AIRPROX REPORT No 2013008

Date/Time: 12 Feb 2013 1335Z

Position: 5602N 00149W (15nm NE SAB VOR)

Airspace: SFIR/OTA E (*Class: G*)

	Reporting Ac	*Reported Ac*
Type:	DA42 TwinStar	FA20 Falcon
Operator:	Civ Comm	Civ Comm
Alt/FL:	FL100 SAS (1013hPa)	FL120 SAS (1013hPa)
Weather:	VMC CLAC	VMC CLAC
Visibility:	>50km	>30km

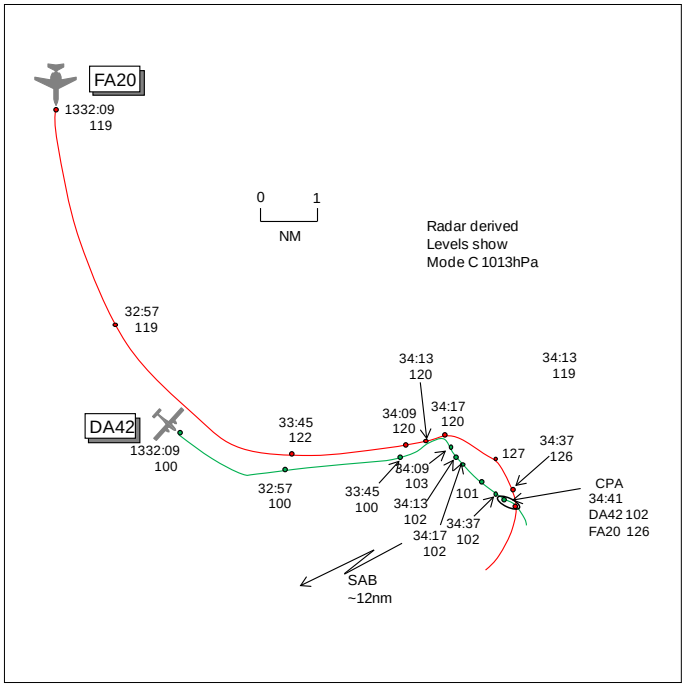
Reported Separation:

<1000ft V/500m H 2000ft V

Recorded Separation:

1700ft V/0·6nm H OR

2300ft V/0·2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DA42 PILOT reports en-route from Wick to Gamston, IFR and in receipt of a DS from Scottish Radar squawking an assigned code with Modes S and C. The visibility was >50km flying clear above cloud in VMC and the ac was coloured white/yellow with strobe lights switched on. The Commander was seated in the RH seat and the AP was engaged. They had planned FL75 for the cruise and requested FL95 once airborne; however, they were subsequently assigned a non-standard FL, FL100, by Aberdeen Radar, the ATSU which they had talked to prior to transfer to Scottish when S of Aberdeen. There was an OVC layer of cloud at 6000-7000ft but above this it was clear. Shortly before passing abeam SAB VOR heading 170° on a direct track to NATEB level at FL100 and 145kt they were given TI on unknown traffic in their 1 o'clock climbing through their level. It was on an opposite direction track and they subsequently became visual with the traffic. The controller gave them a heading to steer to the L in order to stay clear of the traffic and, as they were visual and considered it not to be a threat, they asked to return back onto track which was agreed. The controller advised that the other ac looked as if it was carrying out GH squawking 7000 and that its speed was showing 265kt, all of which was unverified. At this point both crewmembers lost sight of the ac in question behind them and they were informed that it appeared to have turned around and was heading back towards their ac. As a result of this the controller gave them a heading change to the L to remain clear of the traffic, approximately heading 145°. This was updated shortly afterwards with another heading change to the L onto 090°, then 040° and then lastly R 180°. All the while the other ac was behind them and <1000ft above, he thought, and closing. Whilst in the last turn to the R he disengaged the AP as he felt the turn from 040° to 180° required more than the standard AP rate 1. Whilst in this turn he became visual with the other ac, a blue coloured Falcon with pods in a banking R turn <1000ft above and passing 500m away. He remained visual with it from then on until he was certain his ac was completely clear to the S. At no time did he believe the other ac's crew was aware of their presence in proximity to his ac. He assessed the risk as medium.

