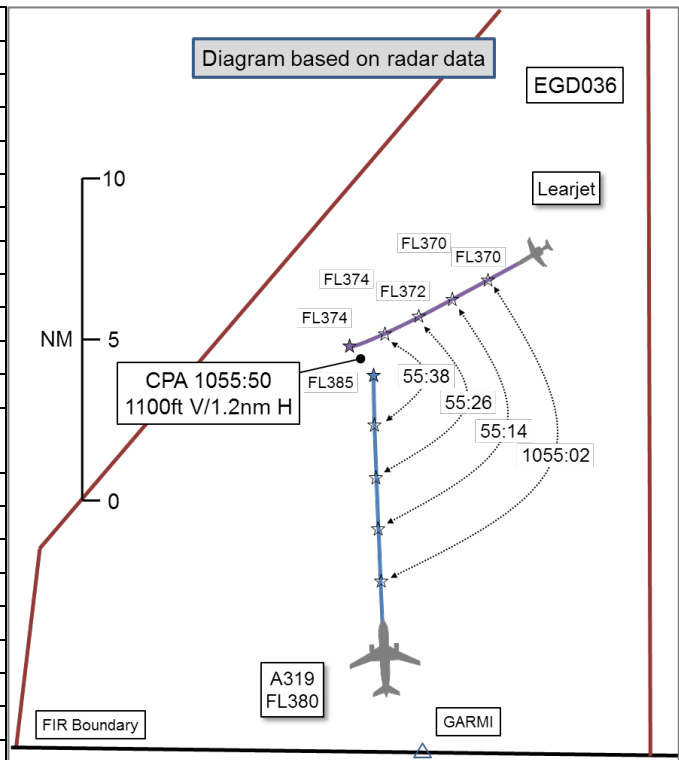


**AIRPROX REPORT No 2019154**

Date: 23 Jun 2019 Time: 1055Z Position: 5012N 00127W Location: 12nm N GARMI

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	A319	LJ45
Operator	CAT	Civ Comm
Airspace	UIR	UIR
Class	C	C
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	Swanwick	Swanwick
Altitude/FL	FL385	FL374
Transponder	A,C,S	A,C,S
<b>Reported</b>		
Colours	Company	NK
Lighting	Strobes, beacon, logo, nav	NK
Conditions	IMC	NK
Visibility	NK	NK
Altitude/FL	FL380	FL390
Heading	330°	NK
Speed	450kt	NK
ACAS/TAS	TCAS II	TCAS II
Alert	RA	RA
<b>Separation</b>		
Reported	NK	NK
Recorded	1100ft V/1.2nm H 600ft V/2.3nm H	



**THE AIRBUS A319 PILOT** reports that he was in the cruise at FL380. A TCAS TA was generated followed by ATC instructing them to turn right immediately to avoid traffic, at which point a TCAS RA was generated demanding a climb. The SFO, the Pilot Flying (PF), followed SOPs and the aircraft was climbed to FL385; once clear of the conflict they returned to FL380. ATC advised that another aircraft was climbing through their level, but its pilot was working another frequency.

The pilot assessed the risk of collision as ‘Medium’.

**THE LEARJET 45 PILOT** reports the during cruise at FL370 they were told by ATC to climb to FL390. During the climb and on almost reaching FL390, they received a TCAS TA immediately after ATC had given them a heading of 275°. During the right turn to 275° they received a TCAS RA, which told them to descend. During their response to the RA, ATC instructed them to descend to FL370. They levelled at FL370 clear of conflict.

The pilot did not report his assessment of the risk of collision.

**THE SECTOR(S) 20/21/22 TACTICAL(T) CONTROLLER** reports that he instructed the LJ45 pilot, who was routing to LELNA, to climb from FL370 to FL390. This resulted in a conflict with the A319, routing to AVANT at FL380. His S19T controller colleague pointed the conflict out to him and they both issued avoiding action to their respective aircraft. He also instructed the LJ45 pilot to descend back to FL370 but the pilot had commenced a climb and was observed on Mode C to vacate FL370.

