizontal/400 feet vertical  
*Recorded Separation:* 1nm horizontal/400 feet vertical



Luton Approach while returning to Coventry having encountered poor weather in the vicinity of Dover.

The FK50 had departed from runway 10 at London City on a Clacton 5U Standard Instrument Departure (SID) and was at altitude 3000 feet. The PA24 was transiting at altitude

**THE INCIDENT**

The aircraft involved in this AIRPROX were a FK50 enroute from London City Airport to Rotterdam under the control of the LATCC North East Sector controller (SC) and a PA24 receiving a Flight Information Service (FIS) from

3500 feet which is the base of the London TMA in this area. However the part of the London TMA immediately to the West of the PA24, and from where the FK50 was coming, has a base of 2500 feet.

In accordance with normal practice, the London City Aerodrome controller requested a departure release for the FK50 from the Thames Radar controller. The Thames Radar controller obtained this from the North East SC and, as there was no traffic with Thames Radar to affect it, told the London City controller to hand the aircraft direct to the North East SC on the standard frequency. However, unknown to him this frequency was unserviceable and an alternate was in use. At 1345, the FK50 departed from London City on the Clacton SID and, at 1346.18, the pilot attempted to contact the North East SC. At this point the FK50 had reached altitude 3000 feet, which was in accordance with the SID. The FK50 pilot then made four attempts to contact LATCC before returning to the London City frequency at 1347. The London City controller then contacted the Thames Radar controller who, in turn, contacted the North East SC and established that the frequency passed to the FK50 was incorrect.

Meanwhile, as the FK50 continued on a north-easterly track at altitude 3000 feet, the PA24 was tracking on a north-westerly heading just outside regulated airspace to the East. Note:- The boundary, between the parts of the London TMA with base altitudes of 2500 feet and 3500 feet, runs from South East to North West about 13nm to the East of London City Airport. The PA24 was just to the East of this boundary. Because of bad weather, the PA24 pilot had abandoned an attempt to cross the English Channel VFR enroute to Amsterdam and, having been identified by Manston Radar, was returning to Coventry at altitude 3400 feet.

At 1348.02, the Short Term Conflict Alert (STCA) alerted the North East SC to the conflict between the FK50 and an unknown contact which was subsequently identified as the PA24. Radar pictures at this time show the PA24 maintaining altitude 3500 feet with the FK50 in

its 11 o'clock at a range of 7.65nm level at altitude 3000 feet. At 1348.39, the FK50 pilot finally made contact with the North East SC advising that he was maintaining altitude 3000 feet and heading 070°. The North East SC immediately instructed the FK50 pilot to turn left heading 010° and gave traffic information on the PA24 which, at about this time, had been advised by Manston to free call Luton Radar. Note:- At this point, in accordance with the SID, the FK50 should have been climbing from altitude 3000 feet to 4000 feet. Despite the urgency of the instruction, the FK50 did not appear to take the turn until approximately 1349.15 by which time it was leaving regulated airspace and crossing through the PA24's 12 o'clock position. Minimum separation, as indicated on the Separation Monitoring Function (SMF) equipment, occurred at 1349.26 when the FK50, level at altitude 3000 feet, was in the PA24's one o'clock position range 1.08nm altitude 3400 feet. Both aircraft were at this time in Class G airspace. The two aircraft then diverged and standard separation was restored at 1350.06.

The Thames Radar controller had not been made aware, either when requesting release for the FK50 or when taking over watch, that the standard frequency for Clacton departures was not in use. However, the standard frequency had been taken out of service at 0735 that morning and although it was not possible to ascertain when or how Thames Radar had been informed of this, a number of aircraft had departed London City Airport prior to the incident and had been transferred to the correct (standby) frequency.

The LATCC TC North East SC observed the FK50 departing from London City but before the FK50 pilot contacted him, the STCA had flashed high severity alert. His first response on receiving the call from the FK50 pilot was to turn the aircraft left, followed by traffic information.

The FK50 pilot stated that during transfer from one controller to another on a standard departure procedure a new heading was given due to conflicting traffic at altitude 3500 feet, but that the traffic was not seen. No reason was

given for his aircraft remaining at 3000 feet when the SID profile required it to be at altitude 4000 feet.

The PA24 pilot stated that on receiving the weather at Amsterdam and Ostend, he informed Manston of his intention to return to Coventry. Manston asked if he would accept a climb to altitude 3400 feet and he accepted and informed them when levelling. At that altitude he was in clear air above the low cloud and below another layer much higher up. He had not been given any traffic information by Manston but had seen a larger aircraft passing ahead from left to right climbing and higher than him. It is not certain if the aircraft he saw was the FK50.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the FK50 pilot who did not climb in accordance with the Standard Instrument Departure, resulting in his aircraft leaving regulated airspace and coming into conflict with traffic in the FIR. A contributory factor may have been the radio communication problems experienced by the FK50 crew when they were given the wrong frequency for the North East SC after departing London City Airport. This may have distracted them from following accurately the SID profile.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

Although, as recounted above, a number of aircraft had been successfully transferred from Thames Radar to the alternative frequency, it would appear that the subject FK50 was the first departure since a shift change. The handover from one watch to another would, therefore, appear to have been incomplete in this respect.

Clearly, the FK50 should have followed the vertical profile of the SID but it was not plain from the pilot's report why he had not done so. The most obvious reason was, of course, his inability to make contact with the North East SC. Some two to three minutes elapsed during which time four calls were made to the standard frequency, before the pilot became established on the correct frequency. This could have resulted in some distraction to the crew - although good CRM should have dictated that the SID was still flown correctly.

The Panel also noted that the FK50 pilot announced his arrival on the correct frequency with the information that he was maintaining altitude 3000 feet and heading 070°. In his report, the pilot goes on to say that he was then given a new heading (this was the North East Sector controller's avoiding action turn). Members did not know the origin of the 070° heading but speculated that the pilot might, just possibly, have thought that he had been released from the SID and that altitude 3000 feet should be maintained.

As an alternative theory, it was also possible to sense from the pilot's report that he thought that they were in fact following the SID correctly. So again, as a matter of speculation, the Panel could not discount the possibility that the crew had misunderstood the stepped level requirements of the SID. This is not an uncommon failing. In turn, this prompted the Panel to examine the SID diagram as portrayed in the UK AIP. As an item of general information, Note 3 says "do not climb above SID levels until instructed by ATC". The boxed stepped climb warning says "...do NOT climb above specified intermediate altitudes unless

cleared by ATC". For a start, the two statements are not quite the same but, more importantly, the Panel thinks that the wording of both is ambiguous and could be misunderstood, especially by pilots whose first language is not English. There was first hand experience on the Panel, plus anecdotal evidence, which indicated that some pilots are asking for clearance to climb above each SID level. The Panel endorses the need for some form of warning note on the plates but believes that, together with the way the step levels are indicated, there needs to be a review of the words used in the warning notice on the SID diagram and an improvement to the format used to portray the step levels.

In this particular instance, the Panel did not know which chart producers version of the plate was being used by the FK50 crew, although it is quite possible that the way the information on it was displayed would correspond with the UK AIP.

**2 Causal Factors** The FK50 pilot did not climb in accordance with the SID and, as a consequence left controlled airspace and conflicted with the PA24.

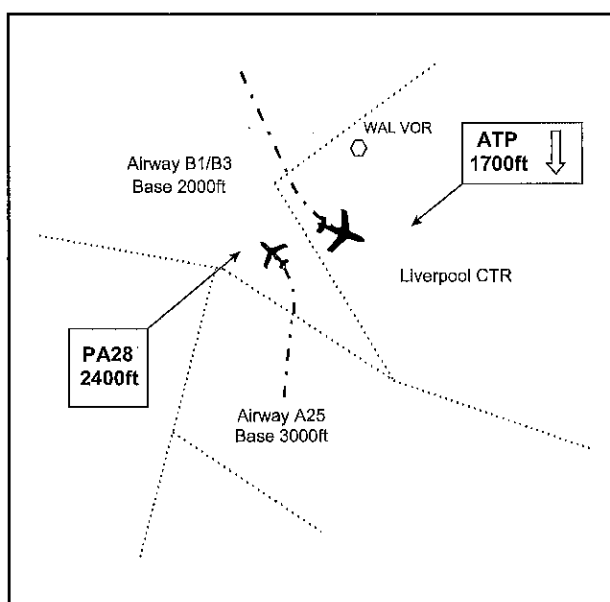
**3 Risk Classification** B

**4 Recommendations** The Panel recommends that the CAA examine the current method used to portray step levels on the SID diagrams in the UK AIP, the words used in the general information note reference SID levels, and the stepped climb warning box.

## AIRPROX REPORT 31c/98

### Occ No. 98/03025

*Date:* 5 June 1998  
*Time:* 1146 UTC  
*Aircraft:* ATP/PA28R  
*Operators:* British Airline/Private  
*Position:* 3nm South of Wallasey  
*ALT/HT/FL:* Altitude 2400 feet  
*Airspace Type:* Airway B1/B3 - Class A  
*Reporter:* Liverpool ATC - Approach Controller  
*Reported Separation:* 2nm horizontal/Nil feet vertical  
*Recorded Separation:* 2nm horizontal/700 feet vertical



## THE INCIDENT

Both of the aircraft involved in this AIRPROX were under the control of the Liverpool Approach Controller. The ATP was inbound, on Airway B3 from the Isle of Man, for an ILS

approach to runway 09 at Liverpool, and in descent to an altitude of 1600 feet. The PA28 was on a VFR flight enroute from Exeter to Carlisle at an altitude of 2400 feet.



At 1144, the ATP pilot made his initial call to the Liverpool Approach Controller, reporting passing altitude 6000 feet for 3500 feet. The controller acknowledged this call, cleared the ATP pilot to descend to an altitude of 2500 feet and, at 1144.30, instructed the pilot to turn right heading 155°. Then at 1145.20, the PA28 pilot established initial contact with the Liverpool controller who replied, "*(callsign) er Liverpool standby one please I'll call you*". Radar pictures taken at this time show the ATP 2.5nm North West of Wallasey and passing altitude 3400 feet in descent while the PA28 is in its one o'clock position range 8nm at altitude 2400 feet, heading North, still in class G airspace but less than 1nm from infringing the base of the airway. The controller then instructed the ATP pilot to descend to an altitude of 1600 feet before asking the PA28 pilot to pass his message. At 1146.00, the PA28 pilot replied, "*Good afternoon (callsign) a Cherokee Arrow from Exeter to Carlisle maintaining two thousand feet, two thousand five hundred feet on one zero one seven six miles to the south of Wallasey*". The controller suspected that the PA28 was operating within the base of airway B3 without ATC clearance and tracking towards the ATP, he therefore gave both aircraft avoiding action.

The controller responded with, "*(callsign) er avoiding action turn left immediately heading West*" and followed this to the ATP pilot, "*(callsign) avoiding action turn left heading one two zero*". The radar pictures timed at 1145.57 show the ATP passing altitude 2700 feet in descent with the PA28 in its one o'clock range 5.5nm level at altitude 2400 feet and now just inside class A airspace.

Both aircraft pilots acknowledged and responded to the avoiding action with minimum separation being recorded at 1146.36, when the ATP was passing altitude 1700 feet in descent with the PA28 in its 3 o'clock position range 2nm at altitude 2400 feet and moving away. The two aircraft then steadied on their respective avoiding headings and separation was rapidly restored with the PA28 pilot reporting visual contact with the ATP but the ATP pilot unable to sight the PA28.

In his written report, the ATP pilot said he was receiving radar vectors for an ILS to runway 09 and descending from altitude 2500 feet to 1600 feet when ATC was heard to give avoiding action to a light aircraft. This was followed by an avoiding action instruction, with conflicting traffic reported to be in his 3 o'clock position, but despite the good visibility the traffic was not sighted. From the subsequent RTF comments he understood that a light aircraft had infringed controlled airspace but at no time did he perceive any conflict had occurred, despite the avoiding action heading.

The PA28 pilot stated in his written report that he descended to below altitude 2500 feet to remain outside the Manchester CTA and, as requested by Hawarden, called West abeam Hawarden using the HAW NDB. He was then instructed to call Liverpool Approach which he did and was told to standby, during which time he heard the controller talking to an ATP pilot. When he was approximately 7-8nm South South West of Wallasey he was asked to pass his message, which he did, and was told to execute an immediate left turn onto 270°. He complied with this instruction while maintaining altitude 2400 feet, and that on completion of the turn he saw the ATP on a relative bearing of 110°, slightly below, at a range he judged to be in excess of 2nm and heading approximately 090°.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the pilot of the PA28 who entered airways B1/B3 at an altitude of 2400 feet without clearance and came into conflict with the ATP which was in descent to an altitude of 1600 feet.

In the circumstances the Liverpool Approach Controller had acted promptly to give avoiding action instructions to both aircraft.

## REVIEW BY AIRPROX PANEL

### 1 Discussion

It appeared from the PA28 pilot's report that he had a fair idea of his position in relation to controlled airspace. However, he fell into the trap of assuming that, because he had been in RTF contact with Hawarden, told by them to contact Liverpool, and had then been told by Liverpool to "standby", that this signified that ATC were content for him to continue into the airway.

The Panel noted that the interval between the PA28 pilot being told to "standby" and then being interrogated by the controller was only about three quarters of a minute. And, whilst the controller had not formally identified the PA28 on radar, he clearly felt that he had enough information to believe that he could be confident enough to give prompt avoiding action. It could be argued that the avoiding action should have been given first to the IFR aircraft, the ATP, but the general view was that as the controller was in conversation with the PA28, it was quite reasonable for him to act the way he had.

2 Causal Factors The PA28 pilot infringed Airway B1/B3 and conflicted with the ATP.

3 Risk Classification C

4 Recommendations The Panel had no recommendations to make.

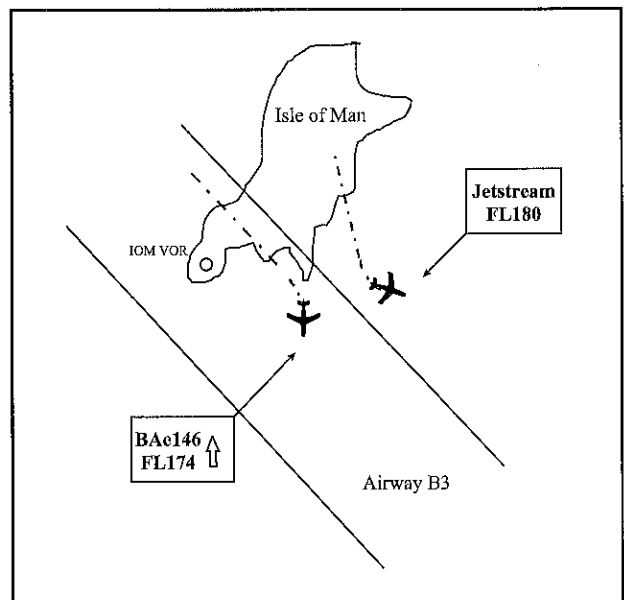
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## AIRPROX REPORT 45c/98

### Occ No. 98/03034

*Date:* 5 June 1998  
*Time:* 1255 UTC  
*Aircraft:* BAe146/Jetstream  
*Operators:* British Airline/British Military  
*Position:* 10nm South East of the Isle of Man of Man VOR  
*ALT/HT/FL:* FL180  
*Airspace Type:* Airway B3 - Class A  
*Reporter:* ScACC Antrim Sector Controller  
*Reported Separation:* 4.4nm horizontal/400 feet vertical  
*Recorded Separation:* 5.1nm horizontal/500 feet vertical



## THE INCIDENT

This AIRPROX occurred within airspace which was the responsibility of the Manchester Area Control Centre (MACC) Isle of Man (IOM)

Sector which at the time was banded with the MACC West Sector. The BAe146 was en route from Belfast City Airport to London Gatwick and was eastbound on airway B3 in the climb to FL190. Although within the IOM sector the pilot was still receiving a service from the

ScACC Antrim Sector Controller who had not yet handed the aircraft over to the MACC controller. The Jetstream was en route from West Freugh to Llanbedr at FL180 and was receiving a radar service from the London Joint Area Organisation (LJAO) North West controller. The LJAO controller had obtained, from the MACC controller, a Cleared Flight Path (CFP) across B3 from North to South at FL180.

At MACC, the IOM Sector was in the process of being split from the West Sector at the time that the AIRPROX occurred. The two controllers who were taking over the IOM Sector had only just arrived in the operations room and were receiving a handover.

At 1242, the LJAO controller telephoned the MACC West Sector Co-ordinator to request a CFP through airways B3 and B1 at FL180 for the Jetstream. The co-ordinator identified the Jetstream and approved the CFP. He also prepared a pink flight progress strip (fps) which he placed under the IOM designator, but this strip only had the level and SSR code annotated on it. No time or crossing position was recorded on the fps as is required by the MATS Pt 2. Nor were the details of the CFP brought to the attention of the West Sector Radar (R) Controller or to the attention of the oncoming IOM controllers. Although the West Sector Co-ordinator was entitled to issue the CFP at FL180, because the clearance was procedurally safe and was within airspace under his jurisdiction, he did not fully comply with the MATS Pt 2 which required him to, "...ensure that the Radar controller is aware of such clearances". In addition MATS Pt 2 states that "All strips containing an ATC clearance either for departure or to join/cross regulated airspace, and issued by the Co-ordinator Controller, must be cocked out". This was not done either.

The co-ordinated track of the Jetstream would have involved the aircraft entering airway B3 approximately 7nm South East of the MACC/ScACC boundary. The MATS Pt 2 requires co-ordination to be carried out with ScACC "For all flights operating within 10nm of

the MACC/ScACC boundary". This requirement was not complied with.

Meanwhile, the BAe146 had departed from Belfast City Airport and the pilot made initial contact with the ScACC Antrim Sector Controller at 1246. He reported on a radar heading of 150°, climbing to FL110 and was cleared to continue the climb to FL210. However, this was corrected to FL190 when the Antrim controller noticed that a new flight plan with a requested cruise level of FL190 had been submitted. Although the Antrim controller instructed the pilot to maintain FL190 on reaching, he did not impose a restriction on the flight requiring it to be level by the ScACC/MACC boundary. It was his responsibility to ensure that the flight complied with its co-ordinated level when entering MACC airspace. In the absence of advice to the contrary this was the level printed on the fps, ie FL190 and it was this level that the MACC controller was entitled to expect the BAe146 to be at when entering MACC airspace.

Note:- In this case, FL190 is the highest available flight level in MACC airspace and is the agreed level associated with a number of standing agreements. Therefore, its use is subject to special care and an entry in the MACC MATS Pt 2 states "Use of FL190 as a cruising level is not banned. However, caution should always be exercised when accepting traffic at this level. "Co-ordinator" Controllers shall ensure that the "Radar" Controller acknowledges the acceptance by ticking the level box on the entry strip. Similarly, "Co-ordinator" Controllers must highlight a FL190 cruising aircraft when handing over to another controller". This procedure was not adhered to by the MACC West Co-ordinator.

Having seen the radar response from the BAe146 indicating FL165 in the climb and noting the developing conflict, the LJAO controller contacted the MACC West Co-ordinator at 1254.20 and said, "LJAO North West (squawk) looking to come right about ten degrees if I could against your (callsign)". The MACC co-ordinator responded with, "(callsign) is working Scottish", followed by, "And they are

*prob.... they they're definitely going above nineteen so I suggest you stay outside controlled airspace for the moment".* The LJAO controller replied, *"Oh right you did give me a cleared flight path at eighteen"*, and the MACC co-ordinator responded to this with, *"Well I gave it to you but they haven't co-ordinated it with me"*. The LJAO controller replied, *"All right I'll turn I'll turn left out of the way"*, and at 1254.37 he instructed the Jetstream pilot, *"(callsign) London Mil avoiding action turn left heading zero nine zero traffic was west of you range six miles south west bound (sic) passing flight level one seven zero in the climb"*.

Radar pictures timed at 1254.44 show the BAe146 passing FL169 in the climb along the northern edge of airway B3 and with the Jetstream in its 11 o'clock position range 7nm crossing from left to right and about 1.5nm from the edge of B3. The Jetstream pilot acknowledged a turn heading of 160° which the controller corrected to 090° and then followed with the instruction, *"Make it a hard left turn now zero seven zero"*. The pilot acknowledged a heading of 060° to which the controller responded at 1255.05 with, *"Affirm hard left turn"*. The pilot then commented that he had passengers on board and that, *"hard is a bit hard"*, and followed this with a request for the position of the conflicting traffic. The radar pictures timed at 1255.11 show the BAe146 on the northern edge of B3, passing FL173 in the climb and having just entered MACC's airspace. The Jetstream is in the BAe146's half past eleven position, range 5.6nm at FL180 and having just started a left turn away from the airway boundary. Subsequent pictures show the BAe146 continuing its climb as the Jetstream turns away from the airway with minimum separation being recorded at 1255.35 as 5.1nm horizontal and 500 feet vertical.

At about the time that the LJAO controller was giving avoiding action to the Jetstream pilot, the Short Term Conflict Alert (STCA) was activated at both MACC and ScACC. The ScACC Antrim controller gave avoiding action to the BAe146 pilot at 1255. This was an immediate instruction to turn onto a heading of 180( and was prefixed by the words *"avoiding action"*. The pilot

acknowledged this and asked for the position of the traffic. This was given as, *"....twelve o'clock at a range of five miles crossing left to right"*. However, by this time the Jetstream was already turning away and separation was not further compromised.

At the time of the incident, the ScACC Antrim Sector Controller believed that as the BAe146 was climbing to FL190 at IOM he could not tell whether the aircraft was level due to overlapping radar returns from an aircraft descending above. He subsequently stated that he had expected the BAe146 to reach FL190 by the IOM. Furthermore, he thought that he had missed both the fact that it did not make the level and that it had gone past the transfer of control and communication point because he had become preoccupied with Belfast inbound traffic which he was descending to a level above that of the BAe146. He commented that he would normally instruct eastbound flights climbing above FL190 to cross the IOM at FL200 or above and emphasised that he was well aware of the requirements to co-ordinate those flights which were unable to comply, with MACC.

The MACC West Co-ordinator recalled that he gave a CFP to the LJAO controller for the Jetstream and that a pink strip was immediately placed under the IOM designator. Traffic on the West sector then began to build and, at about 1245, he asked for the sector to be split. While this split was taking place, the LJAO controller rang enquiring about traffic climbing eastbound at IOM and he instructed the LJAO controller to remain outside controlled airspace because the eastbound BAe146 had not been co-ordinated in the climb.

The MACC West Radar Controller recalled that after the decision was made to split the sector, and while the traffic was being transferred to the IOM sector, he observed the STCA between the BAe146 and a military squawk. He stated that the BAe146 had not been co-ordinated by ScACC and that he was not aware that the military aircraft had been cleared to cross B3 at FL180.

The MACC IOM Sector Co-ordinator recalled that he was in the process of opening the sector when he became aware of the STCA and that although the strips on the BAe146 at the IOM were displayed indicating FL190, the aircraft was still with ScACC. He had no knowledge of the crossing aircraft at FL180. After the incident a strip on the Jetstream was passed to him by the West co-ordinator but as there was no red tick acknowledgement mark on it, he was unable to ascertain whether this strip had been brought to the attention of any radar controller.

In his written report, the Jetstream pilot recalled being asked to turn hard left for avoiding action and about one minute later being turned back onto track with own navigation. He stated that at some point the co-pilot did see another aircraft below and a number of miles away, but it did not seem to be in conflict with them at any time. He could not recall any other details but did subsequently state that although the reason for the turn had been queried by the co-pilot, the turn was already being actioned by him. He commented that, unless other overriding conditions preclude it, he would always react to the avoiding action turn first, then query the whereabouts of the traffic later.

In his written report, the BAe146 pilot recalled being given a turn on to a heading of 180° and that on querying the reason for the turn was told it was for collision avoidance. He said that vision from the cockpit was good but they did not see the traffic.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

The Panel agreed that the fundamental cause of the AIRPROX was plain; the ScACC Antrim controller allowed the BAe146 to enter MACC airspace, whilst still in the climb to its co-ordinated level, without seeking further co-ordination with MACC.

After viewing a replay of the radar recording, and listening to the Antrim RTF recording, the Panel could neither detect the reported overlapping radar returns nor a great deal of activity on the frequency. Members were, therefore, left rather uncertain as to a possible cause for the controller's lapse.

The Panel thought that, whilst it could not say that had the MACC West Co-ordinator followed the various procedures required of him then this incident

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the ScACC Antrim Sector Controller who permitted the BAe146 to enter MACC airspace while still climbing to its co-ordinated level of FL190, without initiating the appropriate co-ordination with MACC. As a result the BAe146 came into conflict with the Jetstream which had been granted a Cleared Flight Path to cross airway B3 at FL180. The situation was compounded by the fact that the BAe146 had remained on the ScACC controller's frequency after it had crossed the ScACC/MACC boundary.

It was noted that a number of written procedures, designed to help to mitigate against this type of incident, were not adhered to by the MACC West Sector Co-ordinator. Specifically the information annotated on the CFP fps for the Jetstream was incomplete; the fact that a CFP had been issued does not appear to have been brought to the attention of the radar controller; the controllers splitting off the IOM sector were not made aware that the CFP had been issued; the required co-ordination with ScACC on the crossing traffic was not carried out and the prescribed procedures for the handling of traffic accepted into the sector cruising at FL190 were not adhered to. As a result a number of valuable system safeguards were lost.

would have been prevented, it did conclude that the chances of detection had been greatly reduced. It was particularly interested in the Co-ordinator's telephone comment to the LJAO controller that the BAe146 was "definitely going above nineteen". This suggested to the PANEL that he had forgotten, or not noticed, the level information on the BAe146's fps. The increase in workload and consequent activity to split the IOM sector from the West sector, might explain his oversight.

In conclusion, members thought that the LJAO controller should be commended. His actions actually prevented separation being lost between the BAe146 and the Jetstream.

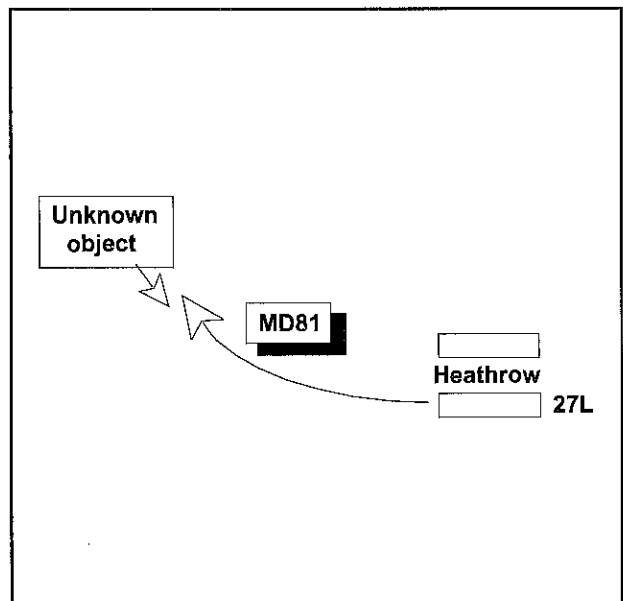
**2 Causal Factors** The ScACC Antrim Sector controller allowed the BAe146 to enter MACC airspace, still climbing to its co-ordinated level, with the result that it conflicted with the Jetstream.

**3 Risk Classification** C

**4 Recommendations** The Panel had no recommendations to make.

**AIRPROX (P) REPORT No 63/98**

Date/Time: 09 Jun 1245  
Position: N5129 W0032 (2.5 NM WNW Heathrow)  
Airspace: CTZ (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: MD81 Unknown  
Operator: CAT  
Alt/FL: 3000 ft ↑ (QNH 1005 mb)  
Weather IMC INT CLOUD  
Visibility:



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE MD 81 PILOT** reports that he was passing 3000 - 3500 ft (QNH 1005) at 170 kt having just departed from RW 27L at Heathrow on a BPK SID. He was in IMC flying in and out of cloud. When about 2 NM W of Heathrow, both pilots saw an object pass in the opposite direction down their port side slightly above their ac. The incident was very quick, the object passing in about a tenth of a second. The PIC describes it

as metallic grey and the size of a small ac with lights on; the FO, who saw it a fraction of a second later as it passed the LH clear view window, describes it as a bright light very close. They estimated that it passed 30-50 metres away. No estimate of risk is given.

Note: Despite extensive enquiries by AIS (Mil), no explanation for this object can be found. A thorough ground search of the area was carried out by Slough, Metropolitan and Maidenhead police officers and the possibility of models, light ac, fireworks and flares was investigated. All proved negative.

**LATCC INVESTIGATIONS** reports that the MD81 departed from Heathrow for Oslo at 1242 on a BPK 6G SID. Having established contact with the TC NE controller passing 4000 ft, the pilot reported a *“flare or something passed twenty feet from our aircraft”*. The controller asked at what point this had happened and the pilot replied that it occurred just as the ac was turning on the BUR NDB QDM 302°. Subsequently the pilot said that he was not sure what had passed, it might have been an ac but the crew were not sure. The controller advised him that he thought it was unlikely that it was another ac and requested the DME range from Heathrow that the incident had occurred. The pilot reported that it was about 2 DME as the ac was passing 3500 ft; he later advised that he would file an Airprox, commenting that the object *“looked like a fighter or something, about 20-50 metres away and moving very fast”*. The controller was busy and arranged for the Airprox to be filed on the FIS frequency 124.6.

Following the Airprox, the Watch Manager carried out an immediate radar replay to determine whether the intruder could have been an ac; nothing was seen. Additionally, the Heathrow 10 cm radar was later replayed as it offered the best resolution for any small object

that might have been in the vicinity; again nothing was observed either ahead of the departing MD81 or at the reported position of the encounter. The incident was reported to Slough police and a thorough search of the area revealed no evidence of model ac, fire or fireworks having been ignited. Inquiries among the public in the general area also proved fruitless.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included a report from the pilot of the reporting ac, a tape recording of the relevant RT frequency, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It was clear that the MD 81 crew's brief glimpse of the object afforded them little opportunity to describe what they had seen. The pilot's RT transmissions and his written report variously depict it as *'metallic'*, a *'bright light'*, a *'flare'* or a *'fighter or something'*. ATCO members were certain that even a very small craft in such close proximity to Heathrow would have been detected, particularly on the Heathrow 10 cm radar. Despite the extensive efforts of the police, AIS(Mil) and the general public, there were no clues as to the nature of the reported object. The Board concluded that owing to the lack of information available to them the incident was unassessable with regard to both cause and risk.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: D

Cause: Unassessable

## AIRPROX (P) REPORT No 60/98

Date/Time: 10 Jun 1022  
Position: N5210 W0417 (10 NM E of Aberporth)  
Airspace: LFS (Class: G)  
Reporting Aircraft Reporting Aircraft  
Type: Hawk Jaguar  
Operator: HQ PTC HQ STC  
Alt/FL: 250 ft 370 ft  
(agl) (Rad Alt)  
Weather VMC CLOC VMC CLBC  
Visibility: 20 NM+

### BOTH PILOTS FILED

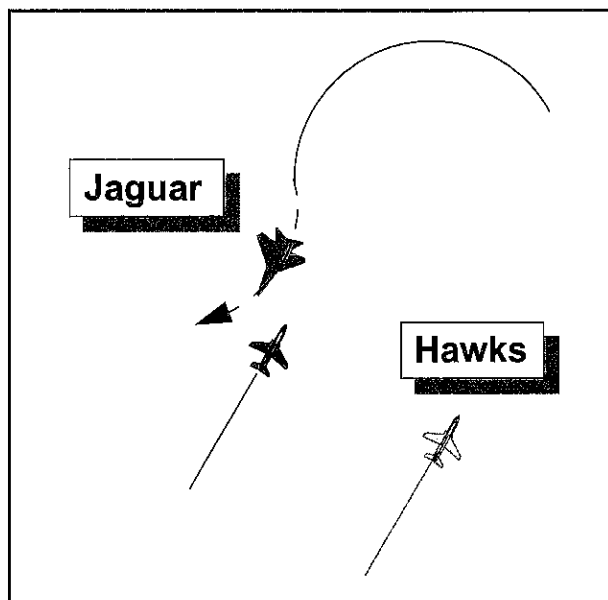
#### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE HAWK PILOT** reports heading 030° at 420 kt on a pairs low level exercise when, 30 sec after he saw a pair of fast jets heading SW, another appeared from his 10 o'clock and passed him in a right turn 50 to 100 ft away and below; he pulled up at 7 g to avoid it. The risk of collision was very high. He thought the other ac might have been a Tornado; he was aware of CBLS on its belly. His sighting had been delayed by his canopy arch and the other ac which had drawn his lookout away from his 10 o'clock.

**THE JAGUAR PILOT** reports flying a left turn at low level at 450 kt when he saw a Hawk in his 10-11 o'clock about 0.5 NM away. Being unable to see a wingman to its starboard, he rolled right to check for one to its port and immediately a Hawk appeared from behind his right windscreen strut. It was tracking 195° relative to him at about 2-300 ft. He was now in a hard right turn and tightened it, passing 10-20 ft below the Hawk and 50-100 ft from its wingtip. The risk of collision had been high. His HISL was on, and he saw the Hawk's nose light.

Note: The ac involved do not show on recorded radar.

**HQ PTC** comments that the similarity of perceived miss-distances indicates that this



was really quite a close encounter. However, despite the distractions of other ac and the propensity of ac to hide behind cockpit structures, the pilots saw and avoided each other - but not by a comfortable margin. The lesson of leaning to see around the obstruction is clear but not always easy to maintain.

**HQ STC** comments that this Airprox highlights the need for all users of the low flying system to maintain a high level of situational awareness and lookout. Even in excellent weather and with good visibility it can be difficult to get an early 'tally' on other ac at low level. In this instance the Jaguar pilot, having established a turn, would not have been able to see both Hawks. On seeing the first Hawk the Jaguar pilot's instinctive reaction was to reverse his turn to clear his 'blind-side'. In doing so he was able, albeit very late, to acquire the second Hawk and manoeuvre to increase the separation.

#### PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac and reports from the appropriate operating authorities.



The Jaguar pilot's actions in checking for a wingman on the other side of the first Hawk he saw demonstrated how vital this sort of situational awareness is at low level. It was also another case which proved the value of the Hawk's nose light. From both pilots' descriptions of the event, the Hawk had only seen the Jaguar in time to take avoiding action as he was passing it (too late to affect the outcome) and that what had saved the day was the Jaguar pilot acting on his suspicions. The Board concluded that the cause of the Airprox was the late sighting of each ac by the other

pilot. Members discussed the risk level at length. It was suggested that the Jaguar pilot was already turning away from the Hawk and only had to tighten it by a controlled amount to ensure he missed the Hawk and that there was therefore no risk of a collision. However, the view eventually prevailed that if he only missed the Hawk by 50-100 ft in a turn, having only seen it some 2 sec before passing it, the risk, as assessed by both pilots, was very high. The fact that both pilots reported the Airprox also fuelled the Board's conclusion that there had been a risk of collision.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: A

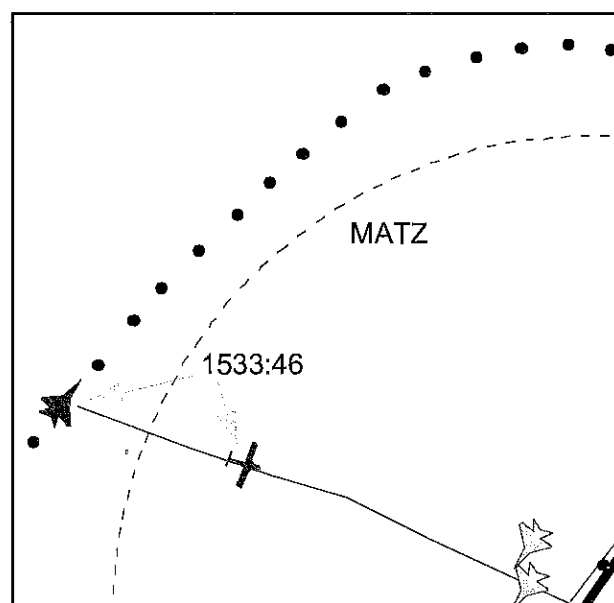
Cause: Late sighting by both pilots.

### **AIRPROX (P) REPORT No 61/98**

Date/Time: 12 Jun 1437  
Position: N5807 W0238 (25 NM SSE Wick)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: AS 332 AS 332  
 Super Puma Super Puma  
Operator: CAT CAT  
Alt/FL: 2000 ft 2000 ft  
 (1013 mb) (RPS 1012 mb)  
Weather IMC IN CLOUD VMC  
Visibility: 1000 m >10 km

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE AS 332 (A) PILOT** reports that he was heading 172° on HMR X-RAY at 125 kt and maintaining 2000 ft (RPS 1013) while in contact with Lossiemouth Approach who were providing a RIS on 119.35. The visibility, in cloud, was about 1000 m. Position lights, anti-collision lights and strobes were on. When about 55 NM N of ADN below W4D, he was informed of traffic on a reciprocal heading at 2000 ft range 2 NM.



He requested descent from Lossiemouth and was asked to 'standby'; he immediately commenced a R turn through 30 - 40° during which he left cloud and his co-pilot observed the other ac, a Super Puma, about 1000 - 1500m away to their L at a similar level. He had not been aware of the other ac prior to the traffic warning by ATC and as there was no vertical

separation he considered it prudent to make a precautionary turn in avoidance. The pilot does not give an assessment of risk. Following his arrival at Aberdeen he and his co-pilot debriefed the incident with their company FSO.

**THE AS 332 (B) PILOT** reports that he was heading 352° at 125 kt at 2000 ft (RPS 1012) about 25 NM/152° on the Wick VOR. The visibility, 500 - 1000 ft below cloud, was in excess of 10 km in VMC. He was receiving a RIS from Lossiemouth radar on 119.35 and squawking 3721 with Mode C. Lossiemouth reported an ac 10 NM ahead which he looked for and, while considering a descent to 1500 ft (climb was not possible due to approaching Cb clouds at 2500 - 3000 ft) he heard the pilot of the other ac call for descent to 1500 ft. He therefore maintained 2000 ft and asked radar to advise the other ac's position. He was informed that it was about to pass 2 NM on his L. He did not see the other ac against the dark background of cloud and sea but did not feel there had been any risk in the encounter.

**HQ MATO** reports that as the Lossiemouth tape recorders were unserviceable no transcript is available for this incident. Therefore it has not been possible to verify all the reports. Where there are anomalies in the reports pertinent to the Airprox these are stated.

The routing of the helicopters, their SSR codes and altitudes are agreed by all involved. The UK AIP promulgates HMR X-Ray as bi-directional between Aberdeen and Wick with a northbound cruising altitude of 3000 ft and southbound of 2000 ft. However, the weather was such that the pilot of Puma (B), routing N on HMR X-Ray below the promulgated levels of ADR W4D, elected to fly at 2000 ft because he was approaching Cb clouds with a base of 2500 to 3000 ft. At approximately 1420 the Puma (B) pilot called Lossiemouth LARS on 119.35 MHz and requested a service. He was instructed to select SSR code 3721 and then placed under FIS at 2000 ft on the Orkney RPS. Super Puma (A) was routing from Wick to Aberdeen on HMR X-Ray at the promulgated altitude of 2000 ft amsl. At about 1425 its pilot called Lossiemouth LARS and was instructed to select

SSR code 3722, whereupon he was placed under RIS at 2000 ft on the Orkney RPS.

As the ac approached each other, the pilots were passed traffic information, the details of which were queried by both. The Lossiemouth controller reports that traffic information on Puma (B) was passed to the pilot of Puma (A) when the 2 helicopters were 8 NM apart. The initial traffic information call made by the Lossiemouth controller to Puma (A) was supplemented by similar traffic information to the pilot of Puma (B). However, the pilot of Puma (A) thought that this traffic information was passed at 2 NM while the pilot of Puma (B) recalls it being passed at 10 NM. The pilot of Puma (A) reports that he queried the altitude with his co-pilot and requested a descent from Lossiemouth; however, the Lossiemouth controller reports that the pilot only queried the altitude of the conflicting traffic. Notwithstanding the exact exchange that took place, the pilot of Puma (A) commenced a R turn during which the ac left cloud and the co-pilot observed Puma (B) between 1000 and 1500m away at the same altitude. The pilot of Puma (B), who stated he was receiving a RIS although the Lossiemouth controller says that the service being provided was a FIS, reports that he did not see the conflicting traffic at any stage before or after the Airprox. Additionally, he reports that he heard the other pilot call for descent to 1500 ft; on the basis of this RT call, he remained at 2000 ft and asked Lossiemouth for the position of the other ac. He was told that the other ac had passed about 2 NM to his left.

Notwithstanding the anomalies between the reports, the pertinent points are considered to be as follows: Regardless of whether Puma (B) was provided with a FIS or RIS, traffic information was passed to the pilot as if he was receiving a RIS; it is probable that traffic information was passed when the 2 ac were approximately 8 NM apart. An exchange of RT calls followed and Puma (A) requested descent to 1500 ft; however, this call was either not received or not heard by the controller and no reply was given. Consequently, the pilot of Puma (A) elected to turn to the R, which is in accordance with the Rules of the Air, to resolve

the reported confliction. Lossiemouth considers that had traffic information been passed earlier, this would have allowed more time for the pilots involved to take timely action to resolve the confliction, and given more opportunity for the service to be upgraded to RAS if so requested. SATCO Lossiemouth has reminded the controller about the importance of timely information. Nonetheless, traffic information was passed involving a number of RT calls which confirmed details of the confliction to both pilots involved. As a result of this the pilot of Puma (A) took action to resolve the confliction in accordance with the requirements of a RIS.

Note: A picture of the Allanshill radar shows the two helicopters passing each other on parallel reciprocal tracks about 0.7 NM apart. The heading change by Puma (A) is not seen.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a report from the appropriate ATC authority and a radar picture.

An ATCO member, familiar with helicopter operations in the N Sea, commented that the modified RAS given to helicopter pilots in that area was not available to the pilots in this incident; he thought there was a possibility that the pilots concerned, who were accustomed to receiving this type of service as a rule, may not have been aware that it was not applicable to them on this route. He wondered, therefore, if similar arrangements might be possible for the Moray Firth area as some low level radar cover to the N of Aberdeen was now afforded by the Allanshill radar. The Board concurred and

asked the Director to recommend a proposal to the CAA and MOD, jointly.

This incident occurred in free airspace where the onus for requesting the appropriate service rested with the pilots concerned. Members wondered why, in view of his flight conditions, the pilot of Puma (A) had been content to remain under a RIS. Under this service the pilot is responsible for ensuring his own separation from other ac irrespective of whether or not traffic information is passed to him. Moreover, the controller is under no remit to give avoiding action. The northbound pilot (B) thought he was under a RIS when he was actually receiving a FIS; in either case, he also was responsible for his own separation and Board members felt that since he was forced to fly at a non-standard altitude, owing to the low cloud, his awareness should have been heightened against possible southbound traffic at the promulgated altitude of 2000 ft. One member commented that it might have been sensible in the circumstances to have flown at a slightly lower altitude, say 1500 - 1800 ft, to build in a degree of vertical separation.

In the reported cloud conditions it was reasonable to expect that neither pilot would spot the other until both were in clear air. The Board concluded, therefore, that the incident was caused by a conflict of flight paths in the FIR resolved by the sensible action of the pilot of Puma (A) as a result of traffic information from Lossiemouth. Members agreed that more timely intervention by the Lossiemouth controller would have been helpful. The visual evidence of lateral separation by the Puma (A) pilot is supported by an Allanshill radar frame which shows that the helicopters passed each other by about 0.75 NM. It was therefore assessed that there had not been a risk of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: A confliction of flight paths in the FIR resolved by the actions of the pilot of Puma (A).

Recommendation:

The UKAB recommends that the CAA and MOD jointly examine the feasibility of introducing a Radar Advisory Service for users of Helicopter Main Routes in the Moray Firth area.

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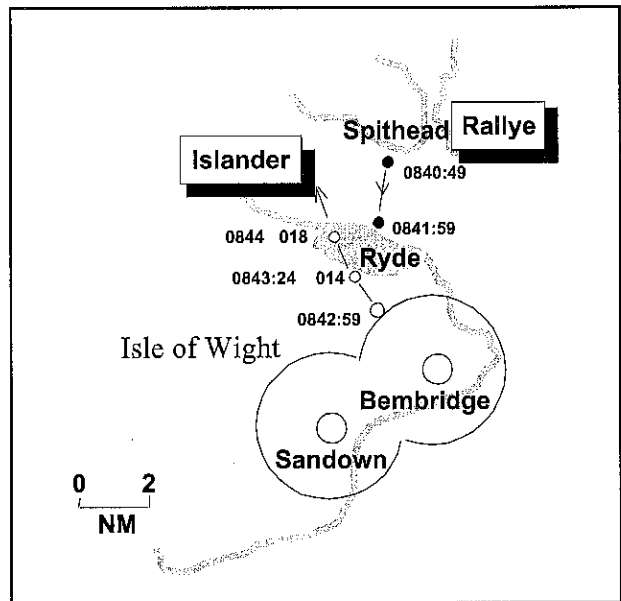
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**AIRPROX (P) REPORT No 64/98**

Date/Time: 12 Jun 0843  
Position: N5042 W0109 (Approx 3 NM NNW Bembridge)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: BN2 Islander Rallye  
Operator: Civ Pte Civ Pte  
Alt/FL: 1500 ft ↑ 1100 ft ↓  
(QNH 1021 mb) (QNH 1022 mb)  
Weather VMC VMC  
Visibility: 30 km 30 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE ISLANDER PILOT** reports that he was in a R turn onto 335° at 90 kt and climbing through 1500 ft (QNH 1021) having just departed from Bembridge in VMC; the visibility was about 30 km. Cockpit workload was high due to post take-off checks and a frequency change to Solent Radar. He was squawking 7000 with Mode C. The other ac, believed to be a Rallye, was seen by his passenger, who was occupying the RHS, as it approached from their 12 o'clock position descending through their level in a L turn about 300 m away; it passed down their starboard side about 150 m away and 50 ft below. He was not able to take avoiding action as he did not see the ac himself at any time; however, he believed there had been a high risk of collision. Although the Rallye was about to enter the Bembridge ATZ its pilot was apparently not on the Bembridge radio frequency (123.25). He obtained the registration of the ac which subsequently landed at Sandown. In a subsequent conversation the Sandown air/ground operator said that the Rallye pilot had made no mention to him of any unusual encounter.



**THE RALLYE PILOT** reports heading 185° at 100 kt and descending through 1100 ft (QNH 1022) while inbound to land at Sandown in VMC; the visibility was over 30 km. He was in contact with Sandown air/ground on 123.50 who had passed him airfield information. When about 3 - 4 NM S of Ryde, he saw an Islander ac about 350 yd away to his L as it climbed through his level from L to R. He turned L and increased his rate of descent in avoidance and the Islander passed about 200 m in front of him and 100 - 200 ft above. He did not consider there had been a risk of collision. The pilot comments that he flies into Sandown several times a month, always routeing over Gosport and then lining up with Ryde pier which leads into Sandown, thus keeping him clear of the Bembridge ATZ. Although he had previously been cleared to contact Sandown by Southampton on 120.225, he remained with Southampton until over Ryde, when he received Sandown's information.

Note: A replay of the LATCC radar at 0840:43 shows a primary return heading S at Spithead.

This fades from cover approaching Ryde and then, at 0842:58 another primary return believed to be the Islander appears to the S of Ryde heading NNW. Shortly afterwards this return displays a 3671 Southampton squawk indicating 1400 ft Mode C. The encounter, which is not seen on radar, is believed to have occurred at about 0843 in the FIR to the S of Ryde and NW of the Bembridge ATZ.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac and a radar video recording.

Members noted that this incident occurred in excellent weather conditions and they felt that both pilots should have been able to spot each other in good time. In the event, the Islander pilot's only awareness of the other ac was through his passenger's late observation of it as it turned and passed them. Notwithstanding his reported high workload, members said that the pilot was not absolved from exercising his responsibility to maintain an adequate lookout; his non-sighting of the Rallye was assessed to be a part cause of the Airprox. The Rallye pilot, who had right of way, spotted the Islander, albeit late, in time to take avoiding action and members agreed that this removed any risk of collision. His late sighting, however, was assessed to be a part cause of the Airprox.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: Non sighting by the Islander pilot and a late sighting by the Rallye pilot.

A GA member observed that the Rallye pilot's declared standard routeing to Sandown via the Ryde pier avoided the Bembridge ATZ by only a narrow margin; good airmanship should have dictated a courtesy call by the Rallye pilot to the Bembridge FISO announcing his presence. Traffic information could then have been passed on the recently departed Islander and the incident might have been avoided, accepting the latter may already have transferred to the Southampton frequency.

A member asked if any procedures existed between Bembridge and Sandown, as their close proximity to each other resulted in overlapping ATZs. He thought that a formal arrangement, perhaps in the form of an letter of agreement, would facilitate the coordination of their combined operations. However, ATCO members pointed out that in view of their limited ATC facilities (Bembridge FISO, and Sandown air/ground) and their position in the open FIR, a formal agreement might be inappropriate. The airfields had co-existed for many years and it was assumed that an understanding with regard to the exchange of basic airfield information, such as RW in use, circuit directions and any planned daily activities, and coordination with inbound/outbound and transiting traffic, would have evolved between them over time.

## AIRPROX (P) REPORT No 62/98

Date/Time: 16 Jun 0835  
Position: N5211 W0106 (1 NM N of DTY)  
Airspace: LFS/FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Tornado GR Sukhoi 29  
Operator: HQ STC Civ Pte  
Alt/FL: 1200 ft ↓ 2100 ft  
(Rad Alt) (QNH)  
Weather VMC CLBC VMC CLBC  
Visibility: 12 km 40 km

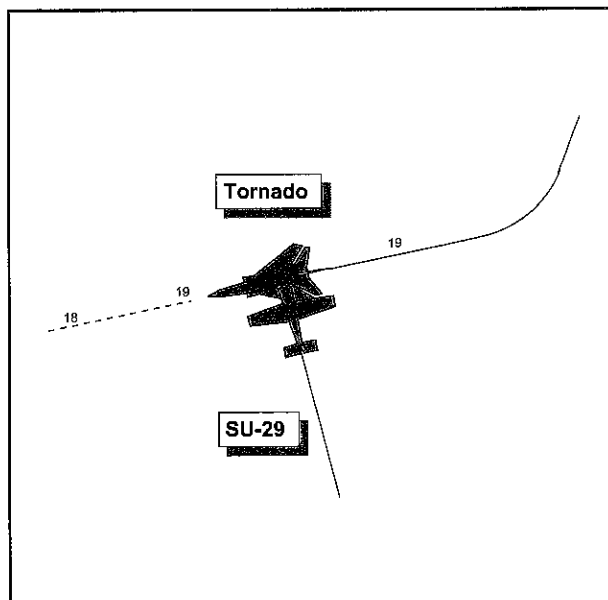
### PART A: SUMMARY OF INFORMATION REPORTED TO JAS

**THE TORNADO PILOT** reports heading 250° at 420 kt on a descent to low level for a student introductory TFR sortie with a high workload. His HISL was on and he was squawking with Mode C. He saw a light ac in his 11 o'clock on a northerly track at the same level less than 200 ft away. He bunted and the light ac passed about 50 ft overhead and 50 ft away with a severe risk of collision. The other ac was a tail-wheel aerobatic type, metallic ruby red with white stripes on the wings.

**THE SUKHOI PILOT** reports heading 330° at 120 kt, level at 2100 ft and not receiving an ATS; he was squawking 7000 but had no Mode C. He saw a Tornado 50 yd away crossing right to left; it passed about 50 ft beneath him as he pitched up. The risk of collision was high. His ac is blue with white stripes and red stars.

JAS Note: LATCC radar recordings show the Tornado turning from 200° to 260° to close with the SU29 which is tracking 346° with no Mode C. The Tornado's Mode C is steady at 1900 ft for the 25 sec up to a position just after the Airprox; it then drops to 1800 ft. 1900 ft Mode C equates to 2035 ft on the local QNH.

**HQ STC** comments that the descent to low level is a high workload event which also involves a transit through levels used extensively by the GA community. In 'see and avoid' airspace aircrew must rely on an effective lookout scan



and in this instance the Tornado crew spotted the light ac in time to take avoiding action.

### PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS

Information available to the Working Group included reports from the pilots of both ac, radar video recordings, and reports from the appropriate operating authorities.

Human memory is particularly unreliable where the colour of fleetingly observed objects is concerned and will tend to fill in what it expects unless primed to note colour. Hence members accepted that what the Tornado pilot had seen was the SU29 as confirmed by both the radar recording and the similarity in the pilots' reports of the encounter.

A military member briefed that the descent to low level was a particularly demanding high workload scenario in a TFR instructional sortie. The need for look out had to be balanced with making necessary TFR selections and monitoring the system very closely to ensure altitude capture; margins for recovery should the TFR not "capture" accurately were quite limited. Nonetheless he accepted that notwithstanding these considerations, the need

for assiduous look out in the VFR environment remained paramount.

Members agreed that both pilots were in a see-and-avoid situation and that the cause of the Airprox was that both pilots saw the other ac very late indeed, notwithstanding the reported fairly good visibility. Being virtually on a collision course, neither pilot would have perceived any relative angular motion in the other ac and each may have been hidden from

the other until a late stage by windscreen or canopy frames.

The Group noted the very close nature of the encounter; most of the Tornado pilot's instinctive avoiding action appeared to have taken effect after the ac had passed, and even with the SU29 pilot pitching up as the ac passed, the pilots collectively only achieved 50 ft of separation between their ac. The Group assessed that there had been a very real risk of collision.

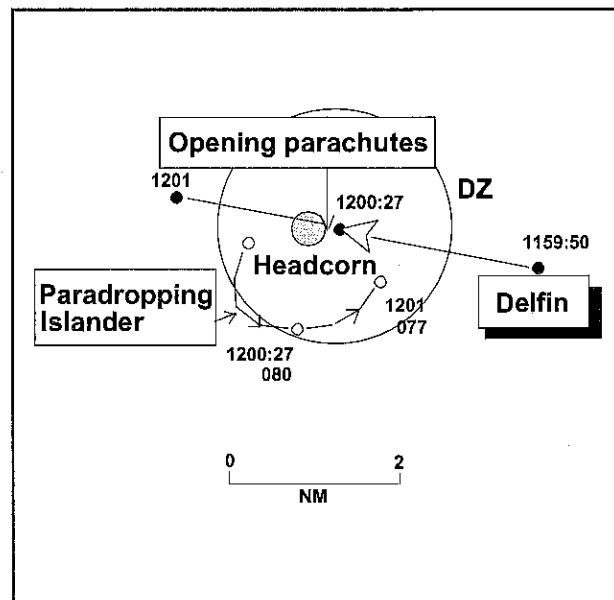
**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: A

Cause: A very late sighting by both pilots.

**AIRPROX (P) REPORT No 65/98**

Date/Time: 17 Jun 1201  
Position: N5109 E0039 (Headcorn airfield - elev 72 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Parachutist L29 Delfin  
Operator: Civ Club Civ Pte  
Alt/FL: 3000 ft ↓ 3500 ft  
 (QFE) (QNH)  
Weather VMC CAVOK VMC SKY  
 CLEAR  
Visibility: 20 km 30 km



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE PARACHUTIST**, who was also the club's Chief Instructor, reports that paradropping from an Islander was taking place at Headcorn from 9500 ft. The visibility was in excess of 20 km in VMC. Having obtained clearance for the drop from London ATC and the airfield ground operator, 8 parachutists were despatched. As his canopy was opening at about 3000 ft, to the S of the RW at Headcorn, he immediately

noticed a jet ac to the N of him slightly above his altitude; other canopies were opening at heights between 2200 and 5000 ft agl. He estimated the other ac, a Delfin jet, was at about 3000 - 3500 ft and travelling from E to W. It passed over the airfield with no apparent deviation in heading and without responding to calls by parachute ground control on the airfield frequency. London ATC called the pilot of the

Islander to enquire if he had seen the other ac which was not under an ATC service but had been observed on radar. Manston was contacted and it was ascertained that the ac had landed there. The Delfin pilot subsequently called the parachute club and said that he was on the airfield frequency (122.0) and had observed the parachutists at all times. The CI comments that in his view it was hard to believe that this could have been possible because the parachutists were in free-fall as the jet approached and canopies were opening at levels below, above and at its altitude, though fortunately most of them were to the S of the RW. Witnesses to the encounter included club instructors and pilots, all of whom were certain that the jet had passed directly over the airfield. The DZ controller became aware of the incident when an instructor positioned at the end of the RW tried unsuccessfully to call the ac on the airfield frequency; both these observers were also of the opinion that the transiting ac had overflown the airfield in a way which endangered the safety of the parachutists. Note (1): In a subsequent telephone conversation the parachutist said that the Delfin passed about 200 m to the N of him; he believed that it came closer to some of the other canopies.

**THE DELFIN PILOT** reports that he was level at 3500 ft and heading about 270° at 200 kt 2 NM N of Headcorn in VMC; the sky was clear and the visibility 30 km. He was maintaining a listening watch with Headcorn on 122.0. He comments that he is a pilot of some 30 years and 1500 flying hours experience and knows Headcorn extremely well as he regularly flies his Stampe ac from there. He states that he is fully aware of the necessary precautions to be observed when flying in the vicinity of a parachute dropping centre, and is familiar with both the club and airfield operator at Headcorn. In view of the 30 km visibility and his extensive knowledge of the area, he felt it was sufficient to maintain only a listening watch on the airfield frequency. He had a very clear view of everything ahead of him from 5 to 7 NM away, including the para-drop, as he approached the airfield. He passed to the N of the ATZ with the parachutists clearly in sight and in his opinion

there was at no time any danger of collision with any of them.

After landing he was asked by Manston ATC to call the Headcorn parachute club which he did immediately. Following a very amicable conversation with both the chief parachutist and pilot of the dropping ac, who were reassured once they realised that he was a regular user of the airfield and familiar with parachuting procedures, he believed that the matter was resolved. The exchange ended on a mutually friendly note and he was surprised later to learn that an Airprox report had been filed.

Note (2): A replay of the Pease Pottage radar at 1159:50 shows a primary return, previously seen departing from Manston and believed to be the Delfin, as it tracks W about 3 NM to the E of Headcorn. At the same time a return believed to be the paradropping Islander can be seen turning L overhead Headcorn at FL 80. The westbound primary return tracks directly over Headcorn at about 1200:30 without deviating from course until several miles to the W of the airfield. At this time the Islander is about 1.5 NM S of the airfield and a few seconds later commences descent from FL 80.

Note (3): Lashenden/Headcorn airfield is notified in the UK AIP ENR 5-5-4-2 for freefall parachuting up to 3500 ft agl within a circle radius 1.5 NM centred on 5109N 0039E. Exceptionally, with LATCC approval, this may be extended up to FL 150 provided the dropping ac has serviceable SSR, including Mode C. ENR 1-1-5-4- includes further advice to pilots on parachuting activity and a warning about the difficulty of spotting free-falling parachutists. Lashenden has a notified ATZ of radius 2 NM active 0800-Sunset (UK AIP AD 2 1-2). The ATZ and DZ are marked on the ICAO 1:500 000 topo chart, the latter with a parachute symbol and a warning of intense parachuting.



## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the parachutist, the pilot of the reported ac, and a radar video recording.

Members accepted that this incident occurred in the open FIR and although the Delfin pilot was operating within legal limits, they questioned the wisdom of flying at the base altitude of the LTMA. Members noted the pilot's assertion that he was listening out on the airfield frequency, but was apparently unaware of attempts being made by ground control to contact him; notwithstanding his stated reasons for not reporting on the airfield frequency, such a call was considered not only courteous but essential, particularly in view of his speed. Contrary to the Delfin pilot's contention that he flew 2 NM N of Headcorn, the radar recording shows that he tracked across the northern part of the airfield, much as described by the parachutist and the numerous ground eye witnesses to the encounter. Although the Delfin pilot reports that he could see the paradropping

activity taking place from some distance away, he makes no reference to seeing the dropping ac and members wondered whether he was aware that parachuting was taking place from 9500 ft; in their view, it was extremely unlikely in these circumstances that he could have spotted 8 parachutists free falling from such a height prior to their canopies opening below him.

The Board concluded that the Delfin pilot had caused the Airprox by transiting a notified and active parachute dropping zone. Members found the risk factor more difficult to assess as it was not known how close the Delfin may have come to some of the other canopies. However, it was felt that a parachutist's limited options for manoeuvre, particularly during canopy opening, would render him extremely vulnerable to any ac passing nearby, and in this case members felt that the Delfin's high speed heightened the danger. The Board concluded therefore that the safety of the parachutists had been compromised.

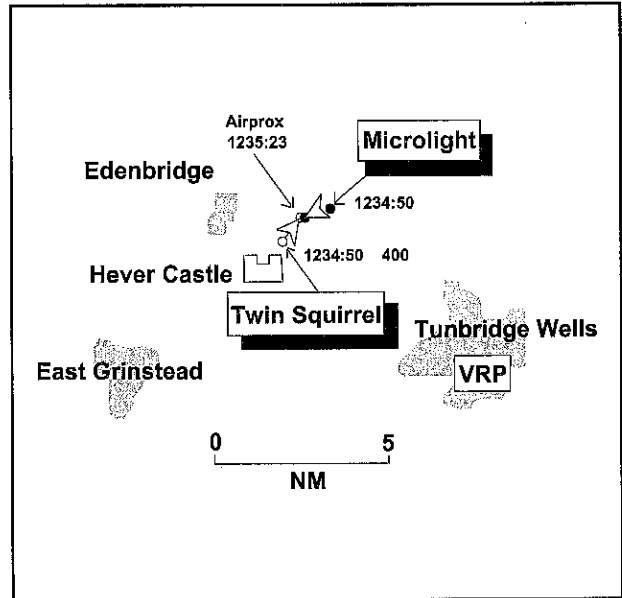
## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: Conflicts at the base of the LTMA while the Delfin transited through a notified, active, parachute drop zone.

**AIRPROX (P) REPORT No 66/98**

Date/Time: 22 Jun 1235  
Position: N5112 E0007 (7 NM NW Tunbridge Wells VRP)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Twin Squirrel CFM Shadow microlight  
Operator: Civ Pte Civ Trg  
Alt/FL: ↑ 1400 ft 1200 ft  
(QNH 1023 mb)  
Weather VMC VMC  
Visibility: >10 km 5 km



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE TWIN SQUIRREL PILOT** reports that he was heading 050° at 90 - 100 kt and in a gentle climb through 1200 ft for 1400 ft having just departed from Hever castle. He was receiving a FIS from Biggin Hill APC and squawking 7000 with Mode C. The visibility was in excess of 10 km in VMC. He first saw the other ac, a microlight with red wings, as it flew towards him at a similar altitude in straight and level flight from his R about 70 m away. He had previously been looking down and R towards the castle landing site and believes his lookout in the direction of the microlight may have been obscured by the helicopter's RH cockpit pillar. He banked steeply to the L and dived as the other ac passed no more than 50 m away on his starboard side at a similar level. He thought there had been an extremely high risk of collision.

**THE MICROLIGHT PILOT** reports that he was on a local training flight from Redhill in VMC; the visibility was about 5 km and he was operating at about 1200 ft at 60 kt in the vicinity of Hever castle at the reported time of the incident. His ac has red wings with blue leading edges. He saw no other ac in the area which might have constituted a threat and was unaware that an incident had occurred.

and tracking NE indicating 400 ft Mode C. At the same time a slow moving westbound return can be seen at its 1230 position about 1 NM away. At 1235:23, 7 NM NW of the Tunbridge Wells VRP, the returns partially merge, with the helicopter, indicating 900 ft Mode C, appearing to turn L to pass just W of the other ac. Following the encounter the helicopter resumes its original northwesterly track and the primary return fades from radar cover.

**PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, and a radar video recording.

Board members expressed surprise that the microlight pilot could apparently have flown so close to a helicopter without being aware of its presence; his non sighting of the other ac was assessed by the Board to be a part of the cause of the Airprox. The helicopter pilot's attention was directed downwards as he climbed out from Hever Castle and the direction from which the microlight approached him was possibly obscured by the cockpit's structure; these factors contributed to the pilot seeing the microlight, which had right of way, only just in time to avoid it. It was concluded that the

Note: A recording of the Pease Pottage radar at 1234:50 shows the helicopter squawking 7000

helicopter pilot's late sighting was a part cause of the Airprox. With regard to risk, members noted that despite his vigorous avoiding action, the helicopter pilot estimated a miss distance of only 50 m from the microlight. This, together with the latter pilot's non-sighting of the helicopter, led the Board to conclude that there had been an actual risk of collision.

The encounter took place in the FIR, where the 'see and be seen' principle applies. Members

noted that both pilots reported good flying conditions and under such circumstances it was considered that neither was exercising a sufficiently diligent look out, albeit the microlight pilot may have been disadvantaged by the helicopter's angle of climbout from the landing site situated close beneath him. The helicopter pilot had a particular responsibility in these circumstances to clear his departure path; members emphasised the need for all GA pilots to keep a good lookout in the open FIR.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: A

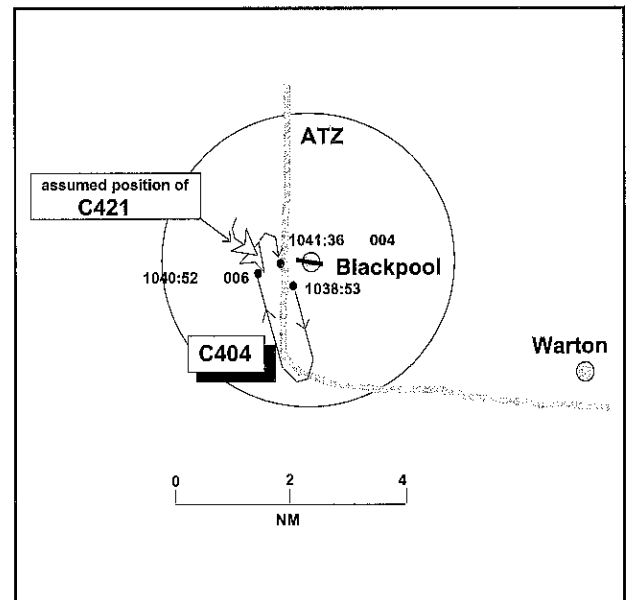
Cause: Non-sighting by the microlight pilot and a late sighting by the Twin Squirrel pilot.

**AIRPROX (P) REPORT No 67/98**

Date/Time: 24 Jun 1041  
Position: N5352 W0304 (1 NM W Blackpool airport - elev 34 ft)  
Airspace: ATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: C421 C404  
Operator: Civ Trg Civ Comm  
Alt/FL: 600 ft ↓ 500 ft  
 (QFE) (QNH 1007)  
Weather VMC CLBC VMC  
Visibility: 10 km 10 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE C421 PILOT** reports that he was conducting a simulated asymmetric approach for RW 10 at Blackpool which was to be followed by a go-around. The visibility was 10 km. He was under the control of Blackpool Tower (ADC) on 118.4. During the turn onto finals, passing heading 120° at about 120 kt and descending through 600 ft (QFE), a low wing twin engined ac appeared about 50 ft under his L wing about 100 m away going away from him. It then turned R onto about 180° descending, causing him to carry out a premature go-



around. He felt there had been a high risk of collision. No warning had been passed to him by ATC on the presence of the other ac.

**THE C404 PILOT** reports that he was detailed to investigate oil coming ashore from the Irish Sea. This work involved both radar searches from altitude and low level visual searches of beaches; his Company holds the necessary exemptions to carry out this work. On this flight

he was training a new Company pilot who was occupying the LHS.

Having transferred to Blackpool Approach Control (APC) from the Barrow frequency, he informed the controller of his intention to track along the beach from N to S at low level; he was passed traffic information on a Robinson 22 helicopter which he sighted and called visual. After tracking S of the airport, he transferred to Warton but simultaneously spotted a beach clearing party and oil in the sea. He recalled Blackpool and advised them that he would be remaining on their frequency and orbiting low level at the beach. Traffic information was passed to him on a C421 on L base which he acknowledged but could not see. As this unseen ac was on L base, he ensured that he did not cross the final approach track; he eventually saw it while executing the turn. Again, he did not consider that there had been a risk of collision.

Note (1): In a subsequent telephone conversation, the C404 pilot said that he first saw the other ac as he was coming out of a R turn following his northbound transit up the beach. This ties in with analysis of the radar recording (see Note (2)) and suggests that the C404 pilot did not see the C421 as he passed beneath it while northbound at about 1041 (the Airprox), but he did spot it shortly afterwards when he had commenced the R turn to head S, re-crossing the RW 10 final approach at a range of about 0.5 NM. Mode C indications are that the ac was flying at about 200 ft agl at this time. The APC RT transcript shows that the C404 pilot was given traffic information on the circuiting C421 at 1041 (coincidental with the occurrence time).

**ATSI** reports that the C404 pilot contacted Blackpool APC at 1030 after transfer from Warton ATC on a southbound routeing along the coast at 500 ft agl. The flight had been allocated a squawk of 3642 by Warton and this was not changed by Blackpool ATC. The C404 pilot was given radar derived traffic information on an R22 helicopter, which was inbound to Blackpool airport. The controller did not state the type of service being provided although it is

possible that the C404 pilot believed he was in receipt of a RIS. Once clear of the Blackpool ATZ, the C404 was transferred back to Warton and its FPS was removed from the display board. At about this time ADC advised APC, via intercom, that RW 10 was active with a LH circuit .

APC said that having transferred the C404 to Warton, he handed over the position to a colleague so that he could have a short break and that before he left the APC room, the C404 pilot recalled on the Blackpool APC frequency. The RT recording reveals that, at 1037, the pilot transmitted: "*... Blackpool C/S back with you er we're working in this area for about ten minutes er just to let you know*". The relief controller replied: "*C/S" rog...*" and wrote out a new FPS for the flight. The off-going controller said he informed his colleague that the C404 was squawking 3642 and noted, from the radar display, that it was about 5 NM SW of Blackpool airport.

On taking back the position about 3 minutes later, the controller said that he observed the C404 still operating to the SW of Blackpool airport and assumed, therefore, that it had remained in that area whilst he was on his break; he added that he did not receive information from his colleague to the contrary. The RT recording of the Approach position reveals that at 1039 ADC enquired, on intercom, about an ac going down the coast line. The controller said that he could not recollect whether he had received this query; however, the recording suggests that it was in fact answered by the other (relief) controller. Radar photographs of the incident reveal that at 1038:25 the C404 passed to the W of Blackpool airport in a R turn, and at 1038:53 it is heading S, just to the SW of the airport. Fortuitously, no conflict occurred on this occasion. This routeing presumably occurred whilst the first controller was on his short break and explains why he saw the ac back in the original position when he returned to duty.

Having taken over the APC position following his break, the controller said that he did not consider it necessary to restrict the C404's area

of operation or to monitor it closely on radar, as he assumed that it would remain in an area to the SW of Blackpool Airport. He discussed the situation with Warton ATC, who confirmed that the flight had not recalled them but there was no traffic to conflict with it in that position. APC said that he was unaware that the C404 subsequently routed N towards Blackpool until, looking at the radar display, he saw it passing through the RW 10 approach track. He immediately called the aerodrome controller who confirmed on intercom that he could see the ac. He added that it was very close to the C421 turning onto final from L base for RW 10. The two controllers passed traffic information to their respective ac and both pilots reported having the other ac in sight. The pilot of the C421 reported going around and commented on the closeness of the other ac.

Rule 39 of the Rules of the Air Regulations, Flight within Aerodrome Traffic Zones, Paragraph 2, states that: "An aircraft shall not fly, take off or land within the aerodrome traffic zone of an aerodrome to which this paragraph applies unless the commander of the aircraft has obtained the permission of the air traffic control unit at the aerodrome". The pilot of the C404 did not request or obtain clearance to enter the Blackpool ATZ when he returned to the Blackpool frequency after transfer to Warton. However, it is possible that some ambiguity existed in his mind as to where he could operate, especially as he may have assumed that he was being provided with a RIS. Also, as no specific clearance to enter the ATZ was passed on the ac's southbound transit, the pilot could have believed that Blackpool APC would again monitor his flight and warn him of conflicting traffic. Had the pilot been instructed to remain outside the ATZ or restricted geographically, or at least been informed of the circuit traffic on RW10, the incident would probably not have occurred.

Note (2): Photographs of the LATCC radar show the C404 as it tracks S towards the Blackpool area at 1034 indicating 500 ft Mode C. The ac passes just under 0.5 NM W of the airfield at about 1036 and when 2 NM to the S makes a R turn to follow the beach northbound.

At 1038:25, 1 NM W of the airfield, it turns R to head S into a racetrack pattern whose inbound northerly leg again follows the shoreline at 600 ft. Shortly after 1040:52, having passed about 1 NM to the W of the airfield, the ac turns R through 180° and passes 0.5 NM from the airfield indicating 400 ft Mode C. During this manoeuvre the ac crosses the approach track to RW 10 twice; first to the N and then to the S. The C421 is not seen on the radar pictures at any time; however, by analysis of the RT recordings, and taking into account the geometry of the encounter as reported by the pilots, it is believed that the incident occurred just after 1040:52 as the C421 was in the latter stages of its final approach to RW 10, unseen by the C404 pilot who was about to commence his R turn from the northerly heading at about 600 ft Mode C (equivalent to 438 ft on QNH 1007 or 404 ft above Blackpool's elevation).

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs and a report from the appropriate ATC authority.

Although the C404 pilot was neither advised on the type of service being provided, nor given specific clearance to transit the ATZ when he first called Blackpool, members considered the nature of traffic information passed to him (as he made his initial transit) made him justified in believing that he was receiving a radar service. Consequently, when he turned back shortly after leaving Blackpool's APC frequency, he might reasonably have assumed that nothing had changed and that ATC would continue to advise him of conflicting traffic. An examination of the radar recording showed that the C404 never left Blackpool's ATZ following frequency transfer to Warton. Furthermore, the RT transcript revealed he was just completing a R turn onto a northerly heading only 2 NM S of Blackpool when he recalled the APC to say that he would be working in...*"this area"*. Board members judged this call to be too imprecise and agreed it ought to have been challenged by the APC. But the (relief) controller did not query

the C404's presence. On the contrary, ATC's acknowledgement of the C404's call ... "Rog" implied tacit approval for the ac's continued operation in the ATZ. The Board also noted an anomaly in the off-going controller's awareness of the returning C404; he said he noticed the ac was operating about 5 NM SW of the airfield - although the radar recording shows the C404 was never more than 2 NM away throughout its two N/S racetracks along the beach. It was further noted that when the relief controller received the C404 back on frequency (1037:30), Blackpool's circuit had become active (for about 1.5 min) and notification of this was given by ADC to the first APC just before he started his short break. Moments after the relief controller assumes control, the C404 is seen on the radar recording clearly penetrating the active circuit area and turning R through the final approach track to RW 10. Members assumed this first incursion went unnoticed by the relief controller, who gave no indication to the C404 pilot that the circuit was active and did not alert the ADC to the C404's presence.

After this first penetration the C404 cleared the circuit, fortuitously without any conflicts, but Board members felt that the subsequent encounter could have been avoided had the relief APC alerted the C404 pilot to the circuit state at that time. While the C404 was positioning in his race-track for another R turn to commence a second low level run up the beach - about 1 min before the Airprox - the first

controller returned to resume his position. At no time during the controller exchange did the stand-in colleague make reference to the C404's activity. However, had the original APC then monitored his radar more closely, on resuming his position, he might have seen the C404 heading N in time to stop its pilot flying into the active circuit. In the event, by the time he did notice the rapidly developing conflict, the Airprox was already on the point of occurring.

Members agreed that the two APCs did not establish properly the C404's intended area of operation and subsequently did not monitor its movements adequately on radar. Both APCs had known that the circuit was active and the relief controller in particular had sufficient time (3 to 4 mins) to alert the C404. It was the Board's conclusion that the Airprox was caused because the APCs did not provide timely traffic information to the C404 pilot who, as a consequence, flew into conflict with the C421 in the circuit.

In assessing risk, the Board noted that the C421 pilot saw the C404 only after it had passed very close beneath him, and the latter's pilot did not see the C421 until just after the encounter when he was turning R to head S. In view of this, and the C421 pilot's close estimate of separation which is supported by the radar evidence, the Board concluded that there had been an actual risk of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

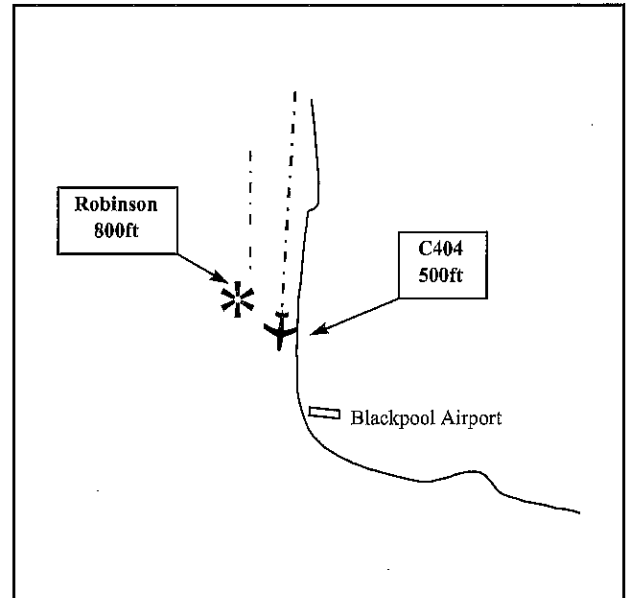
Degree of Risk: A

Cause: The Blackpool Approach Controllers did not provide timely traffic information to the C404 pilot who, as a consequence, flew into conflict with the C421 which he did not see.

## AIRPROX REPORT 21c/98

### Occ No. 98/03571

*Date:* 24 June 1998  
*Time:* 1025 UTC  
*Aircraft:* C404/Robinson R22  
Helicopter  
*Operators:* Aerial Work/Commercial  
Training  
*Position:* Blackpool Airport  
*ALT/HT/FL:* 500 feet  
*Airspace Type:* Aerodrome Traffic Zone –  
Class G  
*Reporter:* Blackpool Aerodrome  
Controller  
*Reported Separation:* 500metres horizontal/300  
feet vertical



### THE INCIDENT

Both aircraft involved in this AIRPROX were VFR flights receiving a Flight Information Service (FIS) from Blackpool ATC, the C404 from the Approach controller and the R22 from the Aerodrome controller. The C404 was at an altitude of 500 feet conducting a low level visual search for oil coming ashore on the beaches to the North and West of Blackpool. The company involved holds the necessary exemptions from the CAA to carry out this aerial work. On this occasion the pilot in the left-hand seat was new to the company and receiving training in the role. The R22 was on a training sortie from Blackpool and was returning to the airport along the beach at an altitude of 800 feet.

On contacting the Blackpool Approach controller, the C404 pilot passed details of his intended track, which was along the beach from North to South at 500 feet on the Blackpool QNH. The R22 was also flying along the beach from North to South but ahead of the C404 and at an altitude of 700 feet initially, but then climbing to 800 feet. The R22 pilot was receiving a service from the Blackpool Aerodrome controller. From a range of about 6nm the pilot of the C404 was given, and acknowledged, constant traffic information on the R22 flying ahead. The pilot of the R22 also received constant traffic information on the

progress of the C404 and was instructed by the Aerodrome controller to maintain altitude to the airport overhead to avoid conflict with the C404. Both aircraft were VMC and on acquiring visual contact with the R22, the C404 pilot retained contact as he overtook and flew down the left-hand side of the R22, 300 feet below it.

The Blackpool Aerodrome controller reported establishing communications with the R22, which was inbound at 600 feet, and then later being contacted on the intercom by the Approach controller who passed traffic information on the C404 at 500 feet. Co-ordination was updated between the approach and aerodrome controllers and the traffic information passed to the two aircraft. The R22 pilot then reported climbing to 800 feet. When the R22 pilot reported visual with the C404, the controller instructed him to pass behind it for the approach.

The C404 pilot informed Blackpool Approach of his intended track and was given traffic information on the R22 which he called sighting at a range of 3-4nm. He reported passing 500 metres to the left of the R22 and 200-300 feet below while maintaining the beach search and believed there was no risk of collision.

The R22 pilot reported that ATC had informed her of the altitude of the C404 as it approached

from her 6 o'clock position and that the first sighting was as the C404 passed to the left and below by approximately 300 feet. She stated that visibility at the time was good and that the incident was not reported by her.

### SUMMARY OF CAA ACTION

It was noted that both aircraft remained on Blackpool ATC frequencies throughout and both received and acknowledged constant traffic information. There was no apparent concern by either pilot on the RTF tape nor is there any apparent alarm or comment from the controllers. Both aircraft were VFR flights in VMC and the situation was under positive

control from ATC, especially the R22 pilot who was instructed to maintain height to the overhead to avoid any possibility of close conflict.

It could be argued that the C404 pilot should have given the R22 a wider berth when overtaking it, but no separation standards were compromised and the situation could be compared with the kind of everyday vertical separation that occurs between visual circuit traffic and overhead rejoins.

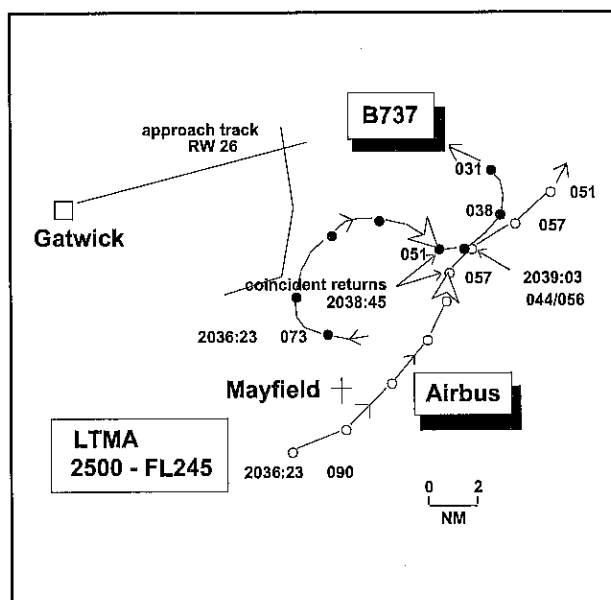
It was concluded therefore that there was no conflict or risk of collision and that in the circumstances it did not constitute an AIRPROX occurrence.

### REVIEW BY AIRPROX PANEL

- 1 Discussion The Panel accepted the Summary of CAA Action. Nevertheless, in the circumstances, it thought that the two aircraft could usefully have been on the same frequency.
- 2 Causal Factors Not applicable.
- 3 Risk Classification C
- 4 Recommendations The Panel had no recommendations to make.

### **AIRPROX (P) REPORT No 69/98**

Date/Time: 26 Jun 2039 TWILIGHT  
Position: N5106 E0013 (6 NM NE Mayfield VOR)  
Airspace: LTMA (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: Airbus A320 B737  
Operator: CAT CAT  
Alt/FL: 5500 ft ↓ 3000 ft  
 (QNH 1010 mb) (QNH)  
Weather IMC IMC  
Visibility:





## **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE AIRBUS PILOT** reports that he was heading 350° at 210 kt and descending through 5500 ft (QNH 1010) while positioning for a L base to RW 26L at Gatwick under the control of the Gatwick Director on 126.82. TCAS signalled a TA followed immediately by an RA demanding climb; at the same time ATC instructed him to stop descent and to turn R immediately onto 090°. He complied with both the ATC instructions and the TCAS demand and deduced from the TCAS indications that an ac had passed 100 m away to his L and about 300 ft below him; he thought there had been a very high risk of collision and reported an Airprox to LATCC on 126.82 and subsequently by telephone to the ATC watch supervisor.

**THE B737 PILOT** reports that he was inbound to Gatwick from Brussels under the control of the Gatwick Director. He recalls ATC instructing him to turn L onto 340°, descend to 3000 ft and reduce speed to 180 kt. The co-pilot, who was handling the ac, called for flap; he looked down to select this and, on looking up, noticed that the ac was turning R. He immediately requested confirmation from ATC that a L turn had been instructed, whereupon the co-pilot complied. This all took place in seconds and he assumed that it was during this period that the Airprox occurred. However, nothing was said on the RT at the time to this effect and he did not see the other ac.

Note (1): Examination of the RT transcript for 126.825, Gatwick Director, shows that at 2040:30 the Airbus pilot transmitted "...and C/S we'll be filing an Airmiss on that". At this time both ac were still on the same frequency.

**LATCC INVESTIGATIONS REPORTS**, with RT transcript, that workload was moderate and all ATC equipment was serviceable. Both the Airbus and the B737 were being positioned by the Gatwick INT/FIN Director for RW 26L at Gatwick. The B737 was 12 NM S of the airfield descending to 6000 ft and turning R from a westerly heading onto 090°. At 2035:58 the Airbus, some 5 NM S of the B737 heading

about 080°, was instructed to descend to 4000 ft, followed at 2036:37 by an instruction to turn L onto 050°. At 2037:19 the B737, approaching 090°, was also instructed to descend to 4000 ft; the ac continued on an easterly heading until 2037:44, when the pilot was instructed to turn L onto 340° at 180 kt. Both parts of this instruction were correctly acknowledged by the B737 pilot. At 2037:53, the Airbus pilot complied with an instruction to turn L onto 350°. Had the B737 also turned as instructed, both ac would have been well positioned on their base legs with about 5 NM of lateral separation; however, in the event, it continued on its 090° heading until 2038:11, when its pilot asked for confirmation of his new heading. The Director then became aware that the ac was actually commencing a R turn directly towards the Airbus which was now 4 NM S of it and descending through 5900 ft. The B737 at this time was 700 ft below the Airbus at a slightly slower rate of descent. At 2038:18 the Director instructed the Airbus pilot to stop descent and to turn R immediately onto 090°. Following acknowledgement of this instruction the Director emphasised that the turn was for avoiding action and passed traffic information to which the Airbus pilot replied that he was in IMC. At 2038:36 the B737 pilot was again instructed to "*L turn now and descend immediately to 3000 ft*". When this instruction was given, the B737 had still not commenced a L turn and separation had reached its minimum of 1.22 NM and 500 ft as shown by SMF data. Thereafter, vertical separation increased while lateral separation reduced to 0.13 NM as the B737's turn brought its track into coincidence with the Airbus; by this time, however, vertical separation had increased to 900 ft. At 2039:06 the Airbus pilot reported that he had responded to a TCAS demand to climb, though by this time standard vertical separation had been regained and the B737 was continuing to descend. Both ac then continued for normal vectored approaches to the ILS.

(Note (2): It should be noted that the SMF recorded separation may differ slightly from the true separation and radar recordings because it is based on processed and predictive radar data).

Note (3): Pictures of the LATCC radar show the 2 ac positioning for RW 26 as described in the LATCC report. Vectoring appears normal until about 2038 when it becomes apparent that the B737 is beginning to turn R instead of L as instructed by ATC. By 2038:45, the B737 is turning through southeast descending through 5100 ft Mode C, with the Airbus at its 12 o'clock at about 1 NM tracking through N in a gentle L turn and indicating 5700 ft, having arrested its descent. The B737 then reverses its direction of turn and at the same time the Airbus turns R onto a NNE track. The ac now converge rapidly and at 2039:03 their tracks coincide, with the Airbus almost directly above the B737; however, by this time vertical separation has increased to 1200 ft as the Airbus maintains 5600 ft and the B737 descends through 4400 ft. The tracks then diverge as both ac are repositioned for normal approaches to RW 26.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, reports from the air traffic

controllers involved and reports from the appropriate ATC and operating authorities.

Following ATC's detection that the B737 was turning R instead of L, members noted that it took the B737 crew almost a minute to respond to corrective instructions, by which time the ac was turning onto a southerly heading and into conflict with the Airbus. An airline pilot member speculated that the pilot might have inadvertently operated the FMS Heading Select on being instructed to turn onto 340°, thereby disengaging it if it was already engaged. The B737 would then have continued its existing right turn instead of following the selector. This was considered an easy mistake to make, but even so in this incident, whatever the cause, the pilots seemed very slow to recognise and correct the error. The Board concluded that the cause of the Airprox was that the B737 crew did not follow the direction of turn instructed by ATC, and were subsequently slow to correct the error. The Board commended the timely actions of the Gatwick Director whose avoiding instructions enabled sufficient vertical separation to be achieved, thereby removing any risk of collision. Members also acknowledged the part played by the TCAS equipment in the Airbus which assisted in assuring its separation from the B737.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

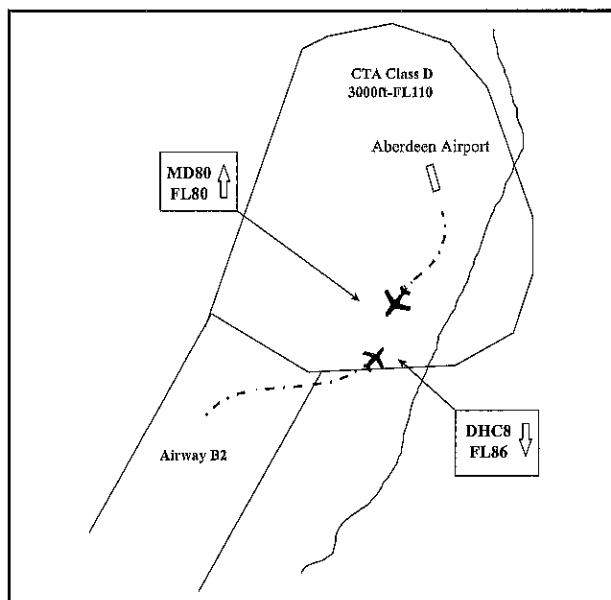
Degree of Risk: C

Cause: Contrary to ATC instructions the B737 pilot turned R and was slow to correct this error, which brought his ac into conflict with the Airbus.

## AIRPROX REPORT 48c/98

### Occ No. 98/03548

**Date:** 27 June 1998  
**Time:** 1224 UTC  
**Aircraft:** DHC8/MD80  
**Operators:** British Airline/Foreign Airline  
**Position:** 20nm South West of Aberdeen  
**ALT/HT/FL:** FL80  
**Airspace Type:** Aberdeen CTA - Class D  
**Reporter:** Aberdeen ATC - Approach Radar Controller  
**Reported Separation:** 1nm horizontal/500 feet vertical  
**Recorded Separation:** 0.5nm horizontal/600 feet vertical



### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the Aberdeen Approach Radar controller who, because of a light workload and the constraints of weekend manning, was performing the combined duties of Approach Procedural and Approach Radar Controller. The MD80 had departed from runway 16 at Aberdeen en route for Ibiza and was in the climb to FL230. The DHC8 had departed from Newcastle and was being vectored in descent to altitude 4000 feet for an ILS approach to runway 16 at Aberdeen. There were significant thunderstorm weather cells in the vicinity of Aberdeen at the time and these were affecting ATC operations.

At 1219.50, the DHC8 pilot established contact with the Aberdeen Approach Radar Controller and reported heading 065° to avoid weather. Following acknowledgement of this by the controller, the pilot then reported in descent to FL90, to which the controller replied with an instruction to descend to FL70. Note:- The DHC8 had been transferred to Aberdeen Approach under the terms of a Standing Agreement with ScACC under which inbound traffic is descended to FL90 and outbound traffic is climbed to FL80.

The normal method of dealing with arrivals and departures to Aberdeen via airway B2, when runway 16 is in use, is to operate a clockwise traffic flow, positioning inbound traffic close to the western edge of controlled airspace for a right hand circuit, and assigning departures a south-westerly heading towards the eastern side of airway B2. This was the approach controller's original plan but it proved to be no longer viable when, at 1221.30, the DHC8 pilot requested to be vectored for a downwind left hand to avoid weather. The controller acknowledged this request with, "(callsign) affirm and continue on your heading now report it". The pilot replied, "Heading zero eight zero (callsign)". The controller asked the pilot to say again the heading and the pilot replied, "Just coming on to a heading of zero eight zero (callsign)". At 1222.00, the controller instructed the pilot to continue on that heading and to descend to altitude 4000 feet. This heading resulted in the DHC8 leaving controlled airspace for a short time as it transited between the eastern edge of airway B2 and the southern boundary of the Aberdeen CTA.

Meanwhile at 1222.10, the MD80 had departed from runway 16 and the pilot established contact with the Approach controller and reported climbing to FL80 on a heading of 230°. The controller acknowledged this and immediately instructed the MD80 pilot to climb

to FL230. At 1222.40, the controller instructed the MD80 pilot to turn right to a heading of 240° but the pilot declined this turn due to a weather build up and instead requested a left turn to a heading of 220°. The controller agreed to this turn even although this resulted in the MD80 turning almost directly towards the DHC8 which was by now at a range of approximately 19nm. Had the aircraft remained on these headings it was assessed that the MD80 would have passed approximately 5nm behind the DHC8, but at 1223.00, the controller asked the DHC8 pilot, "(callsign) can you accept a left turn about twenty degrees". The pilot replied in the affirmative and was instructed, "Thanks turn left heading zero six zero". This turn had the effect of placing the aircraft virtually head on to each other.

Just over a minute later, the controller became aware of the confliction, as the aircraft were now 7nm apart with vertical separation of 2500 feet reducing. He then issued a succession of instructions to both pilots starting at 1224.20, but without using the term avoiding action. He instructed the DHC8 pilot to turn right heading 080° and the MD80 pilot to turn right heading 240°. He then instructed the MD80 to stop his climb at FL80 and for the DHC8 pilot to stop descent at FL85. Following the DHC8 pilot's acknowledgement of this the controller replied at 1224.55, "(callsign) that's correct er avoiding action turn right zero nine zero". Then, at 1225, the MD80 pilot reported, "We have visual contact with the traffic (callsign)". Radar recordings show that the two aircraft passed each other at a range of 0.5nm with 600 feet vertical separation. They were then cleared to continue their respective climb and descent and continued without further incident.

In his written report, the MD80 pilot recalled that the other aircraft was in sight at the 10 o'clock position range of 5nm and 1000 feet above. The Cb cloud in the vicinity led to him deviating from his route. He assessed that there was no risk involved in the incident.

In his written report, the DHC8 pilot recalled hearing the controller giving the MD80 pilot an avoiding turn but he did not know at that time that it was a conflict with his aircraft. He was

then given a turn onto a heading of 095° (sic), to increase separation but was not given an indication of range distance of the other aircraft. He could not remember the exact RTF conversation but he did not get the impression that an AIRPROX had occurred as he did not see the other aircraft but assessed the risk as low with a good view in VMC from the cockpit.

The Aberdeen Approach Radar Controller reported that the DHC8 was turned left onto 060° to tighten up its radar circuit and that the MD80 was asked to turn right onto 240° to keep it within controlled airspace and keep it separated from the DHC8. However, the MD80 pilot was unwilling to turn right but requested a left turn onto 220° to avoid weather. He assessed the position of the DHC8 and approved the turn of the MD80. When both aircraft turned left he reassessed the situation and considered that he would not achieve the horizontal separation required and was unlikely to achieve standard vertical separation so he decided to try and achieve 500 feet emergency separation, with the avoiding action he gave to the DHC8 pilot.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Aberdeen Approach Radar controller who descended the DHC8 and climbed the MD80 through each others' level without providing adequate lateral separation.

It was noted that it would have been preferable to have opted for a solution using vertical separation rather than attempting to provide lateral separation by assigning radar headings.

The decision by the Approach controller to provide 500 feet vertical separation, once the opportunity for alternative solutions had passed, was a sound one and eliminated the risk of collision. However, it was unfortunate that the words, "avoiding action", did not prefix the initial avoidance turn instructions. Their use may well have prompted a more urgent response from the crews and provided

additional lateral separation between the subject aircraft.

### **REVIEW BY AIRPROX PANEL**

**1 Discussion** The Panel was assisted in its consideration of the AIRPROX by a video recording of the incident.

Members questioned the Aberdeen controller's keenness to descend the DHC8 as promptly as he did, bearing in mind that the aircraft had to fly downwind for some distance before making its approach to runway 16. It concluded that he had planned to have the MD80 'jump' the DHC8 but that he had misjudged the situation, possibly expecting the MD80 (which had been cleared straight away to climb to FL230) to gain height more quickly than it did.

Members also asserted that in situations where weather avoidance is necessary, vertical separation between aircraft is the preferable technique. They concluded, therefore, that adherence to Standard Agreement levels, ie FL90 inbound to Aberdeen and FL80 outbound, would indeed have been the preferred solution for the controller to have adopted.

**2 Causal Factors** The Aberdeen Approach Radar controller climbed and descended the MD80 and DHC8 through each others' levels without providing adequate lateral separation.

**3 Risk Classification** C

**4 Recommendations** The Panel had no recommendations to make.

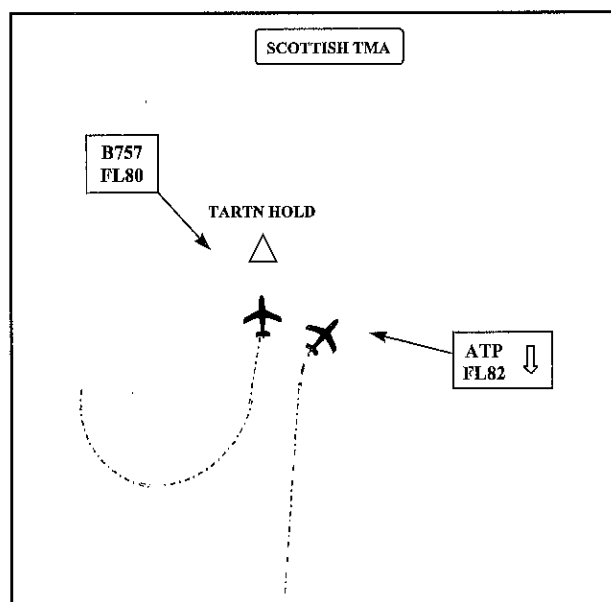
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### **AIRPROX REPORT 12c/98**

**Occ No. 98/03593**

**Date:** 29 June 1998  
**Time:** 1702 UTC  
**Aircraft:** ATP/B757  
**Operators:** British Airlines  
**Position:** TARTN Hold  
**ALT/HT/FL:** FL80  
**Airspace Type:** Class D  
**Reporter:** Edinburgh ATC - Edinburgh Radar Approach Controller  
**Reported Separation:** 2.66nm horizontal/200 feet vertical  
**Recorded Separation:** 2.66nm horizontal/200 feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the Edinburgh Approach Radar controller with the ATP inbound from Manchester and the B757 was inbound from Heathrow Airport. Due to thunderstorm activity in the vicinity of Edinburgh Airport and on the approach to runway 25, the B757 was holding at TARTN awaiting weather improvement before deciding when to make an approach.

The ATP pilot established RTF contact with the Edinburgh Approach Radar controller at 1702, reporting in descent to FL90 and routing towards the TARTN hold. After passing the ATIS letter, the controller advised the ATP pilot about the presence of the thunderstorm activity and, in particular, the reports of lightning strikes in the vicinity of the approach to runway 25 and as an alternative he offered the pilot the choice of making a Surveillance Radar Approach (SRA) to runway 31. The ATP pilot asked the controller to wait whilst they thought about the offer and a few seconds later requested the surface wind. The controller replied that the surface wind 'off the clock' was 020° at 5 kts, visibility 8km in rain, cloud 2 oktas at 800 feet, scattered CB at 1800 feet, broken at 4500 feet. The ATP pilot then simply acknowledged the information. At 1703.20 the ATP pilot advised the controller that they would accept a SRA to runway 31 and the controller replied, ".....Roger maintain flight level niner zero". At this point the B757 had just turned inbound to the holding fix and was on a northerly track with the ATP on a parallel track approximately 3 miles South of the B757.

At 1704, the controller observed, from his radar display, that the ATP's SSR height readout was showing FL87 descending. He then transmitted to the ATP pilot, "(callsign) climb immediately to flight level nine zero avoiding action and turn right heading zero three zero". The ATP pilot replied repeating the instructions. As the ATP appeared slow to turn, the controller then instructed the B757 pilot, "(callsign) turn left heading two seven zero avoiding action". And the B757 pilot replied acknowledging the instruction with a readback. The conflict was

soon resolved as the B757 completed the left turn on to a westerly heading and the ATP turned right on to a north-easterly heading and climbed back to FL90. The controller estimated that the closest point of approach between the two aircraft was 2nm horizontal and 200 feet vertical, although subsequently the ScACC Separation Monitoring Function (SMF) equipment recorded the closest point of approach as 2.66nm horizontal and 200 feet vertical.

Once the conflict had been resolved, the controller asked the ATP pilot to confirm that he had received the earlier instruction to maintain FL90. The ATP pilot responded in the affirmative and apologised for descending below his clearance limit. Both aircraft continued their respective approaches to Edinburgh without further incident. The Edinburgh Approach Radar controller subsequently took AIRPROX (C) reporting action.

*In his written report the B757 pilot recalled, "holding at TARTN at FL80 to await clearance of CB over Edinburgh. ATC advised of traffic avoidance turn left 270° now. After about one minute we were cleared to resume holding at TARTAN. We were holding in a pattern 360° inbound left turn to avoid weather with ATC approval."* No indication was given in the report that any sighting had been made of the ATP and nor was there any reference to assessment of collision risk.

In his written report, the ATP pilot recalled, "aircraft descended below cleared flight level during descent, aircraft autopilot failed to capture FL90, aircraft descended to FL87 when ATC issued avoiding action on proximate aircraft at FL80. Action taken as instructed during which descent halted at FL83. Incident occurred during high workload due to change of runway and thunderstorm activity." The ATP crew made no sighting of the B757 and were unable to assess the severity of risk of collision.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the ATP pilot, who descended his aircraft below his clearance limit of FL90, and into conflict with the B757 holding at TARTN at FL80.

There was reference in the ATP pilot's report to workload, weather and runway change and it would seem that the autopilot 'Altitude Capture' was set and armed and was in the capture phase when one of the pilots operated the pitch

trim wheel and disarmed the capture setting. Whilst workload and inadequate monitoring were cited as contributing factors, ATP crews should be aware that operation of the autopilot pitch trim wheel will disarm the capture process. This problem can only be addressed by training and the crew have been given an appropriate reminder of the dangers associated with inappropriate operation of the aircraft pitch trim wheel during the altitude capture phase.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

The Panel thought that the Edinburgh Approach Radar controller took positive and decisive avoiding action when he observed that the ATP's SSR level readout was showing FL87 descending.

Members also observed that they have already made a recommendation (J98-1) concerning the system operation design of the BAe146 autopilot altitude capture feature. The ATP system is similar in that operation of the pitch trim wheel, during altitude capture, disarms the capture process. This is a subtle degradation where one vital mode of the autopilot is lost rather than the whole system 'dropping out' - which might be more obvious. At the same time, the indication to the pilots of the failure is not sufficiently attention getting. The Panel concluded that any proposed fix for the BAe146 could also be relevant to the ATP.

### **2 Causal Factors**

The ATP pilot descended his aircraft below his cleared level and conflicted with the B757.

### **3 Risk Classification** C

### **4 Recommendations** The Panel had no recommendations to make.

## AIRPROX (P) REPORT No 68/98

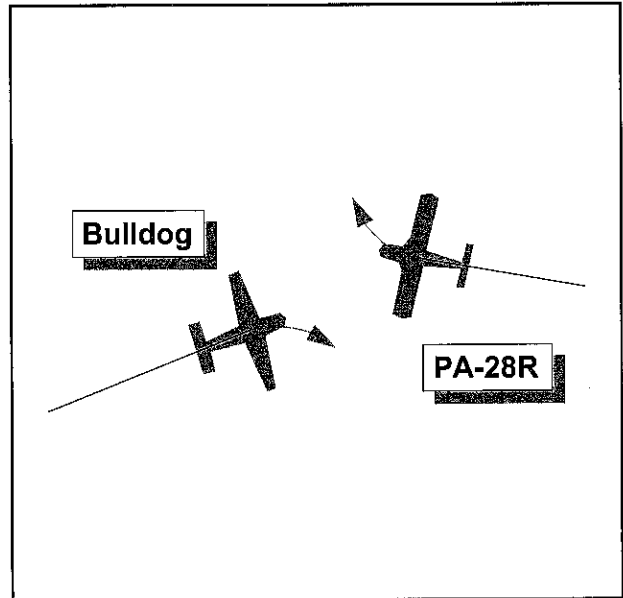
Date/Time: 30 Jun 1109  
Position: N5130 W0115 (1 NM W of CPT)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reporting Aircraft  
Type: PA28R Bulldog  
Operator: Civ Club HQ PTC  
Alt/FL: 2500 ft 1800 ft  
(1012 mb) (1006 mb)  
Weather VMC CLBC VMC CLBC  
Visibility: 30 km+ 20-30 NM

### BOTH PILOTS FILED

### PART A: SUMMARY OF INFORMATION REPORTED TO JAS

**THE PA28R PILOT** reports heading 275° at 140 kt and had just called Lyneham for a RIS. As he moved his head to set the allotted squawk, he saw a Bulldog approaching from 100 ft away in his 11 o'clock and slightly above. He turned hard right and a Bulldog passed 10-20 ft away; he described the risk of collision as 'A'. He was on an IMC training exercise with a safety pilot and he thought the Bulldog's approach may have been masked by a window frame. It filled the whole windscreen as it passed and he could not believe he had missed it. He was in the LHS and he commented that his safety pilot was scanning all round but was not looking in the direction of the Bulldog at the moment he caught sight of it.

**THE BULLDOG PILOT** reports heading 030° at 100 kt on a recovery to Benson from whom he was receiving a FIS; he was squawking 7366 and had HISL, landing light and taxi lights on. His ac was black with a white fuselage top and red dividing line. While talking to his passenger and with both looking out, a white single engined ac appeared from nowhere about 40 ft away in front and to his left, and 30 ft above. He instinctively broke right and down, and the other ac broke right and up. The risk of collision had been very high. He commented that his ac markings may have saved the day; certainly the other ac, white and heading into sun, was seen late. He believed the incident emphasises the



need for even better lookout, even in the best visibility conditions and especially near a VOR or similar.

**HQ MATO** reports with RT transcripts that at 1054 the Bulldog took off from RAF Benson for a local training sortie under a FIS. The local procedures state that such ac will be under a FIS unless the pilot requests otherwise. In addition, when the ATC SSR is serviceable, such local sorties are given a discrete SSR code. However, on this occasion the Benson SSR was unserviceable and no squawk was allocated. On departure from Benson, the pilot contacted Benson Approach and was placed under a FIS until 1111:33 when he called for recovery and stated that he intended to file an Airprox.

At 1100:17, the PA28 Arrow called the Benson Zone (BZONE) controller on VHF for service. The ac had just taken-off from White Waltham and was en route to Filton. The BZONE controller was busy with other ac at the time but at 1101:45 he established contact with the PA28. He noted the flight details, and advised the pilot that the SSR was unserviceable and that for the moment could only offer a FIS. This the pilot accepted and flew on until 1108:24 when he called to say that he was at Compton. The BZONE controller then told the PA28 pilot to free-call Lyneham. Twenty seconds later the



pilot established contact with Lyneham Zone (LZONE) and passed his flight details. LZONE responded at 1109:15, "(c/s) roger squawk 4520, er 4521". This was acknowledged by the pilot and LZONE asked "(c/s) what service do you require?" The pilot started to respond "I'd like radar", hesitated and LZONE injected with "(c/s), traffic believed to be you has traffic in your 12 o'clock erm.... its just passing behind now." The pilot then said "Yeah we are going to have to report an Airmiss on that one I am afraid." There then followed an exchange of calls when details of the incident were passed and a RIS was established. From the initial contact to reporting the Airprox the pilot of the PA28 was on frequency for 50 seconds.

The poor performance of the Benson primary radar on the day and the unserviceable SSR were causal factors in this incident. Had the systems been working normally, the usually poor low-level primary radar coverage to the west of White Waltham would have been supplemented by the SSR data. Aircraft identity might have been established and information on the Bulldog may have been available through the SSR label. In the circumstances, there appears to be little more that the controllers involved could do as the LZONE controller reacted immediately she suspected that the PA28 had a confliction and the Benson Approach controller was only providing a FIS.

JAS Note: LATCC radar recordings show the ac approaching each other on tracks of 070° (Bulldog) and 278° (PA28), and pass at 1109:20 as described by the pilots. The ac are both at FL 24 (Mode C) as they approach each other but the PA28 occasionally shows FL 25. While both pilots perceived the other ac to have been slightly above their own, it is likely that the PA28 was marginally above the Bulldog's level.

**HQ PTC** comments that this was an extremely late spot by both pilots. As with all 'collision' approaches, there would have been little, if any, relative angular motion of either ac to alert the pilot of the other to the danger.

## **PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS**

Information available to the Working Group included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the appropriate ATC and operating authorities.

Members agreed that the occupants of both ac had been very lucky to have survived this encounter which clearly had a high risk of collision. It was difficult to believe that even allowing for the pilot on instruments, 3 other pairs of eyes that were looking out did not disclose the approach of the other ac until nearly too late. It demonstrated that, particularly head on, when aspects are small, closing speeds are high and angular motion is absent, ac do not stand out and must be actively searched for.

Members noted the PA28 pilot's belief that the oncoming ac had been concealed by windscreen structure until a late stage; indeed this might also have been the case in the Bulldog's cockpit and members observed as often before that it was necessary to keep one's head moving while looking out to see past such obstructions. There was also a lesson for safety pilots or any front seat occupant that the survival of any sortie in Class G airspace depends on seeing the other ac before it is too late. Clearly, a radar service will help in these circumstances and it was unfortunate that Benson's equipment was not up to speed. Members noted the very prompt traffic information passed by the Lyneham controller even while the PA28 was being identified; had the pilot called this very alert controller even a few seconds earlier, a more orderly avoidance might have ensued.

The Group concluded that while there was no ready explanation for the very late sighting by the pilots of both ac, this was the cause of this very serious Airprox.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: A

Cause: Very late sighting by the pilots of both ac.

### **AIRPROX (P) REPORT No 70/98**

Date/Time: 03 Jul 1512

Position: N5212 W0047 (3.5 NM SE Sywell - elev 429 ft)

Airspace: FIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: Microlight Mudry CAP10B

Operator: Civ Pte Civ Pte

Alt/FL: 800 ft 2000 ft

(QFE) (QNH)

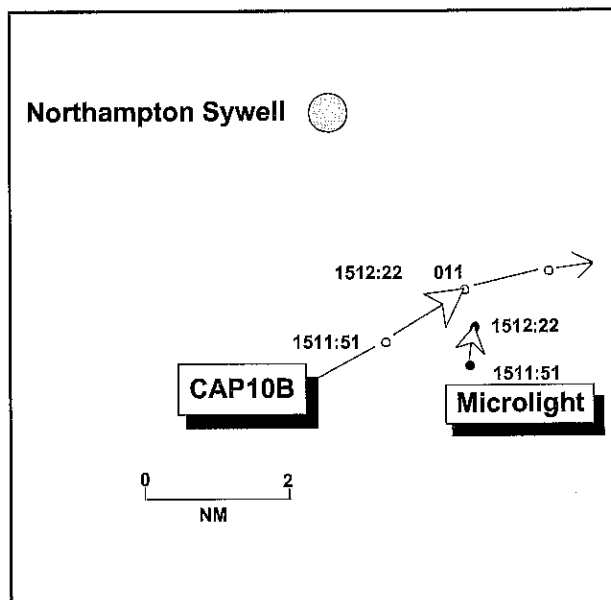
Weather VMC VMC

Visibility: 6 km >10 km

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE MICROLIGHT PILOT** reports that he had departed from Cranfield (elev 364 ft) and was heading N at 65 kt and level at 800 ft (QFE) inbound to Sywell; he was in contact with Sywell air/ground on 122.7. The visibility was 5 - 6 km in VMC. When about 3 NM S of Sywell, he saw a low wing single engined light ac with a large canopy about 100 yd away to his L as it tracked from L to R across his path. He turned R in avoidance and observed that the other ac also turned away, passing about 500 yd ahead of him at a slightly higher level; he considered there had been a low risk of collision.

