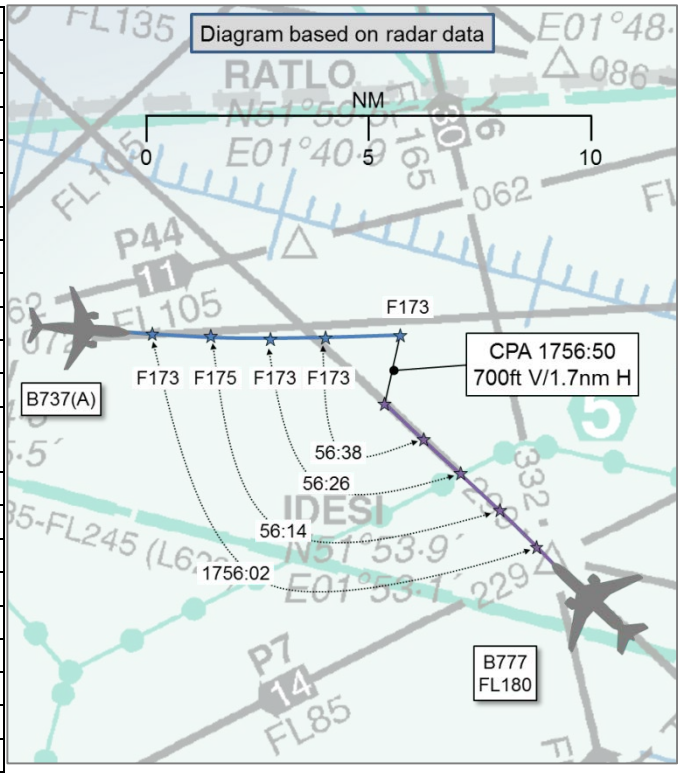
AIRPROX REPORT No 2016044

Date: 01 Apr 2016 Time: 1757Z Position: 5157N 00145E Location: 46nm NE Southend

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	B737(A)	B777
Operator	CAT	Civ Comm
Airspace	London TMA	London TMA
Class	A	A
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	Swanwick	Swanwick
Altitude/FL	FL173	FL180
Transponder	A, C, S	A, C, S
Reported		
Colours	Company	NK
Lighting	Strobes, nav, anti-collision	NK
Conditions	VMC	NK
Visibility	10km	NK
Altitude/FL	FL173	NK
Heading	072°	NK
Speed	280kt	NK
ACAS/TAS	TCAS II	Unknown
Alert	TA	Unknown
Separation		
Reported	700ft V/5nm H	NK
Recorded	700ft V/1.7nm H	



THE BOEING 737(A) PILOT reports that the crew were cleared by London Control to climb from FL170 to FL210 on a heading of 082°. They commenced climb and received a TCAS TA warning. They were aware of two aircraft 1000ft above on opposite direction tracks on the left and right of their track. They were suddenly told by the controller [they believed] to turn left heading 252°, stop the climb and heading, followed by radio silence. It was very unclear what the controller wanted so they maintained a heading of 072° after banking left to initially follow the controller's request and pressed 'Altitude Hold'. The aircraft stopped climbing and then descended to FL173. They did not have any instruction and sensed some confusion from the controller. On their right, the conflicting traffic was banking left and 700ft above. It was his opinion that if they had not selected 'altitude hold' they could have had a more serious situation.

He assessed the risk of collision as 'Medium-High'.

THE B777 PILOT was operating a non-European registered aircraft and did not reply to a request for a report.

THE SWANWICK TC EAST REDFA/DAGGA CONTROLLER reports that as the session had started to get more complex and busy he asked the Group Supervisor for a Co-ordinator. A Co-ordinator arrived and, after around 5 minutes, they decided that, due to the traffic situation, it would be a good idea to split the DAGGA and REDFA sectors. They were in the process of splitting when the incident occurred. Prior to the incident, it had suddenly become very busy with a lot of pilots stepping on each other and checking in on the frequency at the same time. The TC North sector was very late in transferring the B737(A), to him and this caused him to have to vector the London City inbounds off the standard route and eastbound into confliction with the IDESI traffic inbound to Stansted and Luton. At this point, his workload was significantly increased due to these out-of-position London City traffic. He mistakenly instructed the B737(A) pilot to climb to FL210, when he had meant to climb

another B737 of the same company which was behind B737(A) and was clear of traffic and free to climb. Both aircraft were garbling on the radar [with other traffic] at the time. He noticed his mistake and tried to stop the climb of the subject B737(A) but, unfortunately, the aircraft had already passed through FL171 and was climbing against the B777, which was maintaining FL180 to the south, and another B737(B) maintaining FL180 to the north. He subsequently gave the B777 pilot an avoiding action turn onto heading 255°.

