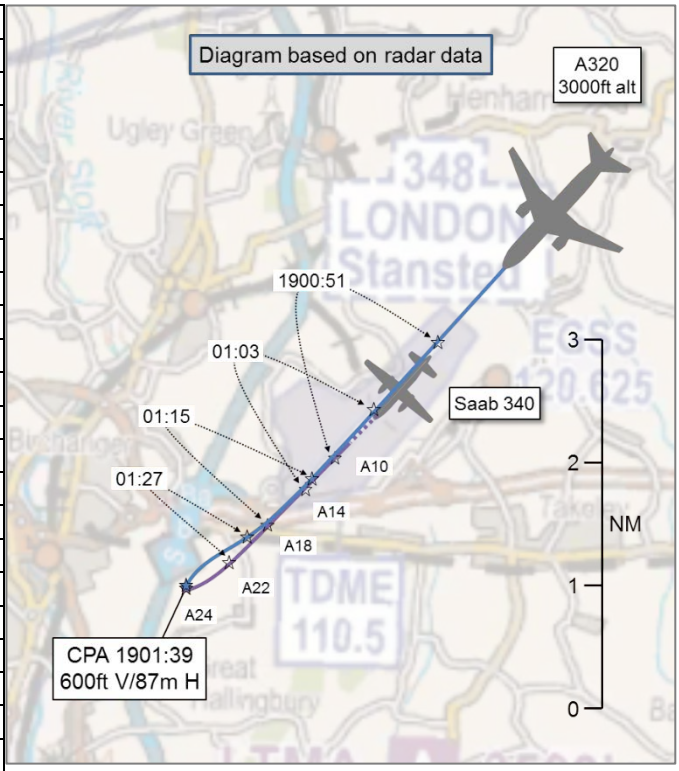
AIRPROX REPORT No 2019207

Date: 12 Feb 2019 Time: 1902Z (Night) Position: 5152N 00001E Location: 2NM SW Stansted Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	A320	Saab 340
Operator	CAT	CAT
Airspace	Stansted CTR	Stansted CTR
Class	D	D
Rules	IFR	IFR
Service	Radar Control	ACS
Provider	Stansted App	Stansted Tower
Altitude/FL	3000ft	2400ft
Transponder	A, C, S	A, C, S
Reported		
Colours	NK	NK
Lighting	NK	NK
Conditions	VMC	VMC
Visibility	NK	NK
Altitude/FL	NK	NK
Altimeter	NK	NK
Heading	NK	NK
Speed	NK	NK
ACAS/TAS	TCAS II	TCAS II
Alert	TA	RA
Separation		
Reported	NK	900ft V/NK H
Recorded	600ft V/87m H	



This Airprox was reported to the AAIB, who conducted an investigation into the circumstances of the event.[1] Key elements of the AAIB and NATS reports have been collated for consideration by the UK Airprox Board in order to establish Contributory Factors and Risk from the UKAB perspective.

Analysis and Investigation

AAIB REPORT[2]

Synopsis

On short finals, the A320 initiated a go-around due to an unstable approach. During the go-around a delayed response to an ATC instruction caused a loss of planned separation and resulted in a Traffic alert and Collision Advisory System (TCAS) Resolution Advisory (RA) on the Saab 340.

History of the flight

A320: During the arrival into Stansted, while at approximately 14,000ft, [Stansted Approach] gave [A320 C/S] a short-cut and a speed reduction to 250kt. The reduction in track-miles available to the crew meant the aircraft was now above the descent profile for the runway in use. The situation was noted by both pilots, but the co-pilot, who was PF, felt the approach was still acceptable. At approximately 7,000ft, ATC cleared [A320 C/S] to descend to 2,000ft and the crew decided they could reach the final approach fix at 2,000ft by using the speed brakes to increase the descent rate. [Stansted Approach] restrictions led to further reductions in speed to 220kt and then 200kt with the consequent effect of a reduced descent rate. [Stansted Approach] offered to increase the distance to landing but

[1] https://www.gov.uk/aaib-reports/aaib-investigation-to-airbus-a320-oe-ihd-and-saab-scania-ss340b-g-lgnk.
[2] UKAB additional clarifications, redactions and comments in square brackets.