**THE S20/21/22 PLANNER(P)** reports that at the time of the incident they had just split the sector from previously being S18/19/20/21/22P approximately 5min earlier. He was busy coordinating an aircraft north of VASUX at FL190 which wanted immediate descent due to icing; consequently, he was on the

telephone to TC SW to see where they wanted them to position it and what frequency they wanted it on. It must have been during this time that the T controller climbed the LJ45 pilot, resulting in the conflict with the A319; he did not hear this clearance. The first he knew of it was when the S19T shouted across saying not to climb the LJ45 because there was another overflight at FL380. Separation was lost and avoiding action was given.

**THE S18/19T** reports that he was asked to split S18/19/20/21/22 and take the S18/19T position. He received a handover from the previous S18-22 T controller. He had two aircraft heading northbound at FL380, an A320 and the A319. The S20-22T controller had an aircraft transiting the sectors, which they had elected to keep and so transferred to themselves from S19 to the S20 frequency. At this point the aircraft was in S19 airspace, climbing to FL350. He was asked by the P controller to turn the A319 direct to TNT at the request of S1. Afterwards, he noticed a red interaction between the LJ45 and the 1st of 2 aircraft at FL380 [the B737]. He pointed this out to the S20-22T who stopped the aircraft at FL370. Subsequent to this he saw the LJ45 was climbing to FL390 and that this was in conflict with the A319, so told the S20-22T controller. He attempted to issue avoiding action to the A319 but another pilot was checking in at the time. After the other pilot finished his call he gave the avoiding action call, at which point the A319 pilot reported a TCAS RA.

**THE S18/19P** reports that S20/21/22 was split from S19/18 at 1045. Shortly afterwards the LJ45 pilot was climbed by the S20/21/22T to FL390, in conflict with the A319 (S19 traffic) at FL380.

**THE ONCOMING GROUP SUPERVISOR (GS) CHANNEL SFD/HRN** reports that he had just taken over when he was alerted to an issue on the Hurn sectors. As he approached he could see the red flashing of STCA between the two aircraft concerned and both tactical (S20/21/22 and S18/19 respectively) controllers giving avoiding action. He immediately requested that outgoing GS to stay around the GS desk to possibly help and also called two controllers back to relieve both T controllers involved in the loss of separation. This was completed within 1-2 min. Both P controllers were asked and were happy to continue working. Both T controllers were offered defusing and refused.

**THE OFFGOING GS CHANNEL SFD/HRN** reports that they were working the SFD/HRN positions in a banded configuration. The Traffic Level Prediction Device (TLPD) had been unpredictable most of the morning and the sector staff who took over at 10.30 were aware it was going to be a steady flow of traffic with a potential split soon. They took the decision to call back staff to split the sectors at 1040, in anticipation that the traffic that was showing on TLPD was starting to arrive on the long range TSD. The decision was made to split the S20/21/22 and S18/19 configuration, with the incoming team taking S18/19 side by side. The off-going GS handed over the sector to the oncoming GS who had control just as the incident happened, approximately 1100. They were then informed of the situation and called back controllers so that the T controllers could be relieved.

## Analysis and Investigation

### UKAB Secretariat

The A319 and LJ45 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>1</sup>. The 2 separate controllers were required to ensure that standard separation of 5nm or 1000ft was achieved in Class C airspace.

### NATS Occurrence Investigation Report

The split of the WOR sectors had been instigated by the GS after consultation with the sector team due to the arrival of new TDLs and an increase of TLPD demand. The split was instigated at approximately 1048 and completed by 1050. The equipment was set up correctly with atomic function, Separation Monitor (SM), FP display, Mode S, vector box, and ground speed displayed on the TDBs all set correctly. The sectors were configured S18/19 bandbox and S20-22 bandbox in T & P configuration. The incumbent controller (who retained the S20-22 sectors) elected to transfer

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<sup>1</sup> SERA.3205 Proximity.

the LJ45 to themselves on the S20 frequency. This aircraft was still within the S19 airspace in the vicinity of the Portsmouth DA. The LJ45 was routing to Spain via LELNA, with the A319 routing to Glasgow maintaining FL380.

At 1050:00, the LJ45 was north of the Portsmouth DA heading 245° passing FL330, with exit level in S20 set at FL390.