THE DA42 OPERATOR carried out a review after discussing the incident with the Commander and the Prestwick controller. The incident occurred in Class G airspace about 14nm NE of SAB VOR and there were no NOTAMS issued to affect the flight. The DA42 had been vectored 5 times to avoid the manoeuvring FA20 Falcon and their on board equipment showed gross deviation had been taken by the DA42. He spoke to the Head of Flight Operations of the FA20's company and the following

information was proffered. The FA20 crew was clearing the airspace as part of a military exercise that started in Class G airspace and the crew was busy on the RT to other traffic and were not in receipt of an ATS. The FA20's onboard equipment could not detect the DA42's Mode S transponder code and were unable to deduce the DA42 flight was working Scottish. The manoeuvre was intended to culminate in a wing-waggle flypast and its crew believed that 2000ft vertical separation existed as they passed. He believed that the FA20 operator should review their clearing procedures and offered these possible options:- 1) Fitting better TCAS systems that can resolve squawk codes and from that deduce which ATSU the ac is working; 2) Ensure coordination is effected with at least 1 ATSU either prior to operations or in real time; 3) Ensure verification procedures are less aggressive and therefore not open to misinterpretation; 4) Educate ATSUs on the nature of their actions/capabilities. An internal review within the DA42 Company did not highlight any procedural or operational issue that could have been further applied to mitigate the incident.

THE FA20 PILOT reports flying in OTA E in support of a formation of 3 Tornado ac, operating autonomously on OTA E frequency and squawking 7000 with Modes S and C; TCAS was fitted. The visibility was >30km flying 6000ft above cloud in VMC and the ac was coloured blue with HISLs and nav lights switched on. They arrived in the OTA from the S, descended for a Wx check and then climbed in the vicinity of St Abbs VOR to FL120. They had a TCAS return at 20nm on an ac at FL100 near St Abbs which they avoided and tried to pick it up visually. It became apparent that this contact was proceeding S very slowly through the heart of OTA E and would be a factor in the forthcoming medium-level evasion training that they were about to control. They elected to investigate the contact to ascertain its type so they could include it in their airborne picture for the Tornados. Heading 160° at 250kt they gained visual contact at about 3nm and closed to its OH maintaining FL120 throughout. Having identified the ac as a Diamond TwinStar they turned away to the N back towards St Abbs. At no time did they descend below FL120 giving separation of 2000ft. No calls were heard on UHF Guard or the OTA frequency. Owing to the task in hand, the crew was working on 1xVHF and 2xUHF frequencies and did not have the capacity to contact an ATSU. He assessed the risk as none.

THE FA20 HEAD OF FLIGHT OPERATIONS comments that although a discussion with the DA42 operator took place shortly after the incident, the points raised in their report needed clarification. The FA20 crew was operating in Class G airspace and was not required to be talking to any ATC agency. The Wx was CAVOK and the crew was working 3 frequencies including a frequency which all high-performance military assets use when operating on OTA E. The crew was not clearing the area nor had any remit to do so, they were establishing the level of risk in commencing an exercise involving high-performance military ac in the vicinity of a potential conflict. As the contact was not spurious it allowed the Capt and crew to manage the exercise area so that the risk to the DA42 was minimised. The TCAS onboard enabled the FA20 crew to deconflict perfectly adequately from the DA42; there is no IFF interrogation equipment onboard and the crew would not have been able to identify the agency working the DA42 from its code. The FA20 crew established TCAS contact at 20nm and visual contact at 3nm and once the DA42's track, height and speed been established the crew were better able to ensure that no high-energy manoeuvres occurred in the area. In order to clearly demonstrate that the FA20 crew had seen the DA42 a clear wing-waggle was given. The flight data download revealed that the FA20 was at 12000ft and flew no closer than 1600ft.