this was declined by the co-pilot. At this point the commander pointed out that the aircraft was above profile and that he wanted to extend the landing gear to increase drag and hence increase the descent rate. This was done and the aircraft began returning to the profile. As the aircraft approached the planned ILS glidepath intercept, the glideslope indication was near the lower end of the scale (fly down indication). Before the AP captured the glideslope, the AP entered an altitude capture mode and began to level at 2,000ft so, again, the descent rate was reduced. The commander directed the co-pilot to use a vertical speed mode to increase the rate of descent. However, the co-pilot inadvertently triggered a climb mode in the AP. The co-pilot wanted to re-attempt the vertical speed selection, but recognising there was no prospect of a stable approach the commander ordered a go-around. The co-pilot set Take Off Go-Around (TOGA) for the flight director and auto-throttle, while also disconnecting the AP. The commander set the go-around altitude in the Flight Control Unit (FCU) and, very shortly afterwards, the aircraft was in altitude capture mode at 3,000ft, the published go-around altitude. At 3,000ft there was some confusion between the pilots over speed and flap selections, and the co-pilot reduced thrust to idle. The commander directed the co-pilot to "set thrust and Flap 1" but then, still not content, he took control of the aircraft. As the commander took control [Stansted Approach] instructed [A320 C/S] to climb to 4,000ft and fly a heading of 135°. This was shortly followed by a further turn to 090°. The flight director was still giving directions to fly the aircraft along the planned navigation path for the published go-around so the commander did not engage the AP. He made a slight turn to the right and then immediately corrected to the left and ordered the co-pilot to set heading 090°. At this point there was an audio callout of "PRIORITY RIGHT" which indicated the co-pilot had pressed the priority take over button on his sidestick. The commander re-iterated his control of the aircraft, brought the control priority to the left, turned left to 090° and climbed to 4,000ft. The departing Saab 340 indicated on the TCAS as a TA with the associated amber visual indications. The crew believed the aircraft were approximately 900ft apart vertically, and the TA disappeared during the climb to 4,000ft. The commander retained control and subsequently flew an uneventful approach to land at Stansted.

Saab 340: The aircraft was routing from Stansted to [destination] and cleared for an UTAVA 1R Standard Instrument Departure (SID) with a cleared altitude of 4,000ft. As the aircraft approached holding point R1 for Runway 22, the crew reported to [Stansted Tower] that they were "READY FOR DEPARTURE". They were cleared for an immediate take-off, and the departure was expeditious but routine. As the aircraft passed approximately 1,000ft, the crew were advised by [Stansted Tower] that an aircraft on approach had initiated a go-around. [Stansted Tower] advised the crew to continue with the planned UTAVA 1R SID. Shortly after this, [Stansted Tower] instructed the crew to turn right onto a heading of 290^0. By this point the autopilot (AP) was engaged so the commander initiated the turn using the AP. A further [Stansted Tower] instruction was then issued to "STOP CLIMB AT ALTITUDE 3,000 FT". This instruction was acknowledged by the co-pilot and the commander set the aircraft altitude select/alert system to 3,000ft. On passing approximately 2,500ft, the aircraft TCAS issued an audio Traffic Advisory (TA) message and the associated amber indication on the pilots' displays. A few seconds later as the aircraft passed approximately 2,700ft the TCAS issued a momentary "LEVEL OFF" RA instruction with the associated red indications on the pilots' displays. The commander disconnected the AP and began to level the aircraft. Almost immediately the TCAS issued a "CLEAR OF CONFLICT" message. The commander subsequently climbed the aircraft to the cleared altitude of 3,000ft and the AP was re-engaged. The co-pilot did not transmit a "TCAS RA" message to ATC due to his high workload at the time of the event. The crew continued the flight to [destination] and reported the event to Stansted ATC upon arrival.

Recorded Information

The radar and ATC transponder data from both aircraft was analysed. A digest of the analysis showing the closest point of approach is shown in Figure 1. The aircraft passed 87 m apart laterally and 600ft vertically. A 3D representation is at Figure 2.