At 1050:38, the LJ45 was climbed to FL390 by S20-22T without coordination with the S19T. The Investigation confirmed that the controller was enacting the original plan for when they were operating the WOR bandbox, without actively considering their new area of responsibility caused by the sector split.

The A319 was a background track to the S20-22 controller within S19 airspace [UKAB note: a background track is one that the controller is not actively controlling and is displayed to them at reduced intensity on the screen]. The A319 was approximately tracking north on his own navigation at FL380. The S18/19T display showed the LJ45 as an 'out-comm-ed' dark green TDB with XFL of FL190. There were no Interim Future Area Control Tools Support (iFACTS) interactions within the S20-22 controller's SM. At this point the controllers R/T was measured and with good cadence.

At 1050:50, red interactions were visible within the S18/19T SM display. The LJ45 and the A319 showed 4.5nm separation within 4.5 mins. These interactions were not visible to the S20-22 controller.

At 1051:15, the S18/19T probed the red interactions within their SM.

At 1051:30, the S18/19T requested that the S20-22T stop the LJ45's climb at FL370 due to a B737 at FL380.

At 1051:32, a stop climb instruction at FL370 was issued by the S20-22T. The instruction was read back correctly by the LJ45 pilot.

At 1052:40, the LUS Sector requested that the A319 was sent direct to TNT and this was actioned by the S18/19T controller (this moved the track of the A319 approximately 15° to the left (west)).

At 1052:58, the LJ45 was sent direct to LELNA (slight turn to the left (south)).

At 1054:54 (Figure 1), the S20-22T assessed the LJ45 and, in attempting to make the exit coordination level of FL390, climbed it to FL390 whilst within the confines of S19 and without coordination with the S18/19T. The LJ45 was approximately at the midway point of S19 airspace.

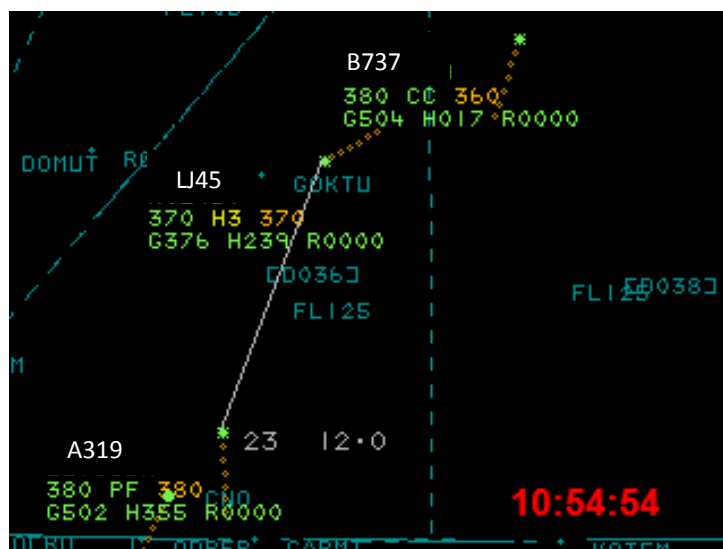


Figure 1.

At 1054:59, the S18/19T displays showed a red interaction between the LJ45 and the A319 of 1nm/30secs. There was no red interaction in S20-22T SM. The A319 was a foreground track on S18/19 but still a background track on S20-22T.

At 1055:10, the S18/19T controller probed the red interaction and immediately brought the imminent loss of separation to the attention of the S20-22T controller.

At 1055:18 (Figure 2), the S20-22T issued "avoiding action turn right immediately heading 270 degrees" to the LJ45 pilot.