THE PRESTWICK TAY TACTICAL/PLANNER CONTROLLER reports operating the Sector bandboxed with low traffic levels. The DA42 was tracking ADN-NATEB at FL100 under a DS when he observed a 7000 squawk tracking N'bound from NATEB at approximately FL120. Initially it looked as if the traffic was passing well to the E of the DA42 and then it descended to low-level and began tracking NW before climbing again. He gave the DA42 flight an early L turn onto 140°, in an attempt to ensure 5nm separation, and TI. The DA42 flight took the turn and then reported visual before asking to continue again towards NATEB so he ascertained that the DA42 pilot was still visual with the traffic and happy to be responsible for his own separation, which was agreed. The traffic passed to the NW and clear of the DA42; however, it then began turning S and tracking towards the DA42, approaching from behind on a similar track and catching owing to the speed differential. He began passing TI and an initial L turn to obtain space then an avoiding action turn to the L onto 040° with continuous TI as the targets closed within 2nm of each other. Further avoiding action onto 180°

and then 270° was given to obtain space between the radar targets; at this point the radar returns were merged and indicating 2000ft Mode C differential on radar (unverified). It was difficult, even when rotating the ac labels, to see which target related to which ac. The DA42 pilot indicated that the other ac was too close and wished to file an Airprox. The controller believed the pilot of the other ac, later traced as a FA20, had showed poor airmanship in pursuing the DA42 in such close proximity.

ATSI reports the Airprox occurred 15nm NE of the St Abbs (SAB) VOR/DME, between a DA42 and a Falcon 20 (FA20).

The DA42 flight was operating IFR on a flight from Wick to Retford/Gamston routeing ADN (Aberdeen) to NATEB and was in receipt of a DS from Scottish Control (TAY sector) on frequency 124.500MHz. The FA20 flight was operating VFR having departed from Durham Tees Valley to participate in a training exercise together with 3 Tornado GR4 ac. The FA20 pilot's written report indicated that the FA20 was to act as the control aircraft for a planned exercise in the 'Operational Training Area (OTA) E' and was listening out on the OTA 'E' and guard frequencies, but was not in receipt of an air traffic control service.

OTA 'E' is a military training area which lies partly over land and sea on the Northumbrian/Scottish coastline. It is not promulgated but forms part of a general training area. Boulmer Fighter Control provides an operational frequency, callsign 'Hotspur,' for participating ac.

The TAY controller had been on sector for 30min and reported traffic levels and complexity as low with no distractions.

CAA ATSI had access to RT recordings of Scottish TAY sector and area radar recordings together with written reports from the controller, ATSU and the pilots of both ac.

The Newcastle and Edinburgh Airport METARS were:

EGNT 121320Z 13005KT 090V160 9999 FEW032 02/M01 Q1018= and EGPH 121320Z 12009KT 040V140 9999 FEW035 03/M02 Q1018=

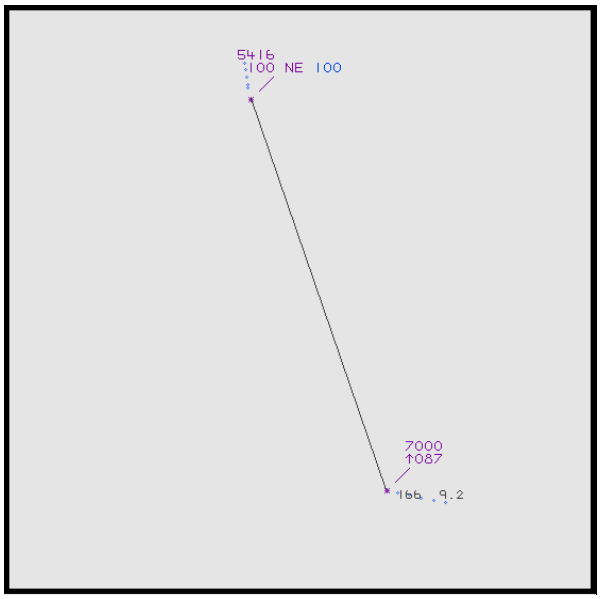
At 1300:35 UTC, the DA42 squawking 5416 passed W abeam the ADN VOR and was coordinated into the TAY sector at FL100, routeing direct to SAB and requesting a DS. The controller advised that the DA42 could route direct to NATEB.

