

AIRPROX REPORT No 2012104

Date/Time: 19 Jul 2012 1224Z

Position: 5401N 00020W (26nm
N of Humberside Airport)

Airspace: AIAA/FIR (Class: G)

Reporting Ac Reported Ac

Type: JS41 F-15E x2

Operator: CAT Foreign Mil

Alt/FL: FL80↓ FL66↑
SAS SAS

Weather: IMC In Cloud VMC CLOC

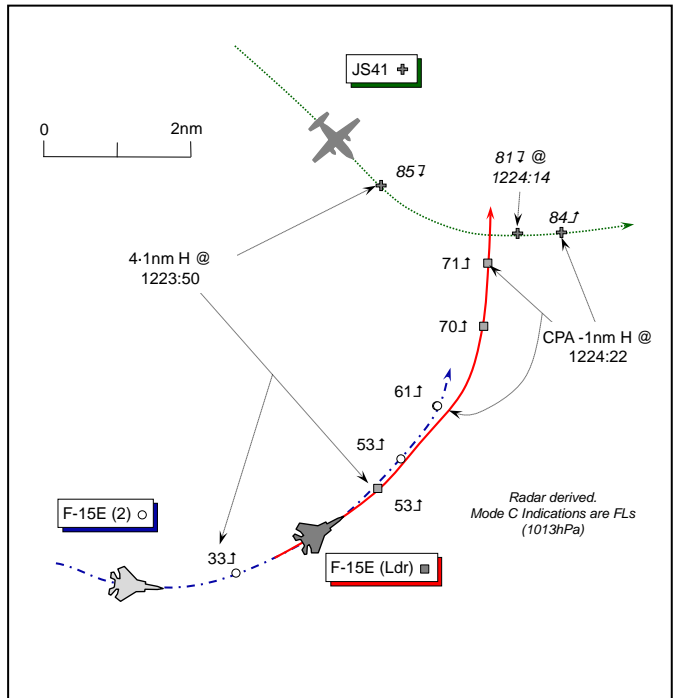
Visibility: NR unlimited

Reported Separation:

1000ft V/1nm H 1500ft V/1.3nm H

Recorded Separation:

1300ft V @ 1nm min H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE JETSTREAM 41 (JS41) PILOT reports he was inbound to Humberside from Aberdeen under IFR at 240kt; the assigned squawk was selected with Mode C, Mode S and TCAS is fitted. They had been handed over by ScATCC (Mil) to Humberside RADAR on 119.125MHz, under a DS descending to FL55, heading 165° to OTTRINGHAM (OTR). About 28nm N of Humberside descending IMC in cloud, RADAR advised them of 2 military ac contacts at low-level in their 2 o'clock; the controller's intentions were to route the flight to the E and down the E Coast, giving further separation under radar vectors. The military traffic – the flight of 2 F-15E ac - could be seen on TCAS from a range of about 12nm and was being monitored by both himself and his 1st Officer. RADAR instructed them to stop decent at FL60 and turn L heading 090° to avoid the F-15s; these instructions were complied with but the F-15s were then seen on TCAS climbing 'sharply'. TCAS enunciated a TA 'TRAFFIC', followed by a CLIMB RA, which was complied with. RADAR was informed of the TCAS RA and the F-15s passed about 1nm astern; minimum vertical separation was 1000ft. TCAS then enunciated CLEAR OF CONFLICT, RADAR was informed and a radar vector issued for recovery to Humberside. He assessed the Risk as 'medium'.

The ac has a blue and white livery; the HISLs were on.

