

AIRCRAFT INCIDENT REPORT

**Report by the UK Airprox Board into the incident between aircraft
TF-ELC and Hawk at 5500 feet 22 nm southeast of Prestwick
Airport, Scotland on 30 July 2003**

M-04103/AIG-25



This investigation was carried out in accordance with Annex 13 (Aircraft Accident and Incident investigation) to the Convention on International Civil Aviation. The aim of aircraft accident investigation is solely to identify mistakes and/or deficiencies capable of undermining flight safety, whether contributing factors or not to the accident in question, and to prevent further occurrences of similar cause(s). It is not up to the investigation authority to determine or divide blame or responsibility. This report shall not be used for purposes other than preventive ones.

AIRPROX REPORT No 118/03

Date/Time: 30 Jul 1248

Position: 5515 N 00400 W
(22nm SE Prestwick)

Airspace: Scottish TMA
(Class: D Base FL55)

Reporter: Prestwick

	<u>First Aircraft</u>	<u>Second Aircraft</u>
<u>Type:</u>	B737-300	Hawk
<u>Operator:</u>	CAT	HQ STC
<u>Alt/FL:</u>	6000ft (QNH 1016 mb)	↑6500ft (RPS 1012 mb)

Weather IMC IMC

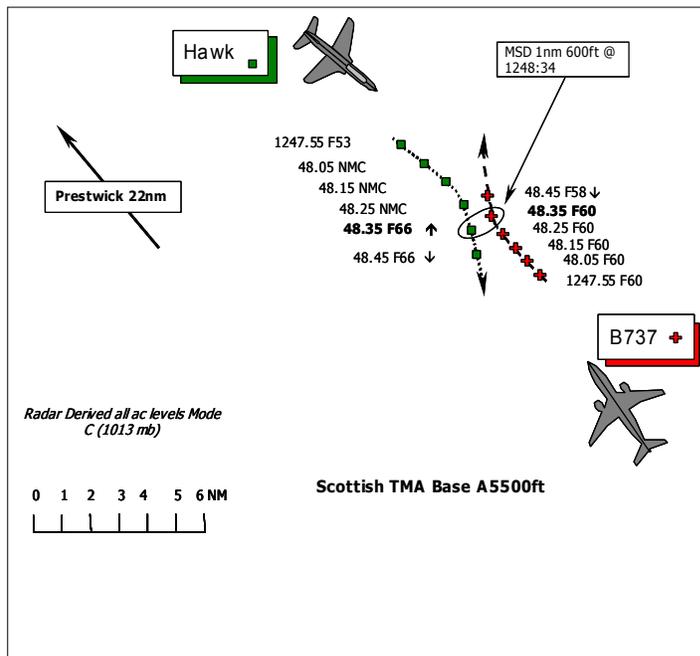
Visibility: IMC IMC

Reported Separation:

N/R N/R

Recorded Separation:

1nm H 600ft V



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PRESTWICK APR CONTROLLER reports that a military Hawk ac climbed into CAS of the Scottish TMA 22nm SE of Prestwick and into conflict with a B737 inbound IFR to Prestwick. Following transfer from ScACC the B737 was being radar vectored for an ILS approach to RW31. His descent was stopped at 6000ft Alt to remain inside the Scottish TMA and TI was passed on 4 low level contacts manoeuvring approx 15nm ahead up to 3000ft displaying squawks of 2632/2633/7000/7001. The B737 was turned left on to a heading of 320° to route to the W of the contacts, 2 of which at this stage were heading NE and the other 2 appeared to be joining up, he thought to follow the others to NE; he subsequently updated the TI. Shortly after the ac squawking 7000 was seen on radar ½ nm to the W of the B737 at FL66. (UKAB Note (1): Radar software converts Mode C heights to FL above transition altitude based on local QNH). The B737 pilot was given an avoiding action turn right on to a heading of 360° as the traffic passed down his left hand side. TI was again passed and the pilot reported a TCAS RA to descend, and that he was IMC. The ac squawking 7000 continued on a southerly direction descending and rejoined with others who were heading E. Following the incident he requested Scottish Military Radar to trace the ac.

THE B737-300 PILOT reports that he was at about 25nm SE of, and inbound to, Prestwick IFR and IMC and with strobes and landing lights switched on and was receiving radar vectors from Prestwick APR. While heading 330° at 230kt in the descent to 6000ft on a QNH of 1016 he was given an avoiding action turn on to 360°. Shortly after, he had a TCAS RA to descend which he complied with, descending to 5500ft before the warning cleared. He reported the descent to Prestwick and was cleared to continue with further radar vectoring inbound.

THE HAWK PILOT reports that he was flying a singleton Hawk ac in LFA 16 intercepting a formation of 3 Jaguars with a student WSO in the rear seat with HISLs selected on, squawking 7000 with Mode C. The weather at low level although showery was assessed as suitable for the exercise. He had carried out a number of intercepts on the Jaguars in the 10min preceding the Airprox, all of which were commenced from an altitude of approximately 4000ft, with a descent to low level during the final stages of the attack. The cloud structure at medium level had allowed him to maintain VMC below 5000ft amsl, albeit having to avoid scattered cloud formations that appeared to extend above. For the northernmost leg of the Jaguars' route he descended to 2000ft agl, beneath the base of the Scottish TMA which is 5500ft amsl. He engaged the formation at position N5523 W00415 at low level, and then disengaged on a heading of 150 degrees. Shortly after the engagement he was forced to abort from low level, due to poor weather on the hilltops. Whilst fully aware of the proximity of the base of the TMA, he estimated that he would regain VMC at approximately 4000ft agl, however passing the Safety Altitude of 4000ft heading 150° at 300kt, he was still IMC in dark, thick and turbulent cloud. Before reaching the base of the TMA he considered levelling off, but decided to maintain his climb in order to minimise the risk of losing control of the ac whilst carrying out a disorientating manoeuvre in very poor weather conditions. He regained VMC at 6000ft, and continued to head 150 deg in order to clear the TMA, levelling off at 6500ft. He estimated that he had cleared the TMA before he had time to squawk emergency and call Scottish Military on Guard. Shortly after clearing the TMA he descended back to low level and continued the sortie. While at 6500ft he maintained VMC and did not see any other ac.