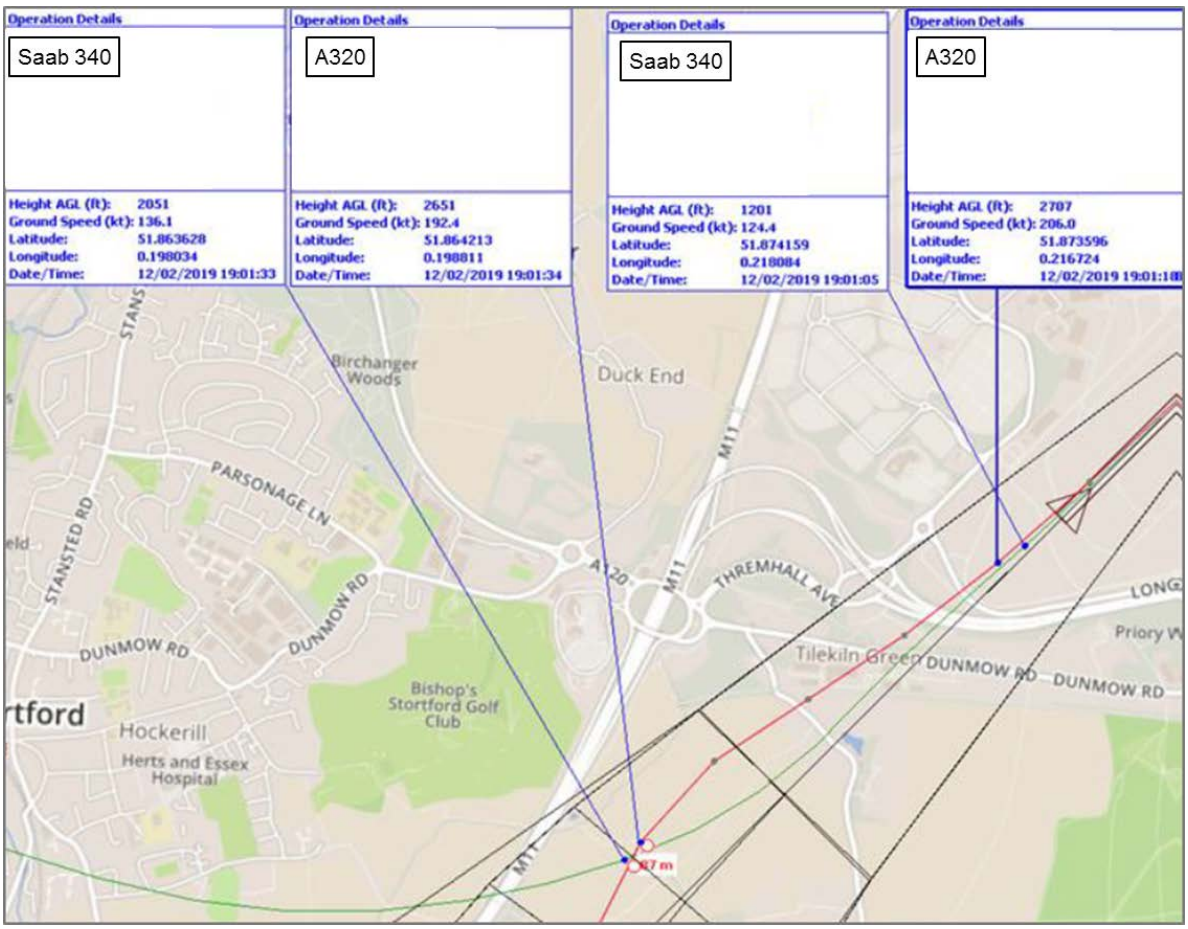


Figure 1
ATC Radar Information

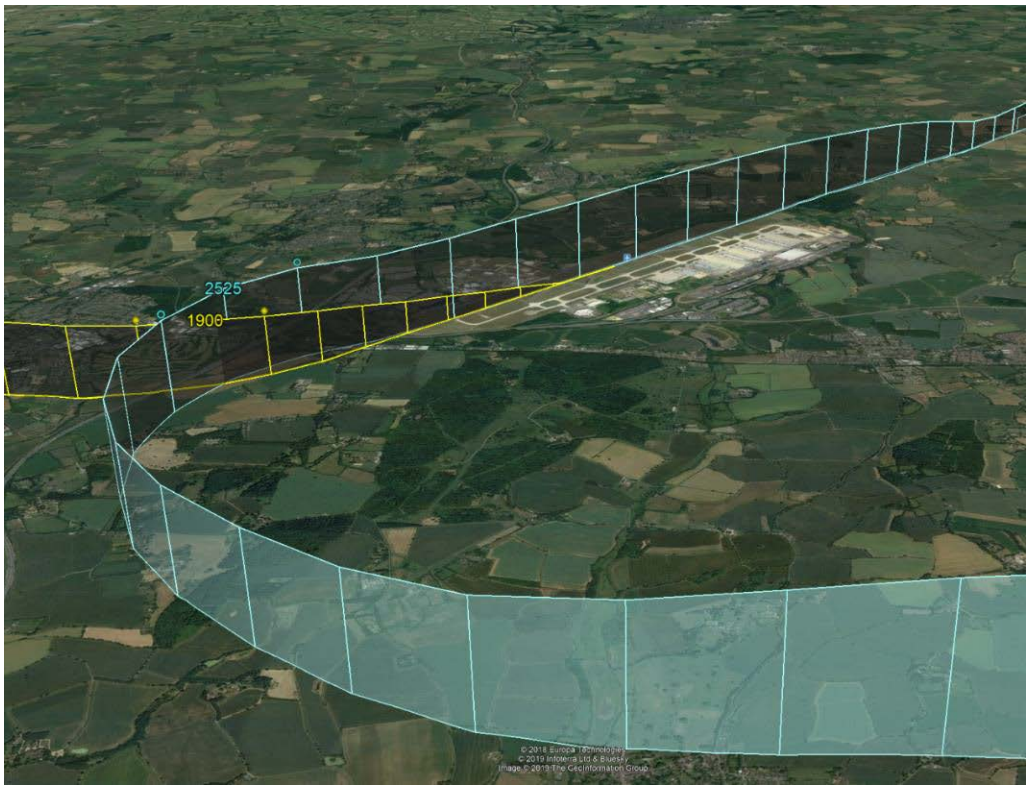


Figure 2
3D Tracks with the red arrow indicating the direction of travel
[Saab 340 C/S] in yellow, [A320 C/S] in blue with altitudes based on 1013 mb

Human factors – [A320 C/S]

The crew of the A320 consisted of a commander under line training in the left seat with a line co-pilot in the right seat. A training captain was supervising the training from the flight deck jump seat. The commander was in a relatively unfamiliar role and being assessed on his performance. It is likely that he did not wish to be too overbearing on the co-pilot and so allowed the perceived excess energy situation to persist longer than he would in normal circumstances. This contributed to the aircraft being above the glideslope as the aircraft neared 2,000ft. The AP capture of 2,000ft during the approach surprised the co-pilot. The commander gave relevant and prompt instructions to recover the situation but these were not followed by the co-pilot, who was under pressure, and their actions triggered a climb. Though the co-pilot wanted to continue the descent, the commander recognised that there was no realistic prospect of a stable approach and ordered a go-around. For the go-around, the co-pilot inadvertently deactivated the AP though they did set TOGA thrust. The crew workload was now significantly above normal. The go-around altitude was 3,000ft and this was reached very quickly. As the aircraft levelled it accelerated quickly. The commander, cognizant of the increasing speed asked the co-pilot to confirm a selection of Flap 1. At this point the co-pilot retarded the thrust to idle as a reaction to the speed increase. The commander then directed "Set Thrust and Set Flap 1." Recognising the breakdown of situational awareness, the commander took control of the aircraft. During this period [Stansted Approach] directed the turn to 135° and then 090°. The commander was aware of the requirement to turn but crew duties had changed, and the co-pilot's situational awareness appeared to have briefly broken down due to the high workload. The aircraft flight director was still commanding a turn to the right to follow the published go-around and so the commander could not immediately engage the AP to reduce workload. As the commander tried to fly the turn manually, the "PRIORITY RIGHT" callout indicated that the co-pilot was still using his flying controls. The commander repeated his order to take control and then flew the manoeuvre directed by ATC.