Factual Background

The required separation between the two aircraft was 1000ft vertical and/or 3nm horizontal.

Analysis and Investigation

CAA ATSI

An Airprox was reported in Class A airspace between B737(A) and a B777 over the English Channel to the north-east of Southend. The B737(A) was an IFR flight from Stansted, receiving a Radar Control Service from Swanwick Terminal Control. The B777 was an IFR flight inbound to Stansted, also receiving a Radar Control Service from the same Swanwick controller. ATSI had access to reports from the controller and the pilot of the B737(A), the area radar recordings and RTF of the unit position frequency. An interview with the controller was also conducted. Screenshots produced in the report are provided using the area radar recordings. Levels indicated are Flight Levels. All times UTC.

At 1751:57, the pilot of B737(A) (transponding code 2022) reported to the controller level at FL110 and on a heading of 080°. The controller then contacted another aircraft before returning to the pilot of B737(A) and instructing him to climb to FL170 which was acknowledged by the pilot. The B777 was transponding 2732 and was preceded by B737(B) transponding 2236, both of which were still with the previous sector at this time (Figure 1).

Figure 1 – 1752:35.

At 1753:07 the controller started to speak to the B737(A) pilot but then told him to disregard the call. Between 1753:11 and 1754:43 the controller issued 13 separate instructions to 8 different aircraft with continuous transmissions from 1753:40.

At 1754:50 the B777 pilot reported on frequency, level at FL180. The transmission was partly blocked by the preceding B737(B) pilot also reporting on frequency, but was acknowledged by the controller (Figure 2).

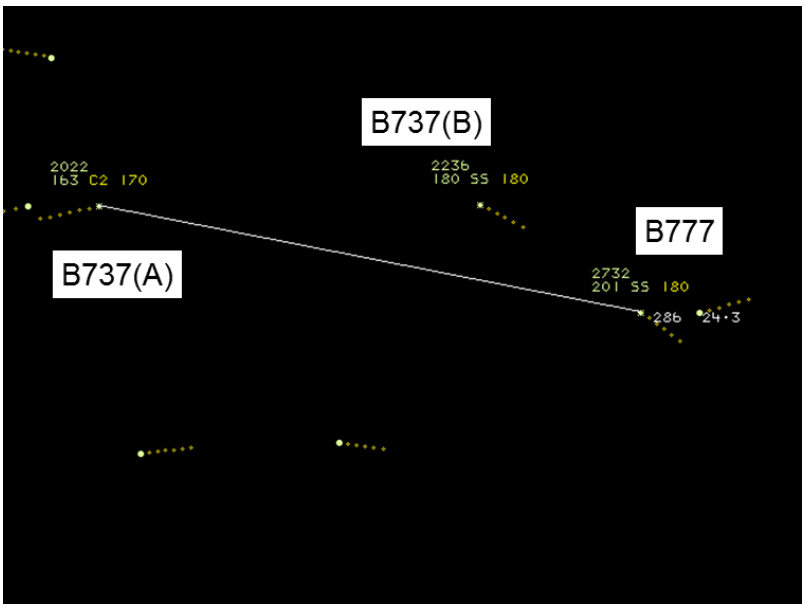


Figure 2 – 1754:50.

Again from 1754:50 until 1755:38, transmissions were continuous. At 1755:38 the controller instructed the B737(A) pilot to climb to FL210 (Figure 3).