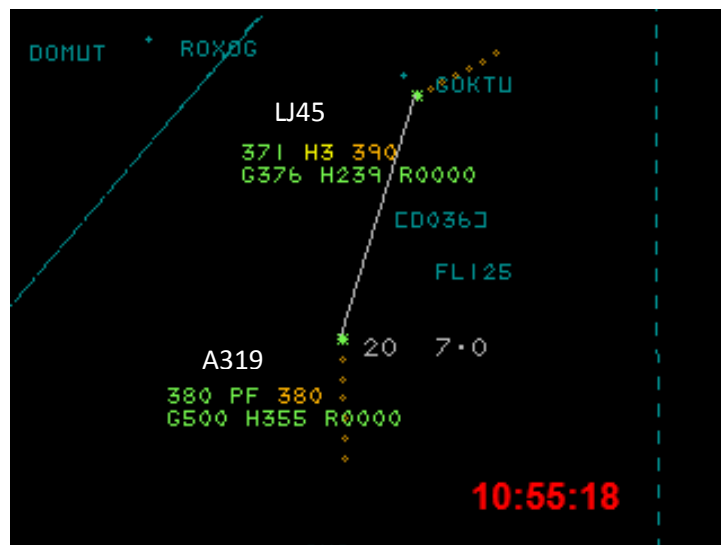


Figure 2.

At 1055:27 (Figure 3), the S20-22T requested that the LJ45 pilot reduce his rate of climb; red STCA was displayed as the LJ45's Mode S indicated FL372; and the A319's Mode S was FL380. The S18/19T SM showed 1nm/30 sec. There was nothing showing in the S20-22T SM for this conflict.



Figure 3.

At 1055:30 (Figure 4), the S18/19T issued the A319 pilot with an avoiding action turn heading 050° with Traffic Information on the conflicting traffic. Range and bearing was given.



Figure 4.

At 1055:37, the S20-22T issued an instruction to the LJ45 pilot to descend back to FL370. The LJ45's Mode S indicated FL374. There was no reply from the pilot.

Minimum vertical separation occurred at 1055:42 (Figure 5), and was recorded on the LTCC Multi-Track Radar as 2.3nm and 600ft. [UKAB note: The required separation minima was 5nm horizontal or 1000ft vertical].

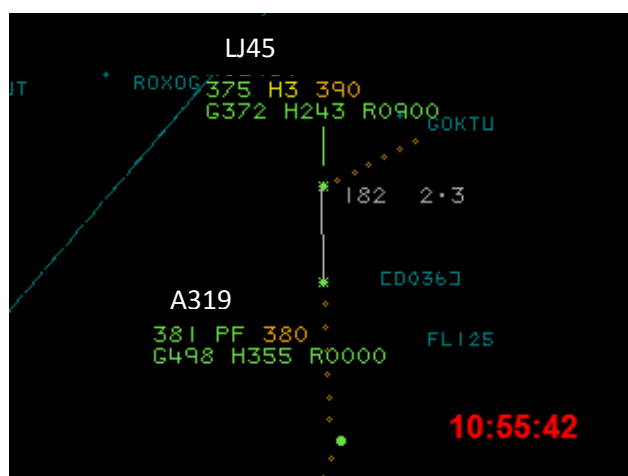


Figure 5.

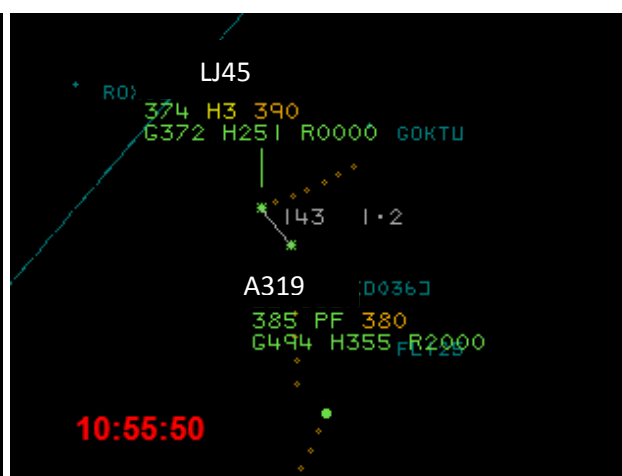


Figure 6 .

Vertical Separation of 1000ft was restored at 1055:50 (Figure 6), as the A319 passed FL385 in the climb and the LJ45 descended through FL374 at a range of 1.2nm. At 1055:55, the A319 became a recognised track on the S20-22T display.