Analysis

The A320 was in a state of excess energy as it conducted its arrival to Stansted. This was recognised by the crew and by ATC, but all involved thought that the situation was manageable. ATC did offer extra distance to the crew to assist in resolving the situation but this was declined by the co-pilot of [A320 C/S] who was PF. The AP capture of 2,000ft altitude triggered a situation which markedly and suddenly increased the crew workload. The crew actions triggered a climb which led to the commander ordering a go-around. During the go-around the commander recognised that the situational awareness of the co-pilot was low, and he took control to resolve the situation. The high workload of the [A320 C/S] crew following the initiation of the go-around and the change of control led their focus to be inside the aircraft for a significant period. During this time their attention was directed at a safe recovery of the situation and the execution of the go-around. These factors contributed to their delayed response to ATC.

Conclusion

The go-around and the very high resultant workload, followed by a change of PF, led to a situation where the ability of one of the A320 crew to react to ATC instructions was reduced. Due to the delay in the response by the A320 crew there was a short-term loss of separation between the aircraft. The Saab 340 crew received a TCAS RA which prevented a further degradation of separation.

SUMMARY OF NATS REPORT[3]

1. Executive summary

[A320 C/S] initiated a go around at Stansted whilst on the SS INT frequency. A departure from Stansted, [Saab 340 C/S], took off and ended up in confliction with the go around. Coordination was made that [A320 C/S] would turn left, and this instruction was given and read back by the pilot on two occasions. The left turn did not take place and the aircraft passed laterally close to each other. The AIR controller gave a heading instruction to the [Saab 340 C/S] and avoiding action was issued by the SS INT

[3] UKAB additional clarifications, redactions and comments in square brackets.

controller and lateral separation was regained. The SS AIR controller was visual with the aircraft at all times

2. Description of the event:

[A320 C/S], an inbound to SS was a little fast and high but monitored by the SS INT controller and insisted that they would be able to complete the approach.