**THE CAP 10B PILOT** reports that he was flying between Wycombe Air Park and Swanton Morley in VMC. The visibility, about 800 ft below overcast cloud, was over 10 km. He was squawking 7000 with Mode C and receiving a FIS variously from Luton APC, Marham Radar and Swanton Radio. When about 5 NM S of Wellingborough, heading 045° at 140 kt and level at 2000 ft (Chatham RPS), he saw a high wing single-engined microlight ac about 1 - 2 NM away to his R. It was about 300 ft below his



level and appeared to be climbing at about 70 kt in a NW direction; his greater altitude and considerably higher speed kept him well clear as he passed about 0.5 NM ahead of it. He did not consider there had been any risk of collision.

Note: A replay of the LATCC radars at 1511:51 shows a return, believed to be the CAB10B, as it tracks NE about 3 NM S of Sywell. At the same time a slow moving intermittent northbound return, believed to be the microlight, can be seen at the CAP 10B's 2 o'clock position just over a mile away. No Mode C data is shown on the latter at this time but at 1512:22, as it passes 0.5 NM N of the primary return, it indicates 1100 ft. (Archive material gives the Chatham RPS for the period as 1018 mb; based on this setting, 1100 ft Mode C equates to 1235 ft. Assuming that the microlight pilot had retained the QFE he set at Cranfield, his altitude equivalent would have been 1164 ft. At the levels reported, therefore, vertical separation would have been in the order of 61 ft).

**PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, and a radar video recording.

Members noted that the reporting microlight pilot did not feel there had been a significant risk of collision and the CAP 10B pilot's report discounted any risk in the encounter; the radar

replay supports the latter's view that the microlight was some distance away from him, albeit closer than the 1 to 2 NM he had estimated. While some members wondered whether this incident was a sighting report, the majority agreed that the microlight pilot's mistaken impression of little lateral separation had prompted him to submit a report. Consequently the Board concluded that there had not been a risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: A mistaken impression of lack of lateral separation from the CAP 10B by the microlight pilot.

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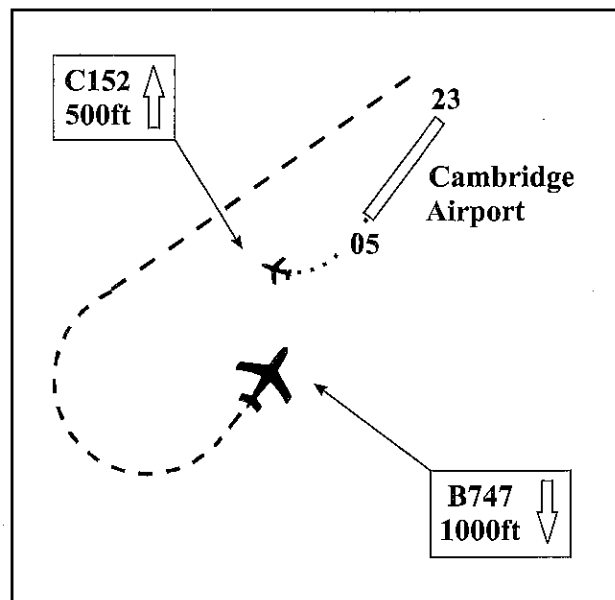
**AIRPROX REPORT 27c/98**

**Occ No. 98/03705**

*Date:* 3 July 1998  
*Time:* 1324 UTC  
*Aircraft:* B747/C152  
*Operators:* British Airline/Private  
*Position:* Cambridge Airport  
*ALT/HT/FL:* 500 feet  
*Airspace Type:* Aerodrome Traffic Zone - Class G  
*Reporter:* Cambridge ATC - Aerodrome Controller  
*Reported Separation:* 0.5nm horizontal/200 feet vertical  
*Recorded Separation* Less than 1nm horizontal/Vertical not recorded

**THE INCIDENT**

Both aircraft involved in this AIRPROX were operating in the Cambridge circuit under the control of the Cambridge Aerodrome controller. The B747 was a positioning flight from Gatwick to Cambridge and was turning final for a landing on runway 05 following a go around from a radar approach to runway 23 due to tail wind considerations. The C152 was a Cambridge



based aircraft and had just taken off from runway 23 for a local training flight.

The B747 pilot first contacted Cambridge Approach at 1312 and was vectored for a Surveillance Radar Approach (SRA) to runway 23. At a range of five miles from touchdown he reported visual with the runway and one minute later he advised ready to continue the approach

visually. The controller cleared the pilot to land and, at 1321, instructed him to contact the Aerodrome controller.

On contacting the Aerodrome controller, the B747 pilot asked for a surface wind check and on being given a wind of zero one zero degrees at six knots replied, "*(callsign) we're going around so we'd like to land zero five*". The controller responded with, "*(callsign) roger go around er surface wind zero one zero degrees seven knots er report downwind left hand in the visual circuit one thousand six hundred feet*". The pilot acknowledged this and then added, "*and confirm that right hand visual circuit*". The controller replied, "*er left hand er left hand*". Note:- visual circuits at Cambridge are normally flown to the South for environmental reasons, ie right hand for 05 and left hand for 23.

The B747 had been positioned slightly right of the runway 23 centreline and so commenced its go around North of the centreline and continued in its climb on the North side of the airfield. The radar replay shows the B747 commencing its go around at 1321.30. The Aerodrome controller watched it until he lost sight of it as it disappeared above the visual control room (VCR) roof line.

The VCR at Cambridge is positioned to the North of runway 05/23 and is an old building which houses, in addition to the aerodrome control position, an approach position, briefing facilities for pilots and facilities for support staff. The view from the VCR is, because of buildings, very limited to the North and Northwest and it also suffers from reflection difficulties and ventilation problems. Reports from ATC personnel relating to the poor facilities have been received by the CAA for many years. The VCR does not meet the minimum standards required by CAP670 (Air Traffic Services Safety Requirements) but has been permitted to continue in operation by the Safety Regulation Group (SRG) while discussions have taken place with the airport operators in order to try and improve the situation. Despite a number of minor actions, the VCR remains largely unchanged and falls well short of the standard required.

Following the B747's go around, the controller continued operations on runway 23 giving a service to a number of aircraft, one of which asked, "*intentions of the er big aircraft?*" The controller either did not hear, or ignored this call. At 1322.30, the C152 pilot reported ready for departure and was told to line up and wait. At 1323.15, the C152 pilot was cleared for take off from runway 23 and, at 1323.45, a Fuji was cleared to land on runway 23. The B747 pilot called next at 1323.50, reporting, "*and er (callsign) we're on left base zero five*". The controller replied, "*(callsign) roger report final you're number two to a Fuji at er half a mile*". About thirty seconds later the B747 pilot reported, "*and (callsign) is finals zero five*", to which the controller replied, "*(callsign) roger continue there is one light aircraft on the main to vacate*". The B747 pilot then asked, "*(callsign) can we have the PAPIS on zero five please*". This prompted the controller to say, "*roger er zero five affirm er there's one er climbing out on the runway two three*". In response to the B747 pilot's request to say again the controller called, "*have you the got the aircraft er visual ahead of you*". The B747 pilot replied in the affirmative and was told, "*roger continue for zero five*". The B747 pilot then reported, "*yeah I see him he's clearing away now thanks*", and was told by the controller, "*roger we don't have the road closed and er on zero five you're now clear land the surface wind three three zero degrees eight knots*".

In the meantime the C152 pilot, on climb out from runway 23, had seen the B747 ahead of him, turning finals for 05. On seeing the confliction he turned right and his aircraft passed clear to the North.

In his report written immediately after the incident, and without hearing the RTF recordings, the controller believed that the first reference to runway 05 was when the B747 pilot asked for the PAPIS. However, the recordings show that this was in fact the fourth mention of 05 by the B747 pilot who had used the runway designator in every one of his transmissions concerning the runway to be used. The controller stated later that during the B747's go around and circuit he was distracted

by various matters, including some visitors in the VCR and various communications that he was having with personnel attempting to switch the road traffic lights protecting the approach to runway 23.

The B747 pilot stated in his written report that, following his go around from runway 23 and request for runway 05, he was told to report downwind left hand and that he queried this as his co-pilot was very familiar with the airfield. As he turned finals and requested the PAPIs for 05, it was apparent his request for runway 05 had not registered with ATC. He reported that the AIRPROX had occurred at 4nm finals to 05 as he was descending through 1200 feet, and that he had seen the C152 from a range of 5nm. He assessed the minimum separation as 3nm horizontal and 500 feet vertical, with no risk of collision

The C152 instructor reported that whilst waiting for take off, he heard an aircraft call overshooting runway 23 and requesting runway 05. He then heard a discussion about whether a left or right hand circuit should be flown. After clearance for departure from runway 23, with no restriction, he was passing 500 feet on climb out when he saw a B747 about 3nm ahead turning towards him. Initially he thought it was turning to position downwind left for runway 23 but it became obvious that it was turning and descending for an approach on runway 05 and that a conflict existed. He then instructed his

student to make an immediate right turn and they passed well clear. He assessed the minimum separation as 3nm horizontal and 500 feet vertical.

Radar recordings, taken from the nearby Area radar facility at Debden, revealed that the minimum horizontal separation was less than 1nm as the C152 turned right to avoid the B747. This confirmed the ATC reported minimum horizontal separation. As the C152 was not squawking any SSR Mode C, it was not possible to ascertain any vertical separation distances.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Cambridge Aerodrome controller who, despite several cues to the contrary, did not appreciate that the B747 was positioning for runway 05 and cleared the C152 for take off from runway 23 into direct conflict with the B747.

Although several cues were missed, the opportunity for the controller to keep the B747 in sight and therefore appreciate the situation at an earlier stage was not available, due to the poor field of view from the VCR. The VCR does not meet the requirements of CAP 670 and its shortcomings were the cause of significant distractions to the controller during a busy period.

### **REVIEW BY AIRPROX PANEL**

#### **1 Discussion**

The aerodrome controller appeared to have had a mental set that the B747 would land on runway 23 as expected. Despite several cues to the contrary, the controller persisted with this erroneous belief until the B747 pilot asked for the PAPIs to be selected for runway 05. On the face of things the controller's actions were surprisingly aberrant. Therefore, the difficulties which the controller had reported, required some examination to see whether they amounted to distraction enough to explain his actions.

It was evident that the controller's workload was quite high and that this was exacerbated by the number of foreign pilots on the frequency in preparation for an air display. It was also reported that a group of visiting foreign pilots was in the VCR to file a flight plan.

Added to the above factors, it was understood that there was a problem with the intercom between the Aerodrome and Approach Radar controllers which prevented the former hearing the radar controller when there were other transmissions on the frequency. To counteract this, it was believed that the aerodrome controller found it necessary to select the Approach Radar frequency in addition to the Tower frequency. Difficulty was also being experienced with the traffic lights on the adjacent public road and these were being switched by a third party; this required the Aerodrome controller to listen in on the Ground frequency as well in order to obtain confirmation of the status of the traffic lights. There are, in addition, the physical limitations of the VCR as explained in the account of the incident.

Taking all the evidence available, the Panel had to conclude that the Aerodrome controller had become overwhelmed by his difficulties and had quite lost the picture. The cues from the B747 pilot's transmissions, together with the fact that he could not see the B747 downwind for runway 23, just did not register.

During the discussion, the proposition was made that the B747 pilot could have been more inquisitive. Strictly speaking, he was never formally cleared by the Aerodrome controller to make a circuit to runway 05. The controller's answer had been "Roger go around ..... report downwind left-hand". No mention had been made of runway 05. Most members thought that his argument could only be made with the benefit of hindsight. Nevertheless, the B747 crew clearly recognised that a left-hand circuit to runway 05, over the city, was unusual and took them against the busy visual circuit. Had the B747 pilot sought confirmation that it was to be a right-hand circuit for runway 05, this might have been enough, despite his difficulties, to have enabled the controller to recognise the reality of the situation.

2 Causal Factors The Cambridge Aerodrome controller cleared the C152 to take off from runway 23, without realising, until too late, that the B747 was making an approach to runway 05.

3 Risk Classification C

4 Recommendations The Panel had no recommendations to make.

## AIRPROX (P) REPORT No 71/98

Date/Time: 05 Jul 0919 (Sunday)  
Position: N5132 W0208 (Hullavington - elev 343 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reporting Aircraft  
Type: Viking glider PA28  
Operator: HQ PTC Civ Pte  
Alt/FL: 1200 ft 1300 ft  
(QFE 1009 mb) (QNH 1015 mb)  
Weather VMC CLBC VMC CLBC  
Visibility: 20 km 30 km

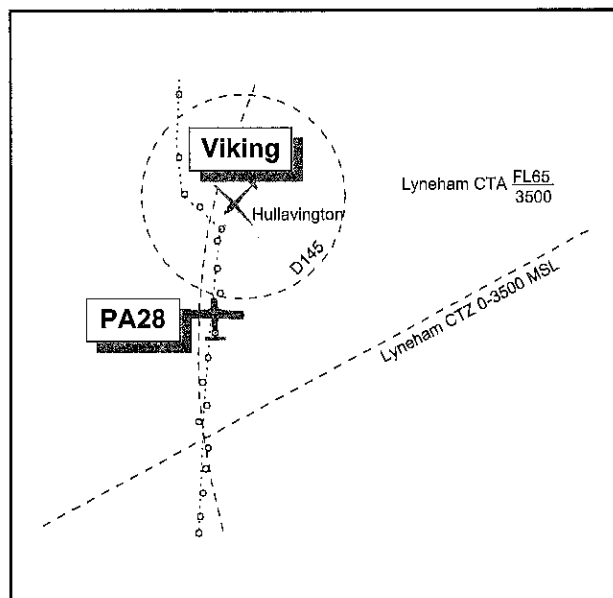
### BOTH PILOTS FILED

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE VIKING PILOT** reports heading 254° at 1200 ft having just completed a winch launch to 600 ft below cloud. When 400 m W of the SW end of the runway, he saw a light ac 900 m away in his 11 o'clock on a northerly track at the same level. He turned left to maintain maximum separation, upon which the other pilot appeared to see him and dived away to its left to about 500 ft. He considered the other ac constituted a high risk to gliders launching from Hullavington airfield due to the steep angle of climb and rapid gain of height.

**THE PA28 PILOT** reports heading 354° at 100 kt and receiving a RIS from Lyneham on 123.4. When 2 NM W of Hullavington he saw a glider 500 ft ahead and to his right; he closed his throttle and turned at 35° AOB to his left and dived to the left, levelling at 700 ft where he regained his heading. As he applied the bank he lost sight of the glider beneath his rising wing; it was then still in straight and level flight. He had been looking ahead for another ac reported 3-5 NM ahead by the Lyneham controller which he had just seen. After the incident, Lyneham asked if he was over Hullavington; he replied that he was 2 NM to the W.

**HQ MATO** reports that the PA28 pilot was receiving an ATS from Lyneham Zone on 123.4 and squawking 4521. In accordance with a



local agreement, Lyneham ATC had been advised earlier that morning that the winch-launch glider site at Hullavington would be active. Several intermittent primary radar contacts had been observed by Zone in the vicinity of Hullavington prior to the occurrence. Consequently, when the PA28 left the Class D Lyneham CTZ, northbound for Gloucestershire Airport at 0918:15, Zone advised the pilot that a RIS was being applied and that "Hullavington may be active", which was acknowledged. Zone then passed traffic information to the PA28 pilot on an unknown ac squawking 7000, "12 o'clock 5 NM right to left no height", which was acknowledged. No other contacts were observed by Zone in the immediate vicinity of the PA28 before the pilot reported at 0920:00, "re-climbing to 1300 on 1015 (Cotswold RPS) I just had to drop down to avoid a glider". Zone perceived that the PA28 was just outside EGD145, marked on the radar video map. No Airprox report was filed over RT before the PA28 pilot switched to Gloucestershire. Subsequently, the gliding supervisor at Hullavington contacted Lyneham and advised that the Viking glider pilot would be filing an Airprox (P).

Zone warned the PA28 pilot of general activity at Hullavington and promptly provided traffic information on observed traffic in accordance with the requirements of a RIS. Although the Lyneham SRE was fully serviceable, the subject

glider was not displayed prior to this occurrence. Consequently, Zone was unable to provide a specific warning about it, which demonstrates once again the extremely poor radar conspicuity of gliders. It is notable that the PA28 pilot reports scanning for the unrelated ac upon which traffic information had been passed by Zone, and had just acquired it when the Airprox occurred. This may have impeded sighting of the glider by the PA28 pilot.

Note: LATCC radar recordings show a return squawking 4521 tracking 004°. Its track is tangential to the W side of the Lyneham CTA; at the SW side of the Hullavington airfield boundary it turns abruptly onto 310° for 16 sec before resuming a track of 004°. There is no Mode C with this return although the PA28 pilot reported it switched on, and only intermittent returns near Hullavington which may be gliders. D145 (Hullavington) was activated by NOTAM, 0600 to 2000 hrs up to 2000 ft agl; this information was available on the Daily Nav Warning Summary.

**HQ PTC** comments that it appears that this Airprox took place very close to the boundary of the airfield at Hullavington. Both pilots appear to have seen each other in sufficient time to avoid; however, there is always a risk of collision between ac and the launching cable, especially if overflight is at heights around 1000 ft.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

Board members agreed that both pilots had done well to spot the confliction and that both

had acted in good time to resolve it, thereby removing any risk of collision; members also commented on the very positive avoiding action taken by the PA28 pilot. However, it was disappointing that the PA28 pilot had tracked so close to Hullavington in the first place, and members agreed that he should have had more regard for D145. It had been NOTAMed as active and while Lyneham ATC was aware that paradropping was not imminent, they were aware that gliding was taking place and warned the PA28 pilot. The Board considered that the pilot was remiss in continuing towards Hullavington - had he known it was active before flight he should have planned to go round it, and having heard from Lyneham, he should have taken the hint. The Board also agreed that the Zone controller's words "may be active" were not ideal, ("is active" would have been more appropriate) but nevertheless this should have been a sufficient clue.

At this meeting the Board dealt with several Airprox involving gliders and GA ac in the vicinity of glider sites. While deploring a lack of awareness by GA pilots of the potential danger that these incidents demonstrate, members agreed that operators at glider sites could possibly do more to alleviate the problem. It is a requirement to check the airspace into which one is going to launch before doing so, because the pitch attitude during launch inhibits all round lookout. A launch takes about a minute - most light ac would not be more than 2 NM away if they were heading for a confliction and should be detectable from the launch point or the winch. The Board commended a diligent pre-launch search by eye and ear to all those involved in launching gliders.

The Board concluded that the incident was a confliction of flightpaths in the vicinity of a notified gliding site which was resolved by the avoiding action of both pilots.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

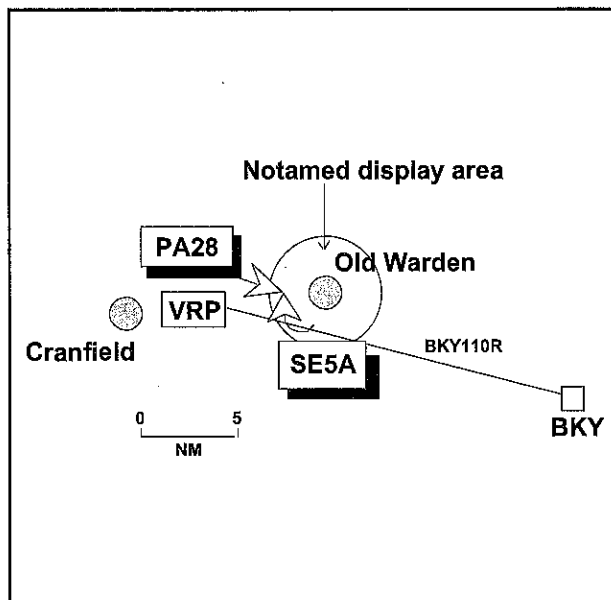
Degree of Risk: C



Cause: Confliction of flightpaths in the vicinity of a notified gliding site, resolved by the avoiding action of both pilots.

**AIRPROX (P) REPORT No 72/98**

Date/Time: 05 Jul 1500 (Sunday)  
Position: N5205 W0021 (1.5 NM W Old Warden airfield - elev 110 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: SE5A PA28 140  
Operator: Civ Pte Civ Pte  
Alt/FL: 2000 ft 2000 ft  
(QFE 1014 mb) (QNH)  
Weather VMC VMC SKY  
CLEAR  
Visibility: >10 NM 20 km



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE SE5A PILOT** reports that he was carrying out tight RH orbits in display airspace which was the subject of a NOTAM while awaiting the departure of another ac which was to join him in a display at Old Warden aerodrome. The visibility below cloud was over 10 km in VMC. His ac was not radio-equipped. His attention was focused on the display activity. When on a northerly heading at 70 kt at 2000 ft (QFE 1014) about 1.5 NM W of Old Warden, he saw a dark coloured, possibly black, low wing single engined ac he thought was a Beagle Pup as it crossed his track from L to R less than 100 m away and 200 ft below his level. He had no time to take avoiding action and the ac passed less than 50 m behind him and 200 ft below with a high risk of collision. He reported an Airprox to UKAB by telephone.

**THE PA28 PILOT** reports that he was flying from Cranfield to Southend in VMC; he was well clear of cloud with visibility over 20 km. He maintained a listening watch, initially with Luton on 129.55 and then with Essex Radar on 120.625. His SSR was switched off. Following departure from Cranfield he tracked NE to

intercept the BKY 110° radial to the N of the VRP at Stewartby Brickworks and then flew at about 2000 ft (QNH) tracking just N of the radial with the intention of turning S when 7 NM DME from the VOR. His speed was 100 kt. The other ac, a biplane believed to be a SE5A, was first seen about 4 NM away at his 2 o'clock position as it manoeuvred to L and R at a similar level. It then turned onto a reciprocal heading for a short time before turning R 90° and heading straight for him; by this time he was slightly below its level. However, as it was converging rapidly on him he pitched forward steeply to pass about 150 - 200 ft below and 300 - 400 m behind it with a fairly high risk of collision. He did not see the ac again and did not think the other pilot had seen him either before or after the encounter.

Note (1): Civil NOTAM J1784 was issued on 23 June at 1548 notifying the display activity at Old Warden. The NOTAMed area was a 3 NM radius circle centred on 5205N 0019W (Old Warden) active on July 5th from the surface to 3000 ft agl from 0945 - 1715.

Note (2): The actual encounter is not captured on recordings of the LATCC radars. However, intermittent primary returns before and after the event correlate to the tracks of the 2 ac as reported by their pilots and indicate that the PA28 penetrated the 3 NM radius circle of the display area.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac.

Some members wondered why the PA28 pilot had not chosen a direct route to Barkway, which would have kept him well S of Old Warden. However, it was suggested that the pilot had probably chosen to intercept a BKY radial which he believed would keep him clear of the gliding activity at Henlow and other en-route hazards to the E of Cranfield. Unfortunately, he was unaware that a NOTAM had been issued for Old Warden and the presence of the SE5A, which he saw from some considerable distance away, did not alert him to the possibility that some kind of display activity might be in progress there. Notwithstanding his initial perception that the SE5A was not a threat, the PA28 pilot eventually had to take urgent action when it turned unexpectedly and flew towards him.

While the SE5A's action undoubtedly took the PA28 pilot by surprise, members nonetheless felt that as he had been watching it from about 4 NM away the onus was on him to remain well clear of it. In the event, the Board concluded that the PA28 pilot, having entered a NOTAMed display area, caused the Airprox by flying close enough to the SE5A to cause its pilot concern for the safety of his ac.

This encounter took place in Class G airspace, where the onus to 'see and avoid' applied equally to both pilots. That said, members felt that the SE5A pilot's late sighting of the PA28 was mitigated to some degree by his preoccupation with his imminent display activity and the belief that he was operating in NOTAM 'protected' airspace. Although the 'shock' factor owing to his late sighting probably caused him to underestimate his distance from the PA28, members acknowledged that he had been very concerned for his safety. Some felt that there had been a possible risk of collision because the SE5A pilot was unable to take avoiding action and both pilots had reported a high risk factor. However, the majority were satisfied that, notwithstanding the PA28 pilot's late avoiding action, he had been in continuous visual contact with the other ac and was always in a position to ensure that they would not collide. The Board concluded, therefore that there had not been a risk of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

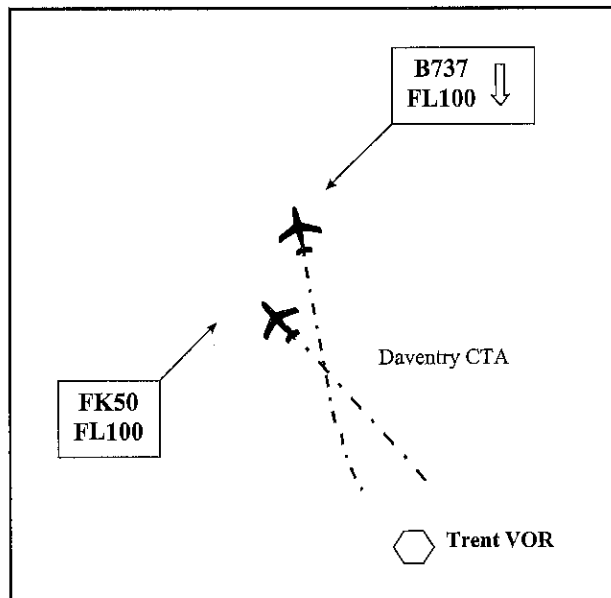
Degree of Risk: C

Cause: The PA28 flew sufficiently close to the SE5A, within a NOTAMed display area, to cause concern to the SE5A pilot.

## AIRPROX REPORT 40c/98

### Occ No. 98/03815

*Date:* 6 July 1998  
*Time:* 1523 UTC  
*Aircraft:* B737/FK50  
*Operators:* Foreign Airline/British Airline  
*Position:* 5nm North of TRENT  
*ALT/HT/FL:* FL100  
*Airspace Type:* Daventry CTA - Class A  
*Reporter:* MACC - TMA South East Sector Controller  
*Reported Separation:* 2nm horizontal/Nil feet vertical  
*Recorded Separation:* 1.7nm horizontal/300 feet vertical



## THE INCIDENT

Both the aircraft involved in this AIRPROX were under the control of the Manchester Area Control Centre (MACC) TMA South East (SE) Radar Controller and were inbound to Manchester via the Trent VOR (TNT). The FK50, which had departed from London City, was level at FL100 and was initially ahead of the B737, which had departed from Paris and was in descent to FL100. The controller's workload was assessed as moderate with a radar controller and a co-ordinator operating the MACC TMA SE Sector in a banded configuration.

The FK50 pilot made initial contact with the Manchester controller at 1512, reporting level at FL160, and on course for TNT. He was cleared initially to route direct to DAYNE but this was amended a short time later to a radar heading of 340°, then to 335° and finally, at 1517, to 330°. These changes were in order to permit a faster aircraft, also inbound to Manchester, to overtake and descend through the level of the FK50 which was also cleared to descend to FL110.

At 1518, the B737 pilot contacted the Manchester controller reporting level at FL200 and heading 330°. He was cleared direct to DAYNE and given descent clearance to FL120.

A few seconds later, at 1518.50, the FK50 pilot was cleared to resume his own navigation to DAYNE. The two aircraft were now on converging tracks, with the FK50 in the B737's half past one position at approximately 6nm. The B737 was considerably faster than the FK50 and so horizontal separation was being rapidly eroded although vertical separation was still maintained.

At 1520, the FK50 pilot was cleared to descend to FL100 and then, at 1521.40, when the B737 pilot reported level at FL120 he also was cleared to descend to FL100, the same level as the FK50. The two aircraft were now on converging headings with both vertical and horizontal separation being rapidly eroded. At just before 1522, the Manchester Approach controller advised the TMA SE Radar controller, by intercom, that he would take the B737 on heading 350° and so, at 1522, the B737 pilot was instructed to turn right on to that heading. Radar recordings, timed at 1522, show the B737 tracking north-westerly and in descent passing FL127 with the FK50 in its 2 o'clock position range 1.5nm level at FL100. Subsequent radar pictures show the B737 turning right and closing on the FK50 to pass close behind and still descending.

As the B737 descended through FL115, the Short Term Conflict Alert (STCA) equipment

was activated and this alerted the TMA SE Radar controller to the situation. As a result he transmitted to the FK50 pilot at 1523, "*(callsign) descend flight level seven zero good rate of descent*". The FK50 pilot responded, "*Expedite down to level seven zero (callsign)*". No transmission was made to the B737 pilot. Then, at 1523.10, the controller instructed the FK50 pilot, "*And (callsign) contact Manchester one one nine decimal four bye bye*". The radar pictures for this time show the two aircraft abeam one another range 0.75nm, but now diverging, with the FK50 level at FL100 and the B737 descending through FL108. Thereafter, the B737 pulled ahead of the FK50 and horizontal separation increased but, for a time, vertical separation continued to reduce until, at 1523.26, horizontal separation was 1.7nm and vertical separation had reduced to 300 feet. However, by 1523.58, as the pilot of the FK50 complied with the instruction to expedite his descent, standard vertical separation had been restored.

The Manchester TMA SE Radar controller recalled that when the FK50 was level at FL100, the B737 was inadvertently cleared to FL100. He stated that when the STCA activated as the B737 passed FL115, the FK50 pilot was instructed to descend to FL70 with a good rate of descent but with the benefit of hindsight this instruction was insufficient to maintain separation.

The Manchester SE Sector Co-ordinator recalled that there were three aircraft inbound to

the DAYNE hold and that, although he was not aware of the levels to which they were descending, the scenario looked perfectly normal. Subsequently, the order of approach was changed but he was not aware at the time of any loss of separation.

In his written report, the FK50 pilot recalled that the flight had proceeded uneventfully and he was not aware of any hazard nor was he advised of any hazard by ATC at any time.

The B737 pilot did not submit a report as he could remember nothing special about his approach to Manchester.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the MACC TMA SE Sector controller who inadvertently descended the B737 to the same level as the FK50.

On being alerted to the impending loss of separation, by the STCA, the controller's reaction was poor. An instruction to resolve the situation was only issued to one of the aircraft involved, the words '*avoiding action*' were not used and no traffic information was provided. A more positive response could have minimised and may even have prevented the loss of separation. Furthermore, the decision to transfer the B737 to Manchester Approach before standard separation had been restored was regarded as questionable.

### **REVIEW BY AIRPROX PANEL**

#### **1 Discussion**

After some debate, members were in agreement that the AIRPROX had not resulted from a misjudgement by the Manchester TMA SE controller but that he had inadvertently cleared the B737 to FL100 rather than the intended FL110. Not only did the South East Sector co-ordinator recall that the scenario looked perfectly normal but the recording of the conversation, on intercom, between the SE controller and the Manchester Approach controller indicated that the former knew that he had to get the B737 over, and ahead of, the FK50.

The RTF recording also revealed that in the period leading up to the AIRPROX, the SE controller sometimes instructed pilots to descend to flight level "one hundred" and on other occasions incorrectly used "one zero zero". He used the

incorrect phraseology with the B737 pilot and received a read back in the same form. This led to a view that consistent use of the correct phraseology might have helped the controller to avoid his mistake. He might have been less likely to have said "flight level one hundred" when he had meant to say "flight level one one zero".

After the mistake there was some label garbling and this could have delayed recognition of the impending confliction.

2 Causal Factors The Manchester TMA SE controller descended the B737 to the same level as the FK50.

3 Risk Classification C

4 Recommendations The Panel had no recommendations to make.

#### AIRPROX (P) REPORT No 73/98

Date/Time: 08 Jul 1006

Position: N5213 W0114 (3 NM SW of Daventry)

Airspace: LFS/FIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: Tornado GR Motor Falke

Operator: HQ STC Civ Trg

Alt/FL: 8-900 ft 1500 ft

(Rad Alt) (QNH)

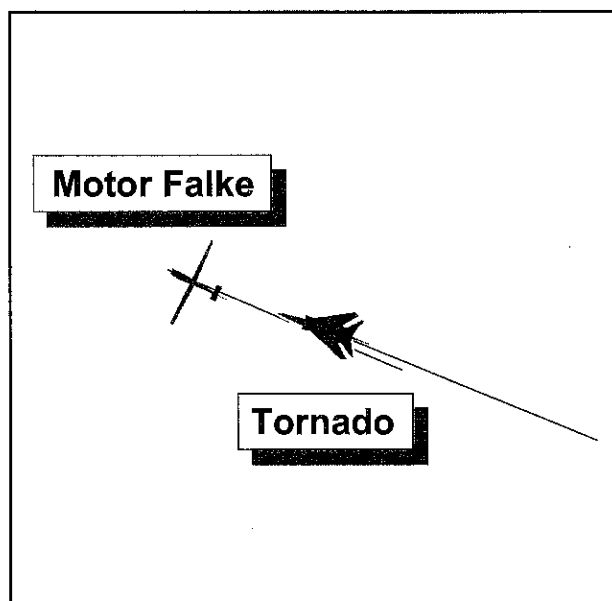
Weather VMC CLBC VMC CLBC

Visibility: 30 km 5 NM

#### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE TORNADO PILOT** reports heading 290° at 420 kt, auto terrain following at 8-900 ft agl. The ac pulled up suddenly for no apparent reason so he took control and overbanked, seeing a light ac 5-700 ft beneath and to the left. It had a red nose cone and longer than usual wings.

**THE MOTOR FALKE PILOT** reports heading 265° at 60 kt. He heard the thunder of engine noise above and then briefly saw a Tornado on a similar track descend ahead out of the cloud before disappearing again. He had no idea how



close it had come or that an Airprox had been filed until he was contacted by telephone.

Note: LATCC radar recordings show a slow moving primary only return that was subsequently traced back to its departure airfield and identified there as the Falke T61. At the Airprox position it is overhauled on a similar track by a 7001 return, level at 1000 ft Mode C. As the returns cross, the Mode C changes to 1300 ft and then continues up to 2300 ft before recommencing a descent.

**HQ STC** comments that the 2 ac involved in this Airprox were within 2.5 NM of each other when the Tornado automatic pull up occurred. With the good visibility reported by the Tornado pilot it is reasonable to assume that the Tornado crew should have seen the light ac before the pull-up occurred. In mitigation it must be stated that light ac are extremely difficult to see at low altitudes, especially when on a constant relative bearing, and that the Tornado crew were under high cockpit workload. It is for these reasons that the need for a constant and disciplined lookout scan must be emphasised.

**PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, radar/video recordings and reports from the appropriate operating authorities.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

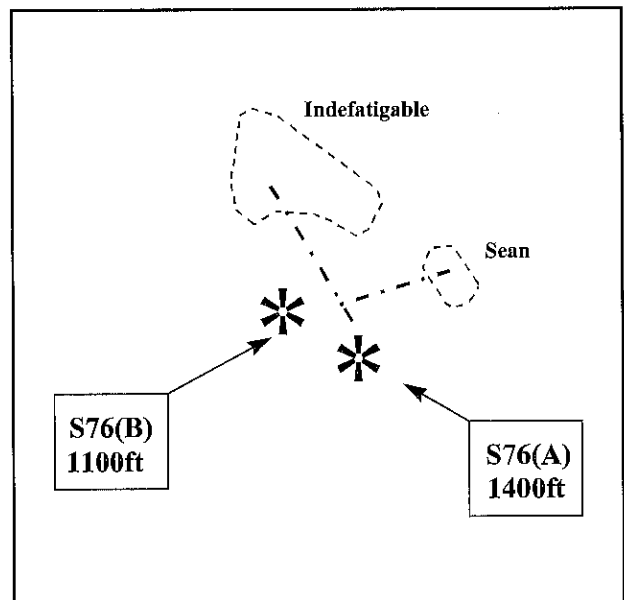
Cause: Confliction of flightpaths resolved by the Tornado's TFR.

The Board discussed whether or not it would have been reasonable to expect the Tornado pilot to have seen the Motor Falke before his TFR took action on it. Stern-on, the motor glider would have presented a very small aspect, its colouring against the cloud would have made it very hard to detect and it was above the Tornado's flightpath. Members were advised that while in TFR in day/VMC it remained essential to keep a sharp lookout despite the powerful head-down attraction presented by the TFR screen. Without TFR, the Tornado might well have passed under the Falke without anyone being any the wiser, but ultimately it was the TFR that resolved what the Board agreed could only be described as a confliction of flightpaths. The TFR achieved a safe separation from the Falke and members agreed that as a result there had not been a risk of the ac actually colliding.

**AIRPROX REPORT 23c/98**

**Occ No. 98/03871**

*Date:* 9 July 1998  
*Time:* 1825 UTC  
*Aircraft:* 2 x S76 Helicopters  
*Operators:* British Commercial  
*Position:* Southern North Sea, West of the Sean Field  
*ALT/HT/FL:* 1100 - 1400 feet altitude  
*Airspace Type:* FIR – Class G  
*Reporter:* Aberdeen ATC – Anglia Radar  
*Reported Separation:* 2nm horizontal/200 feet vertical  
*Recorded Separation:* 4nm horizontal/300 feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were S76 helicopters operating on support tasks in the Southern North Sea within the Anglia Radar Area of Responsibility. S76(A) was in transit between the Indefatigable and Davy Fields at an altitude of 1500 feet and receiving a 'Modified Radar Advisory Service' from the Anglia Radar controller at Aberdeen. S76(B) was climbing out from the Sean Field to an altitude of 2500 feet and returning to Norwich.

Prior to the incident, the S76(B) pilot had been working the Anglia Radar controller inbound to the Indefatigable Field and had left the frequency as he descended to land on a helicopter platform within that field. At 1822, while the S76(B) was out of contact, the S76(A) pilot called the Anglia controller, reporting airborne from the Indefatigable Field and heading for the Davy Field. The controller identified the S76(A) and approved the pilot to climb to altitude 1500 feet.

Meanwhile, the S76(B) pilot had transited below radar cover from the Indefatigable Field to the Sean Field without the Anglia Radar controller's knowledge. Then just before 1825, the S76(B) pilot lifted from the Sean Papa platform, making a call to that effect on the Field Deck frequency. This call was heard by the S76(A) pilot who informed the S76(B) pilot that they were, "passing west abeam at 1500 feet". The S76(B) pilot acknowledged this information and then called Anglia Radar.

At 1825, the S76(B) pilot called the Anglia controller, who assumed erroneously that the aircraft was now climbing out from the Indefatigable Field into which it had previously descended, and which the controller had noted on the flight strip. Seeing no traffic in the vicinity of the Indefatigable Field, the controller told the S76(B) pilot "no known traffic to affect climb". However, as soon as the S76(B) climbed into radar coverage, the controller recognised the conflict near the Sean Field and instructed the pilot to stop his climb at 1000 feet. Note:- North Sea helicopter procedures allow for 500 feet vertical separation. Radar pictures show that

the S76(B) climbed to approximately 1400 feet before quickly descending to 1000 feet. Horizontal separation at that point was approximately 5nm. Both aircraft then continued enroute without further incident.

The Anglia Radar controller took AIRPROX (C) reporting action and stated in his report that as he thought the S76(B) was climbing out from the Indefatigable Field he told him that there was no known traffic. However he has since accepted that he should have confirmed the departure point rather than assuming that it was from the Indefatigable Field.

In his written report, the S76(A) pilot stated that when whilst listening out on the 'Field Platform Frequency' he heard the S76(B) pilot call lifting from the Sean Papa platform, he informed him that they were passing West abeam. (Note: Whilst this information was known to the S76(B) pilot it was not available to the Anglia controller.) The S76(A) pilot did not see the other helicopter but assessed the risk as low.

Although no written report was received from the S76(B) pilot, from the RTF tape recording he appeared undisturbed by the event and made no comment about seeing the other S76. Furthermore, at the time, both he and the other S76 pilot were not aware that the controller had taken reporting action. He did, however, apologise on the RTF afterwards for not making the controller aware that he would be operating between adjacent fields.

## SUMMARY OF CAA ACTION

From the RTF and radar recordings, it would appear that there was only a marginal loss of standard separation between the two S76s. Fortunately, the Anglia radar controller managed to stop the S76(B) pilot from climbing through the level of the S76(A) and radar separation was only eroded to 4nm. The Anglia radar controller, when passing traffic information to the S76(A) pilot about the S76(B), actually reported the range as 5 miles when he observed the S76(B) to be level at altitude 1000 feet. However, the incident clearly

startled the Anglia Radar controller. The S76(B) pilot should have informed the controller, when the flight was outbound to the first gas field, that he was going to operate between adjacent fields. Unfortunately, the stated departure point "from the Sean Papa" in the S76(B) pilot's initial call to the Anglia Radar controller on his return, was spoken quickly and quite difficult to understand. Nevertheless, the Anglia Radar controller should have confirmed the departure point of the S76(B) if he was in any doubt. It was this assumption, together with the lack of

appropriate information from the S76(B) pilot which led to the conflict.

Aberdeen ATC have taken action to ensure that the incident has been brought to the attention of all Anglia Radar controllers, highlighting this kind of movement of helicopters which may take place prior to their returning to the mainland. The S76 operator has issued a notice to aircrew reminding them that they must inform Anglia Radar if they are going to be operating between adjacent gas fields.

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion**

The Panel agreed with the Summary of CAA Action. It had required repeated play-back of the Anglia Radar RTF recording to determine that the pilot of S76(B) had announced that he was departing from Sean Papa. It was not surprising therefore that the controller had not been able to catch this vital piece of information.

Neither helicopter pilot appeared to be perturbed by the incident because they knew what was going on after the pilot of S76(A) had heard S76(B) working the field deck frequency. They could however have assured the controller after the traffic information was given that they were already aware of each other. Nevertheless, the AIRPROX has served to highlight a potential loophole in procedures and brought about a change in those procedures.

### **2 Causal Factors**

The Anglia Radar controller approved the S76(B) pilot's request to climb to altitude 2500 feet unaware that the S76(A) had departed from the Sean Field and was traffic to the S76(B).

### **3 Risk Classification** C

### **4 Recommendations** The Panel had no recommendations to make.



## AIRPROX (P) REPORT No 75/98

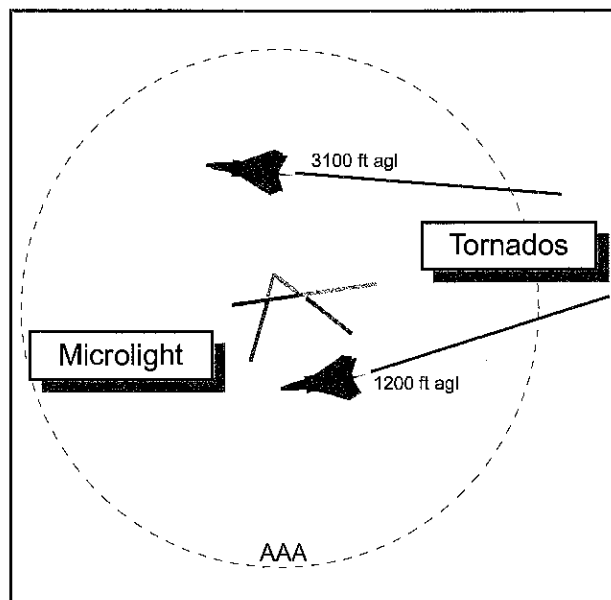
Date/Time: 15 Jul 1009  
Position: N5517 W0143 (Eshott airfield - elev 197 ft)  
Airspace: FIR/AAA (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Microlight Tornado F3  
Operator: Civ Trg HQ STC  
Alt/FL: 300 ft ↑ 1600 ft  
(QFE) (Rad Alt)  
Weather VMC CAVK VMC CLBC  
Visibility: 10 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE MICROLIGHT PILOT** reports heading 190° at 45 kt climbing after take-off from his RW 19 on his second solo flight. He was passing 300 ft when 2 fast jets passed left to right; he saw the first which went 400 ft ahead of him and 50 ft below, and his instructor on the ground saw the second pass behind by 100 ft and 50 ft above. He continued the climb-out to avoid the wake of the first one which presented a high risk. The jets passed well within the Eshott airfield avoidance area.

**THE TORNADO PILOT**, one of a pair, reports heading 260° at 310 kt while regrouping to act as targets for another pair on a conversion exercise. His wingman on the right and above him saw a microlight pass him and although unsure of its aspect, assessed that there was no risk of collision. He estimated he passed 1000 ft above it and 0.5 NM from it. Due to the late sighting, avoiding action was not possible or necessary. At the time they were passing to the S of Eshott, closer than ideal due to a heavy shower to the S.

Note: A replay of LATCC radar recordings show the Tornados heading S to the NE of Eshott and turning across the airfield. The northern one appears to tighten its turn sharply to avoid the AAA to the N but passes 0.75 NM N of the airfield centre at 3400 ft Mode C while the southern one passes less than 0.5 NM S of the main runway at 1500 ft Mode C. The local QNH



was 1008 mb; taking this and the airfield elevation into account, the southern Tornado was at about 1200 ft agl.

**HQ STC** comments that the discrepancy between the altitude of the Tornados as reported by the ground observer and as indicated by the Tornado rad-alt reading is hard to explain. However, it is notoriously difficult to accurately assess ac altitude from the ground, and the Tornado crew report having passed about 1000 ft and 0.5 NM from the microlight. The perception of adequate separation differs between ac types and fast jet users of the low flying system should aim to give light ac as wide a berth as possible and part of this process of avoiding light ac is to remain clear of light ac landing sites. In this instance, the southern Tornado infringed the Eshott avoidance area and although in the event at least 1000 ft of vertical separation did exist between microlight and Tornado, it is clear that the Airprox would not have occurred had the Tornados given Eshott a wider berth.

### PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar

photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The radar recording showed the northerly Tornado sharply tightening its turn and pulling up above the avoidance area but the southerly (left hand) ac passed through the Eshott AAA. The Board concluded that this was the cause of the Airprox. Members were advised that Eshott was very difficult to distinguish from the air and was in the middle of an extensively used

training area; this made it all the more important, if crews were in its vicinity and could not see it, to climb to above 2000 ft.

In the event, the filing pilot greatly mis-assessed the separation from the Tornados and members agreed that there had not in fact been any risk of a collision. However, they well understood why the inexperienced microlight pilot and his instructor had been startled and concerned about the intrusion.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: The Tornado pilot penetrated the Eshott airfield avoidance area.

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### **AIRPROX (P) REPORT No 76/98**

Date/Time: 15 Jul 1650

Position: N5159 E0027 (0.5 NM NW of Wethersfield - elev 321 ft)

Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft

Type: Viking glider PA28

Operator: HQ PTC Civ Pte

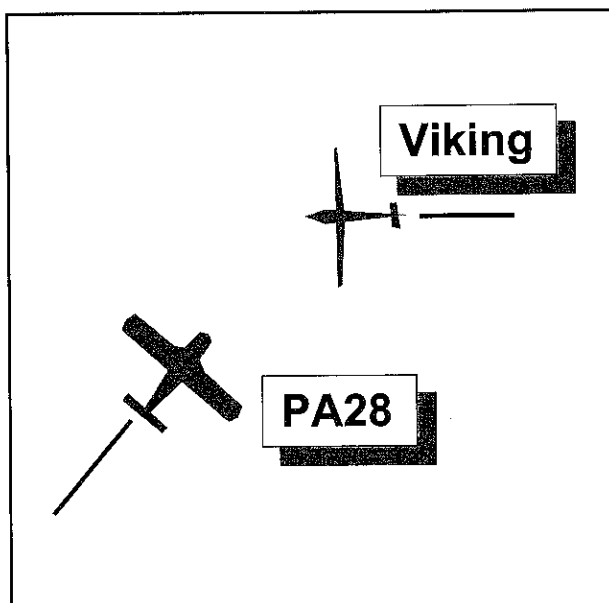
Alt/FL: 1000 ft 1000 ft  
(1003 mb) (RPS)

Weather: VMC CLBC VMC CAVK

Visibility: 25 km 10 NM

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE VIKING PILOT** reports heading 280° at 50 kt on an instructional sortie, having just released the cable after launching to 1000 ft. He saw a light single engined ac closing from the left to within 100 ft and 20-50 ft below; it turned right to pass close astern. As he also turned right, he noted its registration. The risk of collision had been high and he had been unable to see the light ac approach due to the extremely high nose attitude while launching.



**THE PA28 PILOT** reports heading 030° at 90 kt having departed from Andrewsfield and was waiting for a service from Essex Radar, whom she had called on take-off and who had asked her to stand by. She climbed to 1000 ft and was trying to avoid Stansted's controlled airspace with the very limited navigational features in the area. Approaching Wethersfield she saw a glider 500 m ahead and thought she had turned

left to avoid it, passing 400 m from it and 100 m below it. She thought there had been a slight risk of collision and apologised for the confliction. She subsequently acknowledged checking NOTAMs for her first sortie but had not paid attention to Wethersfield since it was not near her intended route. At Andrewsfield their plans changed and she and the other 2 pilots on board had not thought to re-check the NOTAMs which she acknowledged in retrospect was an omission.

Note (1): The Nav Warning summary for 15 Jul 98, issued by AIS at 140500, advised that Wethersfield would be active with gliding to 2000 ft agl. (This was repeated in NWS to cover the period from 11 to 17 Jul.)

Note (2): The recordings of Essex Radar RT and Debden Radar show the PA28 as a primary-only departing westwards from Andrewsfield, and calling Essex Radar at 1645:10 while in a right turn onto a track of 040°. The controller asks her to stand by and next asks her to pass her message at 1650:15. The pilot requests a FIS, including her position as *“Overhead Wethersfield Airfield”*, to which the controller immediately replies *“Rather a dangerous place to be, you might be called upon later to explain that”*. At the same time her return merges with another primary return (presumably the glider) at the western end of Wethersfield airfield. The glider shows for 2 radar sweeps before the event; no other activity shows at Wethersfield on the recording before that. The PA28 pilot acknowledges seeing *“several gliders”*, and about a minute later the glider pilot comes on frequency to report the Airprox.

**HQ PTC** comments that instances of overflight at Wethersfield continue to cause concern at HQ AC and at HQ PTC. It seems that even with the protection of a NOTAM, ac will continue to route through the overhead during glider operations. On this occasion the confliction was spotted late by the glider pilot just as he cleared the cable with the other ac below him.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities.

Members appreciated the constructive attitude of the PA28 pilot in the aftermath of the incident but were saddened at the airmanship lapses displayed by all the pilots on board. Nowadays, with the ability to obtain the full Daily Nav Warning Summary from AIS by fax or the internet, or to get a route-specific briefing by phone, there was no excuse for ignorance of activity affecting one's route; infringements can in some cases be contrary to the law and lead to prosecution. Members agreed that the cause of the Airprox was that the PA28 pilot flew into confliction with the glider over a NOTAMed glider site.

Members discussed Essex Radar's delay in providing a service (drawing adverse but inappropriate comment from another pilot on the frequency) a matter which had been a recurring theme at the GA Air Safety Day at Waddington in the summer. It was argued that if a service was offered it should be provided; if workload meant that provision of services outside CAS could not be relied on, the offer should be withdrawn to allow GA pilots to make other arrangements at the planning stage. However, in this instance the PA28 pilot only requested a FIS which would not necessarily have made any difference to the outcome so the Board agreed that the delay in providing the service was not part of the cause.

Several similar Airprox involving gliders and GA ac in the vicinity of glider sites were dealt with by the Board at this meeting. While deploring a lack of awareness by GA pilots of the potential danger that these incidents demonstrate, members agreed that operators at glider sites could possibly do more to alleviate the problem. It is a requirement to check the airspace into which one is going to launch before doing so,

because the pitch attitude during launch inhibits all round lookout. A launch takes about a minute - most light ac would not be more than 2 NM away if they were heading for a confliction and should be detectable from the launch point or the winch. The Board commended a diligent pre-launch search by eye and ear to all those involved in launching gliders.

There were significant differences in the 2 parties' recollections of the incident. The radar recording indicated that the glider pilot's was the more accurate, and the fact that he had read the registration of the PA28 lent weight to his report. Bearing in mind that he had just come off the launch and had had little time to spot the approaching ac, members considered that the safety of the ac had not been assured.

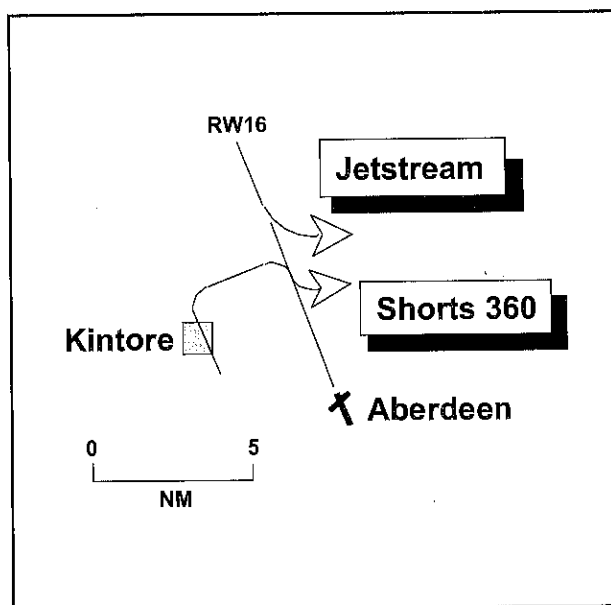
### PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: B

Cause: The PA28 pilot flew into confliction with the glider over a NOTAMed glider site.

### AIRPROX (P) REPORT No 78/98

Date/Time: 15 Jul 1255  
Position: N5717 W0212 (5 NM NNW Aberdeen airport - elev 215 ft)  
Airspace: CTA (Class: D)  
Reporting Aircraft Reported Aircraft  
Type: Jetstream Shorts 360  
Operator: CAT Civ Trg  
Alt/FL: 2000 ft ↓ 1000 ft  
 (QNH 1007 mb) (QFE)  
Weather VMC VMC  
Visibility: 40 km 40 km



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE JETSTREAM PILOT** reports that he was established on the ILS to RW 16 at Aberdeen under the control of Aberdeen Approach Radar on 120.4. The visibility was 40 km in VMC. At a range of about 5.5 NM from the threshold, while passing about 2000 ft (QNH 1007) and with speed reducing through 180 kt, a Shorts 360 turned onto finals about 1 NM in front of him and 400 ft below. ATC instructed him to break off and turn 90° to port, climbing to 3000 ft for a further ILS. The other ac was not on his frequency. He felt there had been a medium risk of collision.

**THE SHORTS 360 PILOT** reports that he was carrying out a RH visual circuit to RW 16 at Aberdeen under the control of Aberdeen Tower on 118.1. The visibility was 40 km in VMC. A trainee co-pilot was handling the ac which was set up for a practice asymmetric approach. He called "downwind" and was cleared to final to report "final". He complied and, having called final, was instructed to go-around and to orbit on a L base leg. He instructed the co-pilot to turn L onto 090°; as they rolled out of the turn at about 1000 ft QFE, he saw a Jetstream at the

same level about 0.5 NM away to his L in a steep turn towards the NE. He did not perceive any risk of collision as it was already turning away from him when first seen.

**ATSI** reports that the controllers concerned had felt fit and adequately rested. Their workload was assessed to have been moderate at the time of the incident but it had been heavier earlier in the session. The relevant ADC equipment had all been serviceable but the APR's RT frequency suffered two main transmitter failures during the previous 20 minutes. Although the standby facilities operated correctly and the service was not directly affected, a number of engineering test transmissions became necessary. While this RT problem is not considered to have had any direct bearing on the Airprox, it would have constituted a minor distraction to the APR.

The Shorts 360 had completed an instrument training detail and, at the time of the Airprox, was carrying out VFR training circuits. The flight had been issued a discrete SSR code for the IFR part of the detail but had been instructed to 'squawk standby' prior to carrying out the circuits, as was standard practice. Combined with reportedly poor primary radar performance, this meant that the Shorts 360 was only intermittently visible in the circuit on the ADC's ATM and the APR's radar. At the time of the Airprox, there was no requirement to notify approach that circuit training was taking place and this had not been done. (However, reports indicate that the APR had noted the presence of an ac in the circuit at some stage during the detail). There are valid arguments for and against the display of SSR codes by circuit traffic. A discrete code would have to be validated and verified by APR, and MATS Pt. 1 (Page 1-41) states that the Conspicuity Code should not be displayed by ac flying in an aerodrome traffic pattern below 3000 ft, so the answer is not straightforward. If on this occasion the Shorts 360 had been displaying an SSR code there would have been considerably more chance of the APR noticing the flight carrying out a slow, wide circuit, and the Airprox may well have been avoided. Since this Airprox occurred, a procedure has been put in place for

APC to be alerted when the fixed wing circuit is active, and a "Circuit Active" FPS has been provided. It is also understood that the unit is considering the introduction of a special purpose 'circuit squawk' for use when considered necessary.

It is understood that it was uncommon to have a relatively large ac carrying out circuit training at Aberdeen Airport. A Shorts 360 would normally be expected to fly a wider circuit than the more customary light ac and helicopters anyway, but on this occasion the circuit was further extended and flown at a lower speed than expected owing to the fact that the ac was conducting asymmetric training. The Shorts 360 pilot's report indicates the flight was asymmetric but this was not known to the controllers at the time. As this incident clearly demonstrates, the Shorts 360 was flying a sufficiently wide circuit to require particularly close co-ordination between ADC, who were working the circuit traffic, and APC who were vectoring IFR flights for ILS approaches.

At 1248:20, the Shorts 360 pilot reported downwind RH for a 'full stop' landing. The ADC instructed him to report on final and advised that he was just becoming number one. At that time, the Jetstream was also downwind RH in the instrument circuit descending to 3000 ft and reducing speed from a previously reported 240 kt. At 1248:50, the APR alerted the ADC to the fact that the Jetstream would be the next ac on the ILS. The range of the flight was not given but, with an ATM available, the ADC is able to monitor the range of traffic on the ILS. (The MATS Pt. 2 does still state that a 10 NM range check should be provided by radar). At 1249:30, the Jetstream pilot was instructed to turn onto a closing heading for the ILS, but the ac did not establish and passed through the localiser. The APR then instructed a R turn to establish from the L.

Normally, ILS traffic is transferred to ADC once the pilot has reported established. On this occasion, the ADC was anticipating the imminent transfer of the Jetstream, having not appreciated that the flight had not established at its first attempt. He was aware of a potential

conflict between the subject ac but was confident that he could resolve it with both ac on his frequency. At 1250:20, having ascertained that the Shorts 360 was just turning base leg to the N of Kintore (approximately 4 NM WNW of the airfield), he instructed the flight: “...keep it tight please next lander at eight miles”. It is calculated, from the radar recording, that the Shorts 360 had at least 5 track miles to run at that stage, so it was already doubtful whether there would be sufficient spacing for the flight to land ahead of the Jetstream.

At 1251:00, the following exchange took place between the ADC and APR via intercom. It clearly shows that both controllers were well aware that one of the ac would have to be broken off. At the conclusion of the intercom exchange, the ADC established that the Shorts 360's speed was 115 kt.

ADC to APR: “That's the (Shorts 360) at four mile final”

APR to ADC: “Er right okay do you want me to break the Two Three One off”

ADC to APR: “Er you might have to I'll see .....”

APR to ADC: “Okay I'll ....”

ADC to APR: “Give him to me now if he's established”

APR to ADC: “He's not I'll break him off ....”

ADC to APR: “No he's alright keep him coming”

APR to ADC: “Okay”

At 1251:20, the APR advised the Jetstream: “...there's a Shorts just joining on a four mile final ahead of you”. The pilot reported the traffic in sight and was asked if he was “...happy to continue the approach”. The pilot asked for the speed of the Shorts 360, advising that his own speed was 180 kt. In the knowledge that the Shorts 360 would be considerably below 180 kt, the APR did not reply to this question and instead unilaterally elected to break off the Jetstream immediately, instructing the flight to

turn left onto heading 090. However, a few seconds earlier, in deference to the fact that the Jetstream was a scheduled passenger carrying flight carrying out an instrument approach, the ADC had broken the Shorts 360 off its approach by instructing it to turn L to reposition and hold on L base. Upon selecting the intercom to the APR, the ADC heard the Jetstream being instructed to turn L. He said on the intercom: “...no mine's turning left - the (Shorts 360)'s going around onto left base.” In response to this, the APR informed the Jetstream that the Shorts 360 was breaking off onto L base and asked the pilot again if he was happy to continue with his approach. The pilot said that he was a little high and requested an orbit. However, at 1252:30, the APR elected to reposition the Jetstream for a further ILS approach and instructed the flight to climb to 3000 ft on heading 010. In the meantime, as the Shorts 360 rolled out on an easterly heading its pilot reported that he had come into close proximity with a Jetstream. The ADC responded by saying that Radar had broken the Jetstream off without his knowledge.

On the radar recording, the radar returns from the subject ac merged at 1251:40, with the Jetstream showing a Mode C readout of 1700 ft. (The Aberdeen QNH at the time was 1007 which would equate to an altitude of 1900 ft and corresponds, approximately, to the flight's last assigned altitude of 2000 ft). There is no Mode C readout for the Shorts 360 but, in his report, the pilot states that he was at 1000 ft on the Aberdeen QFE. (The Aberdeen QFE was 1000, which would equate to an altitude of approximately 1210 ft. Based on this, it is calculated that the vertical separation between the subject ac was in the order of 690 ft).

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, a radar video recording, reports from the air traffic controllers involved and a report from the appropriate ATC authority.

An ATSI adviser told the Board that the significance of the wider than average circuits being flown by the Shorts 360 may not have been fully appreciated by ADC; it was unusual for an ac of this size to be operating in the circuit at Aberdeen.

It was clear to the Board that both the ADC and APR controllers had recognised at a fairly early stage that the Jetstream and Shorts 360 were too closely spaced for both to complete successful approaches. Normal operating practice at aerodromes affords IFR civil air transport priority on an approach but, in this case, the ADC thought he would be able to fit the Shorts 360 in first ahead of the Jetstream. What he had not taken account of was the Short's wider than usual circuit or the relative speeds of the 2 ac.

From the evidence presented, members agreed that the ADC was probably in the best position to judge the overall situation. Had the APR been made aware of the circuit state he might have been able to slow the Jetstream down in good time and assist the ADC by providing an earlier than normal range check. Furthermore, had the APR stood by his original instincts to break off the Jetstream as soon as it became apparent that it was rapidly catching up the Shorts 360, the incident could have been avoided. Similarly the ADC, who should have been aware of the developing confliction from

his ATM, could have taken positive action with the Shorts 360 at the end of its downwind leg when successful integration with the Jetstream looked improbable. After a very hurried and inconclusive attempt at co-ordination by the 2 controllers, the APR allowed himself to be persuaded to let the Jetstream continue its approach; the ADC believed erroneously that once both ac were on his frequency he could resolve any confliction. Realising that the situation was quickly deteriorating, and contrary to his previous agreement with ADC, the APR decided to break off the Jetstream at almost the precise moment that the ADC similarly instructed the Shorts 360 to turn L. These uncoordinated instructions by the 2 controllers put both ac onto conflicting flight paths and caused the Airprox. With regard to risk, members were satisfied that sufficient lateral and vertical separation existed between the 2 ac to preclude any possibility of collision.

While it is generally not appropriate for ac to retain a squawk while in the circuit, ATCO members agreed that in this case, where the Shorts 360 flew a much extended downwind leg, a squawk would have been of great benefit to both the radar and aerodrome controllers; the ac's position would have been more obvious and the controllers might have been prompted to take action much sooner. The Board welcomed therefore the consideration being given by Aberdeen to provide a 'circuit squawk'.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: The uncoordinated instructions of the APR and ADC controllers led both the ac into positions where their flightpaths conflicted.

## AIRPROX (P) REPORT No 77/98

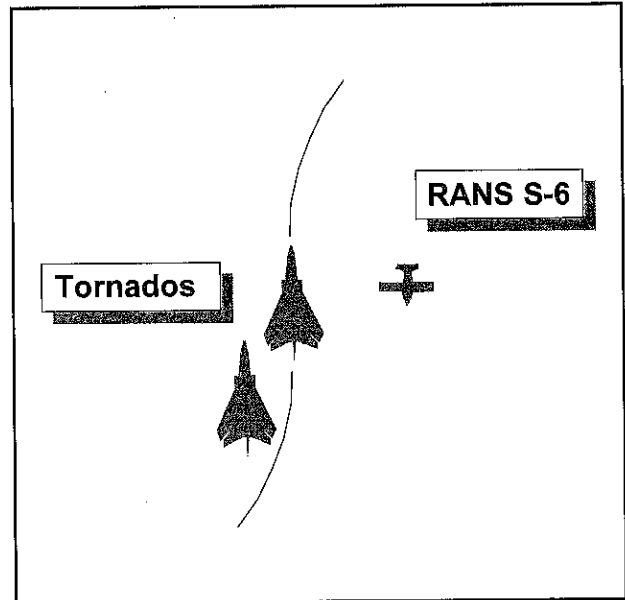
Date/Time: 16 Jul 0948  
Position: N5517 W0143 (1 NM N of Eshott - elev 197 ft)  
Airspace: FIR/LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: RANS S6 Tornado GR  
Operator: Civ Pte Foreign Mil  
Alt/FL: 1000 ft 2000 ft+ (QNH)  
Weather VMC CLOC VMC CLOC  
Visibility: 20 NM 10 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE RANS S6 PILOT** reports heading 180° at 55 kt and 1000 ft in the circuit at Eshott airfield which was about 1 NM ahead of him. A pair of Tornados in formation approached from his 1 o'clock on a reciprocal and passed about 100 yd to his right and above before he could react, although he instinctively turned left. The Tornados appeared to be taking avoiding action.

**THE TORNADO PILOT** reports heading 039° at 420 kt and above 2000 ft, leading a pair for a low level exercise into Spadeadam EWTR. They saw a light ac which may have been the reporting ac but were not sure which way it was heading. It was 700 ft below and to the left; they made a shallow roll to the left to keep it in sight; it was well clear. It was seen late due to its small size and low speed.

Note: LATCC radar recordings show the Tornados, identified from their Spadeadam squawks, in a shallow left turn from NE onto about 350° as they approach Eshott. The turn tightens somewhat in the Eshott overhead and is then reversed onto NE as the ac depart the scene. There is no sign of the RANS on the recording. The Tornados, in a fairly close



formation and both squawking with Mode C, show 2500 ft just before passing Eshott and 2400 ft just after. Taking local QNH and the airfield elevation into account, this equates to 21-2200 ft agl.

### PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

It was clear from the radar recordings that the Tornados were above the Low Flying System and had not infringed the Eshott Airfield Avoidance Area. Furthermore the RANS pilot had given no estimate of vertical separation. Rather than conclude that the Airprox report resulted from his mistaken impression of lack of vertical separation, the Board concluded that the incident was a sighting report with no risk of collision.

### PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C  
Cause: Sighting report.



## AIRPROX (P) REPORT No 79/98

Date/Time: 16 Jul 1454  
Position: N5310 W0312 (2 NM W of Mold)  
Airspace: FIR/LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: CFM Shadow Tornado GR  
Operator: Civ Pte HQ STC  
Alt/FL: 1800 ft 500 ft (agl)  
Weather VMC CLNC VMC CLBC  
Visibility: 20 km 15 km

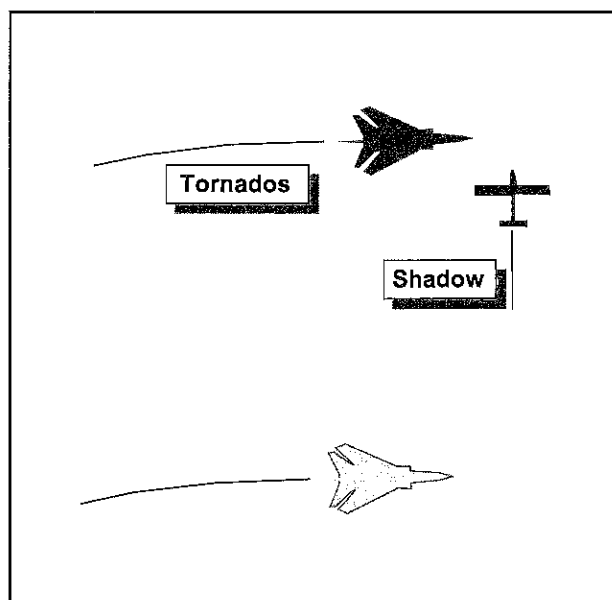
### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE SHADOW PILOT** reports heading 350° at 70 kt and cruising at 1800 ft when he saw a Tornado crossing left to right about 1-200 ft ahead and below. It was passing as he saw it and there was no time for avoiding action. The risk of collision was high.

**THE TORNADO PILOT** reports heading 090° at 420 kt with his No 2 about 2 NM to his right. He saw the microlight as he was passing 2-300 ft under it; he thought it was on a westerly heading. There was no time for avoiding action and the risk of collision was high.

Note: The Clee Hill radar recording shows the Tornado, and intermittently its wingman to the S, gently turning from 078° to 120°. There is no sign of the Shadow but the left hand Tornado passes the reported Airprox position at 1454 in a gentle descent off the Clwydian Hills and passing 2000 ft Mode C at the Airprox position. Local QNH was 1011 mb; Mode C readings are therefore 54 ft above QNH.

**HQ STC** comments that despite the emphasis that is placed on the need for maintaining an effective lookout scan in the 'see and avoid' environment, there are still occasions when lookout breaks down. The crews involved in this Airprox acquired a very late sighting; too late for any avoiding action to be appropriate. It is fortunate that the miss distance, albeit very small, was sufficient to make this an Airprox investigation rather than an accident investigation. As long as 'see and avoid'



remains the primary means of collision avoidance in the low level environment, incidents such as this should be given the maximum publicity.

### PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

Looking at the geometry involved, the Board agreed that neither ac would have presented any angular motion to attract either pilot's attention, and that the Shadow may well have been obscured behind the Tornado's windscreen arch. In addition the Tornado's camouflage and the colour and size of the Shadow made neither ac conspicuous. However, members agreed that these were the sort of difficulties that need to be overcome by diligent, active lookout during operations in Class G airspace where one relies on 'see and avoid'. Whether or not it would have been possible for either pilot to spot the other earlier, the fact was that neither had and the Board concluded that the cause of the Airprox was the late sighting by the crews of both ac. Although the ac had fortunately not been

exactly on a collision course, neither pilot had seen the other ac in time to influence events

and the Board therefore assessed that the safety of the ac had been compromised.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: Late sighting by the crews of both ac.

## **AIRPROX (P) REPORT No 80/98**

Date/Time: 17 Jul 1004

Position: N5125 W0202 (5 NM SSW of Lyneham)

Airspace: Airway Y3 (Class: A)

Reporting Aircraft Reported Aircraft

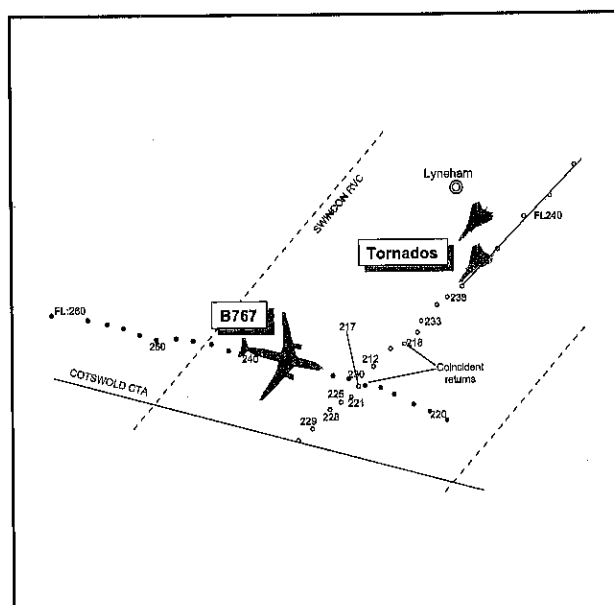
Type: Tornado GR B767

Operator: HQ STC CAT

Alt/FL: FL 240 ↓ FL 240

Weather VMC CLBL VMC

Visibility: 40 km



## **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE TORNADO PILOT** reports heading 220° at 480 kt, leading a pair transiting the Swindon Radar Corridor (SRC) through the Cotswold CTA under the radar control of London Mil at FL 240. The controller told him to expedite a descent to FL 150 so he began a descent immediately and shortly afterwards saw an airliner in their 12:30-1 o'clock at about 3 NM which crossed right to left at right angles at the same level. With the range closing to about 1.5-2 NM ahead, he turned hard right to avoid it. The controller then told him to turn hard right and then to expedite a climb to FL 250, which he did. Minimum horizontal separation from the airliner was about 0.5 NM and some 2-3000 ft below it; however, in IMC, without the visual avoiding action taken, a collision would have been likely.

**THE B767 PILOT** reports that while descending into Heathrow, heading 102°, probably around

FL 250 for FL 240, he was cleared to "continue descent to FL 140". Shortly out of FL 240 his TCAS indicated "traffic"; it appeared yellow and in his 11 o'clock position - 800 ft below. He looked at their 11 o'clock and saw two fighter ac. The controller then told him to turn 10° right - which he did. He then noticed the fighters turning to their right and circling around behind him to his left. He continued to Heathrow with no further incident. He was VMC when the situation occurred. He saw the fighters after the TCAS stated "traffic" (very quickly thereafter he did get a TA) and the fighters saw him and took corrective heading action. Because of having visual contact there never was a question of safety/jeopardising the fighter ac or the B767.

**HQ STC** comments that this Airprox occurred in controlled airspace whilst both ac were under

radar control. The Tornado crew saw an airliner about 3 NM ahead at the same level; believing that a collision risk existed, the Tornado crew initiated a hard right turn to negate the collision risk. The crew of both the Tornado and the airliner comment that it was the visual contact between the ac which nullified the risk of collision. Clearly, whilst the Tornado crew responded correctly to the perceived collision risk, they might reasonably have expected the controller to take prime responsibility in ensuring adequate separation existed as they transited the Swindon RC.

**ATSI** endorsed the report of the investigation into the incident by LATCC ATC Investigations, which found that traffic loading on the Bristol Sector was moderate to heavy at the time, and all equipment was serviceable. The Sector Controller (SC) had just taken over the Bristol SC position. He was aware that the SRC had been activated at FL 240, and that it would therefore be necessary for the B767 to start an early descent to pass beneath the corridor. MATS Pt 2 BRS 4-8 specifies that it is the responsibility of the BRS SC to ensure that traffic under his control is vertically separated from the corridor, hence the SC asked the BCN SC to descend the B767 when it was west of NUMPO (43 NM W of the RC, abeam BCN) at FL 330.

When the B767 pilot called the BRS SC at 1000:46 it was descending through FL 310 for FL 270. The SC instructed him to continue his descent to FL 220, and having ascertained that he was descending at a rate of 1500 ft/min asked him to increase that to 2500 ft/min until through FL 230, which he assessed would achieve separation from the crossing traffic.

He then turned his attention to other matters elsewhere on his sector; when he looked again at the B767 he saw that it was passing FL 270. This occurred at about 1002:40, when the B767 was 7 NM W of the corridor boundary. The crossing traffic, the Tornados, were in its 11 o'clock at a range of 22 NM, level at FL 240 and crossing from left to right. The SC reports that at that time he assessed that the B767 would pass beneath the Tornados, but realised that

separation would be reduced, so instructed the B767 to continue its descent rate to FL 140 and turn right 10°. However, the transcript of the RT shows that this instruction was not passed until 1003:36, when the B767 was passing FL 248, with the Tornados in its 10 o'clock at a range of 9 NM. When the B767 had acknowledged the instruction the controller passed traffic information.

Lateral separation was lost at 1003:50, just as the B767 was descending through FL 240. It was at the time descending at a rate of about 3000 ft/min and would have passed 1000 ft beneath the Tornado, had that ac not, at 1004, commenced a very steep descent of about 5000 ft/min, so that it was already descending through FL 222 by 1004:12, as the B767 was crossing through its 12 o'clock, descending through FL 229, 1.34 NM ahead. By 1004:17 the Tornado was at FL 213, 1300 ft below the B767, and was in the latter's 8 o'clock position. It then climbed 400 ft to FL 217 which it maintained. The B767 continued to descend so by the time the Tornado passed 4.6 NM behind it, vertical separation was reduced to 400 ft. Although the B767 pilot did not report an Airprox, he subsequently reported that he had received a TCAS RA from the Tornado. The nature of the RA was not specified.

BRS controllers are required by the MATS Pt 2 to separate ac from the Swindon Corridor, not from ac within it. The SC's tactic of specifying a minimum rate of descent appears to have been aimed at separating the B767 from the Tornados. It is suggested in MATS Pt 2 that eastbound ac descending into the LTMA should be at FL 220 or below by 40 DME BCN or 70 NM before OCK; if the SC had given descent instructions in those terms to the B767 then he would have ensured that the required separation was achieved, or been able to adopt an alternative plan had the ac been unable to achieve the rate of descent necessary.

**HQ MATO** reports that the Tornado section was transiting the Swindon RC at FL 240, south-westbound for Yeovilton. The lead Tornado was squawking 6411 with Mode C and the crew was under radar control from the LJAO Central

Sector, which comprised two radar positions, TAC1, TAC2 and a 'Planner' position. At 0956, before the Tornado section entered the Swindon RC, TAC 2 called the BRS CSC on the landline and requested "...a Cleared Flight Path..." (CFP) through the Swindon RC at FL 240. The Tornado section was identified to the BRS CSC who responded "...okay, you have the corridor", which was acknowledged by TAC2 who then handed over to TAC1, who was in turn relieved 3 minutes later by a u/t controller and Mentor.

The B767 was descending into the Cotswold CTA, squawking 7743 with Mode C but code/callsign converted. At 1002:30, the Tornado section was within the SRC, 8 NM NE of Lyneham heading 220°, whilst the B767 was 15 NM WSW of Lyneham. It is reported that the STCA enunciated briefly as the B767 approached FL 270 in descent, when horizontal separation was 24 NM. At 1003:38 the Mentor detected the conflict with the B767 as its Mode C indicated that it had not levelled at FL 250 as expected. At 1003:49, he transmitted to the Tornados "...avoiding action descend FL 220 expedite descent", the Tornado leader's reply is unintelligible on the RT recording. At 1004:00, TAC1 transmitted "...avoiding action turn hard right heading 290 co-ordinated traffic has dropped through your level passing through your 12 o'clock now range of 5 miles". Followed 10 seconds later by "...expedite climb FL 250 the co-ordinated traffic in your 12 o'clock range 3 miles crossing right to left", which the leader acknowledged "...visual that traffic". The Tornado section leader followed the initial avoiding action descent instruction but did not acknowledge the turn before further descent was requested. TAC1 perceived that the conflict had been resolved and subsequently approved further descent to FL 150. The Tornado section left CAS and the leader subsequently advised that he would be filing an Airprox.

The LATCC Cleve Hill radar recording and associated SMF plot show this Airprox which occurred 9 NM S of MALBY. The Tornado section is shown on a steady track within the Swindon RC at FL 240. The B767 is shown

descending at a constant rate of about 2600 ft/min, tracking 102°, 2 NM N of the southern boundary of the Cotswold CTA. The first indication to CENTRAL that the B767 had descended through FL 250 would have been at about 1003:34 when the B767 was at the western boundary of the SRC indicating FL 247, in the Tornados' 1 o'clock at 9 NM. Standard horizontal separation was eroded as the B767 passed through the Tornados' assigned level just after 1003:50, when the avoiding action descent instruction was being transmitted. When the avoiding action right turn was transmitted, the B767 was passing FL 231 with the lead Tornado 200 ft above it, after the section leader had initiated descent. At 1004:15, the B767 passed FL 228 and through the 12 o'clock of the Tornado at the minimum horizontal separation of about 1 1/2 NM, whilst the latter is shown 1000 ft below the B767. As the horizontal separation increased, the Tornados appeared to remain on a steady course and passed 2 1/2 NM directly astern of the B767 at 1004:32, whilst their Mode C indicated 400 ft below the latter.

As the Tornados' transit through the Cotswold CTA had been co-ordinated with the BRS CSC, TAC1 would have expected the descent of the B767 to stop at FL 250, or be below FL 230 at the western SRC boundary. Although in this instance a CFP had been requested, the BRS CSC clearly responded by activating the RC, which was accepted by TAC2, so the controllers would have expected GAT to avoid the corridor, not just the traffic using it.

The TAC1 Mentor was placed in a difficult situation to which he had little time to react, but which in retrospect he did not assimilate correctly. Due partly to the relatively slow data update rate, he did not appreciate that owing to the B767's high rate of descent it was too late for it to level above the SRC. Neither did the Mentor act when the STCA enunciated because the indication cancelled itself moments later. However, the STCA can be misleading, insofar as alerts have been generated when GAT is in fact levelling above the SRC. The Mentor was also aware of similar RC infringements, notably where GAT has descended below a RC and

then climbed back to a level above it, which may have prompted his initial reaction. Hence, the avoiding action descent instruction which, with hindsight, prolonged resolution of the conflict and may have aggravated the subsequent loss of separation. The subsequent avoiding action right turn was a more prudent course of action. The Tornado leader's reported hard right turn is not apparent on the SMF recordings. However, a slight right turn is just discernible on one radar return at 1004:13, moments before the leader reported sighting the B767.

The LJAO Central sector is located on the Daventry Suite within the Area Control Ops Room and co-ordination can only be effected via landline, which the BRS SC reports he was unable to answer because he was so busy. This, coupled with the controller's dispersed locations within the ACOR, did not permit immediate clarification by TAC1 of the BRS SC intentions with the B767. Appropriate lessons have been learned from this occurrence; controllers have been re-briefed to double check OAT crossing CAS via RCs before issuing lengthy informative messages and to remain ever vigilant to the potential for such incursions and breaches of agreed co-ordination.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

The Board concluded that the cause of the incident was that the BRS SC did not maintain standard separation between the B767 and the Swindon RC. Members discussed whether part of the cause was the Tornados' descent initiated by TAC1. This probably extended the resolution of the problem more than a level right turn would have done, but the Board agreed that it was not a causal factor. Indeed, members observed that TAC1 had been alert to a

potential problem and had reacted with commendable speed to a situation he was unable to analyse fully in the time available, without being able to talk to the BRS SC. Clearly with hindsight he could have resolved the conflict more tidily, and, while understanding the reasons for what he did, members observed that an uncoordinated level change would usually be more hazardous than a level turn in such circumstances.

As to the risk level, members agreed that both pilots were promptly put in the picture so that they could ensure that any risk of collision was quickly removed. Indeed, separation would have been much greater if the Tornados had followed the instruction to turn hard right. The Board observed that pilots flying in controlled airspace do not have an option about following a controller's instructions; they should be actioned promptly and fully unless seen to take the ac into further danger. It appeared that the Tornado pilot manoeuvred to avoid the B767 rather than to obtain the separation the controller was trying to achieve.

Members discussed the circumstances leading to the loss of separation and wondered if it would be better if the MATS Pt 2 suggested method for ensuring separation from the RC should be made mandatory. The Board was advised that this could lead to other problems and a loss of flexibility which could make a controller's job harder. Members considered that the BRS SC's approach with the B767 seemed surprisingly casual and was unwisely based on 'the intention to monitor' rather than enacting a fail safe plan. With traffic loadings progressively increasing, separation plans based on the intention to monitor a situation stood correspondingly less chance of working safely.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: The BRS SC did not maintain standard separation between the B767 and the Swindon RC.

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### AIRPROX (P) REPORT No 82/98

Date/Time: 17 Jul 1758

Position: N5158 E0028 (Wethersfield - elev 321 ft)

Airspace: FIR (Class: G)

Reporting Aircraft Reported Aircraft

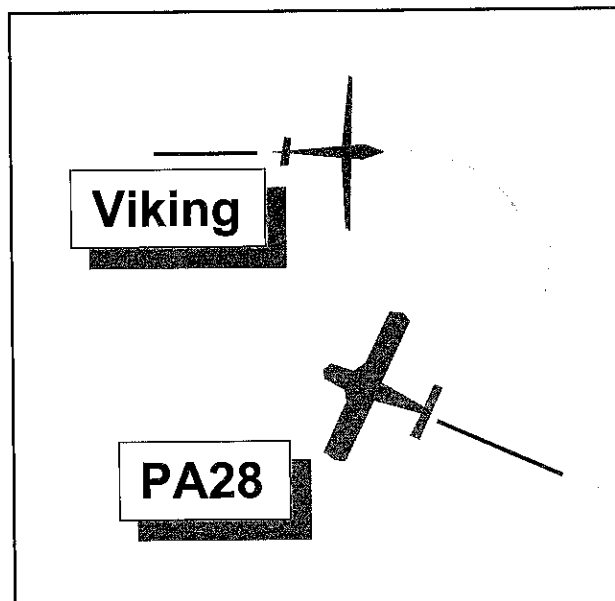
Type: Viking glider PA28

Operator: HQ PTC Civ Club

Alt/FL: 500 ft ↓ 1500 ft  
(QFE) (QNH)

Weather VMC CAVK VMC

Visibility: 10 km+



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE VIKING PILOT** (instructor) reports heading 100° at 50 kt, downwind in a right hand circuit at Wethersfield. He saw a light ac approaching from the SE at a steady height and heading as his student began a turn onto 190° for base leg; the light ac passed 500 ft away and 500 ft above in their 2 o'clock. The risk of collision would have been medium to high if the light ac had appeared earlier or his circuit had been higher. Furthermore, very inexperienced solo students operate from Wethersfield and would be put into great difficulty by this sort of intrusion.

**THE PA28 PILOT** reports heading NW at 1500 ft en route from Biggin Hill to Duxford; he was not receiving an ATS. He saw Wethersfield and gliders on the ground but did not see a glider close to his ac although he saw one 500 m away and at a lower level. He had seen NOTAMs at Biggin Hill but did not note details of any concerning Wethersfield because his intention was to fly around the airfield, clear to

the N. He noted the warning of gliding activity on the 1:500 000 chart and that there is no published ATZ. He did not consider there was an Airprox.

Note: The Nav Warning Summary (NWS) for 17 Jul 98 advised that Wethersfield would be active with gliding to 2000 ft agl. (This had been repeated in NWS to cover the period from 11 to 17 Jul.). LATCC radar recordings show a primary-only return closing towards a group of similar returns manoeuvring to the N and W of Wethersfield. It tracks 292° across the N side of the airfield but it is not possible to determine which of the other returns is the reporting glider.

**HQ PTC** comments that this Airprox is another in a series which have taken place at Wethersfield recently. In this incident, the civil pilot saw the airfield but does not appear to have come too close to the airborne glider. However, airmanship should dictate that more

room is given to glider airfields with their associated cables, etc, particularly when you see one!

**PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

The Board observed that the PA28 pilot had intended to route clear of Wethersfield, and said he was aware of the gliding activity, but in the

event had overflowed the northern side of the airfield. Wethersfield is huge and unmistakable which led members to consider the pilot had been careless to have flown so close to it. However, in this instance, it did not appear from either pilot's report that the PA28 had flown particularly close in plan or elevation to the glider, which had been able to continue its circuit without taking avoiding action. While the Board fully understood the concern of the gliding authority about the potential danger caused by frequent overflights of Wethersfield, it did not appear there was any danger in this case. Members concluded this incident was a sighting report.

**PART C: ASSESSMENT OF RISK AND CAUSE**

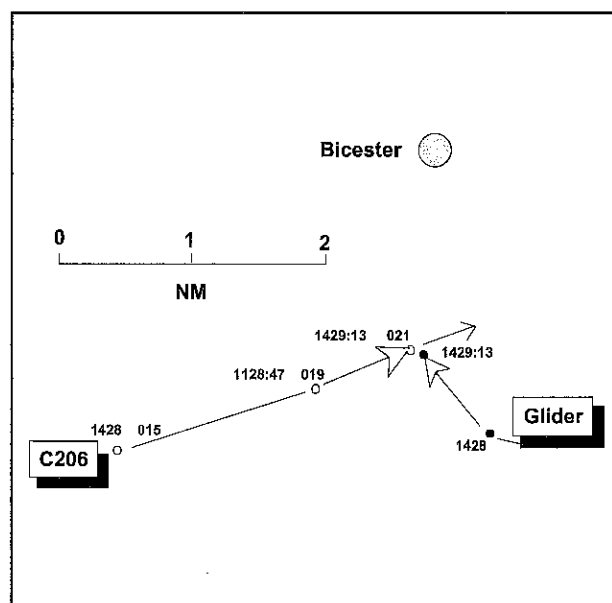
Degree of Risk: C  
Cause: Sighting report.

**AIRPROX (P) REPORT No 81/98**

Date/Time: 18 Jul 1429 (Saturday)  
Position: N5153 W0108 (1.5 NM S Bicester - elev 267 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Discus glider C206  
Operator: Civ Club Civ Club  
Alt/FL: 1500 ft 2000 ft  
 (QFE 1001 mb) (QFE 1004 mb)  
Weather VMC CLBC VMC CLBC  
Visibility: 30 km 40 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

THE GLIDER PILOT reports that he was circling R in a thermal at 1500 ft (QFE 1001) 0.5 NM SE of Bicester airfield (see Note 1), from where he had launched for a general handling sortie. The visibility was 30 km in VMC. He first saw the other ac, a C206, about 600 m away as



it approached from an almost head-on position at a similar level, climbing. He immediately dived in avoidance and the C206 passed no more than 30 - 40 ft above him. He believed that without his action there would have been a

collision. The C206 continued on course with no apparent attempt at taking avoiding action and he believed its pilot had not seen him. He reported an Airprox to AIS (Mil).

**THE C206 PILOT** reports that he was heading 060° at 100 kt and cruising at 2000 ft (QFE 1004) having departed from Weston-on-the-Green (elev 282 ft) for a NOTAMed paradrop at Fringford, 3 NM NNE of Bicester. He routed S of Bicester town due to aerotowing activity W of Bicester airfield. The visibility was 40 km in VMC. He was squawking 0033 with Mode C and in contact with Weston/Fringford a/g on 133.65. Numerous gliders were operating in the Bicester area and he had briefed his parachutists to report any visual contacts. On first calling Fringford, he was advised of 2 gliders circling overhead which he could see on looking L; on looking forward again he saw another glider at his 1230 position about 300 m away, head on to him and slightly lower. He climbed in avoidance and saw the plan view of the glider as it passed about 100- 200 ft below him; he thought there had been a medium risk of collision. The pilot comments that visibility from the C206 is generally good except below the nose forwards due to the high coaming and large engine; because of this he always flies with the seat adjusted to the fully up position. He states that he has operated from Weston-on-the-Green for 3 years and is familiar with the operation at Bicester; he therefore tries to avoid the active areas around the airfield. On this occasion the glider was white and its head-on profile made it extremely difficult to spot. However, despite sighting it late he felt that adequate separation had been achieved.

Note (1): In a subsequent telephone conversation with UKAB staff, the glider pilot was advised that the radar replay indicated that the incident probably occurred some 1 NM S of the area in which he had reported operating. Furthermore, the closest the C206 was seen on radar to pass Bicester airfield was 1 NM to the E on a northerly heading. In view of the C206 pilot's description of the geometry of the encounter, which he said precisely matched his own recollection of it, the glider pilot accepted that his position was probably a little further out

on the outskirts of Bicester than he originally thought.

Note (2): A replay of the Cleve Hill radar at 1428 shows the C206, identified by its 0033 squawk, heading ENE from Weston-on-the-Green indicating 1500 ft Mode C; at the same time a slow moving primary return, believed to be the glider, is observed manoeuvring at his 12 o'clock at a range of about 2.5 NM. The latter tracks slowly NW and at 1429:13 merges with the C206's return which is now indicating 2100 ft Mode C. Following the encounter the primary return fades from radar and the C206 continues heading ENE for a short distance before turning N and passing about 1 NM E of Bicester airfield towards its drop area at Fringford. From archive material, the QNH at Weston-on-the-Green was 1014. On this setting the C206's Mode C indication of 2100 ft equates to 2127 ft altitude; at its reported height of 1500 ft the glider's altitude, based on the elevation of Bicester, would have been 1767 ft. Theoretically, therefore, vertical separation would have been in the region of 360 ft at the time the acs' tracks crossed.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac and a radar video recording.

The gliding specialist on the Board explained that while 'thermallings', a glider's aspect could be constantly changing by as much as 15° per sec. This should both enhance the lookout capabilities of the glider pilot and improve the glider's conspicuity as more of its wing and fuselage surfaces are exposed to view and to sun-glint. Members noted the extremely good flying conditions reported by both pilots and were surprised that, notwithstanding the C206 pilot's obscured forward visibility on account of his ac's structure, they had not seen each other much earlier. A member commented that the C206 pilot gave due consideration to the possibility of gliders in the area by planning to skirt well clear to the S of Bicester when a much



shorter route to his drop site had been available.

The Board concluded that the late sightings were the cause of the Airprox. With regard to risk, members felt that the glider pilot's reported level was likely to be unreliable owing to his

thermalling manoeuvres. Therefore, despite the recorded radar information which suggested a possible 300+ ft of vertical separation, members noted the considerably lower estimates reported by both pilots and concluded that only by their combined actions had the possibility of a collision been averted.

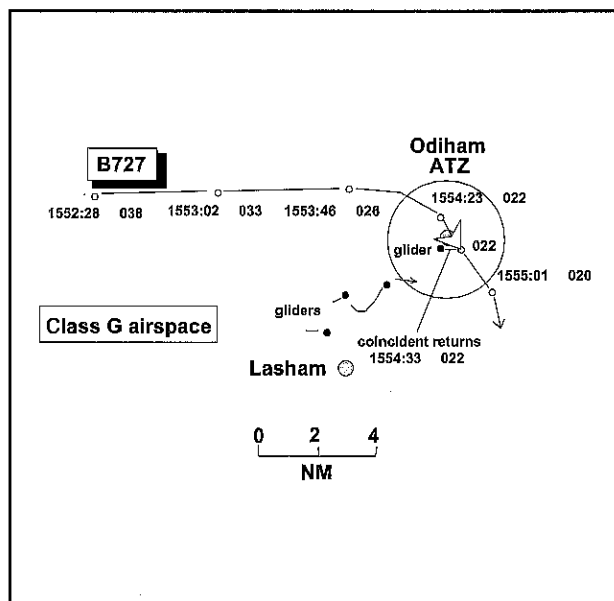
**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: Late sighting by both pilots.

**AIRPROX (P) REPORT No 83/98**

Date/Time: 19 Jul 1555 (Sunday)  
Position: N5114 W0056 (Odiham - elev 404 ft)  
Airspace: ATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: ASK 21 Glider B727  
Operator: Civ Club CAT (Air Test)  
Alt/FL: 1100 ft ↑  
 (QFE 1000 mb) (QNH)  
Weather VMC CLBC VMC  
Visibility: 20 km



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE GLIDER PILOT** reports that he was being winch-launched from RW 23 at Odiham with whom he was in RT contact on 129-975. The visibility was over 20 km in VMC. He was occupying the rear seat while his pupil flew the ac from the front. He comments that forward vision from the glider is severely restricted during the launch phase, with scanning restricted to the sides only. At around 900 ft (QFE), while heading about 190°, he saw a B727 to his R 800 - 1000 m away; his view was of the lower fuselage, wings and flaps and he concluded that he was directly in line with its flight path. He opted to continue the launch in order to clear the B727's path as soon as possible, thereby passing the ac to its R. He

then lost sight of it as it passed behind him to reappear to his L about 400 m away wings level at about 1100 ft (QFE). He watched it continue towards Lasham. He felt there had been a high risk of collision and reported an Airprox to both Odiham operations and the civil duty watch supervisor.

**THE B727 PILOT** reports that he was under the control of Farnborough radar on 125-25 who vectored him downwind for RW 27 at Lasham. His heading was 090° at 160 kt. When abeam the RW ATC instructed him to call Lasham, which he did. He was subsequently cleared to

land and was unaware that an incident had occurred.

**FARNBOROUGH ATC** reports that the B727 was transferred to 125.25 (Farnborough LARS) by London Mil inbound to Lasham when about 15 NM W of Odiham. The pilot was instructed to descend to 2500 ft (QNH) and given a heading of 100° to position the ac towards Odiham. He was then instructed to establish two-way contact with Lasham on his No 2 box on 122.87. Traffic information was passed to the pilot on 3 returns, believed to be gliders operating from Lasham, which were manoeuvring 2 NM to the SW of Odiham. The pilot acknowledged and requested to continue visually. By this time the ac was about 1 NM NW of Odiham at about 3300 ft QNH (1012). The radar service was terminated and the pilot was instructed to call Lasham on 122.87. The ac was then seen to turn S and pass overhead Odiham, but at least 1.5 NM to the E of the contacts previously called.

**MANAGER ATS FARNBOROUGH** comments that having listened to the RT recording and interviewed the controller concerned, he felt that a good LARS service had been provided during a busy period. He notes that the final approach path to RW 27 at Lasham passes about 2.5 NM S of Odiham; a glider launching S from Odiham might, therefore, have been in a potentially conflicting position with the B727 as it positioned on the approach to Lasham.

**ATSI** comments that after a review of the radar and RT recordings, and having taken account of a report from the MAN ATC at Farnborough, it was concluded that Farnborough ATC did not contribute directly to the incident. The B727 pilot elected to continue VFR when he was some 5 NM W of Odiham and was transferred to Lasham. However, a RH circuit to RW 27 at Lasham would take the B727 very close to the Odiham ATZ and it might therefore have been wise if the Farnborough controller, who was busy at the time, had kept control of the ac until it was clear of Odiham, or at least warned its pilot of the presence of the ATZ and the possibility that glider activity might be taking place.

Note (1): A replay of the Pease Pottage radar at 1552:28 shows the B727 12 NM W of Odiham as it tracks E descending through 3800 ft Mode C. Several slow moving primary returns believed to be gliders can be seen manoeuvring about 3 NM N of Lasham at this time. At 1553:46, while passing 2600 ft 4 NM NW of Odiham, the B727 commences a R turn and at 1554:30 is heading SE directly over Odiham indicating 2200 ft Mode C. Three sec later, at 1554:33, a primary return, believed to be the launching glider, pops up for one sweep of the radar at the SW boundary of the airfield. At this point the B727 is about 0.5 NM to the E of the primary return indicating 2200 ft Mode C. (From the Farnborough RT transcript, the QNH was 1012. On this setting 2200 ft Mode C is equivalent to 2173 ft amsl, or 1769 ft agl at Odiham. Given the 900 ft reported height of the glider, and assuming a Mode C accuracy of ±100 ft, vertical separation would have been in the order of 800 - 1000 ft).

Note (2): Odiham has a notified ATZ (UK AIP ENR 2-2-3-5) of radius 2 NM active H24 up to 2000 ft agl. The airfield is marked on the 1:500 000 topographical chart with a gliding symbol and a warning of cables up to 2500 ft agl.

Note (3): Analysis of the RT tape recording for 125.25 (Farnborough LARS) indicates a busy RT workload. At 1546:50 the B727 pilot, speaking with a distinct foreign accent, calls Farnborough ATC descending to 5000 ft. Farnborough acknowledge, advise him of multiple contacts believed to be gliders, instruct him to squawk 0423 and provide a RIS. At 1547 the ac is turned onto 100° and descended to 4000 ft. At 1550:20 the pilot is requested to establish RT contact with Lasham on his No 2 box. At 1551 he is advised that Lasham is at his 1.30 position at 8 NM and given descent clearance to 2500 ft. At 1551:40 the pilot reports two way VHF contact with Lasham; after a short delay, the controller acknowledges, at 1551:52, with...*"c/s thank you, there are multiple contacts in your 2 o'clock at a range of 5 miles all believed to be gliders operating out of Lasham, and with the field in sight you are cleared for the visual approach, Lasham landing runway 27"*. At 1552:15 the pilot

replies...*"Roger, Lasham runway 27, we have runway in sight can we change to Lasham VFR?"*. The controller responds...*"c/s affirm, 122.7"*.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a tape of the relevant RT frequency, radar photographs, a video recording, reports from the air traffic controllers involved and a comment from the appropriate ATC authority.

Note: Following the UKAB meeting, UKAB staff spoke with ATC at Lasham and the maintenance company at Lasham involved in servicing the B727. It was established that a written brief, produced by Lasham, is provided to Airlines for the benefit of their crews. In addition, ATC at Lasham give a verbal brief to pilots prior to flight. These written and verbal briefs, while pointing out the presence of Odiham to the NE, do not specifically mention the gliding activity there. The brief emphasises that, owing to the proximity of Odiham and Farnborough, *"all circuits, manoeuvres and turns after take-off or missed approaches are to be made to the S of the Lasham RW."* As far as arrivals are concerned, several different procedures are to be followed depending upon the status of Lasham Radar (SRA), and the availability of Farnborough Radar. Under the heading of *"Lasham Radar Not Operating - Farnborough Radar Operating"*, the brief states *"Farnborough Radar will position arrivals onto finals for a visual approach to either RW 27 or 09."* The controller on duty at Lasham on 19 Jul 98 confirmed that the B727 crew in question were completely unfamiliar with the area but had received the standard verbal brief prior to departure.

Pilot members felt that the Farnborough controller, although busy, could have been more helpful to the B727's foreign crew. The ac had initially been radar vectored into a downwind position to the N of Lasham on a track which took it slightly to the N of Odiham, and in their

opinion on this routing the ac would inevitably have had to negotiate the area of Odiham ATZ if cleared for a visual circuit. Had the ac continued on radar vectors it would have remained at 2500 ft until past Odiham and therefore the possibility of encountering gliders in the launch would not have arisen (a warning of cables up to 2500 ft agl is marked on the 1:500 000 topographical chart). In the event, the B727 pilot advised visual with Lasham and requested a "VFR" approach when some distance W of Odiham, to which the Farnborough controller acceded. Pilot members felt that at this point positive control or advice from ATC would have been helpful; the B727 could either have been retained under radar control at 2500 ft until clear downwind of Odiham, or the pilot could have been advised not to descend below 2500 ft until clear of the Odiham ATZ. Had either of these courses been adopted the members believed the incident could have been avoided.

ATCO members, with one exception, disagreed. They believed the Farnborough controller had fulfilled his obligations to the B727. Prior to transferring the ac to Lasham's frequency the controller had passed details of all known and observed traffic. As soon as the B727 pilot reported visual with Lasham and elected to fly "VFR" he took on responsibility for subsequent routing and descent into the circuit. Under VFR flight rules he was then required to navigate visually, avoiding conflict with known hazards by reference to an appropriate topographical chart which, under the ANO, he was required to carry in the cockpit. Pilot members disputed the requirement for civil airline crews to have such charts with them. Controller members explained that charts need not be referred to when flying under IFR but, if a pilot declared his intention to relinquish an IFR service and proceed VFR, he was then required to have the appropriate navigational chart available. Moreover, in this instance the pilot should have satisfied himself prior to flight that he was familiar with en-route hazards which might be encountered in the vicinity of his operating airfield. (A NATS safety adviser told the Board

that the B727 crew had received a standard brief from Lasham - see Note above).

Turning to the glider pilot, he could have abandoned his launch to promote vertical separation from the B727. By continuing, he may have decided to maximise horizontal separation instead. Either way there seemed to have been no collision danger. The gliding member, who was very familiar with Lasham's operations, said it was normally ATC practice to avoid routeing departing ac to the N of Lasham owing to the presence of Odiham. In the light of this incident he undertook to liaise with Lasham ATC to determine the extent to which this precaution might also be applied to ac positioning inbound to the airfield.

While pilot and controller members maintained their respective views on the controlling aspects of the incident, the Board accepted that, under

existing ATC procedures, Farnborough ATC had fulfilled their responsibilities to the B727 pilot; though unfamiliar with the area, the latter had received the standard brief from Lasham ATC. The Board concluded, therefore, that the Airprox was caused because the B727 pilot, who, having chosen to carry out a VFR approach, penetrated some 230 ft into the Odiham ATZ and flew over the airfield into conflict with the launching glider, which he did not see.

With regard to risk, members noted the radar evidence and the glider pilot's actions. Assuming his reported height of 900 ft (QFE) to be accurate, he had mistakenly believed the B727 had been at a similar level to himself, whereas the radar replay reveals a minimum vertical separation of about 800 ft. The Board concluded that there had not been a risk of collision.

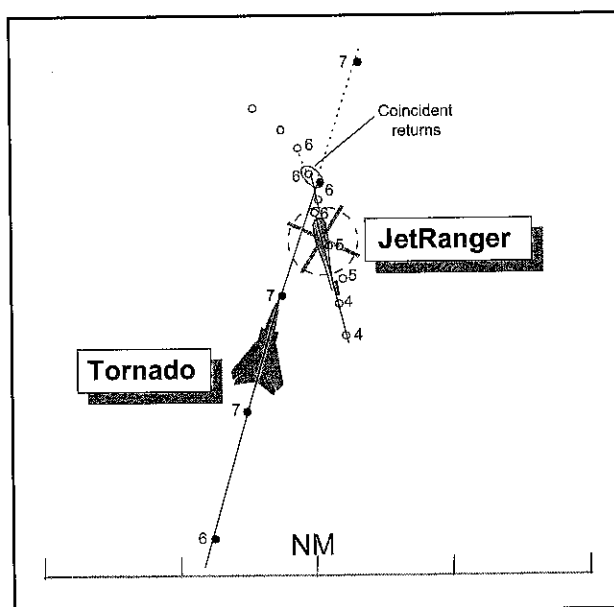
### PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: Having elected to continue VFR, the B727 pilot entered the Odiham ATZ and flew into conflict with the glider which he did not see.

### AIRPROX (P) REPORT No 84/98

<u>Date/Time:</u>	20 Jul 0917	
<u>Position:</u>	N5332 W0045 (2 NM SW of Scunthorpe)	
<u>Airspace:</u>	FIR/LFS	(Class: G)
	<u>Reporting Aircraft</u>	<u>Reported Aircraft</u>
<u>Type:</u>	JetRanger	Tornado GR
<u>Operator:</u>	Civ Comm	HQ STC
<u>Alt/FL:</u>	400 ft ↑	900 ft
	(QNH 1002 mb)	(Rad Alt)
<u>Weather</u>	VMC CAVK	VMC CLNC
<u>Visibility:</u>	30 km+	30 km



## **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE JETRANGER PILOT** reports flying a pipeline patrol and was heading 350° at 90 kt in an en route climb when the crew heard a jet, and a Tornado then overflew from behind, about 100 ft directly above, with a very high risk of collision. There was no opportunity for avoiding action and no wing rock from the Tornado so he suspected he had not been seen.

**THE TORNADO PILOT** reports heading 360° at 400 kt on a low level exercise and while in a slight climb to 1000 ft to facilitate a radar fix he passed a helicopter about 0.5 NM away and 500 ft above it. He was later given details of the radar recording and asked if this was the helicopter, or had he seen another one somewhere else, but he confirmed his original report.

Note: LATCC radar recordings show the helicopter (squawking 0036) descending to a 200 ft (Mode C) hover and then climbing away on a track of 348° as the Tornado, at 6-700 ft Mode C, closes from its 6:30 on a track of 016°. The returns merge at 0919:42 when both Mode Cs show 600 ft. The Tornado's next 2 returns show 700 ft. The actual QNH at the time was 1006 mb and taking the local terrain elevation of 10 ft into account, 600 ft Mode C equates to 400 ft agl. This is confirmed by the helicopter pilot who had descended to a 10 ft agl hover to examine a possible encroachment, while his Mode C showed 200 ft.

**HQ STC** comments that the differences in miss distance, both lateral and vertical, reported by the crews involved in this Airprox are difficult to explain. The Tornado pilot assessed that with 0.5 NM lateral and 500 ft vertical separation from the helicopter, there was no need to take avoiding action. However, the helicopter pilot's assessment of the Airprox indicates no lateral separation and only 100 ft of vertical separation with no time for avoiding action. It would appear that either the Tornado crew are describing an encounter with a different helicopter or that the Tornado crew made an inaccurate range assessment. In attempting to

resolve the differences in perception of this Airprox the Tornado pilot was contacted but he has reaffirmed that he is describing the same Airprox as the helicopter pilot and his original estimate of the miss distance. One of the consistent aims of STC flight safety publicity is to educate all military users of the LFS on the need to maintain an effective lookout scan and to afford adequate separation to other users of this airspace. In this instance the Tornado pilot could have done more to ensure greater separation existed and he has been reminded of the need to afford as much separation as possible in the 'see and avoid' environment. It is also worth noting that the Tornado crew did not indicate having seen the helicopter by performing a wing waggle. This simple action could have reassured the helicopter pilot that he had been seen and the desirability of making a wing waggle has been reiterated to all STC crews.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

The Board was unable to resolve the Tornado pilot's account of what happened against the radar evidence, which in turn correlated exactly with the helicopter pilot's report. Why it had seemed so different to the Tornado pilot was a mystery. There were various possibilities: the incident described by the Tornado pilot was somewhere else on his route - he had specifically denied this, but there was no sign on the radar recording of the climb for a radar fix which he mentioned. Another possibility was that by the time he was asked about it, he may have flown more similar sorties and may not have accurately remembered on which flight he saw a helicopter. Members looked at the radar transcript and could not believe that a Tornado pilot would deliberately fly that close to a helicopter, with no sign of avoiding action, having seen it 0.5 NM away; nor did they think it possible to assess it as passing 500 ft below.

The only conclusion that the Board could arrive at was that the Tornado pilot did not see the helicopter in question at all, and that this was the cause of the Airprox. Members discounted the possibility that the Tornado pilot might have seen the helicopter as he was passing it but too late for effective avoiding action; any instinctive 'pull' away from the helicopter however brief, would have been seen by the JetRanger pilot, and would probably have shown on the radar recording. Clearly, there had been a high risk of collision.

The Group discussed whether or not the JetRanger pilot could have seen the Tornado

coming. He had transitioned away from a low hover and would have been expected when doing so to check all round for low flying ac, but at that point the Tornado was several miles away to the S. A member asked if the helicopter pilot should have kept up a weaving lookout all round for fast jets as he climbed through 500 ft; while the Board came to no conclusion on that point it was surmised that he might do so in future. Although it was the Tornado pilot's absolute responsibility to see and avoid ac he was overtaking, the onus on 'lookout' is shared by all parties to a confliction.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: A

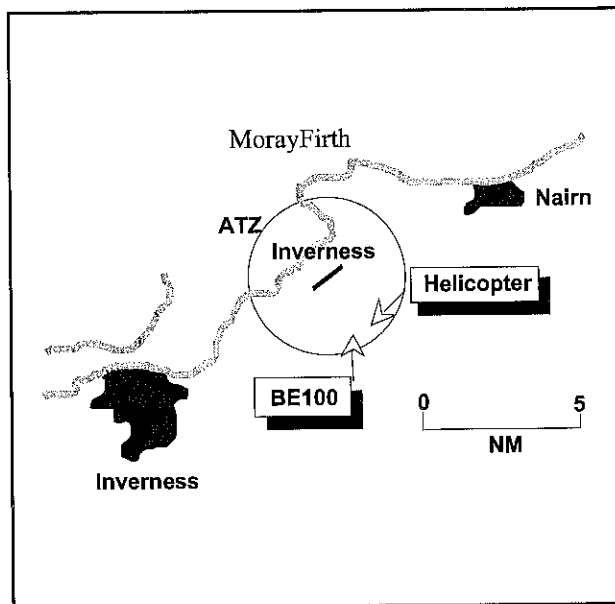
Cause: The Tornado pilot did not see the JetRanger.

