

## **AIRPROX REPORT No 2013149**

Date/Time: 10 Oct 2013 1009Z

Position: 5606N 00550W  
(30nm north-northeast of Islay)

Airspace: Scottish FIR (Class: G)

Reporting Ac Reported Ac

Type: BN2T Defender Mirage 2000

Operator: HQ AAC Foreign Mil

Alt/FL: 700ft NK  
RPS (1029hPa)

Conditions: VMC NK

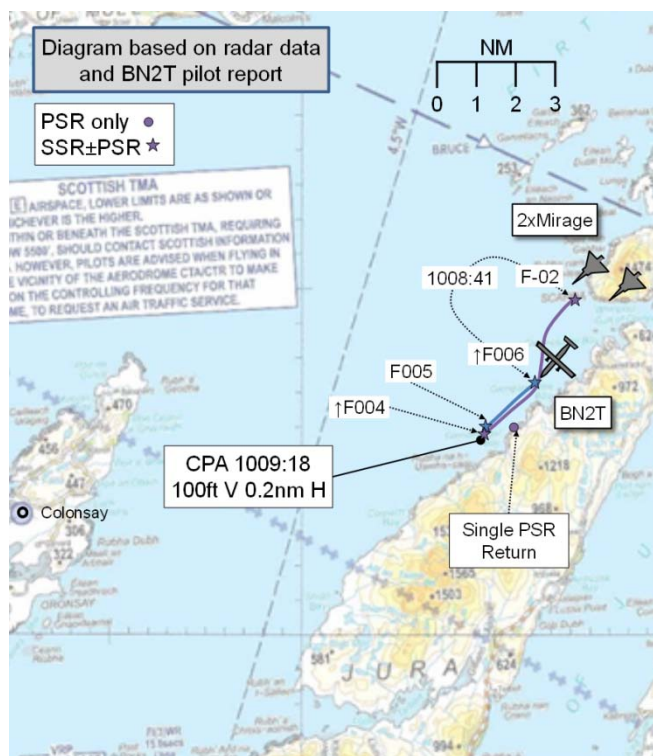
Visibility: 10km NK

Reported Separation:

200ft V/0ft H NK

Recorded Separation:

100ft V/0.2nm H



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

**THE BN2T PILOT** reports conducting a solo navigation exercise to the north of Islay, under a Basic Service from Scottish Information. He was flying VFR, tracking southwest, 10km from cloud, at 700ft (RPS 1029hPa) with transponder Modes 3/A, C and S turned on and the strobe and navigation lights selected. He received a TCAS<sup>1</sup> Traffic Alert on an aircraft '200ft directly below' followed shortly afterwards by a second Traffic Alert indicating that the other aircraft was 100ft below him. He climbed and rolled to the left so that he could check behind his aircraft. He then saw a 'Mirage 3000' pass around 200ft below him 'at high speed'; the BN2T pilot, aware that fast-jets usually operate in formations, continued to climb looking for the 'wing-man', and shortly afterwards spotted another Mirage, which passed above him and to his left. The pilot of the BN2T attempted to make the Scottish Information FISO aware of the Airprox but reports that communications were difficult, although he believed that the FISO had understood his message.

He assessed the risk of collision as 'Medium'.

**THE LEEMING FLIGHT SAFETY OFFICER** reports, on behalf of the Mirage 2000 pilots, that they were operating from Leeming as part of Exercise Joint Warrior but did not see any other aircraft in the area of the Airprox and were, therefore, unable to offer any amplifying comments.

They did not assess the risk of collision.

[**UKAB Note:** Subsequent to the Board's assessment of this Airprox, the Mirage pilots reported that they had initially believed the Airprox had occurred on a different day and that they had, in fact seen the BN2T. Although it is not clear which ATC unit they were in contact with, the pilots reported that they received Traffic Information on the BN2T, achieved visual contact with it, and rocked their wings in acknowledgement as they overtook it. The Mirage crews did not consider that flight safety had been jeopardised.]