Time	Speaker	Text
18:51:11	[A320 C/S]	London, good evening. [A320 C/S], descending level one one zero
18:51:16	SS INT	[A320 C/S], Essex, thanks, maintain a speed of two five zero knots or greater please, report aircraft type, information is hotel
18:51:22	[A320 C/S]	Hotel on board, A Three Twenty and speed two fifty or more, [A320 C/S]
18:51:28	SS INT	[A320 C/S] thank you, descend flight level niner zero
18:51:31	[A320 C/S]	Descending niner zero [A320 C/S]
18:52:37	SS INT	[A320 C/S] descend flight level eight zero
18:52:40	[A320 C/S]	Descend to level eight zero [A320 C/S]
18:53:41	SS INT	[A320 C/S], you've got twenty four miles, descend to altitude six thousand feet, QNH one zero three two
18:53:46	[A320 C/S]	OK, six thousand feet, one zero three two, [A320 C/S]
18:54:10	SS INT	[A320 C/S], report established localiser runway two two, on this heading
18:54:15	[A320 C/S]	Localiser runway two two, call you established, [A320 C/S]
18:55:41	SS INT	[A320 C/S], descend to altitude two thousand feet, cleared ILS approach two two, speed one eighty
18:55:47	[A320 C/S]	Descending two thousand feet, cleared ILS runway two two, speed one eighty [A320 C/S]
18:56:32	SS INT	[A320 C/S], twelve miles, have you got, err, do you need more space?
18:56:42	[A320 C/S]	Ah, we'll manage it [A320 C/S]
18:57:49	SS INT	[A320 C/S], still ok for the height?
18:57:52	[A320 C/S]	Say again, [A320 C/S]
18:57:54	SS INT	Ok, you're eight miles, you still ok for the height?
18:57:55	[A320 C/S]	Affirm [A320 C/S] and confirm cleared for approach?
18:57:58	AIR	*Tower*
18:57:59	TC	*I told him four times - [A320 C/S] affirm you cleared the ILS approach 22. I told him four times now this*
18:58:05	AIR	*Yeah no that's alright and er'*
18:58:05	TC	*[A320 C/S] he's gunna be a bit fast that's all*
18:58:01	[A320 C/S]	Cleared ILS two two, [A320 C/S]
18:58:43	SS INT	[A320 C/S], speed one six five knots til four
18:58:46	[A320 C/S]	One sixty til four, [A320 C/S]

[Saab 340 C/S] was cleared for an immediate take off with [A320 C/S] on final approach but not on the AIR frequency. The [A320 C/S] was observed from the VCR to be going around. The AIR controller rang FIN to coordinate a turn for the [A320 C/S] (left heading 135 degrees) and advised radar of the departure.

18:59:02	[Saab 340 C/S]	Tower [Saab 340 C/S] we're ready to depart here
18:59:04	AIR	[Saab 340 C/S] Tower thank you. Expedite line up via Romeo 1. Traffic four and a half miles.
18:59:09	[Saab 340 C/S]	Expediting line up [Saab 340 C/S]
18:59:21	AIR	[Saab 340 C/S] from Romeo 1 cleared immediate take off, runway 22, 210 degrees, niner knots
Note		**[See Figure 3 below]**
18:59:28	[Saab 340 C/S]	Cleared immediate take off [Saab 340 C/S] **[See Figure 4 below]**
[18:59:54]		[A320 C/S] AFDAS alarm indicating too high **[See Figure 5 below]**

18:59.59	SS INT	[A320 C/S], contact the tower one two three decimal eight zero five, just your callsign
		(no reply)
19:00:02	TC	Zero five, just a call sign just coming in sorry
19:00:04	AIR	No that's alright he looks like he might be going around and I've just got the er' [Saab 340 C/S] rolling so er' if you want to go left with the [A320 C/S]
19:00:09	[A320 C/S]	[A320 C/S], go around **[See Figure 6 approx 2.5Nm]**
19:00:12	TC	Oh he's uh oh right ok. Ok he's come to - ok I'll go left then
19:00:15	AIR	Go left excellent. Thank you very much ta
19:00:16	SS INT	[A320 C/S], that's understood, then climb to, initially to altitude three thousand feet, make a left turn heading one three five
19:00:21	TC	Three thousand feet make a left turn heading 135
19:00:22	[A320 C/S]	Climb three thousand, left heading one three five, [A320 C/S]