**AIRPROX (P) REPORT No 85/98**

Date/Time: 20 Jul 1016  
Position: N5732 W0403 (Inverness airport - elev 31 ft)  
Airspace: FIR/ATZ (Class: F/G)  
Reporting Aircraft Reported Aircraft  
Type: B105 Helicopter Beech 100  
Operator: Civ Comm Civ Comm  
Alt/FL: 1700 ft  
 (QNH 999 mb)  
Weather VMC VMC  
Visibility: >10 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE HELICOPTER PILOT** reports that he was receiving a FIS from Inverness ATC on 122.6 and squawking 7000 with Mode C while transiting on a heading of 245° at 120 kt from a field site about 5 NM ENE of Nairn to Raigmore Hospital, in Inverness town. He had a critical patient on board and ATC had approved a direct



route. The visibility was over 10 NM in VMC. Due to his passenger's condition, he requested a climb to reduce the effects of turbulence. While passing about 2 NM SSE of Inverness airfield and climbing through 1700 ft, he became aware of a Beech 100 on the frequency

and then saw it about 2 NM away at his 11 o'clock position. He had not expected it to descend below 3500 ft as he had heard its pilot being instructed to let down on the N side of the airfield due to the proximity of the helicopter. However, it descended out of cloud and crossed his track on a NNE heading from L to R about 1000 m ahead and not more than 500 ft above him; he stopped his climb and turned L 10° in order to pass behind the ac. He felt there had been a high risk of collision and reported an Airprox to Inverness ATC by telephone on landing. The pilot comments that he believes the other pilot could not have been clear of cloud or visual with the helicopter as he descended, because if he had been he would have expected the ac to pass behind him.

**THE BEECH 100 PILOT** reports that he was inbound to Inverness from France on an IFR flight plan and squawking 2355 with Mode C. Inverness Tower, with whom he was in contact on 122.6, instructed him to descend to 3500 ft QNH to the INS VOR and to carry out the alternative procedure "Alpha" for a visual approach to RW 24. When about 5 NM from INS he advised the tower that he could see the airfield in VMC and requested a visual left hand circuit. The tower asked him to report N of the airfield due to the presence of a helicopter, and he was cleared to land on RW 24. Neither he nor his co-pilot saw the helicopter.

**INVERNESS ATC** reports that the Aerodrome and Approach Procedural positions were combined on 122.6. At about 1012 the pilot of the helicopter called, routing from Forres to Raigmore hospital in Inverness at 1000 ft VFR. He was passed the QNH (999) and instructed to report S abeam Inverness airport. At about 1013 the pilot of the Beech 100 reported at 12 DME from the INS VOR inbound to Inverness. He was instructed to descend to 3500 ft altitude and to report either overhead the INS VOR outbound for an alternative "A" procedure to RW 24, or to advise if at any time he became visual with the ground. At about 1015, the helicopter pilot requested a climb to 2000 ft to avoid turbulence for the comfort of his passenger. This was approved and traffic information was passed to the pilot on the

inbound Beech 100. The helicopter pilot was advised that should the Beech 100 pilot request a visual approach he would be instructed to descend not below 3500 ft until N of the airfield while positioning on a R base for RW 24. The Beech 100 pilot was instructed to route overhead the airfield and to descend when N of the airfield due to the presence of the helicopter. While making this transmission, the Beech 100 was seen to pass ahead and above the helicopter which was now S abeam the airfield. The helicopter pilot was advised that both ac were in sight from the Tower and that the Beech 100 was passing clear to the N of the helicopter. The latter's pilot said that the Beech 100 had not been at 3500 ft as expected, and that the encounter had given him cause for concern.

**ATSI** comments that the controller's plan was clear and sound. Unfortunately, the quality of the RT recording and the Beech 100 pilot's strong accent make it difficult to interpret exactly what was said. The plan was thwarted when the Beech 100, contrary to instructions, descended before passing to the N of the airfield and therefore came into conflict with the helicopter. It can only be concluded that the Beech 100 pilot did not fully understand the controller's instructions. To his credit, the controller was taking account of the fact that he was dealing with a foreign pilot and he was slow and very precise with his RT delivery. Moreover, as well as attempting to build in vertical separation until the conflict was resolved, he passed traffic information to both pilots. With hindsight, perhaps the controller could have been even more careful to ensure the foreign pilot fully understood the situation, or not offered him the option of carrying out a visual approach. However, taking all factors into account, it is considered that the controller is not open to criticism.

Note (1): The incident occurred below the level of recorded radar.

Note (2): Inverness has a notified ATZ (UK AIP AD2 EGPE 1-6) of radius 2.5 NM active from SFC to 2000 ft agl 0545 - 2030 in summer.

## PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, a transcript of the relevant RT frequency, and a report from the air traffic controller involved.

A member commented that the Beech 100 pilot, approaching Inverness from the S in good weather conditions, would probably have been anticipating a LH visual circuit to RW 24. This expectation was thwarted by ATC's instruction to delay descent and route to the N of the airfield to avoid the transiting helicopter. Members felt that this instruction may not have been fully understood by the Beech 100's foreign pilot, and it is not clear from the evidence exactly which way the ac did eventually position, or the altitude flown.

According to the helicopter pilot, the Beech 100 descended about 1 km ahead of him and not more than 500 ft above his level, while the tower controller's report was less precise still - observing the ac passing ahead and above the helicopter. The Beech 100 is a fairly large ac and members felt that at the range reported by the helicopter pilot, the ac's relative position to him could have been difficult to assess accurately. Moreover, without radar/Mode C evidence neither the Beech 100's level at the time the ac crossed nor the point at which it left 3500 ft could be determined.

Members noted the helicopter pilot thought there had been a high risk of collision despite the considerable lateral separation which he had estimated. With this discrepancy in mind, and while appreciating the pilot's concerns, the Board concluded the incident was more consistent with a sighting report with no risk of collision.

## PART C: ASSESSMENT OF RISK AND CAUSE

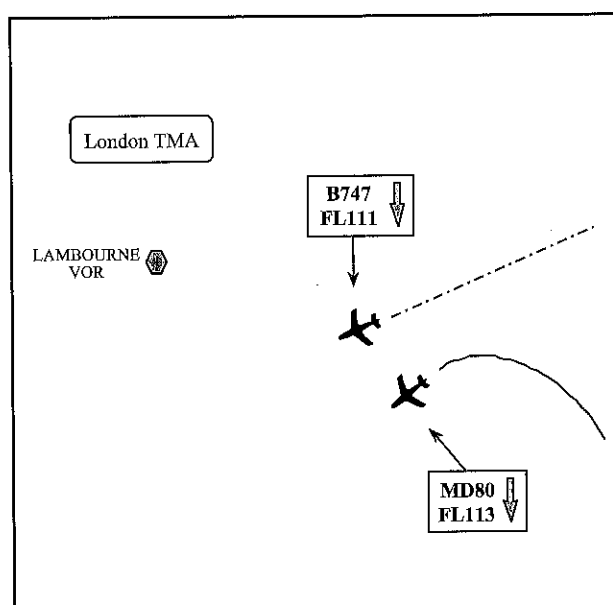
Degree of Risk: C

Cause: Sighting Report.

### **AIRPROX REPORT 49c/98**

#### **Occ No. 98/04071**

*Date:* 20 July 1998  
*Time:* 1801 UTC  
*Aircraft:* MD80/B747  
*Operators:* Foreign Airlines  
*Position:* 5nm South East of  
Lambourne VOR  
*ALT/HT/FL:* FL110  
*Airspace Type:* London TMA – Class A  
*Reporter:* LATCC Terminal Control  
(TC) – Timba and Lambourne  
Sector Controllers  
*Reported Separation:* 1.62nm horizontal/200 feet  
vertical  
*Recorded Separation:* 1.62nm horizontal/200 feet  
vertical





## **BACKGROUND SYNOPSIS TO THE INCIDENT**

This AIRPROX occurred during a very busy period of operations in the London Area and Terminal Control Centre (LATCC). Traffic levels reached such a peak that a number of controllers, from both the Area Control (AC) and Terminal Control (TC) sectors, submitted overload reports. Moreover, the general situation was made much worse by very significant thunderstorm activity affecting airspace over Southern England up to FL370 and the limitations of the flow control process. In day-to-day operations, the relationship between AC and TC is such that any breakdown in AC traffic management can impinge upon TC – and did so on this occasion. The Dover/Lydd Sector suffered a very high workload due to the application of the Target Sector Flow (TSF) during adverse weather conditions and things deteriorated further when the imposed inbound flow rate was significantly exceeded for reasons outside the Supervisor's control. Because of the various interactions involved, the circumstances surrounding this AIRPROX were also the subject of a parallel investigation into the overload situations that took place on the same afternoon.

In the Area Control room random holding patterns had to be adopted, because of the weather. Furthermore, because of the position of very active Cumulonimbus (Cb) thunderstorm clouds, aircraft captains were refusing to accept some heading instructions. All of this made a loss of standard separation more likely, yet, in the event no serious loss did occur in AC operations. Since no AIRPROX occurred, the subject matter fell outside the remit of the AIRPROX Panel and was instead dealt with jointly by NATS and SRG. However, during the same period, in TC Lambourne airspace, an AIRPROX did occur between an MD80 and a B747.

Thunderstorm activity leading to ATC overload has been the subject of previous comment in ATSI reports e.g. AIRPROX(C) 25/97 between a B737 and a BAe146 on the 12 May 1997. Following events on 20 July 1998, LATCC AC

management issued a Temporary Operating Instruction (No 44/98) on 31 July 1998 requiring that, when information is received of a 50% or more risk of thunderstorm activity affecting AC Sectors, those Sectors should immediately have their TSF reduced by 30%. This restriction may only be removed once the Met Office considers that the risk of Cumulonimbus (Cb) activity has reduced below 50% probability. These arrangements will also benefit TC.

## **THE AIRPROX INCIDENT**

The B747 was inbound to Heathrow from Damascus and under the control of TC Lambourne sector. This aircraft had been routed to the Lambourne hold but, due to the thunderstorms, was unable to route direct to the VOR. The MD80 was under the control of the TC TIMBA sector controller and inbound to Heathrow from Milan. As the flight approached the Biggin hold, the crew were faced with a series of thunderstorms which precluded their routing to the Biggin VOR; at that stage the aircraft was operating in heavy rain and hail and encountering severe turbulence. Owing to these adverse thunderstorm conditions, the MD80 had to turn off its route and, as it took up a north-westerly heading, it was obvious to the sector controller that this would take the aircraft into Lambourne sector's airspace. As a consequence the TC South East Co-ordinator was requested to relay the details to the Lambourne sector controller. At the time, all controllers were subject to considerable workload with telephone co-ordination nearly impossible. The South East Co-ordinator chose to go to the TC North sector to co-ordinate directly with his opposite number there. The South East Co-ordinator described the situation as very dynamic and indicated that he found it impossible to keep up with the flow of information required to be exchanged. Nevertheless, upon his arrival at the North East Co-ordinator's position, the South East Co-ordinator stated that he found the position very busy but that he gave the appropriate information on the MD80 and believed that he

had obtained co-ordination for the aircraft to enter TC Lambourne airspace at FL120.

On the Lambourne sector meanwhile, the sector controller was experiencing a very high workload due to the traffic demands caused by the thunderstorm activity. At the time no inbound flow measures had been imposed by the TC Traffic Manager, who believed that the TC operation, to a great extent, would be protected by the Area Control Flow Measures.

The TC Lambourne controller had noted earlier that traffic was building up and had requested the assistance of an extra, dedicated co-ordinator. However, this was not possible due to lack of qualified staff. The RTF tape recording transcript of the TC Lambourne position reveals that most aircraft working the sector were requesting weather avoidance and that the situation was very complex. The controller is of the opinion that the situation was "getting away" from her and that she was reacting to events rather than controlling them. Evidence of this is shown by flights being routed into other sectors' airspace without prior co-ordination. When the B747 pilot made RTF contact on the Lambourne frequency, the pilot refused a direct routeing to the Lambourne VOR and tracked to the Northwest for weather avoidance. Nevertheless, despite the high workload, the TC Lambourne controller was still able to respond and cleared the aircraft to descend to FL100. This was later amended to FL140 and then again to FL110 in order to provide vertical separation between other flights in the sector as the B747 changed its required routeing due to the thunderstorms. It is the TC Lambourne controller's opinion that for a period of some 25 to 30 minutes the sector was not under full control. This view was shared by most of the controllers working on adjacent positions, with the notable exception of the TC North Co-ordinator, who believed that the sector had operated normally albeit with a high workload.

Just before 1801, the Lambourne controller observed the MD80 entering her airspace level at FL120 from the South. This was the first time she had become aware of the flight as the co-

ordination intended by the TC South East Co-ordinator had obviously broken down and indeed the TC North East Co-ordinator cannot recall any mention of it. Without the knowledge of the MD80 pilot's specific intentions, although she was aware that the aircraft was probably avoiding weather, the Lambourne controller felt that the best course of action was to turn the B747 away from the MD80. Unfortunately, when the turn instruction was issued it was declined (Note: the words avoiding action were not used, therefore, it is possible that the B747 pilot was unaware of the gravity of the situation). The flight was then given "avoiding action" descent instructions to FL110. As this still did not resolve the situation, the controller reiterated the request for a turn, this time adding the phrase "avoiding action". After some discussion as to the requested heading, which was 280°, the pilot agreed to take up a heading of 250°.

Meanwhile, the TC Timba controller had allowed the MD80 to proceed into the TC Lambourne sector in the belief that co-ordination had been effected. However, when he noted the B747 in conflict, he instructed the MD80 pilot to turn left on to a southerly heading with a descent to FL110 and gave information on the traffic. The B747 was then seen to descend, so the controller instructed MD80 pilot to, *"(callsign) one two zero please climb back to one two zero the traffic is now on your right hand side in your three o'clock at one one zero"*. The Timba controller's unease was not helped by the apparently slow rate of turn by the MD80, but the pilot's report indicates that he was operating in "moderate to severe turbulence, moderate ice formation, heavy rain and hail (with a high noise in the cockpit)". Eventually, the situation was resolved by the joint actions of those concerned.

The minimum separation recorded in the AIRPROX was 1.62nm horizontal and 200 feet vertical. Subsequently, the controllers involved submitted AIRPROX reports, which were supported by reports from the pilots of the two aircraft. In addition a number of reports were received from controllers on adjacent sectors expressing their concerns about the overall

level of safety achieved during the period and indicating that a significant overload had occurred.

### **SUMMARY OF CAA ACTION**

The AIRPROX occurred when the MD80 entered the TC Lambourne sector airspace without adequate co-ordination to ensure that standard vertical separation would be applied between it and the B747 before horizontal separation was lost. This lack of adequate co-ordination was a direct result of the heavy workload of the TC North East and South East Co-ordinators caused by the adverse weather conditions coinciding with a period of very heavy traffic which the flow control processes had failed to prevent.

The TC Lambourne controller has stated that, in her opinion, her sector was not under full control for a period of 25 to 30 minutes. This view was supported by a number of her colleagues with the notable exception of the TC North East Co-ordinator. The TC Traffic Manager believed that TC operations would be protected by Area Control flow restrictions and therefore did not implement individual TC flow control measures for weather purposes. Had such measures been taken and a more proactive role adopted, it is possible that the TC heavy workload and the AIRPROX would have been prevented. Previous CAA investigations have made a number of recommendations relating to LATCC overloads. Although some have relevance to this incident they are not repeated here. Furthermore, three new recommendations were made concerning flow control measures and liaison with the Met Office in Bracknell:

### **REVIEW BY AIRPROX PANEL**

#### *1 Discussion:*

The loss of separation between the B747 and MD80 was, in itself, a relatively straightforward affair. The Panel, no more than the investigators, could know where and how the co-ordination of the MD80's intrusion into the Lambourne sector airspace broke down. It could not choose between the TC South East and North East Co-ordinators' recollection of events. Nevertheless, the Lambourne controller saw the MD80 and correctly assessed what was happening. Both she and the Timba controller took what avoiding action they could. In this respect, the notion is advanced that had the Lambourne controller used the words 'avoiding action' the urgency of the message could have resulted in the first turn instruction being complied with by the B747 pilot. On the other hand, members noted that when, soon afterwards, the controller did say 'avoiding action' it still led to some negotiation with the pilot before an acceptable heading could be agreed on.

The reality is, the Panel believed that the Lambourne and Timba controllers not only did their best in trying circumstances, but also did exceptionally well. This view, of course, extends to controllers in TC and AC.

The Panel conducted a long discussion into events, but agreed in the end that the AIRPROX stemmed directly from the air traffic and adverse weather situation which prevailed over South East England during the early evening of 20 July 1998. The knock-on effect of this situation led to a breakdown in co-ordination between the TC North East and South East Co-ordinators.

#### *2 Causal Factors:*

Inadequate co-ordination between the TC North East and South East Co-ordinators, resulting in the MD80 conflicting with the B747.

3 Risk Classification: B

4 Recommendations: The Panel had no recommendations to make.

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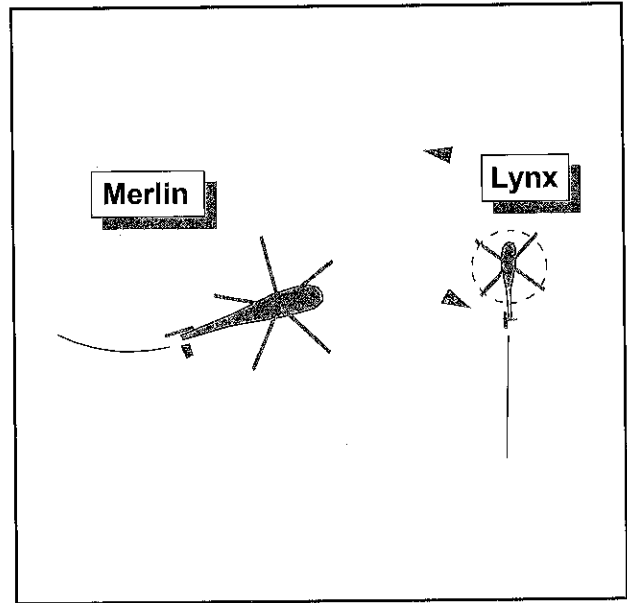
**AIRPROX (P) REPORT No 86/98**

Date/Time: 22 Jul 0855  
Position: N5055 W0228 (2 NM SE of Sherborne)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Lynx Merlin  
Operator: HQ FONA MoD (PE)  
Alt/FL: 3500 ft FL 35  
(QFE 1011 mb)  
Weather IMC CLBL VMC CLBL  
Visibility: Unltd 1 NM

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE LYNX PILOT** reports heading N at 120 kt while his student was joining for a PAR to RW 27 at Yeovilton from 3500 ft; they were receiving a RAS from Yeovilton on 369.875. There was much cloud around and after emerging into a clear area with cloud above, below and to the left he saw a Merlin in his 9:30-10 o'clock about 450-500 yd away at the same level and closing in a left turn. He took control and made a wing-over to the left to clear its flightpath and keep it in sight. The Merlin reversed its turn and passed 200 yd behind and 350-400 ft below. He had not heard any traffic information from Yeovilton and considered the risk of collision would have been high if he had not fortuitously emerged from cloud and been able to see it and take his own avoiding action.

**THE MERLIN PILOT** reports heading E at 130 kt on a test flight at FL 35 during which he was attempting to remain VMC in broken cloud. He turned left onto 040° and saw a Lynx appear in his 12:30-1 o'clock from the top of cloud about 0.25 NM away, apparently in a climbing left turn. He turned gently right at about 20° AOB and the Lynx passed about 1000 ft away and 3-400 ft



above. He felt there was no risk of collision as he saw the Lynx in time to avoid it safely. At the time the LHS pilot had been heads in setting the RT frequency and IFF setting to obtain a RIS from Yeovilton on 127.35.

**RNAS YEOVILTON** reports, with RT transcripts, that the approach control team, providing the Lynx with a RAS, consisted of a revalidating controller and an instructor who were extremely busy. The Lynx came on frequency at 0853:20 after a handover which was very protracted due to workload. The Lynx was tracking N and there was a Yeovil squawk 8-10 NM to its NW which the controller did not consider to be a problem at the time. His student was busy with 2 fixed wing ac (one of which was pressing him for a quiet frequency), 3 helicopters and a pending handover of a Sea Harrier. The Lynx was instructed to set the QFE (1011 mb) which took 2 attempts because the student initially called '462' whereas the Lynx c/s was 642. At that point both the controller and the student noticed the conflicting Merlin 3 NM NW heading SE at FL 35 and at 0855:10

the student transmitted *"Er Navy 6 er 42 avoiding action turn right heading 040, traffic was NW 3 miles tracking SE indicating FL 35"*. There was no reply to this and after 2 other transactions the controller advised at 0855:40 *"642 previously reported traffic now left 9 o'clock 2 miles will pass astern of you"* to which the pilot replied *"Oh that was for me was it? C/s"*. At 0856 the pilot reported that he had the Merlin in sight but did not file an Airprox until after landing.

The Merlin's first call to the Yeovilton LARS controller was some 25 sec after the incident; during the initial exchanges the pilot mentions having passed a Lynx and taken avoiding action. The Station considered that contributory factors included the high workload at the Approach position which led to the confliction not being noticed until the ac were 3 NM apart, the Lynx crew not hearing the avoiding action instructions, and shortages of trained manpower in ATC.

Note: LATCC radar recordings show the incident as described by the pilots. The Merlin shows steady at FL 35 throughout but there is no Mode C from the Lynx. The 2 ac are on closing tracks of 109° and 002° for 4 min up to the Airprox until about 20 sec to go when the Merlin turns onto 068° temporarily before turning right to pass marginally behind the Lynx. Timings on the RT and radar recordings indicate that the first traffic information (which the Lynx crew did not absorb) was given some 45 sec before the ac passed, and the second call was some 15 sec before.

**HQ FONA** comments that the Lynx's delayed decision to file an Airprox meant that the witness actions normally undertaken by the radar supervisor could not be initiated; nevertheless in this instance there is little doubt about the train of events. FONA believes the station has correctly identified the cause of this incident and has only two additional comments: (1) Although the re-validating approach controller's avoiding action was correct, if late, the instructions were not as clearly delivered as they could have been. Nevertheless the Lynx, on a practice diversion and being vectored for a

PAR, should have been expecting turn instructions and could reasonably have been expected to pick up and act on the instructions. (2) Turning to the issue of ATC manpower shortages, the RN, in common with many other ATC service providers, has suffered from lack of trained ATCOs over the last few years, however it is anticipated that by Spring 99 ATCOs will be up to full strength.

**MOD (PE)** comments that this was a confliction in Class G airspace between one ac in receipt of a RAS and the other on a flight test maintaining VMC in order to comply with VFR. The Merlin pilot saw the Lynx at about 0.25 NM away and took the appropriate avoiding action. Although in receipt of a RAS, the Lynx pilot correctly continued to scan visually, acquired the Merlin and acted accordingly. Both pilots' actions were IAW the see and avoid principles within Class G airspace.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the appropriate ATC and operating authorities.

The Board discussed the manpower shortage issue raised in Part A and established that it was not part of the cause of the incident because there was a fully validated controller at the approach post at the time and there was another controller available to fill another position if the Supervisor had required it. However, contributory factors outlined by the Station were supported; the controller had not noticed the confliction until very late and the Lynx crew did not pick up the initial avoiding action addressed to them. (It was unfortunate that the controllers had in fact noticed the potential confliction when the ac were still many miles apart but had not kept an eye on it.)

It was suggested that the Merlin crew were slow to spot the developing confliction and this might have contributed to the cause, but further

discussion concluded otherwise. The cloud structure had rendered an earlier sighting

impossible and both pilots had reacted sensibly once visual contact had been made.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: Late detection of the confliction by the Approach controller, compounded by the Lynx pilot who did not recognise or respond to subsequent avoiding action instructions addressed to him.

### **AIRPROX (P) REPORT No 87/98**

Date/Time: 22 Jul 1439

Position: N5117 W0134 (5 NM NW of Andover)

Airspace: FIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: Lynx Tucano

Operator: HQ DAAvn MoD (PE)

Alt/FL: 2000 ft 2000 ft  
(RPS 1008 mb) (QFE 999 mb)

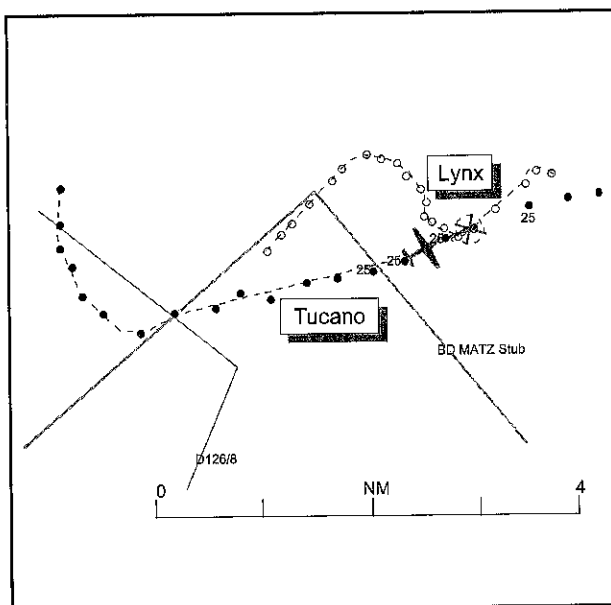
Weather VMC CLBC VMC CLNC

Visibility: 10 km 10 km+

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE LYNX PILOT** reports passing through 040° in a gentle left turn at 100 kt at 2000 ft, while listening out with Middle Wallop on 253.4. He saw a Tucano going away in his 1 o'clock, tracking about 060°. It had passed 2-300 ft directly overhead; there had been no opportunity for avoiding action and the risk of collision had been high.

**THE TUCANO PILOT** reports heading 100° at 180 kt in the Boscombe Down GCA pattern at 2000 ft. The controller warned him of traffic and having acknowledged it, he saw a Lynx 3 NM ahead, heading about 160° and about 200 ft below. He altered heading by 30° at 1 NM to pass 4000 ft behind and 200 ft above the helicopter which then turned towards him and



passed behind him. There had been no risk of collision with the helicopter in sight all the time.

**HQ SAAvn** comments that this Airprox occurred in a portion of airspace regularly used by training ac from the School of AAvn for GH as well as by transit traffic to and from Salisbury Plain. The area is directly to the NE of the Boscombe stub. The ac involved were operating in good VMC. The lack of deviation in the Tucano's track suggested that its pilots had not seen the Lynx, or were content with the separation.

**HQ MATO** reports that the Tucano crew was conducting instrument approaches to RW 23 at Boscombe Down while receiving a RIS from

Boscombe Down Director (DIR) on 291.65. DIR was busy during the period of this Airprox, including the recovery of emergency traffic, which resulted in the Tucano being held to the NE of the aerodrome at 2000 ft QFE (999 mb). At 1438:00, DIR instructed the Tucano pilot to turn left onto 090° at a position about 9 NM ENE of Boscombe for sequencing. Traffic information was passed to the Tucano pilot on an unknown primary contact at 1438:40, *"...traffic east 2 miles manoeuvring no height indication"*. The pilot responded immediately *"...visual one helicopter"*, which was the Lynx. The Tucano continued eastbound as No 2 in the recovery sequence, whilst a Harrier was cleared to penetrate ahead for a TACAN approach. At 1441:05, the Tucano pilot was instructed to turn left inbound onto a heading of 250°. Traffic information was passed to the Harrier pilot who also reported sighting the unknown contact which DIR observed was now squawking 7000 and also displayed in azimuth and elevation on the PAR. At 1442:30, the Tucano pilot reported *"...still visual with one helicopter 12 o'clock 2 miles"*. The Tucano subsequently turned onto the localiser heading and completed an ILS approach without reported incident.

Analysis of the LATCC Pease Pottage radar recording reveals that this Airprox occurred at about 1439:24. The Lynx was initially squawking 7002 (Danger Areas General) when it exited the eastern boundary of EGD128, manoeuvring in an easterly direction at 1436:58, before switching to 7000 but without Mode C. At 1438:59, fourteen seconds after the Tucano pilot reported seeing the helicopter, the Tucano is shown eastbound squawking 2602 and indicating 2500 ft Mode C (1013 mb), with the Lynx left 11 o'clock 1 NM and crossing from left to right. The Lynx, tracking about 170° was approaching the RW 23 extended centreline at about 11 NM final, just outside the Boscombe Down/Middle Wallop CMATZ. A slight alteration of the Tucano's track is apparent as it closes on the Lynx which turned NE as the contacts merged. The Tucano's Mode C consistently indicated 2500 ft until it had opened to about 1 NM E of the helicopter. The Lynx pilot reports flying at 2000 ft RPS (1008 mb), which equates

to about 2150 ft (1013 mb). Therefore the vertical separation was about 350 ft as the Tucano overflew the Lynx.

DIR passed accurate traffic information to the Tucano pilot in accordance with the RIS, which facilitated visual acquisition of the Lynx. The Tucano pilot reports turning 30° left when the horizontal separation was 1 NM with the intention of passing behind the Lynx. Although this turn appears to be substantiated by the radar recording it is evident that the Lynx pilot's turn NE negated the Tucano pilot's avoiding action and subsequently reduced horizontal separation between the ac.

Whilst operating VFR in Class G airspace the Lynx pilot was not compelled to call Boscombe Down for an ATS. Although the Lynx was maintaining a *"listening watch"* from Middle Wallop, he was flying in close proximity to the final approach of the main instrument runway at Boscombe Down. Locally based aircrew are undoubtedly familiar with local traffic patterns within the extremely confined airspace encompassing the CMATZ. Indeed, Middle Wallop crews regularly call Boscombe for a LARS and controllers are specifically established at Boscombe Down to provide a radar service, using the callsign Wallop RADAR, to traffic recovering to Middle Wallop. If the Lynx pilot had obtained a radar service from Boscombe Down, it would have reduced significantly the potential for this occurrence.

**MoD (PE)** comments that it would appear that had the Lynx pilot contacted Boscombe Down the incident may well not have occurred.

**HQ DAAvn** comments that the Lynx crew was conducting a Competency to Instruct sortie and positioning for a PFL within the Middle Wallop DUA when the Airprox occurred. Albeit near the top limit of the DUA, the crew's intention was to descend to LL where the procedure is to remain on the SalOps and Middle Wallop frequencies. The procedures work well to deconflict DUA traffic and it is unfortunate that the 30° left turn by the Tucano and the gentle left lookout turn by the Lynx combined to keep the Tucano in conflict in the Lynx's 6 o'clock.

## PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the appropriate ATC and operating authorities.

Members were advised, in answer to their query as to why the Lynx was operating so close to the BD centreline, that the crew were turning away as a result of discussing that very point. The Tucano had been there for them to see before they started the turn and the Board concluded that the cause of the conflict was that they had not seen it and had turned

unknowingly into conflict with it, partially negating the Tucano's earlier avoiding action. Members agreed there had not been a risk of collision because the Tucano crew had been watching the Lynx throughout and there had in any case been a reasonable vertical separation.

The Board also discussed the radio frequency issue raised in Part A and agreed that helicopters should continue to follow existing procedures while operating in the local LFA as it was more important for them to be aware of each other's intentions. A call to Boscombe/Wallop radar would be appropriate, however, if intending to operate in Boscombe's approach area for any significant period.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: The Lynx crew did not see the Tucano, leading to a conflict resolved by the Tucano pilot.

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### **AIRPROX (P) REPORT No 88/98**

Date/Time: 22 Jul 0926

Position: N5022 W0356 (6 NM ESE of Plymouth)

Airspace: FIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: Beech 200 F15 x 3

Operator: CAT Foreign Mil

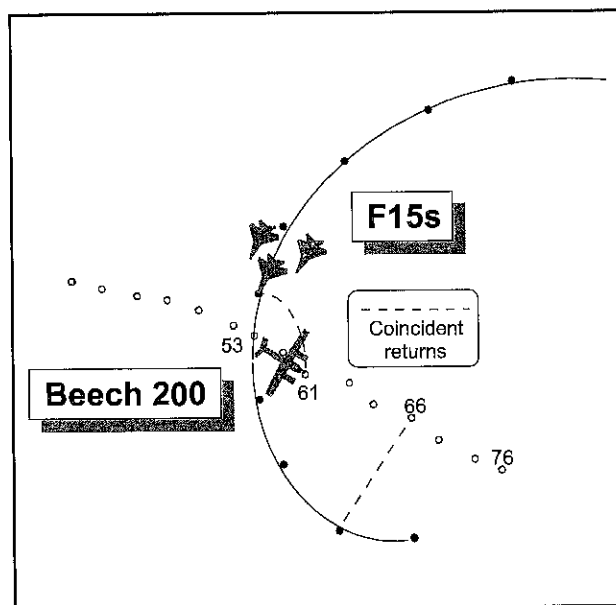
Alt/FL: FL 65 ↑ 5000 ft

Weather IMC IICL VMC CLBL

Visibility: 1500 m

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE BEECH 200 PILOT** reports heading 125° at 170 kt in a climb through broken, layered cloud. He had been cleared on departure from Plymouth for a climb to FL 280 at SKERY remaining clear of CAS and to squawk 3762 for



Plymouth Military. When he contacted the radar unit for a RIS he was asked to stop his climb at FL 150, but he levelled at FL 60 awaiting



clearance to climb through A25, which eventually came from London who cleared him to join controlled airspace NW of SKERY. Passing FL 64 he saw movement at the left edge of his vision and identified 3 fighters below and passing astern in a left bank in close formation. His FO saw them over the right trailing edge emerging from astern and reported the sighting to Plymouth who said they did not know who was controlling the fighters. The fighters, thought by his F/O to be F15s, passed 0.25 NM away and 500 ft below and he thought there was a medium risk of collision, potentially high; if he had been IMC he did not think the F15s would have seen him. In a later telephone conversation he queried why the procedure at Plymouth was to pass ac to Plymouth Radar when ac were not proposing to route through the danger areas, and asked if they could call London Radar instead.

**THE F15 PILOT** reports leading a 3 ac sortie on an exercise and let down to low level using a radar service from Yeovilton, going VFR below 5000 ft. The No 2 called a radar contact about 5 NM ahead at the same level and they adjusted heading to the right to avoid it, descending to look for manoeuvring airspace to hold for a while as they were early for their task. The formation saw the Beech 200 at 2 NM in their 10 o'clock slightly above and climbing. They passed it by over 1 NM and turned behind and beneath it, continuing to hold. By the time they were in its 3 o'clock they were 2000 ft below it and over 1 NM away as the Beech 200 continued to climb into cloud. They had kept visual and radar contact on the ac throughout and there was no risk of collision.

Note: LATCC radar recordings show the Beech from 3900 ft Mode C climbing on a track of 113° while a single Yeovilton squawk with no Mode C, occasionally showing 2 additional primaries in close formation, approaches on a track of 248°. The latter starts an anti-clockwise turn around the Beech 200's return, passing 0.8 NM behind it and 1.5 NM to its right, and crossing 0.5 NM ahead of it, during which time the Beech 200 has climbed 1500 ft.

**PLYMOUTH MILITARY RADAR** reports, with RT transcript that when the Beech 200 was prenoted from Plymouth City Airport the controller noted several squawks to the NE of the airport but all were well clear laterally and indicated on Mode C around FL 200. There was still no problem when the B200 called airborne, and was allocated a RIS at the pilot's request, but the manoeuvring ac then steadied in his direction. One contact, squawking 7000 with no Mode 'C' separated from the group. The controller was not convinced that the ac had maintained their last indicated altitude and therefore repeatedly called the nearest conflictor to the Beech 200; at 0924:14 he advised that *"There's traffic in your left 10 o'clock range of 4 miles tracking SW no height"* and at 0924:34 he advised *"That traffic's just passing down err your left hand side now by about one and a half miles"*. The calls were acknowledged. This proved to be a wise move as the ac had descended and at 0925 the pilot advised that he could see 3 F15s. Subsequent tracing action revealed that they were operating with the RNSFC at RNAS Yeovilton.

**RNAS YEOVILTON** reports that the F15 formation was receiving a RIS and were warned about the B200 which they acknowledged seeing. There was no exercise reason for them not to have been squawking Mode C at the time.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the appropriate ATC and operating authorities.

Members observed that none of the F15s had been squawking Mode C, although there was no exercise reason for not doing so. Accordingly, the Board asked the F15s' operating authority to remind their crews of the benefits of squawking Mode C at all times; the practice allowed controlling agencies to gain better situation awareness, promoted better customer service and could help to reduce the

incidence of Airprox cases overall. Members were also advised that it was better for civil pilots leaving Plymouth initially to call Plymouth Radar for several reasons; the radar coverage at low level was better, the unit would have a better idea of the local traffic situation and Plymouth was established for the task which London Radar was not.

Bearing in mind the separation which ultimately pertained, some members considered that the incident was no more than a sighting report;

they argued that the F15 formation was in control of the situation throughout, that both parties had seen and avoided each other in good time and that the Plymouth Radar controller had fulfilled his remit under a RIS. However, the view eventually prevailed that because the F15s had seen and taken action to avoid the Beech 200 and that the latter was climbing out of the conflict, the cause of the incident was a conflict of flightpaths which was resolved by both pilots and that there had been no risk of collision.

### PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: Conflict of flightpaths resolved by both pilots.

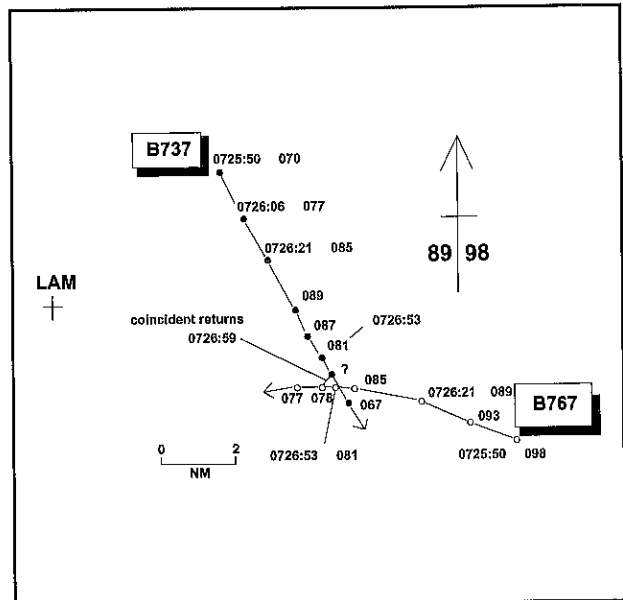
### AIRPROX (P) REPORT No 89/98

Date/Time: 26 Jul 0727 (Sunday)  
Position: N5138 E0021 (8 NM ESE LAM)  
Airspace: LTMA (Class: A)  
Reporting Aircraft    Reporting Aircraft  
Type: B767                      B737  
Operator: CAT                      CAT  
Alt/FL: ↓ FL 80                      ↑ FL 170  
Weather VMC                      VMC  
Visibility: 50 km                      30 km

### BOTH PILOTS FILED

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE B767 PILOT** reports that he was 10 NM E of LAM heading 300° at 250 kt under the control of LATCC. The visibility was 50 km in VMC. On descending through FL 88 for his cleared level, FL 80, ATC instructed him to maintain FL 90 and to turn L 180°. During the climb back to FL 90 he received a TCAS RA demanding descent, with which he complied and another ac passed about 500 m behind him at the same level. He felt that there had been a high risk of collision.



**THE B737 PILOT** reports that after departure from Stansted for Milan, he was cleared by LATCC on 118.82 to climb to FL 170. The visibility was 30 km in VMC. His ac was not TCAS equipped. On passing FL 83 ATC asked him if he was levelling at FL 70. He advised them that he had been cleared to, and had read back, FL 170, whereupon the controller instructed him to descend immediately to FL 70

and to make an avoidance turn L. The other ac, a B767, passed from L to R about 0.5 NM ahead of him and about 200 ft above. He believed there had been a high risk of collision.

**ATSI** reports that the NE DEPS SC described his workload as moderate in the fifteen minutes he was in position prior to the incident, although he added that the traffic had reduced slightly at the time it occurred.

The B767 pilot contacted the NE DEPS SC at 0720 descending to FL 150 on a heading of 270°. The flight was cleared to descend to FL 80, with a restriction to be level 5 NM before LAM. Three minutes later, at 0723, the B737 pilot came on frequency reporting climbing through 2400 ft on a Dover 6R SID after departure from Stansted. The SC instructed the B737 pilot to squawk ident and to climb to FL 170 with no speed restriction; the cleared level was read back correctly. The SC said that he had intended to clear the B737 to climb to FL 70; however, he erroneously transmitted the clearance as FL 170 and did not notice his error when the pilot read back the instruction. The only explanation he could offer was that he was expecting a call from a Gatwick outbound ac, which he intended clearing to climb to FL 170, and for an inexplicable reason he transposed the two ac. The Gatwick outbound ac called about 2 min after the B737 made initial contact on the frequency and was cleared to FL 170; this RT exchange did not help the SC register the fact that he might have cleared the wrong ac to FL 170. He confirmed that as far as he was concerned he had cleared the B737 to climb to FL 70 and had annotated its FPS accordingly; consequently he was unaware of the conflict building between the B737 and the B767.

The B767 was subsequently placed on its own navigation for LAM and, at 0725, transferred to Heathrow Approach. A radar photograph, timed at 0725:50, shows the two ac on conflicting tracks about 11 NM apart with the B737 climbing through FL 70 and the B767 descending through FL 98. The Heathrow Intermediate (INT) N Director reported that when the B767 contacted him he noticed that it conflicted with the B737 which was passing FL

83 on course to Dover. He immediately gave avoiding action instructions to the B767 pilot to maintain FL 90 and to turn L heading 180°, at the same time passing traffic information; both these actions are confirmed by a transcript of the INT N frequency. The B767 pilot said in his report that he reacted to a TCAS RA which demanded descent. Realising that the B767 was continuing to descend, the INT N Director cleared the flight to descend to FL 80 and passed traffic information again. The pilot reported sighting the traffic and confirmed that it had passed his ac.

Having transferred the B767 to Heathrow approach, the NE DEPS SC realised almost immediately from his radar display that the B737 had climbed through what he believed was its cleared level. He immediately asked the pilot to confirm that he was maintaining FL 70 to which the pilot replied that he had been given FL 170 and had read this back, but was now descending to FL 70. The SC said that the B767's Mode C readout at this time indicated that it had levelled off at FL 90. His immediate reaction, therefore, was to instruct the B737 to descend quickly, as it was only 400 ft below the B767 which was about 5 NM away. He explained that he tried to telephone the INT N Director but received no answer. He commented that, although there is a priority telephone facility in Terminal Control, he decided not to use it because he was not practised in its use. Due to the B737's high rate of climb, it continued to FL 89 before commencing its descent and, in the process it climbed through the level of the B767 which was about 4 NM away having by now descended from FL 90 in response to its TCAS RA. Realising that the B737 was now descending into conflict with the B767, the SC, at 0726:45, passed the former traffic information and avoiding action instructions in the form of a hard L turn. The B737 pilot reported sighting the other traffic. A radar photograph at 0726:46 shows the B737 at FL 87 just over 1.5 NM NW of the B767 and 200 ft above it. The SC added that STCA had activated during the incident but only after he had realised the situation.

Note (1): In a subsequent telephone conversation the B737 pilot said that he first saw the B767 at a range of about 2 NM and about coincident with the time ATC instructed him to turn hard L. It was visually apparent at this time that he would in fact track safely behind the other ac, therefore he slightly increased his angle of bank and passed about half a mile behind it.

Note (2): A picture of the LATCC radar at 0726:53 shows the B737 7 NM E of LAM as it heads SSE descending through FL 81 with the B767 at its 12 o'clock 0.9 NM away heading W, also indicating FL 81 and descending. At 0726:59 the ac pass about 900 - 1000 m apart starboard to starboard. At this time the Mode C of the B767 indicates FL 78 but the B737's Mode C is not seen. However, 7 sec later, at 0727:06, the latter is showing FL 67 which indicates a rate of descent of some 1400 ft per min since the Mode C observation at 0726:53. By interpolation, therefore, it is probable that the B737 passed below the B767 by some 100 - 300 ft. (SMF data shows that minimum separation occurred at 0726:58, with nil vertical separation and 0.62 NM lateral separation. However, it should be noted that the SMF recorded separation may differ slightly from the true separation and radar recordings because it is based on processed and predictive radar data).

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, and a report from the appropriate ATC authority.

The ATSI adviser told the Board that he thought this Airprox occurred because the TC NE DEPS SC had inadvertently cleared the B737 to climb

to FL 170 instead of the intended FL 70, which resulted in the two ac being on conflicting tracks without the requisite vertical separation. The Board concurred. Members noted that the SC was not practised in the use of the priority telephone facility and was unable to effect timely co-ordination with the INT N director as a result. They conjectured that had co-ordination been successful, it is unlikely that the ensuing unwelcome contradiction between the TCAS demand to descend and the ATC avoiding instruction to maintain FL 90 (which necessitated a climb) would have occurred. A pilot member commented that the B767 pilot did not apparently use the appropriate phraseology to convey his actions to ATC; the words "TCAS descent" should have been transmitted to alert ATC to the fact that the ac was responding to an RA. Such a message was of particular significance in this instance as it might have alerted the controller to the changing geometry of the situation. With regard to the use of the priority telephone, the ATSI adviser said that at present the computerised ATC simulator was not able to reproduce this facility. He undertook to investigate this further and report to UKAB. An ATCO member commented that in his opinion the avoidance turn onto 180° issued by the INT N controller to the B767 was unnecessarily excessive in the circumstances.

Turning to risk, members noted that the B737 pilot had seen the B767 in sufficient time to deduce that a hard turn to port, as instructed by ATC, was unnecessary as he would pass behind the other ac with only a minor course correction. However, despite this visual sighting and the combined TCAS and ATC actions the two ac passed each other with only marginal vertical and horizontal separation. The Board therefore concluded that the safety of both ac had been compromised to the extent that a collision had been possible.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: The LATCC TC NE DEPS SC mistakenly cleared the B737 to FL 170 believing that he had cleared it to FL 70.

## AIRPROX (P) REPORT No 90/98

Date/Time: 26 Jul 1407 (Sunday)

Position: N5233 W0023 (Peterborough Sibson  
- elev 100 ft)

Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft

Type: Parachutist Chipmunk

Operator: Civ Club Civ Pte

Alt/FL: 2000 ft ↓ 2200 ft  
(agl) (QNH 1013 mb)

Weather VMC CAVOK VMC CLBC

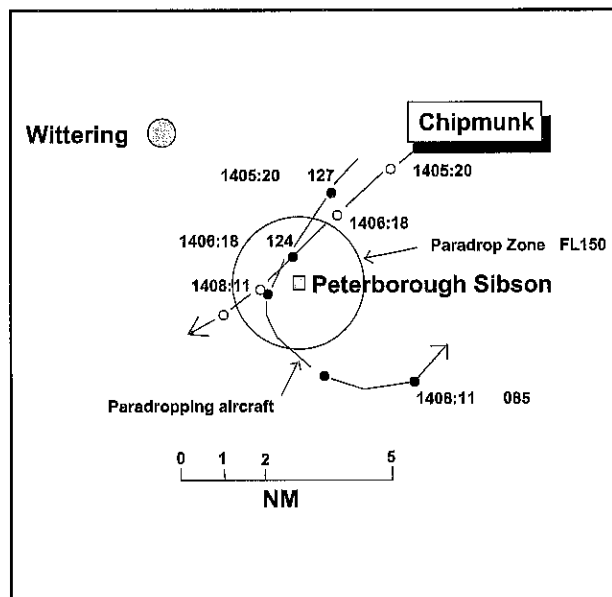
Visibility: >10 km >10 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PARACHUTIST** reports that he was taking part in a skydive with the British army team over Sibson airfield during the British National Parachute championships. He was part of a group of 9 parachutists exiting the drop ac, a Turbolet, from about 12500 ft. The airspace below, which was completely free of cloud, was checked for other ac prior to despatch. About 50 sec after leaving the ac in freefall, all the parachutists turned and tracked away from each other prior to deployment of their parachutes at 2000 - 2500 ft agl. During this time he observed a silver ac with military markings, including a wide yellow band towards the rear of the fuselage, as it flew below him at 1800 - 2000 ft from E to W. He reported the encounter to the Parachute Centre's Chief Instructor on landing.

Note (1): The above account is supported by reports from 3 of the other participating parachutists. One of them describes "...a small silver ac flying past us with 100-200 ft separation"... and another as having to take avoiding action by stopping his separation manoeuvre and turning his canopy away from the intruding ac which passed below and in front of him.

**THE CHIPMUNK PILOT** reports heading 235° at 80 kt and cruising at 2200 ft (QNH 1013) in VMC about 3000 ft below cloud. Her ac was not fitted with a transponder. She had departed



from Fenland at 1355 for Shotteswell and therefore could have been in the vicinity of Sibson 10-15 min later. The visibility was 10 - 20 km and the wind direction southwesterly at 15-20 kt. Having unsuccessfully tried to contact Wittering for a MATZ crossing clearance (see Note 4), she listened out on their MATZ frequency of 130.2. She did not attempt to call Sibson as she was flying above their airfield's ATZ. She was unaware of any parachuting taking place and subsequently assumed that the parachutists must have dropped through the cloud, whose base in the area she estimated at 5000 - 7000 ft. The pilot comments that vision from the Chipmunk cockpit is good forwards and sideways but poor directly above and below when in level flight. No NOTAM relating to the parachute event was found prior to flight.

**THE PARACHUTE CENTRE DZ** controller on the day, a BPA advanced instructor, reports that the Turbolet pilot had called running in and requesting clearance to drop. Having checked that there were no other ac to be seen in the area, she approved the drop. A couple of minutes later, at about 1507, she could hear the Turbolet overhead and, while looking up to watch for canopies opening, she first heard and then saw a silver low-winged ac approach the DZ from the direction of the A1. It appeared to be flying at about 2000 ft on a SW heading directly towards the area where she was

expecting to see canopies at any moment. She immediately looked through a set of telemeters for the ac's registration while an assistant telephoned the control tower to find out if the pilot of the ac was in contact with them. She recognised the RAF roundel and identified the registration mark on the ac. She then turned her attention to the target area and saw that the first 9 parachutes had opened; the others were still in free-fall. The ac continued on its way while the remaining parachutists opened their canopies. In her opinion no more than a few hundred ft separated the ac and the parachutists and she felt that the incident had been very dangerous indeed.

**THE PARACHUTE CENTRE CHIEF INSTRUCTOR** comments that the incident took place overhead the airfield at Sibson which is noted on all aviation maps for its intense parachuting activity. The intruding ac flew within 100 ft of 9 open parachutes with 7 others in free-fall above it. He believes the risk of collision was as high as it could possibly have been without actual contact. He states that there have been several similar incidents at Sibson in the recent past and he is very concerned that repeat encounters of this nature could result in a fatality. He believed the actions of the Chipmunk crew endangered the lives of the parachutists concerned.

Note (2): A replay of the LATCC radars at 1405:20 shows the paradropping ac, identified by its 0033 squawk, as it tracks SW about 2 NM N of Peterborough Sibson indicating FL 127. At the same time an intermittent primary return, believed to be the Chipmunk, can be seen moving in a southwesterly direction about 3 NM NE of the airfield. A further return at 1406:18, 2 NM NE of the airfield, confirms this return tracking towards the area of the drop zone; at this point it becomes masked by the SSR label of the dropping ac and is not seen clearly again until 1408:11, about 1 NM W of the airfield. Assuming that a constant track was maintained between these times, the primary return would have tracked within about 0.5 NM of the airfield at about 1407:30.

Note (3): Sibson airfield is permanently notified in the UK AIP (ENR 5-5-4-2) for free-fall paradropping up to FL 150. The area is defined as a 1.5 NM radius circle centred on 523335N 0002346W. It is also marked on the ICAO 1:500000 topographical chart with a parachute symbol and a warning of "Intense parachuting" activity. The airfield also has a notified ATZ of 2 NM radius active from SFC - 2000 agl 0700 - 1900 in summer. The UK AIP (ENR 1-1-5-4) makes reference to free-fall parachute drop zones and states where these are listed in the AIP; it advises that for such notified sites, an advance NOTAM is only required when night paradropping activity is planned. Additionally, ENR 5-4-3 warns pilots that the ..."visual sighting of free-falling bodies is virtually impossible and the presence of an ac within the drop zone may be similarly difficult to detect from the parachutists' point of view. Paradropping ac may be encountered outside the notified portion of airspace and pilots are strongly advised to avoid all such Drop Zones where parachuting is taking place". Furthermore, the UK AIP entry for Sibson (AD2-EGSP-1-2) warns pilots that ..."intensive free-fall parachuting takes place onto the Dropping Zone 800 m NW of the intersection of the runways. Pilots are advised to ascertain the latest situation on dropping activities on their initial contact call with the a/g station".

Note (4): UK AIP ENR 2-2-4-1 details the procedures and availability applicable to MATZs. Para 3.1 quotes..."A MATZ Penetration Service will be available during the published hours of watch of the respective ATS Unit. However, as many units are often open for flying outside normal operating hours, pilots should call for the penetration service irrespective of the hours of watch published. If, outside normal operating hours, no reply is received after 2 consecutive calls, pilots are advised to proceed with caution". (Wittering's ATZ is operational H24. However, on this occasion their MATZ, which is operated by Cottesmore ATC on 130.2 from 0800 - 1700 Mon - Fri, was closed and therefore a MATZ crossing service was not available from them).

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a radar video recording, and reports from the appropriate operating authorities.

The Board discussed the responsibilities of air and ground crews when clearing the airspace intended for use prior to dropping parachutists. It was felt that in this instance, while the jump master in the Turbolet had ultimate responsibility for the despatch, he was in a less advantageous position to spot an intruder than the DZ controller owing to his ac's altitude. Some members felt that, as the Chipmunk was seen soon after the "all clear" had been given, it must have been sufficiently close to Sibson to have been seen much earlier by those on the ground there. In mitigation, the ac would have been head-on at relatively low altitude and may not have presented an easy target spot. While he took a critical view of the Chipmunk pilot's airmanship in this incident, a GA member was strongly of the opinion that operators of sites conducting aerial sporting activities within the FIR/Class G airspace should be cognizant of the freedom which such airspace affords to the GA community as a whole. He was surprised, in view of the clear weather conditions, that the Chipmunk had escaped earlier detection.

It was unclear to the Board whether navigational difficulties had caused the

Chipmunk crew to stray inadvertently into the area. Members noted that although the pilot claimed to be clear of Sibson's ATZ, the margin was only 100 ft above the upper limit during her transit of the airfield; this led the Board to surmise that in her effort to remain clear of Wittering's ATZ, having failed to establish contact, she had come closer than intended to Sibson. Moreover, she was evidently not alert to the possibility of parachuting activity above the ATZ, despite it being marked on the 1:500 000 topo. Members also noted that the pilot was unaware that, being a Sunday, the Wittering MATZ (which is operated by Cottesmore on weekdays) was closed and therefore a MATZ crossing service was not available; in the circumstances a call on Sibson's frequency would have been a sensible precaution. The Board concluded, therefore, that the Airprox was caused by the Chipmunk's entry into a permanently notified area of intense parachuting which then took it into conflict with the parachutists.

The Board had some difficulty in assessing risk as there was no clear indication of the relative positions and distances between the Chipmunk and the parachutist(s). However, from their reports, the latter indicated that they felt considerably threatened by the Chipmunk's passage and their concerns were endorsed by ground witnesses. Members concluded, therefore, that the safety of the parachutists had been compromised.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: The Chipmunk flew into conflict with the parachutists while transiting a permanently notified area of intense parachuting activity.

## AIRPROX (P) REPORT No 92/98

Date/Time: 26 Jul 1023 (Sunday)

Position: N5100 W0047 (White Waltham - elev 130 ft)

Airspace: ATZ (Class: G)

Reporting Aircraft Reported Aircraft

Type: Condor Su29

Operator: Civ Pte Civ Pte

Alt/FL: 800 ft ↓ 2000 ft ↓

(QFE 1011 mb) (QFE)

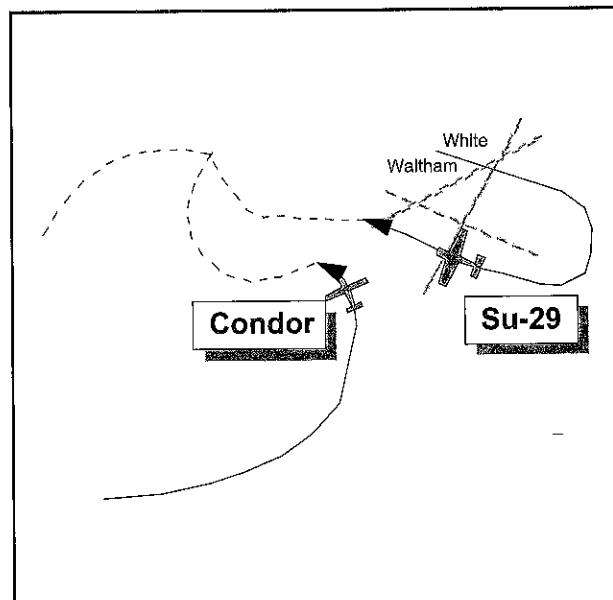
Weather VMC CAVK VMC CAVK

Visibility: 10 km+ 10 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE CONDOR PILOT** reports heading 020° at 80 kt returning from Reading to join White Waltham circuit deadside for RW 29, RH circuit. He heard other ac (some of which he saw) making normal circuit calls. He descended deadside to 800 ft and started to cross RW 29 at right angles when he saw a Sukhoi 29 in his 1:30 500 yd away and diving towards him. He could see its pilot's head through its windscreen. With a collision imminent, he rolled sharply to the left beyond 90° AOB and dived away to the W. When he rolled erect he saw the Su 29 overtake 40-60 ft away at the same level in level flight at a much higher speed, possibly banked slightly right. He recovered at 200 ft and rejoined the circuit. The risk of collision had been very high.

**THE Su29 PILOT** reports flying an air test after some control modifications. He had climbed in the circuit to 1500 ft downwind and up to 2000 ft on the dead side where he made clearing turns before performing security and systems checks which involved pulling and pushing, erect and inverted, to at least ±4G. He did this on a heading of 290° at 135 kt but did not see the other ac. He did not come below 1500 ft so calculated he would have been at least 700 ft above the Condor. He commented that there was an area over the airfield which was specified for aerobatics, but it was mostly used during the week so he thought those who flew at the weekend may not be used to what he



described as normal activity for the area. He emphasised that he was above the circuit while performing his airstest.

Notes: (1) The incident is intermittently visible on LATCC radar recordings. Neither ac is squawking Mode C so no height information is available. The ac appear to pass roughly 300 m apart in plan, due to the effective avoiding action clearly taken by the Condor.

(2) The CFI commented that it was possible that some pilots operating from the airfield may not be fully aware of the aerobatic area and activity - he was recently in post (since the Airprox) and intended to make sure that relevant information was promulgated for all pilots operating from White Waltham.

(3) Flight is permitted up to 1500 ft in the part of the ATZ which is in the Heathrow Zone and up to the base of the LTMA to the west of the LHR Zone.

### PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS

Information available to the Working Group included reports from the pilots of both ac, and radar video recordings.



Members were not surprised that the Condor pilot had filed the Airprox, or that he had taken such spirited avoiding action on seeing the Su29 diving towards him, not knowing what it was doing. Discussion then centred on the Su29's manoeuvres and whether or not the Su29 pilot had been performing aerobatics; while he may have considered what he was doing was not part of a formal aerobatic sequence, there was no doubt among any of the Board members that the manoeuvres described were unquestionably aerobatic. It was not known whether local rules permitted aerobatics at the time but in a period when non-aerobatic pilots were operating in the circuit, as known by the Su29 pilot, members considered it was inconsiderate for him not to have announced on RT what he was about to do before doing it. A Board member who flew from White Waltham advised that information on the aerobatic activity had been disseminated by the CFI as mentioned in Part A. While there was general unease about the practicability of performing aerobatics safely without either endangering circuit traffic or penetrating the 1500 ft ceiling in the LHR zone or the LTMA to the west, members accepted that a pilot who knew his airfield in great detail should be able to stay within the appropriate boundaries. There had been occasional Airprox filed by airliners approaching LHR RWs 09 with aerobatic ac from W Waltham and the benefit of the doubt had usually been given to the latter but the Board was usually uncomfortable about this. Members fully understood the difficulty of finding places to perform low level aerobatics

safely, without generating noise complaints and in a location where they could be assessed from the ground, and had no desire to hinder this activity. At the same time, the Board asked the Chairman to put these concerns to the CFI and ask if he would find a review of the activity by safety experts from the CAA's General Aviation Department to be helpful in integrating disparate aviation activities safely.

The Board concluded that the cause of the Airprox was that the Su29 pilot had flown in a manner which alarmed the Condor pilot, whose ac he did not see. The degree of risk generated a lengthy discussion because of the entirely different perceptions of the incident reported by the 2 pilots. Some members suggested that it would be impossible while pulling and pushing to 4g at 135 kt to remain both below the 1500 ft ceiling and 700 ft above the Condor's 800 ft circuit height but it was pointed out that W of the RW29/03 intersection the ceiling was 2400 ft. While undoubtedly startled, the Condor pilot might well have mis-assessed the miss distance, but the difference between 40-60 ft at the same level and 700 ft was hard to explain. The radar recording was not as clear as usual but indicated a lateral separation much in excess of the Condor pilot's estimate. The Su29 certainly passed close enough to the Condor for its pilot to have seen it but without corroboration from a third party or separate additional information to judge which pilot had mistaken the miss distance, the Board could not assess the risk level.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: D

Cause: The Su29 pilot flew in a manner which alarmed the Condor pilot, whose ac he did not see.

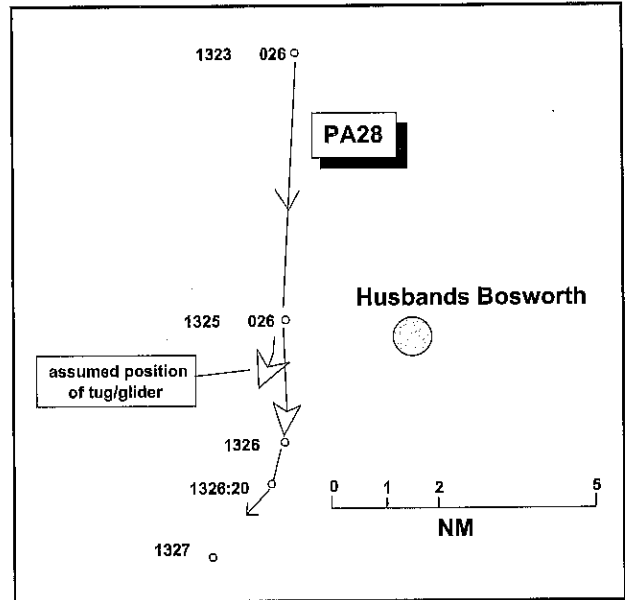
**AIRPROX (P) REPORT No 93/98**

Date/Time: 27 Jul 1325  
Position: N5226 W0103 (Husbands Bosworth)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Supermunk PA28 Arrow  
Operator: Civ Club Civ Pte  
Alt/FL: 1800 ft ↑ 2500 ft  
(QFE 994 mb) (QNH 1010 mb)  
Weather VMC CLBC VMC CLBC  
Visibility: 35 km >10 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE SUPERMUNK PILOT** reports that he was heading about 180° at 65 kt having departed from Husbands Bosworth (elev 505 ft) with a glider in tow. The visibility, into sun and about 1200 ft below a half cover of Cu at 3000 ft, was over 35 km. While passing 1800 ft (QFE 994) he saw an ac converging from his rear L quarter on a track of about 210° at a similar level at high speed. Despite having a glider in tow, he banked steeply to the R in avoidance and the ac passed about 200 ft away down his port side. In his opinion, without his avoiding manoeuvre there would have been a collision.

**THE PA28 PILOT** reports that he was heading 190° at 130 kt and cruising at 2500 ft (QNH 1010) while on a flight from Leicester to Cherbourg. The visibility below high broken cloud was over 10 km. He was squawking 7000 with Mode C. When passing about 3 NM SW of Husbands Bosworth, he saw a low wing single engined ac, mainly red in colour, about 1000 m away to his R as he approached from its rear L quarter. He maintained good visual contact with the ac which then passed down his starboard side 200 - 300 m away and about 200 ft below him; he did not consider there had been any risk of collision. The pilot comments that he is very familiar with the area and regularly flies out of Leicester. Husbands Bosworth is clearly shown on the chart; however, in his experience, there is little point in trying to navigate around the site as gliders from there radiate out in all directions. He says



that because the encounter was so unexceptional he did not take notes at the time and therefore could not be certain of the accuracy of his figures. However, he believes his report represents a true description of the encounter.

Note (1): UKAB staff spoke subsequently to both pilots concerned. The tug pilot said there were many combinations airborne at the time due to a NOTAMed competition. He was unhappy that under these circumstances the PA28 pilot had chosen to route so close to Husbands Bosworth; the incident occurred some 3-4 NM WSW of the airfield. However, the PA28 pilot said that he had good visual contact with both the tug and the glider and he was satisfied that lateral and vertical separation were sufficient to preclude any possibility of a collision.

Note (2): A replay of the Clee Hill radar shows a return believed to be the PA28 departing from the Leicester area at about 1319 squawking 7000. The return tracks 180° climbing to 2600 ft Mode C (equivalent to 2519 ft altitude on QNH 1010) and passes 2.4 NM W abeam Husbands Bosworth at 1325; at 1326 it turns R onto a track of about 220°. As the tug/glider combination is not seen on the recording, the exact timing and position of the encounter cannot be determined. Given the reported

height of the combination above Husbands Bosworth's elevation, its altitude would have been about 2305 ft; in theory, therefore, vertical separation between the ac was in the order of 214 ft.

Note (3): Husbands Bosworth is marked on the 1:500 000 ICAO chart as a glider site with a warning of intense gliding activity.

Note (4): NOTAM U5030/98 was transmitted by AIS at 0622 on Jul 11 concerning the gliding competition at Husbands Bosworth, with a warning that up to 50 gliders and 8 powered ac would be participating in the event.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac and a radar video recording.

A GA member endorsed the comments made by the PA 28 pilot concerning the extent of glider activity around Husbands Bosworth and the difficulties of finding a clear route through the area. He felt that the pilot had given the site a reasonably wide berth and, being familiar with

the local area, had maintained a careful watch for gliders he expected to see operating in the vicinity. However, having seen the Supermunk/Glider combination from some distance away, and in the knowledge that he was approaching it from its blind spot, he thought the PA28 pilot should have arranged his flight to pass sufficiently far from it so as not to cause alarm to the tug pilot. Noting that the PA28 had flown to the L of the combination, the member commented that the Rules of the Air require an overtaking ac to fly to the R. Furthermore, he believed the concerns of the tug pilot might have been considerably alleviated had the PA28 pilot wagged his wings to signify that he had established visual contact. The tug pilot was commended for his vigilance in spotting the PA 28 approaching from behind him.

The Board endorsed this analysis and concluded that the PA 28 caused the Airprox by flying sufficiently close to the combination to cause the tug pilot concern for the safety of his ac. However, since the PA 28 pilot had maintained visual contact with the tug and glider throughout, members were satisfied that he was always in a position to ensure that there was never a risk of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* The PA 28 pilot flew close enough to the tug and glider combination to cause the tug pilot concern for the safety of his aircraft.

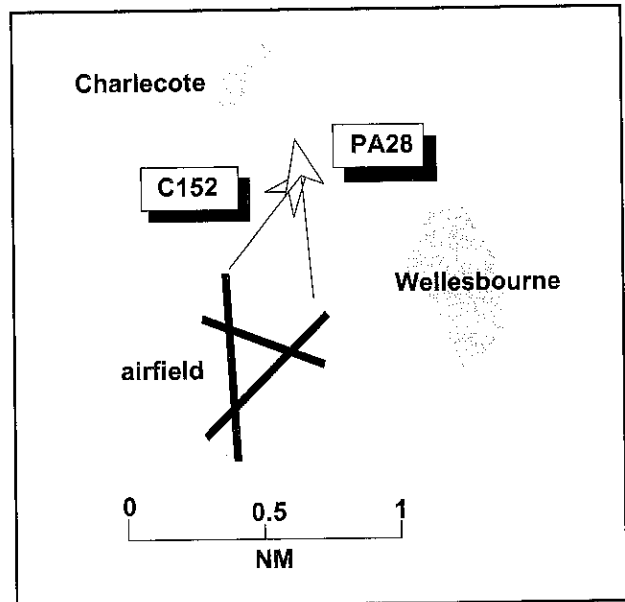
## AIRPROX (P) REPORT No 94/98

Date/Time: 27 Jul 1200  
Position: N5211 W0136 (Wellesbourne airfield  
- elev 158 ft)  
Airspace: ATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: C152 PA28  
Operator: Civ Trg Civ Trg  
Alt/FL: 300 ft ↑ 300-400 ft ↑  
(QFE 1006 mb) (QFE)  
Weather VMC VMC  
Visibility: >10 km >10 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE C152 PILOT** reports that he was heading 030° at 65 kt in the noise abatement procedure and climbing through 300 ft (QFE 1006) having just carried out a touch and go landing on RW 36 at Wellesbourne. The circuit and RT were very busy. A PA28 suddenly came into view at his 2 o'clock high position 20 ft away tracking from his R. He passed through the PA28's level as it pulled rapidly away from him to the L; it did not appear to be climbing. He assumed the other pilot had not seen him and felt there had been a very high risk of collision. He asked the FISO if the "PA28 ahead of us had just made a go-around," to which the reply was affirmative. He had not heard the other pilot call going-around.

The pilot comments that vision from the cockpit of the C152 is poor above and behind due to the high wing configuration. Later that day he contacted the instructor of the PA28 who was visiting Wellesbourne with a student to practise circuits. The instructor told him that his student had initially spotted the C152 as he was in the process of going-around but had then lost contact with it; he said that at the time he had been paralleling the RW 36 centre line and climbing at 79 kt. He (the C152 pilot) drew a diagram representing the flight paths of the respective ac and the PA28 instructor agreed that it was correct. When the C152's student confirmed his instructor's account of the incident, the PA28 pilot replied that since the



C152 was abeam him on the RW it must have come up behind him. He told the PA28 instructor that as the pilot of the ac making a missed approach, it had been his responsibility to maintain visual contact with traffic departing off the RW ahead of him; the instructor did not appear to share his opinion in this instance.

**THE PA28 PILOT** reports that he was visiting Wellesbourne from Enstone to carry out circuit training with a student who was an experienced SLMG pilot carrying out conversion training; there were 4-5 ac in the circuit. The visibility was 10 km in VMC. He was in contact with Wellesbourne Information on 124.02. While on final approach for RW 36 he saw a C152 which was carrying out a touch and go ahead of him. The ac 'paused' on the RW and he instructed his student to go-around; this involved a break to the R at about 200 ft agl to parallel RW 36 to route to the E and N of Charlecote village. Their speed was 75 - 80 kt. The student executed a classic go-around manoeuvre, calling "going-around" which was acknowledged by the FISO. Both he and his student had the RW in sight on their port side; however, despite maintaining a good lookout neither of them saw the Cessna again. Subsequently, after landing, he saw the pilot instructor of the C152 who claimed that the PA28 had overflown him by 20 ft and he was therefore intending to file an Airprox report. The pilot said that he had not heard a going-around

call from the PA28, probably due to high cockpit workload.

The PA28 pilot submitted a detailed plan showing what he believes were the relative positions and tracks of the two ac. He comments that there is a potential confliction between ac making a touch and go on the northerly RW and ac overshooting because of the noise abatement procedure which requires a R turn of 30° immediately after take off. The difficulties of lookout are exacerbated in ac with a high wing, such as the C152. In this instance he watched the Cessna on the RW on his port side until it disappeared behind the PA28's port wing leading edge. He estimated that at this point they were some 300-400 ft above the C152 which was accelerating down the RW abeam them. During this time the student was raising flap and initiating the go-around procedure at 75-80 kt. He cannot support the C152 pilot's claim that he was overtaken from behind for two reasons; firstly, the C152's high wing and the slant view from the pilots' position suggested to him that the PA28 must have been ahead of the C152 when it was first spotted. Secondly, the performance of the C152 is unlikely to have been sufficient on climb-out to have placed it in a conflicting position with the PA28. While he appreciated the concern likely to be felt by a pilot at the unexpected appearance of another ac 200-300 ft above him, he feels that in this case the risk of collision was low. He suggested to the other pilot that the issues surrounding the noise abatement procedures should be raised at a meeting of the Wellesbourne Operational Management committee.

**THE WELLEBOURNE FISO** reports that he was on duty in the Tower providing a FIS. The RW in use was 36 with a LH circuit which was busy with around 5 ac; noise abatement procedures for this RW require a 30° R turn to avoid local villages. The C152 pilot reported ready for departure and was advised to take off at his discretion; at this time the PA28 was turning onto finals. The C152 was slow to line up and take off and, as it was beginning to rotate, the PA28 pilot reported going-around. His attention was then drawn to other ac but he

remembers seeing the C152 and PA28 turning R to avoid the noise sensitive area and being well separated at that time. No Airprox was reported at the time but later that day one of the instructors involved stated his intention to submit a report.

Note: UKAB staff subsequently spoke to both pilots, and the AFISO whose report described the C152 as making an initial take-off as opposed to a touch and go. The FISO said that according to the airfield log, the Cessna took off at 1156 and, since the incident reportedly occurred at 1200, only 4 minutes later, he believed the incident must have occurred on its initial departure. However, the C152 pilot confirmed that he was carrying out a touch and go and this was supported by the PA28 pilot. The Cessna pilot accepted that the shock of the unexpected appearance of the other ac might have caused him to underestimate the vertical separation; however, both he and his student remained convinced that the PA28 was extremely close. The PA28 pilot confirmed that after the C152 passed under his port wing he did not see it again; however, he was convinced that as he had overtaken the ac while it was still accelerating on the ground, and his height at that time was not less than 300 ft agl and climbing, he must have remained ahead of it. In his opinion, the Cessna's lower performance would have made it impossible for it to have got ahead of him as its pilot claimed. The PA28 pilot commented that, as he had turned R onto the deadside in accordance with a normal go-around manoeuvre and was therefore already on track to pass E of Charlecote, the RW36 departure noise abatement procedure was not applicable to him. However, he was concerned that the the noise routeing required for departing ac appeared to present a potential for confliction in these circumstances.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac and a report from the FISO involved.

All members agreed that the PA 28 pilot had a clear responsibility in these circumstances to maintain visual contact with the C152 and to ensure that he remained a safe distance from it during his go around manoeuvre; the Board quickly concluded that by not doing so the PA 28 caused the Airprox. Furthermore, despite his conviction that the C152 could not have caught up with him given his perceived geometry of the situation and the latter's inferior performance capabilities, members felt that once he had lost sight of the Cessna the PA 28 pilot was no longer in a position to comment objectively on the relative positions of the 2 ac. While the C152 pilot may have underestimated the separation distances owing to the 'shock' factor, he and his student were clearly alarmed by the PA 28's sudden appearance and concerned by their inability to take action to avoid it. Members concluded that the ac had been sufficiently close together for a collision to have been possible.

Further concern was expressed at the apparent incompatibility of the noise abatement routeing

for RW 36 with ac on the dead side of the circuit following a normal go-around. While 'on the deadside' pilots were entirely responsible for maintaining separation from other ac, but there was a potential for conflict under the present 'dog leg' procedures for RW 36 which needed to be addressed. Accepting that the noise routeing is limited by geographical considerations, members suggested that Wellesbourne airfield management review the joining and go around procedures for RW 36 to ensure that pilots, particularly those unfamiliar with the airfield, are able to conduct their flights safely. Director UKAB agreed to write to the appropriate authority at the airfield recommending such a review.

Noting that the C152 pilot had apparently not heard the PA 28 making a go around call, members stressed the importance of maintaining an effective listening watch. When operating in an air/ground environment, pilots can only ensure their safe integration with other circuit traffic by careful monitoring of the airfield frequency.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: The PA 28 pilot did not keep sight of or keep clear of the C152.

Recommendation: The UKAB recommend that the Wellesbourne airport Director examines the 'go - around' and noise abatement procedures for RW 36 at Wellesbourne with a view to harmonising them to remove the existing potential for flight path conflicts on the deadside of the circuit.

## AIRPROX (P) REPORT No 96/98

Date/Time: 27 Jul 1746

Position: N5348 W0304 (2.4 NM NW  
Blackpool airport)

Airspace: ATZ (Class: G)

Reporting Aircraft Reported Aircraft

Type: Shorts 360 PA28

Operator: CAT Civ Pte

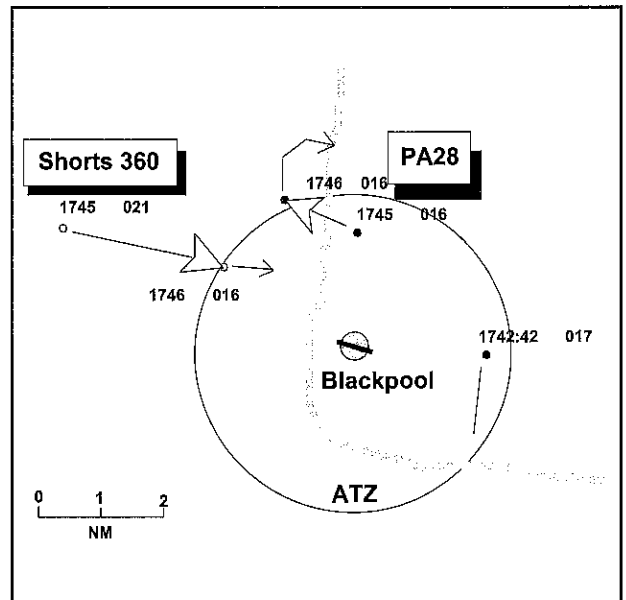
Alt/FL: ↓ 1500 ft 1500 ft  
(QNH 1009 mb) (QNH)

Weather VMC VMC CLBC

Visibility: >10 km 15 NM

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE SHORTS 360 PILOT** reports that he was inbound to Blackpool from the Isle of Man in VMC. Landing and navigation lights were on; the visibility was over 10 km. He was in contact with Blackpool Tower on 118.4 who instructed him to descend not below 1500 ft due to circuit traffic and cleared him for a visual approach to RW 28 RH. The FO, who was the handling pilot, positioned the ac at 1500 ft (QNH 1009) at the start of the downwind leg at 190 kt. ATC advised them of two contacts in the circuit, one on short finals and one on base leg. The crew were very familiar with the Blackpool environment and both pilots scanned the area immediately for traffic as it is not uncommon, in their experience, to find inexperienced pilots in the circuit giving inaccurate position reports. The FO confirmed both ac in sight, whereupon the Captain advised that there was also traffic at their 12 o'clock at the same level and closing. On seeing this traffic, the FO prepared to disengage the autopilot; however, the other ac began a steep turn to the N away from them so he left it engaged and subsequently carried out a normal circuit and landing. The pilot estimated minimum separation at 400 m horizontally and 200 ft vertically; he felt there had been a medium to high risk of collision. While taxiing in he asked the controller if he had had control of the conflicting traffic, to which the reply was "maybe". The ambiguity of this response caused him some concern and on querying it with ATC later on the telephone, he was advised that another ac, the subject PA28,



was believed to be the other traffic concerned and that its pilot had either misunderstood or failed to carry out joining instructions. The pilot comments that the crew had experienced a number of similar incidents at Blackpool in recent months where conflicts had arisen with traffic that had not been advised to them by ATC. He said that this problem, which affects both VFR and IFR arrivals and departures, appeared to be particularly prevalent when controllers were handling large numbers of ac in the circuit.

**THE PA28 PILOT** reports that he had departed from Manchester Barton for Blackpool in VMC; the visibility was 15 NM. He was squawking 7000 with Mode C. When about 10 NM SE of Blackpool, tracking NNW at 2000 ft (QNH) and 105 kt, he contacted Blackpool ATC to request joining instructions and obtain a FIS. Shortly after this he requested permission to fly up the coast northbound towards the Blackpool Tower; this was approved, with the instruction that he was to route to the E of the field. He turned R onto a northeasterly heading to comply and descended to 1500 ft. Having skirted the airfield, he turned onto a WNW heading at 105 kt, maintaining 1500 ft, and ATC asked him to fly direct to the coast and to report crossing it. Approaching the coast ATC requested his position, shortly after which he turned N and tracked towards the Tower; he believes that the

incident might have occurred in this area although he did not see any other ac at the time. Subsequently, when in the vicinity of the Blackpool Tower, he reported turning inbound at 1500 ft to join on a R base for RW 28.

**ATSI** comments that the Blackpool controller was operating a combined ADC/APC function. He reported his workload as medium at the time of the occurrence.

The Shorts 360 pilot contacted Blackpool at 1740 reporting descending to 3000 ft; he was asked to report passing a range of 15 NM DME from Blackpool ILS. The PA28 pilot established contact with Blackpool shortly afterwards; as his ac was approaching from the S he was instructed to report the N bank of the River Ribble, and to expect a L base join for RW 28.

In accordance with published procedures for an ILS DME approach for RW 28, the Shorts 360 pilot was cleared to descend to an altitude of 2000 ft after passing 15 NM DME. The controller, anticipating that the ac would make a visual approach, requested the pilot to report the airport in sight. Following this, the PA28 pilot requested clearance to route to the N of the airport to fly along the beach at 1500 ft before returning southbound. Its pilot was instructed to pass at least 2 to 3 miles E of the airport and was informed that the circuit was active. (The circuit height at Blackpool is 1000 ft.) The controller commented that usually such transiting ac are routed to the W of the airport. However, he considered that on this occasion, in order to avoid it having to cross the path of the Shorts 360 inbound from the W, it was expedient to route the PA28 to the E. He assumed that, providing the PA28 remained outside the ATZ (a circle radius 2.5 NM centred on RW 10/28), the subject acs' flight paths would not conflict. This, he said, was his intention when instructing the PA28 to pass 2 to 3 miles E of the airport. He agreed that with hindsight this clearance was not specific enough to ensure that the PA28 remained outside the ATZ during its transit; namely, there was nothing to stop the ac, once it had passed E of the airport, from turning directly to the coast, thereby routeing close to the RH

downwind leg for RW 28. At 1743 the Shorts 360 pilot reported at 10 NM DME and visual with the airport. The Blackpool MATS Part 2, Page 3/6, states that: "When Blackpool Radar is not available, IFR arrivals joining for visual circuits will normally be instructed to descend 'not below 1500 ft QFE' until ADC is able to apply reduced separation in the vicinity of the aerodrome". Accordingly, the flight was cleared for a visual approach to join RH downwind for RW 28, but not below 1500 ft until advised, because of circuit traffic. The controller said that he saw the PA28 pass to the NE of the airport and estimated that it was outside the ATZ. He considered that even if its pilot turned directly for the coast from that position, the ac would not conflict with the Shorts 360. He commented that he did not see the ac again until it rejoined the circuit. He saw the Shorts 360 when it was about 5 NM off the coast and anticipated that it would "coast in" within the ATZ to the S of Blackpool Tower. Because of this, and the anticipated relative position of the PA28, he decided it was not necessary to pass traffic information to the subject ac.

At 1745, the PA28 pilot reported turning N overhead the beach and, less than one minute later, the Shorts 360 pilot was informed that there was no height restriction for his approach. Information was passed about the circuit traffic, a Cessna ac on base leg. The pilot replied that he could see traffic at 9 o'clock, in a R turn, just off the coast. The controller said that neither he nor his assistant, who was also present in the VCR, could see the traffic that the Shorts 360 pilot was referring to. Subsequently, the Shorts 360 pilot reported sighting the Cessna ahead and proceeded to final in turn. The PA28 pilot reported turning southbound and positioned R base behind the Shorts 360. Whilst taxiing, the pilot of the Shorts 360 queried whether the traffic he had seen near the coast at the same altitude was in contact with Blackpool ATC. The controller explained that because several ac were operating locally to the N of the airport he was uncertain as to which ac the pilot may have seen. He did not consider, at the time, that it was the subject PA28. The radar recording of the event shows a return, squawking the conspicuity code 7000, following the routeing



reported by the pilot of the PA28. At 1745:56, this ac is seen about 1 NM away from the Shorts 360, on a diverging track, at the same altitude. The recording reveals that the PA28 tracked just inside the ATZ as it transited N of Blackpool airport; the pilot of the PA28 later reported that he had not seen the Shorts 360 during this portion of his flight. MATS Part 1, Page 3-23, states, under the heading of "Integration of VFR flights with IFR traffic/Control of VFR flights", that: "Although in Class D,E,F and G airspace separation standards are not applied, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic. This objective is met by passing sufficient traffic information and instructions to assist pilots to see and avoid each other. It is accepted that occasionally when workload is high, the traffic information passed on ac in class F and G airspace may be generic rather than specific".

Note: A replay of the Cleve Hill radar at 1742:42 shows a return squawking 7000 2 NM E of Blackpool tracking northbound at 1700 ft Mode C. This return, believed to be the PA28, then fades from cover, reappearing at 1745 2 NM N of Blackpool airport heading WNW at 1600 ft Mode C. At this time the Shorts 360 is at its 11 o'clock 4.5 NM away heading WSW and descending through 1600 ft Mode C. At about 1746 the PA28, having just crossed the coast, commences a R turn as the Shorts 360 passes opposite direction down its port side about 1.5 NM away; at this time both ac are indicating 1600 ft Mode C.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, a radar video recording, and a report from the appropriate ATC authority.

Initial discussion centred on the PA 28's routing and the instructions passed to its pilot by Blackpool ATC. A pilot member wondered

whether the PA28 pilot had actually been given a clearance to enter the ATZ and, if he had, why the ac had not been under positive ATC control. ATCO members said that entry clearance was implicit in the ATC instruction to route to the E of the airfield, albeit it was evidently assumed by the controller that the ac would in fact track outside the ATZ, or sufficiently wide of it not to constitute a threat to the Shorts 360; the controller did not, therefore, see the necessity to provide the PA 28 with a control service or, indeed, pass its pilot traffic information on the Shorts 360. ATCO members pointed out that the Shorts 360 pilot had opted for a visual approach to the airfield and the PA 28 was operating under VFR. In these circumstances the controller's only responsibility, apart from limiting the descent of the Shorts 360 to 1500 ft as required by the MATS Pt 2, was to pass relevant traffic information to the pilots of both ac to enable them to effect their own separation.

Despite his non-specific instructions, members felt that at no time did the controller appear to know that the PA 28 was tracking considerably closer to the airfield than he expected, and thus in opposition to the Shorts 360 approaching from the W. This is supported by the RT recording which suggests that the controller was unaware of the position of the PA 28 when it made its westerly turn towards the coast, despite apparently having seen it to the NE outside the ATZ.

Members were unable to explain the considerable discrepancy between the Shorts 360 pilot's estimate of lateral separation (400 m) and the evidence of the radar recording which showed that the ac were in fact some 1.5 NM apart at their closest. This led some members to view the incident as a sighting report. However, in deference to the Shorts 360 pilot's belief that the PA 28 was unknown traffic in the circuit and therefore a threat to his safety, the Board as a whole concluded that the lack of awareness of the PA 28's position by the Blackpool controller and the absence of relevant traffic information to both pilots caused the Airprox.

Taking note of the appreciable lateral separation shown by the radar, members did

not consider there had been a risk of collision.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: The Blackpool controller did not appreciate the position of the PA 28 and did not pass relevant traffic information to either the Shorts 360 or the PA 28 pilots.

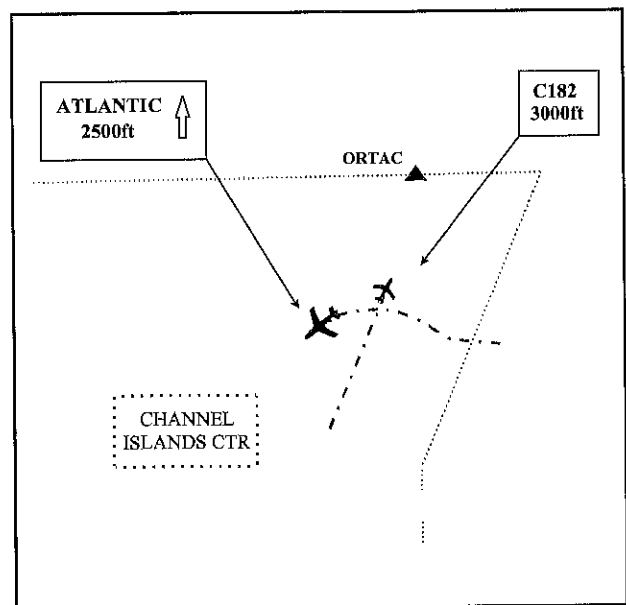
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### **AIRPROX REPORT 25c/98**

**Occ No. 98/04315**

*Date:* 28 July 1998  
*Time:* 1408 UTC  
*Aircraft:* Atlantic/C182  
*Operators:* Foreign Military/Private  
*Position:* 10nm North North East of Alderney  
*ALT/HT/FL:* 3000 feet  
*Airspace Type:* Channel Islands CTR – Class A  
*Reporter:* Jersey ATC - Zone Controller  
*Reported Separation:* 1nm horizontal/500 feet vertical  
*Recorded Separation:* 1nm horizontal/500 feet vertical



### **THE INCIDENT**

The C182 was enroute from Guernsey to Bournemouth at 3000 feet in the Channel Islands Control Zone under the control of the Jersey Zone controller. The Atlantic was operating at varying altitudes on a maritime exercise from Lorient and the pilot had Jersey Radar selected on one of his radios although he did not contact the Jersey controller until after the AIRPROX had occurred.

The Jersey Zone controller first saw the Atlantic on radar at about 1400 UTC operating at low level to the North West of Alderney. Note:- This was within an area where French military aircraft may operate up to altitude 1000 feet without obtaining a clearance from the Zone controller provided certain conditions are met.

The Atlantic then climbed above altitude 1000 feet before it headed East to depart the Zone. It manoeuvred for a few moments before turning West again and re-entered the Zone below altitude 1000 feet. Meanwhile the C182 was tracking in a north-easterly direction towards ORTAC at altitude 3000 feet. At about 1407, the Atlantic began climbing again and approached the C182 from the East before passing behind it by approximately 1nm. A record of the flight path provided by the military authorities shows the Atlantic, timed at 1407, indicating altitude 1044 feet just to the East of the route flown by the C182 about 10nm North East of Alderney. It is then shown climbing further to reach a maximum altitude of 2475 feet, at 1409, before slowly descending as it clears the position of the C182 to the West.

When the Jersey controller first noticed the Atlantic's squawk at low level, the zone traffic was extremely light due to fog in the Channel Islands area and so he decided to monitor the situation. When the Atlantic re-entered the zone and began to climb he tried to discover its full identity from Brest Control. As the aircraft approached the C182 from the right, he gave the C182 pilot traffic information and after the traffic had passed behind at approximately altitude 2500 feet the C182 pilot reported on the RTF seeing it in his 7 o'clock position. The pilot said that, "it could be an Atlantic depending on its range", which was by then approximately 4nm.

In his written report, the C182 pilot recalls being advised by the Jersey Zone controller of an unauthorised penetration of the Jersey Zone by an aircraft which was below and behind him. He was asked by the controller if he could identify it, and as he was 'good VMC' (sic) agreed to try and do so. After a few minutes, during which the controller constantly kept him advised of the others position and distance, he was able to see it in his half past six o'clock position. He could not positively identify it but it looked like a HS748 or Atlantic type. The pilot reported first sighting the unknown at a range of 4.5nm and the minimum vertical separation as 500 feet with no estimate of the minimum

horizontal separation. He assessed the risk as very low.

The Atlantic's operating authority reported that the pilot was listening to Jersey Control on one radio box and to Cherbourg airport on the other as he was expecting an aircraft to take off from that airport. They report that he was originally under the altitude at which Jersey had to be contacted and that due to poor weather conditions for visual flight, he climbed to altitude 2500 feet without contacting Jersey despite the regulation requiring him to do so. He was fully concentrating on the execution of his task and forgot that he had to keep in radio contact with Jersey ATC.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Atlantic pilot who did not comply with the Letter of Agreement governing his operations in the Channel Islands Control Zone and climbed without clearance from Jersey ATC and into conflict with the C182.

The Atlantic's operating authority have taken appropriate action to ensure that further incidents of a similar nature do not occur.

### **REVIEW BY AIRPROX PANEL**

- 1 Discussion: The Panel had nothing to add to the Summary of CAA Action.
- 2 Causal Factors: The Atlantic pilot infringed the Channel Islands CTR and conflicted with the C182.
- 3 Risk Classification: C
- 4 Recommendations: The Panel had no recommendations to make.

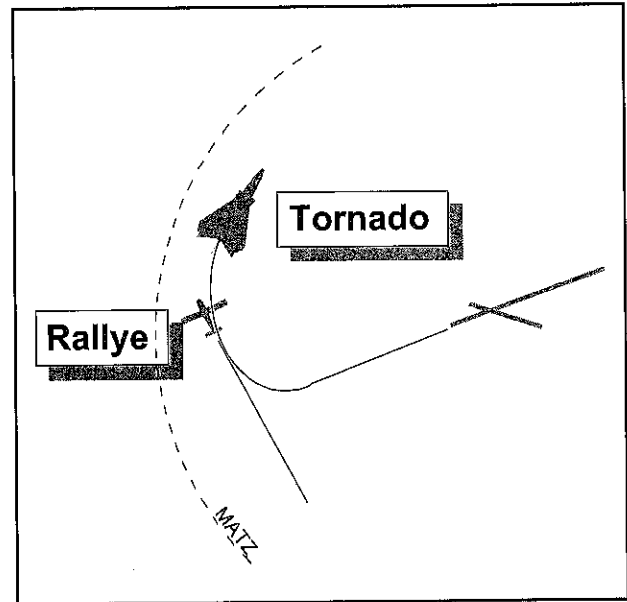
## AIRPROX (P) REPORT No 91/98

Date/Time: 29 Jul 1004  
Position: N5305 W0017 (4 NM W of  
Coningsby - elev 25 ft)  
Airspace: MATZ (Class: G)  
Type: Tornado F3 Rallye MS880  
Operator: HQ STC Civ Pte  
Alt/FL: 2-3000 ft ↑ 1500 ft  
(QFE 1002 mb) (QNH 996 mb)  
Weather: VMC CLBL VMC CLBC  
Visibility: 10 km 10 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE TORNADO PILOT** reports turning right in a climb at 320 kt after take-off from Coningsby. Between 2-3000 ft he saw a low wing single engined ac in his 1 o'clock and pulled up sharply to avoid it, missing it by about 200 yd and somewhat above it. The risk of collision was high. He was receiving a RIS from Coningsby but had not been informed about the light ac which continued straight and level; its pilot did not appear to have been aware of his passage.

**THE RALLYE PILOT** reports heading 360° at 75 kt en route to the Waddington Air Safety Day at 1500 ft. He had talked to Lakenheath and Coningsby who told him to report at East Kirkby (CGY 070/7) which he had some difficulty identifying and set course for Bardney (CGY 325/9). He was released to the Waddington Director on 132.9 and also had difficulty identifying Bardney. He made some orbits to check his position and to avoid weather and advised Waddington that he was unsure of his position, requesting assistance. He was asked to head N and climb to 3000 ft, which he could not do because of the cloud although he did start a climb. He was told he was SE of Waddington and to maintain heading and it was at about this time that he saw a military ac climbing away to the NE. There was no turbulence but some jet noise. He was unable to assess any risk of collision as he only saw the ac going away.



Note: The Claxby radar recording shows the Tornado departing Coningsby at 1003 on a track of 252° and entering a right turn. A very intermittent primary only return is tracking 338° some 4 NM W of Coningsby and the Tornado passes it very close in plan at 1003:55, passing a similar track in its turn, while its Mode C showed between 2200 ft and 3100 ft. Its rate of climb at the time is 7800 ft/min. (The Tornado's Mode C had showed 100 ft while stationary on the ground.)

**HQ MATO** reports that the Tornado departed on a SID2 from RW 26 at RAF Coningsby squawking 3740 with Mode C. Coningsby Approach (CGY APP) was providing an ATS to three other tracks transiting the Coningsby MATZ and a Dominie had also been pre-noted for a PD. The Tornado crew called CGY APP on 312.22 and reported levelling initially at 1000 ft on the SID prior to the stipulated right turn onto 050°. CGY APP identified the Tornado and placed the flight under RIS in accordance with the Coningsby FOB. The pilot was instructed to climb to FL 150 and at 1003:26, some 30 seconds before the Airprox, CGY APP passed traffic information on an unknown track, "...traffic north-west 2 miles slow moving north bound no height information". The Tornado pilot acknowledged immediately "Roger cleared climb SID 2...". The Dominie crew then called CGY APP and a long RT dialogue ensued

regarding the recovery. At 1004:35, the Tornado pilot reported *"...we just had an Airmiss half way in the turn there in the climb...a single light about 3000 ft heading north-west"*.

The reported ac was subsequently identified as the Rallye, one of 120 ac which flew to Waddington for the Air Safety Day. The pilot had initially called Waddington Director (WAD DIR) on 132.9 at 0938; the ac was identified, placed under FIS at 1400 ft and given the QFE (995 mb). It had no transponder. WAD DIR, APP and Zone, assisted by an overload controller, were working under an extremely high traffic loading during the arrival of the visiting light ac. The weather was colour code WHITE with scattered cloud 100 ft below the main cloudbase of 2500 ft. The Supervisor (WAD SUP) transferred the Rallye from DIR to APP, who had VHF DF, to facilitate safe sequencing during the recovery. At 0941:10, when WAD DIR instructed the Rallye pilot to continue with WAD APP there was no reply. Further transmissions from DIR and APP to the Rallye pilot went unanswered. At about 0945, WAD DIR transmitted blind to the Rallye pilot to continue to Bardney VRP and orbit. A primary contact was detected over the VRP and further transmissions were made but to no avail. It was considered that the Rallye pilot might be returning home in accordance with the brief for the Air Safety Day. At this point WAD APP and DIR each had 5 ac under service and Zone had 7 and WAD SUP was unable to divert his attention from the recovery scenario. Further attempts at RT contact all failed until 0959:16 when the Rallye pilot responded to a call from WAD DIR, *"...I had to do an avoiding action to go around some cloud and I'm temporarily unsure of my position. Could you give me a fix please?"* WAD DIR ascertained that the Rallye pilot could orbit in position and maintain VFR. At 1000:41, the Rallye pilot reported at 3000 ft and was instructed to call WAD Zone for a VDF bearing, who ascertained that the Rallye pilot had missed his turning point at Bardney and required vectors for Waddington. At 1002:43, the Rallye was identified by Zone about 5 NM SW of Coningsby and the pilot instructed to fly at 2000 ft QFE. The WAD Zone Overload Controller attempted to pass traffic information

to Coningsby when it became apparent that the Rallye could be a problem to departing Coningsby traffic. Simultaneously, a radar contact was seen to depart from RW 26 at Coningsby but the landline was already busy. Therefore, at 1003:40, the Overload Controller interjected *"...can I just cut in. Your traffic just released from RW 26 the traffic in his 12 o'clock 1 mile is at 2400 ft, light civil...just called us lost in your MATZ"*; this call was acknowledged by the CGY SUP about 6 seconds before the Airprox occurred. Subsequently, CGY SUP called Waddington and advised that the Tornado pilot had reported an Airprox. The Rallye pilot was informed of the Airprox after landing at Waddington.

This conflict in the Coningsby MATZ occurred after accurate traffic information had been passed by APP under the RIS as soon as the Tornado crew called. Although the CGY SUP noted the potential confliction before the Tornado departed, it would have been unreasonable in the prevailing weather conditions to have held the Tornado on the ground until the Rallye had cleared from the vicinity, but the departure could have been modified to resolve the confliction. However, a formation of helicopters departing to the south would have complicated a rapid change of plan. Undoubtedly, the Tornado pilot was given little warning of the confliction. The Waddington ZONE Overload controller passed traffic information almost as soon as the Rallye was identified, but moments before the occurrence. Therefore, CGY SUP had little time to act upon it.

The controllers at RAF Waddington had been working close to the limit of their capacity for three hours, during which 59 civilian ac arrived at Waddington, piloted by individuals of widely differing ability. All three VHF frequencies were in almost continuous use. It is unclear why the Rallye pilot did not respond to Waddington's transmissions for over 18 minutes; satisfactory two-way RT should certainly have been attainable and there is no evidence to suggest that the WAD DIR VHF Tx/Rx was defective. Despite the extremely high workload imposed on Waddington ATC, D&D should have been

contacted when it became apparent that WAD DIR had lost RT contact with the Rallye pilot. Moreover, briefing material promulgated before the event emphasised that visiting pilots should either divert, or return to base in the event of a loss of RT contact in transit.

**HQ STC** comments that although this conflict occurred after traffic had been passed to the departing Tornado under the RIS from Coningsby APP, the crew did not subsequently remember this; although they acknowledged the SID clearance they did not appear to have absorbed the traffic information. Since Coningsby ATC were aware of the unidentified contact, the Tornado's departure could have been modified to avoid it. While the Waddington Zone controller discovered late that the Rallye was in the Coningsby MATZ, he was extremely busy with the workload imposed by the many ac arriving for the Air Safety Day.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the appropriate ATC and operating authorities.

The Board observed that despite everything that was going on the Rallye pilot was entitled to be where he was and that argument as to cause should be based on that. However, it was apparent that the pilot did not intend to enter Coningsby's MATZ unannounced but had been comprehensively lost. It appeared he had been trying to go from East Kirkby to Bardney which

should have taken him on a WNW track well N of Coningsby and had spent some 18 minutes without calling either Waddington or D & D on 121.5 for assistance. Members did not know what the pilot had been doing in that period, but considered that to be unsure of one's position for that long in UK airspace without calling on 121.5 was somewhat irresponsible. The GA member made the point that D & D were only too keen to help in these circumstances, and there was no charge. Any pilot, however experienced, could become unsure of his position; positive and prompt action is then required and a call to D & D is the easiest and quickest way to resolve this problem.

Members commended the fine job done in trying circumstances by Waddington ATC who had passed information on the Rallye to Coningsby at the earliest opportunity. Unfortunately this was only about 6 seconds before the Airprox. However, traffic information had been passed by CGY APP about 30 sec beforehand, arguably at about the ideal time for a pilot to spot and avoid a small ac. Any earlier call would probably not have helped except by offering a chance for repetition. Although the Tornado pilot could not remember being passed traffic information, the RT recording showed that he clearly had, but for reasons unknown he had not hoisted it in. The Board assessed that this communication breakdown was part of the cause of the Airprox, the main cause being that the Tornado pilot did not see the Rallye he was overhauling until very late. Furthermore, while he did see the Rallye in time, it was clear from his report and the radar recording that vigorous avoiding action had been required and that the safety of the ac had not been assured.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: Late sighting by the Tornado pilot, of the Rallye of which he had been given traffic information.

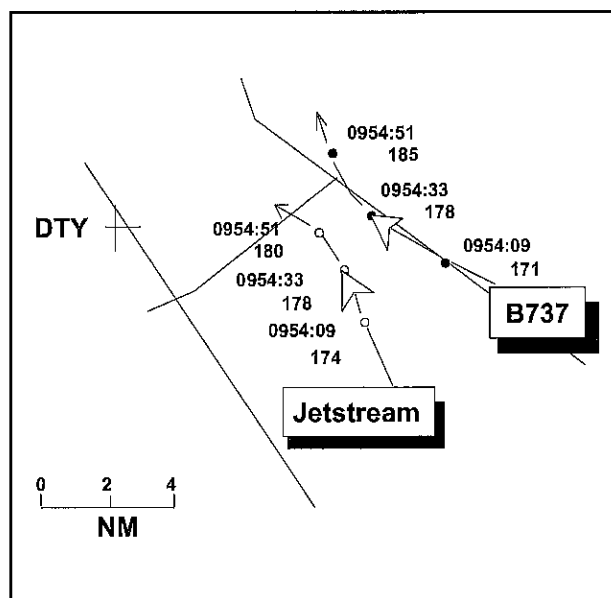
## AIRPROX (P) REPORT No 95/98

Date/Time: 01 Aug 0954 (Saturday)  
Position: N5210 W0055 (7 NM E DTY VOR)  
Airspace: LTMA (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: Jetstream B737  
Operator: CAT CAT  
Alt/FL: ↑ FL 180 ↑ FL 190  
Weather VMC VMC  
Visibility: >10 km >10 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE JETSTREAM PILOT** reports that he was heading 345° at 180 kt (IAS) under the control of LATCC. He was squawking 5006 with Mode C. The visibility, flying between accumulating Cb clouds, was over 10 km in VMC; the ac was in a high rate of climb to its cleared level of FL 180 with the autopilot engaged. When about to level off, the FO alerted him to the presence of another ac, a B737-400, at their 2 o'clock position which was following a similar but slowly converging track from their R and appeared to be climbing through their level. They remarked to each other that it seemed to be much closer than they would normally have expected. Almost immediately, ATC entered into an RT exchange with the pilot of an ac they believed to be this B737. There appeared to be some degree of confusion between ATC and the other pilot whose ac was by this time beginning to converge more rapidly towards them. Being unable to interject on the RT, the Jetstream pilot took the decision to initiate a L turn and shortly afterwards he saw the B737 also turn away from them. ATC then instructed him to turn L immediately onto 320° for avoiding action. During this turn he levelled at his assigned level of FL 180 and the B737 could be seen diverging safely into the distance about 1500 m away at the same level. He thought there had been a low risk of collision.

**THE B737 PILOT** reports that he was heading 320° at about 320 kt 40 NM S of the TNT VOR. He was under radar control from LATCC who had cleared him to climb to FL 190. The



visibility was over 10 km in VMC. When passing FL 170, the controller instructed him to turn R immediately heading 030° due to a traffic conflict. After landing he spoke to the ATC supervisor who advised him that the pilot of the other ac, a Jetstream, was filing an Airprox report and that the 2 ac had come within 1.6 NM of each other. He was told that this was due to an ATC error. He did not see the other ac and makes no assessment of risk.

**ATSI** reports that TC Midland SC was operating both Cowly and Welin sectors in the banded mode with a Co-ordinator. All equipment was fully serviceable. The SC stated that he felt adequately rested for the duty and had been in position for 10 minutes. He described the traffic loading as quite high and this view was endorsed in the Unit report; the report also stated that, having listened to the RT tape, the Deputy Watch Manager and Local Competency Examiner did not assess the frequency as overloaded.

The SC described this sector as one where traffic can increase in intensity very quickly and die down equally quickly. On the day of the incident he did not consider it necessary to split it into its component parts. During the period that the ac involved in the Airprox were on frequency, the SC was working an additional 12 ac, including at least one avoiding weather on

the W side of the sector and one awaiting a joining clearance at Daventry. The Jetstream pilot stated in his report that he was concerned with the loading on the RT at the time of the Airprox as he was unable to make a transmission to inform the controller that he was deviating from his assigned radar heading in order to avoid a B737.

The Jetstream, routeing from Southampton to Belfast City, came on frequency at 0948, level at FL 140 and on a radar heading of 020°, on which it was instructed to continue. At 0951 the pilot was instructed to climb to FL 180 which was the ac's requested cruising level. Immediately afterwards the B737, routeing from Stansted to Dublin, reported on the frequency reaching FL 120 and on a radar heading of 305°. The controller responded with an instruction to continue on the heading and to climb to FL 130. The TC SC would be expected to climb this ac to FL 190 in accordance with the standing agreement, TC Welin to AC Daventry. At 0952 the B737 was instructed to climb to FL 150 and the Jetstream was instructed to turn L heading 345°; the heading convergence of the two ac was then 40°. The SC said that his plan was to climb the B737 to levels vertically separated under the Jetstream until it was approaching its cruising level, at which time horizontal separation would be provided for the level change. At 0953 the B737 was instructed to climb to FL 190. Twelve seconds later the B737 was passing FL 149 and the Jetstream FL 164 with the distance between the two ac about 7.5 NM. The SC judged that this was sufficient distance apart for the B737 to outclimb the Jetstream. He also stated that as there was another TMA outbound ac outside the B737 he was reluctant to turn the B737 R. Post incident analysis showed that the climb rate of the B737 would have needed to be in excess of 3300 fpm to achieve vertical separation before horizontal separation with the Jetstream was lost. In the event, the rate achieved was in the region of 2300 fpm.

At 0954:10 the SC, having been warned by a colleague followed by activation of the conflict alert, realised the error and attempted to stop the B737's climb. He then changed this to an

immediate R turn onto heading 010° as avoiding action. As no response was received, this instruction was repeated 10 sec later and this time acknowledged by the pilot. The Jetstream pilot was then instructed to turn L heading 320° as avoiding action, and traffic information was passed; again no response was received. At 0954:40 the B737 pilot was instructed to turn further R heading 030° which was acknowledged. The SC then checked with the Jetstream pilot to ascertain whether the traffic information he had passed had been received, to which the pilot advised that he was in visual contact with the other ac. In his report, the captain of the Jetstream states that, because he was unable to get in on the RT, he initiated a L turn prior to the controller's instruction because he could see the other ac, which subsequently did prove to be the conflicting traffic. In the minutes 0953 and 0954 there were 15 and 13 transmissions respectively.

Note: A photograph of the LATCC radar at 0954:09 shows the 2 ac 8 NM SE of DTY as they track on converging headings about 3 NM apart, the Jetstream climbing through FL 174 and the B737 through FL 171. At 0954:33 the B737 has overtaken the Jetstream and is at its 2 o'clock position about 1.75 NM away; at this time both ac are indicating FL 178 climbing and both enter turns away from each other, the Jetstream to the L and the B737 to the R. By 0954:51 the B737 is passing FL 185, 2.5 NM ahead of and 500 ft above the Jetstream. Standard separation is restored very soon afterwards.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs, and reports from the appropriate ATC authorities.

The Board commended the Jetstream pilot for his intelligent monitoring of the situation and his timely avoiding action.



Members were surprised that the Cowly and Welin sectors had been combined. They considered the SC's assessment of the situation against the wider evidence available and concluded the level of traffic loading (12 other ac) and the non-stop RT transmissions, which prevented the Jetstream pilot from reporting his heading change, all suggested that these sectors should have been split; the ATSI adviser assured members that this was now done as a matter of course well before traffic loading reached high levels. The Board welcomed this assurance.

An Airline member thought the controller had been unrealistic to attempt to monitor the subject traffic's progress in a busy situation. ATCO members agreed that as a general rule any separation plan based on an "intention to monitor" was seldom 'fail-safe'. While under

some circumstances this technique could be useful if applied with the necessary caution, it was prone to break down if the controller's attention was distracted elsewhere, as it had been on this occasion. The accepted method of achieving a 'climb-through' under these circumstances is to establish the ac on parallel or diverging headings, laterally separated, before climbthrough is commenced.

The Board concluded that the Airprox occurred because the TC Midland SC did not provide the requisite lateral separation between the Jetstream and the B737 before vertical separation became eroded. Members were satisfied, however, that the Jetstream pilot's actions, together with the ATC turn instructions to the B737, had ensured sufficient separation between the ac to preclude a collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

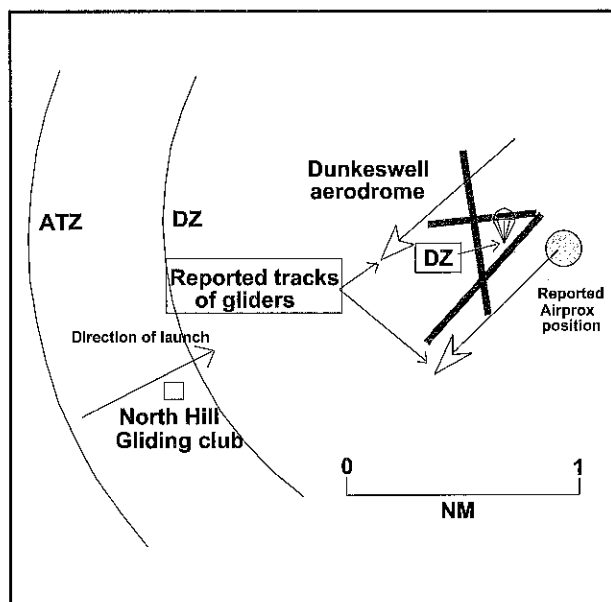
Cause: The LATCC TC Midlands SC did not ensure standard separation between the Jetstream and the B737.