THE F-15E PILOT [F-15E (Ldr)], reports he was the leader of a flight of 2 F-15E ac operating in the Vale of York and LFA 11 for low-level training. Earlier, when he informed the ScATCC (Mil) controller his flight would be entering LFA11 N of Whitby and exiting at Driffield, the controller had advised that upon completion of the low-flying phase of the sortie, he should call Scottish MILITARY on the ICF 277.775MHz. At about 1223:15, he exited LFA 11 at 400kt with his wingman – F-15E (2) - 2nm in trail. Weather was prevalent from 2000ft agl to FL60; however, he found a hole in the weather and climbed up through it whilst contacting Scottish MILITARY on 277.775MHz requesting a climb to FL100. At the same time, flying about 500ft clear above cloud in a L turn, the flight obtained radar contact on another ac – the JS41 - on a bearing of 045° at a range of 2.5nm some 2500ft above his ac. Scottish Military instructed him to squawk A4611, but simultaneously with this transmission, he became visual with the traffic – a blue/white twin – and instructed his wingman to level off below FL70, whilst directing the flight to turn L 'towards the traffic to ensure deconfliction by ensuring 3/9 passage'. He elected to turn toward the JS41 and remain below it to ensure that the other ac's flight

path would not be a 'factor' for his wingman who was exiting the LFS behind him. Recorded AI radar data showed that his ac [F-15E (Ldr)] passed 1.3nm behind and 1500ft below the JS41. No other 'callout' from Scottish Military was received by the flight until the JS41 was well past. He assessed the Risk as 'none'.

The ac has a dark grey paint scheme with red/green/white external lighting.

THE HUMBERSIDE RADAR CONTROLLER reports that he was providing a DS to the inbound JS41 crew, descending through FL80. Traffic information had been given to the JS41 crew on two A7001 squawks observed some 10nm SE of the JS41 indicating 1500 – 2500ft ALT, when the lead ac appeared to commence a climb whilst paralleling the JS41, whose descent was restricted. The lead ac then turned L toward the JS41; avoiding action and further TI was issued to the JS41 crew, who acknowledged the avoiding action and then reported a TCAS RA. Minimum separation was 500ft vertically/1½nm horizontally.

THE ScATCC (MIL) PRIMARY TACTICAL SOUTH CONTROLLER (TAC SOUTH) reports that the flight of two F-15Es were operating low-level in the Vale of York when F-15E (Ldr) free-called on the ScATCC (Mil) Southern ICF. F-15E (Ldr) did not pass a position report other than the flight was exiting LFA11 requesting a TS in a block from the surface to FL240, for general handling in the Vale of York. F-15E (Ldr) was allocated a squawk of A4611 and the crew asked to report their level passing; he was then asked to confirm the squawk. The squawk was observed to come on and the wingman – F-15E (2) - also requested a squawk; A4612 was allocated, the ac identified and placed under a TS. The controller then noticed a Humberside squawk – the JS41 - about 3nm to the NE of the F-15E flight descending through 8000ft; this ac took, what appeared to be, an avoiding action turn to the E. Both F-15Es were now on a NW'ly heading, he thought. He did not deem it necessary to pass TI to the F-15E flight about the JS41 or stop the flight's climb, although they were climbing through the level of the JS41. The F-15E flight was on a heading which was taking them away from the JS41 that, in his view, 'was not a factor'.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a JS41 in receipt of a DS from Humberside APP and a flight of 2 F-15Es, in communication with Primary TAC South at ScATCC (Mil).

The incident sequence commenced at 1221:08, as an unrelated ScATCC (Mil) controller completed the handover of the JS41 to Humberside RADAR. The JS41 was 9.5nm NNE of F-15E (Ldr), tracking SSE'ly, descending through FL127; F-15E (Ldr) was tracking WNW'ly, indicating 2300ft, with F-15E (2) 2nm in trail, indicating 1900ft. Consequently, at this point, the F-15E flight was not conflicting with the JS41.