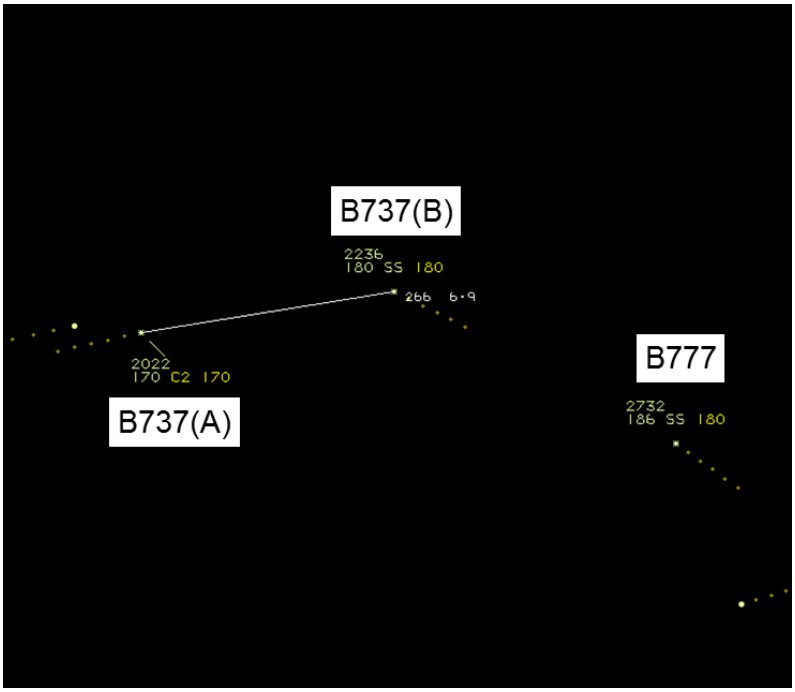


Figure 3 - 1755:38.

At 1755:55 (Figure 4), a low-level Short Term Conflict Alert (STCA) was activated between the B737(A) and the B777 but not against B737(B), which was passing 3.8nm ahead, and indicating 900ft above B737(A). The controller instructed the B737(A) pilot to stop his climb, although he did not complete the transmission and no stop-level was passed. Without pausing, the controller then gave the B777 pilot [using his correct callsign] an avoiding action turn to the left onto heading 250° but this call was wrongly taken by the B737(A) pilot. This error was picked up by the controller who started to give the B737(A) pilot his own turn for avoiding action but did not complete the transmission. The B777 pilot did not acknowledge his avoiding action turn.

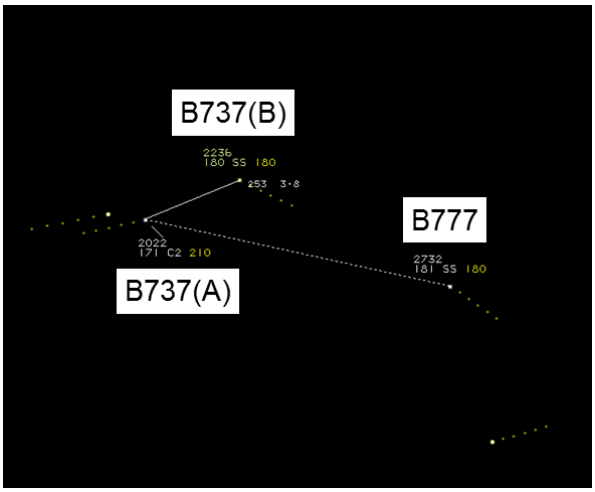


Figure 4 - 1755:55.

At 1756:10, high-level STCA were activated between B737(A) and B737(B) and between B737(A) and the B777. This coincided with a CPA between the two B737s of 500ft vertically and 1.8nm laterally, and a report from the B777 pilot of traffic 400ft beneath and climbing which was acknowledged by the controller (Figure 5).

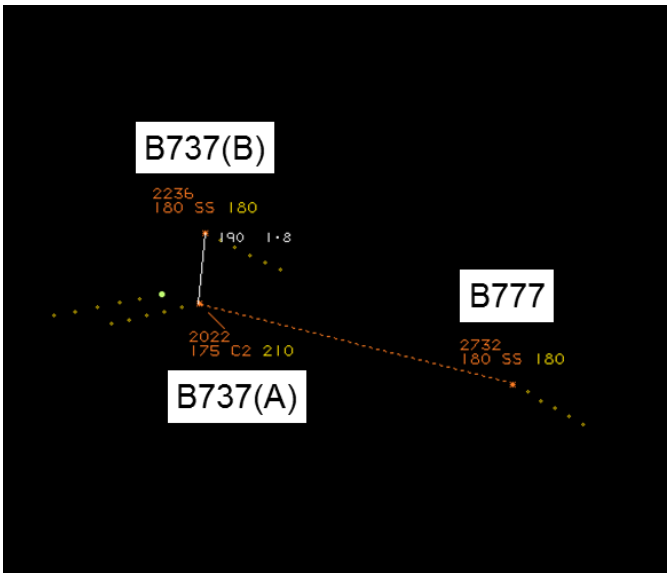


Figure 5 - 1756:10.