**AIRPROX (P) REPORT No 98/98**

Date/Time: 02 Aug 1210 (Sunday)  
Position: N5051 W0314 (Dunkeswell - elev 850 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Parachutist Reported Aircraft Untraced Glider  
Type: Civ Club  
Alt/FL: 4500 ft ↓ (agl)  
Weather VMC CAVOK

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE PARACHUTIST** (who is also the parachute school's Chief Instructor) reports that



the dropping ac, a C206, had climbed to 10000 ft over Dunkeswell with two pairs of parachutists (in tandem) plus a cameraman on board. Owing to the wind direction and strength, the exit point was some 300 m to the E side of the airfield. The C206 pilot called DZ control on 129.9 for clearance to drop. Approval was given after a thorough search by the ground crew of the area above the exit point, and the pilot reported despatching on the airfield frequency, 123.475. The parachutist left the ac in the first tandem; after about 30 sec of freefall he deployed his parachute which opened at 4500 ft. Looking down between his legs, he saw a white high performance glider about 300 ft below him tracking W. He watched it fly under the second tandem pair and then cut across the S side of the airfield towards North Hill. A second glider was seen to pass across the N side of the airfield on a similar track. After landing, the DZ controller told him that he had also seen the glider.

The parachutist later telephoned the gliding club at North Hill to inform them of the incident and met one of their members that evening to discuss it. The member was of the opinion that the gliders were probably from outside the area. However, in a later conversation with the gliding club CFI, he was advised it was possible that a club glider might have been involved. The CFI reminded him that although Dunkeswell was NOTAMED for parachuting activities, it was legal for gliders to cross the airfield ATZ at 2000 ft agl; he also said that the gliding club had dispensation from the CAA to fly up to the edge of the airfield (see UKAB Note (2)), which the parachutist found very disturbing. (A full time parachute club has been in existence at Dunkeswell since 1965). The parachutist points out that sky divers can be in free-fall for 50 seconds and a glider transiting the area can cover a large distance in that time. Furthermore, not all gliders are radio equipped so DZ controllers are not always able to give warnings in these circumstances. Notwithstanding the legalities of flying within a NOTAMED parachuting area, parachutists believe that to do so displays poor airmanship which could easily lead to a fatality.

In a subsequent conversation with UKAB the parachutist commented that he had been operating from the airfield for many years without encountering problems with gliders; it was only recently that gliding activities seemed to have extended to include the airfield and DZ areas. He said that he had written to the gliding club to discuss ways of improving co-ordination between the two units but so far had not received a response from them.

**THE GLIDING CLUB CFI** comments that the gliding and parachuting organisations had worked in relative harmony for some 28 years. In that time there had only been one other incident, which involved penetration of the area by a powered ac while a glider launch was in progress. He intends proposing a meeting with the parachute school to discuss safety issues; included on the agenda will be notification of an imminent paradrop on a common frequency, parachuting activity when cloud cover is extensive, intended despatch locations and the possible time-tabling of DZ activities.

Note (1): The flying log for the gliding club reveals that 15 gliders were airborne from the North Hill site at the time of the Airprox. Thirteen of these were eliminated following examination of the log and extensive enquiries by the club's CFI. The pilots of the remaining two ac supplied data including maps, and barometric and route printouts. Analysis of these indicated that neither matched the flight profiles of the gliders reported or, in the case of one of the gliders, its colour scheme. Enquiries by AIS (Mil) to other glider airfields, including Perranporth, Eaglescott, Brent Tor, Nympsfield and Lasham, all proved negative. The reported glider, therefore, remains untraced.

Note (2): Subsequent enquiries to the appropriate CAA department revealed that there was no substance to the CFI's 'CAA dispensation' claim. However, following a discussion with the gliding club Safety Officer, it is believed that this was probably a reference to a Letter of Agreement (LOA) between the Devon School of Flying at Dunkeswell - who are the airfield's operators - and the Devon and Somerset Gliding Club at North Hill. Para 2 of

the LOA states that, *"The boundary of the (Dunkeswell) ATZ passes through North Hill airfield and a substantial part of the airfield lies within the Dunkeswell ATZ. However, it is accepted that gliders and other ac operating into and from North Hill may penetrate the Dunkeswell ATZ up to half way between the boundaries of the 2 airfields without calling Dunkeswell radio"*. Para 4 further specifies that aero-tows from North Hill in an easterly direction must not penetrate beyond this half way point. The parachutist had no knowledge of the existence of this document.

Note (3): The gliding club's Safety Officer said subsequently that having canvassed all the pilots who were airborne at the time of the incident, he was satisfied, with two possible exceptions, that none was involved. The fact that the reported gliders were flying in a westerly direction at around 4000 ft+ agl reinforced his belief that they were using Dunkeswell as a turning point. Gliders and parachutists at North Hill and Dunkeswell had co-existed satisfactorily for many years and problems with the shared airspace had arisen only recently. The gliding club was very willing to co-operate with the parachute school and would welcome any advice from the UKAB on how best to promote such an initiative.

Note (4): A replay of the LATCC radar tape shows a return with the parachuting conspicuity code 0033 climbing out to the NE of Dunkeswell at about 1145. The return levels at FL 104 and returns to the airfield where it turns L onto an easterly heading shortly before 1200. At 1200:20 the Mode C shows the ac commencing a descent; the parachutists are believed to have been despatched at about 1200:10. While considerable slow moving primary activity, believed to be gliders, can be seen taking place about 7 NM to the NE of Dunkeswell during the Airprox period, no returns are seen in the reported position.

Note (5): ENR 5-5-4-1 of the UK AIP notifies Dunkeswell for free-fall parachuting activity up to FL 150 within a circle radius 1.5 NM centred on 5052N 0314W. The airfield has a notified ATZ of radius 2 NM from SFC-2000 ft, which is

marked on the 1:500 000 chart together with a parachuting symbol.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included a report from the parachutist, reports from the pilots of two gliders from North Hill gliding club, and a radar video recording.

It was noted that both the parachutist and the gliding club CFI referred to the previous long-standing and successful co-existence between their organisations. In view of their location, and the potential incompatibility of their respective activities, members surmised that harmonious relations had evolved during 28 years of trust and co-operation between the two. Something unknown had disturbed the harmony and the Board agreed the best way forward would be for the two parties to meet amicably, examine their differences and discuss ways of restoring the previous status quo.

Turning to the Airprox, members emphasised the over-riding need for vigilance on the part of air and ground crews prior to approving a 'drop'. It was noted that, according to the parachutist's report, the gliders were flying at about 4200 ft above Dunkeswell, which put them well above the ATZ. The Board is invariably critical of airmanship lapses displayed by pilots who fly through NOTAMed areas as a result of poor flight planning and route execution; while they may not be breaking the law in these circumstances, pilots nevertheless risk prosecution under the Rule for 'endangering' if such flights are conducted in a thoughtless and unprofessional manner.

While the FIR embraces a diversity of sporting aerial activity in addition to normal GA flights, members stressed that individual airspace users should not presume any exclusive rights. On the one hand, pilots should take note of relevant NOTAMs during the planning stage, and thereafter conduct their flights in accordance with the requirements of good airmanship. On the other hand, authors of

NOTAMs should not assume that such notification guarantees them any degree of protection from other airspace users.

While appreciating the parachutist's concern about the presence of Gliders in the DZ area, members took the view that this Airprox was caused by a conflict of flight paths in Class G

airspace. The Board concluded that the vertical separation reported by the parachutist was sufficient to preclude any risk of collision with the glider, albeit members appreciated that in different circumstances the parachutist's ability to manoeuvre might have rendered him more vulnerable.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: A conflict of flight paths in the FIR.

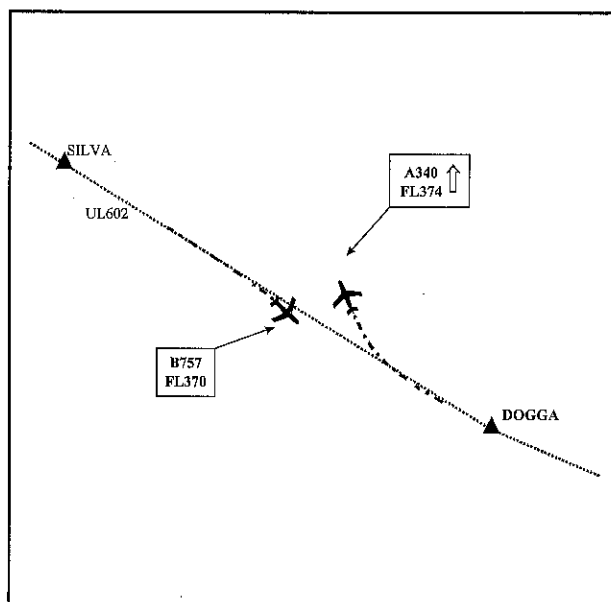
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### **AIRPROX REPORT 22c/98**

#### **Occ No. 98/04393**

*Date:* 3 August 1998  
*Time:* 0934 UTC  
*Aircraft:* B757/A340  
*Operators:* Foreign Airlines  
*Position:* 25nm North West of DOGGA  
*ALT/HT/FL:* FL370  
*Airspace Type:* Upper ATS Route (UAR) – Class B  
*Reporter:* LATCC Area Control - Goles Sector Controller  
*Reported Separation:* 3.7nm horizontal/300 feet vertical  
*Recorded Separation:* 3.25nm horizontal/400 feet vertical



### **THE INCIDENT**

Both aircraft involved in this AIRPROX were under the control of the LATCC Area Control (AC) Goles Sector controller. The B757 was en route from Keflavik to Luxembourg at FL370 on Upper ATS Route (UAR) UL602. The A340 was also on UL602, but in the opposite direction, en route from Dusseldorf to Newark, New Jersey and in the climb from FL350 to FL390.

The B757 pilot contacted the Goles controller at 0925.20 and was cleared by him direct to

DOGGA, then BLUFA. At the same time the A340 pilot who was at FL350, under the control of the Beeno controller, requested a climb to FL390. The Beeno controller asked the pilot to, "standby", while she co-ordinated this request with the Goles controller who is positioned adjacent to the Beeno control position. At this time, when the two aircraft were about 120nm apart the climb to FL390 for the A340 was agreed between the two sector controllers. However, the DOGGA flight progress strip (fps), which is displayed on the Goles sector fps

board, was not annotated with the agreed change of level for the A340.

Note:- Whilst the appropriate section of the Manual of Air Traffic Services (MATS) Part 2 lays down procedures for inter sector co-ordination fms marking, it does not mention intra sector responsibilities. It emerged at subsequent interviews with the controllers involved in this incident that custom and practice on the North Sea Sector Suite dictates that the receiving controller is responsible for annotating the relevant fms. However, this procedure is not always followed and if, for example, the receiving controller is busy, the offering controller may write on the relevant fms. Also if the co-ordination is overheard by the Chief Sector Controller (CSC), he may annotate the fms.

At 0929.10, the A340 pilot was instructed to change frequency to the Goles Sector, which he did, calling at 0929.30 with, "London good morning (callsign) climbing flight level three nine zero". This was acknowledged by the Goles controller. Both aircraft were now on the Goles Sector frequency, on reciprocal tracks about 60nm apart, the B757 at FL370 and the A340 climbing from FL350 to FL390, but the fms still indicating the A340 at FL350.

Meanwhile, the Beeno controller had been relieved and as part of the handover brief to the oncoming controller had stated the correct details regarding the A340. These details showing the climb to FL390 were also displayed on the BEENO sector fms.

At 0933.16, the Goles controller gave the B757 pilot a 10° heading change to take account of the bend in the route at DOGGA. The radar pictures, timed at 0933.17, show the two aircraft, now 25nm apart, head on at FL370. At about this time, the oncoming Beeno controller noticed the two aircraft at FL370 and warned the Goles controller of the confliction. A warning was also received by the activation of the radar Short Term Conflict Alert (STCA).

The Goles controller reacted to these warnings at 0933.25, by instructing the A340 pilot, "(callsign) turn right twenty degrees". The pilot

acknowledged this, giving his new heading as 332°, to which the controller responded, "Thank you that's er emer... avoiding action turn right twenty degrees please". The controller then immediately repeated the message saying, "(callsign) avoiding action turn right two zero degrees". The pilot replied with, "er (callsign) I say again turning right two zero deg....", and then, "That's at three three two". The controller then transmitted to the B757 pilot at 0933.50, "(callsign) avoiding action turn right heading one eight zero". This transmission was immediately repeated and then it was followed, at 0933.58, with a further turn to the A340 pilot, "(callsign) continue the right turn heading three four zero". The radar pictures, timed at 0933.57, show the two aircraft head on at a range of approximately 15nm, with the B757 at FL370 and the A340 climbing through FL372.

At 0934.20, the controller instructed the A340 pilot, "(callsign) traffic in your eleven o'clock range ten miles closing rapidly turn right immediately". The A340 pilot replied, "(callsign) turning further right", whereupon the controller queried with the B757 pilot, "(callsign) confirm turning right heading one eight zero traffic in your twelve o'clock closing range eight miles". The pilot replied, "That's confirmed (callsign)", to which the controller replied, "Roger turn right immediately", and followed this about ten seconds later with, "(callsign) traffic in your ten o'clock range three miles right to correction er". The B757 pilot responded at 0935, "(callsign) has the traffic in sight", and followed immediately with, "London (callsign) has the traffic in sight and we're clear of it". Radar pictures show the avoiding action turns beginning to take effect as first the A340 and then the B757 turn right. The radar pictures, timed at 0934.59, show the aircraft passing each other, with horizontal separation of 3.25nm, the B757 maintaining FL370 and the A340 climbing slowly through FL374. The two aircraft are then vectored back on track and cleared to resume their own navigation before being handed over to their next respective enroute sectors.

The Goles controller had assessed his workload as medium to high. He agreed co-

ordination with the Beeno controller for the A340 to climb to FL390 as he thought that this was not a problem. It was further agreed that, if necessary, headings would be used. The DOGGA fps was not annotated because of workload at the time. When the B757 and A340 aircraft were seen to be head-on at FL370, approximately 30nm apart, immediate avoiding action was given. The instruction to the B757 pilot had to be repeated as no turn was observed on radar. Verbal co-ordination was agreed when he was busy and neither controller had marked the fps. The Goles controller believed that separation would have been achieved if the B757 pilot had taken the turn. He stated later that when he was warned by the oncoming Beeno controller of the two flights at FL370, his first reaction was that it had occurred due to a level bust by the A340 pilot.

The Beeno controller had discussed, with the Goles controller, the possibility of climbing the A340 to the requested level of FL390 and as the B757 was then just passing the Newcastle VOR, approval was given for the climb, and the plan was to use headings if necessary. She did not annotate the DOGGA fps as the climb was approved by the Goles controller and the fps was on his flight progress board. The aircraft was transferred early to the Goles controller, still climbing and before reaching DOGGA.

The CSC reported that he had been on the telephone when the Beeno SC, who had just taken over the sector, asked, "Who is controlling the two FL370s?". He looked at the radar and saw the A340 and B757 both at FL370 although the DOGGA fps showed the A340 at FL350. The Goles controller gave avoiding action but the B757 pilot did not appear to take the instruction which was repeated three times (sic, in fact it was twice). Had the B757 turned immediately as instructed, the CSC believed that separation would not have been lost.

Much of the post incident follow-up discussions with the controllers concerned centred on the procedures for intra sector co-ordination. The Goles controller stated that he thought that he should have written the revised level on the fps. The Beeno controller said that she would have

amended the level box but believed that the Goles controller was about to do it. The CSC said that he was busy at the time of the intra sector co-ordination otherwise he would have annotated the fps.

Because the Beeno and Goles controllers carried out the co-ordination directly and not through a telephone or intercom, no record of the discussion exists and their recollection of the co-ordination differ slightly. The Goles controller said that at the time he was busy monitoring a pilot's readback and the callsign of the A340 did not register, although he did realise that the co-ordination concerned a '....company.....' flight. His recollection was that the Beeno controller had said that if the aircraft got close vertically they could be placed on radar headings to maintain 5nm separation. The Beeno controller recollected that the Goles controller, when agreeing co-ordination, had said he would put the aircraft on radar headings if it proved to be necessary. Both controllers agreed that it would not have been practicable to issue radar headings straight away as UL602 turns at DOGGA. The Beeno controller said that she believed that the Goles controller would write the revised level on the DOGGA fps as she remembered that his hand was poised over it at the time of the co-ordination, as if ready to write the revised information.

Note :- In an audit of LATCC (AC) carried out by the Safety Regulation Group's Air Traffic Services Standards Department in 1997, and published as Audit Report 1/97, it was noted that, "There was clearly observable difference between North Bank and South Bank controllers with respect to strip marking to indicate agreed Intra Sector co-ordinations, sector controller to sector controller. Primarily North Bank controllers made NO fps marking to indicate the agreed co-ordination. The difference in technique was most marked where North and South Bank controllers worked together". A recommendation was made in a subsequent letter that "LATCC Operations to consider introducing procedures that ensure that all controllers use a consistent fps marking when indicating Intra Sector co-ordinations".

In a covering letter to the report by the A340 captain, it was stated that at the time of the incident atmospheric conditions were found to be worse than forecast in terms of performance related data. The outside air temperature was approximately 20° above International Standard Atmosphere (ISA + 20°C) conditions which dramatically affected the climb capabilities of the aircraft. At FL370, the climb rate was such that the flight crew were about to report this to ATC when the controller called a heading change for opposite direction traffic at FL370. At about that time, the opposite direction traffic came within range of the TCAS and a Traffic Advisory (TA) was generated shortly afterwards. A TCAS Resolution Advisory (RA) was received when the aircraft were almost passing each other, but it was evident that no risk existed. Note:- The radar pictures of the incident show that in a period of 54 seconds the A340 climbed only 200 feet which is well below the required minimum of 500ft per minute as stated in the UK AIP.

When contacted, the B757 pilot recalled nothing special about the flight concerned. However, he did remember during one recent flight being requested by ATC, at about DOGGA, to turn immediately due to traffic. The traffic was not sighted and he did not get a TCAS warning.

Note:- This is at variance with the RTF recording where the B757 pilot reported visual with the traffic.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Goles controller who, although he had co-ordinated the climb of the A340 to FL390, did not write the revised cleared level on the DOGGA fps and consequently allowed it to climb into conflict with the B757 at FL370. In addition, the Goles controller should have been aware of the situation when the A340 pilot made his initial call on the Goles frequency, reporting climbing to FL390.

In mitigation, there appears to be some ambiguity in the responsibilities for fps marking, following intra sector co-ordination and that the correct procedure needs to be clarified. Therefore, it has been recommended that LATCC management review and report the progress on the recommendation made by the Air Traffic Services Standards Department following the 1997 audit, with reference to indicating responsibilities for fps marking for Intra Sector co-ordinations in the MATS Pt 2 local operating instructions.

### **REVIEW BY AIRPROX PANEL**

#### **1 Discussion:**

There was a long discussion concerning the wisdom of the agreement between the Goles and Beeno controllers to clear the A340 to climb through the B757's level. Calculation carried out in slow time, rather than the real time busy conditions, showed that the A340 achieved a climb rate of 500 fpm vertical separation would probably have been achieved just before horizontal separation was lost. In this scenario, controller members were divided; some believed, on the basis of experience, that it was alright to "go for" the climb although tempering this with the caution that it would be necessary to assess the climb rate of the A340 at an early stage.

On the other hand, some members argued that the 'climb through' was not, from the outset, a safe plan. Additionally, at the flight level in question, almost any aircraft would have a slow rate of climb and the Panel has consistently campaigned for controllers neither to rely on aircraft performance nor on monitoring. This school of thought would advocate that a fundamental control error had been made and that this was the prime cause of the AIRPROX. All agreed that the slow climb rate of the A340 had made the situation worse but,

because the controllers had not done what they had agreed to do (ie monitor the situation), this removed it as a causal factor.

In passing, the Panel noted that the A340 had only recently levelled at FL350 and that a very poor rate of climb, as a result of the ISA + 20°C, should have already been apparent to the A340 pilot during the latter stages of the previous climb. It would seem that he knew that he had to report a rate of less than 500 feet per minute because he said in his report that he was about to report this to ATC. The lack of such a call was considered to be a contributory feature. Nevertheless, it has to be recognised that the A340 pilot's first call that he was climbing to FL390 had not registered with the Goles controller. However, the Panel thought that a call from the A340 pilot informing him of the very poor climb rate might have alerted the controller to the potential conflict. *The lack of such a call was considered to have contributed to the AIRPROX.*

Turning to the omission to annotate the DOGGA fps on the Goles controller's flight progress board, members agreed that a practice where, according to circumstances, either of the sector controllers or the CSC might do the marking cannot be judged as a failsafe procedure. It believed that the procedure for fps marking as a result of intra sector co-ordination should be no less robust or consistent than that for inter sector agreements. The Panel would, therefore, support the audit report recommendation referred to in the account of the incident.

The Panel next considered the question of how important to the Goles SC was the omission to mark the fps. Would a correctly annotated DOGGA fps have prevented the AIRPROX? After discussion, members could not be certain that it would have done so. The Goles controller was very inexperienced, appeared to be struggling, had not understood the importance of the A340 pilot's initial call and had not monitored the situation as agreed. The Panel believed he might well have been saturated.

2 Causal Factors: The Goles SC did not provide standard separation between the A340 and B757.

3 Risk Classification: C

4 Recommendations: The Panel had no recommendations to make.



## AIRPROX (P) REPORT No 97/98

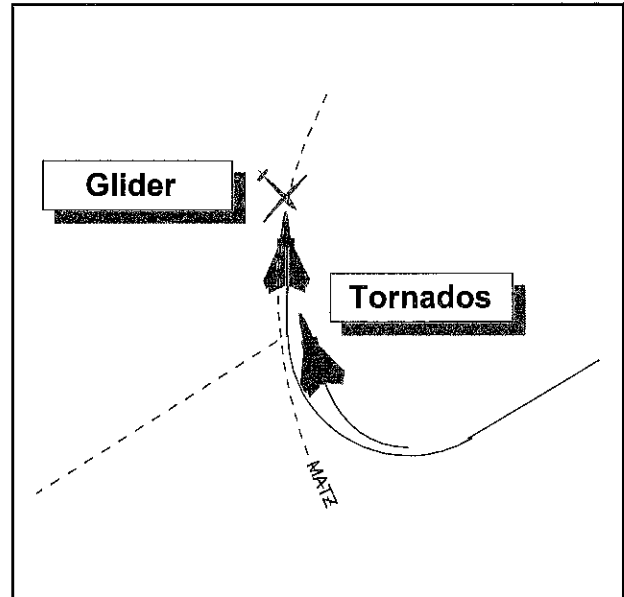
Date/Time: 05 Aug 1354  
Position: N5240 E0025 (5 NM WNW of Marham - elev 75 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Tornado GR Glider  
Operator: HQ ST Untraced  
Alt/FL 3500 ft ↑ (1013 mb)  
Weather VMC CLOC VMC  
Visibility: 10 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE TORNADO PILOT** reports heading 360° at 300 kt in a right turn after take-off from Marham's RW 24. ATC had warned him of a helicopter in the area at 200 ft and he had been looking for it when, on looking up he saw a glider turning just below his nose. It was white with red or orange near the wing tips. He pulled up, checking his height which was FL 35, and passed about 300 ft above it 4-5 sec after seeing it. His wingman called it as he pulled up. He reckoned he would have passed about 100 ft above it had he not taken avoiding action.

**THE GLIDER PILOT**, despite many hours of effort by AIS (Mil), remains untraced.

**HQ MATO** reports that as the Tornado GR1 section was approaching the holding point prior to departure from RW 24 at RAF Marham, the Aerodrome controller (ADC) contacted Approach (APP) and requested a 'release'. The ADC had previously been notified by Marham Zone of a helicopter under a FIS inbound to a private landing site (LS) at Runcton Holme, adjacent to the MATZ boundary 6 NM W of Marham. At 1350:15, APP advised that the helicopter was "...about 500 ft finals at Runcton Holme" and would not affect the departure, so the 'release' was approved. The Tornado leader contacted APP on 268.875 at 1353:52, climbing to FL 190 and squawking 6132. 'Angel Suppression' had been selected on the Marham Watchman SRE. Consequently, APP advised



that the section was "...identified Radar Information Service limited from all round using suppressed radar" and passed traffic information, "as you turn traffic north 3 miles rotary traffic inbound to Runcton Holme last known passing 200 ft". This was acknowledged by the Tornado crew at 1354:16, "...roger looking out". At 1354:43, some 27 seconds later, the Tornado leader reported to his wingman "...glider going underneath". Moments later the Tornado leader advised APP, "...just had a very close encounter with a glider", to which APP responded "that's what we believe was rotary traffic inbound to Runcton Holme". Whereupon the Tornado leader reported that the glider was at about 3500 ft and that the contact upon which traffic information was passed was not, therefore, the helicopter. APP attempted to track the contact but to no avail. An Airprox was not filed on RT, but after the sortie the Tornado leader informed the Marham ATC Supervisor that an Airprox was being filed.

Although the helicopter was not involved, its presence and the related actions of ATC had a direct bearing on this Airprox. Whilst approaching the Runcton Holme LS, the helicopter was squawking and under a FIS from Zone. This specific flight profile is flown regularly and familiar to all Zone controllers at Marham. When the helicopter was 8 NM from the LS, Zone detected an unknown primary

contact, which may have been the reported glider 2-3 NM ahead of the helicopter on a similar heading, but at a slightly slower ground speed before the contacts merged. Zone transmitted the south-westerly Marham surface wind to the helicopter pilot, who then turned final to the LS into wind and descended below SSR coverage, thereby leaving the unknown primary return 'painting' in the same location on a similar heading. Before the Tornado section departed, APP who was validated on Zone, had not detected the unknown primary contact, possibly due to the suppressed radar picture. When it was seen, APP erroneously believed it was the helicopter turning onto final for the LS and passed misleading traffic information as if it was the helicopter, which may have focused the Tornado crew's visual scan down toward the surface. Indeed the Tornado pilot implies that his all-round scan was impaired because he reports looking for the helicopter at 200 ft whilst climbing through 3500 ft (1013 mb). Under the provisions of the RIS, which was limited due to suppression, the crew remained solely responsible for their own lookout and separation from other observed ac, irrespective of whether traffic information had been issued.

The Debden radar recording before the Airprox supports the foregoing. The helicopter's squawk is shown merging with a very slow moving primary contact at 1348:22, 7 NM W of Marham. The helicopter's squawk then fades below coverage indicating 000 Mode C, as it turns SW for landing. The Tornado leader is shown squawking 6132, 5 NM W of Marham and turning through NW, before it merges with the primary contact which is perceived to be the untraced glider at 1354:45, indicating 027 Mode C (1013 mb), 4.5 NM WNW of Marham. (Note: The QFE was 1026 mb; a Mode C of 2700 ft would equate to 3050 ft above airfield level.)

**HQ STC** comments that at the time of this Airprox the Tornado crews were receiving a limited RIS from Marham App and were responsible for their own separation from other traffic. It is therefore understandable that the Tornado crews concentrated their lookout in the direction of reported traffic; a helicopter at 200 ft. However, the report was erroneous and

served only to divert the Tornado crews away from clearing their own flight path. This led to the late sighting of the glider. Arguably, the Tornado crew, in the climb and passing 3,000 ft, would have been wiser to acknowledge the reported traffic at 200 ft but to have concentrated their lookout scan into their own flightpath based on the premise that they had close to 3,000 ft of height separation. This incident highlights the need for application of common sense in determining the most effective lookout scan.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the Tornado pilots, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

The Board agreed that the traffic information about a helicopter at 200 ft some 5-6 NM from the airfield was not pertinent to ac departing in a climb to medium level. However, members also agreed that the Tornado pilot, despite the distraction, was misguided to have taken any notice of it and should have been concentrating towards the area into which he was flying. The BGA has issued circulars encouraging glider pilots not to linger on the centrelines of airfields without calling ATC to advise their presence, but this glider could simply have been in transit. Notwithstanding that gliders are hard to see against the sky, the Board concluded that the cause of the Airprox was the late sighting of the glider by the Tornado pilot. However, because he had seen it in time to take avoiding action, and estimated he would not have hit it anyway, the Board concluded that there had not been a risk of the ac actually colliding.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: Late sighting of the glider by the Tornado pilot.

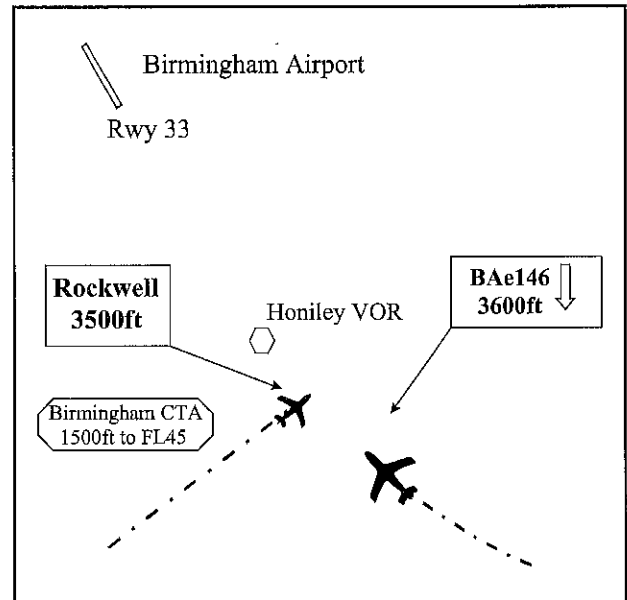
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### **AIRPROX REPORT 34c/98**

#### **Occ No. 98/04482**

*Date:* 5 August 1998  
*Time:* 1404 UTC  
*Aircraft:* BAe146/Rockwell 114  
*Operators:* Foreign Airline/Private  
*Position:* 9nm South of Birmingham Airport  
*ALT/HT/FL:* Altitude 3600 feet  
*Airspace Type:* Birmingham CTA – Class D  
*Reporter:* Birmingham Approach Radar Controller  
*Reported Separation:* 0.5nm horizontal/200 feet vertical  
*Recorded Separation:* 0.35nm horizontal/vertical not available



### **THE INCIDENT**

Both aircraft involved in this AIRPROX were receiving a service from the Birmingham Approach Radar Controller. The BAe146 had departed from Brussels and was inbound to Birmingham for an ILS approach to runway 33, descending through an altitude of 3700 feet. The Rockwell was en route from Lands End to Leicester at an altitude of 3500 feet and was receiving a Flight Information Service (FIS).

At 1356 the Rockwell pilot called the Birmingham Approach controller and reported 3nm West of Evesham at 3500 feet en route for Leicester. The controller acknowledged this call and instructed the pilot to report passing the M1 motorway and to keep a good lookout for gliders. At 1359, the BAe146 pilot reported on the Birmingham Approach controller's frequency. At about 1404.30, when the BAe146 pilot was turning on to the ILS localiser he received a Traffic Alert and Collision Avoidance

(TCAS) Traffic Advisory (TA) and saw a light aircraft crossing ahead from left to right at a range of about 500m and about 200 feet below. Radar pictures, timed at 1404.29, show the BAe146 descending through altitude 3600 feet with the Rockwell passing through its 12 o'clock position range 0.35nm. The controller offered a left turn to avoid the traffic but the BAe146 pilot declined as the traffic was passing clear. Shortly before this the controller had seen a 7000 squawk without any. Mode C height readout 6nm south of Honiley VOR and had asked another controller to check with Coventry if they knew the identity of this contact. However, by the time a reply in the negative was received from Coventry the BAe146 pilot had reported visual with the traffic.

Subsequently, at 1410, the Rockwell pilot requested a change of frequency to Leicester and it then became apparent to the Birmingham controller that this was the unknown aircraft which had passed ahead of the BAe146. The

Rockwell was then identified and, on being questioned by the controller, the pilot indicated that he thought that he had been given permission to enter the Birmingham CTA.

However, as the Rockwell pilot was only under a Flight Information Service (FIS) and had not requested nor was given clearance to transit the Birmingham CTA, the Birmingham controller expected that he would remain clear of Birmingham's airspace.

In his written report, the BAe146 pilot recalled being cleared down to altitude 2500 feet on course to Honiley VOR and that while turning on to the localiser the conflicting traffic was seen passing ahead. He immediately stopped descent and reported the sighting to the approach controller. He assessed the severity of risk as high and that the TCAS warning was necessary. No Resolution Advisory (RA) was received as the Rockwell pilot who had Mode C on his SSR equipment had not selected it.

In his written report, the Rockwell pilot stated that he was fully aware that he required clearance to transit the CTA and that he was certain that he had both asked for and received such permission from the Birmingham controller. His only explanation was that at the time of the incident he was feeling particularly nauseous and that this could have caused the

misunderstanding. He added that at the time, he was on a course of medication, for an infection in his hand and that this may have caused the nausea. However, he has since discovered that the medicine, called Lamisil, can have that side effect. Note:- Lamisil is not a banned substance as regards flying but is a drug which reacts differently with different people. He did not see the BAe146 and was not aware of any "near miss" until informed later by the Birmingham controller.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Rockwell pilot who entered the Birmingham CTA without clearance and came into close proximity with the BAe146.

His attention was drawn to the Aeronautical Information Circular, Pink 114/96, Medication, Alcohol and Flying which covers the subject in some detail and includes questions to be asked when taking medication and intending to fly. Additional flight safety publications about this occurrence and the dangers of flying whilst on medication have been printed in the CAA Safety Sense Leaflet No 24 Pilot Health and General Aviation Safety Information Leaflet (GASIL) 6/98.

### **REVIEW BY AIRPROX PANEL**

- 1 Discussion: On balance, the Panel believes that pilots flying mode C equipped aircraft should switch it on when squawking 7000, in order to maximise the safety benefits of TCAS, as recommended following AIRPROX(C) 51/96. The Rockwell was equipped with Mode C but did not have it switched on at the time of the AIRPROX. So, whilst the BAe146 pilot received a TCAS Traffic Advisory (TA), he was denied the added advantage of a Resolution Advisory (RA). Additionally, the controller's suspicion that the unknown aircraft was within the CTA would have been confirmed in good time.
- 2 Causal Factors: The Rockwell pilot infringed the Birmingham CTA and conflicted with the BAe146.
- 3 Risk Classification: B

**4 Observation:**

The Panel believes that the CAA should consider repeating, through information channels additional to GASIL, the advice to GA pilots regarding the importance of selecting SSR with Mode C (where fitted) to maximise the safety benefits of TCAS. (Rec J97-4 refers.)

**AIRPROX (P) REPORT No 99/98**

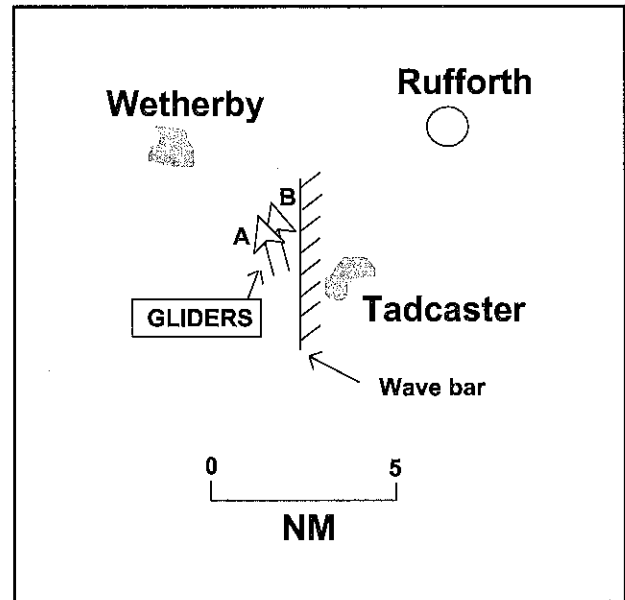
Date/Time: 08 Aug 1350 (Saturday)  
Position: N5354 W0120 (10 NM SW York)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reporting Aircraft  
Type: Glider PIK 20B Mosquito Glider  
(A) (B)  
Operator: Civ Club Civ Pte  
Alt/FL: 7000-7500 ft 7000-7500 ft  
(QFE 1018 mb) (QFE 1017 mb)  
Weather VMC VMC CAVOK  
Visibility: >10 km >30 km

**BOTH PILOTS FILED**

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**GLIDER PILOT (A)** reports that his operating airfield was Rufforth (elev 65 ft), with whom he was in contact on 130.1. The visibility was over 10 km in VMC. When overhead Thorpe Arch (between Wetherby and Tadcaster) heading N at 42 kt and level at 7000 - 7500 ft (QFE), he first saw the other ac, a white fibreglass glider whose registration number he could see, as it appeared off his R wingtip less than 2 metres below him; the cockpit to cockpit distance was less than 30 metres. He immediately made a steep L turn in avoidance and called the pilot of the other glider on 130.1 to ask him how close he thought they had been. The other pilot responded..."too \*\*\*\*ing close". A brief transmission in return was made by pilot (A) suggesting that a better lookout was necessary; he considered that there had been a very high risk of collision. Owing to the shock, pilot (A) forgot to note the exact time of the Airprox.

**GLIDER PILOT (B)** reports that he was flying at 7000 - 7500 ft (QFE 1017 - based on Burn



airfield elev 20 ft) between Tadcaster and Wetherby. The wind was westerly at 18 kt and the visibility, above variable broken cloud, was over 30 NM. He was working a N/S orientated wave bar about 4 NM long to his R where the cloud tops were around 6000 to 8500 ft, and had located three other gliders which were already established in the wave when he joined it from the S. One, coloured blue and white, was clearly visible against the white background 4 NM to the N at a similar height; another, coloured white, was about 1 NM N of him and 500 ft above, while a third, also white but with a larger span, was about half way along the bar and 3000 ft below him. Cockpit workload was low and he was concentrating his attention on looking out. Having flown half way along the bar, he turned to return to the S end for a second beat, losing sight of the nearest glider in the process; on turning N again, despite consciously searching, he could not locate it. When heading 350° at 40 kt about half way along the wave bar, and beginning a gentle turn away from it as lift started to reduce, he

saw the other glider, banked to port by about 30°, emerging from behind the port side of his rear canopy frame about one and a half fuselage lengths behind his tailplane and 10-15 ft above his banked port wing. He levelled his wings and then turned R and the other ac, now with about 90° angle of bank, disappeared behind and below his port wing. The time between losing sight of the other glider and the Airprox had been about 10 minutes. Following the encounter he continued his beat to the N and was joined on his port side by the other glider. The two pilots identified each other and made a short RT communication.

The following day he and the pilot of the other glider discussed the incident by telephone and both agreed that it had been a very dangerous situation; they had been within feet of a collision before visual contact was made despite both having had their heads out of the cockpit. They were unable to explain how they could have arrived at this situation but accepted that their lookout was inadequate on this occasion. Both pilots would welcome expert advice on how best to avoid such an encounter in future.

Note: The Airprox is not seen on the LATCC radar recording.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board consisted of reports from the pilots of both ac.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: A

Cause: A very late sighting by the pilot of Glider (A) and a non-sighting by the pilot of Glider (B).

The Board agreed that only the very late avoiding action by the pilot of glider (A) had averted a collision between the ac. It was evident from the pilots' reports that flying conditions were good with excellent visibility; in these circumstances both were understandably very concerned about the closeness of their encounter. Members considered 2 points in providing the pilots with the advice they sought on avoiding such confrontations in future; one was to re-emphasise the importance of an effective lookout scan and the second was to urge more use of radio when this is available. Unlike many gliders, the ac concerned in this incident were so equipped, and it was felt that had the pilots made RT contact in the area on an agreed discrete frequency the incident could have been avoided.

A GA member commented that both ac were heading into wind on similar headings immediately prior to the encounter and their lack of relative motion, together with the gliders' narrow profiles, could have made visual acquisition difficult. Additionally, it is well known that the human eye has difficulty in focusing efficiently outside the cockpit in conditions where there are few visual references available. The Board concluded that the Airprox was caused by the very late sighting by Glider (A) and an effective non-sighting by Glider (B). Noting the similar graphic descriptions by both pilots concerning the closeness of the encounter, members agreed there had been an actual risk of collision.

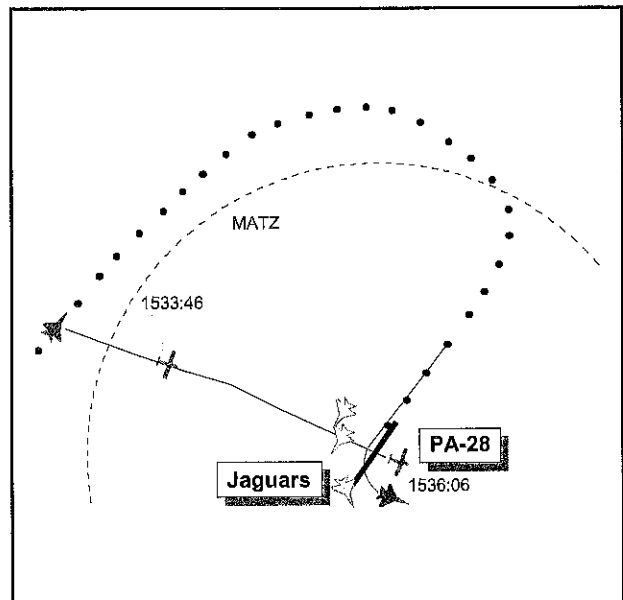
## AIRPROX (P) REPORT No 100/98

Date/Time: 12 Aug 1536  
Position: N5246 E0121 (Coltishall - elev 66 ft)  
Airspace: ATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Jaguar PA28  
Operator: HQ STC Civ Pte  
Alt/FL: 1200 ft ↑ 1700 ft  
(QFE 1011 mb) (QFE 1011 mb)  
Weather VMC CLOC VMC CAVK  
Visibility: 50 km+ 10 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE JAGUAR PILOT** reports heading 220° at 400 kt, leading 4 ac on a left break at 1000-1200 ft into the circuit at Coltishall for RW 22. He saw a red and white low wing light ac tracking about 110° closing from about 0.5 NM away. He passed it with 1-200 ft vertical and horizontal separation and the other 3 members of the formation also had to avoid it, 2 of them shouting at him to take avoiding action. He considered the risk of collision was high. The circuit had been reported clear for his break although the reported ac had been cleared across the MATZ at 1700 ft. Even so, the first time he saw the ac was on the break as he passed it; he did not realise that this was the same ac which he had not seen, but on which he had been given traffic information to the W of the field before rejoining.

**THE PA28 PILOT** reports heading 112° at 105 kt, having called Coltishall Zone for a FIS and MATZ crossing on 125.9, squawking 7000. He was allocated 1742 Mode A (he had no Mode C) and was identified; his request for 1500 ft on 1011 mb was cleared and shortly thereafter he was asked to fly at 1700 ft as ac were recovering to Coltishall. After climbing and reporting level, he asked the controller if she would like him to turn N to clear the Zone. The controller replied that he would be OK with 500 ft separation to which he agreed. On reaching the airfield he saw a Jaguar as expected crossing in front from right to left on the downwind leg for 22 LH at about 800-1000 ft; he



then saw other ac downwind, crossing over them as they flew downwind. He checked his altimeter read 1700 ft on 1011. There was never any conflict or danger, and he commented on the "usual excellent courteous service" from Coltishall ATC.

**HQ MATO** reports that the PA28 pilot called Coltishall Zone on VHF for a MATZ crossing and FIS in transit to Ludham, about 10 NM SE of Coltishall. He was assigned a FIS at 1527:19, squawking 1742. At 1529:33, he was told to climb to 1700 ft QFE (1011 mb) for the MATZ crossing (co-ordinated with Approach (APP)), where he reported level at 1530:57. Zone told him that ac in the circuit would be at 1200 ft, 500 ft below him; the pilot acknowledged. Zone advised the Aerodrome Controller (TWR) that the PA28 would transit "west to east, 2 NM north, 1700 ft, squawking 1742"; TWR acknowledged at 1531:43.

Meanwhile at 1530:31, the Jaguar formation leader had called APP on UHF for a visual recovery. APP applied a FIS, advised that there was no traffic ahead, and at 1532:28 passed traffic information about the PA28, "...traffic west of Coltishall 7 miles heading East at 1700 ft". An update was passed 26 seconds later, "...12 o'clock 4 miles left to right". At 1533:23, the Jaguar leader reported "visual with the field". APP replied: "...the 1700 ft traffic to the north-

east of you now, at 2 miles", whereupon the Jaguar leader repeated "visual", adding "QSY to the tower". APP passed further information on traffic crossing the centreline at 4000 ft heading SE and the pilot again advised changing to TWR. (Note: LATCC radar recordings show that during the frequency change the Jaguar formation passed 1.9 NM astern of the PA28 while descending through FL 40.) At 1534:02, the Jaguar leader called TWR for a visual join when 6 NM NW of the aerodrome. TWR, who had no other traffic in the circuit and had been monitoring the APP frequency responded "...join RW 22 QFE 1011, circuit clear, (c/s No 2) fuel priority acknowledged", which the Jaguar leader acknowledged: "...c/s 1011...c/s". The formation continued NE to the N of the aerodrome before turning inbound, calling 'initials' at 1534:36. Normal run in height is 800-1000 ft through initials, before breaking into the Coltishall visual circuit which is flown at 1200 ft. The pilot asked "Confirm circuit clear?" (TWR reaffirmed "circuit clear" at 1534:44) and subsequently called on the 'break' to land at 1536:05. Intra-formation transmissions about the PA28, unreadable on the RT recording, were followed at 1536:42, by the Jaguar leader stating that the "...MATZ crosser" was "...very close to the break height". No Airprox report was made on RT but another pilot called the ATC Supervisor later that afternoon and advised that the Jaguar leader was filing an Airprox.

Zone planned a MATZ crossing for the PA28 giving 500 ft vertical separation from the Jaguar formation's 1200 ft circuit height. The PA28 pilot appeared content. Although providing a FIS to the Jaguars, APP repeatedly passed radar information to the leader during the visual recovery until visual contact on the PA28 was apparently established. This sequence of events had been monitored closely by TWR, who was listening to the APP frequency. The inexperienced TWR controller did not perceive that further traffic information on the PA28 was required when the Jaguar leader called to join the circuit.

The LATCC Cromer radar recording shows the PA28 maintaining a steady southeasterly track

whilst over-flying Coltishall. The lead Jaguar is clearly shown squawking 1747 whilst breaking into the circuit left hand for RW 22 from 1100 ft Mode C. It climbs to 014 Mode C (1013 mb), which equates to about 1340 ft QFE (1011 mb), whilst passing downwind through the 12 o'clock of the PA28 at a range of less than 0.5 NM, at 1536:30. The other Jaguars show without Mode C as they track downwind.

When the Jaguar leader commented to TWR about the 'MATZ crosser', the controller immediately checked the height of the PA28 with Zone, who confirmed that the pilot had been level at 1700 ft QFE. The Jaguar leader reported that the formation did not climb above the circuit height. Consequently, 500 ft vertical separation should have existed.

Note: The Jaguar pilot confirmed later by phone that he had not been aware until he saw it that there was a MATZ crosser. The earlier traffic information he had been given had not suggested this, and he had assumed it was one of many light ac that operate in the area to the W of Coltishall. He did not see it following the traffic information and could not remember saying he was visual with it. When advised that the RT transcript showed he had said "Visual" after being given traffic information he agreed that he might have meant visual with the field, but he could not remember the exchange. He had double checked that the circuit was clear, and while accepting that the PA28 was above circuit height he thought that "Clear with a MATZ crosser at 1700 ft" would have been a more helpful reply.

**HQ STC** comments that this Airprox occurred as a result of 2 compounding factors. First, the local controller, who was monitoring the Approach frequency, assumed that the Jaguar formation had seen and maintained visual contact with the PA28 and therefore reported the visual circuit as clear. Secondly, the Jaguar flew somewhat above normal downwind height, not expecting to find an ac above the circuit which he believed he had not been warned about. The unexpected sight of this ac may have led to a misperception of altitude separation. As a result of this incident Local



Controllers have been reminded to repeat warnings of traffic within the MATZ on each frequency change, and pilots have been reminded that under VFR rules they are responsible for their own collision avoidance.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

The pilot members of the Board were unanimous in their support of the Jaguar pilot's view that a warning of the MATZ crosser would have been a helpful addition to the local controller's technically correct declaration that the circuit was clear. A counter view was advanced that a circuit could extend above normal circuit height (for example by a member of the formation pulling up after a bird strike) reinforcing the belief that warning of the MATZ crosser would have been helpful. It was clear that while descending through 4000 ft the Jaguar pilot would not have been particularly concerned about traffic at 1700 ft and was only interested in switching to tower for his rejoin having become visual with the field. Even if his remark "Visual" had meant he was visual with

the traffic rather than the airfield, there had been unwarranted assumptions in ATC that the Jaguar pilot would have divined from the traffic information that the PA28 was going to cross the MATZ, and that he would have been able to retain sight of it (had he seen it in the first place) while flying away from it out towards initials. Noting that the PA28 pilot had considerably offered to route away from the overhead, members also thought that with the Jaguar formation recovering it was surprising that the offer was not accepted. However, most of these points were to do with the quality of the service offered which had been technically and procedurally in accordance with the rules. It was up to the Jaguar pilot to see the crossing PA28 in time to avoid it and the Board concluded therefore that the cause of the Airprox was that the Jaguar pilot had seen it late. Moreover, the evidence available indicated that there had been reasonable vertical separation throughout; and that there had not been a risk of the ac actually colliding. Finally, members agreed that the incident must have been a startling experience for the Jaguar pilot.

This Airprox and another one dealt with at the same meeting led the Board to question whether standard practices were adequate with regard to informing MATZ users about traffic crossing a zone. The Chairman agreed to bring this concern to the attention of HQ MATO.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: Late sighting of the PA28 by the Jaguar pilot.

**AIRPROX (P) REPORT No 101/98**

Date/Time: 13 Aug 1220  
Position: N5030 W0345 (12 NM NW of BHD)  
Airspace: UAR UR8 (Class: B)  
Reporting Aircraft Reporting Aircraft  
Type: B747-400 Tristar  
Operator: CAT CAT  
Alt/FL: FL 290 ↑ FL 290  
Weather VMC CLNC VMC CLNC  
Visibility: 10 km 80 km+

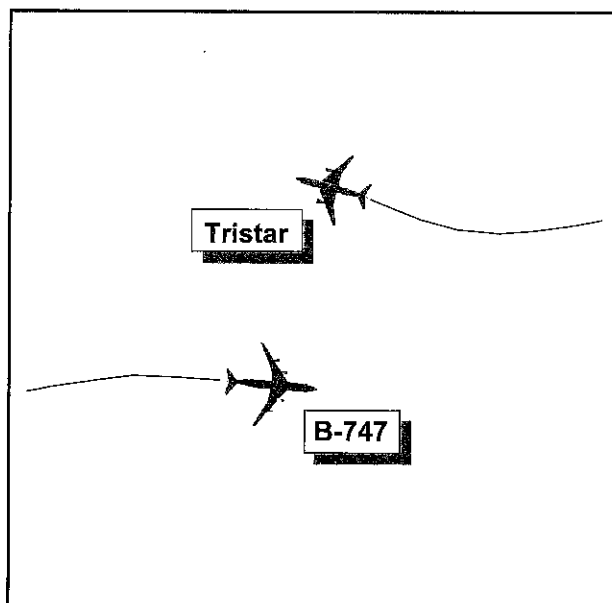
**BOTH PILOTS FILED**

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE B747 PILOT** reports heading 080° at M 0.85, maintaining his cleared level of FL 290, when he was told to turn right by ATC. He also received a TA and the other traffic passed on his left 100 ft below and 4 NM away. He considered the TCAS alert was necessary and the risk of collision was high.

**THE TRISTAR PILOT** reports heading W at 530 kt having been cleared to FL 290 by LATCC on 126.07. On passing FL 286 he was asked to verify his level and ATC then told him to turn right 15° and descend to FL 280 due to opposite direction traffic at FL 290. He complied and heard the other ac also being told to initiate an immediate right turn. He estimated the minimum vertical separation as 400 ft and horizontal 6 NM from the other ac; he received a TCAS TA but no RA.

**LATCC** reports, with RT recordings, that the Tristar was outbound from Heathrow and came on the Berry Head Sector frequency at 1210, climbing to FL 250. The controller acknowledged "C/s roger climb FL 280" and the pilot replied "Up to 280, c/s, thank you". The SC then handed over to the oncoming controller and a trainee. At 1218 the B747, inbound to Heathrow from S America, was put on a radar heading of 080° to take it to the south side of UR8 to facilitate its descent. At 1219:25 the controller noticed the Tristar's Mode C indicating FL 285 and asked "C/s confirm



*maintaining FL 280?"* to which the pilot replied "Negative we're a-" at which the controller interrupted "C/s turn right one five degrees immediately." The pilot replied "Right one five degrees" and at that point the controller took over from the trainee and told the Tristar pilot to descend and maintain FL 280 and to make the turn avoiding action for traffic in his "12 o'clock range 10 miles opposite direction". This was not acknowledged. After 15 sec the controller told the B747 pilot to turn right immediately onto 150° "avoiding action traffic in your 12 o'clock climbing to FL 290". The controller kept the B747 pilot informed on the Tristar's progress back to FL 280 and once standard separation had been achieved, cleared him to resume 080°. When asked, the B747 pilot advised that he would file an Airprox. Radar recordings showed that the Tristar had reached FL 288 some 12 NM ahead of the B747 and rapidly regained FL 280; the ac passed 5.5 NM apart with 1100 ft vertical separation. The Tristar pilot was certain that he had been cleared to FL 290 but the controller, having taken over after the clearance was issued, could only confirm the clearance to FL 280 noted on the FPS. Traffic had been light at the time and there were no other subsequent transmissions to other ac which could have been mistakenly acted upon by the Tristar crew.

**Further Investigation.** The Tristar Captain, in further discussion, advised that the crew had had a standard 2 night rest period and a leisurely start on the day in question. The flight deck crew consisted of Captain and Co-pilot (F/O) with a P3 seated to their rear and primarily responsible for systems management. The F/O was flying and the Captain was working the RT with the LATCC BHD Sector. He could not remember clearly what the P3 was doing at the time but he believed that when they were issued with the clearance to FL 280, P3 may have been in communication on the third radio with Oceanic, in pursuit of their clearance into the oceanic sectors.

Company policy on level clearances (autopilot engaged) was for either pilot (usually the non flying pilot who would acknowledge the new level on RT) to set the new level on the altitude selector, announce the level, and for both other pilots to check his announcement against the reading on the selector and what was said on RT, and acknowledge. The setting pilot would then press the arm button on the selector and the ac would go to the new level. Which pilot was to carry out these functions did not appear to be set in concrete, but the Captain had a responsibility to ensure that they were done.

On this occasion the Captain heard and acknowledged the correct level of FL 280 but for reasons which escape him he set FL 290 on the selector. The selector and arm button are in front of the RHS pilot and the left hand digit is not easy to see from the LHS but there is no parallax and there is in the order of 0.5" between whole FLs on the selector. He announced, he believes, "FL 280 selected" and having obtained agreement from the F/O, he pressed the arm button. The F/O, when asked to comment, could not remember in detail the precise sequence of events at the time. He remembers being busy and saw the Captain resetting the height selector and was under the impression that the P3 had checked it. He believed (as supported by the RT transcript) that the Captain had correctly acknowledged the level assigned by the controller. It is therefore not known if the Captain actually did say on intercomm "FL 280 selected" or "FL 290

selected", but in either case the crew's check was ineffective in that it did not detect a difference either between what the Captain was saying and pointing at, or between what he was saying and the "FL 280" both given and acknowledged on RT a few seconds earlier. The former appears the more likely. At the time all this was going on the ac was in the process of capturing FL 250, the previously cleared level, and this requires specific monitoring which may have distracted the full attention of the F/O from what his Captain was doing. The P3 should also have been in this checking loop, but it is possible that as stated above he may have been attending to their oceanic clearance on another radio at the time.

The Captain recalled that as he was setting FL 290 on the selector, half of his mind was telling him that this was odd because it was not a westbound level. Furthermore he has flown this route countless times before and the level given at that stage has always been FL 280, with FL 310 to follow on the ocean. (He was due to fly home 36 hrs after this discussion and was certain these same levels would again apply.) As soon as the controller asked him to confirm he was stopping his climb at FL 280 he replied "Negative" because he could see the 290 in the selector window and the ac was beginning to capture this level, but as he was saying it he knew it was wrong and took control, rapidly regaining FL 280. This was the first time in his whole career that he had made a level infringement.

The Company Chief Pilot advised that in the prevailing circumstances it was the responsibility of the pilot working the radio to set the new level on the selector and obtain a check from the other pilots. However, there was a tendency to pay more attention to whether or not the height capture was armed than to check that the level itself was selected correctly because failure to arm was a much greater problem.

The Principal Aviation Psychologist at DERA Farnborough provided the following comment:

"A mismatch between intentions and actions is a not uncommon feature of human cognition. It is the cause of many slips and lapses, usually in tasks that are so routine that they require little attention, and to which distraction and preoccupation make us more prone. While high workload is also a factor, low workload is more often the cause, but which applied in this case is not known. The failure of the within-crew checks to detect either the mismatch between what the captain said and what he had selected or (more likely) between his selection and ATC's request demonstrates that drills of this sort are not error-proof even with 3 in the loop. Frequent repetition of this task without error reinforces an expectation that that the setting will be correct and humans are not very good at spotting infrequent errors in routine operations. Checking crewmembers should be aware they are making a double check: that the other pilot has read back the request correctly, and that this agrees with what has been set."

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities.

Board members were particularly complimentary towards the control team on the BHD Sector who noticed the continuing climb of the Tristar, and the instructor who took over and issued the positive and prompt control measures necessary to resolve a head-on conflict at over 1000 kt closing speed. The instructor controller's actions and the prompt response of the Tristar pilot meant that standard separation was maintained in a situation which could easily have had a very different outcome. Members agreed that these prompt actions had removed any risk of the ac actually colliding but noted the magnitude of the concern at the developing conflict clearly indicated by the controller's 70° change of heading instruction to the B747.

The Board also complimented the Tristar Captain for his helpfulness in discussing what for any professional pilot is the uncomfortable realisation that he has made a potentially serious mistake; his openness and analytical approach to the error so that more aircrew can learn from it is exemplary. All Board members were well aware how easy it is to make such mistakes, particularly in tasks which are frequently repeated without error. Members pointed out that because such mistakes are occasionally to be expected, crew checking routines are so important. The lesson to be learned here, which airline members considered was the crux of this incident was the failure of the crew as a whole to detect the error, rather than the initial slip. It was observed that unless crew orders specified who was supposed to be checking whom in such circumstances they would not be effective. With 3 pilots it was easy perhaps for the P3 using the HF to think the F/O would check actions while the F/O, concentrating on the height capture, could believe that the P3 would pipe up if he detected an error.

UKAB was notified by the company Chief Pilot that checking procedures had been reviewed and their importance re-emphasised since the incident, but members suggested that room remained for further precision on responsibilities for checks in various conditions of flight with a 3-pilot crew. Airline members also considered it important for aircrew to request a repeat of a cleared level from ATC should either pilot fail to hear the level clearly. Members were aware of the CAA's concern about level deviations, up 260% in the last 5 years in airspace where traffic had increased by 32%, and agreed that it was vital for all aircrew to pay meticulous attention to autopilot performance, altimeter setting and level change procedures.

The Board concluded that the cause of the Airprox was that the Tristar crew climbed above their cleared level into conflict with the B747.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: The Tristar crew climbed above their cleared level into conflict with the B747.

### **AIRPROX (P) REPORT No 102/98**

Date/Time: 14 Aug 1320

Position: N5118 E0031 (3.5 NM W Detling VOR)

Airspace: FIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: C152 PA28

Operator: Civ Pte Civ Trg

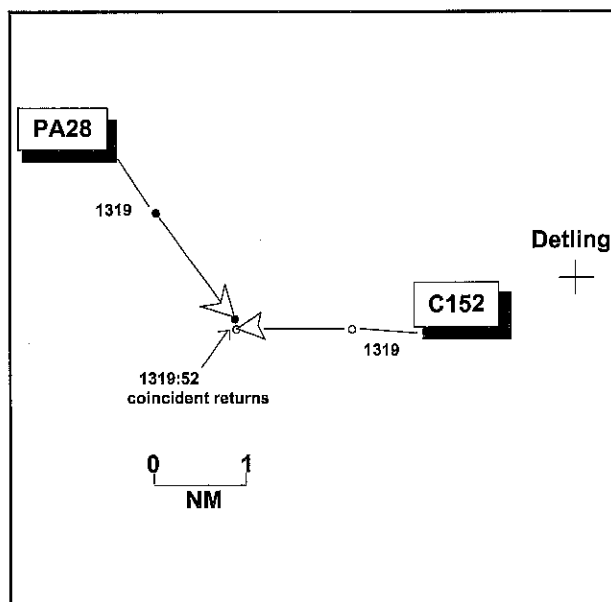
Alt/FL: 2300 ft 2300 ft  
(QNH 1014 mb) (QNH 1014 mb)

Weather VMC CLBC VMC CLBC

Visibility: 20 km >10 km

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE C152 PILOT** reports that he was conducting a navigational VFR flight from Biggin Hill which included Canterbury airfield as a turning point. The visibility was 20 km in VMC. He was squawking 7000 with Mode C switched off. He turned over Canterbury onto 270° at 2300 ft (QNH 1014) and 90 kt. When S abeam Rochester, he called Rochester Information on 122.25 and requested a FIS; the air/ground operator asked him to report when abeam the airfield and advised him that there was no known traffic to affect him. He was keeping a good lookout and listening to the RT when, about 2 NM E of West Malling, he saw a PA28 to his R heading S less than 100 m away and within 50 ft of his level; he thought his view of it had been obscured by a part of the Cessna's window frame. The ac, coloured mainly white with a lot of red and some blue, appeared to be almost stationary in his window and he believed there was a real risk of collision. He could not turn R as he believed this would have risked a collision. However, in the split second he had to assess the situation,



he realised that the ac would pass behind him and the safest course of action was to maintain his heading. Due to the brevity of the encounter he was unable to note the registration of the ac, which then tracked behind him with no apparent change of heading to suggest that its pilot had taken avoiding action.

**THE PA28 PILOT INSTRUCTOR** reports that he was inbound to Lashenden from Stapleford in VMC. The visibility was over 10 km. He was receiving a FIS from London Information on 124.6 and squawking with Mode C off. When about 15 NM NW of Lashenden, level at 2300 ft (QNH 1014) and heading 150° at 100 kt, he saw a white C152 in level flight about 500 m to his L and 200 ft above him. He judged that the ac would pass well ahead and above and therefore felt that avoiding action was unnecessary; it crossed about 300 m ahead of him and in his opinion there had been little risk of collision.

Note: A replay of the Pease Pottage radar at 1319 shows a primary return believed to be the C152 tracking W about 2.5 NM WSW of the Detling VOR. At the same time the PA28, traced on radar from departure at Stapleford to landing at Lashenden, is tracking SE at the C152's 1:30 position 2.5 NM away. At 1319:52 the C152 passes ahead of the PA28 by less than 500 m.

**PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, and a radar video recording.

A GA member felt that both pilots should have seen each other much earlier given the excellent flying conditions reported. The PA 28 particularly, with its crew of 2 and its low wing configuration, was well placed to spot the Cessna. Although the PA 28 had right of way under the Rules of the Air, and despite the late sighting by its pilot, members felt that there had been sufficient time to make a positive gesture of avoidance. Moreover, a wing-waggle would have reassured the C152 pilot that he had been seen and avoided.

The Board concluded that the late sighting by both pilots caused the Airprox. However, members were satisfied that the PA 28 pilot saw the C152 in sufficient time to take avoiding action should it have become necessary and, therefore, there had not been a risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

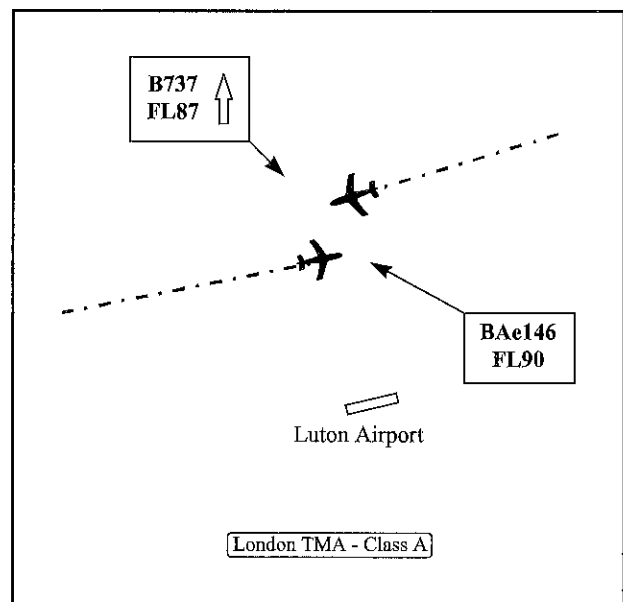
Degree of Risk: C

Cause: Late sighting by both pilots.

**AIRPROX REPORT 14c/98**

**Occ No. 98/04698**

*Date:* 14 August 1998  
*Time:* 1822 UTC  
*Aircraft:* B737/BAe146  
*Operators:* Foreign Airlines  
*Position:* 5nm North West of Luton Airport  
*ALT/HT/FL:* FL90  
*Airspace Type:* London TMA – Class A  
*Reporter:* LATCC Terminal Control (TC) - North West Departures Sector Controller  
*Reported Separation:* 0.87nm horizontal/300 feet vertical  
*Recorded Separation:* 0.87nm horizontal/300 feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the LATCC TC North West Departures Sector controller. The B737 was enroute from Stansted to Cork and had been cleared to climb to FL120. The BAe146 was inbound to Stansted from Dublin at FL90.

The North West Departures controller concerned had only been in position for about six minutes and had during that time been involved in splitting the sector, with the Bovingdon sector being activated. She considered this had added to her already high workload (because of the need for extra co-ordination), especially as the majority of the aircraft remained on her frequency even after the split.

The BAe146 was already on the North West Departures frequency prior to the controller taking over and had been descended to FL90 and the flight progress strip (fps) was correctly annotated. Later, at 1816, she gave the BAe146 pilot a speed reduction and a radar heading, and followed this at 1817.50 with an instruction to route direct to Barkway (BKY) VOR. However, this routing placed the radar return of the BAe146 directly over that of a Luton inbound aircraft with consequent garbling of the SSR label display.

At 1818.50, the B737 pilot reported on frequency at BKY climbing to FL80. The controller acknowledged this with a radar heading of 270° and the lifting of the speed restriction. At 1820.40, the B737 pilot reported level at FL80 and was instructed by the controller to turn left heading 250°. The two aircraft were now on reciprocal headings and, at 1821.12, radar pictures show the B737 at FL81 with the BAe146 at FL90 in its 12 o'clock position range 13nm.

As part of the co-ordination with the Bovingdon controller, there was discussion on climb clearance for a Heathrow outbound which resulted in a requirement for the B737 to be climbed above FL80. At 1821.40, the North West Departures controller instructed the B737

pilot, "*(callsign) climb flight level one two zero*". This was acknowledged and, at 1822.10, radar pictures show the B737 passing FL82 in the climb with the BAe146, level at FL90, slightly left of the 12 o'clock position on a reciprocal heading range 3nm. The aircraft continue to close and, at 1822.19, the separation distance is approximately 1nm with the subject aircraft in each others left 11 o'clock. At about this time the controller became aware of the situation when the Short Term Conflict Alert (STCA) activated with a high severity alert by SSR labels flashing red. The SSR labels of both aircraft and the Luton inbound, which was flying below the BAe146, were all overlapping at this point and it was not clear to the controller what had caused the STCA. However, her first reaction was that the BAe146 pilot had descended below his cleared level and so she asked him to confirm that he was maintaining FL90. When he confirmed it, the controller then realised that she had cleared the B737 to climb to FL120 but by that time the aircraft had passed each other and it was no longer necessary to pass either avoiding action or traffic information.

The North West Departures controller believed that when she cleared the BAe146 direct to BKY, the radar return merged with a lower aircraft inbound to Luton. Subsequently, when she climbed the B737, in response to the co-ordination with the Bovingdon controller, she did not see the return of the BAe146 as it was garbling with the Luton inbound. This was despite the fact that she was aware of its presence and that the fps on her display had been correctly annotated. She was not aware of receiving any low severity STCA and that by the time the high severity STCA was received, separation was being restored. Later she stated that there were a number of reasons why she had overlooked the presence of the BAe146. In addition to the overlapping and garbling radar returns, she said that her usual method of operation was to descend the inbound aircraft to FL130, rather than FL90 as the off-going controller had done and that this was why she had climbed the B737 to FL120. Also, although the fps for both aircraft were correctly displayed, she considered that she

must have been too busy to assimilate the information.

In his written report, the pilot of the BAe146 stated that he had seen the B737 pass in the opposite direction, off the left wing, same level, at an estimated range of 1.5nm. He did not query this with the controller as she appeared busy trying to contact another aircraft on the frequency and no avoiding action was taken. No report was received from the B737 pilot.

### SUMMARY OF CAA ACTION

The AIRPROX was caused by the LATCC TC North West Departures controller who, in a period of high workload, overlooked the presence of the BAe146 at FL90 when clearing the B737 to climb through its level from FL80 to FL120.

It was considered fortuitous that the aircraft passed about 1nm apart as the conflict was not apparent on radar and no remedial action was taken by the controller.

### REVIEW BY AIRPROX PANEL

- 1 Discussion: The Panel accepted the Summary of CAA Action. This was a serious AIRPROX where separation was a matter of chance and there was evidence that the actual separation may have been less than was recorded.
- 2 Causal Factors: The LATCC TC Northwest Departures controller did not take account of the BAe146 when clearing the B737 to climb.
- 3 Risk Classification: A
- 4 Recommendations: The Panel had no recommendations to make.

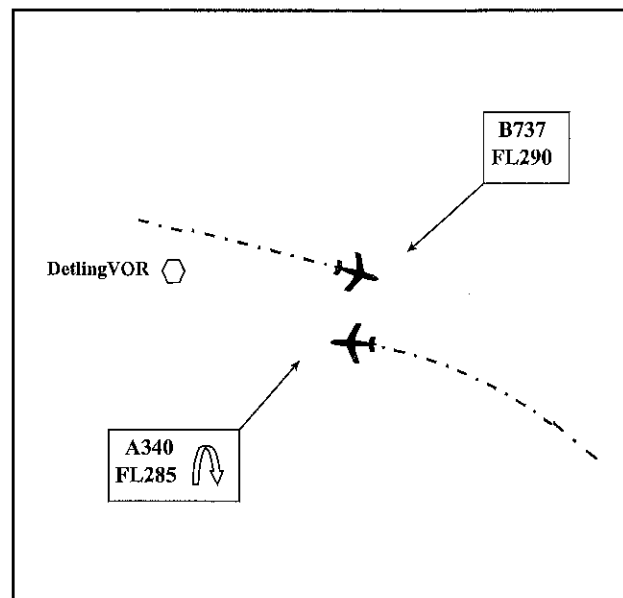
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### **AIRPROX REPORT 41c/98**

#### **Occ No. 98/04695**

*Date:* 14 August 1998  
*Time:* 1043 UTC  
*Aircraft:* A340/B737  
*Operators:* Foreign Airlines  
*Position:* 10nm East of Detling  
*ALT/HT/FL:* FL290  
*Airspace Type:* Upper ATS Route - Class B  
*Reporter:* LATCC AC LUS (E) SC  
*Reported Separation:* 1.5nm horizontal/400 feet vertical  
*Recorded Separation:* 1.4nm horizontal/500 feet vertical





## THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the LATCC Area Control (AC) London Upper Sector (LUS) East Sector. The B737 was en route from Manchester to Brussels and was level at FL290. The A340 was en route from Paris to Montreal and was in the climb to FL310.

The LUS controller was carrying out On the Job Training (OJT) instruction duties as a mentor to a trainee who had just completed the Area Validity Course, but had not commenced formal live training. The traffic loading was described as light to moderate.

At 1029.10, the B737 pilot established contact with the LUS controller and reported climbing to FL290 on a heading of 164°. The B737 pilot was instructed by the trainee to continue on the heading and it was then established that the pilot did not wish to climb further. The A340 pilot made his initial call, at 1035.10, reporting, *"(callsign) heavy's out of two six zero for two eight zero on a heading of three four eight"*. The controller responded with the aircraft's routing and instructed the pilot to maintain FL280. He then cleared the B737 pilot on his own navigation to Dover. After receiving further routing instructions, the A340 pilot indicated that he wished to climb higher, to FL350 initially. At 1042, following discussion between the mentor and trainee, where options were considered and the flight progress strip (fps) display and radar were scanned, the A340 pilot was cleared to climb to FL310. At this point, the B737 and the A340 were head on at a range of approximately 27nm.

Just under a minute later, the controllers received a Short Term Conflict Alert (STCA) warning and, at 1042.55, the trainee controller gave avoiding action to the A340 pilot saying, *"(callsign) turn left avoiding action turn left heading two seven zero"*. Then immediately after the pilot had acknowledged this, the mentor took control and further instructed the pilot to, *"(callsign) descend immediately flight level two eight zero, avoiding action, opposite direction traffic flight level two nine zero in your*

*eleven o'clock range seven miles"*. As the pilot did not acknowledge this message, the controller called again with, *"(callsign) acknowledge descend now flight level two eight zero"*. This was acknowledged and the controller followed, at 1043.25, with, *"Your traffic's twelve o'clock range five miles level two nine zero"*. The A340 pilot responded with, *"Yeah we got him in sight"*. The radar pictures, timed at 1043.27, show the two aircraft head on at a range of 4nm with the B737 at FL290 and the A340 having begun to descend and indicating FL288.

At 1043.30, the mentor controller passed traffic information to the B737 pilot saying, *"(callsign) you may see traffic twelve o'clock just descending out of your level"*. The B737 pilot did not immediately respond to this but asked the controller, *"(callsign) the traffic at our right hand side could you confirm its level please"*. The controller replied, *"Yeah that was the erm traffic I was just calling to you he's just passing two eight five we've given him avoiding action"*. Radar pictures show the two aircraft passing at a range of 1.4nm and with the A340 now 500 feet below the B737. Shortly afterwards the A340 pilot reported level at FL280 and clear of the traffic. He was then cleared to climb again to FL310 and to turn back on track, after which both aircraft proceeded en route without further incident.

The mentor recalled that whilst he and the trainee were assessing possible conflicts to the climb of the A340, the secondary radar response of the B737 was garbling with another response and that this was why the conflict was not seen on radar. However, he agreed that the conflict should have been identified from the fps display. After the STCA warning and the avoiding action given by the trainee, he decided that, because of the climb performance of the A340, a quicker resolution to the situation would be to descend it and therefore he used the override facility on the splitter training box to descend the A340 as a secondary avoiding action.

The mentor described himself as adequately rested for the duty but did point out that he was

one of the staff who had relocated to the South Coast in anticipation of NERC opening and so, that morning, had arisen at 0430.

In his written report, the A340 pilot stated that when just above FL300 and approximately 900 feet below his cleared level he was told to descend and turn left 20°. He then received a Traffic Alert and Collision Avoidance System (TCAS) Traffic Advisory (TA) and became visual with the traffic which he stated was not close, at a range of approximately 10nm. He took a 'slight left turn and gentle descent' and then received a 'clear of conflict'.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the London Upper Sector (East) mentor controller who did not take the B737 into account when allowing his trainee to issue instructions to the A340 pilot to climb to FL310.

It could only be conjecture as to why both controllers missed the confliction to the climb of the A340. Both sets of fps were correctly annotated and on the display board but could have been some way apart as there was other traffic in the vicinity. The radar response of the B737 could have been shielded by overlapping labels.

## **REVIEW OF AIRPROX PANEL**

### **1 Discussion:**

Although the traffic loading was reported as being light to moderate, the Panel thought that there was a degree of complexity with the situation. In the airspace in question, the sector had three westbound aircraft on parallel tracks with the subject A340 being the most northerly. This arrangement placed the A340 head on to eastbound traffic, which included the B737, and meant that there was little opportunity to manoeuvre. In fact, the only option that the LUS East controllers had was to have left the A340 at FL280 for the time being.

However, when the A340 pilot requested climb to FL350, the controllers gave clearance to FL310 to be below one of the eastbound tracks which was at FL330. But they did not take account of the B737 at FL290. Scrutiny of the radar photographs did persuade the Panel that it was likely that there had been garbling of the B737's label and that of a crossing track at about the time when the A340's climb clearance was being considered. This, of course, meant that the fps had not been sufficiently scrutinised - a fact which the mentor freely conceded after the event. The Panel could only surmise that the mentor was engaged in radar and strip scanning, planning and teaching and that this, together with the probable label garbling, led to the significance of the level data on the fps to be overlooked. In fact, a view from one Panel member was that, in the same circumstances but without a trainee, the mentor controller would probably have avoided the mistake. There was general sympathy with this argument.

### **2 Causal Factors:**

The LUS East mentor controller inadvertently allowed his trainee to clear the A340 to climb through the level of the opposite direction B737.

### **3 Risk Classification:** C

### **4 Recommendations:** The Panel had no recommendations to make.

## AIRPROX (P) REPORT No 103/98

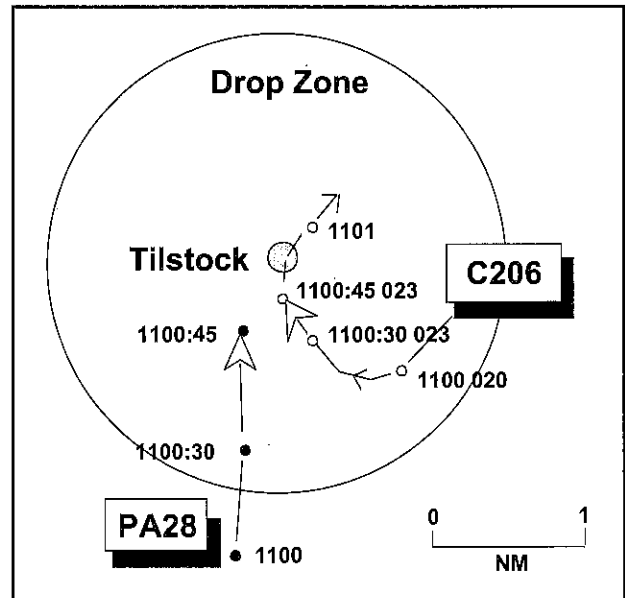
Date/Time: 15 Aug 1101 (Saturday)  
Position: N5255 W0239 (Tilstock - elev 301 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: C206 PA28  
Operator: Civ Club Civ Club  
Alt/FL: 2000 ft 3000 ft  
(QFE 1008 mb) (QNH 1016 mb)  
Weather VMC CLBC VMC CLBC  
Visibility: 30 km 30 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE C206 PILOT** reports that he was paratropping over Tilstock at 2000 ft (QFE 1008). His speed was 80 kt. The visibility was 30 km in VMC. He was in contact with Tilstock radio on 122.07 and squawking 0033 with Mode C. During the final run-in to despatch 2 student parachutists, DZ control became aware of an ac approaching the airfield overhead and immediately instructed him to abort the drop and to "break right." On completion of his avoiding turn he saw the ac about 500 m away and 100 ft above him. He thought there had been a medium risk collision. The registration of the intruding ac was observed through telemeters by DZ control.

**THE PA28 PILOT** reports that she departed from RW 23 at Sleep and turned L to track towards Winsford for the Manchester low level corridor at 100 kt. The visibility was 30 km in VMC. Her DI was working but she was unable to reset it because the knob would not engage (see Note (1)). When levelling at 3000 ft (QNH 1016) abeam Prees she saw a high-wing Cessna type ac about 2 NM away and 1000 ft below in her 2 o'clock position. Being aware that she was approaching the Tilstock parachuting site, she immediately turned L and tracked to Whitchurch. She did not believe that she had entered the Tilstock DZ and did not feel that there had been any risk of collision.

Note (1): In a subsequent telephone conversation the PA28 pilot explained that she



had set her DI prior to take-off and the instrument appeared to be fully serviceable at that time. However, when she attempted to reset it after departure the knob would not engage; she therefore had to refer to the magnetic compass to steer a course while using the DI to maintain a steady heading. She said that the other ac was very clearly in view and she thought it was no closer to her than about 2 NM. She was most concerned when informed of the radar track and separation indications and expressed her regret at having infringed the Tilstock DZ area and caused inconvenience to the C206 pilot.

Note (2): A replay of the LATCC radar shows the C206, identified by its 0033 parachuting conspicuity squawk, climbing out to the NE of Tilstock at about 1050. At 1100 the ac is 1 NM SE of Tilstock at 2000 ft Mode C and commencing a R turn towards the airfield. At the same time a primary return, believed to be the PA28, appears for the first time 2 NM S of Tilstock heading due N. The C206 continues turning and its track converges towards the northbound primary. At 1100:45 the primary return is about 0.75 NM SSW of Tilstock with the paratropping ac at its 1.30 - 2.00 position in a R turn passing through an almost parallel track less than 0.5 NM away and indicating 2300 ft Mode C. The primary return fades from cover at this point and is not seen again on the

recording. The C206's 2300 ft Mode C equates to 2435 ft QNH; at the PA28's reported altitude of 3000 ft, therefore, it is calculated that the vertical separation would have been in the order of 565 ft.

Note (3): The Tilstock free-fall Dropping Zone is notified in the UK AIP ENR 5-5-4-3 as a circle of 1.5 NM radius centred on 5255N 0239W, active up to FL 150.

**PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, and a radar video recording.

Members noted that as the paradrop was taking place from 2000 ft agl, and the PA 28 was cruising at 3000 ft (QNH), there was no possibility that the parachutists themselves

could have been endangered by the presence of the PA 28 had the drop proceeded. Furthermore, at the levels reported, some 500 - 600 ft of vertical separation existed between the PA 28 and the dropping ac, which led the Board to conclude by a small majority that the incident was a sighting report with no risk of collision. Members commended DZ control on sharp lookout.

It was noted that the incident occurred in Class G airspace in excellent flying conditions and, therefore, the PA 28 was not operating illegally. However, members agreed that the geometry of the encounter was fortuitous in this instance and that the PA 28's presence within the notified DZ in less favourable circumstances could have been much more hazardous. Notwithstanding the PA 28 pilot's navigational difficulties, members emphasised the need for pilots to take more care in identifying possible en-route hazards at the planning stage so that they could be given a wide berth.

**PART C: ASSESSMENT OF RISK AND CAUSE**

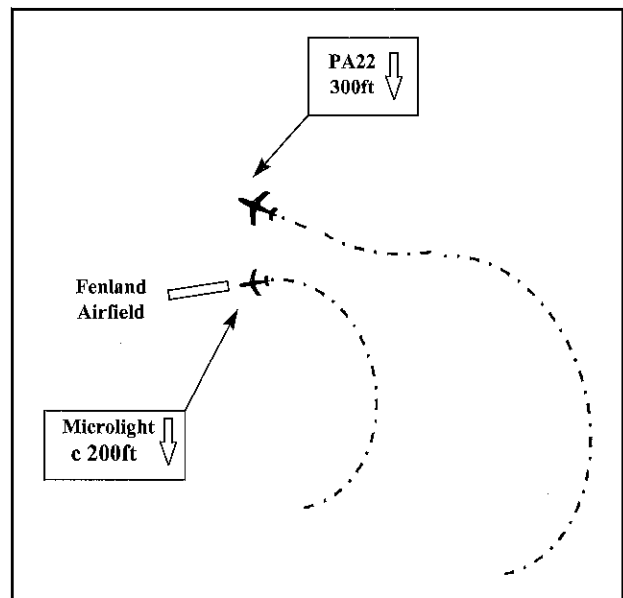
Degree of Risk: C

Cause: Sighting report.

**AIRPROX REPORT 24c/98**

**Occ No. 98/04750**

*Date:* 16 August 1998  
*Time:* 1258 UTC  
*Aircraft:* PA22/Microlight  
*Operators:* Private  
*Position:* Fenland Airfield  
*ALT/HT/FL:* 300 feet  
*Airspace Type:* ATZ – Class G  
*Reporter:* Fenland AFISO  
*Reported Separation:* Less than 1000 feet  
 horizontal/Vertical not known



## **THE INCIDENT**

Both aircraft involved in this AIRPROX were operating in the circuit at Fenland airfield receiving a Flight Information Service from the Fenland Aerodrome Flight Information Service Officer (AFISO). The PA22 was inbound from an airstrip at Burnham and the Microlight was on a local flight from Fenland.

The PA22 pilot was carrying out a left hand circuit to runway 26, following a deadside join, and was making normal RTF calls to the AFISO when the Microlight pilot called to rejoin the circuit. The Microlight pilot made a number of calls to the AFISO, all of which were received, but he seemed unable to receive the replies from the AFISO. The Microlight was then seen to make an overhead join for a left hand circuit at 1000 feet.

The AFISO advised the Microlight's position to the PA22 pilot who had it in sight in a downwind position as he turned on to finals. The Microlight then turned on to a tight base leg which brought his aircraft onto final approach ahead of the PA22 which was descending through about 300 feet. The PA22 pilot had the Microlight in sight coming in ahead, below and from the left and took avoiding action by overshooting to the right. The Microlight pilot continued on his approach to land but subsequently carried out a go around due to excessive crosswind.

The AFISO reported that the PA22 pilot had indicated at all points in the circuit that he had visual contact with the Microlight. When the Microlight turned on a tight base leg, the AFISO checked with the PA22 pilot that he had seen the Microlight which continued turning and came to final in front of the PA22. The two aircraft were converging at a height of about

300 feet. The PA22 was then seen to take avoiding action by going around and breaking to the right. The AFISO stated that in his opinion there had been a very real risk of collision if the pilot of the PA22 had not taken the appropriate action.

The pilot of the PA22 reported that it appeared that the Microlight pilot was intent on a tight circuit to land completely unaware of the existence of the PA22. On turning final he could see the Microlight on the downwind leg and that at approximately 300 feet short final, the Microlight turned base leg in front of him and below, on a heading which put the two aircraft on a collision course. He then went around, breaking to the right over the control tower. He assessed the minimum horizontal separation as less than 1000 feet and the risk as very high without his avoiding action.

In his written report the Microlight pilot stated he was returning to Fenland and receiving no response to his joining calls, elected to perform a non-radio overhead join and a circuit at 1000 feet. He saw one aircraft which he presumed to be on a larger, longer circuit. He was not aware of the incident until being informed later.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the pilot of the Microlight who, following radio problems and executing a non-radio circuit rejoin, failed to keep the PA22 in the circuit in sight and came into close proximity with it when turning onto finals.

The Microlight pilot accepted that it was his error and after he apologised to the PA22 pilot he stated, "*needless to say I will be keeping a better lookout in future*".

## **REVIEW BY AIRPROX PANEL**

### **1 Discussion:**

The majority view on the Panel was that this event was not, strictly speaking, an AIRPROX. Although the microlight pilot was plainly at fault for not maintaining an adequate look out, the PA22 pilot had kept the microlight in sight throughout his visual circuit. So, although the PA22 pilot was probably correct to say that there

would have been a high risk of collision had he not taken avoiding action, the fact was that, in the circumstances, he could dictate the actual separation himself.

2 Causal Factors: Not applicable.

3 Risk Classification: C

4 Recommendations: The Panel had no recommendations to make.

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## AIRPROX REPORT 32c/98

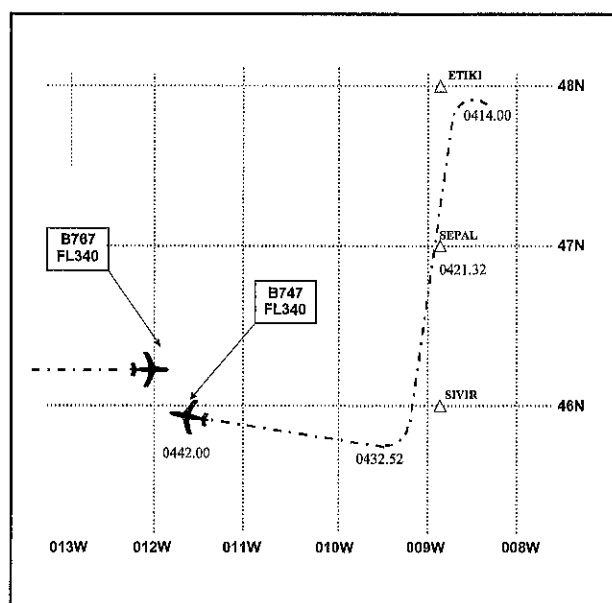
### Occ No. 98/04749

*Date:* 18 August 1998  
*Time:* 0442 UTC  
*Aircraft:* B767/B747  
*Operators:* Foreign Airlines  
*Position:* 46°03'.2" N 11°38'.6" W  
*ALT/HT/FL:* FL340  
*Airspace Type:* Oceanic – Class A  
*Reporter:* Shanwick OACC - En Route controller  
*Reported Separation:* 5nm horizontal/ nil feet vertical  
*Recorded Separation:* No radar facilities

## THE INCIDENT

Both aircraft involved in this AIRPROX were on North Atlantic crossings under the control of the Shanwick OACC based at Prestwick, and were communicating on HF frequencies through Shanwick Radio based at Ballygireen in Eire. The B747 was westbound en route from Cairo to New York at FL340 and the B767 was eastbound en route from Santo Domingo to Milan also at FL340. The B747 pilot who was experiencing difficulties communicating with Ballygireen on HF was also communicating with Brest Control on VHF at the extreme limit of RT cover.

At 0342, the B747 pilot requested his Oceanic clearance with Ballygireen on HF as per his flight plan routeing of '48°N 15°W, 47°N 20°W, 46°N 30°W, 46°N 40°W, BANCS Mach 0.85 at FL 340'. The flight plan clearance request was then passed back to the Shanwick Oceanic



Planning controller at Prestwick. Later, at about 0355, one of the B747's pilots also established contact with the Shanwick Clearance Delivery Officer (CDO) at Prestwick on VHF and made another request for their oceanic clearance. In the meantime, the Shanwick Planning controller, who had begun processing the clearance request, realised the requested route and level were not available due to traffic.

After reviewing all the possibilities, a clearance to route via SEPAL and 47°N 20°W, 46°N 30°W, 45°N 40°W, 45°N 50°W, RAFIN, FL340, was passed to the pilot on the VHF CDO frequency at 0404 and a correct readback was obtained. It was also data linked to Shanwick Radio and Brest ACC. As the B747 was now quite close to the oceanic boundary, Brest ACC asked the Prestwick CDO for the aircraft to be transferred to their VHF frequency 132.02 at 0404.

The Brest controller was then unable to establish VHF RTF contact with the B747 until 0414 - probably due to a mix up with VHF frequencies. When contact was eventually made, the Brest controller could see, on his radar, that the B747 was still maintaining a track towards ETIKI and so instructed the pilot, "*I'm trying to call you for about 10 minutes - from your position - this is very important - from present position direct to SEPAL please*". The B747 pilot replied, "*Proceeding direct to SEPAL this time and we'll request to maintain flight level 340*". The Brest controller acknowledged this call with an instruction to maintain FL310 and, at 0416.21, he instructed the B747 pilot to climb to FL340. At 0418, the Brest controller, who could still see the B747 on his radar, instructed the pilot, "*(callsign) to join SEPAL turn left ten degrees*", and the pilot replied, "*(callsign) to turn left ten degrees*". A few seconds later the Brest controller, who was becoming anxious about other conflicting traffic eastbound off the ocean at FL330, requested the B747 pilot to expedite his climb through FL330. During the next two minutes, the Brest controller made several more calls encouraging the B747 pilot to achieve a climb through FL330. At 0420.24, the B747 pilot reported maintaining FL340 at which point he was instructed to contact Shanwick.

The B747 was now on a South South Westerly heading which if maintained would take the aircraft through SEPAL. At 0421.08, the B747 pilot recalled Brest and asked, "*...We are cleared now to proceed to 47° North 20° West or to maintain 10 degrees left for the track?*" The Brest Controller replied, "*for that contact you proceed to SEPAL and your next routing, contact Shanwick, bye bye*". At 0421.32, Brest recorded that the B747 was overhead SEPAL and at that point there was a shift change of controllers. Three minutes later, at 0424.28, the B747 pilot again recalled Brest and asked, "*...are we cleared to our track 47°N 20°W from SEPAL?*". When the oncoming controller told the B747 pilot to contact Shanwick on HF the pilot replied, "*...you gave us a heading before from SEPAL.*" The controller replied, "*...Yes no more heading restriction but contact Shanwick*

*now*". There was no apparent acknowledgement of this call.

In the meantime, it appeared that a second pilot in the B747 was already speaking on HF to the Shanwick radio operator and was asking similar questions about his cleared routeing. However, HF communications became difficult and after a change of frequency, the radio operator asked at 0426.04, "*...did you get your oceanic clearance on VHF?*", and the B747 pilot replied, "*Affirmative we got it*". He was then told, "*Proceed as per your clearance as obtained on VHF*". The pilot replied, "*Roger confirm to maintain our heading towards to proceed to the first point in Oceanic*". Shanwick responded with, "*You told me you got your Oceanic clearance on VHF you got it on VHF and proceed as per that clearance*". The pilot replied, "*Roger will do*".

At 0444, the B767 pilot who was routeing direct from 46°N 20°W to SIVIR called Shanwick on HF to ask, "*Do you have traffic level three four zero going westbound about one hundred and twenty miles West of SIVIR?*". When this was relayed to the Oceanic En Route controller, he believed that the B767 pilot had requested information on traffic that had passed nearby and that the only aircraft in the vicinity was the B747 and so the reply, via the Ballygreen radio operator was, "*Roger sir affirmative I believe it's the (callsign) (B747)*". The B767 pilot then asked, "*At what level?*", and the operator replied, "*Flight level three four zero*". The B767 pilot replied, "*It came very close to us at flight level three four zero*".

Although the Oceanic controller had received confirmation of a correct clearance readback from the B747 pilot at 0433, when the pilot was asked to confirm his current position, it was 46°N 13°W which was not on the aircraft's cleared route. He then telephoned Brest to ask at what position the B747 had crossed the Shanwick boundary. They informed him that the B747 had passed SEPAL and when last seen had been heading towards SIVIR but they had been unable to contact the aircraft because he was no longer on their frequency.

It appears that the B747 pilot had misinterpreted the radar heading he was given on VHF by Brest Control, to make good SEPAL, and instead of taking up a new course for the next oceanic way point at 47°N 20°W from SEPAL, the B747 maintained the southerly heading until the Oceanic clearance was finally re-confirmed on HF at 0432.52. By this time, dead reckoning puts the B747 position as approximately 20nm South West of SIVIR. The aircraft was then turned to head 285° direct to 47°N 20°W, and at 0442, it came into conflict with the opposite direction B767 at the same level.

In his written report, the B747 pilot stated, *"We were proceeding on our track from CGC to ETIKI under Brest control ... we got our clearance from Shanwick and the track was changed to SEPAL - 47°N 20°W 46°N 30°W Mach 0.85 FL340. We went back to Brest control and we informed them about our new clearance and asked them for climb to FL340 and then changed heading to SEPAL and climbed to FL340. Then Brest asked us about our course and asked us to maintain 10 degree left of our heading under radar vector. When approaching SEPAL we kept asking Brest on VHF for heading after passing SEPAL. We have also been asked to maintain heading then Brest cleared us to change to Shanwick. We changed to Shanwick and asked to change our course to 47°N 20°W ... we got several standbys and it took some time until Shanwick cleared us to go to 47°N 20°W our next point on the cleared track. That was the reason for the deviation to 46° 30'N 11° 38'W. During that time we got a TCAS traffic alert (TA) ... we did not take any action and the other traffic passed on our right side on his course with a reasonable distance."*

## **REVIEW BY AIRPROX PANEL**

- 1 *Discussion:* Evidence confirmed that the B747 pilot had successfully received, and read back, his amended Oceanic clearance received from the Shanwick CDO. Equally, it was plain that he had not subsequently flown this route - although the Panel believed that there were persuasive reasons why he had not done so.

Although no written report was received from the B767 pilot, he stated on the HF RTF afterwards that they had taken evasive action about ten miles head-on and that *"it was a close shave."*

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the B747 pilot who did not conform to the Oceanic clearance routeing via SEPAL (47°N 9°W) and then 47°N 20°W. Instead of turning right at SEPAL on a direct track to 47°N 20°W, the B747 continued South, on a previously assigned Radar heading from Brest Control, to approximately 46°N 9°W before turning right on to a track direct to 47°N 20°W. This brought the aircraft into close proximity with the B767 flying in the opposite direction along latitude 46°N at the same level.

Other factors which contributed to the AIRPROX were language and radio communication difficulties. The crucial aspect was confusion, by the B747 crew, between the radar heading to make good SEPAL, received from Brest Control, and their Oceanic clearance joining instructions. This appeared to stem from misunderstandings of the many HF and VHF RTF transmissions between the B747 crew members and the various control agencies involved. Nevertheless, it seems, from the Brest RTF transcript, that they were twice informed that the radar heading was no longer valid and that they had acknowledged one of these transmissions. Additionally, as they had already acknowledged their oceanic clearance routeing from the Shanwick CDO on VHF, they were obliged to fly it and not continue with the radar heading beyond SEPAL.



Things began to go wrong when the crew were advised by the CDO, at a late stage, of their re-route. The workload on the flight deck was aggravated by the communications problem which prevented them from speaking to Brest for some 10 minutes. Whilst this period without meaningful two-way conversation had no direct bearing on the AIRPROX, it may have heightened a feeling of uncertainty on the flight deck because the aircraft was rapidly approaching the Oceanic boundary. From analysis of the various RTF transcripts, members concluded that the VHF frequency mix-up was caused by Brest and not the B747 crew.

Of course Brest needed to speak to the B747 with some urgency because the aircraft was still heading towards ETIKI. Having achieved contact, the Brest controller was then able to instruct the pilot to head towards SEPAL. He also found it necessary to instruct the pilot to turn left 10°. It seemed probable to the Panel that the controller intended this to be no more than navigational assistance in order to keep the aircraft out of Oceanic airspace until it reached the entry point. However, from the crew's RTF calls, and the Captain's subsequent report, it was clear that they had interpreted the turn as being a radar heading - although the controller never used these words. The crew's interpretation may have been reinforced, however, by the Brest controller's repeated calls asking the pilot to expedite his climb up to FL340 because of conflicting traffic leaving the Ocean. This combination of turn and climb instructions could well have convinced the B747 crew that they ought not alter heading without further clearance.

So far, the event had been punctuated by mischance and misunderstanding but the AIRPROX still need not have occurred. The B747 pilot, as he approached SEPAL, asked the Brest controller a straight question, "*we are cleared now to proceed to 47°N 20°W or to maintain 10° left for track?*". This question clearly showed the uncertainty in the pilot's mind but, unfortunately he received a rather ambiguous answer, "*for that contact, you proceed SEPAL and your next routeing contact Shanwick bye bye*". The pilot's continued uncertainty led him to ask virtually the same question again and, whilst Brest's reply this time included the phrase, "*...no more heading restrictions...*", from the evidence available to the Panel, this transmission went unacknowledged.

The B747 pilot then called Shanwick Radio on HF and asked the question again, "*are we cleared .... 47°N 20°W?*". Shanwick Radio were, of course, at a disadvantage in not knowing the full situation, coping with poor HF communications and having to await clarification by land line from the Oceanic controller. Considerable muddle ensued and the aircraft continued on its southerly heading, beyond the Oceanic entry point, for some 10 minutes, and the AIRPROX occurred.

In conclusion, it has to be said that, in the Panel's view, this event betrayed the continuing deficiencies inherent in the archaic communications system which prevails over the North Atlantic. In 1992, the Panel made a Safety Recommendation (J92-5 stemming from AIRPROX(C) 7/91) expressing its concern about this system of communications. This recommendation was accepted with implementation of an improved system planned for the end of the decade.

2 Causal Factors: The B747 pilot, because of ambiguous replies received from the ATC agencies involved to his question regarding his route, did not comply with his Oceanic clearance.

3 Risk Classification: C

4 Recommendations: The Panel had no recommendations to make.

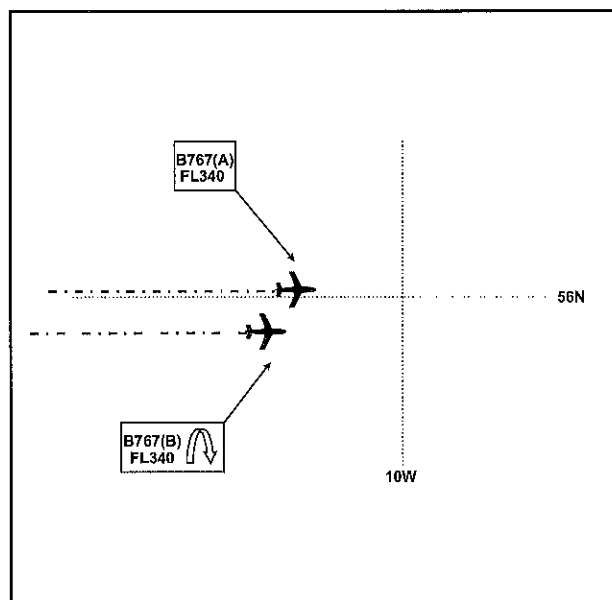
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## AIRPROX REPORT 28c/98

### Occ No. 98/04810

*Date:* 19 August 1998  
*Time:* 0617 UTC  
*Aircraft:* B767/B767  
*Operators:* Foreign Airlines  
*Position:* 56°N 010°W  
*ALT/HT/FL:* FL340  
*Airspace Type:* Shanwick OCA – Class A  
*Reporter:* ScACC – South West Sector  
P & E Controller  
*Reported Separation:* 2 - 3nm horizontal/Nil feet  
vertical  
*Recorded Separation:* 1.6nm horizontal/Nil feet  
vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the ScACC South West Sector controller (SC), who was carrying out the combined duties of both Planning (P) and Executive (E) controllers, and were eastbound within the Shanwick OCA approaching position 56°N 010°W. The leading B767, referred to as B767(A) was enroute from New York to Warsaw and was level at FL340. The following B767, referred to as B767(B) was enroute from New York to Paris and was initially level at FL330.

At 0616.30, B767(B) pilot contacted the SC and reported approaching position 56°N 010°W. This was acknowledged by the controller saying, "(callsign) Scottish good morning squawk six three four four confirm flight level three three zero". This message was read back correctly and the level confirmed by the B767(B) pilot. At 0617, the controllers next

transmission was to the pilot of another aircraft, a DC10 whose callsign included the digits four four, and who was asked, "(airline designator) four four are you requesting a higher level". This message was acknowledged not by the pilot of the aircraft to whom it was addressed but by the pilot of B767(B) who answered without using his callsign, "er yes sir if we could up to three seven zero". The controller responded by instructing the DC10 pilot, using the correct and full callsign, "(airline designator) four four climb flight level three seven zero". This instruction was then also acknowledged by the B767(B) pilot who this time used his correct company name but with the digits four four instead of his own quite different three digit callsign, "(airline designator) four four departing three three zero for three seven zero". The controller did not spot the erroneous company name used with the callsign, believing the acknowledgement to have come from the DC10

pilot. He then proceeded to give the B767(B) pilot an unrelated re-routing instruction.

Shortly afterwards, the controller noticed that the B767(B) was climbing through FL332 and transmitted to the pilot, at 0617.55, "(callsign) confirm you're level at three three zero". The B767(B) pilot replied, "er (callsign) just leaving three three zero for three seven zero". The controller responded with, "(callsign) negative descend now flight level three three zero there's traffic right above you one thousand feet above". The pilot replied, "er right descending to three three zero (callsign)". Immediately after this transmission the B767(A) pilot made his initial call to the controller who replied, "(callsign) Scottish good morning maintain flight level three four zero there is traffic climbing above you five hundred feet above you". The controller followed this with a call to the B767(B) pilot of, "(callsign) do you have a seven six seven below you now", and received as answer, "er yes sir we've got him in front of us at er three four oh". The controller then asked the pilot, "roger what's your passing level", and received the reply, "we're passing three four oh". The controller then asked, "roger do you have him in sight", and received the reply, "yes sir". By this stage the B767(B) which was following about 1.6nm behind the B767(A) had climbed through the level of the B767(A) and descended back down again to FL330.

There then followed an exchange of messages between the B767(B) pilot and the controller, with the pilot asking for confirmation that he had been cleared to climb to FL370 and the controller stating that he had not. The aircraft concerned then continued enroute without further incident.

The South West SC reported that after he had identified the B767(B) and allocated it a squawk, he turned his attention to the DC10 which was some distance away at FL340, and asked the pilot if he was requesting a higher level. The controller, on receiving an affirmative cleared the DC10 pilot to climb to FL370 and obtained a readback. A few moments later he observed the mode 'C' of the B767(B) climbing through FL332. He noted that the maximum

mode 'C' of the B767(B) during the incident was FL345. He stated that due to the close proximity of the two radar returns and the range which he had selected on his display (180nm) he did not consider it appropriate to give lateral avoiding action since the B767(B) pilot had the B767(A) in sight. He noted that the Short Term Conflict Alert (STCA) activated during the incident.

The pilot of the B767(A) reported that the B767(B) had followed them throughout their flight over the Atlantic and that when they were about 30nm West of 56°N 010°W the B767(B) was 2.5-3nm behind, 2nm to the right and 1000 feet below. He reported hearing discussion between the SC and the B767(B) pilot to expect FL370 shortly and a few seconds later saw on his Traffic Alert and Collision Avoidance System (TCAS) display the B767(B) climbing through his level of FL340 and stopping at FL350. Very quickly after that it started descending and stopped at FL330 having crossed his level of FL340 a second time. He reported receiving a TCAS Traffic Advisory (TA) and taking avoiding action by increasing his speed from Mach 0.8 to Mach 0.82.

The pilot of the B767(B) reported that he had followed the controller's instructions and was ordered to descend from a maximum level of FL345 back to FL330 through the other aircraft's level of FL340. He stated that they had visual contact with the other aircraft at all times and at no time was safety compromised. There was no TCAS warning or alert and the aircraft appeared to be no closer than 2nm at any time during the directed descent. He reported making a slight turn right of 2° or 3° as avoiding action following the controller's descent instruction.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the pilot of the B767(B) who reacted to a climb instruction message not directed to him and climbed his aircraft from FL330 into conflict with the B767(A) at FL340. He also used the wrong numerical element of his call sign but with his

own company name in his readback. Unfortunately, the numerical element of the callsign used by the B767(B) pilot was the same numerical element of the DC10, the aircraft to which the instruction was originally addressed.

Whilst the ScACC controller did not recognise that his instruction directed to the DC10 pilot

was answered by the B767(B) pilot, the B767(B) pilot's use of the DC10 pilot's numerical callsign made recognition of this incorrect readback very difficult. As a consequence it was judged that the controller could not be criticised for not detecting the readback error.

## **REVIEW BY AIRPROX PANEL**

**1 Discussion:** The Panel listened to the RTF recording of the incident. It had no doubt that the B767(B) pilot made an incorrect association between the digits "four four" in the squawk, which he had just been allocated, and the numerical element "four four" in the DC10's callsign. This led him to take the correctly addressed clearance to the DC10 pilot to climb as being for him.

Of course the DC10 pilot did not challenge the incorrect response from the B767(B) pilot, and didn't climb, and members wondered if he could have prevented the AIRPROX. However, it was noted that the DC10 pilot had not initiated the request for a higher level and might not have heard the question of whether he wanted a higher level, or the clearance to climb.

Other factors noted from the RTF replay were that the B767(B) and DC10 pilots, although having slightly different speaking voices, had the same distinctive national accent. This, together with the B767(B) pilot's use of an incorrect callsign, or no callsign at all in some of his transmissions, made recognition by the controller of the unfolding incident very difficult indeed. It was also noted that the controller was waiting to give the B767(B) pilot a re-route; this was passed immediately after the pilot's incorrect response to the climb clearance and this may have reduced the closeness of the controller's attention to the B767(B) pilot's readback. In summary, the Panel thought therefore that the only chance that the controller had had to detect the problem was if he had noticed that the pilot responding, although using the correct numerical element of the callsign, had used a different airline designator. Members, however, believed that this was the slimmest of chances and there were persuasive mitigating circumstances to explain why he hadn't detected this clue.

As recounted, the pilot of the B767(A) saw the B767(B) on his TCAS behind him - and adopted the rather novel avoiding action of accelerating. In the circumstances, the Panel was surprised that the crew of the B767(B), who could see the other B767 some 2 nm ahead of them, accepted the climb clearance without question.

**2 Causal Factors:** The B767(B) pilot reacted to a climb instruction, which had been correctly addressed to another aircraft, and climbed into conflict with B767(A).

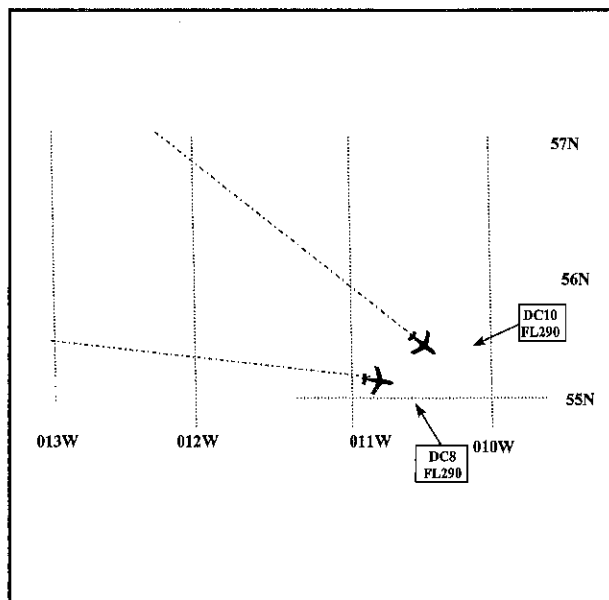
**3 Risk Classification:** C

**4 Recommendations:** The Panel had no recommendations to make.

## AIRPROX REPORT 50c/98

### Occ No. 98/04814

*Date:* 19 August 1998  
*Time:* 1647 UTC  
*Aircraft:* DC10/DC8  
*Operators:* Foreign Airline x 2  
*Position:* Near 55°N 10°W  
*ALT/HT/FL:* FL290  
*Airspace Type:* Oceanic Control Area - Class A  
*Reporter:* ScACC - Dean Cross/South West/Central Planning and Executive Controller  
*Reported Separation:* 4nm Horizontal/Nil vertical  
*Recorded Separation:* 4nm Horizontal/Nil vertical



## THE INCIDENT

Both the aircraft involved in this AIRPROX were exiting North Atlantic airspace. The DC10 was en route from Keflavik in Iceland to Faro in Portugal. The DC8 was en route from Cincinnati Airport to Brussels. Both aircraft were cruising at FL290 with the DC8 exiting Oceanic airspace at 55°N 10°W and the DC10 expected to exit at 56°N 10°W. At the time of the AIRPROX both aircraft were under the control of the Scottish Area Control Centre (ScACC) banded Dean Cross/South West/Central sector. The position was manned by a trainee under the supervision of a mentor controller and the traffic levels were described as light to moderate.

The Scottish controllers were aware, from their flight plan data, that eastbound traffic planned through 55°N and 56°N had shown a potential conflict of three aircraft at FL290. Two of these aircraft were the DC8 and the DC10. After passing 56°N, the DC10 required to route South and cross the track of the DC8. Accordingly, at 1632, the Scottish controller telephoned the Shanwick FL290 En Route controller explaining the problem and asked that as soon as he could see it on radar could he climb the DC10 to FL330. The Shanwick controller responded that the DC10 was not RVSM approved but in any event agreement was reached for the

Scottish controller to climb the DC10 to FL310 instead.

The Scottish controllers then returned their attention to monitoring their radar display in the vicinity of 55°N and 56°N so as to establish early radar and RTF contact with both aircraft. At approximately 1642, a contact (with SSR) was observed heading for 55°N 10°W. The DC8 pilot was called, and after responding, was given an SSR code and identified as this contact. Soon afterwards, a primary contact was observed to the North East of the DC8, converging with it. As the DC10 could not be seen at its expected position of 56°N, the controller enquired of his Shanwick Oceanic colleague if he had any other traffic likely to be showing in the vicinity of 55°N. He also made enquiries through his Bank Supervisor about any military traffic in the area.