At 1223:41, the lead F-15E crew free called Primary TAC South, "*off low fly 11 in the climb 0-5-0 [FL] for the block surface to 2-4-5 [unintelligible] airspace.*" At this point, the JS41 was 5.4nm N of F-15E (Ldr), tracking SE'ly, descending through FL88; F-15E (Ldr) was turning L NE'ly, climbing through FL41. Primary TAC South replied, "[F-15E (Ldr) C/S] *squawk 4-6-1-1 with ident and confirm your level passing*" but was asked to repeat the squawk and said, "[F-15E (Ldr) C/S] *squawk 4-6-1-1 with ident and do you require a squawk for number 2?*" At 1224:11, F-15E (Ldr) read back, "*4-6-1-1 with a flash, affirm.*"

CAP 413 Chapter 3 Para 1.5.1 states that the initial call of a VFR flight to an ATS unit should state the ATS Unit's C/S, the ac's C/S and the type of ATS being requested and that the ATS unit will respond with 'Pass Your Message'. CAP 413 Chapter 3 Para 1.6.2 goes on to state that when ac commanders are 'instructed by the ATS unit to "Pass Your Message", the reply should contain the following information, whenever possible in the order specified: ac C/S or type, departure point and destination, present position, level and additional details or intentions.

At 1224:12, the JS41 entered a turn onto E and levelled at FL81 prior to commencing a climb at 1224:24; this accords with the pilot's report of their response to a TCAS CLIMB RA and the deconfliction advice offered by Humberside APP. At the same time, F-15E (Ldr)'s assigned squawk

appeared on the surveillance display. At this point, F-15E (Ldr) was 1.6nm S of the JS41, levelling at FL70 and turning L onto a N'y track.

[UKAB Note (1): The CPA occurred at 1224:22 as F-15E (Ldr) passed 1nm WSW of the JS41, tracking N, indicating FL71; the JS41 was maintaining an E'y track now climbing through FL84 some 1300ft above F-15E (Ldr).]

At the time of the CPA, Primary TAC South was involved in an exchange of RT with F-15E (2) and identified F-15E (2) at 1224:39. F-15E (Ldr) was not formally identified, nor, as the controller reports, was TI passed to either element of the F-15E flight about the JS41.

Given the nature of the initial RT exchange between the pilot of F-15E (Ldr) and Primary TAC South, the controller had little information to cue them to the F15E flight's location, nor proximity to the JS41. Consequently, given the time between F-15E (Ldr)'s squawk being displayed and the CPA, Primary TAC South had no time in which to affect the outcome of the occurrence. Whilst the ScATCC (Mil) Unit investigation has identified that their controller's initial response to the pilot of F-15E (Ldr) was not in accordance with CAP 413, it is likely that the flight leader's response to an instruction to 'pass your message' would have taken approximately 17secs. Even if the controller had been able to correlate a 'standard' position report, transmitted in accordance with CAP 413, with F-15E (Ldr)'s displayed SSR conspicuity code, the controller would only have had about 7secs in which to assimilate the information and pass a warning to the pilot of F-15E (Ldr) about the JS41. Consequently, BM SM contends that whilst it is noteworthy that the RT phraseology used by both the pilot of F-15E (Ldr) and Primary TAC South was not in accordance with CAP 413, it was neither causal nor contributory to this Airprox.

The timing of the sequence of events compromised the ability of the military ATM safety barrier to operate. However, the crew of F-15E (Ldr) was able to acquire the JS41 on radar and then visually, enabling the flight leader to discharge his responsibility to 'see and avoid' other ac. This was complemented by the action of TCAS onboard the JS41 and the deconfliction advice offered by Humberside APP under their DS.

ScATCC (Mil) has re-briefed all controllers on the use of phraseology in accordance with CAP 413 Chapter 3 Para 1.5.1 and Chapter 3 Para 1.6.2.

ATSI reports that the JS41 crew departed Aberdeen inbound to Humberside, IFR, in receipt of a DS from Humberside RADAR on 119.125MHz. The F15E flight was on a VFR training flight and reported being in receipt of a BS from ScATCC (Mil) on UHF.