<sup>1</sup> Traffic Alerting and Collision Avoidance System

## Factual Background

The weather at Prestwick at 0950 was recorded as:

METAR EGPK 100950Z 33006KT 9999 FEW016 09/03 Q1028

The Airprox location was 5606N 00550W; there were several NOTAMS issued in support of Exercise Joint Warrior, with exercise activity itself (i.e. not including transit flights) promulgated as taking place no further south than 5740N:

### H4945/13

NOTAMN PROPOSAL EGGN

A) EGPX

B) 1310070001

C) 1310171600

E) MIXED FORMATIONS OF ROTARY AND FIXED WING ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES WI AREA BOUNDED BY 580000N 0055000W 580000N 0053000W 574000N 0053000W 574000N 0055000W 580000N 0055000W (LOCH EWE, HIGHLANDS) IN SUPPORT OF EXERCISE JOINT WARRIOR 132. THE MAJORITY OF MANOEUVRES WILL BE BELOW 5000FT AMSL AND ACFT MAY NOT BE ABLE TO COMPLY WITH RAC. MILITARY ACFT ARE NOT TO ENTER CONTROLLED AIRSPACE UNLESS CLEARED BY AN APPROPRIATE CONTROLLING AUTHORITY OR UTILISING AN ACTIVE TRA. NO AIRSPACE RESTRICTIONS ARE IN PLACE FOR GAT. AIP SUPPLEMENT 035/2013 REFERS. CTC 01436 674321 EXTENSION 4409.

F) SFC

G) FL245

### H4946/13

NOTAMN PROPOSAL EGGN

A) EGPX

B) 1310070001

C) 1310171600

E) MIXED FORMATIONS OF ROTARY AND FIXED WING ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES WI AREA BOUNDED BY 584000N 0045000W 584000N 0043000W 582000N 0043000W 582000N 0045000W 584000N 0045000W (LOCH ERIBOLL, HIGHLANDS) IN SUPPORT OF EXERCISE JOINT WARRIOR 132. THE MAJORITY OF MANOEUVRES WILL BE BELOW 5000FT AMSL AND ACFT MAY NOT BE ABLE TO COMPLY WITH RAC. MILITARY ACFT ARE NOT TO ENTER CONTROLLED AIRSPACE UNLESS CLEARED BY AN APPROPRIATE CONTROLLING AUTHORITY OR UTILISING AN ACTIVE TRA. NO AIRSPACE RESTRICTIONS ARE IN PLACE FOR GAT. AIP SUPPLEMENT 035/2013 REFERS. CTC 01436 674321 EXTENSION 4409.

F) SFC

G) FL245

## Analysis and Investigation

**NATS Safety Investigations** reports that the BN2T was on a navigation exercise, receiving a Basic Service from the Scottish Information FISO. During the flight, the pilot stated that he was at 1000ft, 10nm east of Colonsay, and had had a relatively close encounter with two Mirage 2000's at low-level. The pilot asked if Scottish Information knew if the Mirages were remaining in the area and the FISO replied that the traffic was not known and gave generic information on the Joint Warrior exercise, which was in progress at the time. The FISO also passed advice that the BN2T pilot should keep a very good lookout. No declaration of an Airprox was received by the FISO whilst the pilot was on frequency, and notification of the Airprox was subsequently received from the NATS UKAB representative.

### CAA ATSI

The BN2T was conducting a navigational exercise in VMC and was in receipt of a Basic Service from Scottish Information. The BN2T was transponding Mode A code 7401, which is allocated to Scottish Information. [Code 7401 converts to 'SFIS' on the surveillance replay.]

It was noted that whilst Prestwick Multi Radar Tracking (MRT) did show the encounter, the resolution of the event was erratic and inconclusive. Therefore, the Tiree radar has been used for the purpose of this analysis.

The BN2T pilot's route was almost entirely within Prestwick Centre West Coast Sector airspace (see Figure 1). The letter 'A' on Figure 1 indicates that area within which services from Scottish Information are designated<sup>2</sup>.

The Scottish FIR sector provides a Basic Service without the aid of surveillance equipment. A Flight Information Display is available for FISO awareness and infringement prevention purposes; Unit procedures are published to allow FISOs to warn aircraft of any unusual activity noticed on the Flight Information Display. The procedures contain explicit definitions and phraseology for such situations. ATSI note that the short-notice presence of the fast moving Mirages in the vicinity of the BN2T falls outside the permitted scope of warning that FISOs may derive from their Flight Information Display.

Details of the BN2T were passed by Aldergrove to Prestwick Centre Support at 0908 UTC. Aldergrove reported that they had attempted to transfer the BN2T to Campbeltown, however the pilot had requested transfer to 'Scottish'. The BN2T pilot called Scottish Information at 0910:18 and, once the FISO had received and assimilated all the details, a Basic Service was agreed. There were no further exchanges between Scottish Information and the BN2T pilot until 1013.