The FA20 having departed from Durham Tees Valley airport, was transferred to Newcastle Radar at 1308:05 on squawk 3760 for a TS whilst in transit.

At 1310:15, the DA42 flight contacted the controller reporting at FL100 routeing direct to NATEB. The DA42 was leaving CAS and a DS was agreed.

At 1315:20, FA20 crew reported happy to go en-route squawking 7000 and the radar service was terminated. The FA20 was 21nm NNE of NATEB leaving FL130 in the descent. At 1323:24, the FA20 faded from radar as it passed through FL007 in the descent, (IAS 326kt). The distance between the 2 ac was 25nm. The FA20 re-appeared on radar at 1324:11, as it passed FL023 in the climb, turning L onto a W'ly track and at 1325:06, was passing FL064 (IAS 210kt) in the DA42's half-past 10 position.

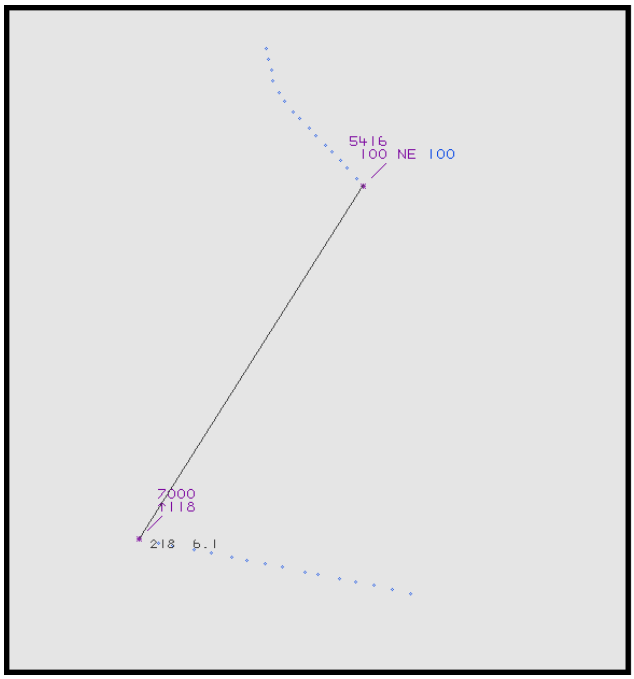
At 1326:02, the controller instructed the DA42 to turn L heading 140° and advised of traffic 11 o'clock at a range of 8nm crossing L to R indicating FL090 unverified (Fig.1).



(Fig.1 – Prestwick MRT - 1326:02.)

The DA42 pilot reported the other traffic in sight at 1326:30, and asked if they could go back on track. The pilot confirmed that he was happy to maintain his own separation from the other traffic, which was going away from them and the controller instructed the DA42 flight to route direct to NATEB.

At 1327:16, the DA42 flight commenced a R turn to resume own navigation for NATEB with the FA20 at FL118 (IAS 220kt) 6·1nm to the SW of the DA42, tracking away (Fig.2).