Meanwhile, traffic information was passed to the DC8 pilot, initially at a range of 25nm and again at 10nm. Soon after, at 1645, the DC8 pilot reported sighting the other aircraft and was told by the Scottish controller to avoid at his own discretion. When the DC8 pilot replied that it was hard to tell whether the conflicting traffic was above or below, the controller instructed the DC8 pilot that he could change level as required against the traffic. At 1646, the DC8 pilot informed the Scottish controller that they

would descend to FL285 and a few seconds later advised the controller that the aircraft they could see was a DC10. The controller then instructed the DC8 pilot to descend to FL280 to achieve 1000 feet vertical separation with the DC10 which was known to have been cruising at FL290.

The Scottish controller then attempted to obtain RTF contact with the DC10 pilot and eventually, at 1647, the DC10 pilot answered the calls. After he was given an SSR squawk for identification, the controller then asked the DC8 pilot, *"....I show you just behind that traffic now 1000 below does that look about right?"*. The DC8 pilot replied, *"...Yes sir that certainly does"*. The controller then added that he thought that the DC10 had come off the ocean through the wrong co-ordinate and reconfirmed with the DC8 pilot to maintain FL280.

In the meantime, the controller was still having trouble confirming identification of the DC10 as he could not yet see the SSR squawk on his radar. After confirming the squawk code, he asked the DC10 pilot to confirm his flight level as FL290. After receiving a confirmation, the controller advised the DC10 pilot he was still not receiving his squawk and asked him for his position. The DC10 pilot replied, *".....Check the five six north one zero west at four eight flight level two niner zero and we are estimating mike alpha charlie one seven zero four"*. The Scottish controller then asked the DC10 pilot if he could see traffic right in his rear 3 o'clock (sic) 1000 feet below in the same direction at about 4 miles range. The DC10 pilot replied that he couldn't see the traffic and after a further series of transponder checks the Scottish controller instructed the DC10 pilot to turn left on to a heading of 030° for identification. Shortly afterwards the controller identified the DC10 and also confirmed that he could now see his SSR squawk.

After the conflict had been resolved, the Scottish controller informed the DC10 pilot, *"...You crossed one zero degrees west at five five degrees north, you were one degree south of your cleared track and have had an Airprox with another traffic that was er just departing*

*level two eight five can you explain that at all?"*. The DC10 pilot responded, *"...Would you er please confirm that we crossed five five north at one zero west?"*. The controller responded, *"....That is correct you are one degrees south of the expected track"*. The DC10 pilot responded, *".....It should be er er different on our equipment"*. When the controller then asked the DC10 pilot what his next flight plan position was after the mike alpha charlie VOR the pilot replied, *"....I do not have clearance after mike alpha charlie our route was completely supplied from my original flight plan er original flight plan should be entering via five five north and er one zero west and then erm MOLAK"*. The DC10 pilot then confirmed he wished to route through Shannon airspace towards his destination so the Scottish controller initially placed the DC10 on a radar vector and shortly afterwards cleared the pilot to route on his own navigation direct to LASNO.

Despite repeated requests, to the DC10 operator, for a pilot's report and an explanation as to why the DC10 had entered Scottish domestic airspace at 55°N 10°W instead of 56°N 10°W, no response has been forthcoming.

The DC8 pilot in his written report recalled, *"As we approached 55°N 10°W (eastbound en route to Brussels) at FL290, Scottish control advised us that there was an unidentified aircraft at our 10 o'clock 25 miles. We did not have the aircraft in sight until it was approximately 8 to 10 miles off our left and ahead of us. Scottish control told us that they did not know the altitude of the aircraft. Initially, it appeared to be above our altitude and turning left to parallel our course. Scottish control advised us "deviate as necessary" to avoid the aircraft (although we were radar contact, ATC gave us no vectors for avoidance). We started a descent (simultaneously, Scottish control cleared us to FL280). The other aircraft (a DC10) turned left away from our path track. Although we were now below the DC10 by at least 1000 feet, I delayed our left turn to TADEx after 55°N 10°W to add further separation. According to Scottish control, the DC10 was 1° South of where it was supposed to be. We were on course."* The DC8 pilot added that they

assessed the risk as potentially serious as they were not fitted with TCAS and that the flight conditions at the time were hazy.

the official reasons for the gross navigation error have never been ascertained.

However, from the RTF transcript, the DC10 crew did admit that their original flight plan had them exiting Oceanic airspace at 55°N 10°W and that it was likely that they had not reprogrammed the aircraft's inertial navigation system to conform to their Oceanic clearance exit point of 56°N 10°W.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the DC10 pilot deviating from his assigned Oceanic track but

### **REVIEW BY AIRPROX PANEL**

**1 Discussion:**

In the absence of any follow up report from the DC10 pilot, or his company, the Panel could only surmise as to the cause of the navigation error. The crew were clearly surprised to be told that they had arrived at an incorrect Oceanic exit point. It seemed probable to the JAAP that the new co-ordinates had either not been entered into the aircraft computer or had been entered incorrectly. Whatever the case, the crew did not detect their error and it had to be assumed that inadequate cross-checking had occurred on the flight deck.

The DC8 pilot stated, in his written report, that "ATC gave us no vectors for avoidance". However, the DC8 pilot was unaware that, whilst he had been identified on radar by the ScACC controllers, his aircraft was still in Oceanic airspace and therefore he was not, strictly speaking, in receipt of a radar service. This would probably explain why the controllers were reluctant to provide any avoiding action measures initially and instead gave the pilot traffic information about an unknown aircraft which they quite correctly and cleverly deduced was the DC10.

**2 Causal Factors:** The DC10 pilot flew an incorrect Oceanic Track and conflicted with the DC8.

**3 Risk Classification:** C

**4 Recommendations:** The Panel had no recommendations to make.

**AIRPROX (P) REPORT No 107/98**

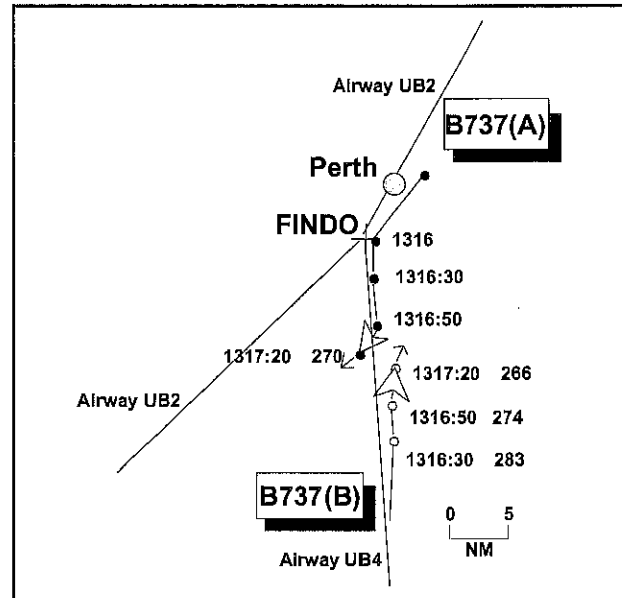
Date/Time: 21 Aug 1315  
Position: N5602 W0323 (10 NM S FINDO)  
Airspace: Airway UB4 (Class: B)  
Reporting Aircraft Reporting Aircraft  
Type: B737 B737  
Operator: CAT CAT  
Alt/FL: FL 270 ↓ FL 260  
Weather VMC VMC  
Visibility: 40 km 10 km

**BOTH PILOTS FILED**

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**B737 (A) PILOT** reports that he was tracking airway UB2 at 440 kt at FL 290 (radar and RT evidence shows that he was at FL 270) whilst routing from Aberdeen to Luton. The visibility was 40 km in VMC. He was under radar control from Scottish on 129.22 and squawking 1401 with Mode C. The sector controller on the previous frequency had cleared him to intercept airway UB2 towards Perth. ATC advised him of traffic about 10 NM ahead descending through his level in the opposite direction, and instructed him to turn immediately onto heading 240°. The other ac, believed to be a B737, passed about 1 km to his port side at a similar level. He felt there had been a low to medium risk of collision.

**B737 (B) PILOT** reports that he was inbound to Aberdeen from Gatwick and heading 010° at 280 kt (IAS) while descending through FL 270 for his cleared level of FL 260, just prior to reaching FINDO. The visibility was over 10 km in VMC. He was under the control of Scottish ATC and squawking 5053 with Mode C. TCAS signalled a TA against opposite direction and converging traffic which he then saw and kept in visual contact. At the same time ATC instructed him to turn R immediately onto 030°; the other ac was also given an immediate R turn. A TCAS RA then demanded climb; however, as the other ac was in sight and observed to be diverging, he continued to follow ATC instructions and the traffic passed to his port side about 4 NM away and 700 ft below.



He thought there had been a low risk of collision.

ScACC reports that the B737 (A) pilot contacted the Deancross SC climbing through FL 215 for FL 250. Shortly afterwards the SC instructed the pilot to...*"Continue present heading, report heading"*... to which he replied... *"roger heading 230°"*... The flight was then cleared to climb to FL 270. B737 (B) was instructed to continue on its present heading, which was 355°, but later adjusted to 360°. The SC then observed B737 (A) turning L off his heading and into conflict with B737 (B). He immediately instructed the former's pilot to turn onto 240° followed by an instruction to the pilot of B737 (B) to turn R onto 030°. This action resulted in the ac passing some 3.5 NM apart at the same level. The STCA activated shortly after the avoiding instructions were passed. Both pilots expressed their intentions of file an Airprox report.

Note (1): Analysis of the ScOACC Forth Low Sector RT transcript shows that the B737 (A) pilot initially called at 1306 reporting passing FL 85 for FL 120; he was given a squawk, advised that there was no ATC speed restriction and cleared to climb to FL 250. The pilot acknowledged this transmission correctly and 5 min later, at 1311, was instructed to call the Deancross SC on 129.22. The RT transcript for



this frequency shows that at 1311:30, on reporting passing FL 215 for FL 250, the pilot was initially advised to *"standby for higher"* which was followed, at 1312:00, by...*"c/s continue present heading, report heading"*... to which the pilot replied...*"Roger, heading two three zero."* ATC then gave further climb clearance to FL 270. At 1314, when the pilot reported levelling at FL 270, ATC advised him that there was traffic L to R 1000 ft above him and to expect further climb in 3 min. A minute later ATC instructed the pilot of B737 (B) to turn R heading 360°. The pilot of B737 (A) was then asked to confirm that he was maintaining his heading; following an initial response to this transmission by another ac, ATC immediately instructed B737 (A)...*"Avoiding action turn right immediately heading two four zero traffic twelve o'clock ten miles descending through your level."* The pilot responded that he was turning R onto 240°; the controller advised him that he should previously have been maintaining a radar heading of 230°. B737 (B) was instructed to turn R immediately onto 030° and further traffic information was passed to both pilots. The pilot of B737 (A) reported visual contact with the other ac. The pilot of B737 (B) reported that he had received a TCAS warning but stated that he could see the other ac. Both pilots expressed their intention to file an Airprox report.

Note (2): A photograph of the Scottish radar at 1314 shows B737 (A), maintaining FL 270 and tracking SW, 15 NM from FINDO. At the same time B737 (B) is about 30 NM S of FINDO tracking N. At 1316, passing slightly E of FINDO, B737 (A) turns L onto a southerly heading and at 1316:30 is head-on to B737 (B), which is descending through FL 283 13.7 NM away. At 1316:50 the STCA activates, at which point the ac are about 7 NM apart, with B737 (B) passing FL 274. B737 (A) then begins a sharp R turn onto a SW track and B737 (B) makes a small alteration to starboard. At 1317:20, 10 NM S of FINDO on airway UB4, the ac pass port to port 3.1 NM apart as B737 (B) descends through FL 266.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, a radar video recording, and a report from the air traffic controller involved.

Members quickly agreed that B737(A)'s turn onto the southerly heading put the ac into conflict with B737(B) and caused the Airprox. Much of the lengthy discussion which followed centred on the possible reasons for B737(A) pilot's departure from the heading which ATC had instructed him to maintain.

It was apparent from the radar recording that B737(A) appeared to be following its flight planned routeing down airway UB4. This prompted members to speculate that the pilot had either misinterpreted, or perhaps even not heard, the instruction to *'continue present heading'*. Whatever the reason for his non-compliance, it was clear that the pilot did turn off the radar heading and by doing so caused the Airprox.

Members considered the nature of the RT exchanges between the controller and pilot (A). A practising controller member pointed out that the controller's phraseology was strictly in accordance with the requirements of the MATS Pt 1 and representative of everyday ATC parlance; the format of the words used was known and generally understood by pilots. He believed the pilot's response to the instruction indicated that he had received and understood it. In his opinion the controller concerned had done well to note the ac's departure from heading in time to issue effective avoiding action instructions; members concurred. However, an airline pilot member felt strongly that pilot (A)'s response left considerable room for doubt about his understanding of the ATC instruction. Under the procedures promulgated in CAP 413 (the Radio Telephony Manual) for responses to ATC instructions requiring a change to critical flight parameters, in this case the heading, pilots are required to read back such instructions in full. As the instruction in

this instance was essentially in two parts - the first to 'continue present heading', and the second to 'report that heading' - the pilot was required to give a clear response to both elements. The pilot member suggested that pilot (A)'s readback alluded to the second part only, the 'Roger' response merely acknowledging that he had heard the transmission. On that assumption, the significance of the incomplete reply was not detected and should have been challenged by the controller. Moreover, given the importance attached to the prescribed radar heading as a means of achieving lateral separation from the rapidly approaching northbound B737, the member further suggested that the controller never considered the possibility that pilot (A) might have, by his inadequate response, misunderstood the instruction. He felt that under the circumstances a reiteration of the radar heading would have clarified the instruction and so prevented the Airprox.

Members agreed that there was demonstrably a need for pilots to review their responsibilities with regard to the use of correct RT

phraseology when responding to ATC instructions, particularly in situations where accurate acknowledgement was crucial to flight safety. In this case the correct response from pilot (A) (according to CAP 413) should have been... "continue heading 230" c/s". The Board suggested the Director should bring this Airprox to the attention of the RTF working group to emphasise the importance of correct RT phraseology.

Although not instrumental in the avoidance process on this occasion, members nonetheless acknowledged that in the absence of the ATC instructions the TCAS equipment on B737(B) would have ensured safe separation of the ac.

Finally, with regard to risk, members noted that the minimum lateral separation between the ac was never less than 3 NM, both pilots had each other in sight, and both thought a low degree of risk had existed. The Board concluded, therefore, that there had not been a risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

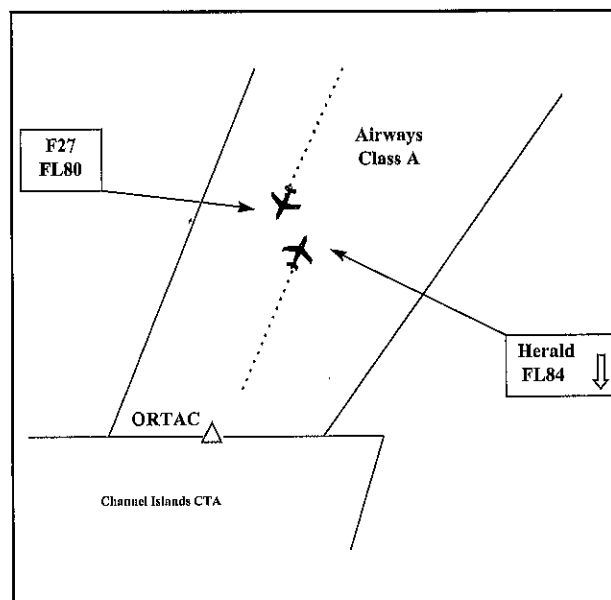
Cause: The pilot of B737(A) turned off his radar heading and into conflict with B737(B).

Recommendation: The UKAB recommends that the RTF Working Group draws attention to standard phraseology listed in CAP 413

## AIRPROX REPORT 16c/98

### Occ No. 98/04870

*Date:* 21 August 1998  
*Time:* 0735 UTC  
*Aircraft:* FK27/Herald  
*Operators:* British Airlines  
*Position:* 16nm North of ORTAC  
*ALT/HT/FL:* FL80  
*Airspace Type:* Airway R41 – Class A  
*Reporter:* LATCC Area Control Hurn  
Sector Controller  
*Reported Separation:* 1nm horizontal/400 feet  
vertical  
*Recorded Separation:* 0.8nm horizontal/400 feet  
vertical



### THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the LATCC Hurn Sector Controller (SC). The FK27 was southbound at FL80 on Airway R41 enroute from Southampton to Guernsey. The Herald was northbound on Airway R41 enroute to Bournemouth from Jersey and in the descent from FL90 to FL50. The Hurn SC described his workload as quiet to moderate at the time of the incident.

At 0724, the FK27 pilot having made initial contact with the Hurn SC on departure from Southampton climbing to FL60, was cleared to continue his climb to FL80. At 0729, the Herald pilot reported on initial contact at ORTAC, and the Hurn SC instructed him to maintain that level. At 0731, with the FK27 and the Herald now established on reciprocal headings at FL80 and FL90 respectively, the Hurn SC received a call from another aircraft departing Southampton and he instructed the pilot to climb to FL80.

Meanwhile, the Hurn Chief Sector Controller (CSC) had agreed an acceptance level of FL50 with Southampton for the Herald and as this would necessitate a descent for this aircraft through the level of the second Southampton departure, the CSC reminded the SC of this. Then, at 0734.40, the SC instructed the Herald pilot, "(callsign) descend now please flight level

five zero (FL50)". The Herald pilot acknowledged this at 0734.50, at which time radar pictures show the Herald and the FK27 on reciprocal headings at a range of approximately 4.5nm. At 0735.30, the FK27 pilot called the SC with, "London (callsign) we just had a Herald pass us fairly close left hand side er almost the same level". The radar pictures timed at 0735.25 show the Herald descending through FL84 and passing approximately 0.8nm down the left hand side of the FK27 which was at FL80. The flight progress strips (fps) for both these aircraft, and for the second Southampton departure, were the only fps displayed in the bay under the appropriate designator. They were also correctly annotated. Subsequently the two aircraft proceeded en route without further incident although both pilots queried the circumstances with the Hurn SC.

The Hurn SC later recalled that he was prompted by the CSC on the potential conflict between the Herald and the second Southampton departure and that as a result he instructed the Herald pilot to descend to FL50. He did this, not remembering the FK27 at FL80 as its squawk was garbled with that of an overflying high level aircraft. Radar pictures show some garbling with an overflying aircraft at about this time. The Hurn SC became aware of the conflict when the FK27 pilot reported visual with the Herald but gave no traffic

information or avoiding action as the aircraft had passed one another. The controller later recalled that he was not aware of any alert from the Short Time Conflict Alert (STCA). However, it was revealed that the STCA performed as required for this encounter, giving a total alerting period of twenty four seconds.

The CSC recalled that he observed the second Southampton departure passing FL65 for FL80 and that he reminded the SC that this aircraft was requesting FL140. The SC responded by descending the Herald to FL50 and climbing the Southampton departure to FL140. He also reported that the fps for the FK27 was correctly displayed but that the label of this aircraft was garbling with other traffic and was not, therefore, taken into account.

The FK27 Captain stated in his written report that, when in the cruise at FL80, between layers of cloud, the First Officer reported a visual contact straight ahead. The other aircraft was confirmed as slightly higher and passing down the left side. It was then seen to descend through their level as it passed abeam about

0.5nm to 1nm away and was identified as a Herald.

The Herald pilot recalled cruising at FL90 and being instructed to descend to FL50. At FL85 in the descent the crew saw an FK27 pass to the port side at a range of approximately 1.5nm. The descent was continued with no action required. He reported the vertical separation as approximately 500 feet.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the LATCC Hurn Sector Controller who did not take account of the presence of the FK27 when instructing the Herald pilot to descend to FL50.

It was noted that whilst the confliction may not have been apparent from the radar display due to label overlap, the fps display did show the traffic conflict situation. Furthermore, the STCA performed as required but it was not acted upon by either controller involved.

### **REVIEW BY AIRPROX PANEL**

- 1 Discussion: The Panel accepted the Summary of CAA Action.
- 2 Causal Factors: The Hurn SC did not take account of the FK27 when he instructed the Herald pilot to descend.
- 3 Risk Classification: C
- 4 Recommendations: The Panel had no recommendations to make.

## AIRPROX (P) REPORT No 108/98

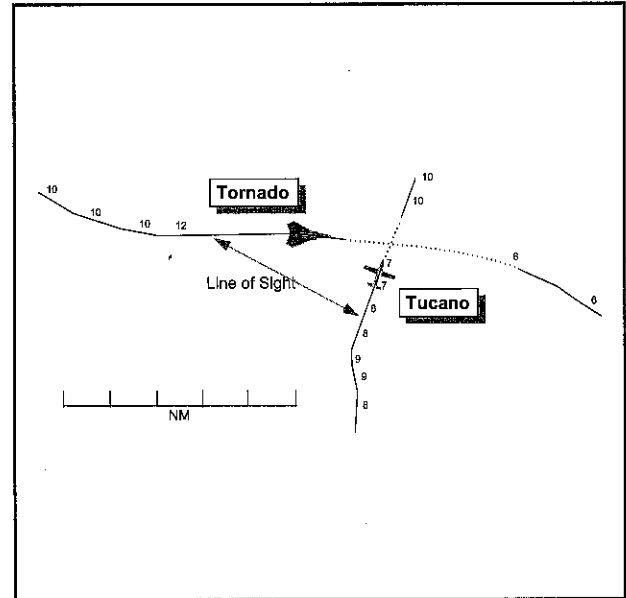
Date/Time: 24 Aug 1049  
Position: N5436 W0150 (5 NM NE of Barnard Castle)  
Airspace: LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Tornado GR Tucano  
Operator: HQ STC HQ PTC  
Alt/FL: 300 ft 250 ft  
(1009 mb) (RPS 1009 mb)  
Weather VMC CLOC VMC CLNC  
Visibility: 30 km+ 20 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE TORNADO PILOT** reports heading 090° at 450 kt on a fighter affiliation sortie at low level with 4 F3s. While concentrating on keeping an RWR indication on the beam he saw a dark flash immediately below his ac. He looked out to the left and saw a Tucano heading N. He had not been turning and assumed it had come from his 2-3 o'clock. He estimated the Tucano had passed less than 50 ft directly beneath; there had been no time for avoiding action and the risk of collision had been high.

**THE TUCANO PILOT** reports heading 010° at 250 kt on a dual navex at 250 ft msd. He saw a Tornado approaching rapidly from about 1 NM away in his 9:30 and slightly high. He descended as this appeared to be the only safe option and passed 100 ft below and about 100 yd behind the Tornado. Because he had seen and avoided it, he considered that there was no risk of collision.

Note: The Gt Dun Fell radar recording shows the 2 ac approaching the Airprox position and departing from it but they are not shown crossing. The Tornado is descending off higher ground on the approach to the incident and is in a gentle descent through 800 ft Mode C with about 10 sec to go, and the Tucano is steady at 700 ft at that point, and would have been below the skyline to the Tornado crew. Their relative sightline on the approach to the incident is shown on the diagram.



**HQ STC** comments that this Airprox occurred at low level in excellent visibility. In assessing the late sighting of the Tucano by the Tornado crew, 2 distinct causal factors are apparent. Firstly, the Tornado crew readily acknowledge that due to in-cockpit distractions their lookout scan was degraded at the time of the Airprox. Cockpit distraction is a recurring theme in many Airprox scenarios. Therefore, one of the core functions of STC FS publicity in recent publications has been to raise awareness of the importance of an effective lookout scan during all phases of flight at low level. Secondly, the relative altitudes of the 2 ac would have placed the Tucano below the skyline to the Tornado, exacerbating the difficulties of visual acquisition at low level. In the event, a late sighting of the Tornado by the Tucano crew negated the actual risk of collision.

**HQ PTC** comments that although this was a late spot by the Tucano crew it was in sufficient time to allow avoiding action to be taken. It highlights the need to keep up an all round sweep and not to concentrate on one 'threat'.

### PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, radar video

recordings and reports from the appropriate operating authorities.

The Board found little to add to the content of Part A. The difficulty of seeing an ac on a constant bearing and against a terrain background is hard enough. Add that to a need to pay at least some attention to a RWR and a conflicting ac approaching possibly from behind a canopy arch and the problems multiply. Members agreed that it was fortunate the Tucano pilot was not quite so disadvantaged

and managed to spot a near nose-on Tornado at 450 kt just in time to get out of its way. The Board concluded that the causes of the incident were a late sighting by the Tucano pilot and effectively a non-sighting by the Tornado pilot in that he did not see the Tucano in time to influence the outcome. Furthermore, there was agreement that the Tucano pilot had seen the Tornado in time to remove the risk of a collision but that the safety of the ac had been compromised.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

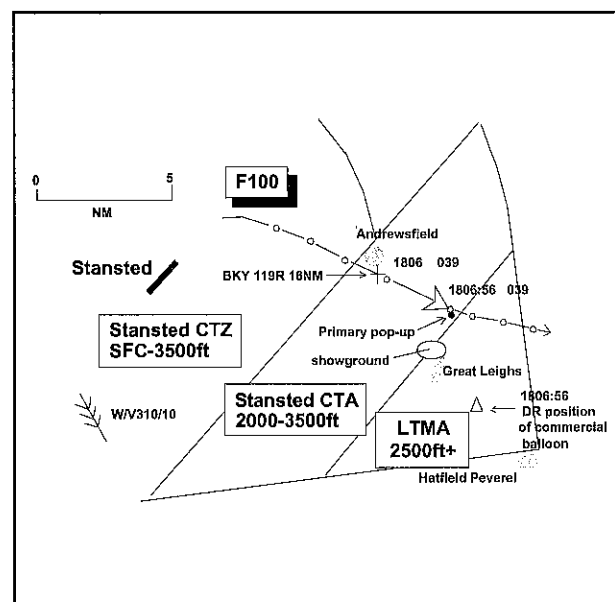
Cause: Late sighting by the Tucano pilot and a non-sighting by the Tornado pilot.

**AIRPROX (P) REPORT No 111/98**

Date/Time: 24 Aug 1805  
Position: N5150 E0029 (10 NM ESE Stansted)  
Airspace: TMA/FIR (Class: A/G)  
Reporting Aircraft Reported Aircraft  
Type: F100 Untraced Hot Air Balloon  
Operator: CAT  
Alt/FL: 4000 ft (QNH 1018 mb)  
Weather VMC  
Visibility: 10 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE F100 PILOT** reports that he was heading 120° at 250 kt and level at 4000 ft (QNH 1018) having departed from Stansted on a CLN SID for Amsterdam. The visibility was 10 km in VMC. He was under radar control from LATCC and squawking 7327 with Mode C. At 1806, approximately on the BKY 119° R at 16 NM DME, he saw a hot air balloon directly in front of him about 2 NM away at a similar level. This prompted a 20° turn to port in avoidance and



the balloon passed by about 1 NM to his R and 500 ft below. He thought there had been a medium risk of collision.

Note 1: A video replay of the LATCC radar shows the F100 departing from Stansted and turning R onto a track of about 115° some 4 NM NE of the airport. At 1806 the ac is level at 4000 ft and approximately at the BKY position given

by the pilot at the time of sighting the balloon. No nearby primary returns can be seen, but 56 sec later one stationary return appears (for a couple of sweeps of the radar) about 300 m to the R of the F100's track, at which point the F100 appears to make a turn of about 8° to port.

Tracing action by AIS (Mil) revealed only one hot air balloon airborne in the Airprox vicinity at the reported time. This was a large commercial craft (120 ft in height and capable of carrying 12 passengers) which lifted from the Essex showground at 1750 for a flight to Hatfield Peverel, some 5 NM to the SE, where it landed at 1840. Black in colour, the balloon has 4 rainbow stripes running from top to bottom. Importantly however, for the wind conditions prevailing at 2000 ft and 5000 ft in the area (see Note 2), the balloon could only have tracked in a south-easterly direction from the show ground. Its estimated position at the reported time of sighting (1806) would have been about 2.0 NM to the SE of Great Leighs, some 5 - 6 NM from the F100 and in its 2 o'clock position. Although the F100 pilot could not remember specific details of the balloon that he saw, he believed it was dark grey or blue with gold/yellow insignia. A report was obtained from the commercial balloon pilot and in a subsequent telephone conversation with UKAB staff he confirmed that he was an experienced local operator familiar with airspace restrictions in the area and particularly sensitive to the need to remain below the base of both the Stansted CTA and the LTMA. Moreover, he was used to seeing jets flying overhead with more than 1000 ft vertical separation but on the day in question saw no ac which could be considered 500 ft away. Finally, he suggested that because his craft was very large compared with the average hot air balloon, its distance and height relative to an observer might be difficult to estimate accurately.

Given the relative position of the balloon reported by the F100 pilot it seems extremely unlikely that the commercial balloon in question was the primary return seen on the radar replay at 1806:56. The possibility remains, therefore, of a different balloon operating independently from a field site in the area.

Note 2: The winds at 2000 ft and 5000 ft were 340/15 and 310/15 respectively.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of the F100 and the commercial hot air balloon, radar photographs, a video recording, and a report from the air traffic controller involved.

Given the limited information available, some members thought that this Airprox was unassessable. It was felt that the widely differing sizes and configurations of hot air balloons might make it very difficult for pilots to judge their relative altitudes and position. While there was no doubt that the F100 pilot was sufficiently concerned about the proximity of a balloon to take avoiding action, all felt it unlikely that the commercial balloon referred to in the report could have been the craft that he saw, as neither its distance nor relative bearing at the reported time were compatible with his sighting description.

The confliction occurred close to the vertical boundaries of the Stansted CTA and the London TMA which restrict FIR operations in that region to 2000 or 2500 ft respectively. While a very large balloon at these altitudes might appear to be higher than this, members accepted the F100 pilot's perception that the one he saw was no more than about 500 ft below him as he passed it, thus placing it well within the base of both the CTA and the TMA in that area. On balance, therefore, the Board concluded that the Airprox was caused by the penetration of an untraced balloon into CAS. With regard to risk, members noted the F100 pilot's estimate of 500 ft vertical separation and his 'medium' risk assessment and concluded there had not been a risk of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

Cause: A conflict within CAS with an untraced hot air balloon

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### **AIRPROX (P) REPORT No 109/98**

Date/Time: 26 Aug 1543

Position: N5434 W0304 (3 NM SE of Keswick)

Airspace: LFS/FIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: Tornado GR Untraced Cessna

Operator: HQ STC Civ Pte

Alt/FL: 500 ft  
(Rad Alt)

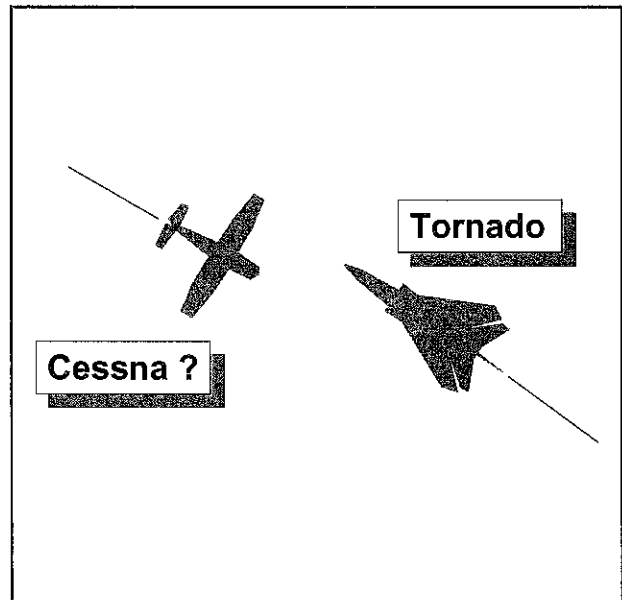
Weather VMC CLOC VMC

Visibility: 40 km

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE TORNADO PILOT** reports heading 300° at 420 kt and following the low level flow system through the lake district at 500 ft agl. He had just turned a corner when he saw a civilian high wing single engined light ac which passed no more than 100 ft above in the opposite direction with no more than 50 ft horizontal separation. He pushed down to avoid it as soon as he saw it but the risk of collision was high. He added that the light ac was going the 'wrong way' along the flow arrows. (Note: UK LFS flow symbols are shown in the UK AIP (ENR 6-5-2-1, previously RAC 5-0-1.1).)

**AIS (MIL)** was unable to find a light ac pilot whose flight matched the reported circumstances so the reported ac remains untraced. While both ac are seen approaching the area on LATCC radar recordings, the incident itself occurred below radar cover. The track of the light ac is not consistent enough, before or after the incident, to enable its origin or destination to be identified.



**HQ STC** comments that the Tornado crew involved in this Airprox was not subject to heavy workload and was flying in an area of the LFS they knew well. Such circumstances should afford the crew the capacity to optimise their lookout scan but in this instance the Tornado crew achieved a late sighting, and took late avoiding action to negate the collision. The late sighting is partly attributable to the Tornado crew's expectations; by following the low level flow arrows they believed that other users of the LFS would be relatively well de-conflicted. Here is a stark reminder that the flow arrows do not necessarily apply to all users with a right to the lower airspace. In further mitigation the light ac also appeared from behind the canopy arch, a well-documented problem which can be partly overcome with a disciplined lookout scan. Further publicity through existing STC publications will highlight this problem again.

Turning briefly to the light ac which could not be traced. We will, of course never know if the pilot



of this ac was visual or tried to avoid the Tornado. Also, we cannot know whether the pilot was aware of the existence of the military flow arrows against which he was flying. In any event this Airprox will serve as a reminder to all general users of the lower airspace of the need for effective lookout, especially when operating in areas where military users are channelled into specific routeings.

**PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included a report from the Tornado pilot and reports from the appropriate operating authorities.

While there was no way to tell if the light ac pilot had seen the Tornado, it was clear that the Tornado pilot had seen the light ac late and the Board agreed that this was the cause of the Airprox. Without the other pilot's report and no

radar evidence it was not possible to arrive at a dispassionate assessment of how close the ac had actually come, but members assessed that the safety of both ac had been compromised. Much of the Board's discussion centred on the possibility and usefulness of having the flow markings from the military LFC marked on CAA topo charts. While this would not be to encourage conformity by civil ac with such markings, it could be useful to give general aviation a better idea of which way to look for approaching fast jets, and the chance to avoid busy choke points. The military members could see no reason to object to the suggestion since the information was already in the public domain on the AIP 1:1,000,000 charts mentioned in Part A. The GA view was that it could be helpful provided flow arrows did not obscure more important information on the charts. The Chairman agreed to bring this view to the attention of the NATMAC Maps and Charts Working Group.

**PART C: ASSESSMENT OF RISK AND CAUSE**

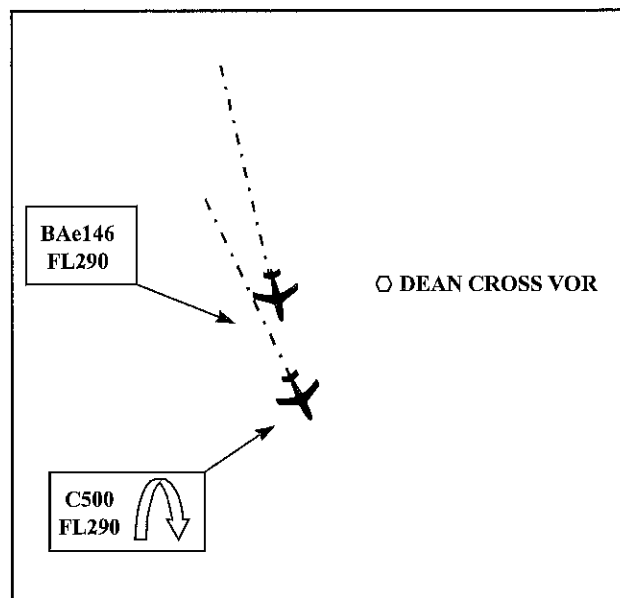
Degree of Risk: B

Cause: Late sighting by the Tornado pilot.

**AIRPROX REPORT 17c/98**

**Occ No. 98/05002**

*Date:* 27 August 1998  
*Time:* 1713 UTC  
*Aircraft:* BAe146/C500  
*Operators:* British Airline/Foreign Executive  
*Position:* 7nm West of Dean Cross  
*ALT/HT/FL:* FL290  
*Airspace Type:* London UIR - Class B  
*Reporter:* ScACC - Dean Cross P and E controller  
*Reported Separation:* 2nm horizontal/nil feet vertical  
*Recorded Separation:* 1.8nm horizontal/nil feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the ScACC Dean Cross Sector Controller who was carrying out the combined duties of both Planning (P) and Executive (E) controllers. The BAe146 was enroute from Inverness to Gatwick at FL290. The C500 was enroute from Glasgow to Biggin Hill Airport and was in the climb to FL330. The controller involved assessed his workload as low.

The traffic situation on the Dean Cross sector just before 1705, when the controller involved in this AIRPROX took over, included the BAe146 which was level at FL290 and heading 150°, as well as two other southbound aircraft. At 1705.20, the C500 pilot made initial contact with the Sector controller reporting climbing to FL250, direct to Dean Cross. The controller acknowledged the call and asked the pilot what was his requested level. The pilot responded with FL330, to which the controller replied, *"(callsign) roger that's understood climb to flight level two nine zero and report heading"*. The C500 pilot replied with a heading of 145°. Over the next three minutes, the C500 pilot and the BAe146 pilot were each given two small right turns which resulted in the C500 heading 165° and the BAe146 heading 170°. The two aircraft were now on similar headings with the C500, which was the slower of the two aircraft, slightly ahead of the BAe146, and climbing to the same level as the BAe146.

At 1709.30, the controller instructed the C500 pilot, *"(callsign) climb to flight level three three zero (FL330) with a good rate through two nine zero please"*. Note:- Although this was not the correct phraseology to instruct a pilot to climb at best rate, it is clear from the pilot's report that he understood and complied with the requirement. At 1711, the C500 was instructed to turn left heading 155°, and at 1711.30, the BAe146 pilot was instructed to turn right heading 175°. Radar pictures timed at 1711, show the BAe146 at FL291 with the C500 in its one o'clock position range 6.3nm and climbing through FL278.

At 1712.10, the controller asked the C500 pilot, *"(callsign) can you pick the climb rate up at all?"*. The pilot replied, *"That's about it I'm afraid"*, to which the controller responded *"(callsign) roger that's understood"*. Radar pictures timed at 1712.20, show the C500 passing FL290 in the climb, and in the 12 o'clock position, range of 3.6nm, to the BAe146 which was level at FL291. At about this time the Short Term Conflict Alert (STCA) activated and at 1712.30 the controller instructed the C500 pilot *"And (callsign) can you descend please to flight level two eight zero (FL280) descend immediately to flight level two eight zero"*.

The radar pictures at this time show the BAe146 level at FL291 with the C500 climbing through FL291, 3.1nm ahead in the 12 o'clock position to the BAe146. Subsequent radar pictures show horizontal separation continuing to reduce as the C500 climbed to FL294 before beginning to descend. At 1712.50, the controller instructed the BAe146 pilot, *"(callsign) turn right please heading one eight five"*. Then, at 1713, the C500 pilot was instructed, *"(callsign) expedite your descent please"*. The radar pictures timed at 1713, show the C500 descending through FL291 and 1.8nm ahead of the BAe146 which was level at FL291. Horizontal separation continued to reduce slightly but by this time vertical separation had increased as the C500 pilot reacted to the expedite call. Once standard separation had been restored the aircraft proceeded without further incident.

The Dean Cross controller stated later that he realised that he had cleared the C500 to the same level as the BAe146 but that he did not foresee a problem provided he could obtain a higher level from the appropriate LATCC sector. After he obtained clearance for the C500 at FL330, he estimated that although the BAe146 was catching up the C500, provided the latter continued to climb at its previous rate, or better, vertical separation would be established before lateral separation was lost. The initial turns given to both aircraft were for tactical positioning and not to separate the two aircraft laterally, as he still thought that his plan would work. In his written report he stated that during

these turns the speed of the climbing C500 reduced and it was caught up by the BAe146 and that the climb rate of the C500 had decayed, compounding the problem.

The controller agreed that he should have used the term 'avoiding action' when attempting to restore standard separation. Furthermore, it would have been prudent to have passed traffic information to the subject aircraft, especially to the BAe146 as it was following the C500, but he believed he did not have sufficient time. He stated that his attention was focused on co-ordinating the revised level for the C500 with LATCC and this, he considered, was imperative as the aircraft was close to the sector boundary. Nevertheless, with hindsight, the controller realised that the forward speed of the C500 decreased more rapidly than he anticipated as it expedited its climb and that this was the main causal factor of the incident.

In his written report the C500 pilot states that his aircraft was reasonably heavy and that he was using a rate of climb of approximately 1000ft/min at that level with a TAS of about 270kts. When asked for a good rate he reduced to the maximum rate of climb speed which was about 150kts IAS (240kts TAS) and

this initially increased his rate of climb to around 1500ft/min. When asked to descend he descended at 2000ft/min. The other aircraft was not seen.

The BAe146 pilot reported that he did not see the other aircraft and could not, therefore, add anything to the investigation.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the ScACC Dean Cross Sector Controller who, while clearing the C500 to climb through the level of the BAe146, misjudged the C500's performance, whereby its speed decreased allowing the BAe146 to catch up and the lateral separation to be reduced below that required.

It would have been preferable, having instructed the C500 pilot to expedite its climb, for the controller to have let the aircraft continue climbing rather than issue descent clearance. This would have reduced the possibility of levels being crossed on two occasions. It would also have been eminently sensible to have passed traffic information, especially as the aircraft were in close proximity.

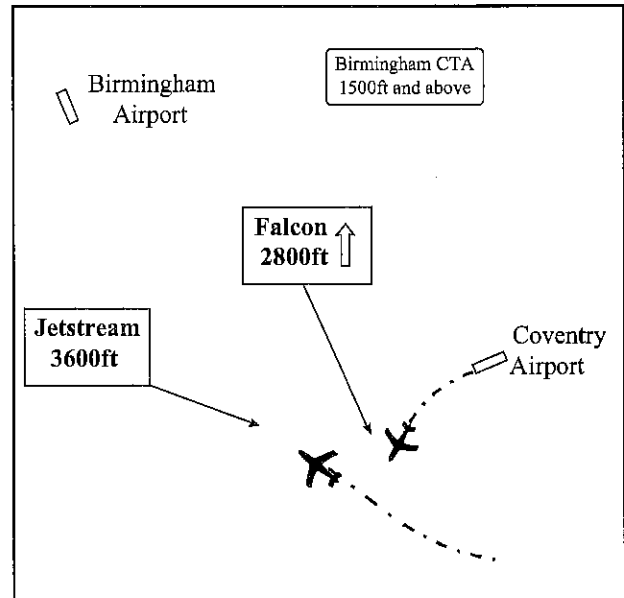
### **REVIEW BY AIRPROX PANEL**

- 1 Discussion: The Panel accepted the Summary of CAA Action. The controller clearly misjudged the rate of climb and forward speed of the C500 at high level. Despite excellent weather conditions, the BAe146 pilot did not see the C500 ahead of him, possibly because traffic information was not given by the controller.
- 2 Causal Factors: The Dean Cross controller did not ensure sufficient horizontal separation between the BAe146 and C500 before clearing the C500 pilot to climb to FL330.
- 3 Risk Classification: B
- 4 Recommendations: The Panel had no recommendations to make.

## AIRPROX REPORT 19c/98

### Occ No. 98/05001

**Date:** 28 August 1998  
**Time:** 0630 UTC  
**Aircraft:** Jetstream31/Falcon DA20  
**Operators:** Foreign Airline/Foreign Executive  
**Position:** 6nm South West of Coventry Airport  
**ALT/HT/FL:** 2800 feet altitude  
**Airspace Type:** Birmingham CTA – Class D  
**Reporter:** Birmingham ATC - Approach Radar Controller  
**Reported Separation:** 1.75nm horizontal/500 feet vertical  
**Recorded Separation:** 1.55nm horizontal/800 feet vertical



### THE INCIDENT

The Jetstream was inbound to Birmingham from Rotterdam and was being vectored by the Birmingham Approach Radar controller for an ILS approach to runway 33. The Falcon had departed from runway 23 at Coventry on a COMPTON Standard Instrument Departure (SID), enroute to Vitoria in Spain. At the time of the incident, the Falcon pilot had been instructed by the Coventry Aerodrome controller to contact Birmingham Approach but had not yet contacted the controller.

At about 0620, the Coventry Aerodrome controller passed an airways clearance to the Falcon pilot and followed this shortly afterwards with the zone clearance which he had received from the Birmingham Approach controller. This was passed as, "(callsign) after departure it'll be noise abatement then on track Compton climbing to altitude two thousand five hundred feet only". The Falcon pilot read this back correctly and was then given take off clearance. After take off the controller called the pilot with the instruction, "(callsign) maintain altitude two thousand five hundred feet contact Birmingham frequency one one eight decimal zero five good morning". The Falcon pilot did not acknowledge this transmission. Meanwhile the Jetstream pilot had been given a heading to establish on

the ILS to runway 33 at Birmingham and was in descent to altitude 3500 feet as he entered the Birmingham CTA South of Coventry.

The radar picture, timed at 0629.07, shows the Falcon departing from Coventry and indicating an altitude of approximately 1400 feet in the climb. The Jetstream at this time was 4nm due South of the Falcon and descending through an altitude of 4000 feet on a heading which would take it from left to right through the path to be followed by the Falcon. The Falcon continued its climb until at 0629.39, as it was turning left on the SID, it had reached an altitude of 2800 feet with the Jetstream now in its 12 o'clock position 1.9nm and crossing from left to right at an altitude of 3600 feet. Meanwhile, as the Coventry controller had not received an acknowledgement from the Falcon pilot of his instruction to change frequency he called the Birmingham controller on the telephone to query whether he was now in contact with the Falcon pilot. The Birmingham controller did not have RTF contact with the Falcon pilot but as he could see the aircraft had climbed above its cleared altitude he gave traffic information about it. He did not, however, give avoiding action as the Falcon's track would take it behind the Jetstream. The radar pictures, timed at 0630.04, show the Falcon at an altitude of 2800 feet with the Jetstream in its 2 o'clock position range 1.55nm heading away and indicating an

altitude of 3600 feet. Horizontal separation then increased as the Jetstream continued inbound to Birmingham on the ILS and the Falcon descended back to an altitude of 2500 feet and called the Birmingham Approach controller two or three minutes after the incident.

The Falcon pilot, in his written report, stated that he did not observe any other aircraft and had received no traffic information from Birmingham ATC. However, in a subsequent telephone conversation with the SATCO at Coventry he explained that for this flight he was the non-handling pilot and that the First Officer was the handling pilot who was using an altimeter which had a notified 200 foot error. The Captain said that the departure requirements to maintain 2500 feet were clearly understood but that on departure when he noticed the 'climb through' of the cleared altitude he called out, "Altitude, Altitude, Altitude", took control and descended to altitude 2500 feet. He noted that the aircraft had reached an indicated altitude 2800 feet on his, correctly reading, instrument. He also stated

that the instruction from the Coventry controller to, "maintain altitude two thousand five hundred feet contact Birmingham frequency one one eight decimal zero", was heard and acknowledged prior to changing frequency. He explained that the non-receipt of this acknowledgement, which was confirmed by the RTF tape, may have been caused by a faulty PTT switch on the aircraft.

The Jetstream pilot reported that the Falcon was not seen.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Falcon pilot who climbed his aircraft through his cleared altitude of 2500 feet and into conflict with the Jetstream.

The level bust by the Falcon pilot was associated with a known altimeter reading error on this particular aircraft.

### **REVIEW BY AIRPROX PANEL**

- 1 Discussion: In the absence of full information on the matter, the Panel had to assume that the Falcon, conducting a commercial air transport flight, either had a dispensation to fly with a notified error on one altimeter or had a three altimeter instrument panel. Whatever was the case, members thought that the handling pilot required to have reference to a serviceable altimeter (which he did not) or, at the least, that the deficiency had been highlighted in the departure brief.
- 2 Causal Factors: The Falcon pilot exceeded his cleared altitude and conflicted with the Jetstream.
- 3 Risk Classification: C
- 4 Recommendations: The Panel had no recommendations to make.

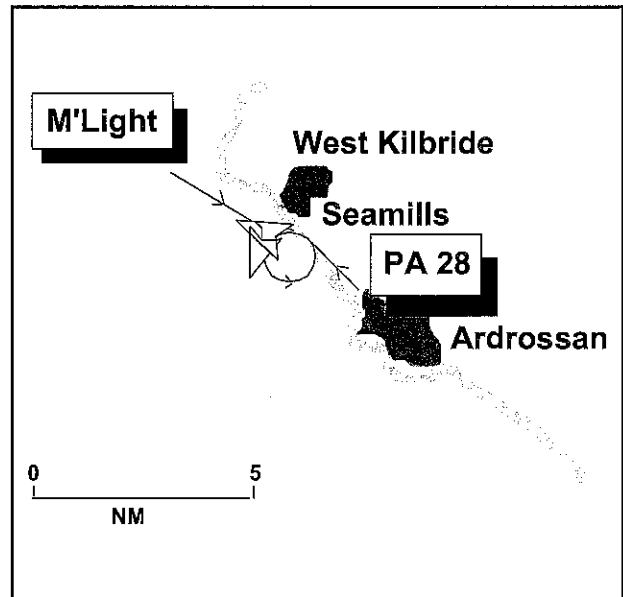
**AIRPROX (P) REPORT No 112/98**

Date/Time: 30 Aug 1445 (Sunday)  
Position: N5540 W0451 (1 NM SW West Kilbride )  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Microlight PA 28  
Operator: Civ Pte Civ Club  
Alt/FL: 1000 ft 1500 ft  
(QNH 1031 mb) (QNH 1018 mb)  
Weather VMC CLOC VMC CLOC  
Visibility: 20 km 5 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE MICROLIGHT PILOT** reports following the coast about 0.5 NM offshore in a southerly direction at 40 kt at 1000 ft on the QNH (1031 - see Note 1). The visibility, with the sun at his 3 o'clock, was 20 km; the wind was southwesterly at about 5 kt. His ac is not fitted with radio. When about a mile S of the VRP at West Kilbride he saw the other ac, a PA 28 Cherokee, about 2 NM away at his 10 o'clock position as it tracked just inland in the opposite direction at a similar altitude. The ac then made a L turn towards him; when it was about 500 m away he made a steep R turn with slight descent in avoidance, intending at the same time to make himself more conspicuous by displaying maximum wing area. He thought the other pilot saw him because the PA 28 turned away in a shallow climbing LH orbit. This took it over Seamills (West Kilbride) and then back onto a heading to pass 200 - 300 ft behind and less than 100 ft above ; he was able to read its registration. He believes that had he not turned when he did a collision would have been highly likely.

**THE PA 28 PILOT** reports that he was on a local flight from Prestwick in VMC. There was no cloud and the visibility was 5 km. He was heading 330° at 100 kt at 1500 ft (QNH 1018) and receiving a FIS from Prestwick Tower on 118.15. When about 1 NM W abeam Ardrossan, he saw an orange microlight about 300 ft away at his 2 o'clock and about 100 ft



below. There was no time to take avoiding action and the microlight passed almost directly beneath him with a moderate risk of collision. He had received no warning of this traffic from ATC and presumes this was because the microlight pilot was not in radio contact with Prestwick.

**PRESTWICK ATC** reports that the PA28 departed from Prestwick at 1434. At 1440 ADC informed the pilot that there was no known traffic to the N to conflict which was acknowledged. The ac landed back at Prestwick at 1521 and no reference was made to, or calls received from, any microlight ac.

Note (1): In a subsequent conversation the microlight pilot said that his QNH was obtained by observing the altimeter setting on the beach S of Ardrossan before take off. He was advised that the QNH current at Prestwick at the time was 1018 and therefore a check of his instrument's calibration might be advisable.

Note (2): ScACC has examined the radar recording for the period of the incident and the encounter is not seen.

## PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac and a report from the air traffic controller involved.

Members acknowledged the microlight's limited performance and had some sympathy for its pilot who was obliged to take urgent avoiding action against the PA 28, despite having watched it from some distance as it approached from the opposite direction. A GA member commented that had the PA28 continued to follow the coast as a line feature the confliction would probably not have occurred; however, he accepted that this might not have been compatible with the PA 28's flight profile at the time. In the reasonable visibility reported, members felt that the PA 28 pilot should have

been able to spot the microlight earlier. The microlight pilot's report clearly suggests that the PA 28 passed by him twice in the vicinity of West Kilbride and it had been on the first occasion that he had taken the avoiding action he described. Members had difficulty in interpreting the precise geometry of the encounter but it seemed likely that the PA28 pilot's first visual contact with the microlight was not until after he had made the orbit over Seamills subsequent to the microlight's avoiding manoeuvre. The sighting was too late to enable the PA 28 pilot to take avoiding action and members concluded that this was the cause of the Airprox. Because the PA 28 pilot had no time to take avoiding action, and the microlight had limited ability to manoeuvre, the Board concluded that there had been a possible risk of collision.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: B

Cause: A late sighting by the PA 28 pilot.

### **AIRPROX (P) REPORT No 113/98**

Date/Time: 02 Sep 1552

Position: N5730 W0350 (8 NM ESE of Inverness - elev 31 ft)

Airspace: FIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: BAe 146 Nimrod

Operator: CAT HQ STC

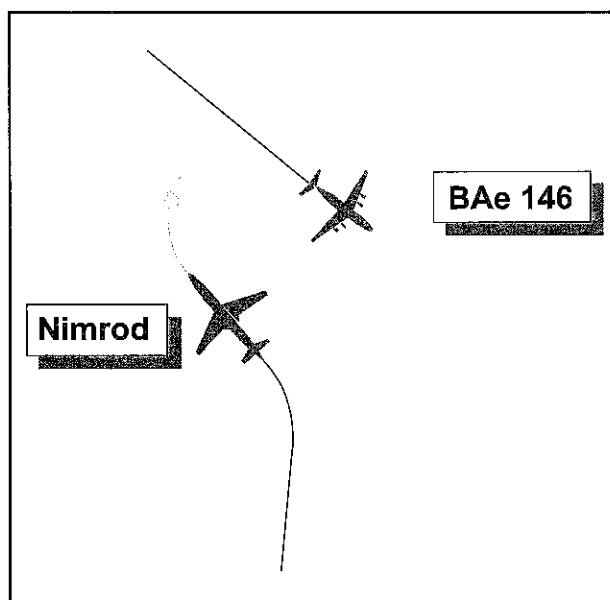
Alt/FL: 3200 ft ↑ 3100 ft  
(QNH 1014 mb) (QFE 1013 mb)

Weather: VMC CLNC VMC CLOC

Visibility: 10 NM+ 15 km

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE BAe 146 PILOT** reports heading 130° at 220 kt in a climb, having completed his after



take off checks and turned onto his departure track from Inverness. Passing 3200 ft he saw a Nimrod in his 3 o'clock on a reciprocal track; it looked as if its pilot had seen him and was turning away to the left. It was 200 ft below and about 500-1000 m away as it passed and he considered the risk of collision was medium to high. He had not received any traffic information on it.

**THE NIMROD PILOT** reports heading 005° at 200 kt on a base leg at 3100 ft for a PAR to RW 08 at Kinloss. He was under a RIS from Lossiemouth Approach who advised him of traffic in his 11 o'clock, 3 NM left to right at a similar level (as far as he could remember). He looked and saw a BAe 146 at about 3000 ft heading SE and climbing so he turned left onto 320° to pass starboard to starboard with it about 0.75 NM away at a similar level. There was no collision risk after he had seen and avoided it although the ac had been on a possible collision course.

**INVERNESS ATC** reports that the BAe 146 had been co-ordinated with the ScACC Moray Sector to route directly to ADN, climbing to FL 175. The pilot had not requested a service from Lossiemouth after departure but the controller advised Lossiemouth *"I've got a 06 departure going straight towards Aberdeen up to FL 290 - do you have anything to affect that?"* The Lossiemouth Departures controller replied: *"I've nothing at the moment, looks as if Director's just got one airborne not above two thousand five hundred."* The controller passed the BAe 146's (ScACC) squawk, advised that it would be departing RW 06 in about 2 minutes and asked *"- anything to affect give me a call"*. Departures replied: *"OK will do"*. About 2 minutes after departure the BAe 146 pilot reported passing close to a Nimrod. He confirmed he could see it a few miles to the E and suggested he called Lossiemouth on his other RT for traffic information. The pilot recalled him later, after transferring to ScACC, to advise he would be filing an Airprox as the Nimrod had been about 500 m from him.

**HQ MATO** reports that at 1548:00, the Inverness Approach Controller (IAC) contacted

the Lossiemouth LARS Controller (LARS) and advised that the BAe 146 would be departing from RW 06 at Inverness, climbing to FL 290 on a direct track to Aberdeen. IAC queried *"...anything to affect that?"*. LARS had no traffic under service which could affect the BAe 146, but the controller opined that Lossiemouth Director (DIR) might have. At 1548:22, IAC advised that the squawk assigned to the BAe 146 was 1141, which would be departing in about 2 minutes and *"if you've anything to affect give me a phone"*, to which LARS agreed. Meanwhile at 1548:06, Lossiemouth Approach began a hand-over to DIR on the Nimrod which was on a bearing of 170° from Inverness at 20 NM, heading 015°; this ac was inbound to Kinloss for a PAR to RW 08, squawking 3716 with Mode C and descending to 5500 ft QFE (1013 mb). The Kinloss weather was colour code BLUE and DIR was manned by a controller under training, screened by a qualified Mentor. At the same time that LARS contacted DIR to relay information about the departure from Inverness, the Nimrod crew called DIR on 259.975 who identified the flight and placed it under a RIS at 1548:55. LARS reiterated the traffic information provided by IAC, which was acknowledged by DIR. At about 1549:30, the Nimrod crew was instructed to descend to 3100 ft (QFE), in accordance with the stipulated radar vectoring minima, which was acknowledged. DIR was then required to relay a message to a Tornado crew in the Lossiemouth instrument pattern. Moments later at 1552:31, DIR passed traffic information to the Nimrod crew on the BAe 146, *"traffic 12 o'clock, 3 miles south-east bound, indicating 2500 ft"*. The Nimrod crew responded immediately, *"...roger just turning left to avoid him"*. About 15 seconds later the Nimrod crew advised *"...clear of that traffic, happy to resume for Kinloss"*. DIR then turned the Nimrod right onto 020° and continued to sequence it in the Kinloss instrument pattern without further incident or comment from the crew.

The Airprox occurred below recorded radar coverage: however, Lossiemouth reports that the Airprox occurred about 110° from Inverness at 8 NM. Although the Lossiemouth Watchman primary radar was fully serviceable, the Kinloss



SSR source utilised by Lossiemouth was subject to an intermittent fault, which did cause some persistent garbling of SSR returns. However, both the BAe 146 and Nimrod were clearly displayed in primary and SSR, and it is evident that traffic information was passed by DIR to the Nimrod crew under the RIS. The BAe 146 would have entered Lossiemouth's radar coverage as it passed about 1200 ft in the climb, probably less than thirty seconds before traffic information was issued by DIR, when it passed 2500 ft. Though speaking to the Tornado crew may have distracted DIR, this traffic information was passed to the Nimrod crew at a fairly late stage, which resulted in barely sufficient warning and little room for manoeuvre. Nonetheless, the Nimrod pilot reports that the BAe 146 was seen as soon as the traffic information was received, whereupon he turned 40° left to avoid it.

The Nimrod crew was solely responsible for maintaining separation from other ac under the RIS that pertained. However, positive action should have been taken by DIR at an earlier stage to effect separation between the subject ac when it was appreciated that a conflict would ensue. Although the ScACC/Lossiemouth/Inverness LOA only compelled DIR to inform IAC of traffic when it is "*downwind in the Kinloss RW 08 radar pattern*", the DIR Mentor exercised poor judgement in not ensuring that co-ordination was effected with IAC in this instance. Furthermore, the BAe 146 departure was notified to LARS in accordance with the LOA, whereby RAF Lossiemouth may provide a LARS to outbound GAT from Inverness. Neither the BAe 146 crew, nor IAC specifically requested a supplementary radar service from Lossiemouth. Therefore, it is unfortunate that it was not proffered by the LARS controller who should have realised that the departure of the BAe 146 was a potential conflict during the Nimrod's recovery. Furthermore, as LARS had not advised IAC of traffic that would affect the BAe 146, as agreed, IAC remained unaware of the potential conflict with the Nimrod. Subsequently, all controllers at Lossiemouth have been debriefed on the circumstances surrounding this Airprox.

The extant LOA does not permit Lossiemouth to specify a departure profile, nor impose a radar service on crews flying in the open FIR. Nevertheless, this Airprox on the boundary of the Kinloss/Lossiemouth AIAA could have been averted if a radar service had been provided. Agreement has been reached between NATS and the MOD regarding the provision of a radar service to Inverness traffic. Two military controllers are to be established at RAF Lossiemouth to provide a radar service to Inverness arrivals/departures and a revised LOA has been agreed by the signatories after considerable negotiation. The provision of service began on 28 Jan 99; under the terms of the LOA, RAF Lossiemouth now provides an Arrival/Departure service to traffic inbound and outbound to Inverness via the Class F ADRs, Monday to Friday. GAT flying outwith the ADR will be provided with a radar service under the auspices of the National LARS, within the constraints of the normal priorities.

HQ STC comments that in accordance with the terms of the RIS they were receiving, the Nimrod crew reacted appropriately in taking avoiding action as soon as traffic information was passed, and the conflict seen. The sequence of events leading to the Airprox has been thoroughly investigated and action is in hand to minimise the likelihood of a recurrence. In the event, the Nimrod crew negated any actual risk of collision when they took positive avoiding action.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies and reports from the appropriate ATC and operating authorities.

Much of the Board's discussion centred on why the Lossiemouth controllers had not passed details of the Nimrod's arrival to Inverness. The Nimrod came on frequency at about the time DIR was being informed by LARS about the BAe 146's departure and the Board agreed with HQ MATO that DIR should have told Inverness

about it straight away. However, he was also required to pass a message to the Tornados and direct the Nimrod in the same timeframe and his traffic information to the Nimrod, which initiated the avoiding action process, was effective. Because the IAC was not in a position to pass traffic information on the Nimrod to the BAe 146 pilot, the appearance of the former was a bit of a surprise to the latter's pilot. However, the Nimrod pilot had been given the information in time for him to take timely avoiding action which, the Board agreed, had removed any risk of the ac colliding. Members concluded that the incident was a confliction of flightpaths in Class G airspace which was

resolved by the Nimrod pilot. Members also observed that in Class G airspace in VMC it is the prime responsibility of all pilots, IFR or VFR, whatever their ATS, to ensure their own separation from other ac and to look out well enough to enable them to do so.

There was wholehearted agreement that the use by the BAe 146 pilot of a radar service from Lossiemouth, which was available at the time, would have made the incident much less likely. Regarding the new LOA, the Board welcomed the development, and concluded the agreement should make such incidents a thing of the past.

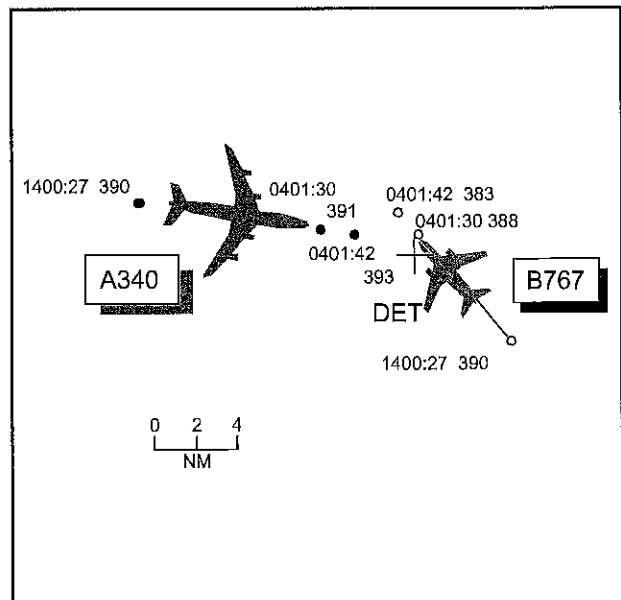
**PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* Confliction of flightpaths in Class G airspace, resolved by the Nimrod pilot.

**AIRPROX (P) REPORT No 114/98**

*Date/Time:* 06 Sep 0401 (Sunday) NIGHT  
*Position:* N5118 E0035 (Detling VOR)  
*Airspace:* UAR (Class: B)  
*Reporting Aircraft* *Reported Aircraft*  
*Type:* B767 Airbus A340  
*Operator:* CAT CAT  
*Alt/FL:* FL 390 FL 390  
*Weather:* VMC VMC  
*Visibility:* 100 NM  
*Reported separation:* < 2 NM/800 ft 5 NM  
*Recorded separation:* 1.9 NM/1100 ft (radar)



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE B767 PILOT** reports that he was heading about 330° at M0.8 while cruising at FL 390 under the control of LATCC on 127.42. The visibility was 100 NM in VMC. When about 70 NM NW of Boulogne, he received a TCAS TA, immediately followed by an avoiding action instruction from ATC. A TCAS RA then

demanded descent, which was followed down to FL 381. The other ac, an Airbus, passed down his port side less than 2 NM away and 800 ft above. He felt there had been a moderate risk of collision.

**THE A340 PILOT** reports that shortly after entering the UK FIR in excellent flying conditions at FL 390, opposite direction traffic was detected on TCAS about 20 NM away. A few seconds later, a TCAS TA was received and then, simultaneously with a TCAS RA demand to climb, ATC instructed him to turn R in avoidance; immediately before this instruction, ATC was heard to pass the same instructions to the other ac. The FO, who was flying the ac, immediately complied with both ATC and TCAS instructions which necessitated a climb to FL 393 and a heading change R of about 40°. He estimated the other ac passed not less than 5 NM away.

**ATSI** reports that the Airprox occurred towards the end of the LATCC AC LUS/LMS SC's second consecutive night duty. Although he had felt fit and adequately rested prior to commencing the shift, he said that he had been feeling tired at the time of the incident. He was responsible for both the London Upper Sector (LUS) and London Middle Sector (LMS) and did not have a dedicated Chief Sector Controller (CSC) available. A 'roving' CSC was available in the Ops room but was not in the vicinity of LUS around the time of the Airprox. This particular 'roving' CSC was not LUS valid but could have been requested to carry out routine co-ordination using levels allocated by the SC. Three SCs were rostered to cover LUS; for the middle part of the duty the task was divided between two with the third being permitted to take an extended break, while remaining on call.

The SC considered himself to have been busy at the time of the Airprox. However, the RT transcript shows that although there were 8 ac on frequency at the time, including the subject ac, during the 10 to 15 minutes immediately prior to the Airprox there had only been 4 or 5. It appears that the SC's perception of his workload was associated more with a rapid build-up in the number of FPSs on the sector than the actual workload being experienced. In addition, the SC pointed out that a high proportion of the incoming telephone calls to the sector were directed to the CSC position and answering these calls involved removing his

headset, or one of the earpieces, in order to use the CSC's handset. In his view, this constituted a significant distraction. The CSC and R3 position recordings were examined and show that, during the 5 min prior to the Airprox, there were 3 telephone calls to the CSC position and 2 to the R3 position. Unbeknown to the SC, at least 2 of the most heavily used CSC telephone lines also terminate on the SC's telephone panel and so could be accessed using the headset. However, this is not immediately obvious since the lines do not ring or illuminate at the SC position unless the appropriate CSC button is selected.

The SC stated that the workload had also been increased by a number of ac requesting level changes due to turbulence. Recognising that his workload was increasing and that he would require assistance, at about 0355, shortly before the Airprox occurred, he arranged for the third controller to be called back to the sector early. This third controller took over the position at 0405 and the SC remained to assist by carrying out what would normally be the CSC duties.

When the SC took over, the A340 had already been co-ordinated into the sector at FL 390. No action was taken to highlight the fact that this was a 'westbound' level; however, it was pointed out that this was not unusual because at that time of day, with the heavy eastbound flow of transatlantic traffic, there would have been considerable use of 'westbound' levels for eastbound flights. It was the SC's recollection that the FPSs on the B767 were not present when he took over and consequently the potential conflict between the subject ac had not been pointed out during the handover. Nevertheless, having taken over control of the sector, the first ac to call him was the B767. By that stage, FPSs on the flight were clearly present because the SC, having acknowledged the B767 pilot's report that he was maintaining FL 390, cleared him direct to DAYNE.

The pilot of the A340 checked in on the frequency at 0348:40, just over a minute after the B767. The SC acknowledged his report of maintaining FL 390 and, apart from enquiring

whether he was having a smooth flight at FL 390, no further exchanges with either ac took place prior to the Airprox which occurred at 0401:46. The SC did not recognise the potential conflict and the ac converged on the Airprox position. He could not offer any satisfactory explanation for this and acknowledged that the correct FPS had been present on both flights. The FPS showed the A340 estimating the Detling VOR (DET) at 0400 and the B767 at 0402 but the SC could not recall where the strips had been positioned in relation to each other in the FPS display. There is no evidence to suggest that the flights were not correctly displayed on radar.

At 0401:10, the LUS SC was alerted to the developing conflict by a colleague on another sector, by which stage the flights were about 9 NM apart. The SC could not recall seeing the STCA activate but was subsequently assured by controllers on adjacent sectors that it had. [The NATS Department of Technical Research and Development (TRD1) carried out an assessment of the STCA performance and found that it performed as required, activating about 80 sec prior to the closest point of approach]. The subject ac were both given instructions, prefixed by the words "avoiding action", to turn R, the B767 onto heading 360° and the A340 onto 180°. The A340 pilot was also provided with information: ....*"traffic is in your eleven o'clock .... range two miles"*....which he reported having in sight. In responding to his 'avoiding action' instruction, the pilot of the B767 advised that he was also complying with a "TCAS descent" RA. This transmission coincided with one from the A340 and it appears that its pilot may have been reporting a "TCAS climb" at the same time. This cannot be confirmed by the RT recording, where the message is not clear, but in his report the A340 pilot confirms that he climbed in response to a TCAS RA. The commander of the B767 reports that he had sighted the A340 at a range of 4 NM.

On the radar recording there is little evidence of either ac complying with the SC's turn instructions. However, even in the absence of any perceived turns, the B767 was at a range of

4.5 NM from the A340 when it passed through its 12 o'clock position from R to L at 0401:30. At their closest point the flights were 1.9 NM apart laterally as they passed port to port at 0401:46, but by then vertical separation was in the order of 1100 ft and increasing owing to the TCAS manoeuvres which had been carried out. Shortly after the encounter, the pilot of the B767 indicated that he would be submitting a report; the crew of the A340 made no further comment on RT.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs and a report from the appropriate ATC authority.

An ATSI adviser said that it was evident that the SC felt under some pressure during the period preceding the Airprox. However, there was little evidence to support his view that the RT, telephone and traffic loadings were excessive to an extent that would explain why he did not detect the conflict, which should have been readily apparent from both the FPS and radar displays. Nonetheless, the SC had evidently considered his workload to be sufficiently high to warrant calling the third SC early for support. Investigation showed that the flights in question were correctly displayed on radar and that the appropriate FPSs, showing reasonably accurate times, were provided. It can only be assumed, therefore, that the SC's check of the FPS and radar displays to detect potential conflicts was inadequate. The adviser felt that a possible explanation for the SC's unawareness of the conflict was that he had become preoccupied with the build-up of FPSs on projected traffic at the expense of his attention to 'live' traffic.

The Board accepted this analysis and concluded that the Airprox was caused because the LATCC LUS SC did not recognise from his displays that there was a conflict. However, noting the minimum recorded lateral radar separation of 4.5 NM, members assessed that

there had not been a risk of collision. In the absence of avoiding instructions resulting from the controller not spotting the conflict, members acknowledged and commended the role TCAS had played in significantly reducing the severity of the encounter.

ATCO members emphasised the importance of thoroughly scrutinising and assimilating the

information on active strips during the handover period; it was thought that the A340's non-standard 'westbound' level should particularly have triggered the need for special care. With regard to the telephone facilities, members agreed that all SC positions should be able to make and take calls without the need to remove headsets; any other arrangement can cause a significant distraction.

**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: C

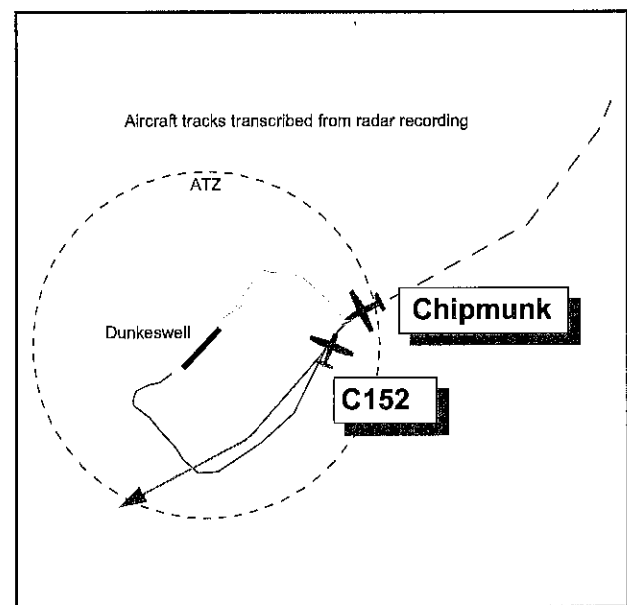
Cause: The LATCC LUS SC did not recognise the conflict.

**AIRPROX (P) REPORT No 115/98**

Date/Time: 8 Sep 1738  
Position: N5052 W0312 (1.5 NM E of Dunkeswell - elev 827 ft)  
Airspace: ATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Cessna 152 Chipmunk  
Operator: Civ Trg Civ Pte  
Alt/FL: 800 ft 1850 ft (QFE) (QNH)  
Weather: VMC HZBC VMC HZBC  
Visibility: 3-5 km 4 NM

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE CESSNA PILOT** (instructor) reports heading 045° at 90 kt approaching the end of the downwind leg at 800 ft in a LH circuit at Dunkeswell, with a student pilot. The student shouted out an ac 5-600 yd away, closing from their 12:30 so he took control and made a sharp 70-80° AOB descending right turn, losing 300 ft. The other ac, possibly a Chipmunk, passed 50 ft above and 5-600 yd to his left and continued without deviation. Its pilot did not respond to a call on Dunkeswell A/G frequency, and had not warned of his transit through the ATZ, and there had been a very real risk of collision.



**THE CHIPMUNK PILOT** reports heading 239° at 90 kt on a cross country at 1850 ft (QNH), about 100 ft below cloud. He saw a Cessna 6-700 m ahead which passed 4-500 ft to his left and 2-300 ft below, weaving. There was no risk of collision and no need for avoiding action, and he did not consider it was necessary for the Cessna pilot to have filed an Airprox, which he thought the flying school may have done to deter other pilots from flying near. The Cessna was out of its ATZ as confirmed by his map and the GPS fitted in his ac. He was operating VFR

and suggested the Cessna pilot may have been caught by surprise. As a display pilot he was used to flying close to other ac in formation and in opposition so emotion did not cloud his judgement of distance, speed and separation.

Note: A replay of the Burrington ATC radar recording shows the 2 ac, both squawking 7000 without Mode C. As the Cessna is tracking crosswind the Chipmunk, approaching from the NE, turns from a track of 218° (tangential to the ATZ) onto 240° and closes on the Cessna as the latter tracks 040° downwind. The returns coincide inside the ATZ with no measurable separation, at 1738:02, at a position 1.5 NM from the airfield centre. The avoiding action of the Cessna is not discernible; after passing the Chipmunk, it turns onto base leg. The Chipmunk then tracks 218°, passes 1.1 NM abeam the airfield centre and departs the ATZ at a point 210° from its centre.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac and radar recordings.

Contrary to the Chipmunk pilot's assertions, the Burrington radar recording clearly showed (at 1:50 000 scale) that the Cessna's circuit was flown within the Dunkeswell ATZ and that the Chipmunk had flown between the Cessna and the airfield. Members agreed that the cause of the Airprox was that the Chipmunk pilot had penetrated the ATZ and flown into conflict with the C152. A further observation was that the Chipmunk had continued through the ATZ in opposition to the circuit direction. The Board noted this incident demonstrated once again that GPS was not adequate as a sole navigation aid and that in the weather conditions prevailing, map reading would not have been easy. It seemed that both pilots had seen each other at about the same moment and although the C152 pilot had ensured there was no risk of the ac actually colliding, members assessed that the safety of the ac had been compromised.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: The Chipmunk pilot penetrated the Dunkeswell ATZ and flew into conflict with the C152.

**AIRPROX (P) REPORT No 116/98**

Date/Time: 11 Sep 1330

Position: N4815 W1900 (550 NM W of Brest)

Airspace: OCA (Class: A)

Reporting Aircraft      Reporting Aircraft      Reporting Aircraft

Type: MD11(A)      MD11(B)      B767

Operator: CAT      CAT      CAT

Alt/FL: FL 350      FL 350      FL 350

Weather VMC CLAC      VMC CLOC

Visibility: 10 NM      Unltd      >10 km

Separation: Not known      Not known

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE MD11 (A) PILOT** reports heading WSW at 482 kt, level at FL 350 and in communication with Shanwick on HF. He received a TCAS traffic alert and 2 seconds later a RA to descend. He saw the traffic, another MD11 on an opposite direction track, which passed 3 NM away, climbing slightly; the TCAS indicated the vertical separation as it passed was 1300 ft. He recognised its airline colours and reported a near miss to Shanwick at the same time asking to have his Oceanic clearance checked.

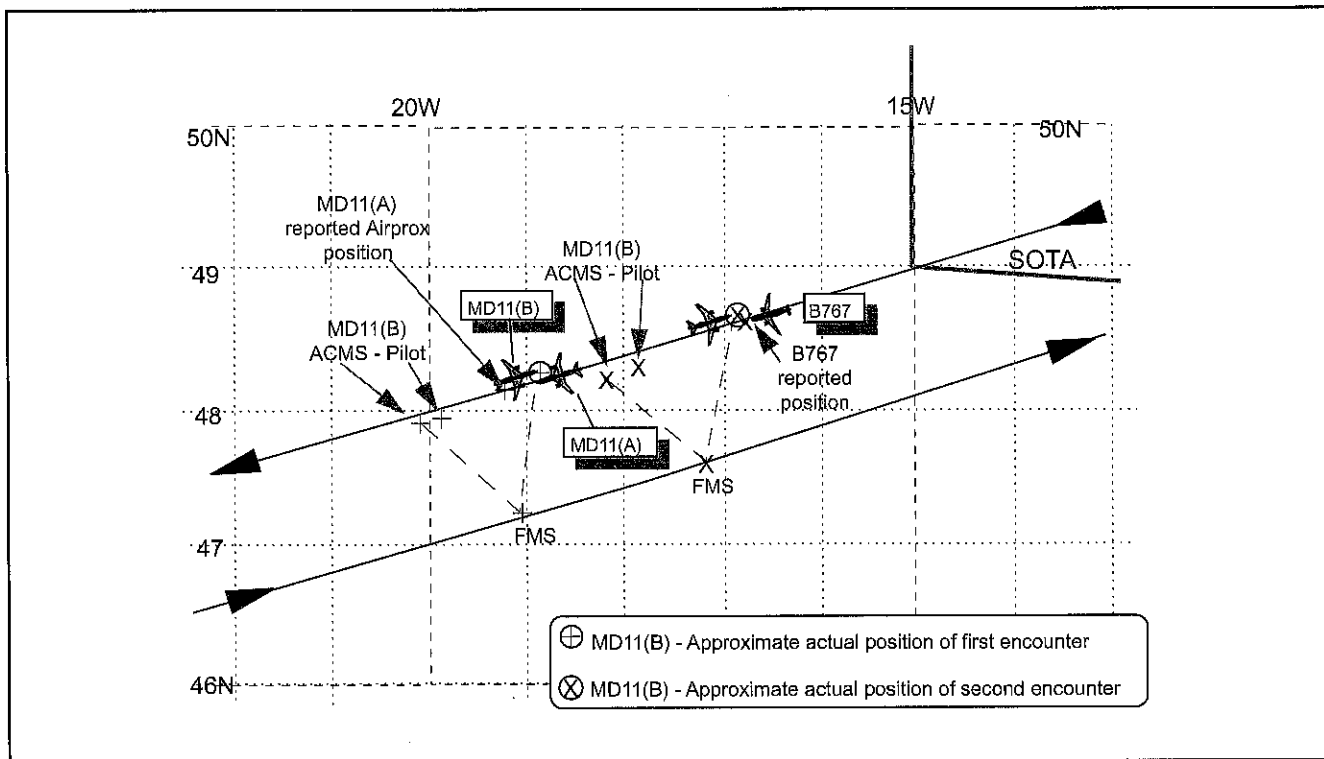
**THE MD11 (B) PILOT** reports that while en route from the Caribbean to Europe at FL 350 over the N Atlantic at 470 kt an opposite direction contact at the same level was displayed by his TCAS which then gave a 'climb' RA. He followed this and saw the other ac which he recognised by type and company as MD11 (A). It passed 3-4 NM to his right and 4-500 ft below having followed its RA to descend. He advised Shanwick of the occurrence and while checking that the route he was on was the one expected, about 5 min after the first occurrence, a second ac was detected (the B767), also head on at the same level. He was in RT contact with this ac and climbed to FL 360 10 NM before it crossed 2 NM to his right and 1000 ft below. (Note: The RT transcripts showed that he did not mention this climb on an ATC frequency, but did so on Guard to the B767.) Later, when within radar cover, Shannon advised that his position was some 50

NM NE of his FMS position. He continued to his destination using VOR/DME navigation.

**THE B767 PILOT** reports heading 262° at M 0.8, level at FL 350 and in communication with Shanwick on HF. He was following about 20 minutes behind MD11 (A) on the same NAT track. At about 1336 he received a TCAS TA with traffic approaching from 12 NM ahead, slightly right of the nose, about 500 ft above and climbing. It passed about 1.5 NM to starboard at FL 360 and its pilot called him on 121.5 to say that he had climbed from FL 350 to avoid him having seen him on TCAS, adding that it was his second confliction in a few minutes. The B767 pilot reported the encounter to Shanwick and asked for his clearance to be confirmed.

**INVESTIGATION.** It was clear from the start that the reason the ac had come into confliction was that MD11 (B) had suffered a gross navigation error (GNE). The reason for this was thoroughly investigated by the airline's flight safety and quality assurance department under remit from its national air safety authority.

The crew of MD11 (B) had been operating in the Caribbean and northern part of S America for the 10 days before the incident, spending much of the time at one of their destinations some 66 NM W of their final departure airfield. The ICAO designators for these airfields differ only by their final letters. On preparing for departure, while the F/O was loading the route into the FMS he mistakenly entered the designator for the other airfield as the departure location. At the time, the Captain had been distracted from monitoring this task by a conversation with the ground engineer about a 'hot spot' on the floor of the main cabin which had been reported by the incoming crew. The importance of this discussion was heightened by the recent loss of the Swissair MD11 off Nova Scotia after an on-board fire. The small difference in the northings of the 2 airfields appears to have been insufficient to stop the IRS alignment or trigger the master caution, both of which will happen if the system finds itself aligning at a different latitude to that indicated by the departure airfield designator. No abnormalities were apparent during alignment. Furthermore, the 2



airfields have no SIDs and have similar layouts and runway alignments.

After take-off the crew immediately became aware of a problem from the picture in the navigation displays. They flew to their first waypoint some 100 NM along track by use of VOR/DME and established that the wrong departure airfield had been entered in the FMS. The crew manually updated the FMS at the waypoint [by entering its co-ordinates in line 1L of the POS REF page and selecting the UPDATE\* prompt via line select key 1R]. This caused a map shift after which the picture on the nav displays was correct. They subsequently performed 2 more manual updates and then on approaching the Leeward Islands obtained 3 radar fixes from Puerto Rico which matched the FMS positions. A final check overhead St Martin VOR gave them sufficient confidence in their navigation system to proceed into the Atlantic MNPS area. (Minimum Navigation Performance Specification applies in the Shanwick OCA between FLs 285 and 420. The navigational accuracy required is specified (ENR 2-2-5-11), the system must be serviceable and must have been checked for accuracy before entering;

subsequent loss of capability must be advised to ATC and there must be a high standard of supervision, monitoring and cross checking of inserted data. Additionally, in the event of an ac suffering partial loss of navigation capability prior to entering Oceanic Airspace, pilots should avoid the MNPS area or consider specified alternative routes.)

The Shanwick RT transcripts showed that MD11 (A), followed by the B767, were cleared on a westbound track as shown in the diagram, while MD11(B) was cleared along a parallel eastbound route 1° to the S. Position reports were correctly made to Santa Maria and Shanwick by all ac until 1327 when MD11 (A) called on 5649 to report a near miss with an opposite direction ac (whose airline he named) at 48.07 N and 19.20 W and asked for his allocated track to be confirmed. At 1329:02 MD11(B) called Shanwick on 5598 but received no reply. At 1330:13 (B) called again on 8831 and reported passing 47N 20W at 1319 (11 min before the call), at FL 350, and estimating 48N 15W at 1344. At 1330:48, after being asked to report at 15W, the pilot stated he had received a TCAS TA at position 47 57.2N 19 56.1W which is a position some 57 NM off track to the



N and a similar distance N of his recent position report. (The airline explained that the first position was taken from the FMS and the second by the Captain reading from the 3rd Mode Control and Display Unit (MCDU) which showed the IRS mix position.) He continued that this was a near miss with another MD11 whose airline he correctly named and added that he was again receiving another TCAS with further traffic. After further conversation about the routing of the 2 ac the pilot then reported a second TA at position 48 19.6N and 17 51.4W with the B767 and questioned if the B767 had been given the correct route, with a comment that showed the crew had not considered the possibility that the problem was on their own flight deck. This position is also some 55 NM N of their allocated track. The next 6 minutes were taken up with the 2 MD11s and Shanwick checking the acs' cleared routes (which were correct) before the B767 pilot could advise at 1340:32 that he had had an Airprox with MD11(B) at about 4840 N and 1650W; he did not give a time at this position.

The IRS mix and FMS positions at the Airprox times were extracted from MD11 (B)'s ACMS data and are shown in the diagram. Neither appears correct; while the IRS position is close to the actual track, the ac appears actually to have been some miles ahead of this position. The precise tracks of the westbound ac are not known, nor the precise times of the Airprox (because of the lack of radar cover) so the exact position of MD11 (B) relative to the FMS position is not known. However, it appears to have been in the order of 55 NM to the NE of the FMS position as indicated by Shannon when MD11 (B) entered radar cover some 34 minutes after the Airprox. The navigation system components were comprehensively tested and found to be functioning correctly. The airline therefore sought from the IRS manufacturers an explanation of the extraordinary drift rate of the 3 IRSs apparently introduced by the incorrect initial position. Simulation of the effect of entering a similarly displaced departure point and making corrections to the FMS produced a similar IRS drift probably induced by the small error in Northings (which were insufficient to trigger the

alarm during alignment). In addition, the incident demonstrated that if the crew had kept a navigational plot of the FMS and IRS positions, the problem might have become apparent to them much earlier. The airline's Flight Safety and QA department intends to make recommendations as a result of this incident: (a) to the company to mandate route plotting when outside the range of terrestrial nav aids, and (b) to Honeywell to reduce the permitted latitude discrepancy found during IRS alignment before the system provides appropriate warnings. (2 other incidents caused by inserting an incorrect alignment location are known to the CAA as are 3 others where this may have been the cause.) In addition, appropriate crew warnings and training were introduced by the airline shortly after the incident.

#### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of the 3 ac, transcripts of the relevant RT frequencies, reports from the air traffic controllers involved and reports from the appropriate investigatory and operating authorities.

This unusual incident generated a lengthy discussion and several points of interest arose. It was pointed out by an airline member that while plotting the IRS and FMS positions on a chart would disclose an unexpected divergence between them, many ac types already have a facility to show the IRS positions and the FMS position on the navigation display at the press of a button, or by making appropriate selections. However, he pointed out that in this instance the crew would have expected to see a significant difference between the IRS positions and the FMS position, a difference which they had built in on discovering their error after take off, but what would still not have been disclosed by plotting was that the ac was at neither of these positions.

It was the general view of the Board that the crew could not have rectified their initial error

while airborne and that their only option to solve their self-imposed problem was to land and realign the IRS while stationary on the ground before continuing into the MNPS area. It was also the view that a thorough understanding of an IRS and its relationship with an FMS, should be possessed by aircrew who use it. They would then have known that the adjusted FMS position would be expected to remain correct while in range of VORs, but would gradually 'wash out' with time once denied fixing aids over oceanic areas. Some members thought it was counter to the spirit of the rules for the MNPS area for the crew to have continued into it given their situation.

The Board then discussed the circumstances surrounding the initial IRS input error and the information available to the crew on discovering it. Members entirely understood how easy it is to make such an error especially bearing in mind the similarity of the ICAO codes and the recent activity of the crew. However, it was clear that company orders required one pilot to enter the FMS data and another to check it by use of his own navigation documentation. Furthermore, the Board were as one with the MD11 (B) captain's desire to be absolutely sure that the reported hot spot was investigated to his complete satisfaction. However, having done so he still had a requirement to check the departure location was correct, even if this meant a delay in departure. Members were also aware that it would have been very easy for the checking pilot also to have missed an error of one letter in an ICAO code but assumed that he would be checking the lat. and long. of the position interpreted by the FMS from that ICAO code. Despite the error (of inserting an

incorrect alignment location) being exceptionally rare, and company orders designed to prevent such a mistake in the first place, members considered that aircrew documentation should include advice to the effect that on discovery of this error, on a flight involving oceanic crossings where the IRS is the sole means of navigation, it is essential to land and re-align before flying beyond the coverage of land based nav-aids. Pilot members thought few airlines currently provided such instruction to aircrew and the Board therefore recommended wider dissemination of this suggestion. It was not known if the pilots could have gained assistance on this point on a company frequency, but their actions overall may have been influenced by a desire not to reveal their error and to solve their problem themselves.

Members also expressed concern that the MD11 (B) crew had not informed Shanwick of their TCAS climb to avoid the B767. It was pointed out that there were international military flights over the N Atlantic which operated sometimes without transponders at intermediate levels, and that FL 360 was in use on that track on that day. The conversation on 121.5 would have been out of VHF range for Shanwick.

The Board concluded that the cause of the incident was a gross navigation error resulting from the crew of MD11 (B) inserting an incorrect IRS alignment position, but that TCAS and some fortuitous lateral separation had removed any risk of actual collision between the ac involved.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

**Degree of Risk:** C

**Cause:** Gross navigation error resulting from the crew of MD11 (B) inserting an incorrect IRS alignment position.

**Recommendation:** That the CAA considers encouraging airline operators to provide instructions to aircrew on actions to be taken on discovering an incorrect IRS alignment position.

**AIRPROX (P) REPORT No 117/98**

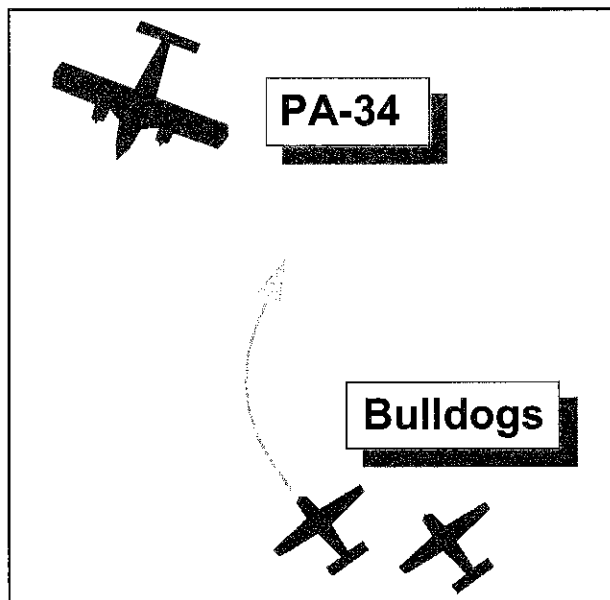
Date/Time: 11 Sep 1431  
Position: N5134 W0109 (3.5 NM SW of Benson - elev 203 ft)  
Airspace: MATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Bulldog PA34 Seneca  
Operator: HQ PTC Civ Pte  
Alt/FL: 2500 ft 2400 ft  
(RPS 999 mb) (QFE)  
Weather VMC CLNC VMC CLNC  
Visibility: 30 km 10 km+

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE BULLDOG PILOT** reports heading 315° at 100 kt to leave the MATZ after departing from RW 19 at Benson, leading a solo student in close formation. He had been advised by Approach of a twin which he located before looking away to check his No 2's position in echelon starboard. On looking ahead again he saw a different twin closing in his 1 o'clock which would pass very close so he called his No 2 and turned hard right to avoid it, passing about 200 yd to its left at a similar level. Without avoiding action he would have passed very close.

**THE PA34 PILOT** reports heading 220° into sun at 130 kt at 2400 ft on the QFE, receiving a FIS from Benson on 120.9. ATC advised him of a pair of Bulldogs which he saw at the same time about 1 NM away approaching from his 10:30. They were turning away to pass down his left hand side by about 0.5 NM with no risk of collision.

**HQ MATO** reports that the Benson Watchman SRE was unserviceable so only secondary radar data from the Brize Norton MSSR source was available. The Bulldog section departed VFR from RW 19 to the west, receiving a FIS from Benson Approach on 268.825, and squawking 7365 with Mode C. The section then switched to another frequency but the leader recalled Approach at 1433:04 to report an Airprox which he advised occurred at 2500 ft Cotswold



RPS (999 mb), about 1 1/2 - 2 NM W of Wallingford.

The PA34 pilot had free-called Benson Zone on 120.9 and received approval to transit the Benson MATZ at 2400 ft, heading SSW, from Westcott to CPT. Zone assigned a squawk of 7350, started a FIS at 1414:36 and passed the Benson QFE (993 mb) for the MATZ crossing. At 1430:35, Zone detected the presence of the Bulldog section and passed traffic information for the first time, "...Bulldog ac, similar altitude to you, just south of you now", which was acknowledged by the PA34 pilot immediately "...looking". Zone reiterated traffic information 5 seconds later "just slightly left of your twelve o'clock now, about 2 miles", which was also acknowledged. It was not until traffic information was transmitted for the third time at 1431:03, "...now 11 o'clock at 1 mile" that the PA34 pilot immediately replied "...visual with that". The PA34 pilot made no comment on RT about the occurrence.

The LATCC Heathrow radar recording illustrates the Airprox. The Bulldog section, identified from their squawk, is shown tracking NW at 2600 ft Mode C and converging with the PA34, which is shown maintaining 2800 ft Mode C and tracking about 190°. The contacts merge at 1431:17, with both ac indicating 2800 ft Mode C. The avoiding action right turn reported by

the Bulldog leader is evident after both ac had passed port to port, but with little horizontal separation. Both ac maintained 2800 ft Mode C as they opened from each other.

RAF Benson local procedures stipulate that pilots departing VFR are automatically provided with a FIS, unless a radar service is requested, so the nature of the ATS provided was not stated on RT. Approach was not required to monitor the Bulldog section continuously and did not do so. Indeed, as both pilots were flying VFR under FIS, neither Approach nor Zone were required to effect separation between the subject ac. However, it would have been prudent for Approach to have passed traffic information on the PA34 crossing through the MATZ. Conversely Zone detected the confliction and repeatedly passed traffic information to the PA34 pilot until it was confirmed that the Bulldog section had been seen. Since this occurrence SATCO Benson has reviewed local procedures and now requires controllers to reaffirm the nature of ATS provided to all VFR departures. Additionally, the efficacy of passing traffic information about ac crossing the MATZ has been reinforced to all controllers.

HQ PTC comments that although this was quite a late spot by both the Bulldog and the PA34 crews, the avoiding action by the Bulldog formation ensured safe separation.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* Late sighting by the pilots of both ac.

recordings and reports from the appropriate ATC and operating authorities.

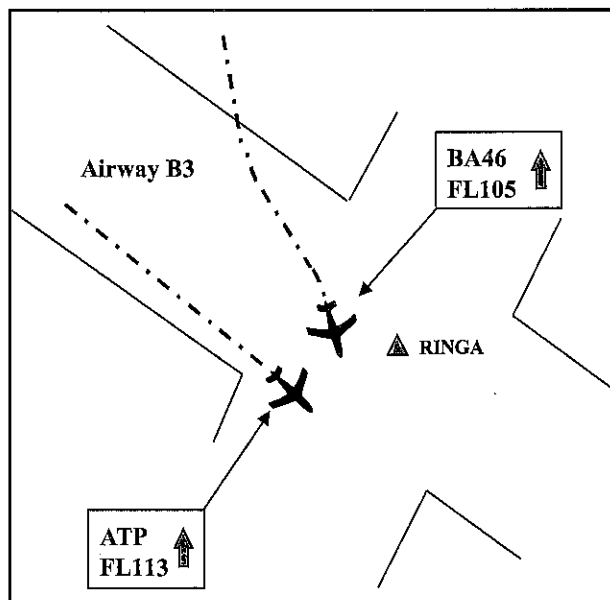
Members understood the tendency for military pilots flying in a MATZ to believe they would be aware of other ac in the zone, not only those they could see but of others they could hear on RT. Therefore to come across something unannounced, such as this Seneca, would have been a surprise to the Bulldog pilot. Bearing in mind the PA34 was not on the same frequency as the Bulldogs, the Board agreed with HQ MATO that it would have been prudent for Approach to have passed traffic information on the Seneca to the Bulldogs. However, in the prevailing circumstances, while under a FIS, the Bulldog leader was responsible for separation and members agreed that part of the cause of the incident was his surprisingly late sighting considering the visibility; the sighting was considered late in terms of that required to manoeuvre a 'student formation' safely. The Board also concluded that the PA34 pilot's sighting was late (later than the Bulldog's) despite the traffic information, although the Bulldogs were partly into sun and head-on as they turned away from him. Where degree of risk was concerned, members assessed that the Bulldog's sighting and avoiding action were effective in time to remove the risk of collision, albeit by not very much. The radar recording indicated a miss distance much closer to the Bulldog pilot's estimate than to the PA34 pilot's.

This Airprox and another one dealt with at the same meeting led the Board to question whether standard practices were adequate with regard to informing MATZ users about traffic crossing a zone. The Chairman agreed to bring this concern to the attention of HQ MATO.

## AIRPROX REPORT 35c/98

### Occ No. 98/05394

*Date:* 15 September 1998  
*Time:* 1052 UTC  
*Aircraft:* BAe146/ATP  
*Operators:* British Airlines  
*Position:* Ringa  
*ALT/HT/FL:* FL110  
*Airspace Type:* Airway B3 - Class A  
*Reporter:* ScACC - Antrim Sector P & E Controller  
*Reported Separation:* 4nm horizontal/Nil feet vertical  
*Recorded Separation:* 3.2nm horizontal/800 feet vertical



### THE INCIDENT

The aircraft involved in this AIRPROX were under the control of the ScACC Antrim Sector Controller. They had both been transferred to his control from the Belfast Aldergrove Approach Radar Controller immediately prior to the incident. The Antrim controller was carrying out the combined duties of Planning (P) and Executive (E) controllers. The ATP had departed from Aldergrove airport en route to Manchester climbing to FL130 on Airway B3 and the BAe146 had departed from Belfast City airport en route to Birmingham and was climbing to FL110, also on Airway B3. Both the Antrim and the Aldergrove controllers assessed their workload at the time of the incident as moderate. Note: Aldergrove is not equipped with SSR and thus controllers do not have access to height readout information.

At 1045, the ATP pilot contacted the Aldergrove controller, reporting passing altitude 2900 feet and climbing to FL110 on a heading of 150°. The Aldergrove controller asked him to report passing FL70 and shortly afterwards gave the pilot a left turn heading 130° to position the aircraft on the South side of Airway B3. Note: This positioning was in accordance with the agreed procedures for when runway 25 is in use at Aldergrove.

At 1047.30, the ATP pilot, in response to a query from the Aldergrove controller, reported passing FL66 and immediately afterwards, at 1047.40, the BAe146 pilot made his initial contact with the Aldergrove controller, reporting passing altitude 2500 feet. The BAe146 was identified and the pilot instructed to climb to altitude 5000 feet and turn onto a heading of 180°. Meanwhile, the controller had co-ordinated with the Antrim controller for the ATP to climb to FL130. At 1048.20, the Aldergrove controller passed this clearance to the ATP pilot and immediately afterwards passed an instruction to the BAe146 pilot to climb to FL110. Note: FL110 is the agreed level for aircraft climbing out on airway B3 and does not require specific co-ordination. The Aldergrove controller then obtained, from the ATP pilot, level reports passing FL87 at 1049.20 and FL94 at 1050.10, and on receiving a report of passing FL70 from the BAe146 pilot he instructed him, at 1050.20, to turn left onto a heading of 155°. The two aircraft were now on converging headings within Airway B3, with the ATP climbing to FL130 and the BAe146 climbing to FL110.

At 1050.25, the Aldergrove controller called the Antrim controller to co-ordinate the BAe146 and stated his intention of moving the BAe146 over to the North side of the airway. However, the Antrim controller expressed a desire to have the

BAe146 on the South side of the airway, and after discussion about the presence of the ATP on the South side climbing to FL130, the Antrim controller said, *"Yeah I can see that I can't get above thirteen with the ... (BAe146) ... at the moment"*. The Aldergrove controller replied that he would leave the BAE146 on its present heading of 155°. The Antrim controller then instructed the Aldergrove controller to, *"Turn him right onto one seventy"*. The Aldergrove controller acknowledged this at 1050.40.

At 1051.10, the ATP pilot was transferred to the Antrim controller having just passed FL102 in the climb, and at 1051.40 the BAE146 pilot, who had just reported passing FL95 in the climb, was turned right onto a heading of 170° and also transferred to the Antrim controller.

At 1051.30, the ATP pilot made contact with the Antrim controller reporting on a radar heading of 130° and passing FL108 but requesting further climb to FL150. The controller acknowledged this by asking the pilot to squawk ident. Immediately afterwards, at 1051.50, the BAE146 pilot called the Antrim controller reporting approaching FL110 on a heading of 170°. The controller acknowledged this with, *"(callsign) roger turn left immediately on to heading of zero nine zero please there is traffic in your right hand side at two o'clock at a range of five miles level at one one zero"*. The BAE146 pilot replied, *"zero nine zero (callsign) turning immediate left"*, to which the controller responded, *"It's avoiding action that"*. The controller then turned to the ATP pilot and instructed him, *"(callsign) right right heading one seven zero traffic in your left ten o'clock at a range of four miles one zero four climbing to one one zero"*. The pilot acknowledged this at 1052.20. The avoiding action then took effect and separation was soon restored after which both aircraft were vectored back on track and proceeded without further incident.

In his written report, the Aldergrove Approach controller recalled that he placed the BAE146 on a converging heading with the ATP on instructions from the Antrim controller and when he queried this with the Antrim controller, confirmation of the instruction to turn the

BAe146 right onto heading 170° was repeated. He believed this placed him in a difficult position as to whether he should comply with the instruction or not, but he decided to comply because the Antrim controller had told him he could see the aircraft in question (the BAE146) and had told him twice to turn it on to a heading of 170°. Additionally, the Antrim controller had SSR Mode C height information. The Aldergrove controller also believed that the BAE146 was below the ATP and about 6nm away from it when he transferred the aircraft.

Subsequent to his written report the Aldergrove controller recalled that when the Antrim controller said, *"Yeah I can see that I can't get above thirteen with ... ( the BAE146) ... at the moment"*, he took that to mean that the Antrim controller could see the subject aircraft on his radar display although, he realised, they would not be identified by him. He also agreed that because of the number of level checks that he had obtained from the subject aircraft, he should have been aware of the disparity in climb rates between the BAE146 and the ATP whereby it was very unlikely that vertical separation would be achieved as the aircraft were transferred to ScACC. With hindsight, it would have been prudent to have stopped the climb of the BAE146 at FL100 to ensure vertical separation.

The Antrim controller believed that Aldergrove had asked to route the BAE146 on the North side of Airway B3 but that he refused this due to traffic and instructed the Aldergrove controller to put it further right onto a southerly heading to get it behind other traffic which was climbing to FL150. When asked later why he had taken what can be described as the operationally unusual step of issuing a heading to an aircraft not seen on radar, the controller said that it was intended to mean that the flight should be routed to the South side of the airway. He agreed that the Aldergrove controller could have misconstrued this action and, consequently, could have assumed that the BAE146 was showing on the ScACC radar. When the BAE146 pilot called him passing FL98 climbing to FL110 and heading 170°, which pointed it at the ATP in a slow climb through

FL110, he judged there was insufficient time to stop the climb of the BAe146 and so ordered an immediate left turn onto 090° and passed traffic information.

In his written report, the BAe146 pilot recalled that when transferred to ScACC he was told to turn immediately onto 090° avoiding action which he obeyed. When this action was queried afterwards he was told there was a mix up in the SSR Mode C. He stated that both pilots had the traffic in sight and that the ATP looked to be higher and at about 5nm distance.

In his written report, the ATP pilot recalled hearing avoiding action being given to the BAe146 pilot and then himself receiving, from the controller, a hesitant instruction to ident and then turn right immediately onto 170°. He believed that there was no danger of collision as it was VMC and the other aircraft was seen by him. He assessed the minimum separation as 4nm horizontal and 800 feet vertical and the severity of risk as low.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the Aldergrove Approach controller who did not ensure that separation was provided between the BAe146

and the ATP when transferring the flights to the Antrim Sector controller.

This was at variance with procedures laid down in the Manual of Air Traffic Services (MATS) Part 1 and Part 2. He thought, understandably, that the Antrim controller could see both aircraft at the time co-ordination took place between them and that the action proposed by the Antrim controller would resolve the situation.

Nevertheless, it was considered to be poor ATC operational practice by the Antrim controller, to have issued an instruction to place an aircraft on a specific heading when that aircraft was not visible on radar.

The provision of SSR at Aldergrove for use by Aldergrove ATC and ScACC should assist in preventing such an occurrence in the future. Such equipment is to be installed with a planned operational date of June 1999.

In order to reduce the possibility of any misunderstanding, in similar circumstances in the future, it is recommended that the Aldergrove Approach Controller should identify appropriate aircraft to the Antrim controller prior to co-ordination taking place, and the latter controller should confirm that the identification has been established.

### **REVIEW BY AIRPROX PANEL**

#### *1 Discussion:*

The panel has encountered several instances of a similar nature in this area. One feature has been that the lateral dimensions of controlled airspace in the vicinity of RINGA are too small and give insufficient room for opposing streams of traffic, of varying performance, to climb and descend. Additional airspace fillets had been expected by now but have not yet been established. Not untypically, on this occasion, the first Eastbound jet departure (not involved in the AIRPROX) had been taken outside controlled airspace in order to pass the ATP.

Another feature of incidents in this area has been the absence of SSR at Aldergrove, although, on this occasion, this may not have been a factor. The Aldergrove controller had asked for regular height checks on the subject aircraft and should have well understood the situation. The onus was on him to sort out the potential confliction. His initial plan had been to put the BAe146 on the North side of the airway and to keep both it, and the ATP, climbing. This was

frustrated by the presence of westbound traffic but the BAe146 had already been cleared to climb to FL110 with the ATP climbing, more slowly, to FL130 ahead of it. The Aldergrove controller was potentially, therefore, in some difficulty.

Whether the Antrim controller could see the BAe146 by this time, or not (and there was some discussion on this point), he did need to get the aircraft on the South side of the airway because of the westbound traffic. The Panel agreed that the instruction to "turn him right onto one seventy" was intended to achieve this, however, it thought that it could have been misconstrued as a radar heading by the Aldergrove controller. Nevertheless, the Antrim controller, having given further climb up to FL130 for the ATP, could reasonably expect to have received the two aircraft "clean" with the Aldergrove controller providing vertical separation between the ATP and the BAe146. Furthermore, the panel believed that the Aldergrove controller should not have complied with the 170° heading instruction knowing that the aircraft were not yet vertically separated.

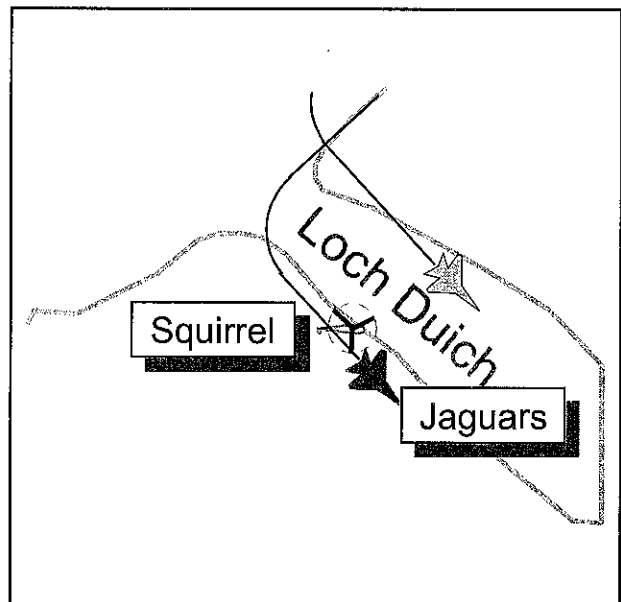
- 2 *Causal Factors:* The Aldergrove controller did not provide standard separation between the ATP and the BAe146.
- 3 *Risk Classification:* C
- 4 *Recommendations:* The Panel had no recommendations to make.

**AIRPROX (P) REPORT No 121/98**

Date/Time: 17 Sep 1148  
Position: N5714 W0530 (Loch Duich)  
Airspace: LFS/FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Jaguar Squirrel  
Operator: HQ STC Civ Comm  
Alt/FL: 500 ft ↑ 150-200 ft  
(RPS) (agl)  
Weather VMC CLNC VMC CAVK  
Visibility: 30 km+ 10 km+

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE JAGUAR PILOT** reports heading 140° at 450 kt on an operational low level exercise, and authorised not below 100 ft msd. He was climbing through 500 ft in a left turn, following the contours of the loch side, when he saw a helicopter apparently hovering with a USL as it passed below his port wing; it was 2-300 ft



below and about 100 m left of his track. It was too late for avoiding action when he saw it but he transmitted its position to the following pair who were able to avoid the position. Furthermore, he appreciated that had he been



at his authorised minimum height there could have been a collision risk or a danger to the helicopter from his wake. A CANP (No 5846) had been issued for USL work at the Airprox position mandating a 2 NM avoidance up to 1500 ft, but along with another in the area, had expired at 1100. A third CANP to the N at Loch Carron expired at 1200 and was avoided laterally.

**THE SQUIRREL PILOT** reports flying a USL task at the Airprox position; his departure had been delayed by ac unserviceability and the CANP covering his task had expired. At 1135 he was overflown by a fast jet which passed about 150 ft above him; it was accompanied by another which tracked along the centre of the loch at about 150 ft and 1 km from the lifting site. At about 1150, while heading 090° in the hover and picking up an USL, a second pair of jets following a similar route overflew the site with one ac directly overhead and a little higher than the first pair, again with its partner out over the loch. He believed the first pair did not see him and the second pair were the ac that filed the Airprox. It was his belief that CANPs could not be modified without 4 hours warning.

Note: The helicopter operator was asked if a revised timing for the CANP had been passed to ALFENS Ops; this had not been done because the operator believed that it could not be actioned without 4 hours warning. The operator has therefore been advised that 4 hours is the time required to guarantee disseminating information fully but that any warning would be acted on immediately and had a good chance of reaching military aircrew not already airborne. The Jaguars' take off time was 1135. The helicopter finally got airborne something after 1000 and was on task at 1100 so in this case a revised CANP could easily have reached the filing pilot before his take-off.