In response to the questions posed about the sector boundaries and areas of responsibility, the S20-22T confirmed that whilst operating in the WOR bandbox they had formulated a plan of action for the LJ45 to achieve the exit level of FL390 and had retained this aircraft on the S20 frequency in an effort to execute this plan. Enacting this plan would have been viable within the WOR bandbox but, with the decision to split the sectors, this plan was no longer valid and the execution of the subsequent climb instructions was made without reference to traffic within the newly split off S18/19 and outside of their area of responsibility. The controller concurred that the prudent action would have been to dispense with the original plan of action and that the LJ45 would have been better served working the S18/19T position and following normal coordination processes to transit from S19 to S20 and onwards to BREST. This would have provided the whole sector team the necessary safeguards in terms of iFACTS indications that would have highlighted the conflicts to the

executive controller. As part of the investigation the S20-22P confirmed that they did not hear the climb instruction issued by the T controller because they were busy coordinating new exit levels for aircraft affected by the icing conditions in the sector at the time and they confirmed that they did not see any iFACTS interactions coincident with the climb instruction to the LJ45 pilot.

When the LJ45 was clear of the B737 the S22T effectively repeated their mistake by again climbing the LJ45, this time into the path of the A319 which was effectively following the standard northbound route. The S22T stated that following the earlier confliction with the B737, it was now their intention to climb the LJ45 once clear of the B737. The S22T relayed in the initial interview that their plan, prior to the split, had been to route the A319 further east toward position AVANT, thus avoiding the LJ45 and this may have been why they had therefore discounted it as traffic. Again this was symptomatic of the lack of structured thinking and re-planning during the splitting process that had led to their flawed mental picture. The S22T should have coordinated this climb with the S19T whilst the LJ45 was still in S19's airspace. When asked why they had not, the S22T stated that it had just not occurred to them. They reiterated that with hindsight the mental picture was still that it was their airspace. This should therefore not be considered a non-conformance, more a symptom of the preceding error of failing to re-plan after the split.

Sector map displaying the S19, 20, 21, 22 interface with the vertical sector delineations displayed. (Figure 7.)