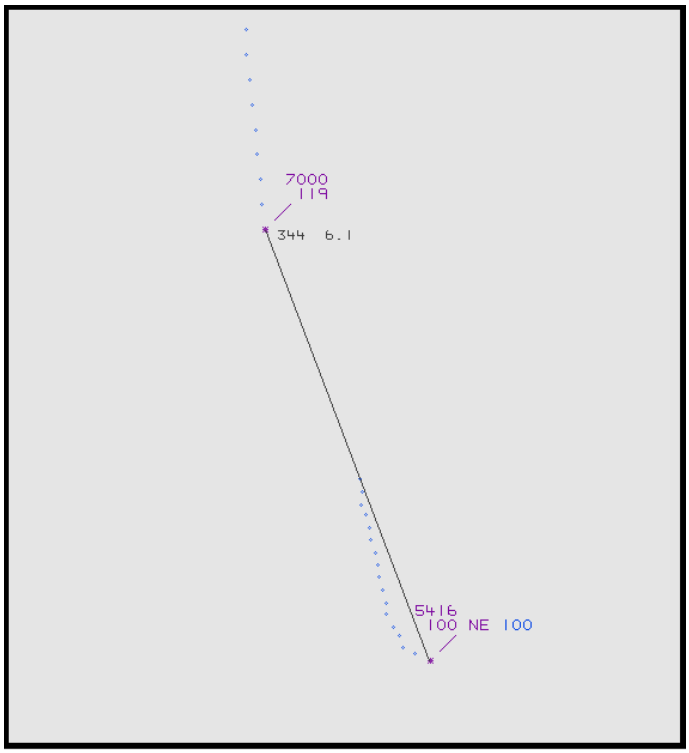


(Figure 2 – Prestwick MRT - 1327:16.)

The FA20 flight commenced a R turn at 1327:52, onto a N'ly track at FL120, passing 7nm W abeam the DA42 at 1328:13.

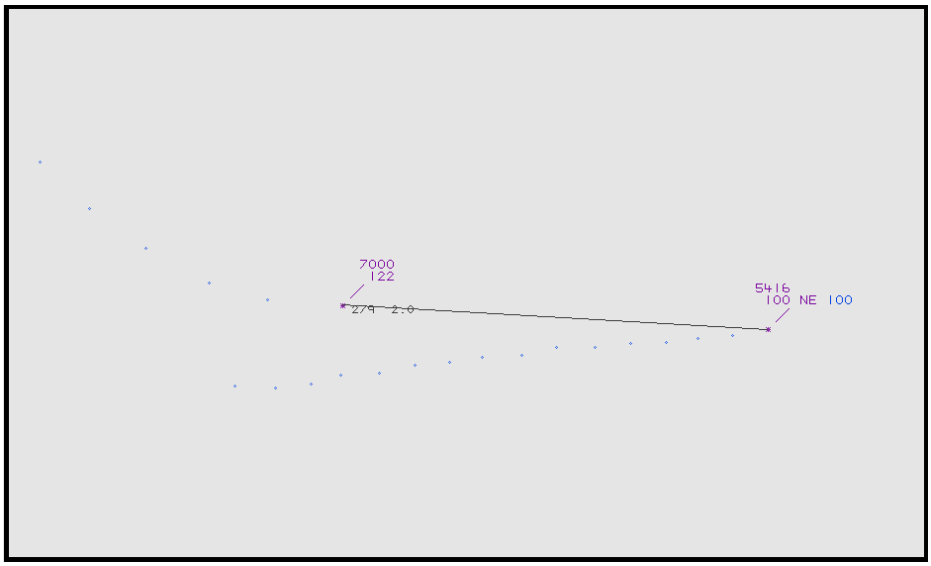
At 1329:28, the FA20 was 10·6nm NW of the DA42 commencing a R turn. The FA20 pilot's written report indicated he had observed a TCAS contact at FL100 routeing south through OTA 'E' and elected to investigate the contact in order to be able to update the GR4 aircraft [not TCAS equipped]. At 1330:30, the FA20 was 10·3nm behind the DA42 at FL119 (IAS 262kt).

At 1331:10, the controller advised the DA42 pilot that the unknown traffic was now in DA42's 6 o'clock, FL120, at a range of 8·4nm and at a faster speed. The DA42 pilot reported that they had lost sight of the other ac and at 1331:26 the controller instructed the DA42 to turn L onto heading 130°. The DA42 pilot asked if ATC knew who the other contact was and the controller responded that there was no way of telling, but it was likely to be military traffic and was indicating a speed of 260kt. The distance between the 2 ac reduced to 5·9nm and at 1332:09 the controller issued avoiding action, *"(DA42 c/s) avoiding action further left turn heading 090 degrees that traffic is currently in your seven o'clock at a range of 5·9 miles indicating FL120 unverified*" (Fig.3).