**HQ STC** comments that notwithstanding the protection CANPs afford to civilian and military operators, RAF aircrews are warned that because the CANP system is voluntary, not all civil movements may be known. RAF aircrews are therefore further warned that civil ac may be encountered anywhere in the UKLFS and that the 'see and avoid' principle must always be

applied. Nevertheless, military fast jet crews are required to avoid active CANPs. For the system to work properly it must be a 2 way process and civilian operators need to make every effort to adhere to their stated times or notify any changes. Without such notification the CANP system is less effective and 'see and avoid' is the only means of collision avoidance. In this instance it is fortuitous that the Jaguars were operating significantly above their briefed minimum altitude and in the event avoiding action was not necessary after a late sighting.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac and reports from the appropriate operating authorities.

Members were advised that an article would be published in the BHAB magazine on the need to keep CANP notifications up to date. The Jaguars would have avoided the CANP area if it had still been active (since they were aware of it) but the Board did not consider this aspect was part of the cause of the incident because participation in the scheme is voluntary and military aircrew are expected to be on the lookout for such conflicts anywhere in the LFS. It appeared that the Jaguar pilot may have filed the incident partly in disappointment that the procedure designed to keep him clear of such conflicts had not worked; it is always difficult to see helicopters but particularly those at very low level picking up USLs. In this respect, some members argued that the helicopter was effectively part of the terrain which the Jaguar was avoiding (at that point, by considerably more than his authorised minimum) and that the incident was therefore no more than a sighting report with no risk of collision. However, the Jaguar pilot's concern that he might at that point have been at 100 ft, and that in any case, if he had seen the helicopter earlier, he would probably have wished to avoid it by a greater margin, led members to argue that the cause was a late sighting by the Jaguar pilot. The Board agreed that this was not a criticism of the Jaguar pilot;

rather it was a statement of fact which emphasised the value of the CANP which should prevent fast jets from encountering such hard-to-see activities, to the mutual benefit of both parties.

As the Jaguar pilot argued, the collision risk was more potential than actual; members agreed that there had not on this occasion been a risk of the ac colliding.

**PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

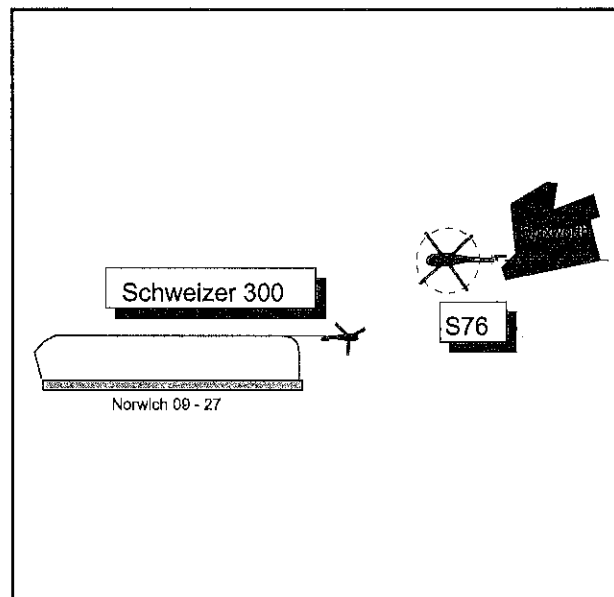
*Cause:* Late sighting by the Jaguar pilot.

**AIRPROX (P) REPORT No 119/98**

*Date/Time:* 22 Sep 1340  
*Position:* N5241 E0118 (Norwich Airport - elev 117 ft)  
*Airspace:* ATZ (Class: G)  
*Reporting Aircraft* *Reported Aircraft*  
*Type:* S76 Schweizer 300  
*Operator:* CAT Civ Trg  
*Alt/FL:* 800 ft 500 ft  
 (QFE 1023 mb) (QFE 1023 mb)  
*Weather* VMC CLBC VMC CLBC  
*Visibility:* 4-5 km 7 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE S76 PILOT** reports that Coltishall ATC had vectored him to the E of Coltishall while inbound under IFR from the N to Norwich which was on RW 09. He asked why he was being vectored to the E which he thought was inappropriate with RW 09 in use, and was told that there would be less delay this way. Norwich APP subsequently gave him vectors which brought him over Spixworth at 1000 ft which was within the visual circuit. Had he not widened his downwind leg he would have flown extremely close to a 'Hughes' 300 which was on climb-out. As it was he saw it 4-500 ft away while he was heading 270° passing 800 ft at 110 kt at the same time as tower advised there would be circuit traffic. He made 2 further points: (1) that it was inappropriate to vector him into an active



circuit, especially into the climb-out path of other ac and (2) he should have been told by APP that the circuit was active; he had assumed it was clear because other departing traffic had been notified. Although he could see they were going to miss, he considered the risk of collision was high.

**THE SCHWEIZER 300 PILOT** reports heading 090° at 60 kt having just taken off from the N taxiway at Norwich; he was climbing to 500 ft for a 500 ft circuit because he had been warned of a helicopter joining LH downwind for RW 09. He looked ahead and saw the S76 a couple of miles away at about 500 ft or above heading for the downwind position. He did not consider

there to be any conflict and levelled at 500 ft, extending until the S76 was about 400 m abeam, and then turning downwind behind it. There was no risk of collision.

**ATSI** reports that the Norwich Aerodrome and Approach Radar Controllers reported that they were fit and adequately rested in the period leading up to the incident. The ADC Controller reported his workload as moderate at the time of the occurrence, whereas the APR Controller described his workload, because of requisite co-ordination, as moderate to high. The Norwich METAR, timed at 1320, shows the visibility as 7 km and cloud broken at 1700 ft.

The Schweizer 300 had been operating for some time in a left-hand circuit north of RW 27 at Norwich. This helicopter training circuit is based on the taxiway situated N of the runway, S of the VCR, and is used exclusively by the Schweizer's company. The procedures, which specify details of co-ordination with RAF Coltishall are published in an Internal Memorandum issued to all Norwich ATCOs; the AD Controller is required to inform APP before it is used. The Norwich APR Controller, who was operating from his position at RAF Coltishall, confirmed that the notification of the north side helicopter training circuit had taken place and he was therefore aware that it was active. He added that he could see its primary return intermittently, whilst it carried out its circuit detail. He had restricted the helicopter to not above 500 feet because of Coltishall traffic.

The S76 contacted Norwich Approach at 1336, inbound from the Britannia Rig in the N Sea to the N of Norwich Airport. The flight had previously been working a military controller at RAF Coltishall, who had routed it to the E of Coltishall at 1600 ft. Therefore, when it contacted the Norwich APR Controller he had the choice of positioning it directly left-hand downwind for RW 09 or routing it through the departure path, prior to vectoring it right-hand downwind. Because of departing traffic from RW 09 to the S (a D328) and another helicopter holding to the S of the Norwich NDB (NH) at 3000 ft, the APR Controller decided to position the S76 left-hand downwind. Accordingly, the

S76 was given a heading of 220. The controller explained that, because of the proximity of RAF Coltishall, it was necessary to position the helicopter close to Norwich Airport before turning it downwind. The pilot of the S76 was passed traffic information on the departing D328 and also on the helicopter holding at the NH. The flight was subsequently given a right turn heading 250, together with a request to report visual with the airport. Its pilot requested descent to an altitude of 1000 ft at 1338 and this was approved, subject to the pilot's discretion. The helicopter was then instructed to turn right onto a heading of 270, in order to position it downwind and away from the departing ac. When the S76 reported visual with the airport, shortly afterwards, it was passed updated traffic information on the position of the D328 and instructed to contact ADC. Although no specific clearance for a visual approach was issued to the S76, it is probable that the pilot believed, having reported visual with the airport and been transferred on a downwind heading to ADC, that he could position visually and descend further as necessary.

The Schweizer was given clearance into the north side circuit again, at 1337:50, with a restriction of not above 500 ft. Shortly afterwards, the ADC Controller passed the pilot traffic information on an S76 joining downwind left-hand for RW 09. The controller said that he could see the inbound helicopter on the ATM about 2 NM NE of the airport but did not see the ac until just before it called on his frequency at 1339:30. He said that on receiving its first transmission he passed traffic information on: "one light helicopter operating north side not above five hundred feet". The pilot, in reply, reported in the descent to 1000 ft with the other helicopter in sight. The ADC Controller commented that the Schweizer positioned downwind behind the S76 and, as far as he was concerned, he did not consider there was any conflict between the two helicopters. No comment about the incident was made on the frequency by either pilot.

MATS Part 1, Page 3-23, states, under the heading of "Integration of VFR flights with IFR traffic/Control of VFR flights" that: "Although in

Class D, E, F and G airspace separation standards are not applied, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic. This objective is met by passing sufficient traffic information and instructions to assist pilots to see and avoid each other. It is accepted that occasionally when workload is high, the traffic information passed on ac in Class F and G airspace may be generic rather than specific". The APR Controller admitted that he should have warned the S76 about the Schweizer operating up to 500 ft on the north side. However, he considered that, as the ADC Controller was aware of the inbound helicopter and would, therefore, organise the circuit accordingly, he gave priority to other urgent co-ordination tasks. He agreed that it would have been prudent to have reconfirmed the S76's descent to not below 1000 ft, when it was transferred to ADC, in order to provide a 500 ft buffer between the subject helicopters. He said that he assumed that the S76 would not descend out of 1000 ft straight away but the radar photographs of the incident indicate that it was at 800 ft, in the descent, just after it called ADC. The pilot mentioned in his report that he widened his circuit after going visual. This turn is reflected in the radar photograph timed at 1339:59. This shows the S76 at 600 ft on QNH 1023 mb (when adjustment is made to the Mode C readout based on 1013 mb) about 0.75 NM away from a primary return believed to be that of the Schweizer. Subsequent photographs show the primary return turning behind the S76, which is continuing its descent downwind.

The published Norwich Radar Vectoring Area, UK AIP, Page AD 2-EGSH-5-1, states that the minimum initial altitude to be allocated by the radar controller is 1800 ft. It is noticeable that, on this occasion, the S76 was transferred from RAF Coltishall below this altitude. Also, it was subsequently given descent by the APR Controller to 1000 ft, albeit at the pilot's request. The controller explained that because of problems with traffic inbound to RAF Coltishall and the fact that any significant obstacles are located to the S of Norwich Airport, he agreed descent but only at the pilot's discretion. The

matter of the allocation of altitudes, below the published minimum, is being addressed by the appropriate Regional Inspector of ATC.

**HQ MATO** reports that as the S76 pilot's comments about the initial routeing to the E of Coltishall were not received at the HQ until over a month after the incident, no recorded information was retained and the controllers on duty at the time have no recollection of any incident. However, SATCO advises that with Coltishall on RW 04 and Norwich on RW 09 the ATC situation is complex but with Coltishall approach patterns flown to the W of the airfield, in an intensive situation there is often no other choice but to vector inbound helicopters to the E of Norwich usually after appropriate consultation with Norwich Approach.

#### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members agreed that ideally it would have been prudent for the Norwich APR to have warned the S76 pilot about the Schweizer 300 in the circuit and to have confirmed with the S76 pilot not to descend below 1000 ft until cleared by the ADC. As it was the APR controller's attention to other urgent tasks and assumption that the ADC would organise separation in the circuit, despite a late hand-over, left a situation where things could start to go wrong. But keeping events in perspective, the BHAB representative suggested that any perceived conflict was largely of the S76 pilot's making for descending before he had found out what traffic might be in the circuit. Moreover, he had descended below 1000 ft without telling ATC. The Schweizer pilot was well aware of the S76, kept it in view and took normal separation from it. In these circumstances, the incident was a sighting report with no risk of collision.



of Newcastle and 1 NM S of the Falcon, still level at FL 150. After executing a LH turn onto NE, the Tornado crew reported *“resetting for the second run”* at 1501:45. There were no other transmissions during the intervening period. As the Tornado steadied NE bound the Mode C, which was not evident on the Spadeadam MSSR during the turn, indicated FL 057 and the RC realised that the crew had executed a steep descent during the outbound turn and was now climbing away. By this stage the Falcon was astern of the Tornado heading W. Therefore, no traffic information was issued. Later that afternoon Newcastle ATC advised RAF Spadeadam that the Falcon pilot was filing an Airprox.

The LATCC Great Dun Fell (GDF) radar recording reveals that this Airprox occurred about 8.5 NM NW of Newcastle Airport in Class G airspace, about 1 NM N of the northern boundary of the Newcastle CTR. At 1500:41, the Tornado is shown turning left through S at FL 148 Mode C, 3.5 NM W of the Falcon's 200° track at FL 031 Mode C. No further Mode 3/A or C indications are evident from the Tornado until 1501:21, when it indicates FL 032 Mode C whilst still in the left turn at 12 o'clock 1 NM to the Falcon, which was still level at FL 031 Mode C. The contacts cross just before 1501:30, when the Tornado indicated FL 039 Mode C and climbing. Thereafter, the Falcon crew's avoiding action right turn onto W is evident and the ac descended to FL 029 Mode C, following the avoiding action descent initiated by the Falcon pilot.

The RC also reports that there were no Mode C indications displayed on the Spadeadam Watchman SRE to alert him to the rapid descent initiated by the Tornado crew. From the radar recording, the Tornado descended at about 12000 ft/min after the left turn was initiated; therefore, it is not surprising that the Spadeadam MSSR did not show the descent. Consequently, the RC did not issue traffic information to alert the crew to the presence of the Falcon that was clearly displayed on the SRE. The Tornado crew did not comply with the provisions of the RIS, insofar as they did not advise the RC before they executed the steep

descent below FL 150. The RC could have confirmed the Tornado crew's intended operating levels, but there were no RT transmissions that suggested they intended to operate below FL 150. However, as a result of this occurrence the Spadeadam procedures have been revised to ensure that controllers confirm intended operating levels and crews should ensure that they advise the controller before changing level.

The high-energy manoeuvre associated with this specific flight profile was executed outside the notified Spadeadam EWTR (D510) or AIAA. The respective entries within the UK AIP, carry a warning to other airspace users relating to the high energy manoeuvres conducted within the EWTR and associated AIAA and that pilots of military ac are unable to comply with 'The Rules of the Air', Rule 17. RAF Spadeadam has proposed a revision to the EWTR and AIAA airspace structure to encompass such manoeuvres, which is currently being staffed through HQ MATO. There are no contributory military ATC factors associated with this Airprox.

**NEWCASTLE ATC** reports, with RT transcript, that the Radar 1 controller had just completed a take-over when he saw a contact (the Tornado) tracking S, just W of the Falcon at about FL 60. It turned left and descended so he passed traffic information: *“C/s there is traffic just popped up 12 o'clock 2 miles at 4000 ft descending”* and then *“C/s avoiding action right immediately heading 280”*. The pilot responded that he was in the turn, that the other ac was a Tornado, and that there had been a definite risk of collision.

**HQ STC** comments that the Tornado crew involved in this Airprox was tasked with training requiring extreme evasive manoeuvres. Notwithstanding the degree of task related focus required for training of this nature, the principles of good airmanship and consideration for other users of the airspace are fundamental to safe ac operation. In this instance the Tornado crew, under a RIS should have informed the Range Controller (RC) of their intention to descend rapidly. This would have allowed the RC to pass appropriate traffic information to the Tornado crew and the Airprox

could have been avoided. As a result of this incident the crew concerned has been interviewed and the Airprox has been publicised at unit level.

**PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board joined the Falcon pilot in commending the Newcastle controller for his

prompt and effective action in helping to avoid what might have been a much worse incident. Members had little else to add to what was in Part A; it was clear that the cause of the incident was that the Tornado pilot had not seen the Falcon. In addition he had flown a steep descent without telling the Range Controller, contrary to the provisions of a RIS, and thus denied himself traffic information which might have helped him avoid the Falcon by a safer margin. The Board considered that this was also part of the cause. Members agreed that the Falcon pilot with the Newcastle controller's assistance had been able to spot the Tornado in time to avoid colliding with it, but because the Tornado pilot did not have him in sight, the Board assessed that the safety of the ac had not been assured.

**PART C: ASSESSMENT OF RISK AND CAUSE**

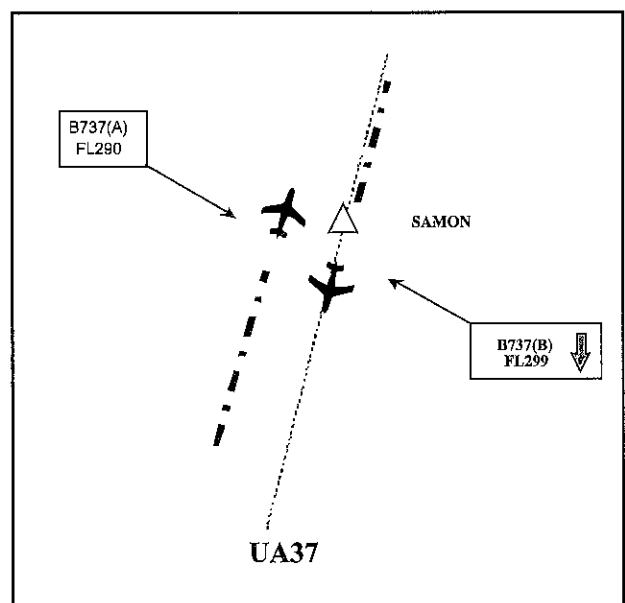
*Degree of Risk:* B

*Cause:* While under a RIS the Tornado pilot flew an unnotified descent into conflict with the Falcon which he did not see.

**AIRPROX REPORT 51c/98**

**Occ No. 98/05523**

*Date:* 22 September 1998  
*Time:* 0714 UTC  
*Aircraft:* B737/B737  
*Operators:* Foreign Airlines  
*Position:* SAMON  
*ALT/HT/FL:* FL290  
*Airspace Type:* Upper ATS Route (UAR)  
 UA37 - Class B  
*Reporter:* LATCC - Area Control North  
 Sea Beeno Sector Controller  
*Reported Separation:* 2.1nm horizontal/1000 feet  
 vertical  
*Recorded Separation:* 2nm horizontal/880 feet  
 vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were under the control of the LATCC AC Beeno Sector controller who was operating with a heavy traffic load in the early morning and had been in position for about 15 minutes. An offer from the North Sea Chief Sector Controller (CSC) to split the sector had been declined as the controller felt there would have been little benefit due to the relatively few aircraft at lower levels. The B737(A) was en route from London Stansted to Stockholm and was level at FL290 northbound on Upper ATS Route (UAR) UA37. The B737(B) was inbound to London Gatwick from Billund and was southbound on UA37, in descent to FL280.

Prior to the incident the B737(B) was level at FL310 and in potential conflict with an aircraft westbound on UL602 crossing UA37. Therefore, following co-ordination with Maastricht Area Control Centre, the CSC asked the controller to descend the B737(B) in order to resolve that conflict. At 0712.56, the controller instructed the B737(B) pilot to descend to FL280. Meanwhile, the B737(A) was 20nm South of B737(B) on a reciprocal heading, level at FL290, and had been on frequency for about ten minutes. There was, however, at this time another aircraft southbound on UA37 and it is possible that the data block from this aircraft could have obscured or garbled that of the B737(A).

B737(A) and B737(B) continued to converge on their reciprocal headings with the B737(B) southbound on the centreline of UA37 and B737(A) northbound displaced approximately 2nm to the left of the UA37 centreline. At 0713.38 when the aircraft were 9.8nm apart horizontally and 1500 feet vertically the Short Term Conflict Alert (STCA) activated. At 0713.59, with separation now 4.2nm horizontally and 1140 feet vertically, the controller instructed the B737(A) pilot, "(callsign) er can you turn left immediately head ten degrees", to which the pilot replied, "Left ten degrees (callsign)". The controller followed this with an instruction to the B737(B) pilot, "(callsign) turn right (sic) immediately three zero

degrees maintain flight level three hundred". Another aircraft then called the controller and was told to standby after which the controller further instructed the B737(B) pilot, "Er (callsign) turn right two five zero". The B737(B) pilot read back this instruction. By this time the aircraft were abeam each other separated by 2nm horizontally and 881 feet vertically. No evidence of turns by either aircraft was seen on radar until the picture timed at 0714.58 by which time they had passed each other and were separated by approximately 10nm. Nor was there any evidence on radar that the B737(B) pilot had stopped his descent at FL300.

The Beeno controller recalled that he was particularly busy on his first day back from a break of 15 days leave and an additional 3 day period of sickness. He was alerted to the conflict by the STCA when the B737(B) was passing FL308. The B737(A) was given avoiding action of 20° to the left and the B737(B) was turned left (sic) 20° and told to maintain FL300 upon reaching. The B737(A) had previously been assigned a heading and so was slightly off track, so a left turn was more prudent. Nevertheless, he had overlooked the B737(A) in attempting to resolve another situation.

The North Sea CSC reported that the B737(B) had been descended to resolve a different conflict. He also recalled that both radar controllers and he were very busy and that the first thing he knew was that the Beeno controller was taking avoiding action. He was of the opinion that the controller was attempting to resolve several potential problems as early as possible and overlooked the B737(A).

The B737(A) pilot reported his first sighting of the other B737 as abeam, 3 o'clock high and that minimum separation was approximately 3nm horizontally and 1000 feet vertically. He altered heading 20° left at ATC instruction, and he assessed the risk of collision as low.

Despite a request, no report was received from the B737(B) pilot.



## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the LATCC AC Beeno Sector Controller who did not ensure that prescribed lateral separation was maintained when clearing the pilot of the

B737(B) to descend through the level of the B737(A) at FL290.

It was considered that the Sector Controller did not apply correct procedures when attempting to retrieve the situation.

## **REVIEW BY AIRPROX PANEL**

- 1 Discussion:* The panel agreed, from the information available to it, that the Beeno controller had been immediately confronted with a heavy traffic load. Nevertheless, because there were few aircraft at lower levels, it was reasonable for him to have decided not to accept the CSC's offer to split the sector. The Panel did however think that in the circumstances reinforcement by way of 'man and boy' operation could have been prudent.

The action taken by the CSC to have B737(B) descended in order to resolve the crossing confliction was also correct; the aircraft had to descend in due course in any case. One Panel member advanced the view that this conflict resolution may have lulled the controller into thinking that B737(B) was secure for the time being and that he did not recognise that he then had to set up lateral separation between B737(B) and B737(A).

Perhaps of more interest to the panel was the effect that the controller's previous absence, because of leave and sickness, albeit not excessive, may have had. Whilst there was no evidence one way or the other in this particular instance, members recognised that there appears to be no formal policy on the question of controller recency until a controller has been away for a period of 90 days. There was a general view from the panel that an absence from active controlling duties rather shorter than 90 days ought to trigger some action on the part of ATC management in order to provide some form of checking/monitoring for a newly returned controller. It was noted that this happens automatically after 30 days for military controllers and after 28 days for commercial pilots. At the moment it is left very much up to the individual licence holder to request help, in the case of civil controllers.
- 2 Causal Factors:* The Beeno controller did not maintain adequate lateral separation when he cleared the pilot of B737(B) to descend through the level of B737(A).
- 3 Risk Classification:* C
- 4 Observation:* The panel believed there would be merit in the CAA giving consideration to the need for controllers to undergo some form of recency check when returning to active controlling duties after an absence of say, one month or more, but certainly less than 90 days.

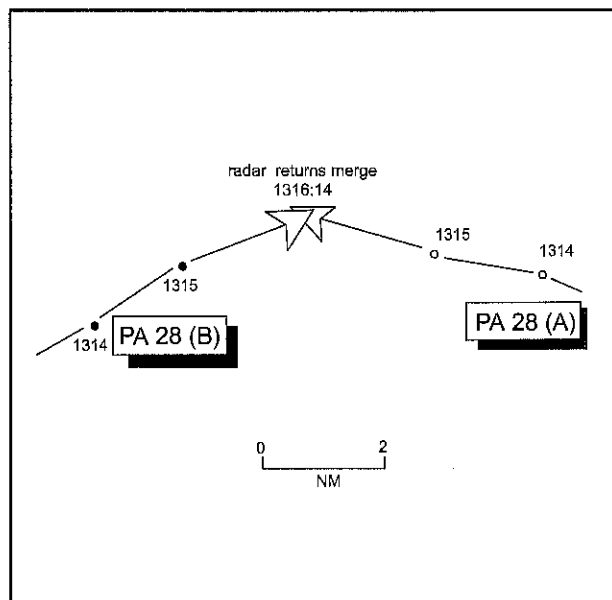
## AIRPROX (P) REPORT No 123/98

Date/Time: 25 Sept 1316  
Position: N5126 0017E (10 NM NE Biggin)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: PA 28 PA 28  
Operator: Civ Club Civ Trg  
Alt/FL: 2000 ft 2300 ft  
(QNH 1009 mb) (QNH 1009 mb)  
Weather VMC HAZE VMC CLBC  
Visibility: 5 NM 8 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PA28 (A) PILOT** reports that he was heading 308° at 100 kt and cruising at 2000 ft on QNH 1009 in hazy VMC; there was no cloud and visibility was about 5 NM. Thames radar was providing a FIS on 132·70 and he was squawking 7000 with Mode C. When 0·5 NM S of the QE2 bridge at Dartford, he saw another PA28 at his 1030 position 2 - 3 NM away flying towards him at a similar altitude. The relative bearing of this ac remained steady. When it became obvious that it was not taking avoiding action, he began a rapid descent to stay clear, at the same time making a shallow R turn to keep the ac in sight and to facilitate any late avoiding action on the part of the other pilot. However, the PA28 passed 100 - 200 ft above him with no apparent change of flight path; as he had seen and avoided it he considered the risk of collision was low, but reported an Airprox to Thames radar on 132·70.

**THE PA28 (B) PILOT** reports that he had departed from Biggin Hill for Southend on an IMC instructional flight. The visibility, 700 ft below cloud, was 8 km in VMC. He was heading 060° at 105 kt and cruising at 2300 - 2400 ft (QNH 1009), squawking 7000 with Mode C off. He was observing the actions of his student, who was in the process of changing frequencies from Biggin to Southend, and was preparing to write down any information passed by ATC, when he became aware of an ac flying about 300 ft under him on a 90° crossing track from the R. He was unable to take avoiding



action owing to the late sighting but thought that, in any case, the existing vertical separation was sufficient to preclude the necessity for such action. He felt there had been a medium risk of collision.

**THAMES RADAR** reports that the pilot of PA28 (A) reported at 1315 that he had manoeuvred to avoid hitting another ac; at the time of the incident the pilot was outside CAS and being provided with a FIS. PA28 (B) was not identified and its position immediately prior to the encounter was not known.

Note: A replay of the Heathrow radar shows 2 primary only returns converging on a point about 10 NM NE of Biggin. They merge at 1316:14 with no apparent lateral separation.

### PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac, a radar video recording, and a report from the air traffic controller involved.

Members noted that, despite having first seen the other ac some 2 - 3 NM away, the vertical separation between the 2 ac eventually achieved by PA28 (A) pilot's avoiding action

was only 100 - 200 ft, albeit he considered there had been a low risk of collision. While it was accepted that PA28 (A) pilot had right of way and that he had been continuously watching the other ac carefully for some time prior to the encounter, the Board cautioned against slavish adherence to the Rules of the Air if that changed a safe situation into a crisis. It was felt that the PA28 (A) pilot left his avoiding action rather too late in this encounter, and this was seen as a part-cause of the Airprox. Members also believed that, notwithstanding his instructional tasks, the instructor in PA28 (B) should have exercised a more efficient look out; in the event, the other ac was already passing him before he first saw it and members agreed this effectively amounted to a non sighting, which also contributed to the Airprox.

While noting that the pilots concerned thought there had been a low to medium risk of collision, members were satisfied that the pilot of PA28 (A), having continuously watched the other ac, was always in a position to ensure that they would not collide. The Board concluded, therefore, that there had not been a risk of collision.

It was disappointing to learn that the Mode C of the PA28 (B) was selected off and members made their customary plea to GA pilots; use Mode C when it is fitted. It is a valuable flight safety tool in a radar environment, enabling controllers to pass pertinent, accurate traffic information in the FIR, thereby reducing the risk of conflicts.

**PART C: ASSESSMENT OF RISK AND CAUSE**

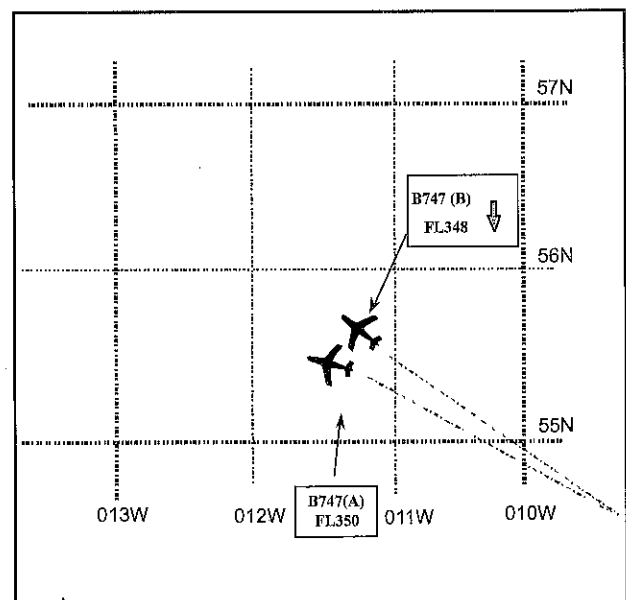
*Degree of Risk:* C

*Cause:* Late avoiding action by PA28 (A) and a non-sighting by PA28 (B).

**AIRPROX REPORT 52c/98**

**Occ No. 98/05624**

*Date:* 27 September 1998  
*Time:* 1331 UTC  
*Aircraft:* B747 x 2  
*Operators:* Foreign Airline x 2  
*Position:* Near 55°N 10°W  
*ALT/HT/FL:* FL350  
*Airspace Type:* Shanwick OCA - Class A  
*Reporter:* ScACC/Shanwick OCC South West Sector Controllers and FL360 En Route Controllers  
*Reported Separation:* 2nm horizontal/Nil feet vertical  
*Recorded Separation:* 2nm horizontal/Nil feet vertical



## THE INCIDENT

Both aircraft involved in this AIRPROX were B747s belonging to the same foreign operator en route from London Heathrow to destinations in Canada. B747(B) was cruising at FL360 en route to Montreal and B747(A) was cruising at FL350 en route to Toronto on the same North Atlantic track. Both flights had transited the Scottish UIR to 55°N 10°W and control of the flights had been transferred to the Shanwick Oceanic Control Centre co-located at Prestwick with the Scottish Area Control Centre (ScACC) and linked with the HF radio station at Ballygireen near Shannon airport in Ireland.

At approximately 1340, the Separation Monitoring Function (SMF) at the ScACC Watch Manager's desk alerted and, on inspection, it revealed that B747(B) had slowly descended and had conflicted with B747(A) causing an AIRPROX. At the time the incident was reported it was understood that the B747(B) may have entered a stall condition at FL360, causing a loss of altitude. Consequently, the occurrence was treated as a serious incident under the provisions of Annex 13 ICAO Air Accident Reporting Procedures. It was later decided that as the event had taken place in North Atlantic airspace between two aircraft en route to Canada that the Canadian Transportation Safety Board (TSB) would carry out the serious incident investigation.

This report has been compiled using information obtained from UK ATC sources together with information provided by the Canadian TSB.

The B747(B) crew first established RTF contact with the ScACC South West Sector at 1314, reporting level FL330 and confirming they had received their Oceanic clearance, with a cruising level of FL360 for the crossing into Oceanic airspace. At approximately 1315, the B747(B) pilot was asked by the South West controller if he could accept climb to FL360 due traffic. The B747(B) pilot replied, "OK we are vacating three three zero for flight level three six zero .....(callsign)". Just after 1324, the B747(B) pilot reported level at FL360 and 3 minutes

later, as the aircraft approached the 10°W position, the ScACC South West controller instructed the B747 pilot to contact Shanwick on VHF. Shortly afterwards, B747(A), which was approximately 2 minutes behind B747(B) at FL350, was also instructed to contact Shanwick on VHF as it too approached 10°W.

Shortly after establishing VHF RTF contact with Shanwick, the B747(B) pilot, who had been cleared on North Atlantic Track 'C' at FL360, reported passing his 10°W position at 1328. Then, at 1335, he requested descent to FL350. Because B747(A) was at FL350 on the same track, only 2 minutes behind the B747(B), it was not possible for the Oceanic En Route controller to approve the request. He then checked with other levels to see if traffic could be moved but this was also not possible.

In the meantime, in the Scottish Area Control Centre operations room, the SMF alerted and the Watch Manager, upon discovering the identification and location of the event, proceeded to the South West sector to advise both the controllers on duty. The loss of separation detected was between the two B747s some 70 nm into Oceanic airspace. The flight progress strips (fps) were checked and indicated that both aircraft had entered Oceanic airspace at their respective cleared levels of FL360 and FL350. As the aircraft were beyond the Sector's normally displayed radar range, adjustments were made to increase the displayed range to show the conflict. It revealed that B747(A) was still maintaining FL350 with B747(B) now indicating FL348. The South West Planning controller then called the Shanwick controller to inform him about the situation.

In the meantime, the Radar controller called the B747(B) and B747(A) pilots to see if they were still on frequency. A call was then made to the Scottish Distress and Diversion Cell (D&D) and a request made to the D&D controller to try and establish contact with B747(B) pilot on 121.5 MHz to warn him about the conflict and ascertain what the problem was. The D&D controller established RTF contact with the B747(B) pilot at 1344 stating, ".....your level ...

from Scottish Control your level is supposed to be flight level three six zero three zero do you have a problem? The pilot replied, "...er yes we do we're trying to get hold of er Shannon we we're unable to hold altitude we're turning off the airway and we have other traffic visual and er we're talking to Shanwick". The D&D controller was then asked by the B747(B) pilot if there were any aircraft in the vicinity and which was the best direction to turn. The D&D controller advised him of traffic in his 6 o'clock range 25nm at FL340 before instructing him, at 1346, to recall Scottish Centre on VHF.

When the B747(B) pilot called the ScACC South West controller, at 1346, this call was interrupted by another aircraft. Two-way RTF contact was established soon afterwards and the ScACC controller asked the B747(B) pilot if he wished to return or make a diversion as it was assumed the aircraft had suffered some sort of problem. The B747(B) pilot replied, "...If we can go down another thousand it would help, down to three three zero". The Radar controller replied, ".....It would actually be better if you descended to flight level two niner zero due traffic that's westbound against you". The B747(B) pilot replied, ".....That's fine we'll go down to two nine zero now (callsign)". When the ScACC controller acknowledged receipt of the clearance read back he again asked the pilot if he wished to return into domestic airspace or divert to land anywhere. The B747(B) pilot replied, ".....Negative that won't be necessary we were just er we got caught out at three six zero...". The controller then sought confirmation that the aircraft was going to continue across the ocean and, upon receiving a reply in the affirmative, the B747(B) pilot added, ".....Once we've recovered speed we'll be OK again er we were up at three six zero and er we were too heavy for that.....". In the meantime the South West Planning controller had still been co-ordinating with the Shanwick controller and it was decided that the B747(B) should be instructed to stop descent at FL320 and be re-cleared to cross the ocean at this level for the time being. So, at 1347.30, the South West Sector controller asked the B747(B) pilot if he could accept FL320. The pilot agreed and the aircraft's descent was

stopped at FL320 and approximately 2 minutes later, when asked if they were still happy at FL320, the B747(B) pilot replied, ".....We are, everything is back under control and er we will need a re-clearance I guess from Shannon er from Shanwick can you relay or do you want us to go back there?". The controller asked the pilot to standby whilst he checked with the Shanwick controller. A few minutes later he attempted to recall the flight but it was by now on the outer limits of VHF RT coverage so an instruction for the B747(B) pilot to continue with Shanwick on HF was relayed via another aircraft. An acknowledgement that the pilot had received the information and was now proceeding to his destination under the control of Shanwick on HF was received back via relay.

After the B747(B) re-established contact with Shanwick on HF, he reported maintaining FL320. As this level was only a temporary solution to the separation problem, the Oceanic En Route controllers had to determine a new plan to get the aircraft down to FL280 in order to restore full separation with all known traffic on Track C. The controllers opted to turn the B747(B) right to position 30nm North of Track C and, once established, to descend and maintain FL280. This was achieved several minutes later and the aircraft continued to its destination without further incident.

A replay of the incident on SMF revealed that, as the two B747s passed 10°W, there was a 70 to 80 kt ground speed differential between them. As the replay commenced, B747(B) is still level at FL360, indicating a ground speed of 426 kts 8nm ahead of B747(A), indicating FL350 and a ground speed of 475 kts. One and a half minutes later, B747(B)'s ground speed shows a reduction to 410 kts and then 30 seconds later it is reduced further to 397 kts, whilst that of B747(A) is showing 480 kts. Soon after, the B747(B) descends to FL356, the speed increases to 415 kts but then decays again to under 400 kts as the aircraft continues descent to FL354. After another short period it appears to increase slightly before decaying again to approximately 390 kts as the aircraft settles again in a descent to FL350. By this time B747(A) has turned left slightly and is

passing B747(B) 2nm to starboard with both of them indicating FL350.

In his written report the B747(B) pilot recalled *"Unable to maintain speed at FL360 Captain 'Pilot Flying' F/O 'Pilot Not Flying'. Climb to FL360 from FL330 was started at ATC request at about 683,000 lbs. Aircraft performance was good in the climb, about 500 FPM all the way up. When we levelled off at 360 weight was 679,100 lbs. Just in the first box on the cruise chart OAT was -58 degrees C on the Static Air Temperature gauge and well below the max rat. Mach was just over .85 on level off. Power was reduced to about 0.04 (1.60) above Engine Pressure Ratio (EPR ) (1.56) for that altitude. Speed began to decrease slowly toward Mach .84. The aircraft then appeared to be settling into cruise mode. At that time I told the crew I would be doing a PA about half-way through the PA I felt a slight ripple, not enough to call it turbulence and I looked at the airspeed which was passing .75M/248Kts and dropping. I alerted the F/O and pushed the power up to Maximum Continuous Thrust (MCT). Airspeed stabilised for a few minutes and then began to drop again slowly. At that time we asked Shanwick on VHF for a descent. I began a descent to maintain airspeed. B747(A) heard our call and told Shanwick he had us visual and was maintaining separation. Shanwick told us to go to HF. Where we were unable to contact. When the other B747 passed us on the left, I continued descent and called Shanwick on 121.5. F/O also declared a PAN. (Note. No PAN call was received or recorded by any of the Domestic or Oceanic ATS agencies) I turned left to establish off track while descending. Scottish noticed our alt deviation and called us on 121.5. He then relayed to Shanwick and then changed to Shanwick control for radar vectors. Shanwick initially cleared us to FL290. By this time we were 10L of track and at FL340. We regained our speed by FL330 and Shanwick amended the clearance to FL320. Back under speed control, we were re cleared to rejoin track at FL320 Mach. 84. Shortly after that Shanwick requested we establish 30 NM right of track and descend to FL280 turn rejoin track."*

## **ANALYSIS BY THE CANADIAN TSB**

### **General**

Due to the limited value of the DFDR data a reconstruction of the flight was not possible. Crew reports, radar data, and ATC radio transcripts were used to reconstruct events which led to the loss of separation between two B747s. Due to VMC weather and TCAS, the crew of B747(A) were able to monitor the progress of B747(B) and offset their aircraft track so as to avoid wake turbulence and reduce the risks of close proximity flight.

### **Cockpit procedures**

After levelling at FL360 the DFDR indicates that about six minutes elapse before there is a reaction to the loss of airspeed. During this time, none of the flight deck crew monitored the aircraft performance to determine if the thrust settings selected were adequate for the aircraft altitude versus weight. This may have been in part due to the better than normal cruise and climb performance noted by the crew prior to levelling at FL330.

As the speed decreased and the pitch angle changed to about 5.5o the Captain was making a PA announcement and the F/O and S/O were preparing a position report required for 55°N 10°W crossing. Thus there was no effective monitoring of the aircraft performance just after reaching a cruising altitude which the crew were aware was at or near the performance limitations of the aircraft. This lack of monitoring may be the result of limited jet performance training which, had it been available, may have provided the flight crew with a better understanding of performance related issues and may have resulted in cockpit tasks being modified until after the aircraft achieved stable cruise flight.

### **Digital Flight Data Recorder**

The digital flight data recorder (DFDR) was removed and sent to the operator's, Technical Operations Data Retrieval Department for analysis.

The data from the DFDR was found to be limited for analysis purposes which was due to a problem with the acquisition function of the recorder. Most of the engine parameters including engine thrust settings as well as altitude readouts were missing, therefore it could not be determined if the thrust was set at the required levels. Airspeed, two fuel flows, pitch, static air temperature, angle of attack, magnetic heading and some non relevant parameters were available.

The DFDR did confirm the loss of airspeed which occurred over a period of about six minutes as well as a change in angle of attack from about 3o nose up to about 5.5o nose up. There were significant fuel flow discrepancies between the number one and two fuel flows recordings. The flows are indicative of the thrust setting changes which the Captain reported and to the radar data which shows a variation in ground speed and altitude.

### **The Flight**

After levelling at FL360 the Captain had the EPRs set to predetermined levels for this altitude/weight configuration. Once the altitude was captured, the loss of airspeed precipitated an increase in pitch angle. This pitch angle would change slowly and would not be perceived by the flight deck crew who were all preoccupied with duties not associated directly with the monitoring of aircraft performance. Thus it was not until the Captain noted a shudder through the aircraft that his attention was diverted away from the PA announcement he was making to the passengers. Because of the low airspeed, moving the thrust levers to MCT did not provide sufficient thrust to regain airspeed without lowering the nose and descending. Further complicating the recovery was the crew's inability to communicate with the appropriate ATC authority immediately. Communications were eventually established, but not until after a loss of separation occurred. Because of VMC weather and the installation of TCAS in the following B747, the crew of which were able to offset their track and pass B747(B) with about 2 nm separation. The B747(B) Captain also had a good spatial knowledge of

where other aircraft were near his airspace and was aware that by off-setting his track during the descent, he would avoid flight in close proximity to other following aircraft.

### **Findings**

The flight crew of B747(B) were qualified for the flight.

Based on available data the aircraft was capable of sustaining flight at FL360.

After leveling at FL360, the flight deck crew became preoccupied with tasks not associated with monitoring aircraft performance.

After leveling at FL360 the airspeed decayed to Mach .75. The target speed was Mach .84.

As the airspeed decreased the pitch angle increased from about 2.5° to about 5.5°.

The crew's attention was directed to the aircraft deteriorating performance by a shudder that was felt through the airframe.

To regain airspeed the thrust was increased to MCT and the nose was lowered. The lowering of the nose resulted in a loss of altitude.

The loss of altitude resulted in a loss of separation with a following B747.

Due to VMC weather and TCAS, the crew of B747(A) were aware that B747(B) was in a descent and moved laterally off course to avoid wake turbulence and to provide lateral separation.

Communications difficulties resulted in the appropriate ATC agency not being made aware of the intentions of B747(B) until after the loss of separation occurred.

The loss of separation was detected and displayed by the ACC Separation Monitoring Function.

## **Safety Action**

The B747(B) operator's Flight Safety Department reviewed the occurrence and made several recommendations addressing internal procedures. The recommendations are:

### **Jet Performance Training**

That the Training Department provide a new or an amended training program or course for jet performance training. The course is to be given by trained and qualified instructors.

### **Oceanic Procedures Training**

That the Standards Department review Oceanic Procedures as the procedures in use appear to be cumbersome.

### **Aircraft Performance Pilot Training**

That the Training Department ensure all crews are trained in the idiosyncrasies of operating under maximum performance altitude, weight/speed conditions such as those faced by the crew of B747(B). The emphasis should be placed on the small margin of performance available and the techniques described in the AMO to handle this type of situation.

### **Digital Flight Data Recorders**

That the Technical Operations Branch review their procedures to ensure that the DFDR equipment is operating properly prior to flight.

## **REVIEW BY AIRPROX PANEL**

### *1 Discussion:*

The foregoing account of the incident and analysis by the Canadian TSB gives a full description of the circumstances surrounding the loss of height suffered by B747(B). The panel (which had B747 experience amongst its membership) concurred with these accounts and findings. In particular it agreed that the causes were that the crew had insufficient understanding of the consequences of operating the aircraft near its performance limits and that this was compounded by them not monitoring adequately the flight in the period between levelling at FL360 and the onset of the incident.

The Panel was also assisted by a video recording of the ScACC radar which gave a graphic portrayal of the event. The subject aircraft were part of a stream

## **Action Taken**

As a result of the DFDR recommendation, the operator has published an Aircraft Technical Bulletin #405, dealing with Flight Data Recorder Correlation Checks.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the B747(B) crew who, after passing 10°W at FL360, were unable to sustain the aircraft at that level. The subsequent descent to FL350, required to regain sufficient airspeed for level flight, put the aircraft into close horizontal and vertical proximity with the B747(A) which was flying in the same direction. The loss of airspeed was not detected by the flight deck crew none of whom had monitored the aircraft performance to determine if the thrust settings selected were adequate for the aircraft altitude versus weight.

The B747(B) operator's Flight Safety Department reviewed the occurrence and made several recommendations addressing internal procedures. There were no ATC implications and, within the constraints of the present system, the controllers and radio operators involved reacted well to ensure the situation was recovered safely and with the minimum risk to the many other aircraft in the vicinity of a very busy Oceanic track.



of 4, following the same track with perhaps 10 or 12 miles covering them longitudinally. B747(B) was second in the stream and B747(A) fourth.

The replay clearly showed B747(B) slowing and being overtaken by the third aircraft in the line (but with vertical separation maintained) and then descending, in irregular steps, through the level of B747(A) as it also overtook.

The replay convinced members of the importance of the deviation to the left carried out by B747(A) and believed that, but for this action to create some lateral separation, a real risk of collision would have existed. Had B747(B) not descended in a semi-controlled condition - for example had the stick pusher operated - B747(A) would have been, just about, directly below. A reaction to TCAS (RA) by the B747(A) pilot in these circumstances might not have been quick enough. As it was, his avoidance action removed the risk from the situation.

The ATC agencies involved did all that they could in the circumstances.

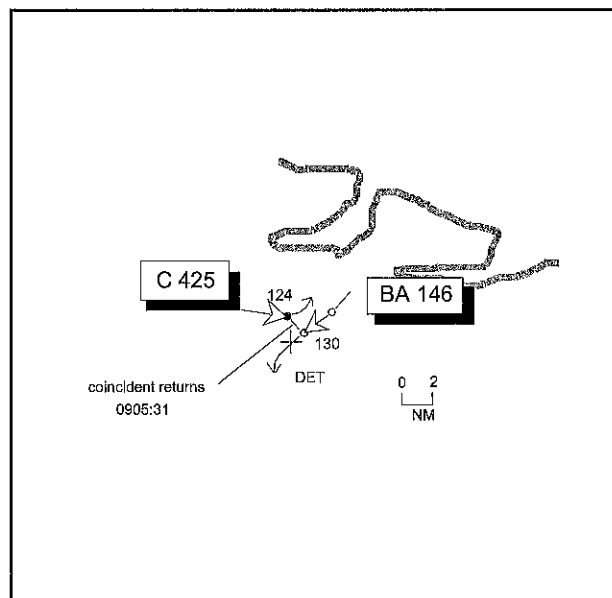
- 2 *Causal Factors:* The crew of B747(B), who had allowed their aircraft to lose speed such that it was unable to sustain level flight at FL360, were forced to descend to regain speed and in doing so flew through the level of B747(A).
- 3 *Risk Classification:* C
- 4 *Recommendations:* The Panel had no recommendations to make.

#### AIRPROX (P) REPORT No 124/98

Date/Time: 30 Sep 0905  
Position: N5119 0037E (1 NM NE Detling VOR)  
Airspace: LTMA (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: BAe 146 C 425  
Operator: CAT Civ Comm  
Alt/FL: FL 130 ↑FL 120  
Weather VMC CAVOK VMC CLBC  
Visibility: 10 km 7 NM

#### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE BAe 146 PILOT** reports that he was heading 197° at 295 kt and cruising at FL 130 under radar control from LATCC during a TIMBA 1E arrival to Gatwick. He was squawking 2110 with Mode C. The weather



was CAVOK. ATC advised him of conflicting traffic and instructed him to turn onto 170° for avoiding action. He did not see the other ac but

was later advised by telephone from LATCC that it had passed him by 1.5 NM and 500 ft.

**THE C425 PILOT** reports that he had taken off from Wycombe Air Park and joined CAS near Biggin on a flight to Belgrade squawking with Mode C. The visibility, flying between small cumulus clouds, was 5 - 10 NM in VMC. Workload was high as he complied with LATCC instructions during a stepped climb out. He was flying the ac and the co pilot's seat was occupied by a large passenger.

While heading in an easterly direction at about 200 kt, in bumpy weather conditions, his passenger attempted to plug in his headset, causing interference on the radio reception and blanking out some RT transmissions. He quickly pushed the passenger forward, removed the headset jacks and re-checked his radios. Owing to this distraction he omitted to set the No 1 altimeter to the standard pressure setting and climbed, at about 2000 ft per min, with the autopilot heading engaged and the altitude selector set to 120. ATC queried his maintenance of FL 120 and he noticed that, after a brief characteristic overshoot, the autopilot settled at an indicated level of FL 120. He then noticed that the altimeter setting still showed the QNH (about 990 mb) so he quickly corrected this to read 1013 and adjusted his level accordingly. In the meantime the other ac, which he had seen initially some 1 - 2 NM away, passed in the opposite direction to his R about 0.5 NM away and 1000 ft above. ATC then instructed him to turn L 30°. In his opinion there was no risk of collision.

The pilot comments that in future non-aircrew persons will not be allowed to occupy the co pilot's seat during periods of high workload.

**LATCC** reports that the C425 was cleared to FL 120 by the BIG outbound controller but was observed passing FL 123. The pilot was instructed to turn L heading 040° and passed traffic information on the BAe 146. A further instruction was given to tighten the turn and traffic information was passed again. Meanwhile, the TIMBA SC, controlling the BAe 146, also noticed the C425 climbing through FL

122 and passed avoiding instructions to the BAe 146 pilot. The latter did not see the C425.

Note: A video replay of the LATCC radar at 0905:11 shows the BAe 146 heading SW towards DET at FL 130. At the same time the C425 is heading E and climbing through FL 121 at the BAe 146's 1.30 position range 3.3 NM. At 0905:31 the BAe 146 passes about 1.5 - 2 NM abeam the C425, which is now indicating FL 124 Mode C, on its starboard side. Six sec later, at 0905:37, the BAe 146 crosses DET while the C425, now some 1.5 NM N of DET, commences a L turn onto a northeasterly heading, reaching FL 126 Mode C before descending back to FL 120. The BAe 146 starts a L turn at about 0905:45.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a recording of the relevant RT frequency, radar photographs, and a report from the air traffic controller involved.

The Board quickly concluded that the Airprox occurred because the C425 pilot had exceeded his cleared level owing to an incorrectly set altimeter. Members noted that this was a single-crew operation and the pilot had clearly been distracted by the actions of his front seat passenger at a time of particularly high workload. Although this mitigated his error, members nonetheless stressed that it was the pilot's responsibility to ensure that passengers were properly briefed on safety related issues prior to flight, including the potentially dangerous consequences of interfering with cockpit instruments or controls. A member commented that the ac's safety could have been further jeopardised by obstruction of the control column when the passenger was pushed forward.

Turning to risk, members were satisfied that the prompt actions of the TC controllers ensured that the ac would not collide, and radar recordings confirmed that the ac passed each

other with appreciable lateral and vertical separation. On this basis the Board concluded

there had not been a risk of collision.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* The C425 pilot exceeded his cleared flight level owing to an incorrectly set altimeter.

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### **AIRPROX (P) REPORT No 125/98**

*Date/Time:* 30 Sep 1431

*Position:* N5240 E0117 (Norwich Airport - elev 117 ft)

*Airspace:* ATZ (Class: G)  
*Reporting Aircraft* *Reported Aircraft*

*Type:* S76A ATR 72

*Operator:* CAT CAT

*Alt/FL:* 5 ft 100 ft

(QFE) (agl)

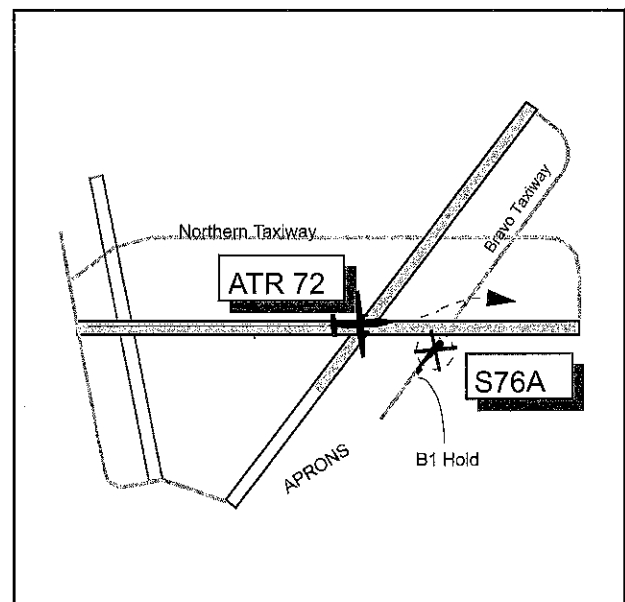
*Weather* VMC CLBC VMC CLBC

*Visibility:* nk 10 km

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE S76A PILOT** reports taxiing to the 'B1' hold for a take-off on the Norwich Airport Bravo taxiway. Shortly after arriving at the hold both crew heard a take-off clearance which they clearly understood was for their S76 and which was acknowledged by the FO (non-handling) from the LHS. He began take-off on receipt and acknowledgement of the clearance and on reaching 25 kt on a heading of 040° ATC called 'hold position'; he abandoned take-off and brought the ac to a hover about 20 yd short of RW 09/27. At this point he saw an ATR 72 at 50-150 ft in the climb after take-off from RW 09. The ATR passed 50 m in front and 150 ft above. He did not assess the risk of collision.

**THE ATR 72 PILOT** reports heading 093° at 90 kt on take-off from RW 09 at Norwich having heard the S76 being told to hold at B1. He



became aware that the helicopter was hover taxiing beyond B1 at the same time as ATC told it to stop immediately. He saw it adopt a high nose-up attitude and stop 5-10 m short of the RW edge. Once airborne he banked left to increase separation, passing the B1 hold at about 100-150 ft in the climb. He thought there had been a medium risk in the incident.

**NORWICH ATC** reports, with RT recording, that the S76A pilot was asked while taxiing to the B1 hold if he could take a B1 departure in the prevailing SEasterly wind; the pilot accepted. The ADC told him to hold at B1 and advised him of departing traffic from RW 09. Once the ATR 72 had backtracked it was cleared to take off and while it was doing so ADC saw the helicopter dip its nose as if about to take off and

immediately and repeatedly told it to hold at B1. He saw the helicopter's nose come up again and it landed, and saw the ATR 72 deviate to the left after take-off.

Note: The RT recording shows that the ATR was given the surface wind and told to line up and hold at 1428:30. ADC then asked the S76 pilot if he wished to use 09 or the Bravo taxiway, the wind being 150/13, and repeated the question when the pilot asked him to say again: "C/s do you require RW 09 for departure or are you happy to take it from Bravo, 150/12 kt?", to which the pilot replied, "I will take it from B, c/s". ADC replied "C/s expect that hold at B1, departing traffic 09 full length" and the S76 pilot responded "C/s". ADC's next transmission was to helicopter traffic in the northern circuit advising that traffic would shortly depart from RW 09 full length; ADC then advised the ATR 72 pilot, clearly using his callsign, that the runway was wet, there was a helicopter operating on the N taxiway and that he was clear to take off. The ATR 72 pilot's reply, "Clear take off, c/s" was very slightly more garbled than his earlier transmissions, all of which were less clear than the S76's RT. However, repeated examination does not disclose audible evidence that the helicopter pilot, whose c/s was considerably shorter, was acknowledging the same message, or that 2 ac were transmitting at the same time. 20 seconds later ADC calls out clearly and positively to the S76 pilot "C/s hold position, hold position" which the pilot acknowledged with his callsign only. There were no similarities between the c/s of the 2 ac.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, recordings of the relevant RT frequencies, and reports from the air traffic controller involved.

The Board immediately and unanimously praised the Norwich ADC for his alertness and prompt action which stifled what could easily have developed into a very serious incident. As it was, members were disturbed at the degree

of inattention demonstrated by the S76 pilot who clearly had not taken aboard the warning about the impending departure of the ATR, a warning also repeated to the helicopter in the circuit. Members observed that the S76 pilot, had not fully read back some clearances, responding only with the last 2 letters of his registration, and wondered if there was some sort of distraction or preoccupation in the cockpit which reduced the attention paid by both pilots to what was going on around them. Members were also surprised that the LHS pilot had not automatically looked left along the RW 09 and seen the ATR before starting his transition, despite believing he had been cleared to go.

Some members considered the cause of the Airprox was that the S76 pilot had taken off without clearance. However, this raised the question why? He had absorbed the requirement to hold at B1 and had stopped there. Members found it hard to believe he would then simply have taken off without a word to anyone, and accepted eventually that the cause was that the S76 pilot mistook the ATR72's take-off clearance for his own. This demonstrated a considerable degree of inattention by both pilots. While there was no evidence of his acknowledgement, or of 2 ac transmitting together on the RT recording, it seemed likely that the S76 pilot just acknowledged with 2 letters, as he had responded to other instructions. This could easily have been masked by the ATR72 pilot's transmission acknowledging his take-off clearance followed by his much longer callsign.

In assessing the degree of risk, members accepted that the prompt action of the ADC and the reactions of the S76 pilots had removed the risk of the ac actually colliding, but agreed that the safety of the ac had been compromised.

## PART C: ASSESSMENT OF RISK AND CAUSE

*Degree of Risk:* B

*Cause:* The S76 pilot mistook the ATR72's take-off clearance for his own.

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### **AIRPROX (P) REPORT No 122/98**

*Date/Time:* 01 Oct 1431

*Position:* N5109 W0109 (5 NM S of Basingstoke)

*Airspace:* FIR (Class: G)

*Reporting Aircraft* *Reported Aircraft*

*Type:* Jetstream 41 Harrier

*Operator:* CAT MoD (PE)

*Alt/FL:* ↓ FL 55 5000 ft

(QNH 1004 mb)

*Weather* VMC VMC CLBL

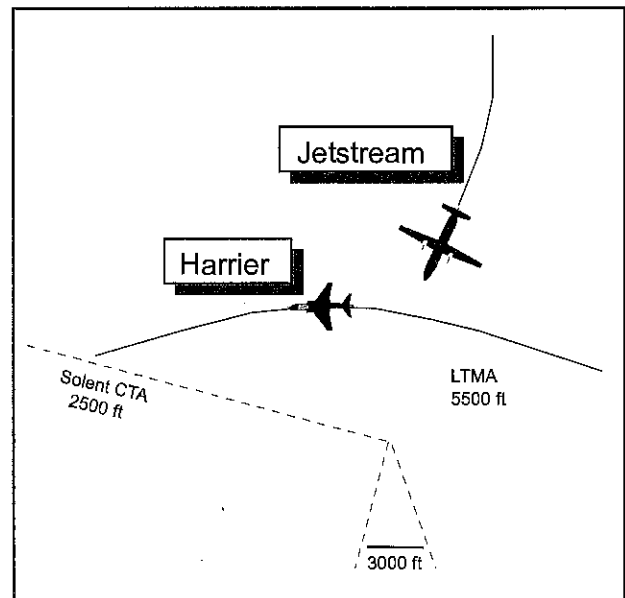
*Visibility:* 2 km 10 km

*Separation:* 2/3 NM - 500 ft

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE JETSTREAM PILOT** reports heading 225° at 210 kt in a descent to FL 50 with Solent Approach. Passing FL 60 he was warned of fast moving traffic on a London Mil squawk tracking to cross his position left to right indicating climbing through FL 53. ATC was not in contact with the other ac and advised it appeared to be levelling at FL 53. As he was now approaching FL 55 he requested a further descent which ATC agreed, so he descended out of CAS to 4000 ft on QNH 1003. On passing 4500 ft he saw a Harrier about 1.5 NM ahead at about 4800-5000 ft and considered the risk of collision as moderate. After landing he was advised that the Harrier had infringed controlled airspace and that ATC was filing a report. (Note: This referred to the track of the Harrier after the Airprox which took it into the 2500 ft base section of the Solent CTA.)

**THE HARRIER PILOT** reports heading 300° at 350 kt on a departure from Dunsfold and



receiving a RIS from Farnborough on UHF. He was cleared to climb to 5000 ft (the base of controlled airspace above him was 5500 ft) and the Jetstream was called to him as unknown traffic; he saw it when it appeared from behind/above a cloud layer. It was never on a collision course; he passed well ahead (2 NM) at a similar level and a much higher speed. There was no risk of collision and no conflict of flightpaths; he was surprised that an Airprox had been filed and queried why the Jetstream had descended out of controlled airspace.

Note: LATCC radar recordings show the Jetstream tracking 178° in a steady descent, and the Harrier converging on it on a track of 295° at Mode C readings varying between FLs 52 to 54. When the ac are about 2 NM apart the Jetstream, passing FL 51 Mode C, turns onto 210° and is passing FL 48 as the Harrier crosses about 2/3 NM ahead at FL 53 in a very gentle left turn from 298° to 252° (the turn was

in response to a request from London Mil relayed by Farnborough). FL 53 equates to 5060 ft on the Farnborough QNH of 1004 mb.

**MoD (PE)** comments that this was a confliction in Class G airspace whilst the Harrier was receiving an appropriate radar service (RIS) from Farnborough. The conflicting traffic was correctly called by the radar controller and then visually acquired by the Harrier pilot; he assessed that there was no confliction. The pilot continued to monitor the separation as his ac passed well ahead of and at a significantly higher speed than the Jetstream. He does not understand therefore why the pilot of the other ac considered that the safety of his ac had been endangered.

**ATSI** reports that the Airprox occurred during a period of light workload when all the relevant Southampton ATC equipment was serviceable. The combined Solent / Southampton Approach / Approach Radar Control controller (APR) had felt fit and adequately rested. The investigation was hampered by an apparent discrepancy between the timings on the Southampton and Farnborough RT transcripts. The timings on the Southampton recording accord with radar derived data provided by LATCC so it is most likely that the Farnborough timings, which appear to be behind by about 2 minutes, are inaccurate. (This has been brought to the attention of the unit).

The Jetstream established communication with Solent Approach at 1428, cleared to descend to FL 80. The Solent controller told the crew to expect an approach to RW 02, instructed them to turn right from their TC assigned radar heading of 140 onto 180 and cleared them to FL 50. The radar headings were to position the Jetstream east of traffic climbing northwards from Southampton, but meant that the flight would enter a segment of airspace with a base of 5500 ft and was therefore likely to descend below the base of controlled airspace before reaching the Solent CTA. MATS Pt 1 (Page 1-45, para. 12 "Vectoring") states the following :-

*"Unless an aircraft has planned to leave controlled airspace, it is not to be vectored outside the horizontal or vertical limits, except :*

- a) *when an emergency situation arises requiring the aircraft to be vectored outside controlled airspace;*
- b) *when avoiding severe weather; the circumstances must be explained to the pilot before the aircraft leaves controlled airspace;*
- c) *when specifically requested by the pilot.*

*Although aircraft operating in controlled airspace are deemed to be separated from unknown aircraft flying in the adjoining uncontrolled airspace, the radar controller should aim to keep the aircraft under his control at least two miles within the boundary where possible. Unpredictable manoeuvres by unknown aircraft can easily erode separation."*

The Jetstream had not planned to leave CAS and the pilot did not ask to leave, so the APR was not entitled to issue the descent to FL 50. He explained that when RW 20 is in use, airspace layout made it difficult to keep ac within CAS and achieve straight-in approaches from the north. Aware of this, regular operators into Southampton were frequently willing to drop out of CAS, subject to the provision of a RAS. These same pressures did not apply for approaches to RW 02, however, where more track miles are available for positioning. While on this occasion RW 02 was in use, APR was anticipating that the pilot might see the airfield and be able to carry out a visual approach.

Aware that the clearances issued to the Jetstream would lead to it 'dropping' out of CAS, APR said that it had become almost a routine practice, in the absence of potentially conflicting unknown traffic on radar. He said he would normally ask pilots if they were prepared to accept a RAS outside CAS but was not sure why he did not do so on this occasion. APR did not notice the Harrier when clearing the Jetstream to FL 50; at that time the Harrier was

tracking NW about 11 NM to the W of Dunsfold with a Dunsfold SSR code.

The Harrier was on a pre-planned sortie from Dunsfold to RAF Valley, routeing west below CAS; and receiving a radar service from Dunsfold, followed by Farnborough and London Military (LM). The Farnborough controller radar identified the Harrier, applied a RIS and, at 1428:20, instructed it to climb from 4000 ft to 5000 ft on QNH 1004 mb. While this was taking place, the Farnborough controller was telephoned by a LM assistant to whom the Harrier was identified on radar and it was agreed that it should change squawk to the pre-briefed 3330. At 1428:30, the LM controller came on to the line to take the radar handover. The Farnborough controller said the Harrier was: "...south-south-west of Odiham by seven miles ...heading three zero zero". The LM controller replied: "I'm not taking him on that heading in there". The Farnborough controller then asked what heading the LM controller would like the ac on, explaining that it was only climbing to 5000 ft and remaining below controlled airspace. At 1428:50, having noticed the Jetstream's 'airways' squawk on a conflicting track and apparently descending below CAS, the Farnborough controller passed the Harrier traffic information: "...traffic in your right one o'clock range of five miles right to left indicating five thousand five hundred feet slowly descending." The Harrier pilot acknowledged, reporting good VMC. The LM controller told the Farnborough controller to turn the Harrier left onto radar heading 260°, which she did and, at 1429:10, updated the traffic information: "...that traffic now indicating similar level in your right two o'clock range of two and a half miles right to left." 20 seconds later the pilot reported: "...traffic in sight passing well clear." He was then transferred to LM.

In the meantime, at 1430:16, the Solent APR had instructed the Jetstream to turn right onto heading 220°. At about that time he noticed the 3330 squawk approaching from the east and, at 1430:22, he passed traffic information to the Jetstream: "...I have a London Military squawk away in your eleven o'clock range of five miles left to right indicating flight level five four." The

Jetstream pilot acknowledged and requested further descent. He was instructed to expedite descent to 4000 ft and the traffic information was updated: "...now is in your eleven o'clock at flight level five zero left to right range of two and a half miles." The pilot reported visual with the traffic and said it was a Harrier. The APR replied: "Okay thanks er just on the base of controlled airspace er you're now under Radar Advisory passing underneath that ac turn left again heading two zero five and that should take you well behind." The Jetstream became visual with the airfield a short time later and carried out a visual approach without further incident. When the APR asked the pilot if he wished to file a report on the earlier encounter, he said that he would discuss the matter after landing and subsequently filed an Airprox report.

The radar recording indicates that the Harrier passed 0.6 NM in front of, and 500 ft above the Jetstream. The turn onto 260 by the Harrier helped increase the separation slightly, whereas the Jetstream's right turn onto 220 aggravated the situation. However, both turns took effect at such a late stage that they did not significantly affect the outcome. On its heading of 260 the Harrier clipped the northern portion of the Southampton CTA a short time after the Airprox. On its original heading of 300, it would have passed below Airway R41 where its base is FL 55.

MATS Pt 1 (Page 1-36, "Type of Service") states that: "Pilots must be advised if a radar service commences, terminates or changes when: (a) they are operating outside controlled airspace or, (b) they cross the boundary of controlled airspace. When the APR advised the Jetstream pilot that he was "...just on the base of controlled airspace ...now under radar advisory ..." at 1430:56, the ac was descending through FL 48 (about 4500 ft on the Southampton QNH 1003 mb) in an area where the base of CAS is 5500 ft, so this transmission was somewhat delayed. The Jetstream pilot should have been advised that the service being provided had changed from a control service to a RAS as soon as it descended through 5500 ft and under the terms of either a

control service or a RAS, should have been provided with timely avoiding action to resolve the conflict with the Harrier. Under the terms of the RIS being provided to the Harrier, the Farnborough controller was only required to provide the details of conflicting traffic and this she did.

**HQ MATO** reports that the SEC 33 controller at LM advised the Farnborough controller (FBO) that he was not happy to take the handover with the Harrier heading 300° and requested that FBO turn it onto a westerly heading in order to route the ac clear of the Cotswold CTA and S of the Salisbury Plain Danger Areas. The Airprox occurred before the Harrier pilot called SEC 33 at 1431:15. The closest point of approach between the subject ac occurred during the handover. The handover was correctly executed and SEC 33 was justified in accepting the ac. There are no contributory military ATC factors associated with this Airprox.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It was evident that the Southampton controller had cleared the Jetstream to descend out of

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* The Southampton controller cleared the Jetstream to descend out of CAS and into conflict with the Harrier.

CAS before making an adequate check of the airspace below, or asking if the pilot agreed. The Jetstream then flew into conflict with the Harrier which the controller saw too late to provide proper avoiding action. Members accepted that existing procedures covered a situation where a pilot wished to descend out of CAS (and was content to accept an advisory service in Class G airspace), as long as the procedures were applied properly, ie check first that the pilot is content and then advise when leaving CAS, and apply the appropriate ATSO-CAS.

Members agreed that the Harrier pilot's route and altitude were sensible, keeping him clear of CAS, Lasham and danger areas, and that he was flying at a moderate speed, and that the Farnborough controller provided a RIS correctly. It was noted that the turn requested by the LM controller took the Harrier un-cleared through the Solent CTA after the Airprox; while this was therefore a separate issue, members observed that the Harrier could have reached its destination (Valley) on its current heading and at its current level without infringing anything.

Concerning the risk level, the Board agreed that although the Harrier pilot did not see the Jetstream until he had passed it, the horizontal and vertical separation that pertained meant that there had been no risk of the ac actually colliding.



## AIRPROX REPORT 30c/98

### Occ No. 98/05784

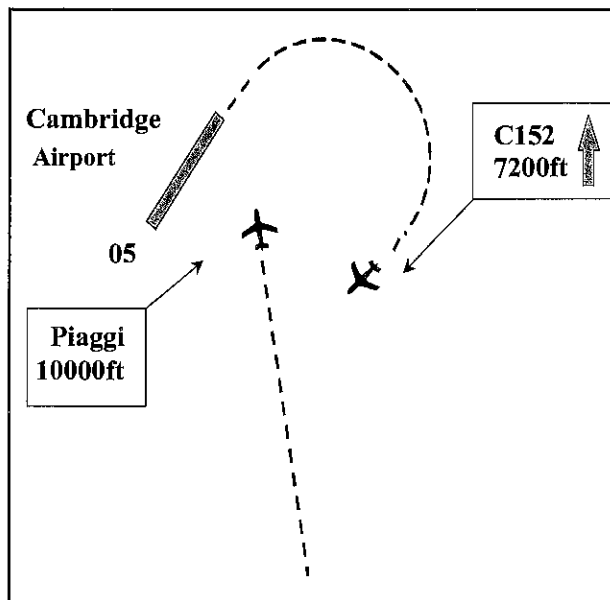
*Date:* 3 October 1998  
*Time:* 1320 UTC  
*Aircraft:* Piaggio/C152  
*Operators:* Private  
*Position:* Cambridge Airport  
*ALT/HT/FL:* 700 feet  
*Airspace Type:* ATZ - Class G  
*Reporter:* Cambridge ATC - Aerodrome Controller  
*Reported Separation:* Not determined  
*Recorded Separation:* Not determined

### THE INCIDENT

The aircraft involved in this AIRPROX were under the control of Cambridge ATC. The Piaggio was enroute from Wycombe Air Park to Newmarket and was diverting into Cambridge due to deteriorating weather. The C152 was carrying out circuit training.

At approximately 1315, the C152 pilot took off from runway 05 at Cambridge to carry out a local training flight, intending to fly two circuits. However, as the weather began to deteriorate on his initial climb out, he decided to fly only one circuit and, in order to remain clear of cloud, requested permission from the Aerodrome Controller to fly this at height 700 feet instead of the normal 800 feet. Permission was granted and the pilot reported downwind right hand at 1318. Meanwhile, the Piaggio pilot, who was passing Cambridge enroute to Newmarket, encountered the same deterioration in the weather and had inadvertently flown into cloud. He therefore decided to divert to Cambridge and, also at 1318, called on the Cambridge Approach frequency with this request. He was given clearance to join right hand downwind for runway 05 but at 1319, reported overhead the airport at height 1000 feet. He was then given details of the circuit traffic but did not report visual with it.

The Aerodrome Controller reported that from an initial good forecast, the weather in the circuit at Cambridge deteriorated within the space of two



hours to give a cloudbase below 500 feet. He reported that during this period, he believed separation was almost certainly lost when the Piaggio pilot flew through the downwind leg and was directly over the runway before realising his position. The Piaggio pilot was at this time still on the Approach frequency and neither he nor the pilots acquired visual contact with any other aircraft. However, the controller took AIRPROX reporting action.

In a subsequent verbal report the controller stated that his objective in submitting the AIRPROX was to highlight the inaccurate weather forecast provided for Cambridge. A later report from the Met Office stated that, with hindsight, the issued low level weather forecast for the area was clearly too optimistic and that no amendment had been issued. In addition, Terminal Aerodrome Forecasts (TAFs) for Cambridge, which took into account the deteriorating conditions which were spreading from the North East, were not issued until after the incident.

In his written report, the Piaggio pilot stated that when he was just outside the Cambridge ATZ, he was heading into deteriorating weather and believed that it would be dangerous to continue. When he then inadvertently flew into cloud, he decided to divert immediately to Cambridge, flying overhead the airfield at just below the

cloudbase. He was aware of an aircraft in the circuit from the traffic information passed to him by the Approach controller and assumed it was always well separated from his aircraft. Although he entered the circuit and overflew the control tower without ATC clearance, getting his aircraft and passengers on the ground safely became an overriding concern due to the sudden deterioration in weather conditions.

In his written report, the C152 pilot stated that he carried out a circuit at altitude 700 feet to remain clear of cloud and that whilst downwind the horizontal visibility deteriorated further to about 1km to 1.5km in rain, making it difficult to see the runway. He heard a radio call from an aircraft wishing to join the circuit and that that aircraft was advised of his presence in the circuit but was unable to see him. He stated that at no time was he able to see the joining aircraft and could not confirm its position or height other than that it was joining the circuit whilst he was downwind.

Radar recordings were taken from the Area radar site at Debden but from these it was not possible to determine the identity of the two aircraft involved or how close they came to each other.

## **REVIEW BY AIRPROX PANEL**

1 *Discussion:* The Panel endeavoured to reconstruct the event by using the precise time base of the RTF recording and the transmissions between ATC and the two aircraft, aided by the considerably less conclusive evidence of the few radar trail dots which were recorded on the Debden Radar.

Its conclusion was that there was a strong probability that the Piaggio and C152 had come into close proximity and that the controller was justified in filing an AIRPROX. The event is a good example of a very serious cause being revealed but without the evidence to reliably establish a degree of risk.

2 *Causal Factors:* The Piaggio pilot infringed the Cambridge ATZ.

3 *Risk Classification:* D

4 *Recommendations:* The Panel had no recommendations to make.

## **SUMMARY OF CAA ACTION**

It is not clear whether an AIRPROX actually occurred in this case as none of the pilots involved reported any conflict with another aircraft. The Aerodrome Controller did not see either aircraft but from the reported positions of the C152 and the Piaggio, he was convinced that an AIRPROX occurred. Furthermore, it was not possible to determine the proximity of the aircraft from the available radar recordings.

The Met Office confirmed that the Cambridge TAF had been too optimistic and that TAFs, which took into account the deterioration in the weather conditions which were spreading from the North East, were not issued until after the AIRPROX.

The Piaggio pilot accepts that in diverting to Cambridge at short notice he inadvertently flew through the Cambridge Aerodrome circuit before he had obtained a clearance to join. This occurred due to the sudden deteriorating weather conditions he encountered and his concern for the safety of his aircraft and his passengers.

## AIRPROX (P) REPORT No 127/98

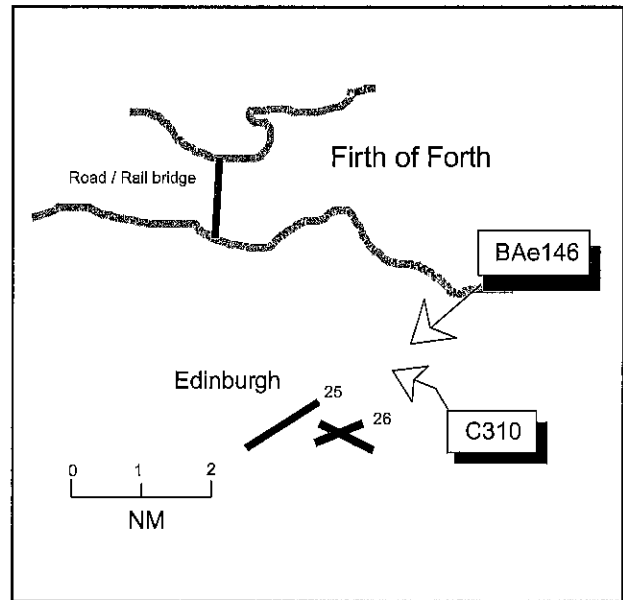
Date/Time: 08 Oct 1644  
Position: N5557 0321W (Edinburgh Airport - elev 135 ft)  
Airspace: CTR (Class: D)  
Reporting Aircraft Reported Aircraft  
Type: BAe 146 C 310  
Operator: CAT Civ Comm  
Alt/FL: 400 ft ↓ 1000 ft ↓  
(QNH 1029 mb) (QNH 1029 mb)  
Weather VMC VMC CAVOK  
Visibility: 10 km 30 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE BAe 146 PILOT** reports that he was on final approach for RW 25 at Edinburgh at 130 kt. The visibility was 10 km in VMC. At about 3 - 4 NM from touchdown, a Cessna light twin ac turned in from the L and lined up with RW 25 ahead of him. He had heard the Tower controller clear a Cessna to land on RW 26. At 2 NM from touchdown clearance to land on RW 25 was given but, observing that the Cessna was still ahead of him, he asked the controller to confirm it was positioning for RW 26. Almost immediately he was instructed to go around, while the Cessna landed ahead of him on RW 25. He estimated the minimum separation was 1 NM and 300 ft and, although he felt the risk of collision had been low, he thought it appropriate to submit an Airprox report.

**THE C310 PILOT** reports that he was descending through about 1000 ft (QNH 1029) at 120 kt while on a VFR final approach to RW 25 at Edinburgh. Although the visibility was generally about 30 km in VMC, he was flying into blinding sunlight which made identification of the RW extremely difficult. He did not see the other ac.

Note (1): Examination of the Edinburgh Approach Control RT transcript (121.2) shows that the C310 pilot first called at 1623. It is evident from the transcript that the pilot's transmissions were almost unreadable at times but eventually, having been given and read



back a clearance limit of the Forth Bridge, the pilot was transferred to the tower frequency (118.7) at 1627. On contact with this frequency at 1629, the pilot reported *'passing the bridges'* and was instructed to report at the South Tower. This he did about a minute later and was instructed to join and report R base for RW 26. (Again, it is clear that there is difficulty understanding some transmissions). The pilot acknowledged this instruction correctly and at 1631 reported R base. He was instructed to call final, which he acknowledged. At 1633 ATC asked the C310 pilot for a *'position report'* to which he replied that he had *'lost the airfield'* and requested radar vectors. When the controller asked if he was *'lost'*, the pilot replied *...."er no I'm not lost I've got the river can I continue with er radar vectors for two six and two five"*... The controller replied that he was unable to give radar vectors for 26 and requested the ac's altitude, which was then given as 1500 ft. At 1634 the pilot was asked to squawk 0431 and instructed to fly a heading of 360° (relayed from the radar controller). At 1635 the pilot reported at *'the bridges'* and was instructed to remain there. About a minute later he reported that he had the airfield in sight and was in a downwind position for RW 25. Having asked for a repeat of this message ATC replied *...."negative c/s remain at the Bridges please....report visual with a Fokker 100 at three miles for RW 25"*. The pilot confirmed he

was visual with this ac and was then instructed to ....*"cross runway 25 route into the overhead for runway 26"*. The controller repeated this instruction and the pilot acknowledged with...*"overhead join for two six c/s"*. At 1639 the pilot reported *"overhead for 26"*; he was instructed to turn cross wind when ready and to report downwind LH for RW 26 number two. This was correctly acknowledged. At 1641 the pilot reported *"downwind for RW 26"* and was instructed to report finals, now number one; this was also acknowledged correctly. At 1642 the BAe 146 reported *'ILS for 25'* and was instructed to continue approach. At 1643 ADC asked the C310 pilot for a position report, to which he replied...*"c/s just turning finals two six"*. ADC asked him to confirm that he was positioning for RW 26, to which he again replied...*"c/s finals two six"*. He was then cleared to land on RW 26 and, at 1643:30, the BAe 146 pilot was cleared to land on RW 25. The BAe 146 pilot immediately asked the controller if he was...*"sure that Cessna's going for two six"*, whereupon he was instructed to go-around, leaving the Cessna to land ahead of him. The next transmission to the C310 pilot, at 1645, is to vacate the RW.

**EDINBURGH ATC** reports that the C310 was overhead RW 26 and positioning downwind LH for that runway. Having reported downwind, the pilot was instructed to report finals. The BAe 146 was on finals for RW 25. The C310 pilot reported finals for RW 26 but could not be seen in that position from the tower; he was therefore asked to confirm he was finals for RW 26, which he did. He was then cleared to land. ADC was still unable to see the ac but thought it was either obscured by a hangar or a pillar in the tower. The BAe 146 was now at about 2 NM, obscured by the pillar, and was cleared to land on RW 25. Both ac then appeared on final for RW 25 in front of the pillar with the BAe 146 above the C310. The former's pilot queried the landing clearance and was immediately instructed to go-around. The C310 landed on RW 25.

Note (2): RW 25 at Edinburgh is 2560 m in length; RW 26 is 909 m. Both are asphalt.

**ATSI** comments that it was difficult to be critical of the controller's plan and actions. All the C310 pilot's RT calls indicated that the ac was being positioned for RW 26 and the ADC had sighted the ac in the overhead; there was no reason for him to believe that it might route for RW 25. Furthermore, the C 310 was being flown by a locally based operator and the weather was CAVOK. It was unfortunate that the ADC did not see the C 310 passing through the RW 26 final approach track and positioning for RW 25; however, it is acknowledged that the view from the VCR of the final approaches to RWs 26 and 25 is poor, and also the performance of the ATM (which does not have an SSR capability) is, reportedly, not good. It is understood that NATS have commissioned a safety survey to examine the view from the VCR following recent building work at the airport. A new VCR is under active consideration.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, reports from the air traffic controllers involved and a report from the appropriate ATC authority.

Members asked whether the obstructed view from the VCR was a long standing problem. An ATSI adviser said that a combination of pillars within the structure, a hill and buildings to the E prevented a clear view of the eastern approaches to the airfield, and the siting of the new RW to the NW of the old airfield had exacerbated the situation. Frequent movement by the controller was necessary to overcome the problem. Given the known limitations of the VCR and the poor performance of the ATM, an ATCO member questioned the wisdom of allowing the simultaneous use of runways 25 and 26. In these circumstances controllers, not being able continuously to monitor the progress of ac in the circuit, were obliged to rely on pilots' faithful adherence to ATC instructions. The Board welcomed the possible replacement of the VCR.

Members could find no mitigating circumstances to explain the locally based C310 pilot's mis-identification of the runways. Even given the low bright sun reported, members could not understand how he could possibly have confused RW 25, which stands alone from the main airport complex some distance to the NW, with the much shorter RW 26. Furthermore, members agreed that having reported overhead the airfield for RW 26, nothing in the RT transmissions from the C310 pilot which followed could have alerted the controller to the possibility that the ac would subsequently position for RW 25. The pilot was

twice asked for confirmation of his intention to land on RW 26 just prior to the encounter and on both occasions gave the appropriate assurance. The Board concluded that the C310 pilot caused the Airprox because, having been cleared to land on RW 26, he then flew an approach and landed on RW 25.

Members were satisfied that the BAe 146 pilot had seen the C310 in good time and was in a position to ensure that he could manoeuvre and reposition well clear of it. The Board concluded that there had not been a risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

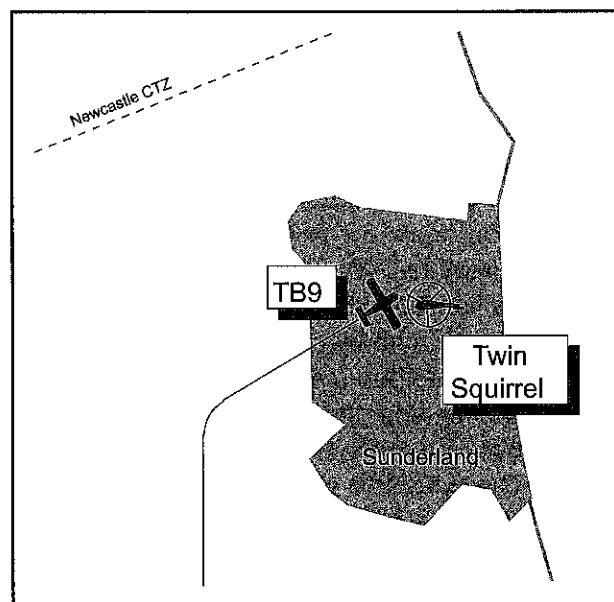
*Cause:* The C310 pilot was cleared to land on RW 26 but flew an approach and landed on RW 25.

**AIRPROX (P) REPORT No 126/98**

<i>Date/Time:</i>	09 Oct 1818	NIGHT
<i>Position:</i>	N5454 W0126 (Sunderland)	
<i>Airspace:</i>	FIR	(Class: G)
	<i>Reporting Aircraft</i>	<i>Reported Aircraft</i>
<i>Type:</i>	Twin Squirrel	TB9
<i>Operator:</i>	Civ Comm	Civ Club
<i>Alt/FL:</i>	500 ft	1200 ft
	(QNH 1004 mb)	(RPS)
<i>Weather</i>	VMC CLBC	VMC CLBC
<i>Visibility:</i>	25 km+	30 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE TWIN SQUIRREL PILOT** reports holding during a 'night sun' operation over a stolen vehicle; he was receiving a FIS from Newcastle. He descended to 450-500 ft to make more effective use of the light and as he came out of an orbit in a slow climb, heading 270° at 10 kt, he saw a fixed wing ac 1-200 ft to the W and about 50-100 ft above, heading directly towards



him. He took avoiding action by descending and considered there had been a high risk of collision. He questioned why the other ac was only at 600 ft over a built-up area. He had seen another ac earlier about 6 NM to the W heading N which he thought was the same ac.

**THE TB9 PILOT** reports heading 080° at 95 kt on a night cross country, on a leg from Durham to Sunderland, at 1200 ft on the RPS, and had received a FIS and a RAS from Newcastle during the sortie. Over the Sunderland area he was advised of a police helicopter at 600 ft approaching from the N. He increased his lookout but did not see it. About 1-2 minutes later the police helicopter pilot called to advise that he (TB9) was overhead and that the helicopter had descended to 500 ft. He immediately climbed to 2000 ft.

**NEWCASTLE ATC** reports that both ac were under a FIS from the APR controller in Class G airspace. The helicopter, operating at low level, had gone below radar cover and the TB9 was operating at varying levels below 2500 ft; radar contact was intermittent below 1500 ft. As the TB 9 approached Sunderland the helicopter appeared 1 NM to its E so the controller immediately passed traffic information to both ac; *"(TB9 c/s) and ah (helicopter c/s) keep a sharp lookout over Sunderland er you're both in the vicinity of Sunderland and (helicopter c/s) the other ac's about 600 ft above you at the moment"*. The TB9 pilot replied *"C/s that's copied"* and the controller continued to advise him that the helicopter was about 600 ft below and to the E by about a mile. The helicopter pilot then advised that he was *"visual and dropping down"*. Their Mode Cs were showing A011 and A007. The helicopter pilot later advised that he had not heard the first traffic information but had seen the TB9 on the second call and thought the TB9 was 50-100 ft above him.

Note: The Gt Dun Fell radar recording shows the TB 9 tracking N to a position 4 NM SW of the helicopter when it turns onto 060°. The helicopter and TB9 are at 800 and 1200 ft Mode C as the ac close, and 700 and 1500 ft as the TB9 passes almost directly over the helicopter. The TB9 continues up to 2100 ft and the helicopter stabilises at 1100 ft. (Local QNH was 1005 mb; 1200 ft Mode C equates to 985 ft amsl.) Timings on the radar and RT recordings indicate that the controller's first warning started about 15 sec before the ac crossed.

Note 2: Rules of the Air R 5 (1) includes the order that an ac other than a helicopter shall not fly over any congested area of a city below 1500 ft above the highest fixed object within 600 m of the ac, with provisos that did not appear to apply to the TB9's flight. Much of the part of Sunderland overflown by the TB9 is over 150 ft amsl.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the air traffic controllers involved.

From the TB9's cockpit it was clear that the helicopter did not stand out against the lights of the town and was not seen; however, members observed that from the Mode C, the helicopter was initially some 400 ft below the TB 9 and not in conflict with it. This separation increased to 700 ft once traffic information had been passed and the Board agreed there had not in fact been a risk of collision. However, members could understand the startle factor which the helicopter crew may have felt, not knowing in the dark how close the TB9 was, although the Newcastle controller had advised there was 600 ft between their altitudes; the Board concluded that the cause of the Airprox report was a mistaken impression of lack of vertical separation by the helicopter pilot.

It seemed possible to members that the TB9 may have been below the requisite height over a built up area - without a verified Mode C it was not possible to be certain. Although members agreed that this was not a cause of the Airprox, they felt it was a point the TB9 pilot should take on board for the future.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: Mistaken impression of lack of vertical separation by the helicopter pilot.

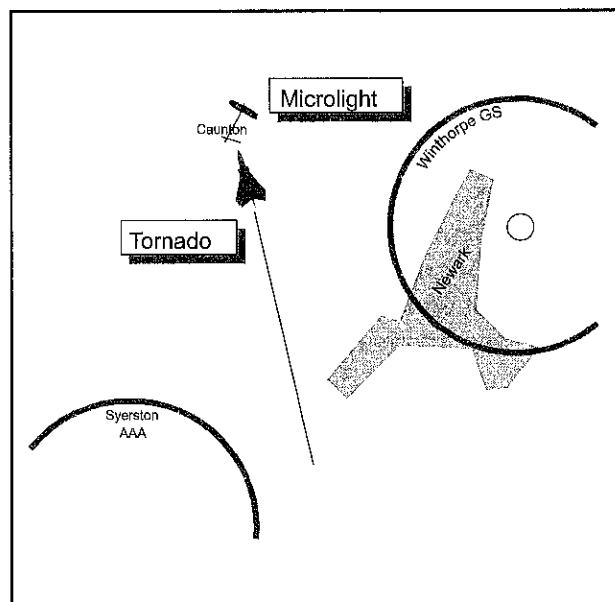
### **AIRPROX REPORT No 129/98**

Date/Time: 09 Oct 0846-0850  
Position: N5308 W0053 (4 NM NW of Newark)  
Airspace: FIR/LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Microlight Tornado GR  
Operator: Civ Pte HQ STC  
Alt/FL: 350 ft ↓ 500-600 ft  
(agl) (Rad Alt)  
Weather VMC CLNC VMC CLNC  
Visibility: 20 km+

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE MICROLIGHT PILOT** reports heading 210° at 50 kt on finals to land on his RW 21 at Caunton airfield; as he turned finals a jet came across the middle of the airfield at a similar height as him (350 ft) and appeared to be in a slight left turn passing about 350 ft away. He continued to land under it and commented that the risk of collision would have been high if he had been flying round the circuit.

Note: The Microlight pilot filed his report later in the day and could not remember the exact time of the incident; he later advised that it would have been between 10 minutes before the hour to 10 past. LATCC radar recordings showed 3 Tornados passing at low level through the Newark/Syerston gap in the time period but since none of the pilots could remember seeing a microlight, it was not possible to identify positively which one was involved. The middle one believed he may have seen something below and to his right as he passed the area, but this was inconclusive. The LATCC radar



recordings do not show any of the ac involved in the area just W of Newark.

**THE TORNADO PILOTS** report heading N at 420 kt through the Newark/Syerston gap and did not see the microlight despite being aware of the site (which is marked on the LFC).

**HQ MATO** reports that a stream of 3 Tornado GR1 ac were prenotified to Cranwell Zone by Cottesmore ATC for northbound transits at low level with about 2 minutes between each ac. The first 2 were not seen on radar and were placed under a FIS. The third was identified and placed under a RIS while squawking 7001 with ident and Mode C in accordance with a LoA. Traffic information regarding 2 contacts at FL 45 and FL 55 was passed. Meanwhile and unknown to Cranwell Zone, the microlight was in the circuit at Caunton microlight site. Zone complied with his requirements in attempting to identify all 3 Tornados and passed appropriate traffic information to the one that was identified.

However, Zone did not see any other radar returns in the vicinity of the Airprox.

**HQ STC** comments that lack of accurate information has made it impossible to determine the ac involved in this Airprox. Of the 3 possible Tornado crews, all were aware of the microlight site and all complied with the appropriate regulations. Furthermore, in considering the size and relative speed/altitude of the microlight it is probable that the Tornado crews had very little opportunity to acquire visual contact. In assessing the collision risk of this Airprox, at the time of the incident the microlight was below the level of the Tornados and descending with lateral separation.

#### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

The microlight pilot gave a miss distance of 350 ft but he said the Tornado had passed over the

middle of his 500 yd strip; at 350 ft on finals this would have placed the microlight something over a quarter of a mile short of the threshold. So the separation would have been in the order of 0.5 NM. It seemed the microlight pilot was more concerned about the outcome if he had been elsewhere in his circuit and the Board agreed that would have produced a different incident to the one they were assessing. In this case members agreed that the incident was a sighting report without risk of collision.

As to the future, members observed that this operator had chosen to site his activity in the centre of the one remaining gap in the string of avoidances along the river Trent that obstruct the only south/north transit route in the eastern half of the low flying system. Consequently it seemed he would have to live with frequent low level overflights which in the future would tend to feature Harriers at 250 ft agl instead of the majority of Tornados at 500 ft. It was suggested that he could promote safety by making a telephone call to RAF Cranwell ATC and passing details of his activity before flying. ATC could then warn LFS users to keep a lookout for microlights.

#### **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* Sighting report.



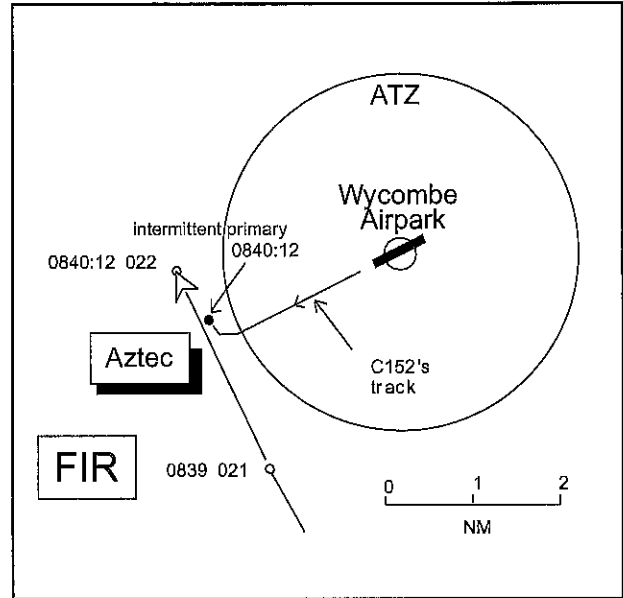
**AIRPROX (P) REPORT No 128/98**

Date/Time: 10 Oct 0840 (Saturday)  
Position: N5135 W0051 (2.5 NM SW  
Wycombe Airpark - elev 520 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: C152 PA23 Aztec  
Operator: Civ Trg Civ Pte  
Alt/FL: 1200 ft ↑ 2200 ft  
(QFE) (QNH 995 mb)  
Weather VMC VMC CLOC  
Visibility: 20 km 10+ km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE C152 PILOT** reports that following departure from RW 25 at Wycombe he turned crosswind onto a heading of 330° at 65 kt. The visibility was over 20 km in VMC. On passing about 1200 ft (QFE) a low wing twin ac, white in colour with some yellow/brown/orange markings, overtook on his port side about 5 ft away at the same height having approached from behind him. He watched the ac as it tracked towards Stokenchurch. He considered there had been a high risk of collision and reported an Airprox to Wycombe Tower on 126.55. He asked the controller if the other ac had been on the Wycombe frequency and was advised that it was unknown.

Note (1): In a subsequent telephone conversation with UKAB staff the C152 pilot said that he had climbed straight ahead from RW 25 to 1000 ft to conform with the noise abatement routeing. This took him to the ATZ boundary where he turned R onto a crosswind heading of about 330°. Shortly after turning, with wings level and climbing through about 1200 ft (QFE), the twin passed on his port side at high speed with its starboard wing under his port wing; had it been any closer it would have taken away his wing support strut. He immediately felt the wake from the ac's starboard wing which caused his ac to tip onto its LH side. He thought the other pilot may have seen him because soon afterwards he saw the ac jink slightly before continuing on its way.



**THE PA23 PILOT** reports that he had departed from White Waltham in VMC and was tracking in a northerly direction towards Leicester at 2200 ft QNH (995) and 150 kt. The visibility was over 10 km. He was squawking 7000 with Mode C and listening out with Benson on 120.9. Although unaware of any ac being alongside him, in the High Wycombe area his passenger momentarily saw a high wing light ac behind and slightly R of them about 0.25 NM away. He thought this ac must have either turned or climbed up behind them.

**WYCOMBE ATC** reports that shortly after departing from RW 25 to leave the circuit to the N, the C152 pilot called and asked if a twin-engined ac was working the frequency. As this call was being made a 'twin-prop' was observed from the tower transiting to the W of the airfield 1 - 1.5 NM away at about 1500 ft. The C152 pilot was advised that the 'twin' was not in RT contact and was unknown traffic to Wycombe, which drew a reply from the C152 pilot that there had been a definite risk of collision and he would be filing an Airprox report on his return.

Note (2): A video replay of the Heathrow radar shows a return believed to be the Aztec tracking NW from the White Waltham area. At 0840:12 this return tracks about 0.3 NM WSW of the Wycombe ATZ at 2200 ft Mode C (Equivalent to 1714 ft QNH 995, or 1194 ft above Wycombe's

elevation). At the same time a primary return appears about 0.5 NM in trail and slightly R of the Aztec's path. This return, believed to be the subject C152, remains in intermittent contact for a few sweeps of the radar and can be seen moving slowly in a north-westerly direction. It is believed that the Airprox occurred at about 0839:52 just outside the SW boundary of the Wycombe ATZ.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a radar video recording, and a report from the air traffic controller involved.

The Board was amazed that the Aztec pilot could have come so close to another ac without being aware of its presence and members agreed it was purely fortuitous that the two ac did not collide. Despite the reportedly good flying conditions and visibility, neither pilot saw the other and this was assessed to be the cause of the Airprox.

Members considered possible reasons why the pilots had not spotted each other. It was felt that of the two, the Aztec pilot was probably in a

better position to see the Cessna in spite of the obstructions to lookout caused by his RHS passenger and the ac's nose and starboard engine. A GA member emphasised the need to lookout particularly carefully when transiting close to the ATZ of a known busy airfield. However, the scope for seeing the climbing Cessna was probably limited, as the time from its take off at Wycombe to the incident was only in the order of some 3 minutes. The C152 pilot's view to his L and upwards was initially limited by his ac's high wing configuration and, furthermore, the Aztec would have been some 5 - 6 NM to the S of the airfield at the time the C152 departed, albeit approaching the area at a fairly high relative speed. However, members thought that the C152 pilot might have had the opportunity to spot the other ac as he began his turn to the R. He would have had a clear view to the L below his raised port wing and by that time the Aztec was likely to have been well within visual detection range at a very similar altitude.

While any sightings would probably therefore have been late, members nonetheless felt that both pilots had an opportunity to spot each other and take avoiding action at some point. In this case the lookout of both pilots was clearly ineffective and members concluded that the ac had come extremely close to an actual collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* A

*Cause:* Non - sighting by both pilots.

## AIRPROX REPORT 39c/98

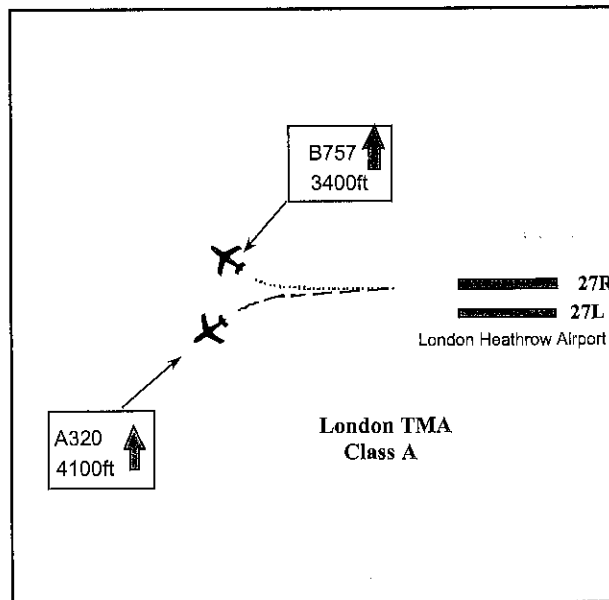
### Occ No. 98/05985

**Date:** 13 October 1998  
**Time:** 1514 UTC  
**Aircraft:** A320/B757  
**Operators:** Foreign Airline/British Airline  
**Position:** 2nm West of London Heathrow Airport  
**ALT/HT/FL:** Altitude 3000 feet  
**Airspace Type:** London LTMA - Class A  
**Reporter:** LATCC Terminal Control (TC) North West Departures Controller  
**Reported Separation:** 1nm horizontal/600 feet vertical  
**Recorded Separation:** 1.2nm horizontal/700 feet vertical

### THE INCIDENT

The aircraft involved in this AIRPROX were under the control of LATCC Terminal Control (TC), the A320 with the WILLO Sector Controller and the B757 with the North West Departures controller, but both had been transferred from the Heathrow Air Departures controller immediately prior to the incident. The A320 had departed from runway 27R at Heathrow on a Midhurst (MID) Standard Instrument Departure (SID) en route to Paris while the B757 had followed the A320 on departure from Runway 27R, for a Wobun (WOB) SID en route to Edinburgh.

The A320 departed at 1512 and was followed about 45 seconds later by the B757. At 1513.17, the A320 pilot made his initial call to the WILLO controller who lifted the speed restriction. When the B757 departed, it appeared on radar at 1513.34, 1.4nm behind the A320 and 1400 feet below. This loss of separation resulted in the Short Term Conflict Alert (STCA) flashing a white low level alert on the North West Departures controller's radar display and, at 1513.49, when the B757 pilot made his initial call he was given an avoiding action turn on to a heading of 360° and traffic information on the A320 in his 12 o'clock range



1nm, 1000 feet above. By the end of this transmission the STCA was flashing a red high level alert. The radar pictures timed at 1513.48 show the A320 just beginning a left turn on the SID and passing an altitude of 3800 feet in the climb. The B757 is 1.4nm behind the A320 and is passing an altitude of 2700 feet. Subsequent radar pictures show the B757 catching up on the A320 both in distance and height with minimum separation of 1.2nm and 700 feet being recorded at 1514.04 when the A320 was passing altitude 4100 feet in the climb. At about this time the B757 pilot was asked by the North West controller if he was visual with the A320 ahead and replied, "negative India Mike Charlie". He was then instructed to stop his climb at altitude 4000 feet. However, by this time the A320's left turn on the SID and the avoiding action turn right by the B757 had begun to take effect. Although vertical separation reduced to 600 feet, horizontal separation had increased and continued to do so as the tracks quickly diverged.

The B757 pilot was then advised that he was clear of the traffic and given climb to FL140. When asked if the traffic had shown on his Traffic Alert and Collision Avoidance (TCAS) equipment he replied that his aircraft was not fitted with TCAS.

The pilot of the A320 was not aware of any conflict with any other aircraft on this flight.

The Heathrow Air Departures controller believed that the two aircraft departed one minute apart as for standard departure separation. He observed the aircraft on the Aerodrome Traffic Monitor (ATM), and that at no time did he consider that action was required.

The North West Departures controller who took AIRPROX reporting action recalled that when the B757 got airborne the STCA activated almost straight away and that he then gave an avoiding action turn right. As the avoiding action turn was not giving a rapid solution, he stopped the B757 at altitude 4000 feet.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by a combination of circumstances. The Heathrow Air Departures controller did not allow a full 1 minute departure separation between the A320 and the B757 and the B757, which was a little faster than the A320, drifted slightly left of initial departure track. Nevertheless, the North West Departures controller, alerted to the hazard by the STCA, acted promptly to resolve what he believed to be a developing serious loss of separation.

## **REVIEW BY AIRPROX PANEL**

- 1 *Discussion:* The Panel had no real evidence to confirm that the departure separation between the A320 and B757 was in fact as little as, about, 45 seconds. The important point of measurement is "wheels off" between successive aircraft and this information is not routinely recorded. Clearly, however, the North West Departures controller thought that the interval was too short and took prompt action.  
  
The panel's attention was drawn to the Midhurst SID, changed as a consequence of revised go around procedures at Heathrow, which now requires aircraft to proceed further to the West before turning. This has increased the chance of a subsequent departure closing the gap, particularly when the wind is strong, and triggering the STCA.
- 2 *Causal Factors:* The Heathrow Air Departures controller released the B757 too close behind the A320 to allow for the required separation to be achieved.
- 3 *Risk Classification:* C
- 4 *Recommendations:* The panel recommends that, in the light of the revision to the Heathrow runway 27R Midhurst SID (subsequent to AIRPROX 59/97) it may be timely for the CAA to reconsider the current one minute departure separation in order to establish that this is adequate in all relevant circumstances.

## AIRPROX (P) REPORT No 130/98

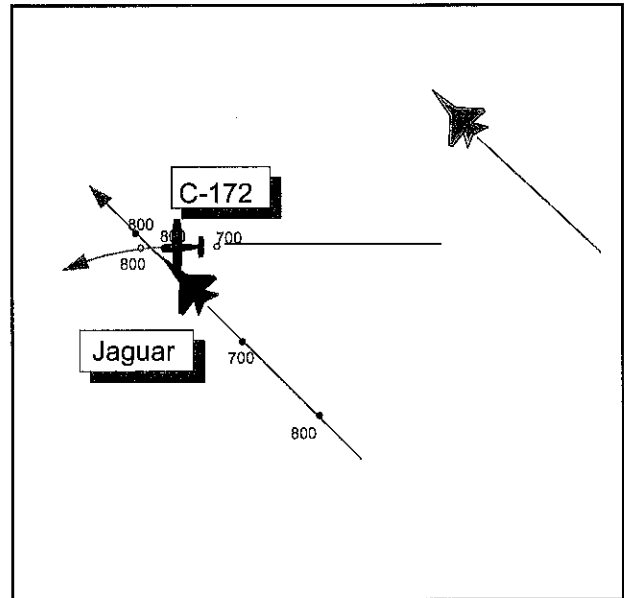
Date/Time: 14 Oct 1041  
Position: N5405 W0135 (4 NM SW of Ripon)  
Airspace: FIR/LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Cessna 172 Jaguar  
Operator: Civ Trg HQ STC  
Alt/FL: 700 ft ↑ 800 ft ↓  
(QNH 1007 mb) (Rad Alt)  
Weather VMC CLBC VMC CLOC  
Visibility: 50 km+ 10 km+

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE CESSNA PILOT** reports heading 270° at 50 kt climbing away from a PFL when Linton, from whom he was receiving a FIS, warned him of fast moving traffic 1 NM SE of him heading NW at a similar level. Both pilots looked and saw the jet at very close range pointing right at him at the same height. He responded that he was visual and pushed the control column forward. The jet passed directly overhead by about 50 ft although due to the high wing, the separation was difficult to assess. He lifted the right wing as he heard it pass and found themselves looking directly along its smoke trail which obscured the ac itself. Linton then called other traffic which he saw pass behind. He had no doubt there would have been a collision if he had not seen and avoided the jet which did not deviate and gave no impression of having seen him. He later found out that the jets were not in RT contact with Linton.

**THE JAGUAR PILOT** reports heading 350° at 450 kt in a descent to low level. He was leading a box formation with his No 2 to his right and the 3-4 pair about 4 NM astern. Approaching 800 ft he saw a high wing light ac about 1 NM away in his 2 o'clock. He called it to the rest of the formation and reduced his rate of descent so that the light ac passed about 300 m astern and 3-400 ft below. The risk of collision was low.

**HQ MATO** reports that the C172 pilot departed the Linton MATZ westbound at about 1031:19, flying at 2500 ft and receiving a FIS from Linton



Zone on 129.15. The Linton weather was reported as colour code Blue, visibility 50 km, with 2 Oktas at 2000 ft. Zone had established that the C172 pilot intended to conduct general handling, including PFLs, North of Harrogate not above 3000 ft RPS (1007 mb) before returning to Leeds. Subsequently, London Radar contacted Zone for a hand-over on a formation of four Jaguars for a low-level let down. However, at 1037:09, London Radar reported that the Jaguar leader had terminated the radar service to continue 'VFR en-route'. More than 3 minutes later, Zone observed traffic squawking 7001 with Mode C, which was subsequently identified as the reported Jaguar, closing rapidly on the C172. Although the C172 pilot had requested a FIS, at 1040:12 Zone passed traffic information, "Traffic south-east range 1 mile north-west bound, fast moving indicating similar levels", to which the C172 pilot responded immediately "visual". At 1040:58 Zone passed traffic information on further unknown traffic squawking 7000 with Mode C, with which the C172 pilot responded "...visual". At 1042:20, the C172 pilot advised that the sortie was complete and switched to Leeds Approach. An Airprox report was not filed over RT with Zone.

About 45 minutes later the C172 pilot telephoned the Linton Supervisor and advised that while flying between Harrogate and Ripon

the traffic was first reported by Zone when he was climbing away from a PFL at about 700 ft RPS. He saw the ac and said that the only option he had was to descend; the other ac, which was thought to be a Tornado, did not seem to alter track at all. Moreover, the C172 pilot said that the traffic information provided by Zone enabled him to see the reported ac and *"..if we hadn't seen it he'd have hit us"*.

The LATCC Claxby radar recording shows the Airprox. At 1040:30, the C172 is shown squawking 4530 (without supporting primary) and indicating 800 ft Mode C (1013 mb), having just started a climb. The Jaguar is tracking 316°, squawking 7001 (without supporting primary) in a descent and converging with the C172. 6 seconds before the ac cross the Jaguar and Cessna are at 700 and 800 ft respectively. The respective contacts subsequently merge at about 1040:43, and 2 sec later both ac indicate 800 ft Mode C. The second contact upon which Zone passed traffic information is also shown and passed 2.5 NM E of the C172 and well clear, after the Airprox.

There appears to be an anomaly between the RT and radar recording time references, insofar as the radar recording shows that the Jaguar was 4.5 NM SE of the C172 at the time that traffic information was passed by Zone. Nevertheless, it is evident that Zone astutely provided a warning to the C172 pilot about fast moving traffic, which enabled him to see the Jaguar and take avoiding action.