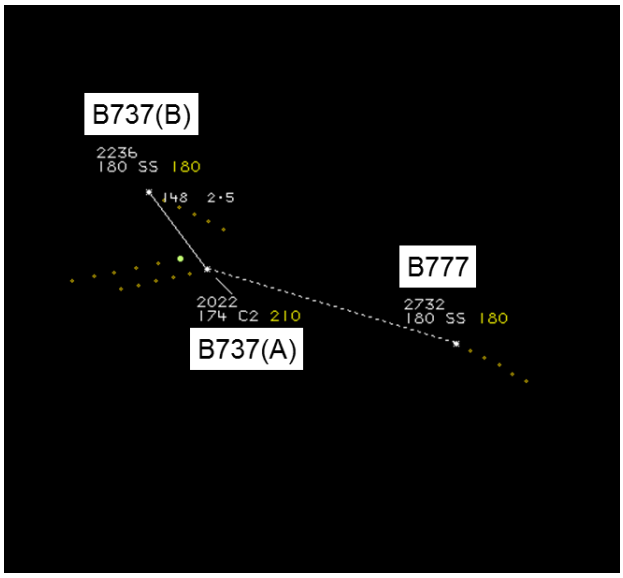


Figure 6 - 1756:20

At 1756:20 the controller again instructed the B777 pilot to make an avoiding action turn, (as previously issued), which this time was acknowledged by the pilot. The STCA between the B737s disappeared and returned to a low-level alert against the B777, with the B737(A) pilot having climbed up to FL175 but in the process of descending to FL173 as the 'altitude hold' selection took effect (Figure 6).

CPA between B737(A) and the B777 took place at 1756:50; 700ft vertically and 1.7nm laterally (Figure 7).

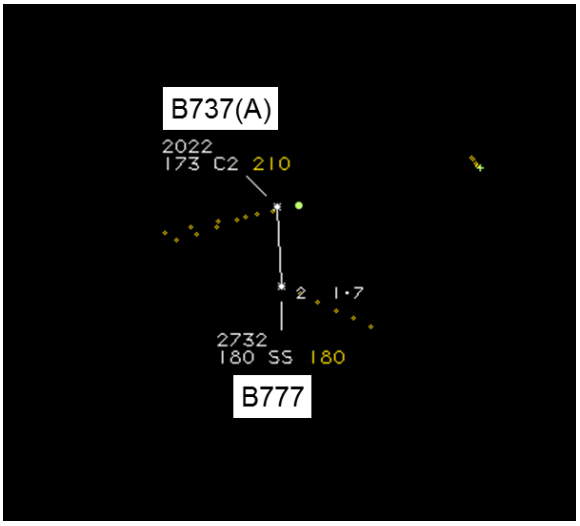


Figure 7 - 1756:50.

The controller had been valid in TC East for over a year, and an area controller for a total of 2.5 years. He had been suitably rested before and during the shift, and had been in position for 25 minutes before the incident.

In the controller's report, he acknowledged mistakenly climbing the B737(A) instead of another aircraft operated by the same company, and therefore with a similar callsign, which was some 20nm astern of B737(A) and on a similar track. At interview he confirmed this and again made reference to the fact that both the B737(A) and the succeeding aircraft callsigns were garbled on the radar screen by other aircraft. Figure 8 is a screenshot taken from a recording of the controller's position at this time, included to show the garbling (both ringed in red), although the callsigns have been converted back to transponder codes, and are therefore not as long.

Figure 8 – 1755:38

The controller had intended to climb the B737(A) earlier because it had been delayed in its transfer from the previous sector, and so started to transmit that instruction at 1753:07, but had spotted the confliction with B737(B), and so cancelled the call before completion.