STATION COMMENTS it is clear from the Hawk pilot's statement that a transgression into CAS occurred. Furthermore, it is highly likely that such an action would alert TCAS and generate an avoidance manoeuvre. The key issues are: why did the transgression occur and were the subsequent actions correct?

Given his assessment of the weather at the time of the incident, it is understandable that a low-level abort was preferred over a manoeuvre at low-level in poor weather and high terrain. Clearly, the assessment of the weather was over-optimistic, and a greater safety margin should have been applied; the unit concerned has already taken corrective action. That said, having found himself in an unexpectedly disorientating situation, the pilot acted correctly in continuing to climb and 'fly the ac'.

Turning to his subsequent actions on finding himself in clear conditions inside CAS, we need to establish the relative merits of selecting an emergency squawk or concentrating on clearing his flightpath and expeditiously returning to Class G airspace. The pilot elected to take the latter course of action. Given the time available and envisaged coordination and communication difficulties, especially those inherent with the Hawk's avionics fit, his decision may have been justified.

ATSI reports that there were no apparent ATC causal factors. The B737 was at 6000ft inside Class D CAS where the base is 5500ft. TI was passed to the B737 about the traffic manoeuvring ahead and below 3000ft. The Lowther Hill Radar recording shows one of the unknown ac suddenly appearing at FL63, in an area where other SSR labels were overlapping. Shortly afterwards, an appropriate avoiding action right turn was issued by the Prestwick APR Controller, as the unknown was showing FL65 about 2nm away. Vertical separation was 600ft as the ac passed.

UKAB Note (2): The recording of the Glasgow Radar shows the Hawk return appearing slightly earlier than the Lowther Hill Radar at 1257:53 at FL53 in the 12 o'clock of the B737 at about 7nm. The combined closing speed of the ac was 530kt or about 1nm every 7sec. The CPA occurred at 1248.34 with the Hawk passing 1nm SW of the B737 on an opposite heading 600ft above his Alt. Although imprecise due to the lack of accurate height information of the Hawk it is probable that it passed through the B737's Alt, just left of its 12 o'clock, at about 1248:16 when the ac would have been separated by a little over 3nm.

HQ STC comments that the pilot of the Hawk was faced with a serious dilemma. Should he take his chances amongst the high ground in IMC or take a 'big-sky theory' gamble within the Scottish TMA. The fact that he had self-induced this pressure through over-optimistic decision-making has been thoroughly covered. Apart from flying his ac the requirement to squawk emergency (one switch selection on the Hawk) should have been his primary aim once above safety altitude. At the very least he should have remained predictable and spoken to Scottish Military to explain his transgression and not just continued his sortie.

HQ STC commends the prompt action of the Prestwick APR Controller by vectoring the B737 that almost certainly helped avert a very close encounter. Also, the value of TCAS has again been proven in this incident.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available 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.

Military Board members considered in the first instance that pilots with sufficient experience to gain an 'aggressor' qualification should be able to exercise better judgement in assessing the weather and not get themselves into situations where escape options are severely restricted, as this pilot did.

Having weather aborted, there was insufficient space between the Safety Alt and the base of CAS to allow him to arrest his rate of climb safely without penetrating the TMA. That said, he should have, as is taught for and practised in, the military Instrument Rating Test, squawked emergency and contacted ATC as soon as it was safe to do so. By not doing so, he compromised the safety of his own ac and that of the B737 by not immediately drawing the attention of the controller to his situation and allowing the latter to take early action to deconflict the two ac. As it was, the controller spotted the Hawk's intrusion into CAS and issued avoiding action very quickly, but due to its rate of climb, the Hawk passed through the B737's level (in its 12 to 11 o'clock at a range calculated to be approx 4nm) and continued its climb to 600ft above the B737's alt, before descending behind it. All of this was done with the Hawk pilot not being aware of the B737's position and while flying in IMC.

Owing to the lateral separation between the ac when the Hawk flew on an opposing track through the B737's alt and because it remained 600ft above until after they had crossed, the Board concluded that there had not been a risk of their colliding. However, separation had been below that required in CAS, to the extent that there had been compromise to the safety of both ac.

The Board concurred HQ STC's commendation of the prompt action of the Prestwick APP Controller.

Conversely Members found some of the comments put forward by the Hawk pilot's Station, in supporting the pilot's chosen course of action, as disappointing. They accepted however, the HQ STC representative's assurance that Strike Command did not in any way condone such transgressions into CAS and that the station concerned had been reminded that they cannot be excused and directed crews to be informed accordingly.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: While conducting a weather abort from low level, the Hawk pilot climbed into CAS in IMC into conflict with the B737, which he did not see.

Degree of Risk: B