HQ STC comments that the crews of both ac in this Airprox acquired a late sighting of each other which may have prompted a different response from each. The Jaguar pilot assessed the separation as adequate and that minimal avoiding action was necessary, in the form of a momentary level off, whilst the Cessna pilot initiated a descent without which, to his mind, a collision was inevitable. The difference in perception is hard to explain although it is likely that the Cessna, on climb-out from a PFL and at a relatively low energy state, would have felt somewhat vulnerable on sighting the Jaguar in close proximity. Turning to the Jaguar pilot, who states that the chance of collision was low,

it is apparent that he could have been more proactive in avoiding the Cessna. The lesson is well rehearsed but worthy of reiteration to all crews both military and civil; when operating within the understanding of the 'see and avoid' principle, effective lookout is vital and crews should aim to achieve the maximum miss distance practicable.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

It was clear from the radar recording, which agreed with the Cessna pilot's report, that the Jaguar pilot was reporting a separate encounter; members agreed that he could not have mistaken an ac within 100 ft of him as passing 3-400 ft below. The Jaguar pilot had departed on an operational detachment shortly after the event and was thus unable to assist much in resolving the matter from 2000 miles away. However, the formation had discussed avoiding action taken against a Bulldog earlier in the descent - confirmed on the radar recording - and it seems likely they mistook this action for the Airprox and never saw the Cessna at all. The Board accepted that this was the case and that part of the cause was that the Jaguar pilot did not see the Cessna. The Board thought this incident was a useful reminder to GA pilots on see and avoid when flying a PFL; this exercise involves a double transit through the levels used by low flying jets, and GA pilots should note that a light ac, climbing out against a backcloth of cultured terrain, was particularly hard to see from above. Members also agreed therefore that part of the cause was a late sighting of the Jaguar by the Cessna pilot. In this respect, the Board complimented the Linton controller for his timely warning, and the Cessna pilot for having the good sense to be talking to Linton while in that area.

The risk level provoked a lengthy discussion. Some members considered that there was undoubtedly a risk of collision (A) and others argued that the ATC warning had given the Cessna pilot time to see the Jaguar and remove the risk of collision, although the safety of the ac

had clearly been compromised (B). The argument finally prevailed that there was too much luck in the fortunate outcome of the incident and that there had been some risk of collision even once the Jaguar was seen.

### PART C: ASSESSMENT OF RISK AND CAUSE

*Degree of Risk:* A

*Cause:* Apparent non-sighting of the Cessna by the Jaguar pilot and a late sighting by the Cessna pilot.

### AIRPROX (P) REPORT No 132/98

*Date/Time:* 14 Oct 1345

*Position:* N5119 W0006 (5 NM W BIG VOR)

*Airspace:* LTMA (Class: A)

*Reporting Aircraft* *Reported Aircraft*

*Type:* B737 MD83

*Operator:* CAT CAT

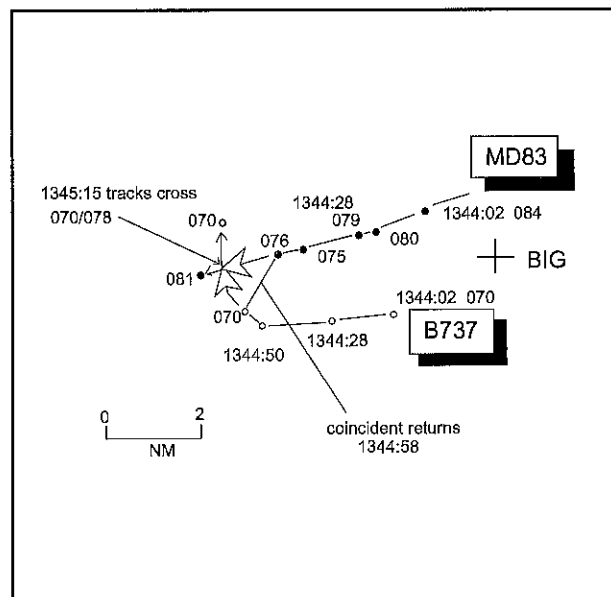
*Alt/FL:* FL 70 ↓ FL 80

*Weather:* VMC

*Visibility:* 20 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE B737 PILOT** reports that he was inbound to Heathrow at FL 70 and 220 kt under the control of LATCC on 120.4. The visibility was 20 km in VMC. While in a level R turn an MD80 was seen about 400 m away to his R crossing from R to L, about 800 ft above him. He heard ATC instruct another pilot to climb to FL 80. This did not elicit a response, and a second more urgent call was heard at which juncture he realised that his was the other ac involved in a confliction. No avoiding action was required because of the ATC instructions issued to the MD80 and he felt there had been a low risk of collision.



**THE MD83 PILOT** reports that he had been cleared to descend to FL 80, which was set on the autopilot. On reaching FL 80 the autopilot altitude capture did not light up; when passing FL 78 the altitude alarm triggered. The crew immediately disengaged the autopilot and climbed back to FL 80. This action coincided with an ATC instruction also to climb back to FL 80. As he could see the other traffic concerned, the manoeuvre was conducted in an expeditious but gentle manner in order to minimise discomfort to the passengers. Maximum deviation from cleared level was estimated to be about 450 ft.

The same defect occurred again on entering the Paris TMA and after landing the ac was declared unserviceable. An engineering investigation indicated an elevator clutch failure and an altitude selection malfunction which have since been remedied. The incident was brought to the attention of the airline's flight safety office and an 'alt-select' check was carried out on their MD83 fleet.

**LATCC INVESTIGATIONS** reports that the incident occurred 5 NM W of Biggin at 1345. Traffic loading was light and all equipment was serviceable.

Both ac concerned were inbound to Heathrow via Biggin. The B737 had been given descent clearance to FL 70 with an instruction to leave BIG on a heading of 270°. The ac levelled at FL 70 at 1341:50 and shortly afterwards, at 1342:21, the MD83 was also instructed to leave BIG heading 270° and to descend to FL 80. The MD83 pilot acknowledged these instructions correctly and by 1343:50 the ac was steady on 270° at 4 o'clock/2.3 NM to the B737.

At 1344:23, the Heathrow INT director instructed the B737 to turn R onto 075° downwind. At this time the radar recording shows that the MD83's Mode C read FL 80. As the B737 began to turn, the Director noticed that the MD83 was still descending so, at 1344:31, he instructed the MD83 pilot to climb back to FL 80 and passed traffic information on the B737. When no immediate acknowledgement was received from the MD83, he repeated the instruction, this time specifying that it was avoiding action. The MD83 pilot acknowledged adding...*"We had a problem with the autopilot"....* While the avoiding instructions were being passed the STCA activated red. The Director again passed traffic information to the MD83 pilot who then reported visual contact with the B737.

Minimum separation of 1.6 NM and 500 ft was reached at 1344:51. Having enquired how close the other ac had come, the B737 pilot elected to file an Airprox report. The Heathrow Director is to be commended for his careful

monitoring and prompt remedial action without which a more serious incident might have developed.

Note: A video recording of the LATCC radar at 1344:00 shows the subject ac heading W from BIG; the B737 2.5 NM SW of BIG level at FL 70 tracking 265°, and the MD83, descending through FL 84 and tracking 255°, at the B737's 3:30 position range 2.3 NM. At 1344:50 the B737 begins a R turn in response to the 1344:23 instruction from the Heathrow INT controller to turn R onto 075° (See LATCC report). As the B737 turns, the MD83's Mode C indicates FL 75. By 1344:58 the B737 is turning R through NW with the MD83 1.5 NM to its NE, now indicating FL 76 having arrested its descent at FL 75. Shortly afterwards, at 1345:15, the ac cross on 90° tracks with virtually no lateral separation. The Mode C of the MD83 at this time indicates FL 78.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, radar photographs a video recording, reports from the air traffic controllers involved and a report from the appropriate ATC authority.

An airline pilot member said that notwithstanding the technical problems associated with the autopilot altitude capture, it was always the pilot's responsibility to ensure that he recognised and reacted to such malfunctions in good time. While he was not familiar with the autopilot on the MD83, he explained that there would be a visual and/or audio warning device which alerted the pilot several hundred feet in advance that he was approaching the set level. In this instance, the pilot did not anticipate the autopilot's failure to capture and allowed the ac to descend well past his cleared flight level, after which it was some 30 sec before corrective action was seen to take effect on radar. An ATCO member commented that the loss of separation might have been reduced had the MD83 pilot



acknowledged and reacted to the first call from ATC instructing him to climb back to FL 80.

The Board concluded that the MD83 pilot had caused the Airprox by descending below his cleared level. Members unanimously

commended the vigilance of the Heathrow controller whose timely instructions to the MD83 pilot ensured some 800 ft of vertical separation between the ac. On this basis the Board assessed that there was no risk of collision.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* The MD83 pilot descended below his cleared level.

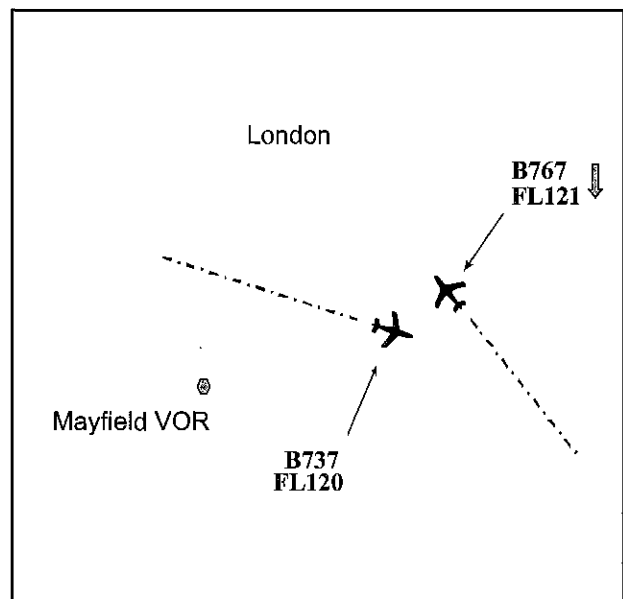
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### **AIRPROX REPORT 53c/98**

#### **Occ No. 98/06032**

*Date:* 15 October 1998  
*Time:* 1838 UTC  
*Aircraft:* B767/B737  
*Operator:* British Airline  
*Position:* 7nm East of Mayfield  
*ALT/HT/FL:* FL120  
*Airspace Type:* London TMA - Class A  
*Reporter:* LATCC - Terminal Control (TC) South East controller  
*Reported Separation:* 1.66nm horizontal/500 feet vertical  
*Recorded Separation:* 2.53nm horizontal/100 feet vertical



### **THE INCIDENT**

Both aircraft involved in this AIRPROX were under the control of the LATCC Terminal Control (TC) South East Sector Controller whose traffic loading was assessed as light to moderate. The B767 was inbound to London Heathrow from Geneva and was in descent to FL120. The B737 had departed from London Gatwick on a WIZAD Standard Instrument Departure (SID) en route to Vienna and was level at FL120.

As the B767 approached from the South East on a heading of 310°, the pilot was instructed by the controller to descend to FL130. This level

was given due to traffic in the Biggin hold at FL120. Meanwhile, the B737 was climbing to FL120 on a radar heading of 110°. The controller was aware of both of these aircraft, but when FL120 became vacant in the Biggin hold, he instructed the B767 pilot, at 1837.29, to descend to FL120, forgetting about the B737 already climbing to that level. The radar recordings for this time, show the two aircraft 14nm apart with the B767 descending through FL136 at one o'clock to the B737 which was climbing through FL104.

The controller quickly realised his mistake and, at 1838.20, instructed the B737 pilot to turn

right onto a heading of 120°, and the B767 pilot to turn right onto a heading of 360°, although without any sense of urgency and without specifying that it was avoiding action. Radar recording pictures timed at 1838.21 show the B737 level at FL120 with the B767 crossing from right to left, at a very acute angle, through its 12 o'clock at a range of 5nm and descending through FL124.

The pilots of both aircraft reported on the RTF that they were responding to Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisories (RA). The B767 pilot reported that he was increasing his rate of descent, and the B737 pilot reported that he was following a climb advisory. The controller instructed both pilots to continue their climb and descent as appropriate and the aircraft passed each other, at 1838.35, with minimum separation of 2.53nm horizontal and 100 feet vertical. Radar recordings show that neither aircraft made the heading change requested by the controller.

In his written report, the controller said he believed his mistake was due to a lack of concentration when the traffic load was light. He was alerted to his mistake from the readouts and then instructed both aircraft to turn right. During this period, the Short Term Conflict Alert

(STCA) flashed a white low severity warning and he then descended the B767 and climbed the B737. He recognised that he should have specified that the turns he gave were for avoiding action, but felt that it was clear when he issued the instructions that the B737 would pass behind the B767 with a loss of separation but no real risk of collision.

In his written report the B767 pilot recalled receiving a TCAS Resolution Advisory (RA) at FL120. The autopilot was disconnected and the RA followed by increasing the rate of descent. The alert was assessed as useful.

In his written report the B737 pilot recalled observing the conflicting traffic visually before receiving a TCAS Traffic Advisory (TA) and subsequently a RA. Although the traffic bearing was changing, a TCAS climb was carried out to FL122.

#### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the LATCC TC South East Sector controller who descended the B767 pilot to FL120 and into conflict with the B737 without the required horizontal separation.

#### **REVIEW BY AIRPROX PANEL**

- 1 *Discussion:* The PANEL accepted the Summary of CAA Action.
- 2 *Causal Factors:* The LATCC TC South East Sector controller descended the B767 to FL 120 and into conflict with the B737.
- 3 *Risk Classification:* C
- 4 *Recommendations:* The Panel had no recommendations to make.

**AIRPROX (P) REPORT No 131/98**

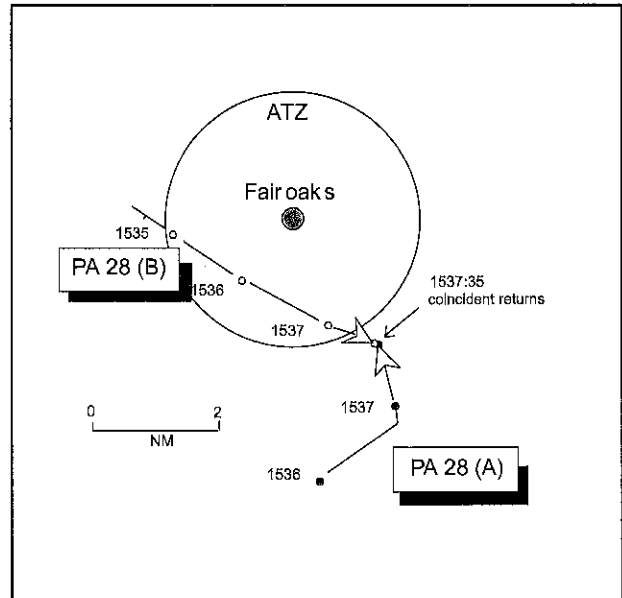
Date/Time: 18 Oct 1537 (Sunday)  
Position: N5119 W0031 (2.5 NM SE Fairoaks)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reporting Aircraft  
Type: PA28 (A) PA28 (B)  
Operator: Civ Trg Civ Trg  
Alt/FL: 1500 ft 1500 ft  
(QNH 1019 mb) (QNH 1018 mb)  
Weather VMC CLBC VMC CLBC  
Visibility: 50 NM 20 km

**BOTH PILOTS FILED**

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE PA28 (A) PILOT** reports that he was returning to Fairoaks from Shoreham with two students on an instructional cross-country exercise. The visibility was around 50 NM. He had been emphasising to his students the importance of maintaining a particularly good lookout in such excellent flying conditions. Approaching Fairoaks from the S descending from 2200 ft (QNH 1019), he called the FISO for traffic and airfield information; the FISO advised that the circuit was clear and no calls were heard from any other ac. While descending through 1500 ft and looking forward and right for any traffic that may have been overlooked, his student suddenly shouted a warning and, on looking L, he saw a Cherokee at his 10:30 - 11:00 position 50 - 70 yd away heading directly towards him. He immediately rolled R and descended steeply in avoidance, believing that the other ac would strike his tail; the other ac was not seen to take avoiding action and he felt that had he not done so himself, in the 2 - 3 sec available to him, there would have been a collision. Not having been warned of any traffic, he was not expecting another ac to be coming from the ATZ in the opposite direction. Despite everyone in his ac looking out, they had not been able to spot the PA28 earlier.

**THE PA28 (B) PILOT** reports that he was on a local PPL training flight from White Waltham in VMC, with one passenger on board; the



visibility was 25 km. A SVFR clearance had been obtained from Heathrow on 119.9 to transit the London zone not above 1500 ft on QNH 1018. When crossing the M3 motorway he was handed over to Fairoaks for transit of their ATZ. Approval was received for this and he heard another ac being advised of "opposite direction traffic". He does not recall being given any such information himself. When about 1 NM W of Wisley, heading 115° at 95 kt and just clear of the Fairoaks ATZ, he first saw a low-wing single engined ac about 300 m to his L as it approached from the opposite direction slightly above his level. He rolled R in avoidance and the other ac passed about 60 ft away and 20 ft above him with a high risk of collision. The pilot comments that although remaining vigilant for other ac, his lookout was degraded by navigational tasks.

**THE FAIROAKS FISO** reports that the initial call from PA28 (B) was somewhat confusing and led him to believe the ac was routing NW via Woodley to White Waltham at 2000 ft and would pass SW of Fairoaks at 1600 ft. He advised the pilot that if he required to transit the Fairoaks ATZ he should be at 1500 ft, which was the upper limit of the ATZ (See Note 1). Several other ac were on the frequency when he saw a PA28 passing almost over the threshold of RW 06 travelling in a southeasterly direction. He deduced that this must be PA28

(B). After he had dealt with the other ac, PA28 (A) called inbound to the field and "*just crossing the railway line*". He passed airfield information to the pilot who acknowledged. Immediately afterwards, as he was about to pass traffic information to both PA28 pilots about each other, he was interrupted by a call from another ac, which he answered. Following this, the pilot of PA28 (A) reported that he had come very close to another ac and enquired whether there was another ac in the area. The FISO replied that the ac he had seen was probably PA28 (B). The PA28 (B) pilot then advised that he was at Ockham and changing frequency. PA28 (A) landed at Fairoaks without further comment.

Note (1): Fairoaks has a notified ATZ of 2 NM radius up to 2000 ft agl. However, as all but a small sector of the ATZ to the S of the airfield is embedded in the London CTZ, the airspace from 1500 to 2000 ft agl is effectively sterile unless its use has been approved with Heathrow.

Note (2): A replay of the Heathrow radar at 1535 shows a return, believed to be PA28 (B), tracking SE and entering the Fairoaks ATZ 2 NM to the W of the airfield. At the same time a primary return, believed to be PA28 (A), is about 5 NM SSW of Fairoaks heading NE. PA28 (B), squawking 7042 (Thames radar) but with no Mode C, tracks just over a mile SW of the airfield and exits the ATZ to the SSE shortly after 1537. Meanwhile PA28 (A), having turned onto a northerly heading just before 1537, is now about 1 NM away from PA28 (B); the ac are now on conflicting tracks which cross at about 120°. At 1537:35, 2.4 NM SE of Fairoaks, the returns of the 2 ac merge. Lateral separation is barely discernible, though PA28 (A) appears to be the further E of the two.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a radar video recording, and a report from the FISO involved.

The Board discussed the Fairoaks FISO's responsibilities with respect to passing traffic information. Members were advised that his role was strictly advisory and valid only to ac operating either within the confines of the ATZ or to ac joining; in this context he was responsible only for issuing traffic information to pilots to assist in preventing collisions. Had the FISO in this incident correctly assessed the initial routing of PA28 (B) he might have been able to provide more timely traffic information to both pilots concerned. However, it was apparent that the PA28 (A) pilot did not transmit his joining call until he was very close to the ATZ boundary to the S and not until after the FISO observed what he thought must be PA28 (B) flying close to the airfield in a southeasterly direction. Members acknowledged that there was therefore very little time available for him to pass the relevant traffic information and, as he was about to do so, he was thwarted by a call from another ac, which he elected to answer. It was felt that having realised the imminent potential conflict between the 2 PA28 ac at that time, the FISO should have instructed the other calling ac to 'standby' and passed the traffic information to the PA28 pilots by means of a joint broadcast to convey the urgency of the situation. Members agreed that, even then, the PA28 pilots would have had little time to assimilate and react to the information. In the event, the radar recording shows that the incident occurred in the FIR beyond the ATZ boundary where, notwithstanding the absence of traffic information, it is the responsibility of pilots to 'see and avoid' other ac. Despite the excellent visibility reported, the pilots saw each other only just in time to take avoiding action and the Board concluded that their late sightings were the cause of the Airprox. Furthermore, from the close estimates given by the pilots, confirmed by radar evidence, it was assessed that there had been an actual risk of collision.

The Board questioned the PA28 (B) pilot's wisdom of conducting his flight through a busy ATZ when, with the minimum of disruption, he could have arranged his route to pass clear of the area to the SW.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: A

Cause: Late sighting by both pilots.

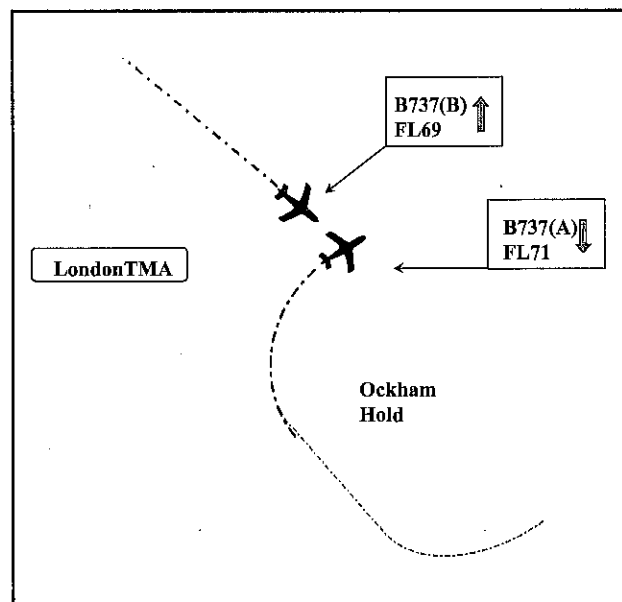
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### AIRPROX REPORT 42c/98

#### Occ No. 98/06068

Date: 19 October 1998  
Time: 0906 UTC  
Aircraft: B737/B737  
Operators: Foreign Airlines  
Position: Ockham Hold  
ALT/HT/FL: FL70  
Airspace Type: London TMA - Class A  
Reporter: LATCC - TC Biggin Sector  
Intermediate Director South  
Controller  
Reported Separation: 0.42nm horizontal/200 feet  
vertical  
Recorded Separation: 0.42nm horizontal/200 feet  
vertical



### THE INCIDENT

Both the aircraft involved in this AIRPROX were under the control of LATCC TC, with the B737(A) pilot receiving a service from the Heathrow Intermediate Director South and the B737(B) pilot receiving a service from the Biggin Sector Controller (SC). B737(A) was inbound to London Heathrow Airport from Shannon while B737(B) had departed from Heathrow on a Dover 5F Standard Instrument Departure (SID) and was en route to Istanbul.

At 0853.50, the B737(A) pilot made his initial contact with the Heathrow Director and reported descending to FL110 and heading for the Ockham hold. The Director acknowledged this and cleared the pilot to descend further to FL100, with an expected approach time (EAT) of 0911. Subsequently the Director cleared the B737(A) pilot for further descent in stages until at 0903.50 he was cleared to descend to FL70.

Meanwhile, the B737(B) was taxiing for a departure from runway 27R at Heathrow and had been cleared for a Dover 5F SID. Note:- SID charts for London Heathrow include a, "WARNING Due to interaction with other routes do NOT climb above 6000ft until cleared by ATC". At 0902.30, the B737(B) pilot was cleared for take off and at 0904.30 was instructed to contact the London Biggin sector. The pilot made his initial contact with the Biggin controller at 0905.40, at which time radar pictures show the aircraft tracking South East and passing an altitude of 5500 feet in the climb. The B737(A) was now approximately 7nm to the South, in the hold, turning right through a heading of about North and passing FL77 in descent.

The two aircraft continued on their respective tracks with the B737(A) in descent to FL70 and the B737(B) climbing and going through its cleared altitude of 6000 feet at about 0905.55. Radar pictures show that, at 0906.09, the

B737(B) was passing FL64 in the climb with the B737(A) in its one o'clock range 3nm in a right turn crossing from right to left and descending through FL74. At about this time, the Biggin controller received a Short Term Conflict Alert (STCA) and reacted, at just after 0906.10, with an instruction to the B737(B) pilot of, "*(callsign) er ma- avoiding action turn le- descend immediately altitude six thousand feet er and turn left heading three six zero degrees*". The pilot responded with, "*Three six zero turning left immediately .....*", to which the controller replied, "*(callsign) descend immediately altitude six thousand feet traffic twelve o'clock four hundred feet above*". The controller repeated the descent instruction and then, at 0906.40, followed it with, "*(callsign) traffic is now passing right to left you were instructed to stop altitude six thousand feet*".

The radar pictures, timed at 0906.35, show the B737(B) appearing to be stopping its climb at FL69 as the B737(A) passes through its 12 o'clock from right to left at a range of 0.43nm and indicating descending through FL71.

Meanwhile, the Heathrow Director had seen the B737(B) climb through its cleared level and, at 0906.10, transmitted to the B737(A) pilot, "*(callsign) there's a level bust er traffic in your eleven o'clock three miles showing flight level six six can you see it*". The pilot replied, "*Affirm*", and was instructed at 0906.20, "*Okay visual avoiding action I think you know*". Subsequently the pilot queried the level of the traffic with the controller who replied, at 0906.40, "*Er just going down now he's gone down to six five*". The B737(A) pilot responded, "*Ooh yea thanks it just looked er a bit close*". Following discussion about reporting action the controller transmitted to the pilot, at 0907.00, "*Okay just watch him as you turn he's er he's six three flight level six three now on your right hand side*". Radar pictures, timed at 0907.01, show the B737(A) still in its right turn level at FL70 with the B737(B) in its right half past three at a range 1.5nm, maintaining a south-easterly track and descending through FL63.

Subsequently the B737(A) continued in its right turn in the hold, with standard separation being restored at about 0907.20 when the B737(B) had returned to an altitude of 6000ft. The B737(B) pilot did not appear to take the avoiding action instruction to turn onto a heading of 360° and, at 0907.20, was instructed to take up a heading of 095°. With separation restored both aircraft continued en route without further incident.

The written report from the crew of the B737(B) stated that take off had been conducted normally and that after take off, the Dover SID required a 6000 feet altitude limitation but that due to a misinterpretation of ATC instructions, they had selected a higher altitude on the auto pilot and continued the climb above 6000 feet. While crossing (sic) 6000 feet the crew received an instruction to descend to 6000 feet due to traffic ahead and after disengaging the autopilot the aircraft regained 6000 feet from 6700 feet. The crew admitted an error on their part, but they assessed that there had been no risk of collision.

The pilot of the B737(A) stated in his written report that his aircraft was holding at FL70 which was the lowest level in use in the hold at Ockham and that his first sighting of the confliction was at approximately 0.5nm on advice from the radar controller. He reported keeping the conflicting aircraft in sight and that had it not stopped climbing as it passed behind his aircraft avoiding action would have been necessary. He assessed the risk as moderate to high and the minimum separation as less than 0.25nm horizontal and 200 feet to 300 feet vertical.

The Biggin SC recalled that after sorting out other traffic on his frequency he saw the B737(B) at FL65 climbing, and head on to the B737(A). He immediately gave an avoiding action turn left onto 360° and a, "*descend immediately to 6000ft instruction*". As he was unsure that the pilot had taken the instruction he issued it again. He stated that he did not recall the pilot turning on to the new heading but that he descended rapidly to 6000 feet. The

blips were seen to merge with B737(B) at FL69 and B737(A) at FL70.

The Heathrow Intermediate Director recalled that as the B737(A) was turning outbound in the Ockham hold at FL70 he noticed a Dover departure from Heathrow heading towards the B737(A) indicating FL64 and that very shortly after this the STCA flashed briefly a white low level alert before becoming a red high level alert as the outbound aircraft climbed to FL69. The SSR labels then overlapped. He believed that he would have been unable to give adequate radar avoiding action had the weather been IMC as both aircraft were turning towards each other. Fortunately, he was aware that ceiling and visibility were unlimited so he just

passed traffic information to the pilot of B737(A). The pilot of the B737(A) reported that he was visual with the B737(B) and the controller instructed him to take visual avoiding action.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the pilot of the B737(B) who exceeded the SID altitude restriction of 6000ft and climbed into conflict with the B737(A) holding at FL70.

The B737(B) crew's company has taken action to prevent a recurrence of similar incidents.

### **REVIEW BY AIRPROX PANEL**

- 1 *Discussion:* It seemed clear to the Panel that some mistake was made on the flight deck of B737(B) but that, in the absence of more information from the company, the nature of the mistake remains uncertain. What could be said is that there is no indication that anything said by ATC on the RTF could be construed as a clearance for the pilot to climb his aircraft above the SID altitude.
- 2 *Causal Factors:* The pilot of B737(B) exceeded the SID altitude restriction and conflicted with B737(A).
- 3 *Risk Classification:* B
- 4 *Recommendations:* The Panel had no recommendations to make.

## AIRPROX (P) REPORT No 134/98

Date/Time: 21 Oct 0625 TWILIGHT  
Position: N5113 E0017 (12 NM SE BIG VOR)  
Airspace: LTMA (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: Airbus A321 B737  
Operator: CAT CAT  
Alt/FL: ↑ FL 170 ↓ FL 120  
Weather IMC IICL  
Visibility:

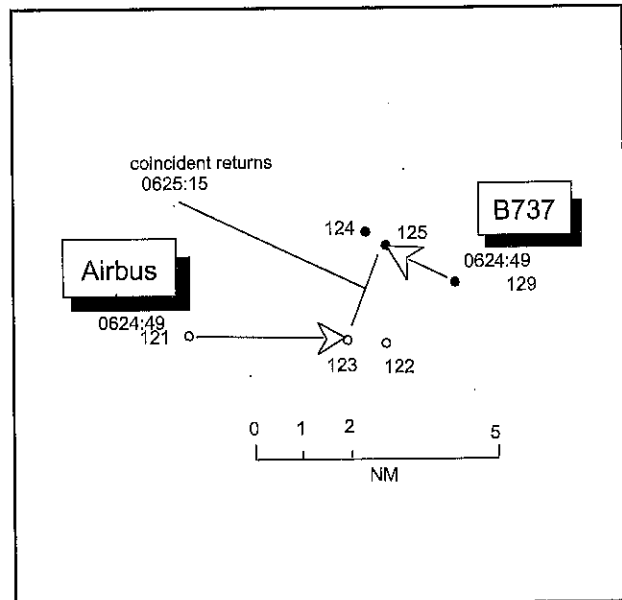
### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE AIRBUS PILOT** reports that he was heading 100° at 340 kt in intermittent IMC while climbing out from London Heathrow under the control of LATCC. When passing through FL 110 in the vicinity of the Detling VOR, an ac appeared about 10 - 15 km ahead of him descending on a reciprocal track about 1500 ft above his level. Shortly afterwards he received a TCAS TA followed by an RA demanding a descent. He complied immediately and ATC informed him that the traffic had passed by him 3 NM on his L side and 200 ft above. The pilot does not give an assessment of risk but comments that in his opinion the other ac was closer than 3 NM.

Note (1): The other ac was a B737 inbound to Heathrow from Brussels. Its pilot was unaware that an incident occurred and therefore was not able to submit a report.

**ATSI** reports that the LATCC TC SE sector was being operated in the "bandboxed" mode by a sector controller under training, and his mentor. The traffic loading and workload was typically high for the time of day but not considered excessive for a trainee of some experience.

The controller under training was an experienced TC controller regaining a certificate of competence following an accident. His radar training was not part of a formal training programme, rather a regaining of his TC South qualification on an opportunity basis as and when conditions allowed on his old



watch. This led to a lack of clarity on the precise nature of the relationship between the two controllers and on whose licence the Air Traffic Service was being provided. At interview the controller under training was sure that the service was being provided on the mentor's licence but the mentor was not sure.

The B737 pilot contacted TC SE at 0615:20 on a standard arrival route to Biggin passing FL 180 for FL 150. On being informed that there would be some holding delay at BIG, the pilot requested a speed reduction which was approved by the TC SE trainee controller. The A321 pilot reported on the frequency some 3 minutes later, climbing to 6000 ft on a DVR 5F departure. He was instructed to maintain that level, squawk ident, and the speed restriction was lifted.

At 0620 the A321 was instructed to leave Epsom on a heading of 140°, and at 0621:40 was instructed to climb to FL 120. At 0622:35 the B737 was instructed to descend to FL 120, this being the lowest level available in the Biggin stack. At 0622:45 the A321 was instructed to turn left onto 100 and climb to FL 170 (this was to position it behind the B737 on course towards Dover, but clear and ahead of other traffic in the sector inbound to Biggin). The mentor said that it was at this stage, or shortly thereafter, that he told the trainee he



thought that the heading he had selected was "a bit tight" and would not provide sufficient separation between the 2 ac, but he did not *instruct* the trainee to change it. No subsequent heading alterations were given by the trainee controller.

At 0624:50, when the A321 was climbing through FL 121, its pilot reported traffic at 8 NM but did not qualify the source of his information. (No traffic was seen on the radar at the range given; however, at that time the subject B737, believed to be the traffic referred to by the pilot, was 11 o'clock/5.5 NM to the A321 on a diverging track and descending through FL 129). The controller replied that the traffic was in his 10 o'clock position, going away at 4 NM. This was followed, at 0625:03, by the A321 pilot calling "TCAS descent". The trainee controller responded by instructing the ac again to climb to FL 170, which was acknowledged by the A321 pilot but was not complied with. [*The controller's climb instruction was in contravention of Supplementary Instruction No 3 of 1996 of the MATS Part 1 which states that ac calling a TCAS Resolution Advisory must be allowed to complete the manoeuvre*].

At interview the trainee controller stated that the A321 pilot's transmission caused him some concern and interrupted his concentration because, at the time, he did not register the B737 as a confliction. He had previously assessed from the radar that the rate of climb of the A321 would be sufficient to enable it to climb through the B737's level well before lateral separation was compromised and, furthermore, he had selected a heading which he believed would ensure that it passed behind the B737. Had the A321 maintained its initial high rate of climb, he believed this plan would have succeeded.

At 0625:20 the B737 was instructed to descend to FL 110 and to change frequency to Heathrow Director, followed by the A321 being instructed to turn L heading 085. This was acknowledged by the pilot who again reported TCAS traffic to his L at 1 mile and 200 ft above. The response from the controller was that he was passing 3

miles behind a B737 inbound to Biggin. The A321 was then transferred to the Dover Sector.

(Note (2): In a subsequent telephone conversation the A321 pilot said that he did not see the other ac at any time; he first became aware of opposite direction traffic from TCAS indications prior to receiving a TA. Avoiding action was not initiated until an RA demanded descent).

Note (3): It is apparent from analysis of the SMF data recording that at 0623:27 the A321, passing about FL 105, more than halved its rate of climb from about 2800 ft per min to about 1200 ft per min with an accompanying increase in speed; at this time the ac were some 20 NM apart, with the B737 descending through about FL 142. This change in climb rate and speed occurred some 1 min and 23 sec before the pilot called the traffic at 8 NM, and 1 min 38 sec before the RA descent action registered on the SMF. Had the A321 maintained its original rate of climb, it is calculated that the 2 ac would have been at co-altitude while they were still about 10 NM apart and, when their tracks crossed about 1 min later, the A321 would have been some 3000 - 4000 ft above the B737. (The SMF recorded separation may differ slightly from the true separation and radar recordings because it is based on processed and predictive radar data).

Note (4): A photograph of the LATCC radar at 0625:15 shows the A321 heading E indicating FL 123 Mode C, with the B737 heading ENE on its port side indicating FL 125 Mode C. At this time lateral separation reaches its minimum of 2.1 NM.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included a report from the A321 pilot, transcripts of the relevant RT frequencies, radar photographs, video recordings and a report from the appropriate ATC authority.

An airline pilot member said that in his opinion the controller unwisely based his strategy on an assumption of the A321's climb performance. He explained that in normal operating conditions a reduction in vertical speed should be expected firstly when the ATC speed restriction is lifted, and again above FL 100 where the 250 kt speed limit no longer applies; in both these circumstances the rate of climb will reduce as the nose is lowered to gain speed. If a high rate of climb is required by the controller, as it was in this case, he should make this request to the pilot on first contact. In his opinion the A321 pilot was understandably concerned when he perceived a possible conflict from his 12 o'clock, and was right to query the controller about this traffic. As to the disparity in target distance measurements noted by the controller, the member pointed out that TCAS encoding was not precise at the ranges in question and the A321 pilot's report of 'traffic at 8 miles' should therefore be seen as an approximation. For him it was more an indication that there might be a potential threat ahead.

ATCO members endorsed the pilot member's comments, particularly with regard to informing the pilot if a good rate of climb was required. Surprise was expressed at the apparent confusion about whose licence the trainee

controller was understood to be operating under; the Board was advised that it would have been the mentor's. It was unfortunate that the mentor and the trainee concerned had not established this responsibility prior to the commencement of training. However, members agreed that in the particular ATC training circumstances of this incident the high experience level of the trainee introduced a human factors element which should be addressed through TRM (Team Resource Management). The mentor's reluctance to interfere with his experienced trainee's actions was well understood; nevertheless, it was the mentor's ultimate responsibility as instructor to ensure that such actions did not compromise the safety of ac under his control. In this case, the Board concluded that the TC SE Mentor controller caused the Airprox by not ensuring that standard separation was maintained between the A321 and the B737. The Board was advised that this Airprox has been highlighted within the unit and controllers have been reminded of their responsibilities in training situations.

Turning to risk, members agreed that the minimum lateral separation of some 2 NM shown by the radar recording indicated that there had not been a possibility of collision.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

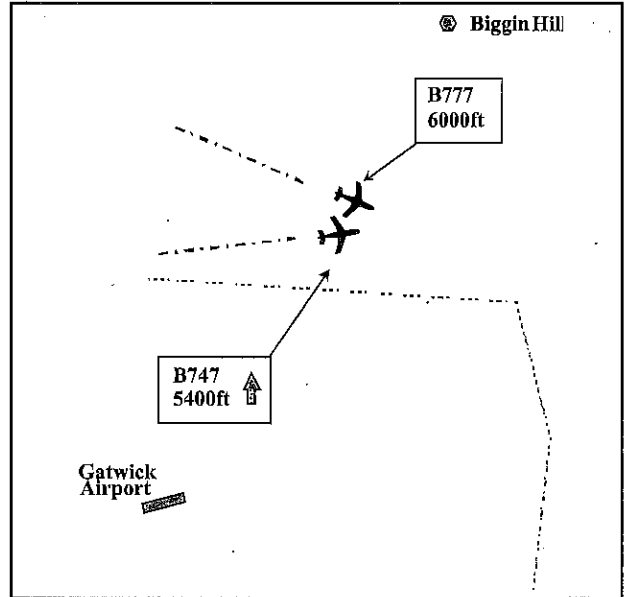
*Degree of Risk:* C

*Cause:* The TC SE Mentor controller did not ensure standard separation between the A321 and the B737.

## AIRPROX REPORT 29c/98

### Occ No. 98/06198

*Date:* 24 October 1998  
*Time:* 1048 UTC  
*Aircraft:* B747/B777  
*Operators:* British Airline  
*Position:* 7nm North East of Gatwick  
*ALT/HT/FL:* 5400 feet  
*Airspace Type:* London TMA - Class A  
*Reporter:* LATCC Terminal Control  
BIGGIN Sector Controller  
*Reported Separation:* 1nm horizontal/600 feet  
vertical  
*Recorded Separation:* 1nm horizontal/600 feet  
vertical



### THE INCIDENT

The aircraft involved in this AIRPROX were under the control of the LATCC Terminal Control (TC) Biggin Sector Controller (SC). The B777 had departed from Heathrow enroute to Bahrain on a Dover Standard Instrument Departure (SID) and was level at an altitude of 6000 feet. The B747 had departed from Gatwick enroute to Orlando on a Lambourne SID and was in the climb to an altitude of 5000 feet.

The pilot of the B777 was on a radar heading of 130° from the Epsom reporting point and had been cleared for, but not yet commenced, a climb from altitude 6000 feet to FL100 when the B747 pilot called the SC and was instructed to climb to and maintain altitude 5000 feet. As the B747 pilot levelled the aircraft at altitude 5000 feet, radar pictures, timed at 1047.50, show the two aircraft approximately 3nm apart, on converging headings, but separated vertically by 1000 feet. Shortly afterwards, the B747 begins to climb above its cleared altitude, and radar pictures timed at 1048.39 show the B777 still level at an altitude of 6000 feet, with the B747 in its 3 o'clock position range 1nm, on a converging heading and indicating altitude 5400 feet. At about this time, and virtually simultaneously, both aircraft received Traffic Alert and Collision Avoidance System (TCAS) warnings and the SC received a Short Term

Conflict Alert (STCA) warning. The B747 pilot responded to his TCAS Resolution Advisory (RA) and the controller's instruction and descended back to altitude 5000 feet.

In subsequent correspondence, the B747 pilot stated that the aircraft was flown manually to level at altitude 5000 feet. At this point the auto pilot was engaged and, on receiving a cancellation from the controller, the speed restriction was deleted from the Flight Management system. This last action resulted in a large power application during which the aircraft was observed on radar to have climbed 400 feet and the pilot received a TCAS Traffic Advisory (TA) followed by a RA. However, the pilot was not initially aware of the climb as, on receiving the TA, he was looking for the conflicting traffic and it was only when he received the RA of 'stop climb' that he realised that the aircraft had climbed to about altitude 5250 feet and was levelling off.

Although the B747 pilot believed that the auto pilot would probably have recovered the aircraft back to altitude 5000 feet, the auto pilot was disconnected and the aircraft flown manually back to altitude 5000 feet as required by the TCAS procedure. He stated that at no time was a climb initiated above the cleared altitude and that it was purely an altitude deviation due to the rapid increase in thrust.

The B777 pilot reported maintaining an altitude of 6000 feet and having been cleared to climb when he received a TCAS TA about traffic in his 3 o'clock position, 800 feet below and climbing. This was immediately followed by a RA 'climb' and this was initiated with the auto pilot disconnected. The minimum separation was estimated as 1nm horizontally and 600 feet vertically and the TCAS warning was assessed as necessary.

The Biggin SC reported that he received a transmission from the B777 pilot of, "(callsign) TCAS climbing", and that immediately afterwards he received a STCA red indication and that the B747 was indicating altitude 5300 feet and climbing. He immediately instructed the B747 pilot to descend to altitude 5000 feet.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the pilot of the B747 who allowed his aircraft to climb above his cleared altitude of 5000 feet and into conflict with the B777.

The B747 operator has since issued a Flight Crew Notice titled 'ALTITUDE ACQUIRE PRECAUTIONS' which expands the precautions that need to be taken by pilots when aircraft acquire an altitude/level and draws particular attention to the effect of speed change inputs to the auto pilot.

## **REVIEW BY AIRPROX PANEL**

- 1 *Discussion:* The panel accepted the Summary of CAA Action. With autopilot engaged, it is reported that a significant speed change can require an autopilot input which is greater than its command threshold at the time. During the acquired manoeuvre the autopilot will attempt to limit the 'g' input to 0.10 for passenger comfort reasons.
- 2 *Causal Factors:* The pilot of the B747 allowed his aircraft to climb above his cleared altitude and into conflict with the B777.
- 3 *Risk Classification:* C
- 4 *Recommendations:* The Panel had no recommendations to make.

## AIRPROX (P) REPORT No 135/98

Date/Time: 31 Oct 1447 (Saturday)

Position: N5622 W0322 (4 NM S Perth  
airfield - elev 397 ft)

Airspace: SFIR (Class: G)

Reporting Aircraft Reported Aircraft

Type: PA28 (A) PA28 (B)

Operator: Civ Trg Civ Pte

Alt/FL: 3000 ft 2600 ft ↑  
(QNH 1002 mb) (QNH 1005 mb)

Weather VMC CAVOK VMC

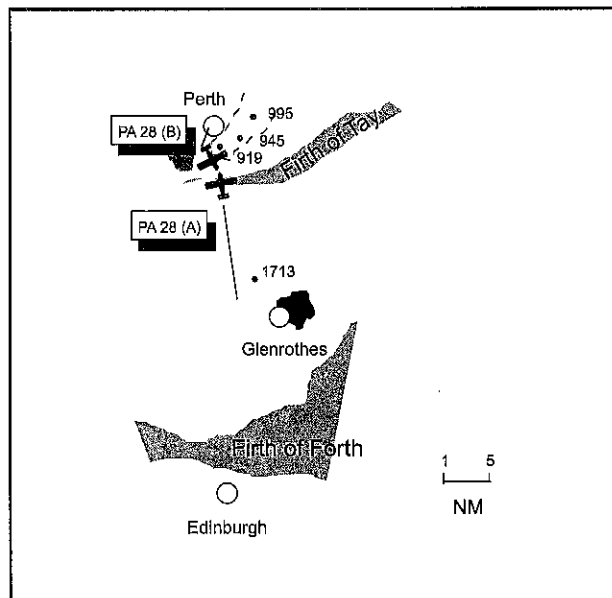
Visibility: 60 km 15 km

### BOTH PILOTS FILED

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PA28 (A) PILOT** reports that he was flying to the Perth VOR from Edinburgh on an IMC training flight; his student was occupying the LHS 'under the hood'. The visibility was 60 km in VMC. While listening out on the Perth air/ground frequency, 119.80, he heard a pilot reporting airborne from RW 28 at Perth on a direct track for Glenrothes "climbing out not above 2000 ft" on the Tyne RPS. When about 4 NM S of the Perth VOR at 3000 ft (QNH 1002), heading 355° at 120 kt, he suddenly saw this ac, a PA28, as it climbed from L to R across his track about 100 ft away and 50 ft below. Owing to the late sighting he was not able to take avoiding action and the ac passed 50 ft in front of him with a very high risk of collision; it was clearly above the 2000 ft limit of climb stated earlier by its pilot. He reported an Airprox to Perth air/ground. The pilot comments that the view in the direction of the threat was obstructed by his student.

**THE PA28 (B) PILOT** reports that he had departed from Perth for Glenrothes with one passenger on board. The visibility was generally about 15 km in VMC but there was a dark background of cloud above 3000 ft ahead of him to the S. He was listening out and making blind calls on Perth's air/ground frequency, 119.80. When about 6 NM SSE of Perth airfield, heading 165° at 100 kt and



climbing through about 2600 ft (QNH 1005), a low-wing single-engined ac appeared over the hills ahead of him flying in the opposite direction about 1000 ft away. An immediate L turn was made in avoidance and the other ac passed about 500 m away and 600 ft above down his starboard side. He felt that they might have collided had he not turned when he did.

The pilot states that his first transmission following departure from Perth was a 'position' report... "c/s is approx 1 mile to the W of Perth on RW heading at 2000 ft". He then advised that he would be turning S to track towards Glenrothes and repeated that he was "at 2000 ft". Shortly afterwards the other ac called on the frequency... "c/s is at 3000 ft positioning for a procedure at Perth VOR". Owing to the hills to the SE of Perth it was necessary for him to climb further, to about 3000 ft, on his route towards Glenrothes. The next RT transmission was from the pilot of the other ac saying... "that was close, c/s, why did you not stay at 2000 ft?" He replied that it had been close, but that his last call had been a position report, giving his altitude at that time as 2000 ft. He comments that had the pilot of the other PA28 asked him to orbit and remain at 2000 ft at his first reported position, he would have complied. In the event he was not sure where the other ac was relative to himself and was surprised when it suddenly

appeared almost directly ahead of him. He felt that had both he and the other pilot made better use of the radio the confliction could have been avoided.

Following the encounter, he changed frequency for Glenrothes and the remainder of the flight was uneventful. On landing at Glenrothes he mentioned the incident to the Airport manager and was approached by two other pilots, who had heard the RT exchanges between himself and the pilot of the other ac and volunteered their support if required.

Note (1): In a subsequent telephone conversation with UKAB staff, the pilot of PA28 (B) said that he had fully expected to have to climb above 2000 ft in order to achieve a safe altitude above the hills to the SE of Perth. His post departure 'blind' RT call was, therefore, intended purely as a position and level report for the benefit of any other pilot who might be operating in the area, not a declaration that he would not be climbing higher. He felt that he saw the other ac as early as could be expected due to the dark background of cloud he was flying into. Furthermore, as he had been airborne and climbing for no more than about 5 min, he thought the other pilot probably could not have spotted him much sooner than he did either.

Note (2): The student of PA28 (A) sent a letter to UKAB in support of his instructor. He recalled that when 10 - 15 NM S of Perth, having selected the Perth radio frequency, the other ac was heard to call airborne from Perth to Glenrothes flying 'not above' 2000 ft. A few minutes later 2 more ac joined the frequency and the same information was passed to them by the pilot of this ac, again stating that he was proceeding not above 2000 ft. Shortly afterwards, on removing his training goggles, he saw the other ac approaching rapidly from a 10 - 11 o'clock low position. By the time his instructor, who had noticed the ac at about the same time, could react, the ac had passed to their R at a similar level between 50 - 75 ft away; he firmly believed that the other pilot had not seen them and was unaware of their presence until he was called subsequently on

the RT. His instructor transmitted... *"that was a bit tight c/s, that looks above 2000 to me"*. After an incoherent reply his instructor told the other pilot that having said he would not go above 2000 ft he should not then have climbed. *The pilot replied... "it was my intention not to be above 2000 when I called"*. The student comments that in his opinion the other pilot, who did not have right of way, should have been able to see them silhouetted against a clear blue sky.

Note (2): Another pilot who was airborne at the time and later spoke to the pilot of PA28 (B), telephoned UKAB staff with his recollection of the RT exchanges. He recalls the pilot of PA28 (B) saying that he was "at 2000 ft" but to the best of his memory no height restriction was implied in this call. What concerned him most was the attitude adopted by the pilot of the other ac whom, he felt, was unnecessarily vocal about his feelings on the RT. While no offensive language was used, he felt that disagreements between pilots should be expressed on the ground and not while airborne.

Note (3): The incident occurred below the level of recorded radar.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board consisted of reports from the pilots of both ac.

Whatever the RT service or nature of sortie in Class G airspace it is essentially the responsibility of pilots to ensure their separation from other ac on the basis of 'see and avoid'. Despite the IMC training nature of PA28(A)'s flight, which inevitably tended to concentrate attention into the cockpit, lookout remained a priority and members thought the captain should have been able to spot the other ac earlier than he did in the excellent reported flying conditions. However, there was some sympathy for him among members as it was felt he had been led into a false sense of security by pilot (B)'s initial RT call and the subsequent

absence of any information from him that he was in fact continuing to climb. Members recognised that pilot (B) was trying to be helpful to other pilots by making 'blind' broadcasts but they were unable to determine from the conflicting evidence available whether or not he had indicated his full intentions. However, all agreed that whatever interpretation was put on his message there was no guarantee of unaltered flight parameters unless some sort of specific co-ordination had been agreed between the pilots. Although some members felt that open transmissions could sometimes be ambiguous and counter-productive, as it might appear they were in this case, a GA member strongly encouraged pilots both to make meaningful calls and also to listen out on the RT as a means of assessing the traffic situation and thereby minimising the risk of chance encounters. In the event, notwithstanding the excellent flying conditions,

both pilots saw each other late and the Board assessed this to be the cause of the Airprox.

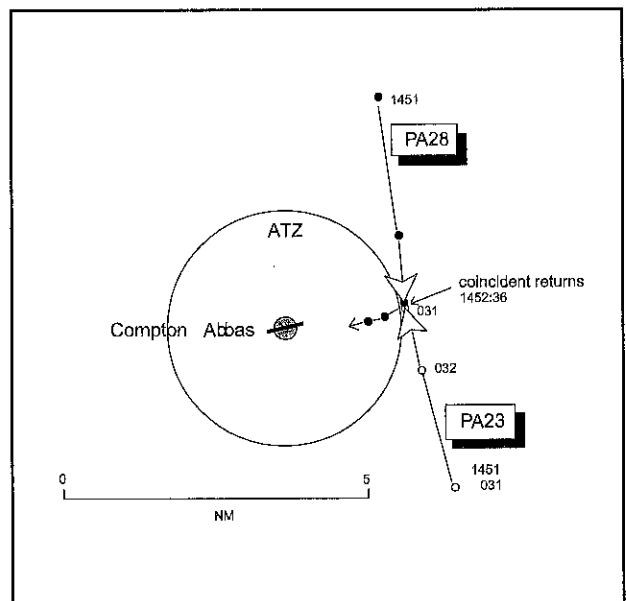
Members found the risk difficult to determine because of the widely differing estimates of separation by the pilots concerned. A view emerged that as the pilot of PA 28 (B) felt the need to take immediate avoiding action the resulting separation was probably rather less than the 500 m/600 ft he described. Conversely, the later sighting by pilot (A) probably heightened his perception of the closeness of the other ac and led him to believe it was closer than it actually was. In the absence of radar or other corroborative information, the Board concluded therefore that the actual separation was probably somewhere between the two estimates and, given the late sightings and the inability of pilot (A) to take avoiding action, was close enough to compromise the safety of both ac.

**PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* B  
*Cause:* Late sighting by both pilots.

**AIRPROX (P) REPORT No 133/98**

Date/Time: 01 Oct 1452  
Position: N5058 W0206 (2 NM E Compton Abbas - elev 810 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: PA23 PA28  
Operator: Civ Pte Civ Trg  
Alt/FL: 3000 ft  
(QNH 1008 mb)  
Weather VMC CLBC  
Visibility: 60 km



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PA23 PILOT** reports that he was flying from Guernsey to Gloucester in VMC; workload was low in 60 km visibility. He was squawking 4530 with Mode C and receiving a FIS from Bournemouth Radar on 119.62. When 3 NM NE of Compton Abbas, flying at 3000 ft (QNH 1008) at 120 kt on a northerly heading, he saw a low-wing single-engined ac, whose registration he could part read, at his 2 o'clock. It was about 300 m away and 100 ft above descending towards him in a R turn. He immediately turned 30° R and descended in avoidance. The other ac passed about 100 m ahead and 100 ft above from R to L; he felt there had been a very high risk of collision and reported an Airprox to the Airprox Section by telephone.

The pilot states that the squawk and QNH given are those he last recorded and therefore they may not be correct for the time of the Airprox. He comments that this was his most serious incident in 35 years of flying.

**THE PA28 PILOT** reports that at the time and date of the reported incident he was flying from Compton Abbas on a general handling training sortie and was in contact with Compton Radio on 122.7. He was unaware that he had been involved in a close encounter. In view of the separation distances given by the pilot of the other ac, which he does not dispute, he expresses concern that he did not see the ac.

Note: A replay of the LATCC radars at 1451 shows a return squawking 7000, believed to be the PA23, tracking 350° at 3100 ft Mode C 4 NM SE of Compton Abbas. At the same time a primary return, believed to be the PA28, can be seen on a directly reciprocal track 4 NM NNE of Compton Abbas. At 1452:36 the returns merge just outside the Compton Abbas ATZ 2 NM due E of the airfield. Coincident with the encounter, the PA28 turns 90° R and tracks towards Compton Abbas while the PA23 continues on a steady course with no discernible alteration of heading.

## PART B: SUMMARY OF THE UKAB'S DISCUSSIONS

Information available to the Board included reports from the pilots of both ac and a radar video recording.

This incident took place in Class G airspace where the 'see and avoid' principle applies. Despite the excellent visibility reported, however, the PA23 pilot saw the PA28 only just in time to take avoiding action and the PA28 pilot did not see the PA23 at all. The Board assessed that these late/non sightings were the cause of the Airprox. As to risk assessment, members agreed that although the PA23 pilot's avoiding action removed any likelihood of an actual collision, he had described it as a high risk encounter and this was confirmed by the radar recording. Moreover, the PA28 pilot was not in a position to take avoiding action as he did not see the other ac. For these reasons the Board concluded that there had been a possible risk of collision.

Given the good flying conditions, members felt that the only mitigating factor in this incident was that prior to the encounter the ac were head-on to each other at similar altitudes; consequently the absence of lateral movement would have made them more difficult to spot. The PA23's pilot, therefore, was not aware of the PA 28 until it loomed conspicuous during its R turn towards Compton Abbas. Members assumed that once the PA28 pilot had commenced this turn, his attention was likely to be focused in the direction of the airfield and the oncoming PA23 would probably have been unsighted by his raised port wing. Notwithstanding these considerations, however, the Board felt that both pilots should have seen each other in time to avoid this very close encounter. The incident highlighted the importance of maintaining an effective lookout in Class G airspace, particularly when flying in the vicinity of a busy airfield with an ATZ.



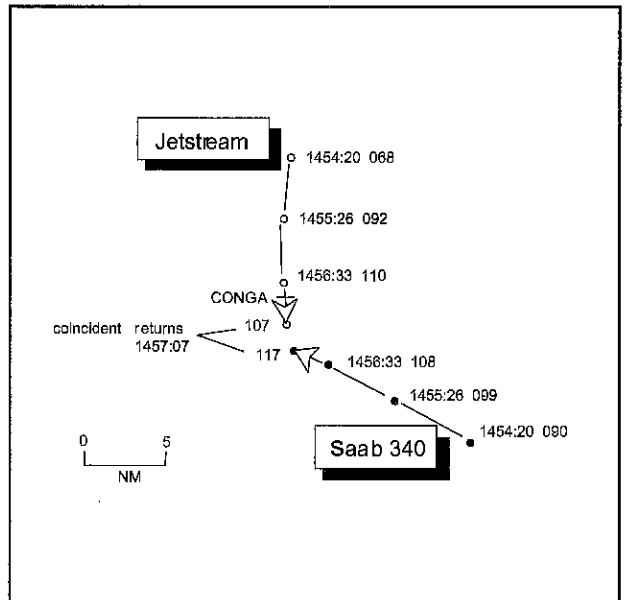
**PART C: ASSESSMENT OF RISK AND CAUSE**

Degree of Risk: B

Cause: A late sighting by the PA23 pilot and a non-sighting by the PA28 pilot.

**AIRPROX (P) REPORT No 137/98**

Date/Time: 03 Nov 1457  
Position: N5306 W0212 (3 NM S CONGA)  
Airspace: MTMA (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: Jetstream Saab 340  
Operator: CAT CAT  
Alt/FL: ↑ FL 130 ↑ FL 120  
Weather IMC IICL  
Visibility:  
Reported separation: 2.5NM/300 ft  
Recorded separation: 2.8 NM/500 ft (radar)



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE JETSTREAM PILOT** reports that he was climbing out from Manchester at 200 kt in intermittent IMC with the RHS pilot flying the ac. He was instructed to climb by ATC to FL 150 on a radar heading of 175°, but was then told to stop the climb at FL 110 and to turn R, first onto heading 180°, then L onto 145°. These instructions were followed immediately by ... "descend now FL 100, avoiding action aircraft crossing left to right same level." The Capt took control, disengaged the autopilot and complied immediately. As the ac descended back through FL 107, a Saab 340 was seen passing about 300 ft above from L to R 2.5 - 3.0 NM away. He thought there had been a low risk of collision.

The pilot comments that he believed his flight was scheduled to be flown by a slower ac (ATP) and he thought this might account for the controller's actions. However, it was understood that the correct flight details had been filed by his company.

**THE SAAB 340** pilot was unaware at the time that an Airprox had occurred and therefore was not able to submit a report.

**ATSI** reports that the Manchester ACC SE Radar Controller described his workload as medium to high at the time of the AIRPROX. The Trent and Stafa Sectors were being operated in "band-boxed" configuration and, in the SE Radar Controller's opinion, it was not necessary for the sector to be split. The Jetstream pilot mentions, in his report, that he believed ATC were under the mistaken impression that his flight was being operated by an ATP. However, the controller concerned stated that he had always been aware of the correct ac type and, consequently, he had formulated his plan accordingly.

At 1451 the Saab 340 pilot contacted the SE Sector after departure from East Midlands, reporting maintaining FL 80 direct to Wallasey. The SE Radar Controller said that he was

surprised the ac was as high as FL 80 as normally he would have expected it to be restricted to FL 50/60. He assumed that the Co-ordinator would have pointed out this unusual level to him but on this occasion, as far as he could recollect, he had not been informed. He added that the fact that the ac was starting at a higher level than normal may, subsequently, have affected the operation of his plan. He agreed, however, that Saab 340's FPS was in the correct position and was annotated with the appropriate flight level.

The Jetstream pilot established contact on the SE frequency at 1452, reporting passing 2300 ft on a CONGA 2S SID from Manchester. The SE Radar Controller stated that, because of the perceived poorer climb performance of the Saab 340, compared with the Jetstream, his plan was to issue climb clearance to the Jetstream to a higher level than the Saab 340 in the belief that standard vertical separation would be achieved before the ac came closer than the requisite 3 NM lateral separation. Accordingly, the SE Radar Controller cleared the Jetstream to climb to FL 130, followed shortly afterwards by an instruction to the Saab 340 to climb to FL 100. The controller said that, having then turned his attention to the traffic situation elsewhere in the sector, he looked at the Jetstream's Stafa FPS and, for an inexplicable reason, believed that the FPS marking indicated that the flight was level at FL 130 (Note; a radar video recording shows that the Jetstream was still below FL 40 at this stage). Consequently, at 1453, he cleared the Saab 340 to climb to FL 120.

Because he was under the impression that vertical separation was now achieved between the subject ac, he said that he did not monitor their progress until, at about 1455, he recognised from the radar display that the Jetstream was still climbing. A quick reassessment followed; since the Jetstream was below the level of the Saab 340, albeit by only 100-200 ft, he then instructed the former ac to stop its climb at FL 110. (It had just passed FL 100 at that point). His next instruction cleared the Saab 340 to FL 160, stipulating a good rate of climb.

A radar photograph, timed shortly afterwards at 1455:53, shows the 2 ac at FL 102 about 11 NM apart. As a back-up, although he believed that vertical separation would be achieved before lateral separation was lost, the controller issued both ac with L turns away from each other (the Jetstream a heading of 145 and the Saab 340 a heading of 270°) with a reminder to the latter to expedite its climb. Realising subsequently that vertical separation was not assured, at 1456:40 the Jetstream was given an avoiding action descent to FL 100, accompanied with information on traffic crossing L to R at FL 110. The 2 ac were about 5 NM apart at this time on conflicting tracks. The pilot of the Jetstream read back the descent instruction and, immediately afterwards, reported sighting the traffic. A radar photograph, timed at 1456:58, shows the subject ac, separated vertically by 500 ft, approximately 2.8 NM apart. Reassured that the problem was resolved, the SE Radar Controller said that he did not consider it necessary to pass traffic information to the pilot of the Saab 340. A radar photograph, timed at 1457:07, shows that vertical separation was restored when the ac were about 2 NM apart, the Jetstream having descended to FL 107.

With hindsight, the SE Radar Controller agreed that a better solution would have been, because of the higher climb rate of the Jetstream, to stop the Saab's climb. Radar recordings of the incident tend to justify that had this course of action been taken, separation would probably have been maintained.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, and a report from the appropriate ATC authority.

In view of the medium to high workload reported by the Manchester Radar controller, and notwithstanding his assertion that it was not necessary to split the sector, some members

thought this would have been expedient in the circumstances.

All ATCO members reiterated yet again that any plan made on the basis of assumed ac performance only was inherently unsound because, unless very carefully monitored, this technique was not fail-safe. The normal method of achieving a climbthrough in these circumstances is to establish lateral separation by the use of appropriate headings until vertical separation is assured. Unfortunately in this case the controller not only misjudged the rates of climb of the 2 ac concerned, but his inexplicable misinterpretation of the Jetstream's level on its FPS compounded the problem,

leading to a late resolution of the conflict and consequential loss of both lateral and vertical standard separation.

The Board concluded that the Manchester ACC SE Radar controller had not provided the requisite standard separation between the subject ac and this was the cause of the Airprox. Moreover, members considered that in the circumstances it would have been prudent for the controller to have passed traffic information to the Saab pilot on the Jetstream. With regard to risk, members noted the minimum separation distances of 2.8 NM/500 ft indicated by the radar and assessed that there had not been a risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

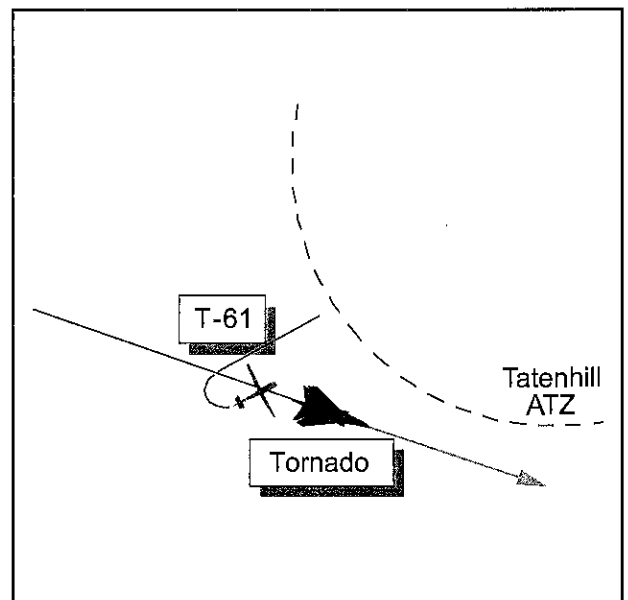
*Cause:* The Manchester ACC SE Radar Controller did not ensure standard separation.

**AIRPROX (P) REPORT No 136/98**

*Date/Time:* 6 Nov 1447  
*Position:* N5247 W0149 (2.5 NM SW of Tatenhill - elev 450 ft)  
*Airspace:* LFS/FIR (Class: G)  
*Reporting Aircraft* *Reported Aircraft*  
*Type:* Tornado GR Slingsby T61  
*Operator:* HQ STC Civ Club  
*Alt/FL:* 500 ft 1200 ft ↓  
 (Rad Alt) (QFE 1007 mb)  
*Weather* VMC CLNC VMC CLBC  
*Visibility:* 10 km+ Unltd

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE TORNADO PILOT** reports heading 113° at 420 kt on a low level exercise. Both crew members glanced at Tatenhill to check their distance from the airfield as they were about to pass it and on looking ahead, they saw a motor glider about 300 m in their 2 o'clock and 100 ft



above. It was too late to take any avoiding action and the risk of collision was high.

**THE T-61 PILOT** reports that he had departed from Tatenhill for Cosford and had started a PFL

from 1200 ft. He turned left onto 045° heading downwind for his selected field at 60 kt and was at 800 ft (Tatenhill QFE) when a Tornado passed directly below by about 200 ft, tracking from his 8 o'clock to 2 o'clock. He saw it a split second before it passed and the risk of collision was high.

Note: LATCC radar recordings show the Tornado tracking 106° towards a primary only return which has just turned left from SW to NE. The Tornado is at 500 ft Mode C as it crosses directly over the primary return. The terrain elevation in the area averages 250 ft amsl; taking the local QNH into account (1024 mb), 500 ft Mode C equates to about 550 ft agl.

**HQ STC** comments that the Tornado crew involved in this Airprox were aware of their proximity to Tatenhill and concentrated their lookout scan in the direction of the airfield. This may to some extent have reduced their scan in the forward sector, from which the motor glider appeared, and therefore made an early visual acquisition unlikely; especially in view of the known difficulties of visually acquiring light ac. Notwithstanding the need to emphasise lookout into known areas of increased traffic density,

this Airprox is a timely reminder of the requirement to maintain a balanced scan into the ac's flightpath.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, , radar video recordings, and reports from the appropriate operating authorities.

Both pilots showed unusual agreement in the circumstances and miss distances involved which, along with the fact that neither party saw the other in time to take avoiding action, led members to assess that there had been a risk of collision. It was a 'see and avoid' situation and the Board concluded that the cause of the ac getting so close was a late sighting by the Tornado pilot and effectively a non-sighting by the T61 pilot. The light coloured T61 would have been very hard to see against the sky and similarly the camouflaged Tornado approaching from the T61's 7:30 would have been very hard to spot, with virtually no relative angular motion in either case.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

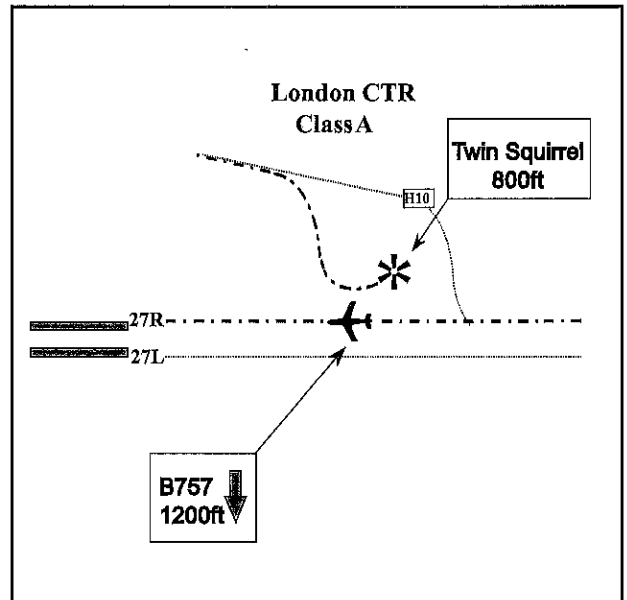
*Degree of Risk:* A

*Cause:* Late sighting by the Tornado pilot and effectively a non-sighting by the T61 pilot.

## AIRPROX REPORT 36c/98

### Occ No. 98/06501

**Date:** 6 November 1998  
**Time:** 1651 UTC  
**Aircraft:** B757/Twin Squirrel  
**Operators:** British Airline/British Private  
**Position:** 4nm East of London  
Heathrow Airport  
**ALT/HT/FL:** Altitude 800 feet  
**Airspace Type:** London CTR, Heli Route  
H10 - Class A  
**Reporter:** Heathrow ATC - Special  
VFR Controller  
**Reported Separation:** 1.23 nm horizontal/500 feet  
vertical  
**Recorded Separation:** 1.29 nm horizontal/400 feet  
vertical



### THE INCIDENT

The aircraft involved in this AIRPROX were receiving a service from Heathrow ATC, the B757 from the Aerodrome controller (Arrivals) and the Twin Squirrel from the Special VFR controller. The B757 was inbound to Heathrow from Stockholm and was carrying out an ILS approach to land on runway 27R. The Twin Squirrel was en route from Denham to the London Westland Heliport, on Heli Route H10, at an altitude of 800 feet.

At 1649.15 the Twin Squirrel pilot contacted the Heathrow SVFR controller, having passed overhead Northolt Airport, and was cleared to Battersea (The London Westland Heliport) via the route H10. Note: From Northolt Airport the Heli Route H10 eastbound follows the A40 road for approximately 2.5nm to just past Perivale where it turns right and follows the A406 road. Meanwhile the B757, which was one in a stream of aircraft, was on finals at approximately 10nm to land on runway 27R. Radar pictures show the two aircraft following their respective correct routes until, at 1650.12, the Twin Squirrel is shown turning right onto a southerly heading. This turn is approximately 2nm before the point at which H10 turns right, and is at the point where the A4127 road crosses the A40.

At 1651.00, the Northolt controller, who had previously been working the Twin Squirrel pilot, rang the Heathrow SVFR controller to check that the pilot had called. This alerted the Heathrow controller to the fact that the Twin Squirrel was deviating from the correct route for H10 and, at 1651.15, he transmitted to the Twin Squirrel pilot, "Okay just turn left please immediately heading zero six zero". The pilot read back this instruction and the controller then asked him "(callsign) are you aware of your present position". The pilot responded, "er (callsign) lost it a bit", to which the controller replied, "Yeah I should think you did you just about lost separation with the Heathrow inbounds there erm I'll vector you back on to H ten".

Radar pictures timed at 1651.15 show the Twin Squirrel, apparently following the route of the A4127 road, at an altitude of 800 feet with the B757 passing through its 12 o'clock position range approximately 1.25nm and descending through an altitude of 1400 feet. Subsequent radar pictures show vertical separation being reduced to a minimum of 400 feet as the B757 continues on its approach to land, but by this time the Twin Squirrel had turned away from the track of the Heathrow inbounds and was being vectored back onto H10 by the SVFR controller.

In his written report the Twin Squirrel pilot stated that although he often used the H10 route by day he had not flown it by night for some considerable time. Light levels were quite low due to cloud cover and whilst routing East towards Perivale he made the southerly turn too early. He then reduced speed from 120 kts to 8 kts and confirmed from the relative position of Heathrow and its landing traffic that this was the case and while deciding whether to reverse course or to adjust in order to re-intercept H10 the Heathrow controller promptly vectored him to Brentford. He assessed the risk of collision as low.

The pilot of the B757 had no report to make as the Twin Squirrel was not seen, nor did he receive traffic information or avoiding action.

**SUMMARY OF CAA ACTION**

The AIRPROX was caused by the pilot of the Twin Squirrel who deviated from London Heli Route H10 and came into conflict with the B757 on approach to runway 27R at Heathrow.

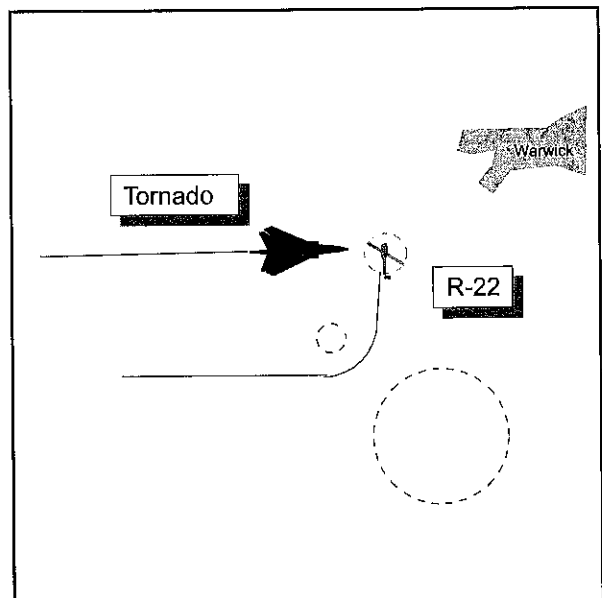
It was noted that at night the Twin Squirrel pilot probably mistook the A4127 road for the A406 road. However, he was reminded that correct timekeeping would have identified the desired turning point and that precise track keeping was essential to avoid the congested areas and Heathrow landing traffic.

**REVIEW BY AIRPROX PANEL**

- 1 *Discussion:* The panel accepted the Summary of CAA Action.
- 2 *Causal Factors:* The Twin Squirrel pilot deviated from Heli Route 10 and conflicted with the B757.
- 3 *Risk Classification:* C
- 4 *Recommendations:* The Panel had no recommendations to make.

**AIRPROX (P) REPORT No 139/98**

Date/Time: 9 Nov 1501  
Position: N5216 W0140 (3 NM WSW of Warwick)  
Airspace: LFS/FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Tornado GR R22 B  
Operator: HQ STC Civ Pte  
Alt/FL: 1000 ft 15-1600 ft  
(Rad Alt) (QNH)  
Weather VMC CLOC VMC CLBC  
Visibility: 10 km+ 10-15 NM



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE TORNADO PILOT** reports heading 085° at 400 kt maintaining 1000 ft through the West Midlands Weather Corridor on a singleton low level exercise. He was looking out carefully and suddenly saw a large shadowy shape 300 m away in his 2 o'clock high, heading N. It passed 200 ft above and slightly astern before he could react. He considered there had been a high risk of collision.

**THE R22 PILOT** reports heading 005° at 82 kt, receiving a FIS from Coventry Radar who warned him of 2 fast jets which he saw overtake in the same direction, 0.5 - 1 NM to his right and 500 ft below, and he also saw a second pair pass. There was no risk of a collision; he enjoyed watching them pass and expressed an interest in making a flight with them.

Note: LATCC radar recordings show the R22, identified by its squawk, tracking E between Snitterfield and Wellesbourne where it turns N to track W of Warwick. The Tornado, identified from its subsequent Cottesmore squawk, crosses it directly in plan with no discernible separation. The Tornado is at 1300 ft Mode C at that point; the local QNH was 1012 mb. Since it is a singleton tracking at right angles to the R22 it is presumably not the ac seen passing by the R22 pilot. These ac are possibly ones that pass the R22 earlier while it is on an easterly track, although they pass to the N of it.

HQ STC comments that notwithstanding the fact that the Tornado crew involved in this Airprox were actively clearing their flightpath they did not see the R22 in time to take avoiding action. Indeed, small slow moving helicopters such as the R22 are extremely difficult to see and there may have been little opportunity for an early sighting. Concerning the report submitted by the R22 pilot it is apparent that the crews are describing different encounters and that the R22 pilot did not, therefore, see the Airprox Tornado.

**PART B: SUMMARY OF THE WORKING GROUP'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, radar video recordings, and reports from the appropriate operating authorities.

The sightings reported by the R22 pilot could not be resolved from the radar recording, but he did not report an ac passing left to right at right angles beneath him, so members concluded that his non sighting of the Tornado was part of the cause, as was the Tornado's very late sighting. Neither ac would have been easy to see; the R22 is tiny and hard to spot at the best of times and a camouflaged Tornado approaching at a lower level is designed not to be seen. The lack of relative angular motion in either case would also have made a sighting less likely.

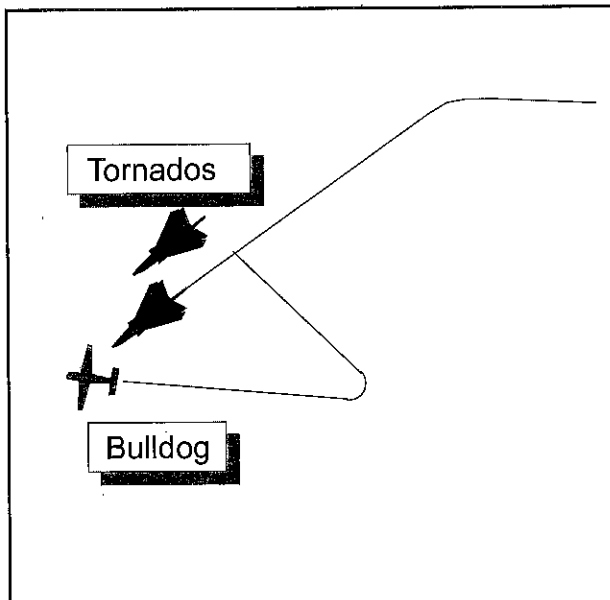
**PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* A

*Cause:* Late sighting by the Tornado pilot and a non-sighting by the R22 pilot.

## AIRPROX (P) REPORT No 138/98

Date/Time: 11 Nov 1503  
Position: N5254 W0023 (14 NM NE of Cottesmore - elev 461 ft)  
Airspace: FIR (Class: G)  
Reporting Ac Reported Ac  
Type: Tornado GR Bulldog  
Operator: HQ STC HQ PTC  
Alt/FL: 2000 ft 2500 ↓  
(QFE 1006 mb) (RPS 1014 mb)  
Weather VMC CLNC VMC CLNC  
Visibility: 5-8 km 10 km+  
Reported Separation: 200 ft  
Recorded Separation: 200 ft



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE TORNADO PILOT** reports heading 230° at 200 kt leading a pair of ac in the landing configuration in a left hand radar pattern for RW 23 at Cottesmore, at 2000 ft and into sun. He was receiving a RIS from Cottesmore Director and TD, squawking with Mode C. ATC reported an ac at 5000 ft and 5 NM which was acknowledged. He then saw a Bulldog in his 12 o'clock, level, heading SW, and entered a shallow descent to pass about 200 ft beneath it. The risk of collision was high until avoiding action was taken.

**THE BULLDOG PILOT** reports flying a solo QFI GH sortie, heading 240° at 75 kt, and was performing a left hand glide circuit for a PFL from 3500 to 100 ft at the time of the Airprox, but he did not see the Tornado. He would have been heading into sun at the time, but the Tornado came from behind him. His ac was painted black with yellow stripes. He was listening out on the PTC quiet frequency.

**HQ MATO** reports that the Tornado was leading a pair on recovery to RAF Cottesmore and squawking 4612 with Mode C. The crew were receiving a RIS from Cottesmore Director (DIR) which was manned by a trainee controller and a qualified mentor; the crew's workload was assessed as low albeit the adjacent airspace was very busy, and were being vectored for a

PAR to land. Meanwhile, the reported Bulldog was carrying out general handling manoeuvres in airspace known as the Lincolnshire Agreed Airspace (AA) squawking 2642 (later 2641) with Mode C but not receiving an ATS. DIR correctly applied the RIS and passed several items of traffic information to the Tornados. At 1501:36, DIR transmitted "C/S traffic South West 2 miles manoeuvring" and 5 seconds later reaffirmed with "...that traffic's indicating 600 ft above". One of the Tornados responded with "...look left ten high...". Correlation with LATCC radar recordings suggests that this information related to the reported Bulldog. Shortly afterwards, the Tornados were handed over to PAR. PAR heard the Tornados check in on frequency then, at 1502:21, the leader transmitted to the No. 2 "...follow me for avoiding action". The Tornado aircrew reported the Airprox to PAR and advised that they had descended to 1500 ft and were climbing back up.

The AA is a portion of Class G airspace extending from 4000 ft Cranwell QFE to FL 245; it is detailed in a Letter of Agreement (LoA) between RAF Coningsby, RAF Cottesmore, RAF Cranwell and RAF Waddington. The AA is established to allow ATC at those units to provide a more expeditious ATS to military ac in the vicinity by deeming vertical separation based on Mode C information against certain



other military ac operating in the AA. This is achieved by the ac operating in the AA squawking pre-assigned Mode 3/A codes with the proviso that their SSR Mode 3/A and C are validated and verified by one of the participating units before they change to a 'quiet' non-ATS frequency. Ac entering or leaving the AA squawk 2641 to highlight their intentions; they squawk 2642 while operating within the AA.

The Tornados were operating on the Cottesmore QFE (1006 mb) and the Bulldog was on the Barnsley RPS (1014 mb). However, the Mode C indications on the recorded radar evidence and all altitudes within this paragraph refer to the 1013 mb datum. Several 2642 squawks can be seen at 1500:49, while the Tornados are on a north-westerly heading. At this stage, the subject Bulldog is about 5 NM to the NW of the Tornados and on a Southerly heading at 3800 ft; the Tornados are at 2200 ft. The Tornados are shown maintaining altitude while turning onto finals; meanwhile the Bulldog turns sharply right onto W at 1501:40, descending to 2700 ft and changing squawk to 2641. At 1502:47, the ac are barely separated horizontally; the Tornados are still indicating 2200 ft with the Bulldog passing 2400 ft in the descent. The Tornados were in the 4-5 o'clock position from the Bulldog and on a relatively constant bearing. At 1502:55, the returns are merged. As the returns separate, it can be seen that the Tornados had descended to 1600 ft and the Bulldog had continued its descent.

The Bulldog pilot was not receiving an ATS so his ability to maintain separation from other ac was based on the 'see and avoid' principle. The Bulldog had been on a westerly heading immediately prior to the Airprox and would therefore have been unlikely to have seen the Tornados approaching from behind and below his ac. Nevertheless, RAF Cottesmore has questioned the wisdom of the Bulldog pilot in electing to descend out of the AA in the particular area chosen. There were no contributory military ATC factors associated with this Airprox; the traffic information passed by DIR probably assisted the Tornados in seeing the Bulldog.

HQ STC comments that this Airprox occurred in notoriously congested airspace where the principle of see and avoid is often the primary method of deconfliction. The instigation of the LAA has helped to reduce the potential for conflict and when used sensibly, is generally sound in practice. In light of this incident however, the Lincolnshire Airspace Users Group may wish to review local ATC and operating procedures.

DIR conceived a plan for the Tornado GCA based, not unreasonably, on the presence of a Mode 3/A squawk of 2642 in the AA. This plan was unexpectedly compromised by a significant change in the Bulldog's flightpath and a descent out of the AA into the Cottesmore radar pattern. Both the controller and Tornado crews alike were presented with a rapidly changing air picture, and an increasing cockpit workload diverted the attention of the crews as the separation reduced. It is fortuitous that sufficient time was available for the crews to take avoiding action, and surprising that the Bulldog pilot neither saw nor heard the Tornados as they passed.

HQ PTC comments that despite the mystery of the non-sighting of the Tornados by the Bulldog pilot, there can be little doubt that his was the ac concerned. Unusually in this case, it was the FJ crews who felt vulnerable, by virtue of being in formation, configured and into sun. The wisdom of carrying out a PFL in this position in less than perfect visibility is questionable. We are therefore pleased that, despite the time/transit penalties for such slow ac, Cranwell light ac pilots have been advised to steer clear of it.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATC and operating authorities.

Members were surprised that the Bulldog pilot had performed a PFL on Cottesmore's extended centreline without manoeuvring sufficiently to see any approaching instrument traffic. The selected PFL location was a hazardous place for such an exercise, as demonstrated by the Airprox, and the Board was reassured to hear that the practice had since been discouraged. Bearing in mind the extreme density of radar returns in the area at the time and the Bulldog's 'late' descent it was not surprising that traffic information on this particular return did not appear to have been passed. While some members thought it possible that the 'traffic 600 ft above' might have been the Bulldog, it seemed unlikely that the formation would then have undertaken a frequency change with an impending conflict

to resolve. However, with the geometry of the conflict that resulted, it was up to the Tornado crews to see and avoid the Bulldog, which they did, and the Board concluded that the incident was a conflict of flightpaths in Class G airspace which was resolved by the Tornado pilots.

The risk level provoked some discussion. While some members argued that the Tornado pilots had seen the Bulldog in time to remove all the risk of collision, the view eventually prevailed that ac safety had not been assured for 2 reasons; one was the Tornado formation's limited ability to manoeuvre while in the landing configuration and the other was that the Bulldog pilot had not seen the Tornados.

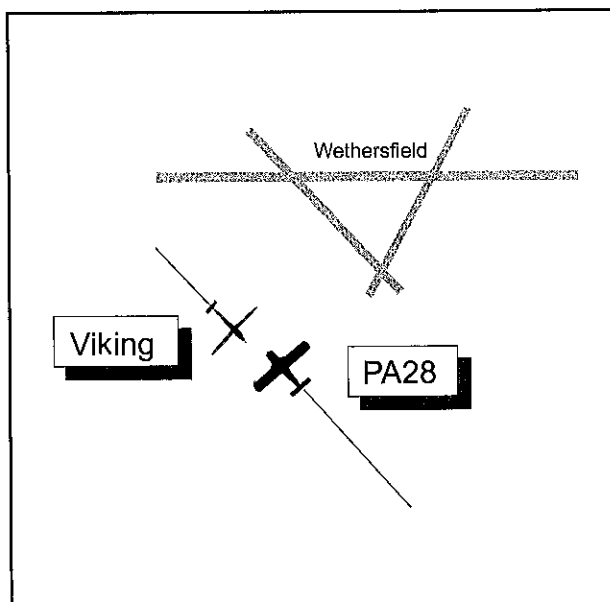
### **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* B

*Cause:* Conflict of flightpaths in Class G airspace, resolved by the Tornado pilots.

### **AIRPROX (P) REPORT No 141/98**

*Date/Time:* 15 Nov 1430 (Sunday)  
*Position:* N5158 E0030 (0.5 NM SW of Wethersfield - elev 321 ft)  
*Airspace:* FIR (Class: G)  
 Reporting Aircraft Reported Aircraft  
*Type:* Viking glider PA28  
*Operator:* HQ PTC Civ Club  
*Alt/FL:* 700 ft ↓ 1400  
 (QFE 1009 mb) (QNH 1016 mb)  
*Weather* VMC CLBC VMC CLBC  
*Visibility:* 20 km 6 km



### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE VIKING PILOT** reports heading 150° at 50 kt while downwind in a LH circuit for RW 33 at Wethersfield. Passing 700 ft (300 ft below cloud) he was warned on the radio by another

glider on the ground of a light ac ahead which he then saw closing from 500 m away in his 12 o'clock and slightly above; it had been obscured

by the canopy post. The light ac passed about 100-150 ft above and to his left with a high risk of collision.

**THE PA28 PILOT** reports heading 330° at 100 kt on a cross country at 1400 ft QNH, 3-500 ft below cloud. He saw a glider on finals at Wethersfield and, surprised that gliding was taking place in such poor visibility and low cloudbase, started looking for other gliders. He did not see the reporting glider but understood that it was at 700 ft so it would probably have been out of sight below the nose of his ac.

Note: LATCC radar recordings show the PA28 tracking NW to pass SW of Wethersfield at 1430. It is squawking 7000 with no Mode C until 1.5 minutes after the Airprox when it changes to 0201 (Essex Radar) before turning W into the Stansted zone. The glider does not show on radar although an intermittent primary-only return appears in the PA28's wake some 16 seconds after it has passed that position. The Stansted RT recording shows that the PA 28 pilot calls Stansted *"At Wethersfield, 1200 ft on 1017"* at 1430 and is allocated the squawk of 0201. 1200 ft on 1017 mb equates to 984 ft on the Wethersfield QFE of 1009 mb.

**HQ PTC** comments that if the PA28 pilot was surprised that Wethersfield were launching gliders in marginal weather one has to ask under what lower parameters of VMC he was authorised to operate? However, the glider was able to see and avoid the PA28 by a reasonable margin with the alert assistance of those on the ground. There have been 6 Airprox reported by Wethersfield in the last 3 years. Frustratingly however, there seem to be no prevalent factors apparent that we could seek to rectify. We understand that HQ AC have moved to obtain some form of greater airspace protection but this might have much wider ramifications. Meanwhile, it will remain necessary to maintain the sound lookout from the ground which has served them so well in the past.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate operating authorities.

The Board congratulated the personnel on the ground at Wethersfield who were keeping a lookout and were able to warn the Viking pilot of the passing PA28; it seemed a very necessary activity in view of the number of light ac pilots who, like this one, apparently were content to ignore the warning on the chart about intense gliding activity at Wethersfield at weekends and public holidays. All members felt that this flight through the glider circuit showed a lapse of airmanship by the PA28 pilot and they considered the cause of the Airprox was that the PA28 pilot flew over an active glider site and into conflict with the glider which he did not see.

At the same time members observed that there was little, apart from trying to educate those who did it, that could be done to stop such overflights which, while displaying poor airmanship, were not illegal. The glider site is not protected airspace and it behoves those who used it to operate accordingly. A sharp lookout for passing traffic has to be kept, both from the air and from the ground where the possibility of seeing and hearing traffic approaching could allow useful warnings to be passed, as in this case.

In considering the risk level, members thought it more likely that the PA28 pilot was at the height he gave on RT to Stansted which would have put him less than 300 ft above the glider. While this did not appear dangerously close, the Board assessed that because the PA28 pilot did not see the glider and the Viking pilot's sighting had been fairly late, the safety of the ac had not been assured.

## PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: B

Cause: The PA28 pilot flew over an active glider site and into conflict with the glider which he did not see.

### AIRPROX (P) REPORT No 142/98

Date/Time: 16 Nov 1117

Position: N5157 W0002 (9 NM ENE Luton airport)

Airspace: CTA/FIR (Class: D/G)  
Reporting Aircraft Reported Aircraft

Type: F27 Microlight

Operator: CAT Civ Pte

Alt/FL: ↓ 2500 ft 2400 ft  
(QNH 1027 mb) (QNH)

Weather VMC CAVOK VMC

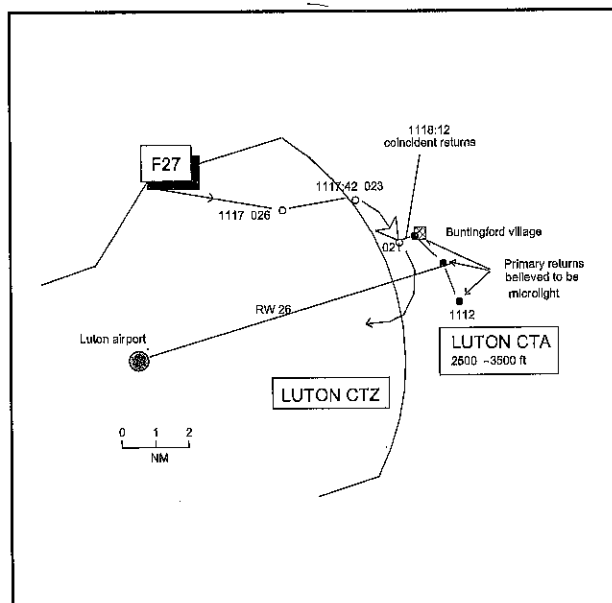
Visibility: 10 km >10 km

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE F27 PILOT** reports that he was heading 170° at 180 kt and descending to 2500 ft (QNH 1027) on base leg for the ILS to RW 26 at Luton, under the control of Luton Radar. The weather was CAVOK. ATC advised him of a primary contact at his 12 o'clock position at unknown height. On passing 2700 ft, the traffic, a weightshift type microlight, was seen ahead at the same altitude. While turning R heading 230° to intercept the localiser the microlight passed down his LH side between 150 - 200 m away heading in an ENE direction.

Note (1): Luton 1050 Metar gives: W/V 340/15 25 km CAVOK 03/02 Q1027.

**THE MICROLIGHT PILOT** reports that he was 3 - 4 NM NE of Stevenage at 2400 ft (QNH), heading about 360° at 55 kt. The visibility was over 10 km in VMC. He saw a twin turbo-prop ac about 2 miles away as it approached him from the N in a R turn; the ac eventually passed about a mile from him and 600 ft above. The



pilot, a microlight instructor, comments that he had a continuous clear view of the other ac and did not feel there was any risk of collision with it, or danger from its wake. Furthermore, he was satisfied that at his reported altitude and position he was not within controlled airspace. He did not consider the encounter constituted an Airprox.

**LUTON ATC** reports that the F27 was being vectored for an ILS approach to RW 26. As the ac was about 7 NM NE of the airport, descending from 3000 ft to 2500 ft altitude (QNH 1027), a primary 'pop-up' return appeared just to the E of the control zone boundary. The F27 pilot was advised of "unknown traffic, 11 o'clock range 1.5 NM no height, but should not be above 2400 ft." Shortly afterwards the F27 was instructed to turn R onto 230° to close the ILS; this turn was considered sufficient to ensure that the unknown return passed to the E of the F27, thus obviating the need for avoiding action. The F27

pilot reported that the unknown ac was a microlight ac at 2700 ft alt. The microlight was tracked and contact was lost in the vicinity of Hunsdon, a microlight site 8 NM SW of Stansted.

Note (2): The LATCC radar video recording (LATCC radar information was not available to the Luton radar controller) shows an almost stationary primary return, believed to be the microlight, 9.5 NM due E of Luton airport at 1112; at the same time the F27 is 10 NM NW of Luton on radar vectors for a RH circuit to RW 26. The primary return moves very slowly NNW, possibly following the A10 main road towards Buntingford village (9 NM from the airfield and about 1 NM N of the centreline of RW 26). At 1117:42 the F27 is commencing a R turn onto base leg for RW 26, 8 NM from the airfield and indicating 2300 ft Mode C, by which time the primary return is in the vicinity of Buntingford. While passing about 150° in a R turn to intercept the localiser, the F27 tracks about 0.4 NM W of the primary return indicating 2100 ft Mode C (equivalent to 2478 ft ± 100 ft QNH 1027). After passing through the RW 26 final approach track from the R at about 8.5 NM, the F27 eventually establishes on the localiser from the S. The primary return manoeuvres in the Buntingford area and is last seen on the radar recording at 1122:43 tracking E, 10 NM from Luton airport .

Note (3): The MATS Pt 1 Ch 6, referring to the **'Use of levels by controllers'**, states that, except when ac are leaving controlled airspace by descent, controllers should not normally allocate a level to an ac which provides less than 500 ft vertical separation above the base of a control area or airway. This will provide some vertical separation from ac operating beneath the base of controlled airspace. Similarly, controllers should exercise caution when operating close to the upper vertical limit of a control zone or area where it is not contiguous with further controlled airspace.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a radar video

recording, and a report from the air traffic controller involved.

The LATCC radar recording showed that the F27's base leg took it marginally outside the Luton CTZ and into the CTA where the base of CAS is 2500 ft. Moreover, the pilot had been instructed to descend to 2500 ft and the ac's Mode C at the Airprox time indicated a level which could, subject to Mode C tolerance, have put it just below the CTA. Members drew the Luton controller's attention to the MATS Pt 1 (See Note (3)) which, while not mandatory, strongly advocates that ac should not be positioned close to the lower limits of CAS without providing a minimum of 500 ft vertical separation against possible FIR traffic. The controller was clearly aware of an intermittent radar return just outside the CTZ, albeit this first appeared at a fairly late stage while the F27 was positioning towards base leg. The F27 pilot reported seeing a microlight at the same level as he was passing 2700 ft and both radar and Mode C evidence suggest that the ac were some 2.5 NM apart at this point. Members thought it unlikely that the microlight instructor pilot, familiar with local airspace limitations and a regular operator in the area, would have allowed his ac to enter CAS. The Board therefore concluded that the Luton controller caused the Airprox by clearing the F27 to descend to the base of the Luton CTA and into conflict with the microlight.

Members noted that there was considerable disparity between the estimates of reported lateral separation. It was felt that if the F27 had passed as close to the microlight as the F27 pilot estimated, the microlight pilot would almost certainly have expressed much more concern. In the event, while the microlight pilot clearly thought there was no risk in the encounter, the radar recording indicates that actual separation was about half the 1 NM he estimated, and considerably more than the F27 pilot's assessment of 150-200 m. Based on the evidence of the radar, members were satisfied that there had not been a risk of collision.

## PART C: ASSESSMENT OF RISK AND CAUSE

*Degree of Risk:* C

*Cause:* The Luton Radar controller descended the F27 to the base of the CTA and into conflict with the microlight.

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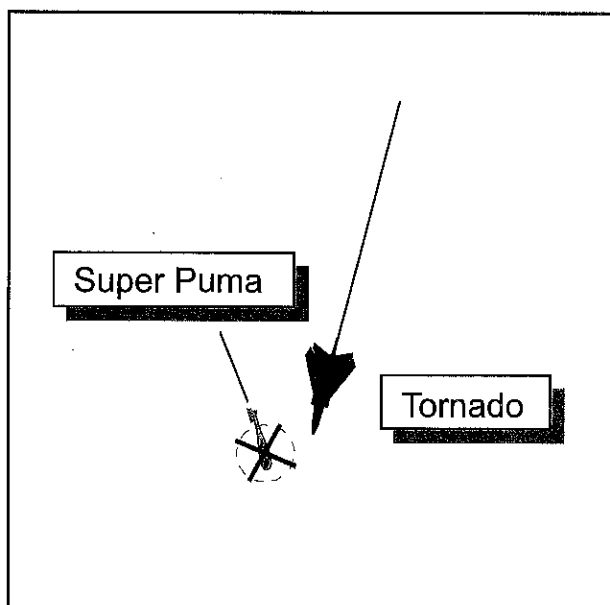
### **AIRPROX (P) REPORT No 143/98**

*Date/Time:* 18 Nov 1846 NIGHT  
*Position:* N5812 W0254 (17 NM SE of Wick)  
*Airspace:* HMR (Class: G)  
*Reporting Aircraft* *Reported Aircraft*  
*Type:* Super Puma Tornado GR  
*Operator:* CAT HQ STC  
*Alt/FL:* 2000 ft 1500 ft ↑  
(RPS 1023 mb) (QFE 1025 mb)  
*Weather* VMC CLNC VMC CLNC  
*Visibility:* 40 km+ 10 km+  
*Separation:* 1000 ft

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE SUPER PUMA PILOT** reports heading 166° at 123 kt, maintaining 2000 ft and receiving a RIS from Lossiemouth on 119.35. He saw an ac on his left just before it passed about 500 ft beneath him; he asked the Lossiemouth controller what height it was flying at. The controller replied that it was 'fast jet traffic just popped up indicating 2000 ft southbound'. It did not appear to be climbing to his level as it went away but he thought the risk of collision was high.

**THE TORNADO PILOT** reports heading 190° at 420 kt at low level, recovering to Lossiemouth. He started a climb from 500 ft to 2000 ft to clear D807 which he assumed was active. He levelled at 1500 ft when Lossiemouth told him it was inactive and that there was a helicopter at 2000 ft. He did not see the helicopter but was later informed by ATC that he had passed 500 ft beneath it. He did not think there had been a risk of collision; he had been unable to call Lossiemouth earlier as the frequency was busy.



**HQ MATO** reports that the Super Puma pilot was flying from Wick to Aberdeen along HMR X-RAY at 2000 ft Orkney RPS (1023 mb) and approaching MORAY. The pilot was in receipt of a RIS from Lossiemouth Approach (APP) on 119.35 and squawking 3721 with Mode C. The limited Lossiemouth night flying programme resulted in the controller simultaneously providing a LARS on VHF and a Radar Approach service on UHF. The weather at Lossiemouth was reported as colour code WHITE, but deteriorating with shallow fog approaching the aerodrome from the west. At 1846:31, about 20 seconds before the Airprox occurred, the crew of the reported Tornado GR1 free-called APP on 376.65 advising, "...presently 30 miles to the North with information Foxtrot for self-position, internal aids to land". To assist radar detection at the extremities of the Lossiemouth Watchman radar coverage and for identification, the controller instructed the Tornado crew to squawk 3711,

requested that they confirm their heading and altitude, and passed the Lossiemouth QFE (1025 mb). The controller perceived from the crew's reply, which is garbled on the RT recording, that the Tornado was heading south and climbing to 2000 ft and suspected that it might be in the helicopter's vicinity. However, the Tornado was not displayed on primary or secondary radar before it climbed from low-level. Consequently, APP advised the Tornado crew to fly *"...not above fifteen hundred feet initially, believed to be a helicopter in your area 2000 ft under the control of this unit"*. The Tornado crew's acknowledgement is again garbled on the RT recording, but indicates that they had received the message and apparently levelled at 1500 ft QFE. APP subsequently identified the Tornado when it was displayed clear to the SW of the helicopter at 1847:00, when the flight was placed under RIS. Consequently, no further traffic information on the helicopter was issued. The Tornado crew was advised that D807 was not active and they completed their approach without further apparent incident or comment about the occurrence.

Meanwhile, as APP was attempting to identify the Tornado, the helicopter pilot called on VHF at 1846:50, querying *"what was the height of that jet we had pass underneath us?"* Because of the intensifying traffic scenario and simultaneous transmissions on UHF/VHF, the Radar Supervisor (SUP) answered from her console, *"...just popped up on radar indicating 2000 ft"*. Additional traffic information was passed to the helicopter pilot at 1847:16, when the Tornado had been identified, *"...that previously reported jet is now to the right of you, in your right 2 o'clock, range 3 miles ...on a south westerly heading"*. The helicopter pilot was asked by SUP 8 minutes later *"...how low did you estimate the jet passed underneath"*, the pilot responded *"...difficult to say - 500 ft"*. No Airprox report was filed on RT. Later that evening the SUP was contacted by the Chief Pilot of the helicopter company involved who advised that the pilot had filed an Airprox.

SUP acted sensibly in off-loading the VHF LARS task from the controller when APP

became busy with multiple simultaneous transmissions on UHF/VHF. However, APP was unable to provide traffic information to the helicopter pilot under the terms of the RIS, as it is reported that the Tornado was not evident on the Lossiemouth Watchman until after the pilot had executed a climb from low-level only moments before the occurrence. However, APP should have ensured that the radar service was 'limited', as evidently the helicopter was close to the extremities of radar cover; a standards bulletin has been issued at Lossiemouth reminding controllers to limit radar services where appropriate. APP was not required to effect separation between the two ac under RIS. Nevertheless APP demonstrated sound appreciation of a developing situation and deduced correctly that the Tornado was climbing in the vicinity, and to the cruising level of the helicopter, despite the Tornado pilot's rough initial position report of *"... 30 miles to the North"*. The controller's decision to stop the climb of the Tornado at 1500 ft was evidently justified, as the Tornado pilot did not see the helicopter at all. However, the controller reports that in a subsequent landline conversation with the Tornado pilot, he stated that the ac had already climbed through 1800 ft, when he received the instruction not to climb above 1500 ft; apparently the pilot descended immediately. Understandably, the helicopter pilot would have been surprised when underflown by the Tornado, at night, allegedly 500 ft below him. However, if the helicopter was maintaining 2000 ft RPS (1023 mb) and the Tornado had climbed to 1800 ft QFE (1025 mb), the minimum vertical separation could have been as little as 260 ft.

Note: The Allanshill radar recording shows a difference of 1000 ft between the Mode C readings of the 2 ac as the Tornado passes slightly E of the Super Puma, having just started a climb from low level. It reaches 1700 ft some miles SW of the helicopter and then returns to 1500 ft.

HQ STC comments that a key factor in this Airprox was the Tornado crew's decision to overfly D807, albeit under VFR, in the vicinity of a helicopter route and at a standard helicopter operating altitude. Had the crew been able to

establish the status of the danger area at an earlier stage, the need to climb above it would have been negated. As a result of this Airprox, crews have been reminded of the procedures to be adopted when operating in the vicinity of helicopter routes.

**PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings and reports from the appropriate ATC and operating authorities.

**PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* Sighting report.

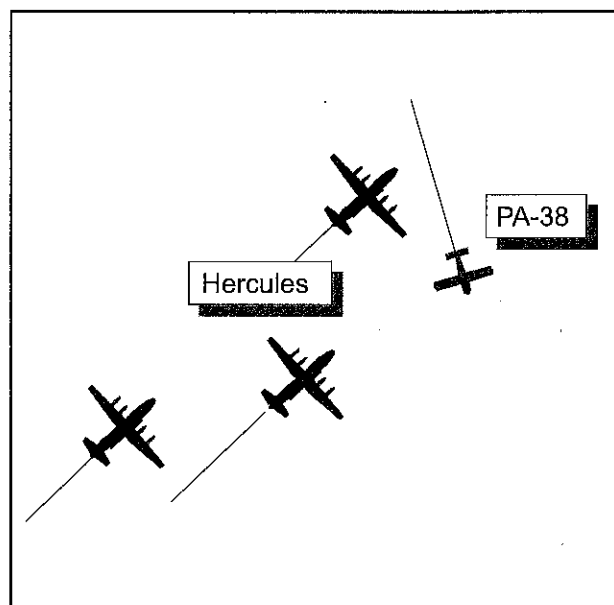
It appeared to members that at least part of the reason the Super Puma pilot may have filed this Airprox was that no-one seemed to know at the time what the separation had been, and what separation there was had happened by chance rather than by arrangement. However, the Allanshill radar recording showed that the Tornado had in fact passed well below the Super Puma and that there had been no conflict. The Board concluded that the incident was a sighting report with no risk of collision and members were assured that Tornado crews have been reminded to be more considerate with regard to the HMR; a call before starting to pull up would have prevented this incident.

**AIRPROX (P) REPORT No 144/98**

*Date/Time:* 20 Nov 1500  
*Position:* N5211 W0114 (5 NM W of DTY)  
*Airspace:* LFS/FIR (Class: G)  
*Reporting Aircraft* *Reported Aircraft*  
*Type:* Hercules PA38  
*Operator:* HQ STC Civ Pte  
*Alt/FL:* 2000 ft 1700 ft approx  
 (RPS 1023 mb) (RPS 1023 mb)  
*Weather* VMC HZBC VMC HAZE  
*Visibility:* 6 km 7 km  
*Separation:* Estimated 2-700 ft?

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE HERCULES PILOT** reports heading 045° at 220 kt on a low level exercise having climbed to 2000 ft to remain VMC above a layer of broken cloud and haze. He first spotted the light ac in cloud tops in his 10 o'clock less than 1 km away; it appeared to be 500 ft below and



passed about 300 ft below his No 2, the middle ac in the stream. No avoiding action had been possible due to the brief nature of the incident and he assessed the risk of collision as slight.



**THE PA38 PILOT** reports heading 150° at 90 kt; he was in contact with Coventry or Turweston radio at the time and was not receiving an ATS; due to the variable cloudbase and haze he was not flying high enough for a radar service. He saw the Hercules formation about 2 km away and they passed 2-300 ft above him, crossing right to left, with a low risk of collision. He was not sure about his height, heading or speed at the time as he had not noted them.

LATCC radar recordings show a single 7001 return for the Hercules tracking NE which crosses marginally ahead of a 7000 squawk, presumed to be the PA38, at 1500:45. The Hercules is in a slight climb passing 2100 ft Mode C at that point; the PA38 shows no Mode C. 2100 ft Mode C equates to 2400 ft on the PA38's pressure setting.

**HQ STC** comments that the hazy conditions, undercast and relative size of the PA38 contributed to a late sighting by the Hercules crew. The PA38 pilot cites high workload in mitigation for a late spot of the Hercules formation. Nevertheless, despite a pick-up range of 2 km, the PA38 pilot did not deem avoiding action necessary. When VFR, pilots must maintain an effective lookout even under

high workload conditions, and attempt to manoeuvre to negate even a slight collision risk.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

It seemed to members that in the prevailing weather conditions the crews of both ac had seen the other ac about as early as could be expected and in time to take avoiding action had they considered it necessary. Therefore there was no risk of them actually colliding. The PA38 pilot had added by telephone some comment on how busy the airspace was which was agreed by a Board member who operated from Kidlington. The PA38 pilot appeared to have been looking out accordingly and members agreed that the incident was a conflict of flightpaths in Class G airspace. It was observed that there would have been some 700 ft of separation if the PA38 pilot's reported height had been correct, but he had been unsure about it; both parties estimated the vertical separation had been about 300 ft.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* Conflict of flightpaths in Class G airspace.

## AIRPROX (P) REPORT No 145/98

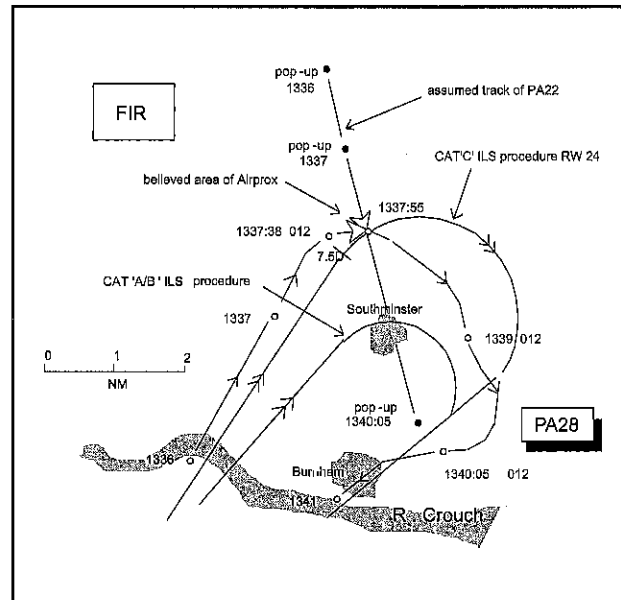
**Date/Time:** 22 Nov 1340 (Sunday)  
**Position:** N5138 E0051 (6.5 NM NE Southend airport)  
**Airspace:** FIR (Class: G)  
**Reporting Aircraft** **Reported Aircraft**  
**Type:** PA28 PA22 Colt  
**Operator:** Civ Trg Civ Pte  
**Alt/FL:** 1540 ft 900 ft  
(QNH 1024 mb) (QNH 1025 mb)  
**Weather** VMC VMC HAZE  
**Visibility:** 15 km <10 km (into sun)

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PA28 PILOT** reports that he was flying an instrument training sortie in the Southend ILS procedure. The visibility was 15 KM in VMC with no significant cloud. He was receiving a FIS from Southend Approach on 128.95 and squawking 7000 with Mode C.

During the turn onto base leg, at 1540 ft (QNH 1024) and 120 kt, he became aware of an ac passing about 50 ft beneath him from L to R. He noted that the ac was a high wing single engined monoplane, brown or dark red in colour with cream stripes, but was not able to take any avoiding action since the other ac was already passing him when first seen; in his view the risk of collision had been high and he reported an Airprox to Southend ATC by telephone after landing. He had heard the other pilot call Southend ATC requesting a rejoin from Burnham and giving his altitude as 1500 ft. What concerned him most was that the incident occurred while he was flying a published instrument approach procedure.