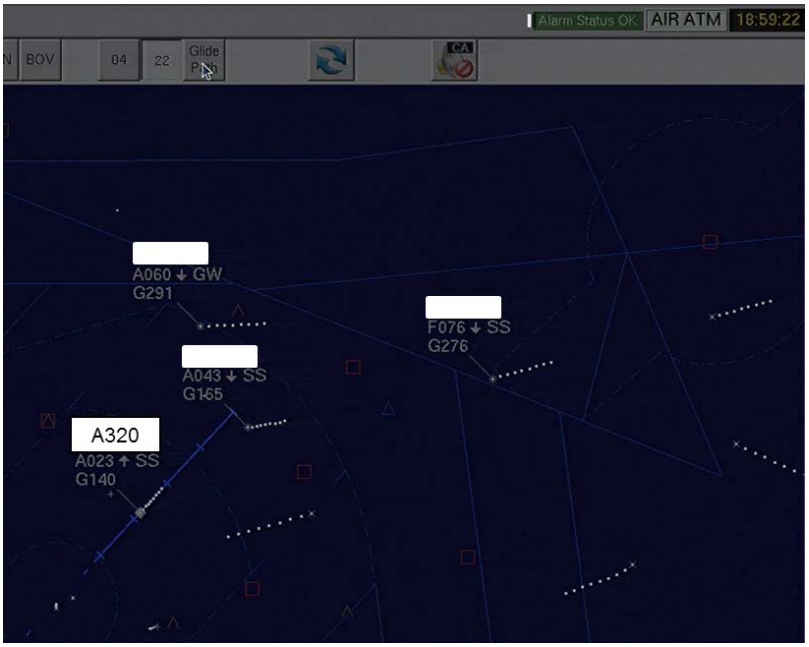


Figure 3 18:59:22 [A320 C/S] briefly arrests their descent and climbs to altitude 2400ft (approx 4.1nm)

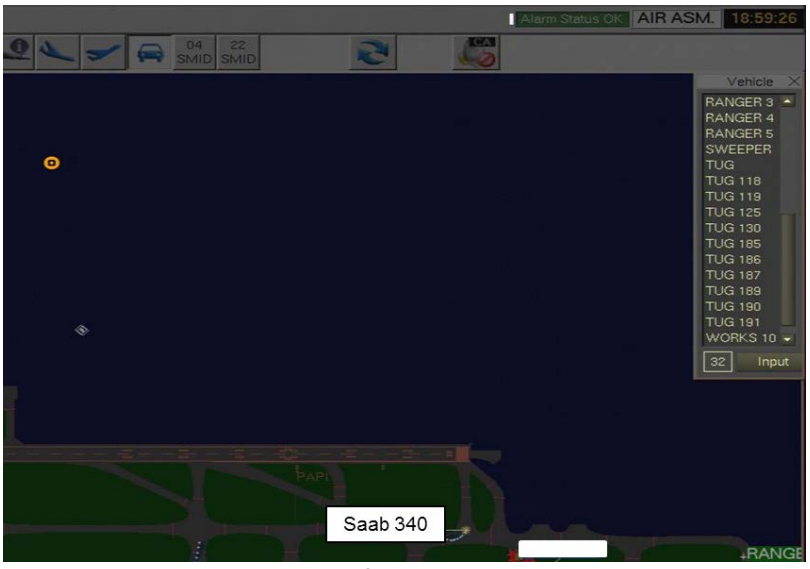


Figure 4.