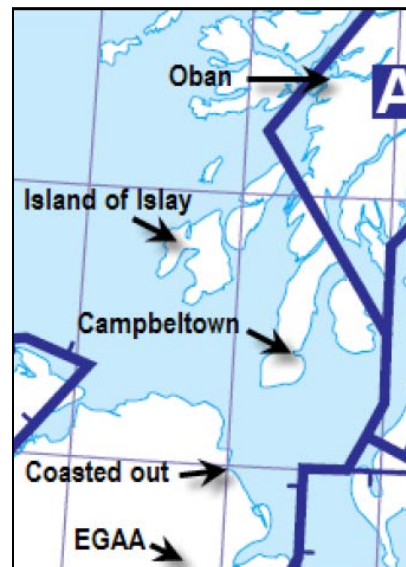


Figure 1: Extract from UK AIP ENR 6-2-0-2

At 1008:25 the BN2T was 30nm north-northeast of Islay aerodrome on a southwesterly track at FL005 (Figure 2). [The prevailing Islay QNH was 1029hPa; FL005 converts to altitude 932ft]. At this time an SSR return from the Mirages first appears 5.3nm behind the BN2T.

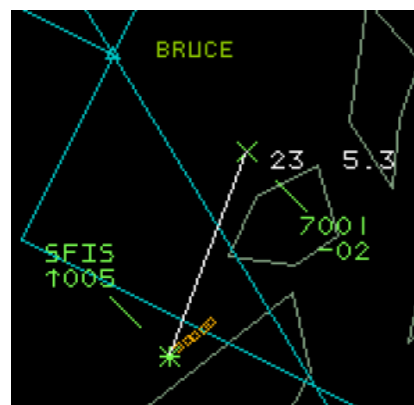


Figure 2: Tiree Radar at 1008:25

The Mirages continued on a south-southwesterly track at high speed before appearing to overtake the BN2T (Figure 3). Minimum recorded distance at 1009:13 was 0.3NM/200ft. The Mirages then pulled ahead before disappearing from surveillance coverage to the southeast.



Figure 3: Tiree Radar at 1009:13

At 1013:20 the BN2T pilot reported to Scottish Information, "currently at 1000 feet 1028 er just to the about er 10 miles east of Colonsay erm just had a er relatively close encounter with two I believe Mirages 3000s er they were low level in the area are they er supposed to be remaining in this area." Scottish Information responded to the pilot, stating that the traffic was unknown, but due to the ongoing military exercise traffic could be encountered anywhere. The pilot was instructed to keep a good look-out. An Airprox was not reported on the RTF. The BN2T transferred back to Aldergrove ATC at 1036.

Prestwick Centre investigations noted that there were various NOTAMs issued in support of the military exercise, with notified activity apparently taking place no further

<sup>2</sup> UK AIP, ENR 6-2-0-2

south than 5740N. The encounter between the Mirages and the BN2T took place at 5606N 00549W. There was one NOTAM concerning GPS jamming as part of the exercise, which appeared to indicate more widespread activity may be possible.

The BN2T pilot was in receipt of a Basic Service from Scottish Information; pilots should not expect any form of traffic information from a FISO, as there is no such obligation placed on the FISO under a Basic Service outside an ATZ, and the pilot remains responsible for collision avoidance at all times.

In this low-level encounter the quick appearance and disappearance of the two Mirages from surveillance coverage would have limited any form of warning even if a radar controller had been providing surveillance derived services. ATSI also noted that prior to the encounter the BN2T's radar return had also been erratic.

## UKAB Secretariat

As the Mirages were overtaking, the BN2T had right of way and the Mirages were required to keep out of its way by altering course to the right.<sup>3</sup>

## Comments

[**UKAB Note:** The following Operating Authority comments were made prior to the updated information being received from the Mirage pilots. The comments are retained for completeness but should be interpreted in light of the fact that the Mirage pilots had reportedly seen the BN2T after all, and presumably perceived that their separation was adequate as they flew past.]

### HQ Air Command

Whilst Ex JOINT WARRIOR airspace was NOTAM'd to the north, this does not imply that all associated traffic would remain inside. Indeed, the airspace in the region of the Airprox was available to all users, including fast-jet traffic, whether Exercise participants or not. On this occasion, the decision by the BN2T crew to fly a navex below 2000' agl/amsl put it in the height-band used by fast jets for low level training. Whilst the onus was on the Mirage captains to avoid the BN2T as they overtook it, they cannot avoid what they do not see/detect; they reported no sighting of other ac in the area. Overall, this Airprox appears to have occurred due to ineffective lookout from the fast-jet captains and a decision by the BN2T captain to train in a height band routinely used by high-speed traffic.

### AAC

Given the close proximity of the event, it seems almost inconceivable that the French Mirage aircraft failed to see the AAC Defender. Ultimately the event happened in uncontrolled Class G airspace in good weather conditions, although the NOTAMs circulated in support of the exercise suggested that no military air traffic supporting Ex Joint Warrior would be operating in the area of conflict. Thankfully the Defender aircraft has TCAS fitted, which gave the pilot prior notice of fast moving traffic in the vicinity and provided him with additional situational awareness.