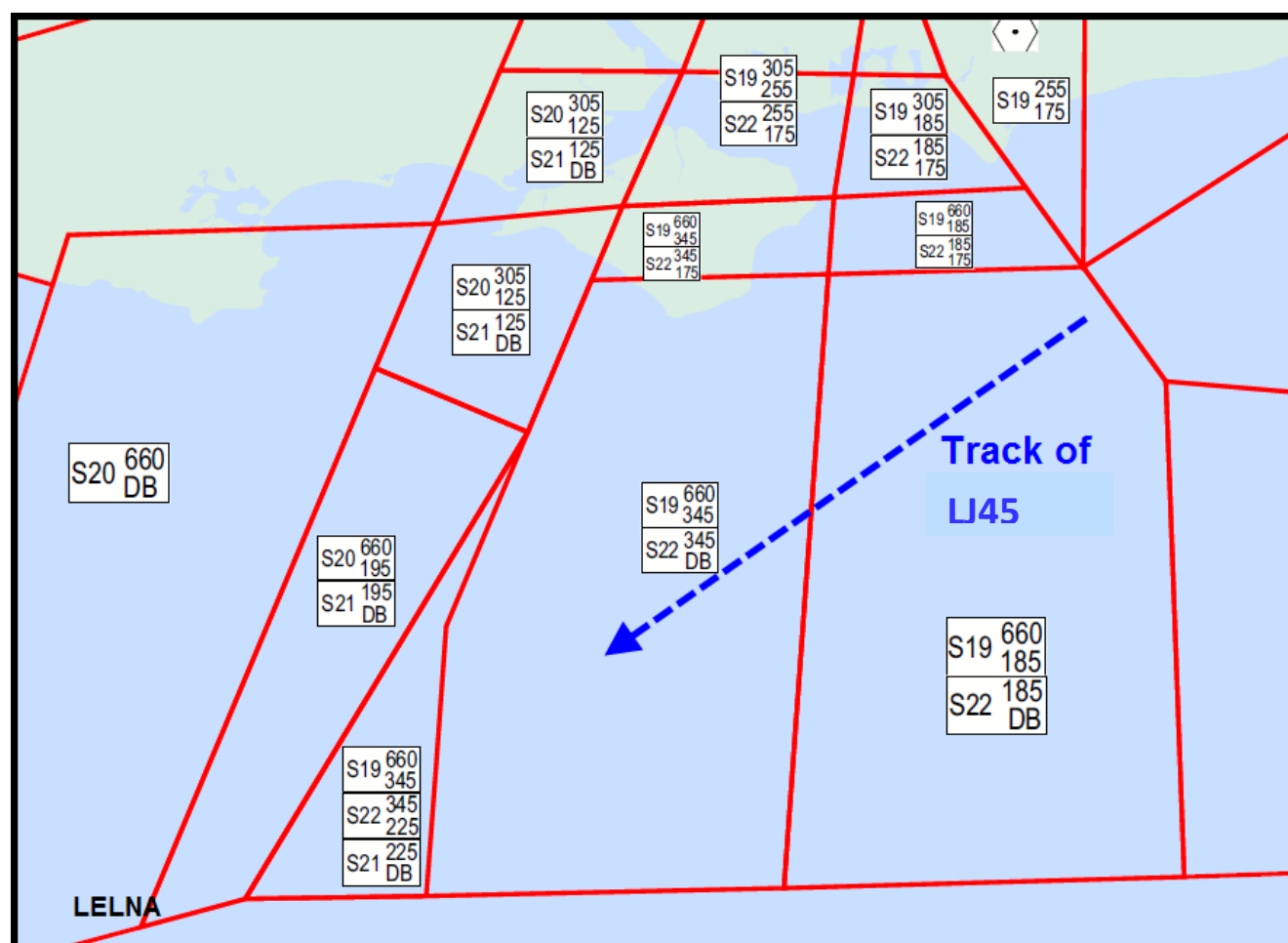


Figure 7.

## Summary

An Airprox was reported when an A319 and a LJ45 flew into proximity near the Isle of Wight at 1056hrs on Sunday 23<sup>rd</sup> June 2019. Both pilots were operating under IFR in receipt of a Radar Control Service from Swanwick; the A319 pilot from S18/19 and the LJ45 pilot from S20/21/22.

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

Information available included reports from the pilots, the controllers, area radar and RTF recordings and reports from the appropriate ATC and operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

A civil controller member with operational experience of Swanwick Area Control briefed the Board on the circumstances leading up to the Airprox. Due to relative low traffic levels, Sectors 18/19/20/21/22 were bandboxed. However, because the traffic levels were expected to rise, the SFD/HRN Group Supervisor decided that the Sectors needed to be split to accommodate this extra traffic. Accordingly, at 1040, approximately 15mins before the Airprox, they called back staff to open Sectors 18/19, leaving the existing controller on Sectors 20/21/22. The member commented that this was a usual sector split.

At handover, two aircraft routeing northbound in Sector 18/19's airspace remained on their frequency. The first of these was a B737, which was followed by the subject A319: both aircraft were maintaining FL380. The S20/21/22 controller decided to transfer the LJ45 (which was climbing to FL370 and routeing southwest through the B737 and A319's routes), to his own frequency even though it was within S18/19's airspace. This was partly, he reasoned, because the LJ45, if transferred, would soon return to his frequency as it left S18/19's airspace and he also needed to climb it soon for it to be able to reach FL390, its exit level, before transfer to Brest.

After the handover, the S20/21/22 controller instructed the LJ45 pilot to climb to FL390; in the process he had overlooked the presence of the B737. There were no Interim Future Area Control Tools Support (iFACTS) interactions and the B737's labels (as well as the A319's) were showing as background levels. These occurred because the LJ45 was being controlled by Sector 20/21/22 in S18/19's airspace. The member explained that having non-sector traffic only showing as background assisted in the controller being able to concentrate on his own traffic because it reduced the clutter on the radar display. The S18/19 controller realised the situation between the LJ45 and the B737 and requested the S20/21/22 controller to stop the LJ45's climb at FL370, which was achieved before separation was lost.