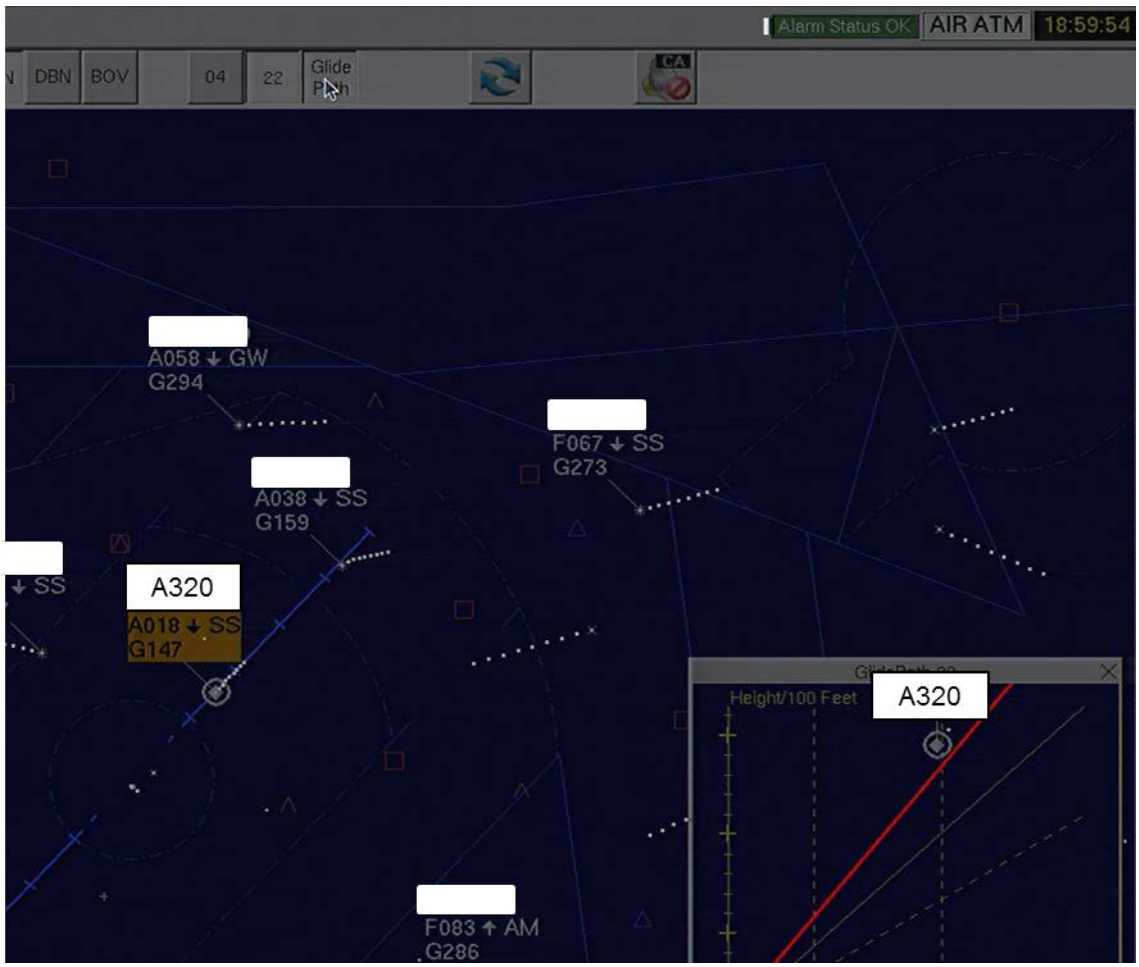


Figure 5 [A320 C/S] AFDAS too high

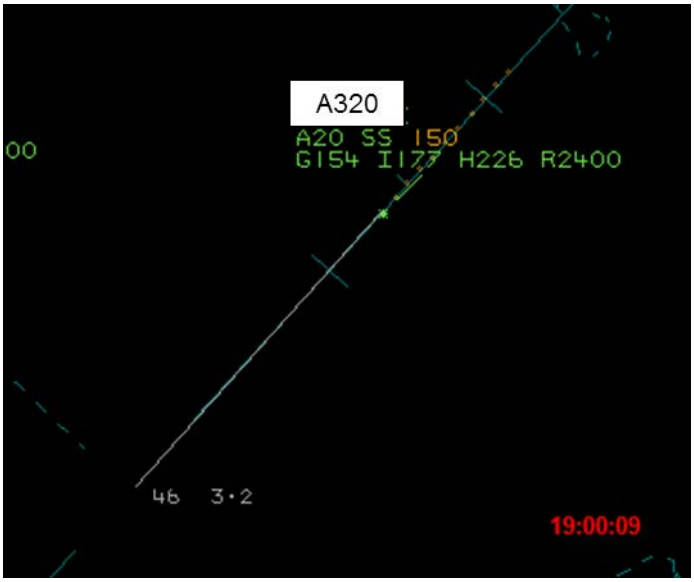


Figure 6.

At about 3.5nm, the SS INT attempted to transfer [A320 C/S] to the tower; a number of things occurred almost simultaneously. The tower had rung to ask about the [A320 C/S], SS INT said that it was coming over but the tower could see it initiating a go-around at about 2.5nm and requested that it be turned left mentioning that they had a departure rolling. [A320 C/S] came in on the INT frequency going around and was given a left turn and climb. [Saab 340 C/S] was recorded airborne at 19:00:34 in EFPS, the ASMGCS suggests that [Saab 340 C/S] was airborne at 19:00:26, the disparity could be due to workload at this time.