Having issued the climb instruction to the wrong aircraft and having not immediately realised this, the controller was alerted to the confliction with B737(A) and both the B737(B) and the B777 when the low-level STCA activated. It was the separation against the B777 which was his biggest concern as he felt that B737(B) had already crossed ahead of and out of confliction with B737(A). He paused in his transmission of the stop-climb instruction to the B737(A) pilot as he realised that it was not going to work, and admitted that he should have introduced a gap between that transmission and the avoiding-action turn instruction to the B777 pilot. It would appear that at that time the B777 pilot had not heard the instruction and had not made the turn.

The attempts by the controller to resolve the confliction were further hindered by the B737(A) pilot taking the avoiding action turn issued to the B777 pilot, requiring the controller to have to instruct the B737(A) pilot to disregard the call.

Although the B737(A) pilot had not been issued with a level to stop his climb he had placed his aircraft into an altitude-hold configuration based on information gained from TCAS and the aircraft settled back down to FL173. The pilot's report indicated that the crew saw the B777 pass to the right, 700ft above and in a left-hand bank configuration, suggesting that it had just commenced the avoiding action left turn as a result of the repeated instruction to do so by the controller.

The crew of B737(A) reported receiving and commencing the avoiding action turn, not realising that it was not for them. The report from the crew of B737(A) also indicated that they only received a TCAS TA. No reports from the pilots of the B777 or B737(B) were available to ATSI.

The controller was responsible for the combined sectors of Dagga and Redfa. He stated at interview that the Traffic Load Prediction Tool (TLPD) did not indicate a level of traffic requiring a split of the sectors prior to taking over the position earlier; however, within 10 minutes of having

taken over, support was requested and a coordinator was brought back in. There was subsequently agreement between both controllers to split the sector, but this had not yet taken place.

The sector is responsible for Stansted, Luton, London City, Cambridge and Biggin Hill inbounds, with the outbounds from the same and Gatwick. The controller opined that, since the implementation of the London Airspace Management Programme, (LAMP), TC East (which comprises Dagga, Redfa, Saber and Jacko sectors), had become much busier. Originally controllers had only had to deal with one main crossing track, and now there are many more. Also there was little lateral freedom, and separation is taking place mainly in the vertical plane. When the sector is split, the incoming controller, by default, takes the conflicting traffic, possibly with little situational awareness, and this is counter-productive. Their final comment on the changes to TC East was that, despite standing agreements with adjacent sectors, the number of telephone-calls has also increased.

The snapshots used to illustrate the events running up to and including the CPA do not adequately indicate the actual traffic situation presented to the controller at the time. Figure 9 is a screenshot taken from the controller's position at the time he issued the climb instruction to the B737(A) pilot. Points to note are:

The London City inbounds are ringed in red, Stansted/Luton inbounds in yellow, and Stansted/Luton departures in green.

The controller is handling traffic from FL110 up to FL 220, aircraft well above and below these levels is also visible.

There is little/no filtering of traffic by level/track.

The London City inbounds now route significantly further east than pre-LAMP.