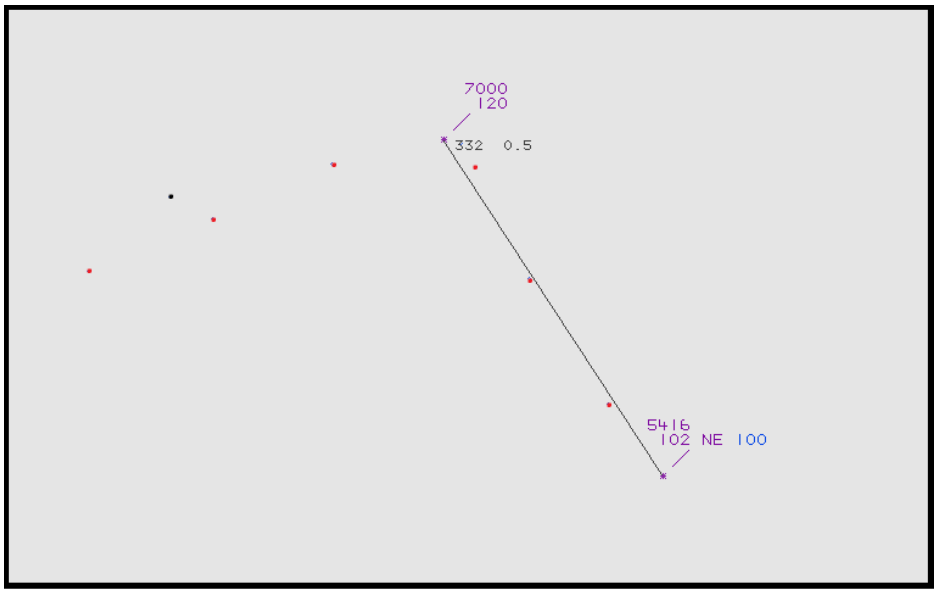
(Fig.3 – Prestwick MRT - 1332:09.)

At 1332:56 the controller updated the TI on the FA20 which was now 7 o'clock at a range of 4nm still indicating FL120 and tracking 170°. The deconfliction minima (5nm/3000ft) were lost at 1332:58. Radar showed the FA20 adjusting its heading to intercept that of the DA42. At 1333:14, the controller updated the TI indicating that the unknown traffic was 7 o'clock at 3nm indicating FL120 and turning towards the DA42. The controller then gave a further avoiding action L turn onto a heading of 040°. This was followed at 1333:44 by another avoiding action R turn onto a heading of 180°, with updated TI on the position of the unknown traffic, 6 o'clock at a range of 1·7nm at FL122 (Fig.4).



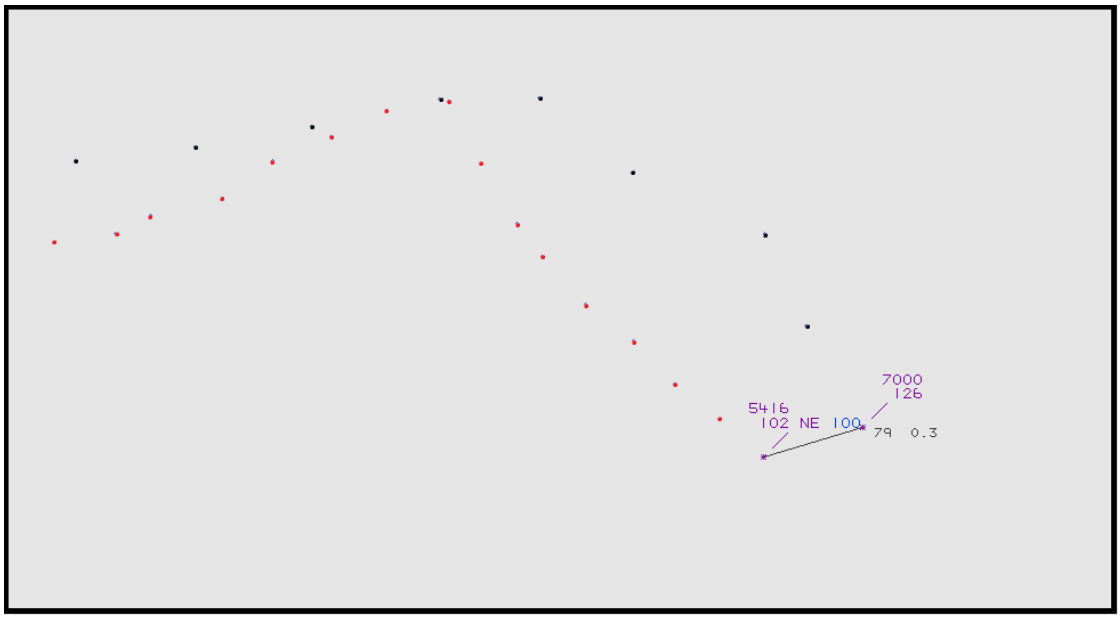
(Figure 4 – Prestwick MRT - 1333:41.)