Humberside RADAR provides surveillance services through use of a local 10cm primary radar and feed from the nearby Claxby Radar source. The JS41 crew called Humberside RADAR at 1221:30, 33nm NNW of Ottringham VOR (OTR), in the descent to FL55 passing FL120 on track OTR. The controller identified the JS41 and a DS was agreed. The JS41 crew was then informed that vectors would be issued for an approach to RW20 and requested to continue on their present heading of 160°.

ATSI noted that prior to establishing RT contact with RADAR the JS41 had been squawking A4641, which is allocated to Scottish MILITARY Radar. A squawk of A4251 was then selected prior to handover to Humberside. As this code is allocated to Humberside RADAR it is assumed that prior co-ordination between Scottish MILITARY and Humberside Radar had taken place.

At 1222:00, when the initial exchanges with RADAR were complete and the JS41 was descending through FL112, there were two ac [the F-15 E flight] squawking A7001 about 9nm SW of the JS41 that were established in a LH race track pattern indicating between 1700 and 2000ft Mode C (1013hPa).

At 1222:30, RADAR gave the JS41 crew TI on the two A7001 contacts, which were approximately 10,000ft below and instructed the crew to turn L onto a heading of 140°. RADAR stated that the plan was to take the JS41 towards the coast as the, *“traffic could climb at any time.”*

SSR code A7001 is allocated for military fixed-wing low level conspicuity/climb out. The code is unvalidated and unverified and may be selected at the pilot’s discretion. It is notified for use in the UK Low Flying System and it will be retained on climb-out by ac until alternative instructions are passed by an ATC unit.

By 1223:04, the two A7001 contacts had broken from their racetrack pattern onto a SE’ly track and had climbed to 2600 - 2800ft Mode C (1013hPa). The JS41 was now established on a track of 140°.

At 1223:30, the JS41 crew was instructed to stop descent at FL60. The level of the two A7001 F-15E contacts continued to indicate that they were climbing and now turning onto a track perpendicular to the JS41. After acknowledging the first stop descent instruction, the JS41 crew was instructed to stop descent at FL65.

At 1223:40, RADAR instructed the JS41 crew to, *“turn left heading 0-9-0 degrees..traffic was south 7 miles manoeuvring indicating 3 thousand 7 hundred feet climbing squawking low level.”* Without waiting for a response from the JS41 crew, RADAR upgraded the instruction, *“now avoiding action turn left heading 0-9-0 degrees (1223:50) traffic was south 4 miles tracking towards indicating flight level 5-0 climbing.”*

The Deconfliction Minima (DM) against unco-ordinated traffic are: 5nm laterally (subject to surveillance capability and CAA approval); or 3000ft vertically and, unless the SSR code indicates that the Mode C data has been verified, the surveillance returns, however presented, should not merge.

At 1223:47, the JS41 was passing FL87 and the more proximate A7001 contact [F-15E (Ldr)] was in the JS41’s 1 o’clock - 5nm, crossing R - L, indicating FL45. The second A7001 [F-15E (2)] was 2nm behind the first, on the same track and indicating 1400ft below it.

About 13secs later, at 1224:00, RADAR updated the TI to the JS41, to which the crew responded, at 1224:10, *“TCAS R-A.”* RADAR responded, *“roger.”* At this time the vertical distance between the JS41 and the F15 reduced below the 3000ft DM to 2200ft - see Figure 1.

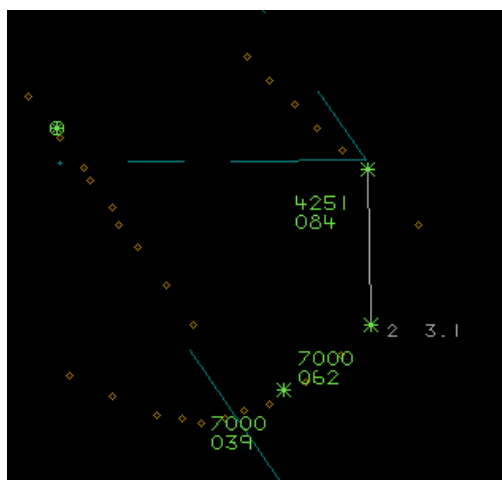


Figure 1: Claxby Radar 1224:00.