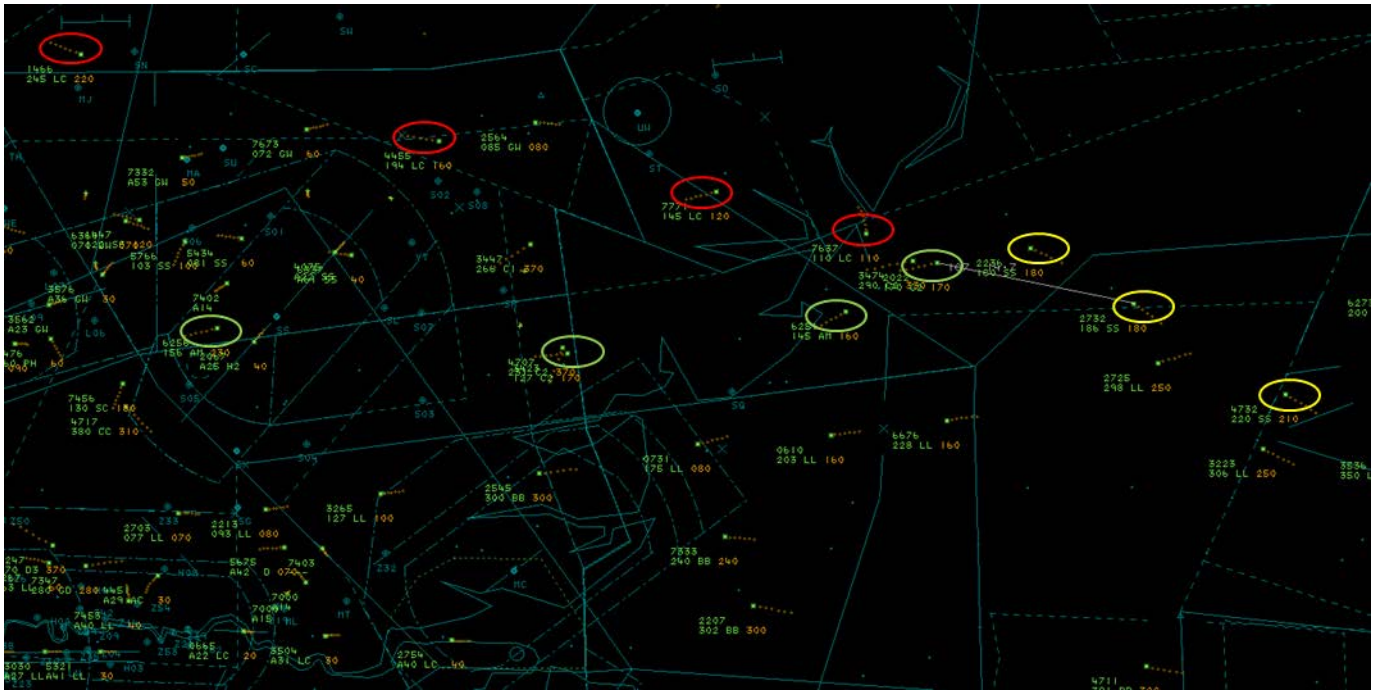


Figure 9 - 1755:38

During interview, and from watching the sector at work, the controllers spoken to confirmed that this is the picture they are used to working with, and the lack of level filters is to allow for better presentation of their own traffic to the next sector.

UKAB Secretariat

The B737 and B777 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[1]. Notwithstanding, in controlled airspace, the controller is responsible for ensuring separation is maintained between IFR traffic.

Summary

An Airprox was reported when B737(A) and a B777 flew into proximity at 1757 on Friday 1st April 2016. Both pilots were operating under IFR in receipt of a Radar Control Service from the Swanwick Redfa/Dagga sector. During a period of high workload, the controller issued a climb instruction to an aircraft using the wrong callsign, and thereby climbed B737(A) into confliction with two other aircraft (B737(B) and the B777). Although not immediately recognising the mistake, the controller's subsequent actions, despite being hindered by aircraft taking the wrong calls, together with the decision by the crew of the B737(A) to apply an altitude hold, ensured that separation did not reduce further. The minimum separation between the B737(A) and the B777 was recorded as 700ft vertically, 1.7nm horizontally.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, the controller concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities. The Board was disappointed that the pilot of the B777 had not filed a report, noting that he was operating a foreign-registered aircraft and therefore not required to abide by UK regulations in this respect.

The Board quickly agreed that the Airprox had occurred because the controller had inadvertently instructed the wrong aircraft, B737(A), to climb into confliction with the B777. In mitigation, it was apparent to the Board that, at the time of the Airprox, the controller's workload was high. Some members wondered whether the controller was actually overloaded but Civil Controller members stated that this depended on many factors and it is really only the controller involved that could determine whether he had felt that he had been overloaded; on this occasion, the controller had considered that, although the workload had been high, he had not been overloaded. Nevertheless, the R/T was certainly congested, with continuous transmissions being made, and in the Board's opinion this high workload was a factor to the Airprox not only in that the controller was operating at levels that approached maximum, but also because the continuous rapid transmissions meant that it was easy for pilots to mishear or misinterpret calls, as had happened in this incident.