About 3mins later, the S20/21/22 controller cleared the LJ45 to climb to FL390, this time overlooking the presence of the A319 (**CF2/CF4**). The member stated that on both occasions the controller should have requested coordination with S18/19 (**CF1/CF6**). The local investigation considered that the S20/21/22 controller was still controlling on the basis that the sector split had not taken place and was still working as if he was in control of the total airspace. Again the S18/19 controller became aware of the conflict situation because he had received a red interaction between the LJ45 and the A319. He brought the imminent loss of separation to the S20/21/22 controller's attention, who was unaware at the time (**CF3**). The LJ45 pilot, who had just left FL370, 7nm from the A319, was given an avoiding action turn heading 270° and then told to reduce his rate of climb. The S18/19 controller also issued an avoiding action right turn heading 050° to the A319 pilot. At the time they were 4.6nm apart horizontally and 700ft vertically. The minimum separation was recorded as 2.3nm horizontally and 600ft vertically, where 5nm/1000ft was required (**CF5**). Both pilots received TCAS RAs virtually coincident with the avoiding action instructions issued by the controllers and STCA also activated at about the same time. The member commented that it was unfortunate that the S20/21/22 Planner had not heard the Tactical controller clear the LJ45 pilot to FL390. At the time he was busy coordinating an aircraft, whose pilot required immediate descent due to icing.

Although the incident had resulted from the inappropriate climb clearance issued by the S20/21/22 controller, some members wondered whether the LJ45 pilot should have been aware from his TCAS display that the A319 was proximate before he climbed. However, they acknowledged that it was not known what scale was selected at the time on his display and because he was relying on ATC instructions to maintain separation he may not have assimilated such information. Civil airline pilots commented that the LJ45 pilot might have been fortunate to have seen the impending confliction but that this was not something that could be relied upon for collision avoidance purposes.



The Board debated the risk within this incident at some length. The required separation was either 1000ft vertically or 5nm horizontally, and it was apparent that separation in this incident had been well below that with only 600ft vertically and 2.3nm horizontally at CPA. The required separation was not subsequently regained until 1.2nm separation when 1000ft was achieved. Some members felt strongly that 2 aircraft coming within about ½ the required vertical separation distance and about ¼ of the required horizontal separation in controlled airspace, and with both receiving and having to act on TCAS RAs, this represented a situation where safety had been much reduced below the norm (i.e. risk Category B). The civil controller members agreed that the situation had been much closer than desirable, but they opined that, although the pilots had been given avoiding action turns and had reacted to TCAS RAs, the changes of direction had taken place after CPA and so, with the aircraft 2.3nm apart at that point, there had been no actual risk of collision. A robust debate ensued about the actual risk of collision versus the reduced safety in incidents where the achieved separation in controlled airspace was significantly less than that required but the aircraft were actually still not in close proximity. In the end, the Chair called a vote in which the majority view was that, in this incident, although safety had been reduced, there had been no risk of collision. Accordingly, although it was acknowledged that this had been on the cusp of a Category B incident, the Board assessed the risk as Category C.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

2019154			
CF	Factor	Description	Amplification
<b>Ground Elements</b>			
<b>• Regulations, Processes, Procedures and Compliance</b>			
1	Human Factors	• ATM Regulatory Deviation	Regulations and/or procedures not complied with
<b>• Situational Awareness and Action</b>			
2	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
3	Human Factors	• Conflict Detection - Detected Late	
4	Human Factors	• Inappropriate Clearance	Controller instructions contributed to the conflict
5	Human Factors	• Separation Provision	Not Achieved
6	Human Factors	• ATM Coordination	Inadequate or ineffective
<b>Flight Elements</b>			
<b>• Electronic Warning System Operation and Compliance</b>			
7	Contextual	• ACAS/TCAS RA	TCAS RA event

Degree of Risk: C

### Safety Barrier Assessment<sup>2</sup>

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

#### **Ground Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **ineffective** because the Sector 20/21/22/ T controller did not coordinate with S18/19 before instructing the LJ45 pilot, who was in S18/19's airspace, to climb to FL390, resulting in a conflict with the A319 at FL380.

<sup>2</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).



**Situational Awareness of the Confliction and Action** were assessed as **partially effective** because although the S20/21/22T controller passed avoiding action, this was late and only at the same time as the two pilots received TCAS RAs.