As F-15E (Ldr) neared the JS41 its Mode A SSR code was recycled (hence Figure 1 above showing A7000) and at 1224:07, its SSR code became A4611.

The JS41's turn onto 090° was observed to take full effect at 1224:14. The JS41 was now at FL81 with F-15E (Ldr) in its 4 o'clock, range 1.3nm, and indicating 1100ft below the JS41 - see Figure 2.

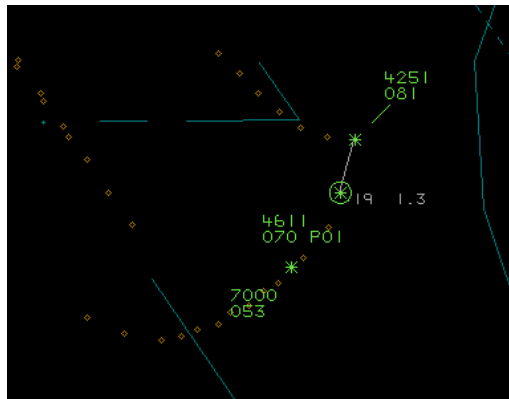


Figure 2: Claxby Radar 1224:14.

On the next update of the radar replay the JS41 had climbed 300ft, with F-15 (Ldr) passing 1nm behind and 1300ft below the JS41 - see Figure 3. Thereafter the lateral distance between the JS41 and the F-15E flight began to increase as the JS41 climbed to a maximum level of FL87.

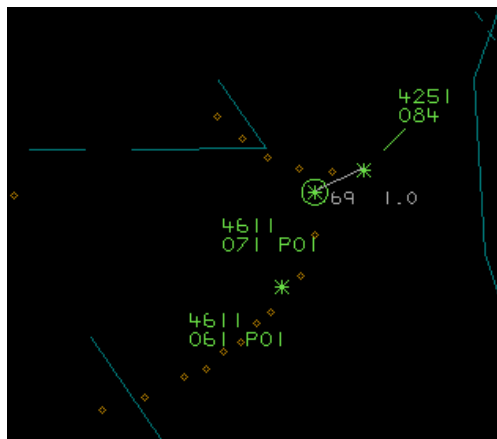


Figure 3: Claxby Radar 1224:23.

At 1224:50, RADAR informed the JS41 crew that the traffic was now routing towards the NW and the JS41 crew confirmed they were CLEAR OF CONFLICT.

DM of 5nm was re-established between the JS41 and the second ac of the conflicting pair – F-15E (2) - at 1225:02.

The JS41 crew was given further vectors and descent for the approach to Humberside Airport. RADAR informed the JS41 crew at 1228:10 that, “I’ve just spoken to Scottish Mil they [the F-15E flight] were operating low level and just weren’t speaking to anybody [when they commenced the climb].”

Within 1min of the JS41 crew's initial call, RADAR recognised the potential for conflict with the two F-15E ac operating low-level/climb-out nearby. By issuing a 20° L turn, RADAR took action to begin to try to maintain DM. One minute later, RADAR issued vertical instructions, recognising that the conflicting traffic was now climbing. Avoiding action was promptly given; however, 30sec later DM were lost.

ATSI was unaware what information, if any, the F-15 flight had on the conflicting JS41. However, as a recycling of their SSR Mode A codes is shown during the confliction then, it is possible they were only apprised of the conflict during this time.

The Airprox occurred when the F-15(E) flight climbed out from low-level and into confliction with the JS41 inbound to Humberside Airport.

The JS41 crew, in receipt of a DS from Humberside RADAR, was given prompt information and deconfliction advice, however, DM were not achieved for about 1min.