The Board noted that the controller had been operating the Redfa and Dagga Sectors bandboxed. They also noted that he had realised that the sector had been getting busier and had requested a Co-ordinator. Within 5 minutes of the Co-ordinator's arrival, they had decided that the sector needed to be split. Although the request had been made and agreed to, it had not occurred at the time of the incident and several members wondered why this action had not been taken earlier. A TC Controller with experience in this environment explained that use is made of the Traffic Load Prediction Tool to try and forecast a sector's workload. However, although this can be a useful tool for some sectors (mostly En-route), in Terminal airspace it only forecasts movements based on their flight-planned departure times, which can change due to unanticipated delays. Although recognising that predicting a sector's workload is difficult, the Board agreed that if the sector splitting had taken place earlier it would probably have reduced the likelihood of the Airprox, or at least have allowed the controller more time to resolve the situation. In any case the R/T loading would have been much reduced and, therefore, it would have been more manageable.

The Board was briefed by the TC Controller member about the London Airspace Management Programme (LAMP) and the change to the East Sector procedures, which included Redfa and Dagga, just over 6 weeks before the Airprox. In his opinion, although there had been adequate

[1] SERA.3205 Proximity.

simulator training, with provision for extra time if requested, some controllers were still getting used to the different routeings and possible confliction areas. Additionally, he noted that the sector had become much busier since the implementation of the LAMP procedures. In the Board's opinion this overall higher workload led extra credence to the fact that the sector should have been split earlier.

The Board noted that the aircraft which the controller had intended to climb was behind B737(A) and was operated by the same company. Under pressure, the controller had transposed their callsigns, albeit that the flight numbers were not similar, and this transposition was considered to be a contributory factor in that had it not occurred, B737(A) would not have been instructed to climb. It had not been possible to positively determine why this inadvertent error had occurred, but the ATSI advisor commented that the radar returns of both aircraft had been garbling with other traffic and so the controller could not use the radar information when passing the climb instruction. However, the aircrafts' flight progress strips were on the display and would have shown the confliction. All the ATSI advisor could surmise was that the controller had probably reverted to memory when he incorrectly recalled the callsign. In instructing the B737(A)'s pilot to climb to FL210 rather than the aircraft behind, a potential confliction occurred between B737(A) and two aircraft, B737(B) and the B777, which had been routeing to cross ahead of B737(A) at FL180. The advisor confirmed that, at interview, the controller stated that he had been aware of the presence of the two aircraft at FL180 but had only realised the confliction caused by the use of the wrong callsign after STCA had activated. He had then instructed the B737(A) pilot to stop his climb and without pausing had instructed the B777 pilot to make an avoiding action turn. Unsurprisingly, it would appear that these conflated clearances had resulted in some confusion; although the B737(A) pilot did stop the aircraft's climb and also responded to the turn instruction but the B777 pilot did not acknowledge the call or commence the turn. Several members considered that ideally the two instructions should have been issued separately. Moreover, if the controller had considered it time expedient to only use one transmission they wondered why the controller had not used the phrase 'break' to split up the clearances. [CAP413, Chapter 2, Paragraph 2.18, states that *'the term 'break' indicates the separation between messages; 'break break' indicates the separation between messages transmitted to different aircraft in a busy environment although this may be confused with an instruction to an aircraft formation and should be used with caution.'*]

Turning to the actions of the pilots, the Board commended the B737(A) pilot for his situational awareness, use of TCAS to monitor the surrounding situation, and his quick reaction to the instruction to stop climb which quickly prevented the aircraft climbing above FL175. Without this intervention, the Board considered that separation could have been much more seriously eroded.

In looking at the risk of collision, although it was recognised that the controller's actions had caused the confliction between the subject aircraft, the Board noted that he had subsequently taken action to control the situation. The B737(A) pilot had also reacted to the controller's instruction to stop his climb, and the B777 pilot had turned after a subsequent avoiding-action transmission and had also reported being aware of the traffic underneath. The Board noted that the standard separation required between B737(A) and the B777 was either 1000ft vertically or 3nm horizontally. Because standard separation had not been maintained (CPA was recorded as 700ft vertically and 1.8nm horizontally), the Board considered that safety had been degraded; however, the Board assessed that timely and effective actions had nonetheless been taken, and the incident was assessed as Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The controller inadvertently climbed the B737(A) into conflict with the B777.

Contributory Factors: 1. The controller was subject to a high workload.

2. The controller, under pressure, transposed callsigns.

Degree of Risk: C.