At 1334:00, the controller passed the DA42 flight further TI on the unknown traffic, at 6 o'clock, 1·2nm indicating FL121 and an indicated airspeed of 250kt. This was acknowledged by the DA42 pilot who then reported the other ac in sight. Between 1334:09 and 1334:13, the minimum vertical distance between the 2 ac was recorded as 1700ft, at 0·8nm and 0·6nm range, respectively.
At 1334:18, the DA42 pilot, (using non-standard phraseology) reported that the other aircraft (FA20) was very close (Fig.5).



(Figure 5 – Prestwick MRT - 1334:17.)

As the FA20 turned R it climbed to FL127 and then descended to FL126. At 1334:38 the controller again issued avoiding action, instructing the DA42 flight to turn R onto heading 270°, reporting that the traffic was now directly above at FL126 indicating a descent. The lateral distance between the 2 ac was 0·3nm and the vertical distance was 2400ft (Fig.6).



(Figure 6 – Area radar recording at 1334:37.)

At 1334:41, (CPA) the DA42 pilot reported that they were now fully visual and able to identify the type and operator of the FA20. The FA20 was in a R turn crossing 0·2nm ahead of the DA42 and 2300ft above (slant distance 2657ft). The FA20 then broke away to the W and the controller instructed the DA42 pilot to roll out onto a heading of 180°. The DA42 pilot asked the controller to file an Airprox report. The Mode S data indicated the Aircraft ID (later traced to give the ac type and registration).

At 1340:15, the Tay Controller contacted Leuchars Radar to request any information on the traffic squawking 7000 in the SAB region at FL120. Leuchars advised that they had not been in contact with the ac at any point during the day.

At 1342:32 the DA42 flight was transferred to Newcastle Radar.

The Scottish Local Area Supervisor (LAS) reported that neither Scottish Military nor Hotspur had any contact with the FA20 flight. A route brief obtained from NATS AIS for the day showed that there were no NOTAMs promulgating an exercise in the area.

The FA20 flight was not in receipt of any air traffic control service and in view of the forthcoming exercise had decided to investigate the DA42 to ascertain its type. It was likely that the FA20 pilot, whilst deciding to remain 2000ft above the DA42, did not fully appreciate the predicament of the TAY controller in trying to achieve the required deconfliction minima of 3000ft or 5nm. CAP744 Chapter 4, Page 1, Paragraph 6, states:

> 'The deconfliction minima against uncoordinated traffic are:
> • 5nm laterally (subject to surveillance capability and regulatory approval); or
> • 3000 ft vertically and, unless the SSR code indicates that the Mode C data has been verified, the surveillance returns, however presented, should not merge.
> (Note: Mode C can be assumed to have been verified if it is associated with a deemed validated Mode A code. The Mode C data of aircraft transponding code 0000 is not to be utilised in assessing deconfliction minima).
>
> '…furthermore, unknown aircraft may make unpredictable or high-energy manoeuvres. Consequently, it is recognised that controllers cannot guarantee to achieve these deconfliction minima; however, they shall apply all reasonable endeavours.'