USAFE-UK comments that this was an encounter in Class G airspace where the Humberside controller and the crews of each of the aircraft took prompt and effective action; the Scottish MILITARY controller was not in a position to prevent the technical loss of separation.

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.

The F-15E Ldr intended to operate from the surface to FL245 - a large tract of airspace in the AIAA; some Members contended this was not a wise place for the flight to be conducting GH, which the USAFE-UK advisor suggested might reflect a lack of familiarity with UK airspace. The BM SM report highlights the absence of a suitable position report in the F-15E Ldr's initial call that he was, "*..off low fly 11 in the climb..*", which was of little practical help to the controller. Members agreed that if an accurate position had been included in the F-15E Ldr's call this would undoubtedly have helped TAC South focus on the flight's location a lot quicker, rather than having to scan a wide area of airspace for the requisite squawk amongst a myriad other background tracks within the congested airspace of the Vale of York AIAA. In that case, however, Members noted that only around 7sec would have been available to the controller in which to locate the flight if he was to give a warning about the proximity of the JS41 to the F-15E Ldr. Here, in the intervening 11sec from the F-15E Ldr's acknowledgement of the squawk to the CPA, TAC South was unable to proffer any TI and, although one controller Member believed that TAC South should have been able to spot the conflicting JS41 and say something about it, the Board agreed that TAC South was not well placed to affect the outcome. As it was, simultaneously, the F-15E's AI radar was already enabling the lead crew to acquire the JS41 whilst they were calling ScATCC (Mil), recognise the confliction with their ac plus the wingman and take sound avoiding action by levelling off and turning to pass clear astern of the JS41. Nevertheless, the F-15E Ldr's reported visual sighting range of 2.5nm suggested to one fast-jet pilot Member that this was a late sighting. It was the F-15's turn, taking the flight's projected upward vector ahead of the JS41 that triggered the latter's TCAS CLIMB RA. However, the JS41 crew's resultant climb was only evident on the recorded radar data at the CPA; hence, the F-15E Ldr's avoiding action turn and stop-off was instrumental in resolving the conflict, before TCAS could do so independently in the vertical plane. This was not meant to suggest that the JS41 crew was in any way tardy in their response to the RA or the avoiding action issued by RADAR. Rather, the incident provided an example for all pilots, but particularly those flying high performance aircraft, of the importance of not sweeping their flight vector through the 'TCAS bubble' ahead of an airliner to prevent undesirable reactions by TCAS. However, TCAS has proven its worth repeatedly and the message here was 'promptly follow the RA'.

The Board commended the Humberside RADAR controller for his sound appreciation of the situation when he observed the fast-moving F15Es, squawking A7001 at low-level, and recognised the potential for a conflict with the JS41 if the unknown ac climbed out of the LFS. By promptly turning the descending JS41 and subsequently stopping the descent at FL60 he showed sound forward planning in attempting to achieve more room to manoeuvre at an early stage and give the jets as wide a berth as feasible. However, once the F-15E flight turned L and climbed rapidly ahead of the JS41, controller Members recognised the only feasible avoiding action was to turn the JS41

eastbound and pass TI, endeavouring to try and direct the crew's eyes onto the conflicting F-15Es. Unfortunately, the speed differential between the jets flying at 400kt against the slower JS41 descending at almost half the F-15E's speed was too great to enable planned DM to be achieved. Consequently, horizontal separation reduced to 1nm; however, the combination of the F-15E flight's turn and level off, coupled with the JS41 crew's compliance with the avoiding action issued by RADAR ensured that 1300ft of vertical separation was preserved at the closest point as the jets passed clear astern of the JS41 climbing in response to the RA. The Board concluded, therefore, that this Airprox had resulted from a conflict in Class G airspace that was resolved by the crews involved and ATC, with their combined actions effectively removing any Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the crews involved and ATC.

Degree of Risk: C.