**THE PA22 PILOT** reports that he had been on a local flight in his white/maroon coloured ac to the W and N of the airfield, completing his detail just S of Osea Island at 1500 ft (QNH 1025) heading about 150°. About 3 NM NW of Burnham, he called Southend APC for rejoin and was asked to descend to below 1000 ft owing to traffic in the ILS procedure. This he did immediately, levelling at 900 ft when



approximately abeam Southminster. After ATC had accepted his readback of the rejoin instructions, he heard the controller ask the pilot of the ILS ac whether he had the PA 22 in sight. He heard the pilot reply, in a fairly excited tone,..."He's just gone right underneath us". He immediately looked around, maintaining heading and altitude, but initially made no contact before eventually spotting it heading towards the airfield about a mile away and considerably higher than himself. Flying well past the extended centre line of RW 24 he was then cleared by Southend to join the ILS.

The pilot comments that visibility into sun was reduced by the hazy conditions. Vision from the Colt is further restricted by its high wing configuration and the fact that the cockpit has glazed windows to the front and sides only. Despite frequent changes in attitude it is extremely difficult to see ac approaching from above and abeam; however, he would have expected to see the shadow of another ac, and felt some evidence of its wake, if it had passed so close above him. The pilot also comments that being an IMC rated pilot flying mostly from Southend, he was fully aware of the Southend procedures and appreciated the need to descend immediately when instructed to do so by Southend ATC. The unexpected late sighting by the PA 28 pilot might explain why he perceived the PA 22 to be closer than it actually was.

Note (1): In a subsequent telephone conversation with UKAB staff, the PA 22 pilot was asked at what point he thought his descent from 1500 ft might have commenced in relation to the ILS procedure. He reaffirmed that he had been level at 900 ft when in the Southminster area and calculated that his descent would probably have been started some 2 miles or so to the N of this position. The pilot commented that his interpretation of the RT transmissions of DME ranges given by the other pilot suggested that the PA 28 was well N of the ILS pattern. He was surprised when advised that the radar recording indicated that the ac appeared to be following the wider CAT C procedure for the ILS instead of the CAT A/B which he would normally have expected for an ac the size of a PA 28.

**SOUTHEND ATC** reports that at 1339 the PA 22 pilot called N of Burnham at 1500 ft for a rejoin. He was given traffic information and descent to 1000 ft to avoid a PA 28 on a base leg turn for the RW 24 localiser. At 1340, the PA 28 pilot reported seeing the PA 22 pass below him; he later telephoned ATC to advise that he was filing an Airprox report because he estimated the vertical distance between the ac was about 50 ft.

Note (2): A video recording of the LATCC radar at 1336 shows the PA 28 heading NE over the river Crouch apparently following the outbound leg of the CAT C ILS procedure. A primary pop up return appears at this time some 5 - 6 NM N of the PA 28. The return appears again about a minute later having in the meantime tracked about 1.2 NM and 160° from its previous position, and a third return appears at 1340:05 about 1 NM NE of Burnham, close to the final approach track of RW 24. These returns are consistent with the heading and speeds reported by the PA 22 pilot. The projected track of the ac crosses the outbound leg of the ILS CAT C procedure from N to S at a range of about 8 NM and almost coincident with the point at which the PA 28 commenced its base-leg turn shortly after 1337:38; at this point the PA 28 was indicating 1200 ft Mode C, equivalent to 1497 ft QNH 1024. It is believed, therefore, that the Airprox occurred in this area at about 1338 when both ac were at similar altitudes. This deduction is supported by analysis of the RT

tape recording for 128-95 which shows that following the PA 28 pilot's *"Beacon outbound 2400 ft"* report at 1334:30, the PA 22 pilot's first call to Southend was at 1338:00 advising....*"c/s 2 Miles N of Burnham long final 24 1500 ft"*. ATC immediately passed traffic information to the PA 28 pilot who, at 1338:20, transmitted ....*"have him visual just went straight underneath us"*.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, a recording of the relevant RT frequency, a radar video recording, and a report from the air traffic controller involved.

Members noted that Southend is one of many busy airfields in the UK which operate promulgated IFR procedures in uncontrolled airspace. Attention is drawn to airfields which fall into this category not least by the plotting of instrument approach paths to main runways on navigational charts. GA pilots should take note of these and where possible arrange their flights to remain outside the area likely to be occupied by ac using the procedures. Often such ac have limited access to a radar advisory or information service. In the case of Southend it was explained that the LARS was withdrawn some time ago. The airfield radar is operated within staffing limitations and a radar service is not available unless a suitably qualified controller is on duty; this applies particularly at weekends. Pilots flying instrument procedures in these circumstances are therefore essentially subject to the same rules that apply to other users of Class G airspace, namely to 'see and avoid' other ac. When possible, ATC will assist by passing traffic information, and pilots are expected to listen out to assimilate the local traffic situation. For this reason it is of vital importance that pilots transmit accurate and timely position reports when joining the circuit and flying in the instrument procedures. Furthermore, good airmanship dictates that pilots should avoid known instrument approach paths when planning to rejoin or fly close to an

airfield which is known to have a notified procedure. In members' opinion the PA22 pilot, being locally based, should have been especially sensitive to these considerations and given more thought to the possibility that the procedure might be active prior to rejoining. Furthermore, his initial call to join the circuit should have been made much earlier, thus allowing time for pertinent traffic information to be assimilated and acted upon. In the event, his first call - '2 NM N of Burnham at 1500 ft' - put him very close to the ends of the outbound legs of both ILS patterns at a level likely to conflict with ac using the procedure. In this case, all the evidence suggests that the Airprox occurred within seconds of the PA22 pilot's first transmission, when he was either still at 1500 ft, the same level as the PA28, or had just begun his descent.

Notwithstanding all these considerations, it was ultimately the responsibility of both pilots to maintain an effective lookout to avoid collisions in this class of airspace, whatever the nature of their flights or cockpit duties. The PA28 saw the PA22 as it passed below, but too late to take any action to avoid it which effectively amounted to a non-sighting, and the PA22 pilot did not see the PA28 until some time after the encounter. The Board concluded that the non-sightings by both pilots caused the Airprox. Moreover, as the radar and RT evidence and the PA28 pilot's description all suggest that both ac were at the same or very similar levels, with neither pilot being in a position to avoid, the Board concluded that there had been an actual risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

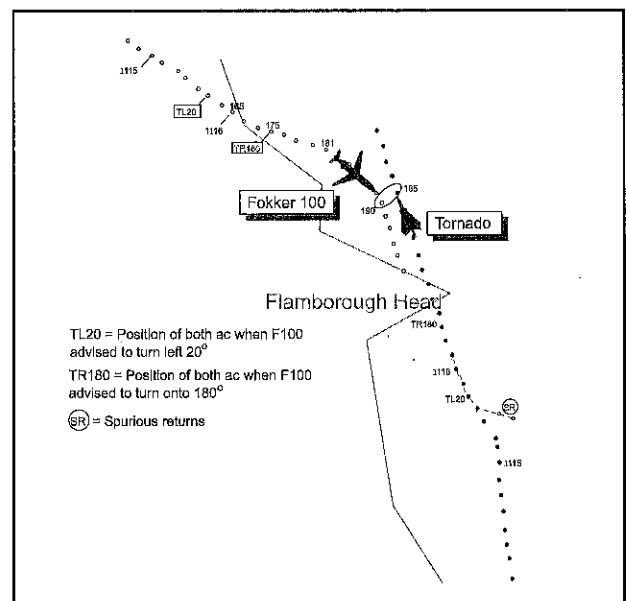
*Degree of Risk:* A  
*Cause:* Non-sighting by both pilots.

**AIRPROX (P) REPORT No 146/98**

Date/Time: 27 Nov 1117  
Position: N5414 W0012 (8 NM ESE of Scarborough)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Fokker 100 Tornado GR  
Operator: CAT HQ STC  
Alt/FL: FL 185 ↑ FL 185  
Weather: VMC CLNC VMC CLNC  
Visibility: 10 km+ 50 km+  
Separation: 1.5 NM / 500 ft

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE F100 PILOT** reports climbing on a heading of 100° at 250 kt and receiving a RAS from Pennine Radar. Pennine advised him to turn left 20° to avoid military traffic, and then 30



seconds later to turn right 80°. Passing FL 185, a Tornado flew down his port side on a

reciprocal heading at the same level about 2 NM away.

**THE TORNADO PILOT** reports heading 340° at 400 kt and level at FL 185. London Mil, from whom he was receiving a RIS, advised him of traffic climbing through his 12 o'clock 7-8 NM ahead. He saw it and maintained sight of it as it passed down the left hand side in a right turn about 2 NM away and 500 ft above, still climbing. There was no risk of collision.

Note: The Pennine Radar RT transcript shows that at 1115:45 the controller told the F100 pilot to *"turn left 20°, that's to take you clear of military traffic manoeuvring in your one o'clock about 20 at the moment"*. The pilot acknowledged. At 1116:20, having co-ordinated with London Radar, the controller advised the F100 pilot *"in fact that traffic's turned, turn right now heading 180°, I'll take you to the west of it"*. At 1116:30 the pilot replied *"Right head 180 (c/s), confirm right 80°?"* and the controller answered *"Right heading 180 affirm, traffic's in your 2 o'clock now at 10, right to left indicating 185"*. The pilot replied *"Roger (c/s), confirm range of the other traffic?"* and the controller responded at 1116:47 *"Er 2 o'clock at seven now right to left sir, right heading 180 now please"*.

**HQ MATO** reports that the Tornado crew was receiving a RIS from London Radar Sector 13 (SEC13) on 232.02 and squawking 6137 (code/callsign converted) with Mode C. The ac was heading 340° and cruising at the correct quadrantal of FL 185. SEC13 detected the F100's Pennine Radar squawk and at 1116:03 the Pennine controller called requesting co-ordination. At 1116:10, when horizontal separation was about 18 NM, SEC13 advised that the Tornado was *"...Flamborough Head maintaining FL 185, Radar Information"* and when questioned, added that the Tornado was maintaining its track to Amble. The Pennine Controller advised that he would turn the F100 right onto 180° to pass west of the Tornado. The landline transcript also records the RT transmission from Pennine Radar to the F100 pilot *"...right now heading 180 affirm traffic's in your 2 o'clock now at, er, right to left indicating 185"*. At 1116:47, SEC13 issued traffic

information to the Tornado crew *"...traffic left 11 o'clock 6 miles crossing left to right indicating FL 180, is on an avoiding action turn...onto south...I'll keep you advised"* to which the Tornado crew responded *"Roger, looking..."*. The Tornado crew reported 14 seconds later that they had sighted the F100. At 1116:59, the Pennine controller re-iterated that the F100 crew had been instructed to turn right onto 180° and asked SEC13 *"..if you want to turn right a bit that'll be ideal actually"*. SEC13 was unable to respond before the Pennine controller was heard instructing the F100 crew to turn further right onto 190°. SEC13 advised the Tornado crew that the F100 was *"...left 11 o'clock 2 miles reciprocal indicating 200 ft above"*, to which they responded at 1117:21, *"Roger visual with that thanks"*. SEC13 endeavoured to inform Pennine that the Tornado crew had sighted the F100, when it became apparent that the Pennine controller had terminated the call. No further comment was made by the Tornado crew regarding the occurrence. Subsequently, Pennine Radar advised SEC13 that the F100 pilot was filing an Airprox; the Tornado crew was informed on RT.

The Claxby radar recording shows the incident which occurred at about 1117:30, 7 NM NNW of Flamborough Head. The Pennine controller was informed that the Tornado was on a steady track maintaining FL 185 at 1116:12. The F100 is heading about 120° and climbing through FL 170 Mode C with the Tornado at its 1 o'clock at about 18 NM. Just under 1 minute later at 1117:08, the F100 is shown in a gentle right hand turn, climbing through FL 184 with the Tornado at a range of 5 1/2 NM and moments before standard horizontal separation was eroded. The ac continued to close as the F100 turned right through 170° and passed west abeam the Tornado at 1117:31, with less than 1 1/2 NM horizontal separation as the F100 climbed through FL 190 Mode C, 500 ft above the Tornado which is shown maintaining FL 185 throughout.

Because of an equipment failure the SEC13 controller's workload had increased considerably and he was, therefore, very busy. As soon as the Pennine controller's intentions were established, SEC13 passed

comprehensive traffic information to the Tornado crew in accordance with the requirements of the RIS, which helped them to see the F100. SEC13 was not required to effect separation. All relevant information was given by SEC13 to the Pennine controller.

**ATSI** comments that it could be argued that the Pennine controller should have used the words 'avoiding action'; however, he initiated action in a timely fashion and kept the crew of the F100 updated on the position of the conflicting traffic. On first observing the potential conflict, the controller perceived that the Tornado was manoeuvring and he initially attempted to turn the F100 left, which was not appropriate given the track of the Tornado, but this decision was quickly corrected. This incorrect perception may have arisen due to some 'spurious' radar returns, which appeared just to the east of the Tornado's trail dots and could well have given the impression that the aircraft was heading west initially.

The Pennine controller initiated co-ordination with the SEC13 controller providing a RIS to the Tornado and it was agreed that the F100 would turn right. SEC13 can be heard passing traffic information to the Tornado on the deskside recording. From the radar recording, the F100 crew appear to have been somewhat slow in reacting to their turn instructions and this would have contributed to the minimal lateral separation achieved.

**HQ STC** comments that the Tornado crew, having accepted a RIS and flying at an appropriate FL, achieved an early visual contact at a range of 7 - 8 NM; they were then able to monitor the progress of the F100 to a minimum range of 2 NM and assessed that no avoiding action was necessary. Nevertheless, from the perspective of ATC and the F100 pilot, separation was reduced and the F100 crew felt sufficiently uncomfortable to file an Airprox.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of

the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board discussed at length what the Pennine controller's requirement was in terms of separation between the F100 and the Tornado. The discussion revealed that despite several years' work to harmonise the definition and interpretation of a RAS between civil and military agencies, clear differences in interpretation remained, at least among the controller members of the Board, some of whom did not believe the controller had a remit to achieve as much separation as possible if he could not achieve standard separation. Eventually the Board recommended that action should be taken to resolve these differences in interpretation.

It was suggested that the controller should have stopped the F100's climb at FL 175 to effect separation but at the time he noticed the Tornado it was unknown traffic. This meant he had to aim to achieve 5 NM / 5000 ft separation, which ruled out the vertical option as the F100 was already approaching FL 160. Moreover, being unaware of the Tornado's intentions on first spotting it, the initial left turn was reasonable; having co-ordinated, he realised that a quick reversal right would be required, but he did not manage to convey to the pilot the urgency needed in carrying out this turn. (The F100 was passing FL 175 when the Pennine controller had finished co-ordinating with London Radar; it would have taken an unknown distance to get the pilot to stop the climb and return to FL 175 to provide standard (co-ordinated) vertical separation).

Notwithstanding the foregoing, some members thought that the F100 pilot's responses to the turn instructions were inordinately slow. Their view was that under a RAS, advisory avoiding action turns were always to avoid other traffic and that in Class G airspace should always be reacted to promptly and not questioned. However, a majority view prevailed that Commercial Air Transport pilots were usually pretty slow to respond, often because they would use the autopilot to effect a turn, and the

controller should have on this occasion used the phrase "avoiding action" to elicit a more appropriate response from the pilot. The Board also recommended that the need to react promptly to controllers instructions while under RAS should be emphasised to airline pilots.

It was pointed out that in the circumstances the controller was under remit to provide as much separation as he could, short of standard separation, and some members argued that he had satisfied this remit by achieving about 1.5 NM. However, a majority, while agreeing this, considered that this separation happened rather than was arranged and that the controller could have done better by calling for avoiding

action, especially when the pilot began to question him. In acknowledging that the F100 pilot was uncomfortable enough about the situation to file an Airprox, the Board concluded that the cause of the incident was that the Pennine Radar controller achieved a level of separation which caused concern to the F100 pilot.

Concerning the risk level, members observed that in addition to the lateral separation there had been 500 ft of vertical separation as the ac passed and that the Tornado pilot was always in a position to ensure the ac would not collide. The Board agreed that there had not in the event been a risk of the ac colliding.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* The Pennine Radar controller achieved a level of separation which caused concern to the F100 pilot.

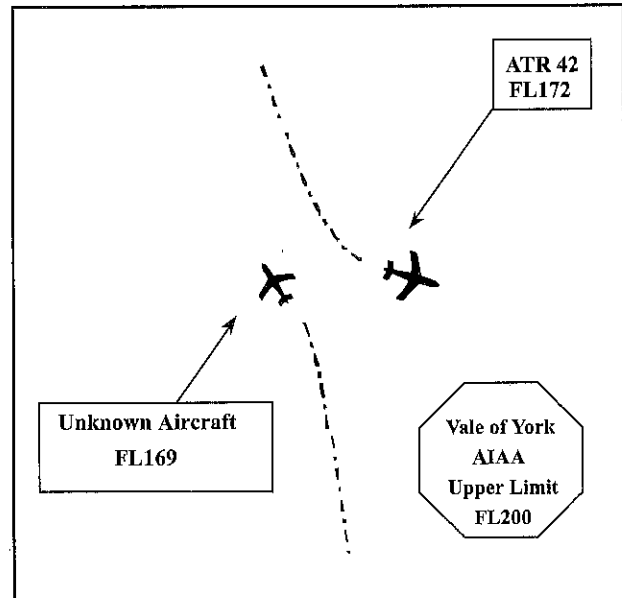
*Recommendation:* (a) That the CAA considers drawing the attention of civil controllers to the conditions set out in DAP's 8AP/51/08/01 dated 27 Nov 97 on how urgently they should aim to achieve standard separation while providing a RAS.

(b) That the CAA considers drawing to the attention of airline pilots that when under RAS, a Controller's advisory avoiding action instructions should be treated as avoiding action.

## AIRPROX REPORT 37c/98

### Occ No. 98/06945

**Date:** 30 November 1998  
**Time:** 1405 UTC  
**Aircraft:** ATR42/Unknown  
**Operators:** British Airline/Unknown  
**Position:** 12nm East of Linton on Ouse  
**ALT/HT/FL:** FL170  
**Airspace Type:** FIR - Class G  
**Reporter:** Manchester ACC - Pennine Radar  
**Reported Separation:** 1.5nm horizontal/Nil feet vertical  
**Recorded Separation:** 1.5nm horizontal/300 feet vertical



### THE INCIDENT

The aircraft involved in this AIRPROX were operating in the Vale of York Area of Intensive Aerial Activity (AIAA). The ATR42 was receiving a radar information service (RIS) from Pennine Radar whilst en route from Newcastle to Stansted at FL170. The unknown aircraft, probably military, was manoeuvring at FL170 and displaying a Vale of York SSR conspicuity code.

At 1356, the ATR42 contacted the Pennine Radar controller in the climb to FL170 and was identified and initially given a Radar Advisory Service (RAS). However, this service was changed to a RIS one minute later when the controller said to the ATR42 pilot, "And (callsign) in fact I'm going to reduce this service to Radar Information Service due to your present track to the South of Tees zone which is about your twelve o'clock or I should say ranging anywhere from your ten o'clock to your two o'clock range of about ten to twenty miles you're entering an area of gliding activity I've no height information on those gliders whatsoever keep a good lookout Radar Information Service". The controller then followed this transmission one minute later with, "And (callsign) the previously mentioned gliding activity seems to have er abated now and disappeared but to be advised the Vale of York is very active though er nothing particularly at

*your levels the highest seems to be about seven zero height unverified I will keep you advised though".*

At 1404.20, the controller reported to the ATR42 pilot, "(callsign) traffic for you just coming into your twelve o'clock from the right half past twelve range ten miles traffic indicating flight level one seven zero presently operating on a Vale of York conspicuity the height is not verified intentions not known". The pilot responded with, "Roger having a good lookout (callsign)". Then, at 1405, the controller gave the pilot advisory avoiding action of, "(callsign) that traffic's now going into a left turn to go almost head on in fact he is head on to you now range three miles indicating same level height is unverified suggest if not spotted do an immediate left turn of thirty degrees". The ATR42 pilot responded, at 1405.20, with, "Doing a left turn of thirty degrees (callsign)". Radar pictures, timed at 1405.02, show the ATR42 level at FL170 with the unknown traffic in its one o'clock range 4.5nm and turning towards indicating FL171. Subsequent radar pictures show the ATR42 initially maintaining FL170 then climbing slightly with the traffic in its one o'clock, descending slowly and closing on a constant bearing until the avoiding action turn by the ATR42 pilot is seen to take effect. At 1405.34 the radar pictures show the ATR42 in its left turn and indicating FL172 with the



unknown traffic passing down its right side, 3 o'clock position, range 1.5nm at FL169. At 1405.30, the controller advised the ATR42 pilot, "*(callsign) that traffic now going down your right hand side coming into your half past two range of two miles*". Then, at 1405.50, the controller followed up with, "*(callsign) suspect that traffic's now seen you the charlie is indicating in a descent passing one six seven going behind you now in your four o'clock suggest you resume your own navigation to seventeen west of Ottringham and you are clear to cross Bravo one maintaining flight level one seven zero*".

There then followed discussion between the pilot and controller concerning the incident where the pilot advised that he had not been visual with the traffic and the controller indicated that he had received a Short Term Conflict Alert (STCA).

Later the Pennine Radar controller recalled that he was providing a RIS due to the high traffic levels in the Vale of York AIAA, but that when he gave avoiding action to the ATR42 pilot he did not alter the service from RIS as he felt avoiding action was of greater importance. He stated that, "*Even although the ATR42 pilot was under a RIS and that the unknown traffic was probably maintaining a look out he had never before been so convinced that he was on the verge of*

*a midair collision and yet nobody was probably in the wrong*".

In his written report, the ATR42 pilot recalled that having been warned of traffic he was then given avoiding action of, "Turn left hard now through thirty degrees". He did exactly that and although both crew members were looking out neither saw the other aircraft as they were turning away from the traffic and the visibility to the right was diminished. He was therefore unable to assess the risk involved in the incident.

The unknown aircraft was never successfully traced.

### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by conflict in the FIR between the ATR42 and an unknown aircraft. Although the Pennine Radar controller was providing a RIS he suggested avoiding action to the ATR42 pilot if the conflicting traffic was not sighted and this suggestion was accepted. The controller could not be criticised for his actions and reacted well to the situation with which he was faced as the radar recordings indicated that the minimum separation would have been significantly reduced if the controller's advice had not been followed.

### **REVIEW BY AIRPROX PANEL**

1 *Discussion:* The panel has commented before that, if it is possible to avoid the Vale of York AIAA, then commercial air transport, in particular, should do so. It is acknowledged, however, that this would involve a circuitous route for this particular service. Unless that is, it could get above the AIAA which has an upper limit of FL200. The ATR42 had requested FL195 but was flying at the non-quadrantal level of FL170; even at FL195, the Panel thought, it would have been less likely that AIAA traffic would have been encountered.

Members agreed that the Pennine controller's reaction was commendable and his avoiding action for the ATR had been fully justified.

2 *Causal Factors:* Conflict in the FIR.

3 *Risk Classification:* B

4 *Recommendations:* The Panel had no recommendations to make.

**AIRPROX (P) REPORT No 148/98**

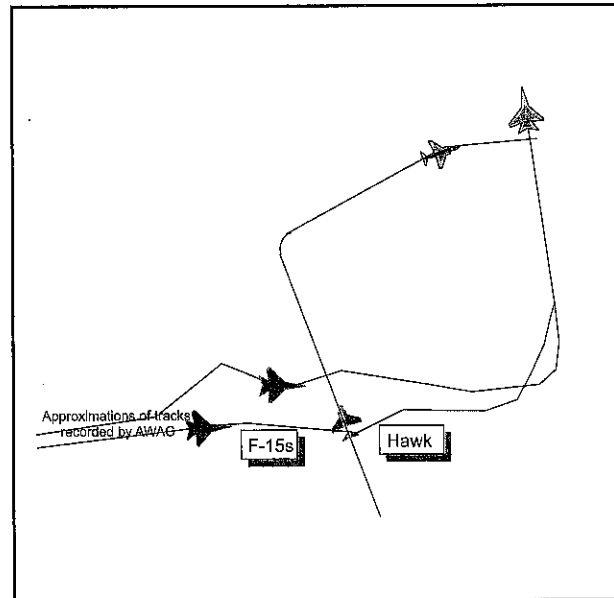
Date/Time: 4 Dec 0948  
Position: N5200 W0415 (8 NM N of Carmarthen)  
Airspace: LFS (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Hawk F15  
Operator: HQ PTC Foreign Mil  
Alt/FL: 500 ft 2000 ft  
(msd) (agl)  
Weather VMC CLNC VMC  
Visibility: 40 km

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE HAWK PILOT**, a solo student, reports heading 340° at 420 kt on an IP to target leg at 500 ft. He saw an F15 cross left to right 1 NM ahead and looked for its No 2 which was behind his canopy arch on a constant bearing 300 m away and slightly above as he was in a valley which the F15 was crossing. He bunted at -2g to avoid it while the F15 made some changes in roll but made no avoiding action. He considered the risk of collision was moderate. 2 minutes later, on a heading of 062°, he encountered the F15s again, closing from his right on a constant bearing, so he turned right to go behind the rearmost one.

**THE F15 PILOT** reports heading 095° at 450 kt and 2000 ft agl in 4-5 NM trail on his leader. He saw a Hawk 3 NM to the SE, tracking NW. He turned right to obtain a boresight radar lock and then turned further right to obtain separation for a stern engagement. At about 1-2 NM he manoeuvred behind the Hawk, carried out a mock attack and then broke-off to the E, never descending below 1500 ft. At his closest he was 0.5 NM from the Hawk and 1000 ft above it. 2 minutes later they were heading 350° at 2000 ft, conducting a SAP, but did not see the Hawk re-crossing their track.

Note: LATCC radar recordings show the F15s tracking 077° into the Airprox area in trail with the leader at 1600 ft Mode C. Neither the Airprox nor the Hawk are shown. An AWAC



mission recording showed the 2 F15s throughout the area but not the Hawk. The No 2 is consistently to the S of the leader until the ac turn N after the incident. The leader's Mode C shows 1500 ft 5 NM W of the incident position and not below 1600 ft in the incident area but the No 2 shows no Mode C.

**HQ PTC** comments that the more sources of information that become available, the more equivocal becomes the picture in this case. However, the Hawk appeared on neither radar source but the F15s did on both, with consistent Mode C readings (from the leader) well above that declared by the Hawk. This tends toward a view that the ac were further apart than the student perceived. It is to his credit that he maintained such an effective lookout against a manoeuvring pair even during an IP to tgt run but it looks as though he misappreciated the size of the F15.

**HQ 3AF** comments that at the first encounter the F15 pilot had visual contact from some way out and maintained contact throughout. It is normal activity for military jets to carry out practice interceptions on each other in Class G airspace following chance encounters. The Hawk pilot may have mistaken the close proximity of the incident and not been aware that the 2 ac were deconflicted by 1000 ft altitude and 3000 ft slant range.

## PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the UKAB included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

It was pointed out that the RAF does not allow interceptions of training ac because of possible over-reaction by their inexperienced pilots; the Chairman agreed to ascertain how the F15 Operating Authority's rules compared. In this

case the trainee pilot had overstressed his ac and taken avoiding action towards the ground which could have had a less fortunate outcome while at low level. While members commended the Hawk pilot for his vigilance it was assumed that he had first seen the second F15 when it had boresighted him and had probably mistaken its range which was a common occurrence since the F15 was a large ac for a fighter. Indeed the Board concluded that the cause of the incident was a mistaken impression of a lack of separation by the Hawk pilot and that there had not in fact been a risk of a collision.

## PART C: ASSESSMENT OF RISK AND CAUSE

*Degree of Risk:* C

*Cause:* Mistaken impression of a lack of separation by the Hawk pilot.

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### **AIRPROX (P) REPORT No 149/98**

*Date/Time:* 05 Dec 1350 (Saturday)

*Position:* N5143 W0219 (1 NM W  
Nympsfield - elev 700 ft)

*Airspace:* FIR (Class: G)

*Reporting Aircraft* *Reported Aircraft*

*Type:* LS4 glider C152

*Operator:* Civ Pte Civ Trg

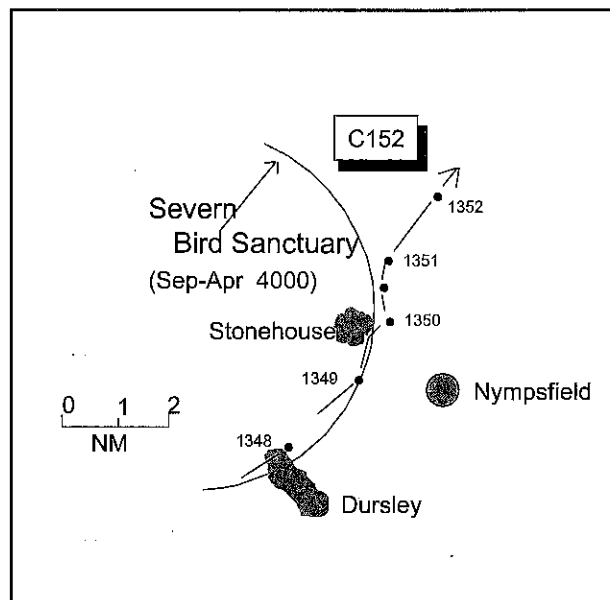
*Alt/FL:* 1400 ft 2500 ft  
(QFE) (QNH 1011 mb)

*Weather:* VMC CLBC VMC

*Visibility:* >20 km

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE GLIDER PILOT** reports flying at 1400 ft (QFE) along a ridge line 1 NM W of Nympsfield airfield heading 360° at 45 kt. The visibility was over 20 km in VMC. He heard the sound of engine noise from behind and then saw a grey/blue high wing Cessna as it flew 30 ft directly over the top of him in level flight on a northerly heading; he was able to read most of its registration. Since his only warning of the



other ac had been the sound of its engine to the rear of him he took no avoiding action, believing it safer to remain straight and level. He felt there had been an extremely high risk of collision.

Note (1): The incident was witnessed by the Club's Safety Officer who was flying another glider nearby. He provided a report which

included a detailed sketch of the geometry of the encounter (see below). The Safety Officer recalls that both he and his student watched a high-wing Cessna as it passed him on a northerly heading having flown within 100 ft vertically and about 600 m of 2 other gliders before approaching the reportee's glider from its blind spot. A collision looked imminent and he tried unsuccessfully to radio a warning as the Cessna flew directly over the glider by not more than 50 ft. Neither ac appeared to take avoiding action and he thought there had been a very high risk of collision. Following this encounter, the Cessna also flew close to 2 more gliders manoeuvring nearby.

**THE C152 PILOT** reports that he was a student PPL pilot with limited navigational experience making a short solo flight to the S from Gloucester to Filton and return. Prior to departure from Gloucester he had been warned that the weather was deteriorating from the NE and he should therefore turn back when overhead Filton rather than land there. On the southbound leg he kept as far from Nympsfield as possible without infringing the bird sanctuary. Three gliders were seen some considerable distance to the E of his track.

On his return flight N he cruised at 2500 ft RPS (1011) and, as on his southbound leg, intended to skirt around the bird sanctuary. In the vicinity of Dursley it became apparent that he would have to fly closer to Nympsfield than planned to avoid a small patch of cloud in the area. He also realised at this time that the weather was closing in from the N and the deterioration was more extensive and rapid than he had anticipated. Although the visibility around Nympsfield was good, he was for the first time becoming a little concerned about his route further N where the conditions did not look good. His revised track took him within an estimated 1 NM of Nympsfield which he knew was active and therefore kept a sharp lookout. Identifying white gliders against the background of incoming weather was difficult. However, he recalls seeing 4 gliders circling some distance to his E and one closer to the W; the latter was estimated to be 500 m away and 200 ft below him. He was unsure of the intentions of this

glider which, for a short time, seemed to be paralleling his track, though he could not make out whether it was coming towards him or going away. The glider began to turn, apparently towards his track, so he elected to increase to full power and climb to maximise vertical separation. Although he initially kept the glider in sight by briefly lifting his L wing, he subsequently lost it owing to the Cessna's attitude in the climb. He levelled at 2700 ft and could no longer see any gliders and considered that they were all now behind and below him. At no time did he feel that there had been risk of collision.

Subsequently he calculated he had increased power at about 1350 local. If the glider he saw at that time was the reporting ac, he did not feel there had been any risk of collision because of the height differential between them and the fact that he had been watching it closely until he lost sight of it in the climb.

Note (2): A replay of the LATCC radars at 1348 shows a primary return believed to be the C152 tracking slowly NE on the northern outskirts of Dursley about 3 NM SW of Nympsfield. At 1349:02 the return passes about 1.7 NM to the W of Nympsfield and then turns onto a meandering NNE track, passing just to the E of Stonehouse at 1350. No gliders are seen on radar in the vicinity of the return during its transit through the area.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac and a radar video recording.

Noting the C152 pilot's relative inexperience, the Board discussed the wisdom of allowing him to undertake a navex in weather conditions which were expected to deteriorate from the N and therefore likely to affect him on his return to his departure airfield. Although the route chosen was well served by navigational ground features, it nevertheless required the student pilot to negotiate a narrow choke point between the Severn Bird Sanctuary and Nympsfield, an

airfield well known for its intense gliding activity; having to worry about the weather which he could see deteriorating to the N of him was an additional unwelcome burden. Although the pilot had been warned to expect this deterioration, members felt that in authorising the flight insufficient consideration had been given to his inexperience.

The C152 pilot's report, the eyewitness account by the Club's Safety Officer and the radar recording all suggest that while he had observed gliders operating in the Nympsfield area on both legs of his navex, the C152 pilot did not see the reporting glider at all. Members assessed this non-sighting to be the cause of the Airprox.

A lengthy discussion ensued on whether or not it was reasonable to expect the glider pilot to see the C152, given the geometry of the

encounter. One member took the view that it was the glider pilot's equal responsibility in Class G airspace to avoid other ac on the 'see and avoid' principle. However, most members felt that in the circumstances of this particular incident the C152 overtook the glider from behind at considerably higher relative speed and, in their opinion, the glider pilot could not have been expected to spot it earlier. The Board therefore decided that his non-sighting of the C152 prior to the encounter did not contribute to the Airprox.

Members noted the very close vertical separation reported by the glider pilot, witnessed and corroborated by the Safety Officer, and concluded that this, compounded by the non sighting of the glider by the C152 pilot and the glider pilot's inability to take avoiding action, led to an actual risk of collision.

**PART C: ASSESSMENT OF RISK AND CAUSE**

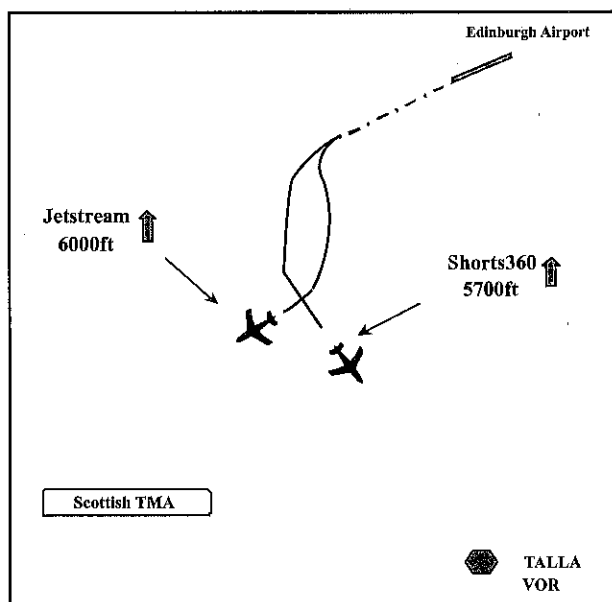
*Degree of Risk:* A

*Cause:* Non - sighting by the C152 pilot.

**AIRPROX REPORT 54c/98**

**Occ No. 98/07076**

*Date:* 8 December 1998  
*Time:* 1046 UTC  
*Aircraft:* Jetstream 41/SD360  
*Operators:* British Airlines  
*Position:* 12nm SW of Edinburgh Airport  
*ALT/HT/FL:* Altitude 6000 feet  
*Airspace Type:* Scottish TMA - Class E  
*Reporter:* ScACC - TMA In Radar controller  
*Reported Separation:* 2nm horizontal/300 feet vertical  
*Recorded Separation:* 1.8nm horizontal/300 feet vertical



## THE INCIDENT

The aircraft involved in this AIRPROX had both been transferred from the Edinburgh Aerodrome controller to the ScACC TMA In Sector controller immediately prior to the incident. The SD360 was en route to Leeds and the Jetstream was en route to Belfast Aldergrove. Both had departed from runway 25 at Edinburgh on a Talla 4C Standard Instrument Departure (SID). The SID routeing is initially straight ahead to 7nm DME then a left turn onto the Talla (TLA) VOR radial 349° to TLA VOR, climbing to an altitude of 6000 feet. The TMA In controller was acting as a mentor to a trainee and was operating as both Planning (P) and Radar (E) controller at the time of the incident.

In accordance with local procedures, the SD360 had been released by Approach Control, following a call from the Ground Movement controller. Therefore, at 1037.34, without further reference to Approach, the Aerodrome controller cleared the aircraft for take off from runway 25. The Aerodrome controller annotated the flight progress strip (fps) with the Actual Time of Departure (ATD) of 1039 and the SD360 was transferred to ScACC at 1041. Prior to this, the ATD was passed to the Approach controller. Meanwhile, the Jetstream pilot reported at the holding point for runway 25 and was cleared to line up and wait.

Note:- The Edinburgh Manual of Air Traffic Services (MATS) Part 2 states the responsibilities for separation are delegated from Approach to Aerodrome Control. One method of which is, *"The use of the departure table to assist with separation (Edinburgh Approach Radar remains responsible for departure separation)"*. The departure table is described in the MATS Pt2 as follows, *"In addition to MATS Part 1 departure separations, aircraft on the same SID/route may be separated using the published departure table provided the aircraft is listed within the departure table and Edinburgh radar is serviceable. In order to plan the most expeditious departure sequence for aircraft following the same route, in conjunction with speed limit criteria, aircraft types are categorised into groups with agreed*

*minima to be applied between the groups which will assist in the provision of separation for the first 20-30 miles of flight"*.

Because the SD360 and the Jetstream were included in the departure table and Edinburgh radar was serviceable, the Aerodrome controller's intention was to use the specified departure interval. For a SD360 followed by a Jetstream 41 on the same SID, the requisite interval was 5 minutes, a time which was in accordance with the departure table separation (as amended by the Edinburgh Temporary Operating Instruction 9/98).

Prior to clearing the Jetstream for take off, the Aerodrome controller looked at the fps for the SD360 and misread the ATD as 1037 instead of 1039. Thus she cleared the Jetstream for takeoff at 1041.38 believing that she had achieved the correct 5 minute spacing when in fact the Jetstream became airborne at 1042, ie only 3 minutes after the ATD of the SD360. The Jetstream pilot was transferred to ScACC at 1044 and the Approach Radar controller was advised of the ATD of 1042. The Aerodrome controller was not aware of the incorrect departure interval although this should have been apparent from the Aerodrome Traffic Monitor (ATM).

Note:- Although the Approach Radar controller does not routinely work departing traffic, the Edinburgh MATS Part 2 states that Approach Radar is responsible for providing certain services which includes, *"Monitor departure separations before transfer to appropriate sectors"*.

The Approach Radar controller confirmed that he was informed of the ATD of both aircraft but stated that he did not register that the time interval between them was not correct. Subsequently he realised from the radar display that the Jetstream was closer to the SD360 than he would have expected and was catching it up. His first reaction was to ask the Aerodrome controller if the Jetstream was still on her frequency, but it was not. He then telephoned the TMA In controller to warn him of the problem but received no reply. His immediate thought was that the controller had

realised the situation and was dealing with it since the Jetstream was still proceeding straight ahead, possibly he thought, in response to remedial action taken by the controller. He then saw the Jetstream turning left on the SID and tried telephoning the controller again, but still received no answer. He then rang the TMA Out controller and asked him to tell the TMA In controller to instruct the Jetstream to turn.

On contacting the TMA In controller, at 1041, the SD360 pilot reported passing altitude 2300 feet and was identified and instructed to take up a heading of 180° after passing the 7nm DME position. The Jetstream pilot made his first call to the controller at 1044.50, reporting passing altitude 3500 feet. The radar pictures at this time show the aircraft 4.6nm apart, with the SD360 ahead, heading 180° and passing altitude 4300 feet. At 1045, the SD360 was cleared to climb to FL95.

The controller first realised that a conflict existed when, at 1046, the Jetstream pilot called approaching altitude 6000 feet. The controller replied, "*(callsign) fly heading two three zero*", and the pilot responded, "*Two three zero and er we got the er proceeding (sic) er Short three sixty I think it is in sight*". The controller then instructed the SD360 pilot, "*(callsign) turn left heading er zero nine zero*", and followed this to the Jetstream pilot with, "*(callsign) further right two seven zero*". Meanwhile, the controller had received a Short Term Conflict Alert (STCA) warning. At 1046.50, the Jetstream pilot reported level at altitude 6000 feet and was instructed to climb to FL100 and the SD360 pilot was instructed to stop his climb at an altitude of 6000 feet. Radar recordings show that separation reduced to 1.8nm horizontal at which time the Jetstream was 300 feet above the SD360.

The Approach Radar controller stated later that when the Jetstream was approximately 5nm South West of Edinburgh he realised that the separation between the two aircraft was eroding. As the separation continued to erode he made repeated attempts to contact the TMA In controller with no success. He then called

the TMA Out Sector and asked them to relay the message to turn the Jetstream.

The TMA In controller mentor recalled that his trainee was kept busy with other traffic and co-ordination and that they noticed the Jetstream rapidly catching the SD360 when both were passing altitude 5500 feet. On his instruction, the trainee gave the Jetstream pilot a turn but as the pilot had the other aircraft in sight, and separation was by this time increasing, he considered that there was no risk of collision so the term avoiding action was not used.

In his written report, the Jetstream pilot recalled that on passing altitude 4500 feet on the SID, a SD360, which had taken off approximately 4 minutes before his aircraft, was seen approximately 1.5nm to 2nm ahead and 1000 feet to 1500 feet above. ATC were informed and the rate of climb and airspeed were reduced. ATC then issued separation instructions to both aircraft. Minimum horizontal separation was estimated as 1.5nm to 2nm and vertical as 1000 feet to 1500 feet. He assessed the severity of risk as low.

The SD360 pilot recalled being told to immediately turn on to a heading of 090° but that ATC did not mention any aircraft in his vicinity. The conflicting aircraft was not seen and therefore no further information could be provided.

## **SUMMARY OF CAA ACTION**

The AIRPROX was caused primarily by the Edinburgh Aerodrome controller who misread the SD360 ATD, as written on the fps, which resulted in less than the specified departure interval being provided between the SD360 and the following Jetstream.

The Edinburgh Approach Radar controller did not ensure that the procedures for ensuring that the required departure separation is provided before aircraft are transferred to the appropriate frequency were carried out. It is realised, however, that the procedures in use are no

guarantee that Approach Radar controllers are able to carry out their responsibilities.

Had the ScACC TMA In controller answered his telephone the situation could have been resolved earlier. A priority line between Edinburgh Approach and ScACC may assist in overcoming this difficulty but this presupposes that the Approach Radar controller is able to spot a potential problem. Although the ScACC TMA In controller could have expected Edinburgh ATC to have provided the requisite spacing between the subject aircraft it would have been prudent for him to have monitored the relative distance between them.

This incident shows that there are no failsafe procedures which ensure that the Approach Radar controller is in a position to carry out his responsibilities as regards departure separation.

It is recommended that NATS management review the departure procedures at Edinburgh Airport, in consultation with ScACC management, to produce a system that would allow Edinburgh ATC to fulfil its responsibilities with regard to ensuring the provision of the required departure separation.

## **REVIEW BY AIRPROX PANEL**

### *1 Discussion:*

The panel agreed that the AIRPROX had been set in train by the Edinburgh Aerodrome controller's error over the departure interval, between the SD360 and the Jetstream, and further agreed that the current procedure is not failsafe. It wondered, however, if failsafe procedures can always be provided to protect against a mistake, by controller or pilot. In fact, in this instance, the STCA could be considered as having provided the backstop. Nevertheless, if a priority line should be thought to be a suitable precaution, the Panel would advocate a priority button which would generate a distinctive ringing tone on an existing line rather than simply adding to the number of lines.

As alluded to in the Summary of CAA Action, members questioned the arrangement whereby the Approach Radar controller is responsible for monitoring departure separation even though the aircraft involved would not routinely be on the Approach Radar frequency. This arrangement gives no direct, and only uncertain indirect, ability to exercise that separation responsibility.

Members thought that the training which was in progress on the TMA In sector might also have had a bearing on the incident. The view was expressed that, although entitled to expect the aircraft to have been correctly spaced when transferred, the sector controllers were a little slow to notice the situation and to take effective action. Furthermore the avoiding action when given was in the direction of the aircrafts' destinations rather than accounting for their relative positions. The Jetstream's track was actually East of the SD360's and the Panel believed that a more effective solution would have been to turn the Jetstream onto an easterly heading and the SD360 onto westerly one. It was also thought that the trainee had been fully engaged by co-ordination being conducted with military ATC, and other matters. The effect of this not only delayed trainee and mentor's reaction but also probably accounted for the telephone going unanswered.

### *2 Causal Factors:*

The Edinburgh Aerodrome controller did not provide the correct departure separation between the SD360 and the Jetstream.



3 Risk Classification: C

4 Recommendations: The Panel had no recommendations to make.

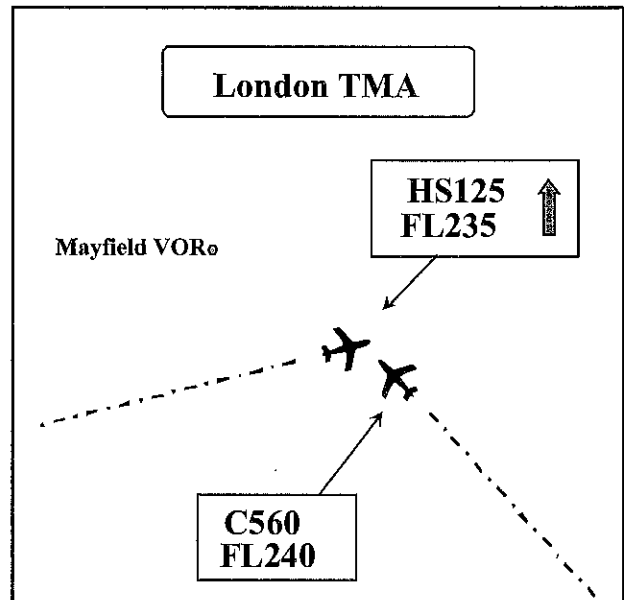
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### AIRPROX REPORT 44c/98

**Occ No. 98/07116**

**Date:** 9 December 1998  
**Time:** 1057 UTC  
**Aircraft:** HS125/C560  
**Operators:** British Executive/Foreign Executive  
**Position:** 5nm South East of Mayfield  
**ALT/HT/FL:** FL240  
**Airspace Type:** London TMA - Class A  
**Reporter:** LATCC - Area Control Lydd sector controller  
**Reported Separation:** 0.5nm horizontal/600 feet vertical  
**Recorded Separation:** 1nm horizontal/500 feet vertical



### THE INCIDENT

The aircraft involved in this AIRPROX were both under the control of the LATCC Area Control (AC) Lydd Sector Controller. The C560 which had departed from Le Bourget en route to Luton was level at FL240 and awaiting descent into Stansted as a weather diversion. The HS125 was en route from Farnborough to Dusseldorf and in the climb to FL270.

The controller was carrying out her first daytime radar duty for three months as she had been training as a Chief Sector Controller and had only performed radar duties on a night shift during that period.

When the controller took over the sector, the C560 was on frequency, maintaining FL240 and on a routeing to the Mayfield VOR (MAY). At 1050, the controller instructed the C560 pilot, "(callsign) when ready descend flight level two zero zero be level by Mayfield". The pilot acknowledged this but as he was not ready did not immediately descend. Subsequently the

HS125 was accepted into the sector climbing to FL230, a level which would conflict with the descent of the C560. Therefore, as the C560 pilot had not yet commenced descent he was instructed by the controller, at 1053.50, "(callsign) er maintain flight level two four zero at the moment".

Prior to the HS125 pilot contacting the controller, she had discussed its details with the Seaford controller and agreed that it would be placed on a radar heading to take it behind the C560. At 1054.50, the HS125 pilot made his initial contact with the Lydd controller reporting climbing to FL230 and heading 070°. The controller acknowledged this call and instructed the pilot to climb to FL270. This climb instruction was made on the assumption by the controller that the HS125's track would take it behind the C560 and her intention was to monitor its progress against the conflicting traffic. The controller correctly annotated the flight progress strip (fps) with the cleared level of FL270 for the HS125. However, having done so, she then forgot that she had cleared the

HS125 pilot to climb to FL270 and so continued operating in the mistaken belief that the HS125 was climbing only to FL230 and was thus vertically separated from the C560 at FL240.

She maintained this belief even when she realised that lateral separation would not be maintained and that the HS125 would not pass behind the C560. She did not consult the fps display as, because of the low workload, she saw no need. Thus she continued to monitor the two flights with the intention of issuing climb and descent instructions, as appropriate, once their tracks had crossed and lateral separation existed.

At 1055.42, the Short Term Conflict Alert (STCA) activated with the aircraft separated by 20.6nm and 3337 feet, but the controller, still believing that the aircraft were cleared to vertically separated levels, dismissed this alert as a nuisance warning. About one minute later, when the HS125 was passing FL228 and still climbing fairly quickly, the controller checked her fps display and realised that she had cleared the HS125 to climb to FL270. As a result, at 1056.50, the controller instructed the HS125 pilot, *"(callsign) stop climb flight level two three zero"*. The pilot replied, *"Er we're two three four now"*, and the controller responded to this with, *"Er down again then avoiding action descend now flight level two three zero"*. The pilot acknowledged this with, *"Descending two three zero we're presently two eight zero"*, and immediately corrected this at 1057.10 with, *"Er correction to that it was two three eight er on our level"*. Radar recordings timed at 1057.14, show the C560 level at FL240 and heading towards the MAY VOR with the HS125 in its 11 o'clock, range 3.7nm, crossing from left to right and indicating FL238. The controller advised the HS125 pilot, *"(callsign) roger er traffic's in your two o'clock range four miles"*, then at 1057.25 instructed the C560 pilot, *"(callsign) climb immediately flight level two five zero"*. The C560 pilot replied, *"Climbing to flight level two five zero (callsign) traffic in sight"*. At 1057.30, the controller responded to this with, *"Roger er thank you maintain flight level two four zero then"*.

Radar recordings timed at 1057.26, show the C560 at FL240 with the HS125 in its half past

eleven, range 1.3nm, crossing from left to right and indicating descending through FL235. Meanwhile, the HS125 pilot reported, *"Er (callsign) we had the traffic visual"*. Subsequent radar pictures show the HS125 passing ahead of the C560 at a range of 1nm and 500 feet below. Both aircraft then continued en route without further incident. The STCA warning ceased at 1057.42.

The Lydd controller stated later that in view of the low workload at the time of the incident she did not consider that the lack of recent experience on her part was a causal factor to the incident.

In his written report the pilot of the HS125 recalled that his first sighting of the C560 was at a range of 2nm when the controller advised the location and range, and that subsequently he assessed minimum separation as 0.5nm horizontal and between 500 feet and 1000 feet vertical. He descended to FL230 as instructed and that early corrections were given by the controller, with clear instructions to both aircraft. He assessed that there was no risk of collision.

The pilot of the C560 recalled cruising at FL240 when he was given an order to climb immediately. He disengaged the auto pilot to climb and then saw the other aircraft in the 10 o'clock position range 2nm about 1000 feet below. He assessed that there was no risk of collision.

#### **SUMMARY OF CAA ACTION**

The AIRPROX was caused by the LATCC AC Lydd controller who dispensed with lateral separation when clearing the HS125 pilot to climb to FL270 and through the level of the C560 at FL240 in the erroneous belief that she had provided standard vertical separation between the aircraft.

**REVIEW BY AIRPROX PANEL**

- 1 *Discussion:* The panel accepted the Summary of CAA Action.
- 2 *Causal Factors:* The LATCC Lydd controller cleared the HS125 pilot to climb through the level of the C560 without providing the necessary lateral separation.
- 3 *Risk Classification:* C
- 4 *Recommendations:* The Panel had no recommendations to make.

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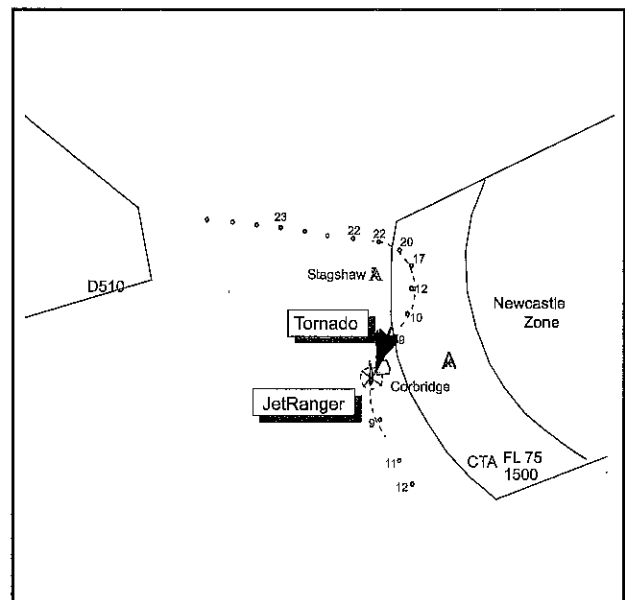
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**AIRPROX (P) REPORT No 151/98**

*Date/Time:* 11 Dec 1314  
*Position:* N5458 W0202 (2 NM E of Hexham)  
*Airspace:* FIR/LFS (Class: G)  
*Reporting Aircraft* *Reported Aircraft*  
*Type:* JetRanger Tornado GR  
*Operator:* Civ Comm HQ STC  
*Alt/FL:* 1000 ft 2500 ft ↓  
(QNH 1012 mb) (Rad Alt)  
*Weather* VMC CLNC VMC CLNC  
*Visibility:* 20 NM 7 km  
*Reported Separation:* 50-100 ft V

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE JETRANGER PILOT** reports heading 180° at 10 kt on a photographic task 1000 ft above the Roman fort at Corbridge. Newcastle Approach warned him of a military ac at Stagshaw, the masts 3+ NM N of him. He then heard a roar and saw a black shadow at the top of his windscreen and what he thought was a Harrier descended in front of him, rocking his ac from side to side in its wake; he could smell burnt kerosene. He was amazed how loud the ac's noise was above the sound of his noisy helicopter and through his headset. He estimated the jet passed about 50 ft (certainly less than 100 ft) above him and realised how close he had come to being killed. The jet continued on a southerly track and he reported the incident to Newcastle.



Note: No Harrier could be found that had been in the area at the time. The Gt Dun Fell radar recording showed a return departing Spadeadam Range to the E and changing to a 7001 squawk before turning right onto 198° around the Stagshaw masts, descending from 2000 ft to 900 ft Mode C before disappearing below radar cover just over 1 NM from the Airprox position. It reappears at 900 ft just under 1 NM beyond the Airprox position at 1314:05; Corbridge fort lies on a line between these positions. The local QNH was 1012 mb so the Mode C equates to altitudes. The Spadeadam squawk used by this return was allocated to a Tornado.

**THE TORNADO PILOT** reports finishing a detail with Spadeadam and departing at 2000 ft

before descending to low level just before the 540 ft masts to the E of Corbridge. He had left Spadeadam's frequency on descending below radar cover and did not see the helicopter. The visibility was about 7 km into sun and about 20 km down sun.

**HQ STC** comments that the Tornado had been receiving a RIS from Spadeadam when it departed the range area before descending to low level. Although there is no requirement for crews to call Newcastle ATC when transiting from Spadeadam area through the Hexham Gap, it may well have been prudent to do so in this case. However, in the absence of a second radio, the crew were only able to maintain 2-way comms with a single agency. The crew satisfied their operating authority that they were conscientious in maintaining a good lookout throughout the sortie but this incident highlights the difficulty in visually acquiring slow, or in this case near stationary, helicopters whilst flying at low level.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

This was a very serious Airprox; all members agreed that there had been a very high risk of collision and that the cause of it was that the Tornado pilot did not see the JetRanger he was

overtaking. The Board went on to discuss the features in this incident which were common to collisions in recent years between military and GA ac, in particular the inconspicuous colour schemes of the GA ac and the fact that their pilots were engaged in tasks which degraded normal lookout, such as photography.

Trials had shown that a red and white colour scheme did not stand out when viewed from a distance and that the further from matt black an ac's colour was, the less likely it was to be seen by a fast jet pilot at the range he needed to see it in order to avoid it. A photographic task meant that the pilot would inevitably spend time concentrating on what he was photographing which would be to the detriment of looking out for other ac and that it was highly advisable for photographic pilots to take a 'looker' with them on the sortie and to keep manoeuvring as much as possible to clear all round the horizon. Members also considered that if a pilot was going to a particular location for photography he should use the CANP which has a 98% success rate in keeping those who use it clear of fast jets. The Board agreed that survival in this environment required a healthy appreciation of the dangers and maximum use of effective countermeasures by all who flew in it. Members emphasised that the Tornado pilot should have seen the helicopter, but acknowledged that the limitations of human sight meant that sometimes small conflicting ac were not seen and that pilots in this environment should do everything possible to enhance their own survival.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* A

*Cause:* The Tornado pilot did not see the JetRanger he was overtaking.

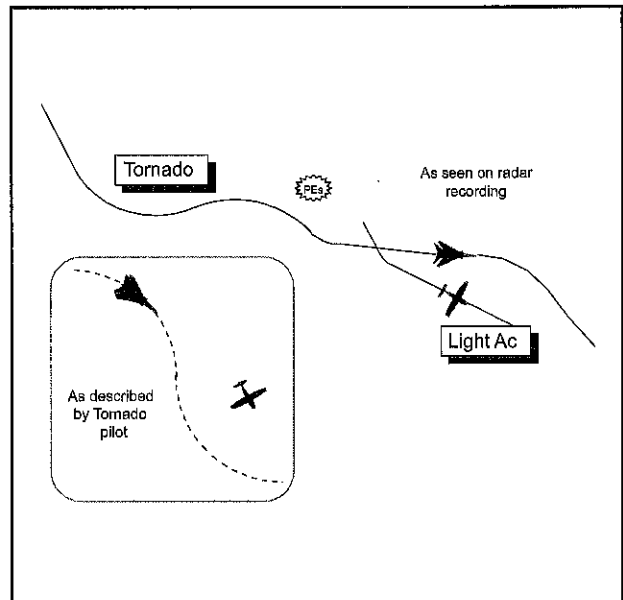
**AIRPROX (P) REPORT No 152/98**

Date/Time: 11 Dec 1440  
Position: N5422 W0116 (10 NM NNE of Topcliffe)  
Airspace: LFS/FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Tornado GR Untraced light ac  
Operator: HQ STC  
Alt/FL: 600 ft  
(Rad Alt)  
Weather VMC CLOC VMC  
Visibility: 10 km+

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE TORNADO PILOT** reports heading 110° at 420 kt on a terrain following (TF) sortie at 600 ft. He saw a high wing light ac in his 11 o'clock at the same level 1 NM away and disconnected the TF, turning right and then left to increase the separation, passing about 0.5 NM from it. He thought there had been a moderate risk of collision.

Note: LATCC radar recordings show the Tornado starting a wide left turn and then a right turn as it tracks through the Teesside/Leeming gap and crosses the Yorkshire Moors. However nothing conflicting shows on radar at the right turn. The Tornado then enters a sharper left turn and passes about 2 NM to the right of a slow moving return on a SE track, later turning right to depart the area. The pilot of this ac, a Cessna 150, reports seeing a Tornado pass about 0.5 NM to his right and 1000 ft below (he was at 2000-2500 ft) but did not consider there was an Airprox. No fast jets pass to the right of this ac. The pilot of another C150 who was also in the area and receiving a FIS from Topcliffe was contacted; he saw no Tornados. It has not been possible to trace any ac passing to the left of the Tornado in this area or to relate either of the received pilots' reports to the scene on radar. There are some intermittent stationary returns at the given Airprox position, but they are there on most sweeps of the radar and are probably permanent echoes.



**HQ STC** comments that the Tornado pilot, under high workload, made a late sighting but with sufficient time to take avoiding action to nullify the collision risk in a controlled manner.

**PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the Tornado pilot and from 2 light ac pilots, radar video recordings and reports from the appropriate operating authorities.

While the Tornado pilot's report could not be reconciled with anything seen on the radar recording, it was clear that he had seen the other ac in time and had avoided it according to the requirements of VFR flight and members agreed that little more could be asked of him. The Board concluded that the incident was a confliction of flightpaths in Class G airspace which was resolved by the Tornado pilot in time to remove any risk of collision.

## PART C: ASSESSMENT OF RISK AND CAUSE

*Degree of Risk:* C

*Cause:* Confliction of flightpaths in Class G airspace, resolved by the Tornado pilot.

### **AIRPROX (P) REPORT No 153/98**

*Date/Time:* 13 Dec 1037 (Sunday)

*Position:* N5346 W0301 (Blackpool airport - elev 34 ft)

*Airspace:* ATZ (Class: G)

*Reporting Aircraft* *Reported Aircraft*

*Type:* PA 28 R22 helicopter

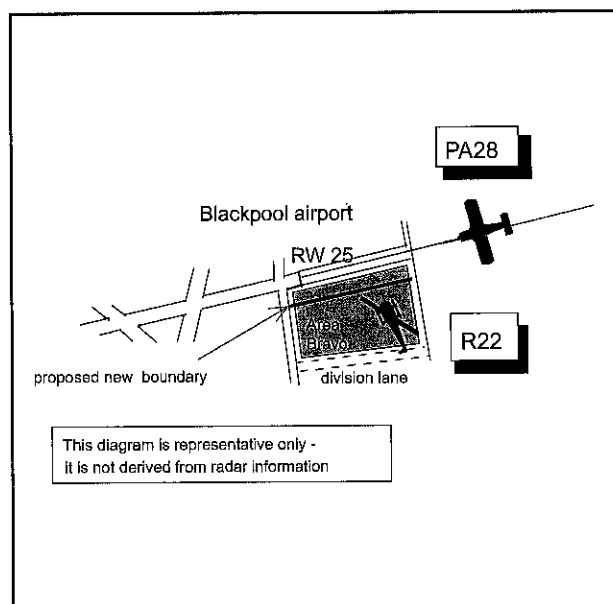
*Operator:* Civ Pte Civ Trg

*Alt/FL:* 150 ft ↓ <50 ft

(QFE) (QFE)

*Weather* VMC VMC

*Visibility:* 25 km



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PA28 PILOT** reports that he was 0.5 NM from touchdown and descending through 150 ft while on finals for RW 25 at Blackpool; workload was high as he concentrated on his imminent landing. The visibility was 25 km in VMC. He saw an R22 helicopter at his 10 o'clock tracking from L to R. It encroached the centreline ahead of him, less than 0.5 NM away, before turning L and clearing to the S. Although he did not consider it necessary to take avoiding action he felt that the helicopter's presence was a serious risk to his safety.

Note (1): In a subsequent telephone conversation with UKAB staff, the PA28 pilot said that he was not familiar with the airfield and was not expecting to see helicopters operating so close to the RW. There was a strong southwesterly wind and, having been cleared to finals, he was awaiting a late landing clearance due to another light ac taking off. He was adamant that the helicopter flew directly in front of him before turning L and clearing the centreline to the S. On seeing the helicopter, he

considered going around in avoidance but thought better of it as he felt this might bring him too close to the departing ac which was then just becoming airborne ahead of him.

**THE R22 PILOT**, a locally based QHI, reports that he was unaware that an incident had occurred until he was asked by Blackpool ATC to submit an Airprox report. During the period of the alleged incident he had been carrying out a training exercise with a student in a designated helicopter training area known as "Area Bravo" while in contact with Blackpool Tower on 118.4. The helicopter was operated within his qualifications as a QHI and at all times his flight was conducted in such a manner as to stay within the confines of "Area Bravo", as required by local procedures. The pilot comments that he has flown within the designated area using accepted operating procedures for hundreds of hours without incident. Visibility from the R22 is very good and neither he nor his student felt

that their position had created a hazard for other ac.

**BLACKPOOL ATC** reports that the PA28 was cleared to land on RW 25 while the R22 was operating in “**Area Bravo**”, the grass area between runways 25 and 28. The locally agreed procedure in this area is for helicopters to operate up to 50 ft agl and away from the runways. In this instance the helicopter had arrived from the E and its pilot was advised that RW 25 was active, which was acknowledged. The ac was then seen carrying out high speed turns into wind. Although the distance between the 2 ac involved was difficult to estimate accurately, from experience the controller was satisfied that the helicopter was sufficiently far S of the extended centreline not to present any hazard to ac on final approach. However, the PA 28 pilot felt that the R22 had endangered his ac and declared his intention to file an Airprox report.

**THE BLACKPOOL SATCO** comments that following this incident he wrote to the helicopter training schools to remind them of the procedures for operating in area ‘Bravo’ (this area has been in use for about 6 years). He also issued a Temporary Operating Instruction (TOI) for controllers to advise pilots of visiting ac of the helicopter activity in area ‘Bravo’. The SATCO further comments that he intends to change the northern boundary of area ‘Bravo’ by bringing it S and into line with the existing holding point C2 on taxiway Charlie.

Note (2): The Blackpool MATS Pt 2 Appendix A/6, under **Area Bravo**, describes it as a grass area E of the NDB site between the fence on the disused part of RW 25 and division lane. Within area ‘Bravo’ helicopters may operate freely up to a maximum height of 50 ft. All manoeuvres above 50 ft and outside the defined area must have ATC approval.

Note: The incident occurred below the level of recorded radar.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies and a report from the air traffic controller involved.

An ATCO member pointed out that the AIP does not contain an entry concerning the helicopter activity in Area Bravo at Blackpool, putting the onus on the controller to warn visiting pilots about it before commencing an approach. It is understood that the Blackpool SATCO intends to ensure that the AIP is updated to promulgate Area Bravo and its activity. The Board welcomed this and also his intention to modify the northern boundary of the area to provide an increased buffer between the helicopter operations and the edge of RW 25.

Several members commented that they were aware of other locations where helicopter training was conducted in similar circumstances. When properly promulgated such operations were generally safe and offered no disruption to other airfield users. At Blackpool, however, the boundary of the designated helicopter training Area Bravo extended to the edge of the disused part of RW 25 and members felt this made insufficient allowance for lateral errors which might in some circumstances lead helicopters to encroach, or appear to encroach, on the final approach track. On this occasion there was reportedly a strong south-westerly wind and members conjectured that this could have caused the helicopter to drift slightly more north than usual. Furthermore, if there was an appreciable amount of starboard drift on final approach, the PA28 pilot might have perceived the helicopter to be on his nose and therefore apparently on the approach track.

Although the ATC report tended to support the helicopter pilot's view that he had remained within the operating area, members noted that the controller admitted being unsure about the actual distance between the ac. As both pilots were adamant that their recollection of the circumstances was accurate, members had

some difficulty in assessing a cause. However, it was felt on balance that the PA28 pilot, being unfamiliar with the airfield, was understandably concerned about the apparent closeness of the helicopter at such a late stage of his approach; of the two pilots concerned he was better placed than the helicopter pilot, who had not seen the PA28 at any time, to assess the geometry of the encounter. A helicopter member commented that once belly-up in a L turn the helicopter pilot would have unsighted

himself from any ac on the final approach. The Board therefore concluded that the cause of the Airprox was that the R22 pilot had flown sufficiently close to the centreline of RW 25 to cause concern to the pilot of the PA28.

Members noted that the PA28 pilot had not thought it necessary to take avoiding action but would have been in a position to do so had the situation demanded it. Members concluded, therefore, that there was no risk of collision.

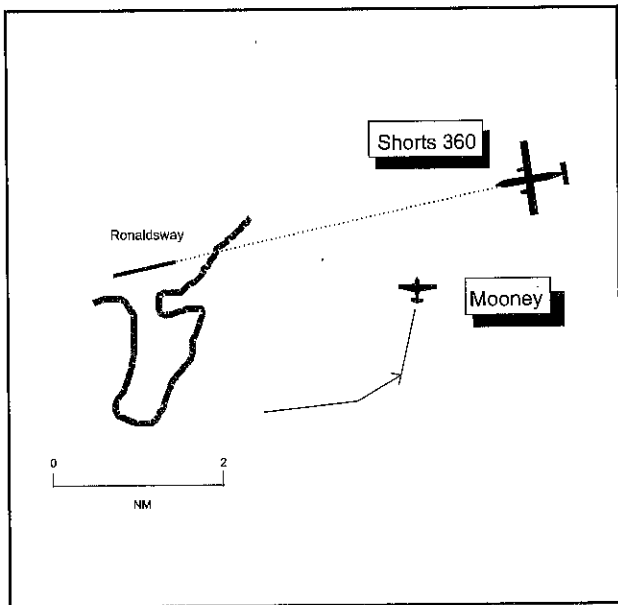
### **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* The R22 pilot flew close enough to RW 25 to cause concern to the PA28 pilot.

### **AIRPROX (P) REPORT No 154/98**

*Date/Time:* 14 Dec 0938  
*Position:* N5405 W0430 (4 NM E Ronaldsway airport - elev 55 ft)  
*Airspace:* CTZ (Class: D)  
*Reporting Aircraft* *Reported Aircraft*  
*Type:* Shorts 360 Mooney M20J  
*Operator:* CAT Civ Pte  
*Alt/FL:* 1600 ft 1600 ft  
 (QNH 1012 mb) (1011 mb)  
*Weather* VMC IMC HCL  
*Visibility:* 3 NM



### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE SHORTS 360 PILOT** reports that he was inbound to the Isle of Man under the control of Ronaldsway APR on 120.85. The weather was VMC. When 6.5 NM from touchdown for RW 26, approaching the glidepath, he saw a Mooney ac at his 10 o'clock about 3 NM away tracking from L to R 700 ft above; he kept the ac in sight and watched it pass about 200 m in front of him. Although he had not felt it necessary to take avoiding action and thought the risk of collision was low, he considered his

safety had been compromised and reported an Airprox to Ronaldsway ATC after landing.

**THE MOONEY PILOT** reports that he was inbound to Ronaldsway in intermittent IMC and receiving radar vectors from Ronaldsway APR for positioning to the ILS for RW 26. While maintaining his cleared level of 1600 ft (QFE 1011), he inadvertently turned onto a base leg heading of 010°, whereupon he saw a Shorts



360 ac about 2 NM away to his R descending through the same level. As he was passing ahead of the other ac, he maintained his heading and shortly afterwards ATC instructed him to turn and climb. Although he did not feel there had been a risk of collision, he acknowledged and deeply regretted the serious error he had made.

**RONALDSWAY ATC** reports, with RT transcript, that the Mooney was 4 NM S of the airfield on radar vectors for RW 26. The pilot was instructed to turn R from 080° to 090° for track adjustment; about 30 sec later the ac was observed on radar to have turned N and into conflict with a Shorts 360 on the ILS. APR instructed the Mooney pilot to turn R immediately and instructed the ADC to pass traffic information to the Shorts 360. The pilot of the Shorts 360 reported that he had visual contact with the Mooney and continued his ILS approach to the RW. The Mooney pilot was passed traffic information on the Shorts, instructed to climb to regain separation and given further vectors for the ILS.

Note: The incident occurred below the level of recorded radar.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, and reports from the air traffic controllers involved.

The Board quickly concluded that the Mooney pilot caused the Airprox by not complying with ATC heading instructions; however, his honest admittance and apology for the error were appreciated. Aside from the possibility that he had unwittingly slipped into 'VFR' mode, members could find no explanation for his uncommanded turn onto base leg. Analysis of the RT recording shows that, having been passed the weather information, the pilot requested radar vectors for the ILS and was given an IFR clearance. Although he was not given specific information on the Shorts 360, or advised of his position in the traffic sequence, the RT transcript shows that the Shorts 360 was receiving ATC positioning instructions for the ILS at the same time as the Mooney and therefore the latter should have been aware of the situation.

Members noted that both pilots perceived a low risk of collision. Moreover, the actions of the controller, whose vigilance was commended by the Board, assisted in minimising the degree of conflict. The Board therefore concluded that there had not been a risk of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* The Mooney pilot did not obey ATC heading instructions and flew into conflict with the Shorts 360.

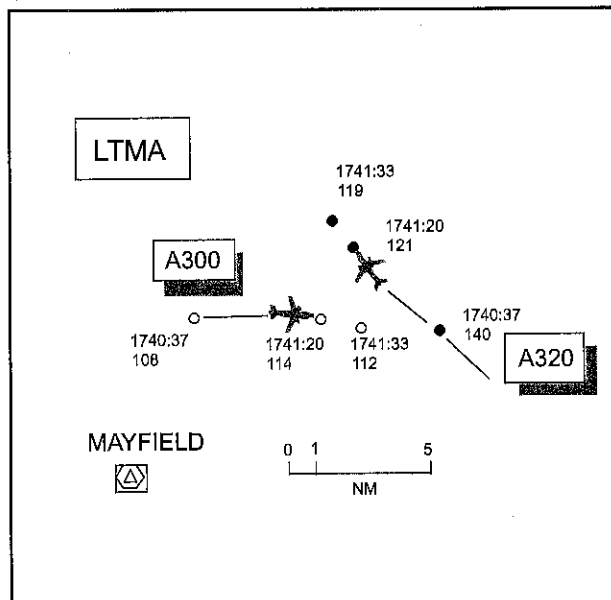
## AIRPROX (P) REPORT No 155/98

Date/Time: 15 Dec 1741 NIGHT  
Position: N5107 E0019 (20 NM E Gatwick)  
Airspace: LTMA (Class: A)  
Reporting Aircraft Reported Aircraft  
Type: Airbus A300 Airbus A320  
Operator: CAT CAT  
Alt/FL: ↑ FL 130 ↓ FL 80  
Weather IMC  
Reported separation: 2-3 NM/300 ft  
Recorded separation: 3 NM/700 ft

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE A300 PILOT** reports that having departed from Gatwick on a WIZAD 4M SID, he was instructed to head E and climb to FL 110 (note: the RT transcript shows that the pilot was cleared to and acknowledged FL 120). On changing to the next frequency he was further cleared to FL 170, which was almost immediately amended to FL 130. When passing through about FL 120, a TCAS TA signalled traffic at his 12 o'clock descending at a range of about 8 NM. Assuming that the cause of the TA might be his own high rate of climb, he reduced it [by using the autopilot vertical speed function]. On informing ATC of the situation, he was advised that the other ac had 'bust its level'. No instructions were passed either to him or the pilot of the other ac. ATCAS RA then cautioned "monitor vertical speed", by which time the other ac was 3 NM ahead of him and still apparently on a reciprocal heading; being unsure of what it might do, he disconnected the autopilot and made an immediate R turn in avoidance. At no time did he see the other ac, but TCAS indicated that it passed down his port side 2 - 3 NM away and 300 ft above. He felt there had been a very high risk of collision.

**THE A320 PILOT** reports that he was unaware until some weeks later that he had been involved in an incident. He recalls that he had been given and read back a clearance to descend to FL 80 by LATCC. Passing about FL 115 he was asked to confirm his passing level;



when he replied with this information, the controller told him he was cleared only to FL 140 and instructed him to climb back to that level. He acknowledged but was immediately instructed to continue his descent to FL 80. No further comment was made on the frequency; however, after landing he was informed by a Company dispatcher that ATC had advised him of their intention to check the recording of the RT exchanges between ATC and the pilots.

**ATSI** reports that the LATCC TC SE SC was operating the sector in a banded configuration which was in the process of being split; a Co-ordinator was providing assistance. The traffic loading was described as increasing in complexity and workload increasing from moderate.

The A320, from Paris Charles de Gaulle to London Heathrow, called the LATCC TC SE SC at 1736:40, descending to the agreed sector inbound level of FL 160. The SC immediately responded by instructing the ac to descend to FL 80, which was the lowest level available to him in the BIGGIN stack. The controller could recall absolutely no reason whatsoever for giving this instruction as it ran completely counter to the standard way in which he usually managed the sector. He said that it is his practice, when operating the sector banded, to descend Heathrow BIGGIN inbounds to FL

140 which retains separation against inbounds through TANET at FL 130 and allows climb of the outbounds to FL 120. It was also noted that he wrote FL 140 on the FPS of the A320.

The A300, from Gatwick to Bahrain, reported on the sector frequency at 1740:10 on a radar heading and climbing to FL 120. This ac had taken off on a WIZAD SID in order to expedite departure from Gatwick which involved a L turn after take off instead of the normal R turn for DOVER VOR. The nature of this route necessitates an early climb to avoid conflicting with the TIMBA stack or tracking outside CAS and so the TC SE co-ordinator had assigned an outbound level of FL 120 to the ac once it was airborne. The first response of the SC to the ac was to instruct it to climb to FL 170 and adjust the radar heading, but this was immediately countermanded with an instruction to climb to FL 130. At 1741:00 the pilot of the A300 reported that he had stopped the climb due to a TCAS warning. The controller acknowledged and responded that he thought the other ac had 'bust its level' but was now to the L at 3 miles and going away. The pilot then said, at 1741:15, that he was "*levelling off and climbing*" to which the controller responded with an instruction to climb to FL 170. Neither the STCA nor the SMF was triggered at LATCC.

The pilot of the A300 filed an Airprox on the basis of his TCAS information. The first time the controller became aware that an ATC error had occurred was at the local investigation after the event.

Note: A Picture of the LATCC radar at 1740:37 shows the A300 heading E 9 NM NNE of the Mayfield VOR and climbing through FL 108 with the A320 about to cross its track from R to L at a range of 14 NM and descending through FL 140 on a NW track. At 1741:20, the A300 has reached FL 114 with the A320 at its 0930 position at 3 NM descending through FL 121 and tracking away. Shortly afterwards the A300 is seen to commence a slow turn to the R. Minimum separation distances are calculated to be in the order of 3 NM and 700 ft.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs and a report from the appropriate ATC authority.

An ATCO member familiar with TC operations said that the TC SE SC was evidently coming under increasing pressure owing to the build up of traffic and it might have been prudent to split the frequency sooner. He commented that the outbound routeing given to the A300 was a relatively infrequent occurrence, which meant that the controller received the ac later and considerably further S than would usually be the case.

It was evident that once the SC had erroneously cleared the inbound ac to FL 80, but correctly annotated FL 140 on the FPS, there was nothing on the FPS display which could alert him to his error. Indeed, his instruction to the A300 pilot when he called on the frequency some 4 min later to climb to FL 170, but quickly corrected to FL 130, clearly reflected the controller's conviction that he had cleared the A320 to descend only to FL 140. Consequently, when the climbing A300 pilot reported a TCAS warning, the SC's immediate reaction was that the A320 had 'bust its level' (descended below the cleared level of FL 140). The SC was unable to explain his action and, as this was clearly a human factors issue which was outside the scope of the Board's expertise, members could offer no advice on how the error could be avoided in future. The Board concluded that the LATCC TC SE SC had caused the Airprox by descending the inbound A320 into conflict with the departing A300. Noting that minimum radar separation distances were in the order of 3 NM/700 ft, members assessed that there had not been a risk of collision.

An ATSI member pointed out that TCAS is inaccurate in azimuth and its use is not permitted to resolve perceived conflicts in the lateral plane. The A300 pilot's decision to turn R based on TCAS bearing information,

without visual verification, was therefore incorrect as such action could have put the ac

into conflict with other traffic unknown to him at a similar level.

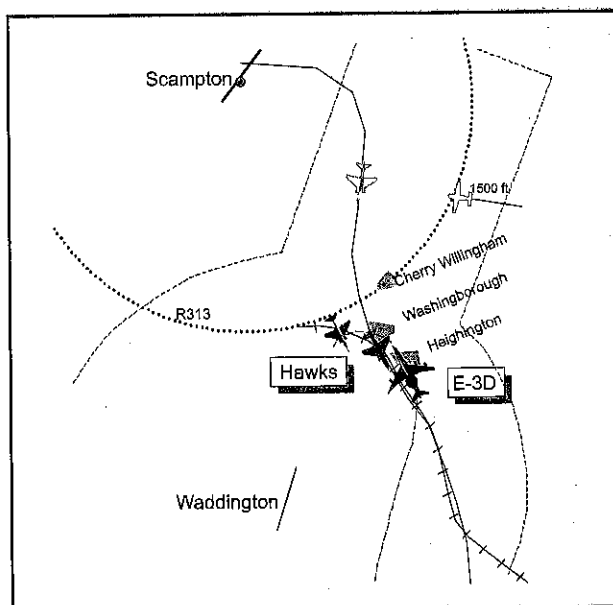
### PART C: ASSESSMENT OF RISK AND CAUSE

Degree of Risk: C

Cause: The LATCC TC SE SC descended the A320 into conflict with the A300.

### AIRPROX (P) REPORT No 156/98

Date/Time: 18 Dec 1429  
Position: N5312 W0027 (4 NM NE of Waddington - elev 231 ft)  
Airspace: MATZ (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: E3D Sentry Hawk x 2  
Operator: HQ STC HQ PTC  
Alt/FL: 700 ft ↓ 500 ft  
(QFE) (QFE)  
Weather VMC CLBC VMC CLBC  
Visibility: 50 km 10 km+  
Reported Separation: 200 ft/500 ft  
Recorded Separation: 500 ft



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE SENTRY PILOT** reports heading 300° at 155 kt descending through 700 ft in a LH final turn for RW 21 at Waddington. He saw 2 Hawks less than 0.25 NM head-on and slightly below which he first thought were 2 lights in Lincoln. One Hawk gave a short burst of smoke. Both passed directly beneath by 200 ft as he turned and climbed to maintain separation; his ability in this respect was limited by his speed and configuration. He had not been warned about the traffic and there had been a moderate risk of collision. R313 had been briefed pre-flight as inactive for a 3 week period but before flight ATC had advised him that R313 had become active.

**THE HAWK PILOT** reports heading 170° at 360 kt leading a pair recovering to Cranwell from

R313 having been advised on the RAFAT frequency by Waddington that there was an E3D in their circuit. He saw it before leaving R313 and followed the FOB LL route back to Cranwell at 500 ft as agreed with Waddington. Having the E3D in sight he did not deviate and flew slightly W of it as it neared the end of its downwind leg, releasing some smoke to indicate his presence as he was on a different frequency. He considered there was no risk of collision as there was 500 ft of separation both vertically and horizontally and he was in visual contact throughout.

**HQ MATO** reports that due to an equipment malfunction, information from the Waddington Radar Approach position could not be obtained. The Sentry was on the Tower (TWR) freq 388.22 and the 2 Hawks of the RAFAT were

operating in R313 and receiving a RIS from Waddington Approach (APP) on the RAFAT discrete freq 125.35. R313 was not originally programmed for use by RAFAT until 6 Jan 99, however Cranwell ATC informed the Waddington Supervisor (SUP) during the morning of 18 Dec that R313 would be utilised that day by RAFAT. Whilst passing his sortie details to ATC, the Sentry Captain was told by SUP that ATC would negotiate instrument approaches to RW 21 with RAFAT, should this be required.

Due to the presence of the Sentry in the visual circuit and a Bulldog in the PAR pattern at 1500 ft QFE, APP informed the Hawks that their return transit to Cranwell should be at 500 ft when they passed their "2 minutes to completion" call. At 1425:20 APP informed ADC by landline "...Reds are 2 minutes, 500 ft transit", which was acknowledged. The Sentry pilot then reported finals and was cleared to roll at 1428:00. During this period, the Hawks commenced their return transit through the Waddington MATZ to base. They were informed of the position of a Bulldog on PAR and, once clear of that ac, were updated on the position of the Sentry (12 o'clock at 3 NM) to which they reported visual. At 1428:13, APP informed ADC by landline "Reds coming through the centreline, 500 ft, visual with the 'D'". At exactly the same time, the Sentry pilot transmitted "...what's the aircraft coming underneath us now? Seems like the Arrows going home without telling anybody", followed at 1428:22 by "...that's almost an air incident there". With nothing else to affect them, APP then transferred the Hawks to Cranwell, where they landed at 1433. The Sentry continued to operate in the visual circuit, landing at 1530. After landing, the Sentry captain telephoned SUP and stated that he was unhappy that the Hawks had been so close to his ac at a critical stage of flight. After speaking to the Hawk pilot, the Sentry Captain telephoned the Waddington ATCO IC at 1620 and stated that he was filing an Airprox.

This Airprox is shown on the Claxby radar recording 3.3 NM NE of Waddington. There appears to be a discrepancy of 97 seconds

between the radar timing (1429:50) and the RT timing (1428:13). The Hawk section is shown squawking 7003 (Red Arrows transit/display), without Mode C, tracking S, then turning SE as they pass through the RW 21 centreline at 4 NM. At 1429:30 the Sentry is tracking 020°T, squawking 3622 at 1400 ft Mode C (1013 mb) starting its finals turn when about 2 NM downwind. The Bulldog is on a left base heading at 7 NM, maintaining 1800 ft Mode C with the Hawks having already passed 2.5 NM ahead. The closest point of approach recorded is at 1429:50, with the Sentry established in the final turn and the Hawk section 0.3 NM WNW. At this point, the Mode C of the Sentry still indicates 1400 ft, equating to 1040 ft QFE 1001 mb ( $\pm 100$  ft) and appears to remain level for one further radar sweep (7 sec later) before a descent is observed. No deviation from the anticipated course is observed by either track.

There is a substantial Letter of Agreement (LoA) between Waddington and Cranwell defining the ATC co-ordination procedures between the Units and specifically, RAFAT operations from Cranwell, which includes the promulgated routes to/from R313. The return route crossed the Waddington MATZ on a southerly track, passing 3 NM E of the airfield, with the ac crossing the extended centreline of RW 21 at about 6 NM. There was no guidance given however, as to how close to the routes the ac must fly. On this occasion, the Hawks flew about 1 NM closer to the Waddington airfield than promulgated and in the opposite direction to the first half of the Sentry's finals turn. It is possible that the Hawks' chosen route had been selected in order to remain clear of the Bulldog on PAR. APP complied fully with the LoA by selecting an appropriate height for the transit and passed accurate traffic information to the Hawk section leader, resulting in visual acquisition of the Sentry and thus a technically safe transit. By omitting to transmit details of the MATZ crossing, contrary to the normal MATZ crossing procedures, ADC left the Sentry crew unaware of the presence of the Hawks until the pilot saw the Hawks' nose lights. Following this Airprox, guidelines have been issued to all controllers to ensure compliance with the LoA, and the importance of following

the correct MATZ crossing procedures has been highlighted. Additionally, the LoA route provided minimal lateral separation from a Sentry turning finals to RW 21 and it has been modified to ensure that RAFAT ac do not underfly ac in the Waddington visual circuit, but pass to the E of or above them.

**HQ STC** comments that the standard route followed by the RAFAT clearly provided insufficient separation from an E3D turning finals to RW 21 and RAF Waddington has, as a result of this Airprox, instigated a review of procedures. The omission of an information call from the ADC to the E3D captain concerning the approaching Hawks may be deemed a contributory factor in this Airprox. Indeed, such a call would have alerted the captain, who quite naturally at this point in the circuit pattern had assumed a degree of immunity to conflicting traffic. However, it is disappointing that after an early visual acquisition, the Hawk leader reduced the separation between his formation and the E3D to such a degree so as to cause the latter's captain significant concern.

**HQ PTC** comments that this report might not have been filed had either ADC warned the E3D that the Hawks were about to underfly him in visual contact or had the Hawks stuck more closely to the promulgated route. Despite these 2 factors the procedure failed safe by virtue of its VFR limitation and the transit height allocated to the pair. Moreover, the radar recording tends to support a greater vertical separation than the E3D pilot's assessment; he appears to have maintained his downwind height rather than to have climbed in avoidance. Since this incident RAFC Cranwell and RAF Waddington have agreed a new transit procedure to ensure that there is no conflict with the wider

circuit of the E3D. They have also made it clear that FJ pilots must be more considerate to the vulnerability of those flying less manoeuvrable ac. But, most crucially, sound co-ordination between controllers is worthless unless it is passed to the traffic concerned.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the UKAB included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, and reports from the appropriate ATC and operating authorities.

The Board agreed that the actions taken to modify the LoA should make a recurrence of this type of incident less likely. Members agreed that the Sentry pilot had every right to expect traffic information on the Hawks about to penetrate the MATZ and that part of the cause of the incident was that ADC inexplicably did not pass on APP's warning to the E3D pilot. The Hawks flew an inconsiderate path through the airspace the Sentry pilot would have used during his final turn, causing him to delay his descent on finals in avoidance; the Bulldog at 1500 ft could not have been a sufficient reason for the Hawks to have flown where they did and the Board agreed that part of the cause of the incident was that the Hawk pilots flew sufficiently close to the E3D to cause its pilot concern for the safety of his ac.

Members agreed that each party to the incident had seen the other in time to ensure that there was no risk of the ac actually colliding.

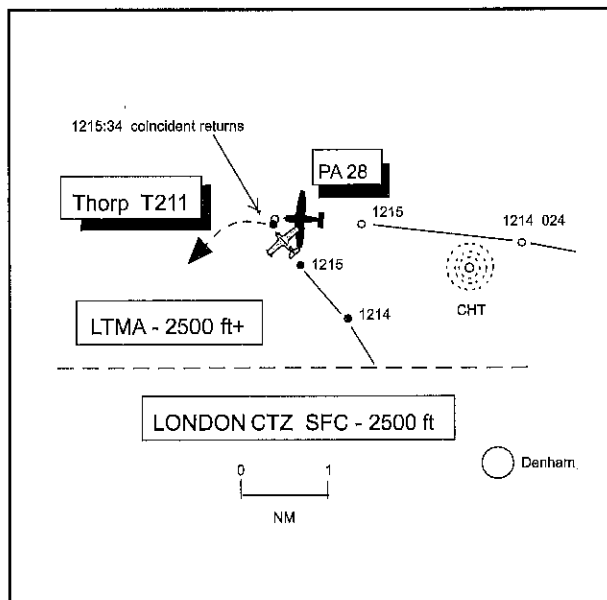
## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C:

*Cause:* ADC did not pass traffic information on the Hawks to the Sentry pilot and the Hawk pilots flew sufficiently close to the Sentry to cause its pilot concern for the safety of his ac.

**AIRPROX (P) REPORT No 158/98**

Date/Time: 19 Dec 1215 (Saturday)  
Position: N5138 W0125 (3.75 NM NW Denham - elev 249 ft)  
Airspace: FIR (Class: G)  
Reporting Aircraft Reported Aircraft  
Type: Thorp T211 PA28 Arrow 3  
Operator: Civ Pte Civ Pte  
Alt/FL: 2300 ft ↑ 2250 ft (QNH 1013 mb)  
Weather VMC VMC  
Visibility: 30 km good  
Reported separation: 150 ft lat/0 ft vert - Not seen  
Recorded separation: Estimated 100 m lat



**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE THORP T211 PILOT** reports that he was receiving a FIS (this point is discussed in Part B) from Denham radio on 130.72 while conducting a local flight to the NW of Denham in VMC. The visibility, between cloud layers, was about 30 km. When heading 330° at 80 kt and climbing through 2300 ft (QNH 1013) about 4 NM NW of the airfield, he saw the other ac, a Piper Arrow, 100 - 150 ft away to the R heading W at the same level having approached from his 4.30 position; he was able to read its registration. He immediately banked hard L, climbing about 300 ft to avoid the other ac's wake. He thought there had been a very high risk of collision. The pilot comments that vision to the rear from the cockpit of this ac is limited. Being familiar with the airspace around Denham and knowing how congested it is, he always tries to maintain a careful lookout. However, on this occasion the other ac had approached unseen from behind him and he could not understand why its pilot had not seen him.

**THE PA28 PILOT** reports that he was heading W at 175 kt and cruising at 2250 ft (QNH) on the return leg of a local flight to the E from Wycombe Air Park. He is an experienced pilot and flies this route frequently, calling Denham

for traffic information as he tracks N of the CHT NDB, and then Thames Radar for a radar information service. He vaguely recalled being advised of an ac climbing out by Denham and on reflection believed he would probably have been looking out for it more towards the departure/crosswind leg of RW 24 at Denham and below him, rather than at the same altitude as himself. As some time had passed since the incident he was unable to remember details with certainty. Neither he nor his passenger can remember seeing the other ac despite a careful lookout.

**THE OPERATIONS MANAGER** at Denham, who was also the air/ground operator on the day in question, reports that the PA28 was in contact with Denham Radio while transiting from E to W via the CHT NDB at 2300 ft en route to Wycombe. Records show that the Thorp departed from Denham at 1210. At about the same time, the PA28 pilot reported abeam the airfield to the N and changing frequency to Wycombe, which was acknowledged. At about 1213 the Thorp pilot reported a very close encounter with another ac, though the description he gave did not appear to fit the PA28. However, a pilot from the Denham School of Flying, who was airborne in the vicinity at the time, reported seeing a PA28 Arrow cross the CHT NDB travelling W a short time before the Thorp pilot reported an Airprox.

Note (1): A replay of the Heathrow radar at 1214 shows a return, believed to be the PA28, tracking W about 0.75 NM ENE of the CHT NDB and indicating 2400 ft Mode C. At the same time a primary only return, believed to be the Thorp, can be seen tracking NW about 2.5 NM W of Denham. At 1215:34, the returns almost merge 3.75 NM NW of Denham as the Thorp makes a sharp L turn and the PA28 passes to the N of it indicating 2300 ft Mode C. Lateral separation is difficult to measure but the tracks observed are just separated and indicate a slightly greater distance than that estimated by the Thorp pilot, probably in the order of 100 m. The Thorp's return then fades for a few sweeps of the radar, reappearing at 1216:23 well behind the PA28 having apparently resumed its original course.

Note (2): In a subsequent telephone conversation with UKAB staff, the Thorp pilot said that although his ac was equipped with SSR, including Mode C, it had been giving problems on a previous flight so he had not switched it on. He does not recall being passed any information about the other ac but was aware from RT exchanges he heard between Denham a/g and another pilot that an ac was transiting the area from the E, and he was looking out for this. Visibility to the R from the LHS was limited by a passenger in the RHS and the ac's cockpit configuration which did not lend itself to good rearward vision. The other ac, an Arrow, appeared suddenly to his R and about to pass through his 12 o'clock at the same level, having approached from his R rear quarter. He immediately banked hard L and climbed in avoidance; visual contact was momentarily lost in the turn but quickly regained. Being in such a small ac, he had been anxious to avoid the Arrow's prop-wash which he is sure he would have encountered had he made a R avoiding turn.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included reports from the pilots of both ac and a radar video recording.

Noting that the Thorp pilot reported receiving a FIS from Denham, GA members pointed out that such a service is not available from an air/ground station. However, by monitoring the Denham RT transmissions the pilot was evidently aware of westbound traffic routing through the area and was apparently looking for this. Given the good reported visibility, members thought he ought to have been able to spot the Arrow during clearing turns in the climb but he did not see it until the last minute and only just in time to take avoiding action. Members assessed his late sighting was a part cause of the Airprox.

Although the Thorp did not strictly have right of way under the Rules of the Air, members observed that there was an overtaking element in the geometry of the encounter which shifted some of the onus for avoiding action onto the PA28 pilot. In the circumstances, and allowing for the restricted vision from the Thorp's cockpit, it was felt the PA28 pilot was in a better position from a visual aspect to have seen the Thorp in good time to avoid it. But he did not and his non-sighting was assessed also to be part of the cause.

Turning to risk, members noted 3 points: the Thorp pilot's estimate of separation, his concern about possible wake turbulence and that he was able to read the Arrow's registration. Furthermore, being unseen by the other pilot, only the Thorp pilot's actions could resolve the confliction. Members agreed that all these factors indicated there had been a possible risk of collision.

## **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* B

*Cause:* Non-sighting by the PA28 pilot and a late sighting by the Thorp pilot.



## AIRPROX (P) REPORT No 159/98

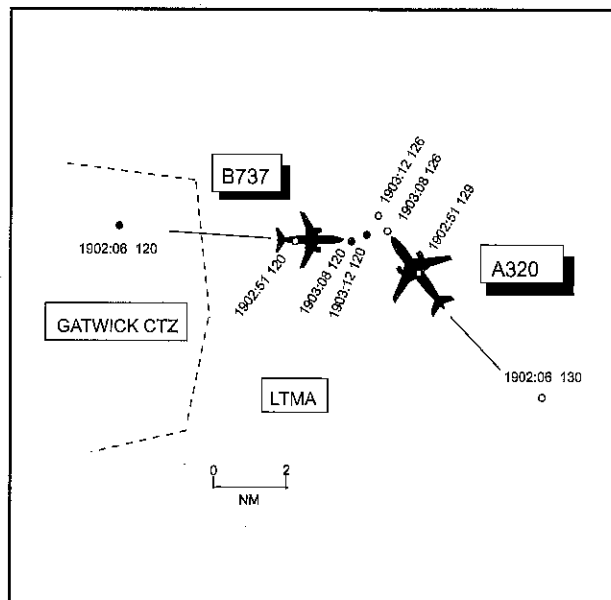
**Date/Time:** 22 Dec 1905 NIGHT  
**Position:** N5111 E0011 (10.75 NM SSE Biggin VOR)  
**Airspace:** LTMA (Class: A)  
**Reporting Aircraft** **Reported Aircraft**  
**Type:** B737-300 Airbus A320  
**Operator:** CAT CAT  
**Alt/FL:** FL120 ↓ FL 100  
**Weather** VMC  
**Visibility:** >10 km  
**Reported separation:** 0.25 NM/600 ft  
**Recorded separation:** 0.5 NM/600 ft

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE B737 PILOT** reports that he was level heading E to SE at 280 kt having been cleared to FL 120 by LATCC on 120.52 following departure from Heathrow for Frankfurt. He noticed, from his TCAS, another ac descending within 1000 ft of his ac. He pointed this out to his FO whereupon they both acquired the traffic visually and kept it in sight. A TCAS TA followed indicating traffic 800 ft above and then, as the other ac passed through their 12 o'clock about 0.25 NM away and 600 ft above, a TCAS RA instructed 'monitor vertical speed'. Although he was ready to turn R, action was unnecessary as the ac was now seen to be clear of them and appeared to be descending at about 500 ft per min. He queried the situation with ATC and they advised him that the error had been caused by controller confusion. The pilot comments that but for TCAS and the clear weather conditions he would not have been any the wiser about the encounter.

**THE AIRBUS PILOT** was not aware at the time that an incident had occurred and therefore did not submit a report.

**ATSI** reports that the Airprox occurred in Class A airspace of the LTMA about 5 NM S of the BIGGIN VOR. The LATCC TC SE sector was operating in the split mode with one controller managing all LTMA inbound ac on TC TIMBA position (TC SE INs), and another controller



managing all LTMA outbound ac on the TC BIGGIN position (TC SE DEPs). All ATC equipment relevant to the task was serviceable and both controllers, who were very experienced, reported that they felt adequately rested. Traffic loading and workload was reported as heavy. RT transmissions were between 10 and 15 per minute plus a heavy co-ordination workload in the region of the stacks and where inbound and outbound tracks cross. The Group Supervisor had offered the TC DEPs controller a reduction in the outbound flow rates but he did not consider it necessary with the sector operating in the split mode. However, having selected that modus operandi, which necessitated working in common airspace, the key to its success required both controllers to work as a team. In this respect, they felt that they had been working well, with no difficulties.

One of the TC DEPs controller's tasks is to control Heathrow departures routeing via Dover. The TC DEPs controller is required to climb such ac to the Standing Agreement level of FL 170 and transfer the ac to the Area Control Dover Sector. If the TC DEPs controller elects to route the ac between the Biggin and Timba stacks, in order to expedite climb, the routeing will take the ac in the region of the Gatwick RW 26 final approach track heading in an easterly direction. This unfortunately means that the SSR labels of the outbound ac garble

with the labels of ac on approach to Gatwick. Inhibiting a climb profile is not considered ideal by controllers because of difficulties which can be encountered further down route in the region of the Detling and Dover VORs. A practice therefore exists whereby the two controllers can initially agree on climb/descent levels (say FL 120 for the outbound and FL 130 for the inbound) to ensure that vertical separation is maintained until the ac tracks have crossed. This requires co-ordination between the controllers for individual ac.

Much of the TC SE INs controller's task is to control ac inbound to Gatwick towards the Timba stack and ac inbound to Heathrow towards the Biggin stack, co-ordinating their descent against ac being climbed by the TC SE DEPs controller.

There is a requirement in the MATS Part 2 (SEA 1-4, para 4.2.1.) placed on the TC SE DEPs controller that, until E of the Biggin holding area, any climb above 6000 ft must be co-ordinated with TC SE IN. However, both controllers stated that it is routine practice to co-ordinate all ac climbing or descending in the area S of Biggin. Such co-ordination is necessary because the controllers are operating side by side on separate radar consoles and with separate FPS displays. However, these co-ordinations are carried out face to face and no automatic recording is carried out. They should be manually recorded on the relevant FPS, which has the added human factor benefit of manipulation, thus assisting in retention in the memory.

The A320, inbound to London Heathrow from Paris, called the TC SE INs controller at 1855:00 descending to FL 160. At 1859:20 it was cleared to FL 130, and at 1902:20 to FL 100. The B737 pilot, outbound from Heathrow to Frankfurt, called the TC SE DEPs controller turning L from the departure RW at 1856:30; he was instructed to maintain 6000 ft and informed that there was no ATC speed restriction. At 1857:20 the pilot was instructed to leave Epsom on a heading of 135°, this being to position the ac away from traffic in the Biggin stack, and at 1858:10 the flight was instructed to climb to FL

120. At 1900:30 the pilot reported approaching FL 120; he was instructed to maintain that level and to turn L onto a heading of 110° which was to start the ac heading in the direction of Dover and to keep it clear of the Gatwick Timba stack. At 1903:20, following a couple of minor heading changes, the pilot confirmed that he was maintaining FL 120 and reported a contact passing ahead of him; he asked ATC whether it was descending. No mention was made of the source of this information but, on receipt of the pilot's Air Safety Report, it was confirmed as a TCAS TA which the pilot had used to assist a visual sighting. As the Airbus passed through the B737's 12 o'clock position within 600 ft vertical separation, the TA changed to an RA. The TC DEPs controller responded that he would try and come up with an explanation for the conflict, but that the flight should maintain FL 120 because the other traffic was now clear of him. At 1904:20 the controller instructed the B737 pilot to climb to FL 170 and, on transferring the ac to the next sector at 1905:10, informed him that there had been a misunderstanding of co-ordination on the sector.

Both controllers felt that, although the traffic and RT loading was high, they had not had any specific difficulties and could offer no explanation as to how the breakdown in their process, which resulted in the incident, could have happened. The TC SE DEPs controller was convinced that he had co-ordinated a higher level (FL 120) for the B737 as the ac departed Epsom on a heading at approximately 1858. The TC SE INs controller could not recall such co-ordination and believed therefore that he was entitled to descend the Airbus to FL 100 into the Biggin stack, this being the lowest level available and on top of a Gatwick departure routeing to Clacton and climbing to FL 090. In the period prior to the incident he had been attending to traffic in the Timba stack. With these contradictory recollections of whether any co-ordinations took place it has been impossible to determine the actual course of events. However, it should be noted that no record of the co-ordination had been kept on the FPSs on either side. The TC SE INs controller stated that he felt the process of co-

ordinating crossing inbound and outbound ac was not as watertight as it could be and that a more standard form of words should be used which specified the level and an agreement, for example "FL 120 - agreed".

An analysis of the STCA functionality during the incident was carried out as both controllers expressed surprise that the warning had gone straight to red without a preliminary white indication; the equipment was assessed to be functioning normally. The reason for the short notice was that both ac were level and separated vertically until close to each other laterally. When the Airbus commenced its descent, the alert started when the two ac were within 2 NM and 600 ft of each other, thus triggering an immediate high severity alert. The minimum recorded separation was 0.51 NM laterally and 500 ft vertically.

Note: A Picture of the LATCC radar at 1902:06 shows the ac as they converge on a position about 11 NM SSE of the BIG VOR. The B737 is tracking E 8 NM ENE of Gatwick indicating FL 120 Mode C with the Airbus at its 1 o'clock range 11 NM tracking NW, indicating FL 130 and descending. At 1903:08 the Airbus has just crossed 1 NM ahead of the B737, 600 ft above, and 4 sec later, at 1903:12, the ac pass port to port by 0.5 NM; vertical separation remains at 600 ft.

## **PART B: SUMMARY OF THE UKAB'S DISCUSSIONS**

Information available to the Board included a report from the pilot of the reporting ac, transcripts of the relevant RT frequencies, radar photographs and a report from the appropriate ATC authority.

The Board quickly established that the Airprox occurred as a result of a breakdown in co-ordination between the TC SE DEPs and the TC SE INs controllers. Both were controlling traffic in the same block of airspace which required constant co-ordination between them. Members were advised that the onus for initiating co-ordination lay with the DEPs

controller. Although there is no formal or technical method for the automatic recording of these co-ordinations, either on-line or off-line, there is a requirement under the LATCC MATS Pt 2 for co-ordination to be recorded on the FPS using appropriate co-ordination symbols. The controllers concerned could not explain why this was not done on this occasion. In the absence of such a record, and as both controllers had a different recollection of events, each convinced they had negotiated an agreement concerning their allocated levels, it was not possible to determine precisely where the breakdown between them had occurred.

ATCO members experienced in TC operations commented that this block of airspace is one of the busiest areas in the London TMA and at times co-ordination transactions between the two adjacently situated controllers could be occurring several times a minute. The situation can be extremely dynamic with inbound and outbound levels being co-ordinated for ac on an individual basis. On this occasion the Sector had been split into its separate frequencies and both controllers considered they were functioning well as a team. ATCO members said that often the transaction rate could increase to a point where little or no time was available to record co-ordination agreements on the FPS. However, this did not appear to be a factor on this occasion as the controllers concerned did not feel they were working under any undue pressure. As an additional complication, it was pointed out that the outbound route used places ac on the Gatwick RW 26 final approach track where SSR labels become garbled with those of ac on approach to Gatwick making all unreadable; this considerably reduces the chance of one or both of the TC SE controllers observing a mistake in time to correct it before the outbound ac crosses the inbound track to the Biggin hold.

Members acknowledged these factors but remained concerned that an incident of this nature could have arisen as a result of inadequate co-ordination. The board was advised that audio and visual methods of verifying co-ordination had been researched and tested following incidents in the past but

these were found to be unworkable or impracticable for a variety of reasons. It is understood that LATCC management are examining co-ordination procedures following their own investigation of this incident and Director UKAB indicated that he would write

informally to LATCC asking to be kept informed of developments.

The Board noted that radar separation at the time the acs' paths crossed was in the order of 1 NM and 600 ft and concluded that there had not been a risk of collision.

### **PART C: ASSESSMENT OF RISK AND CAUSE**

*Degree of Risk:* C

*Cause:* A breakdown in co-ordination between the LATCC TC DEPs and the LATCC TC INs controllers allowed the B737 and the A320 to come into conflict.

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1c/98	9 Jan	B737/Learjet	4 NM NE Luton Airport	B	22
15c/98	13 Jan	BAe146/ATP	15 NM E Prestwick	C	25
3c/98	20 Jan	A320/Canadair Regional Jet (CRJ)	11 NM NE Mayfield VOR	C	27
20c/98	25 Jan	B757/B737	15 NM WSW TALLA	C	30
26c/98	30 Jan	BAe146/Lockheed L188 Electra	Coventry Airport	C	33
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54/98	26 May	Jetstream/A320 Airbus	6 NM SE Cardiff airport	C	88
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67/98	24 Jun	C421/C404	1 NM W Blackpool airport	A	124
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73/98	8 Jul	Tornado GR/Motor Falke	3 NM SW of Daventry	C	150
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75/98	15 Jul	Microlight/Tornado F3	Eshott airfield	C	154
76/98	15 Jul	Viking glider/PA28	0.5 NM NW of Wethersfield	B	155
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77/98	16 Jul	RANS S6/Tornado GR	1 NM N of Eshott	C	161
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91/98	29 Jul	Tornado F3/Rallye MS880	4 NM W of Coningsby	B	205
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98/98	2 Aug	Parachutist/Untraced Glider	Dunkeswell	C	210
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41c/98	14 Aug	A340/B737	10 NM E Detling	C	233
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24c/98	16 Aug	PA22/Microlight	Fenland Airfield	C	237
32c/98	18 Aug	B767/B747	46°03'.2" N 11°38'.6" W	C	239
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116/98	11 Sep	MD11(A) / MD11(B) / B767	N4815 W1900 (550 NM W of Brest)	C	272
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121/98	17 Sep	Jaguar / Squirrel	N5714 W0530 (Loch Duich)	C	281
119/98	22 Sep	S76 / Schweizer 300	N5241 E0118 Norwich Airport	C	283
120/98	22 Sep	DA20 Falcon / Tornado GR	N5506 W0154 8 NM NW of Newcastle	B	286
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123/98	25 Sep	PA 28 / PA 28	N5126 0017E (10 NM NE Biggin)	C	291
52c/98	27 Sep	B747 / B747	Near 55°N 10°W FL350	C	292
124/98	30 Sep	Bae 146 / C 425	N5119 0037E (1 NM NE Detling VOR)	C	298
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129/98	9 Oct	Microlight/Tornado GR	N5308 W0053 (4 NM NW of Newark)	C	312
128/98	10 Oct	C152/PA23 Aztec	N5135 W0051 2.5 NM Wycombe Airpark	A	314
39c/98	13 Oct	A320/B757	2nm West of London Heathrow Airport	C	316
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132/98	14 Oct	B737/MD83	N5119 W0006 (5 NM W BIG VOR)	C	320
53c/98	15 Oct	B767/B737	7nm East of Mayfield	C	322
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29c/98	24 Oct	B747/B777	7nm North East of Gatwick	C	332
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137/98	3 Nov	Jetstream/Saab 340	N5306 W0212 (3 NM S CONGA)	C	338
136/98	6 Nov	Tornado GR/Slingsby T61	N5247 W0149 (2.5 NM SW Tatenhill)	A	340
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139/98	9 Nov	Tornado GR/R22 B	N5216 W0140 (3 NM WSW Warwick)	A	343
138/98	11 Nov	Tornado GR/Bulldog	N5254 W0023 (14 NM NE Cottesmore)	B	345
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149/98	5 Dec	LS4 glider/C152	N5143 W0219 (1 NM W Nympsfield)	A	364
54c/98	8 Dec	Jetstream 41/SD360	12nm SW of Edinburgh Airport	C	366
44c/98	9 Dec	HS125/C560	5nm South East of Mayfield	C	370
151/98	11 Dec	JetRanger/Tornado GR	N5458 W0202 (2 NM E of Hexham)	A	372
152/98	11 Dec	Tornado GR/Untraced light ac	N5422 W0116 (10 NM NNE of Topcliff)	C	374
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154/98	14 Dec	Shorts 360/Mooney M20J	N5405 W0430 (4 NM Ronaldsway airport)	C	377
155/98	15 Dec	Airbus A300/Airbus A320	N5107 E0019 (20 NM E Gatwick)	C	379
156/98	18 Dec	E3D Sentry/Hawk x 2	N5312 W0027 (4 NM NE of Waddington)	C	381
158/98	19 Dec	Thorp T211/PA28 Arrow 3	N5138 W0125 (3.75 NM NW Denham)	B	384
159/98	22 Dec	B737/Airbus A320	N5111 E0011 (10.75 NM SSE Biggin VOR)	C	388