The TAY controller agreed to provide a DS and subsequently provided TI together with updates and avoiding action in order to try and achieve the deconfliction minima. It was not possible to determine

what action the FA20 pilot might have taken, had the DA42 flight been given an instruction to descend.

CAP 774 Chapter 1, Page Paragraph 2, states:

> Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment. The Class F and G airspace environment is typified by the following:
> • It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;
> • Controller/FISO workload cannot be predicted;
> • Pilots may make sudden manoeuvres, even when in receipt of an ATS.

The Airprox occurred when the FA20 crew elected to investigate the track of the DA42 and intended to remain 2000ft above the DA42. However, as a consequence, the TAY controller was unable to provide the DA42 flight with the required deconfliction minima of 3000ft or 5nm.

UKAB Note (1): The Mil AIP entry at ENR 5-2-10 Para 6.1 promulgates an Advisory Service Area (ASA) stating:-

> 'An ASA is an area of Class G airspace of defined dimensions where Military fixed wing fast jet aircraft are carrying out autonomous operations within the area are to receive, where possible, an ATSOCAS from a nominated source.'

Para 6.2 Leuchars ASA promulgates the areas coordinates and states:-

> (a) 'Operating levels are from 5000ft AMSL to FL195 (FL245 when TRA007 is active).
>
> (b) When operating in this area pilots are to request a service from one of the following sources:-
> i) ScATCC (Mil)
> ii) ASACS
> iii) RAF Leuchars
>
> (c) Crews are responsible for selecting:
> i) The ATS provider.
> ii) The type of ATS required; Basic Service, Traffic Service or Deconfliction Service.
>
> (d) Crews can request a quiet frequency if necessary (subject to Unit capacity). Crews should consider accepting requests for coordination against CAT where possible/able but there is no compulsion to do so.
>
> (e) If no ATS is available, crews are to continue to operate autonomously iaw Class G regulations.

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 video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members were disappointed that the FA20 crew had taken it upon themselves to visually identify the DA42, which was traffic they considered to be a factor to the training exercise in OTA E, contained within the Leuchars ASA, that was about to commence. It would have been better had the FA20 crew arrived earlier and established contact with one of the ATSUs listed for the ASA which would

have been able to establish the identity of the DA42 through coordination with the controlling ATSU. The FA20 crew would then have been in receipt of all the facts from which they could update the air picture to the incoming military fast-jets. A military pilot Member remarked that had a military ac been involved, as soon as the other ac was identified as a civilian ac, the pilot would break-away at range to avoid flying in close proximity. As the FA20 was flying in support of a military exercise in OTA E, Members agreed that best practice would have been for the crew to comply with the requirements promulgated in the Mil AIP for flight in the Leuchars ASA. To that end, the Board agreed to recommend this to the FA20 operator.

In this incident there was a disconnect between the interested parties. The FA20 crew was unaware that the DA42 was in receipt of a DS and the ScACC TAY controller was applying all reasonable endeavours to achieve deconfliction minima (5nm laterally or 3000ft vertically). The TAY controller and DA42 were unaware that the FA20 crew had located the DA42 on TCAS, then visually and were intentionally flying a profile to maintain 2000ft vertical separation from it whilst identifying the ac. In doing so the FA20 crew flew close enough to cause the TAY controller and DA42 crew concern, which had caused the Airprox.

Members commended the actions taken by the TAY controller who persevered with issuing instructions to the DA42 crew in trying to resolve the confliction. Despite his best endeavours, the TAY controller was unable to achieve deconfliction minima but the visual sighting of the DA42 by the FA20 crew and the flight profile flown was enough to allow the Board to conclude that any risk of collision was effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The FA20 crew flew close enough to cause the TAY controller and DA42 crew concern.

Degree of Risk: C.

Recommendation: The FA20 operator is recommended to comply with the Leuchars ASA requirements when operating in OTA E.