## Summary

The Airprox occurred at low-level in Class G airspace, 30nm north-northeast of Islay aerodrome when two Mirage aircraft rapidly overtook a BN2T which was being flown on a navigational exercise. Prevailing conditions were VMC, and the BN2T received a TAS warning of the Mirages' presence. No warning was available from Scottish Information as a non-surveillance based Basic Service was being provided. The NOTAMs in force appeared not to indicate military exercise activity in the area of the Airprox but it would not have prevented the Mirages from operating outside the nominal NOTAM

<sup>3</sup> Rules of the Air, 2007, Rule 11, Overtaking, as reflected in RA2703

area anyway during their transits to or from the Exercise. The BN2T pilot reports seeing the Mirages as they passed above and below him, and the Mirage pilots originally reported that they did not see the BN2T but updated information indicated that they had seen it after all.

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

Information available included reports from the pilot of the BN2T and confirmation from the Mirage pilots that they had not seen anything, transcripts of the relevant RT frequencies, radar photographs/video recordings, and reports from the appropriate ATC and operating authorities.

Members were informed that the Mirage pilots had been correctly authorised for their sortie, including the low-level sections, as had the BN2T pilot; all of the pilots were entitled to carry out their respective activities in the areas in which they were flying. However, due to the BN2T's speed, its pilot was not required to book in to the UKLFS<sup>4</sup> and therefore he would not have had the opportunity to access information on other aircraft also planning to low-fly in his planned operating area. Given the reduced warning times that can be experienced at low-level, the Board expressed their surprise that some military aircraft (those flying below 140kts) intending to operate at low-level were not formally required to notify their intentions to do so and thereby provide an opportunity for themselves and others to deconflict. Furthermore, the Board was informed that, at the time of the Airprox, none of the pilots had access to CADS<sup>5</sup> because the system was still in its implementation phase. CADS is now fully implemented, and has become a mandatory element of military flight planning; consequently, all military pilots will now have access to each other's' plans during their pre-flight planning, and this will assist in providing situational awareness of all aircraft operating at low-level in future.

With regard to the BN2T's pilot, the Board agreed that his actions following the TCAS alert showed commendable awareness in that, having climbed away from the threat and having seen the first Mirage, he continued searching for the second fast-jet even though he had no indication of its presence. Notwithstanding, some members opined that given the extensively NOTAM'd exercise activity further to the north, the BN2T pilot might reasonably have expected increased low-level traffic flows in the adjacent areas, and may have been better served by electing to fly his sortie either in another area or by avoiding the altitude band used by low-flying fast-jets. Finally, with regard to the provision of ATS, it was opined that rather than attempting to use Scottish Information for a service, the BN2T pilot may have been able to obtain a Traffic Service from Scottish West Coast, who have radar coverage in that area. However, it was accepted that, even so, given the altitudes of all of the aircraft they may still not have been able to provide Traffic Information.

**[UKAB Note:** Prior to the submission of the additional information from the Mirage pilots, the Board had originally agreed that the cause of the Airprox was a non-sighting by the Mirage 2000 pilots and that, whilst this was clearly a close encounter where safety margins had been much below the normal, the actions of the BN2T pilot had prevented it becoming worse. They originally agreed that the degree of risk was B. However, with the new information, it was clear that the cause could not have been a non-sighting and so key Board members were consulted ex-committee to offer their updated assessment. They unanimously agreed that, if the Mirage crews had indeed seen then BN2T, then they had flown closer than was normally acceptable given the different speeds and flight characteristics of the two aircraft types, and that they had not complied with the Rules of the Air in that they did not keep sufficiently clear of the BN2T whilst over-taking it. Therefore, they determined that the cause was that the Mirage pilots had flown into conflict with the BN2T. It was agreed that safety margins had still been much reduced below normal, and that the degree of risk was still B, but, because the Mirage pilots had seen the BN2T prior to passing it, the ERC score was reduced from an original assessment of 20 (the visual lookout barrier had previously been thought to be non-effective) to one of 4 because it seemed that visual lookout had in fact been effective after all.]

<sup>4</sup> The military UK Low-Flying System (UKLFS) does not require aircraft that are operating below 140kts to book into the UKLFS.

<sup>5</sup> Centralised Aviation Data Service- a system allowing participating pilots to compare their routing with other participating pilots' planned routes.

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

Amended Cause: The Mirage 2000 pilots flew into conflict with the BN2T.

Amended Degree of Risk: B.

Amended ERC Score<sup>6</sup>: 4.

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<sup>6</sup> Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.