19:00:37	AIR	[Saab 340 C/S] er' just going around behind you is er' an airbus A320 they're making a left turn heading 130 continue on the UTAVA departure
19:00:48	[Saab 340 C/S]	We're continuing uh UTAVA 1 Romeo departure [Saab 340 C/S]
19:00:57	SS INT	[A320 C/S], confirm taking a left turn one three five, there is traffic rolling ahead of you
		(no reply)
19:01:03	SS INT	[A320 C/S]?
19:01:05	[A320 C/S]	Say again the heading, [A320 C/S]
19:01:07	SS INT	[A320 C/S], turn left heading one three five **[See Figure 7 below]**
19:01:09		RING TONE
19:01:11	AIR	[Saab 340 C/S] standby now heading 290 degrees please climb altitude 3000 feet
19:01:12	[A320 C/S]	Left heading one three five, err, left heading one three

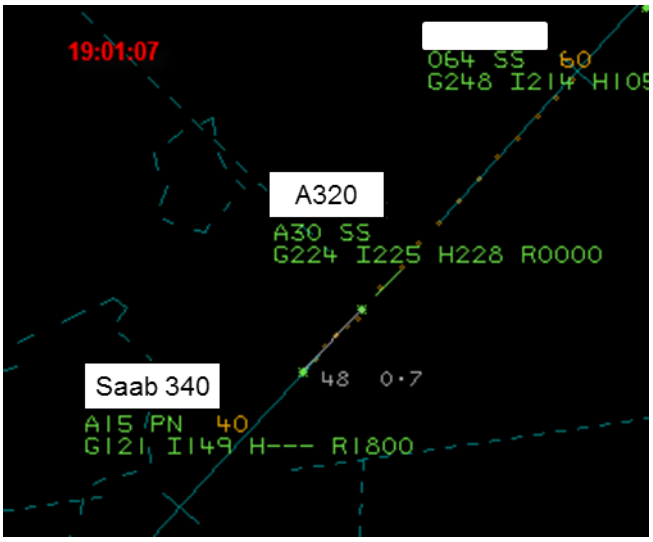


Figure 7

This instruction was [not followed] on two occasions by [A320 C/S] as the aircraft continued on runway heading coming increasingly close to the departing [Saab 340 C/S]. In spite of the eventual proximity, 0.26nm and 500', [A320 C/S] did not report a TCAS RA.

The AIR controller gave traffic information to the [Saab 340 C/S] and told him to fly the standard SID. The [A320 C/S] was observed maintaining runway heading and converging with the departing aircraft. The AIR controller turned the [Saab 340 C/S] right heading 290 degrees. FIN rang to advise that the [A320 C/S] aircraft had failed to make the turn, but was turning and climbing now. Both a/c were visual from the VCR at all times and the AIR controller was applying Reduced Separation in the Vicinity of the Aerodrome (RSVA). Having coordinated a turn, to the left, for the [A320 C/S] with Radar the Air controller then issued the [Saab 340 C/S] a turn in the opposite direction, right, in an attempt to gain separation.

19:01:18	TC	*I just got a go – I got up very shortly but he didn't take the turn*
19:01:20	AIR	*Right I've turned the [Saab 340] 290 degrees*
19:01:22	TC	*Ok, alright ta*
19:01:22	AIR	*Alright thank you ta* **[See Figure 8 below]**
19:01:28	AIR	And [Saab 340 C/S] continue the right turn now heading stop the climb altitude 3000 feet
19:01:34	[Saab 340 C/S]	and stop the climb at 3000 feet [Saab 340 C/S] **[See Figure 9 below]**

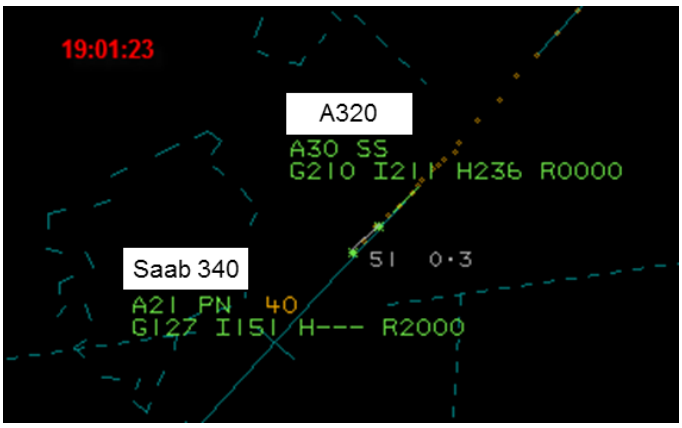


Figure 8 Radar separation lost

Figure 9 19:01:34
[Saab 340 C/S] instructed to stop climb

The SS INT controller eventually succeeded in turning [A320 C/S], passed traffic information and, ultimately, avoiding action.

[Figure 10] below from the Airport Noise monitoring facility indicates that the [Saab 340 C/S] was marginally ahead as the tracks cross when [A320 C/S] starts to make the left turn.

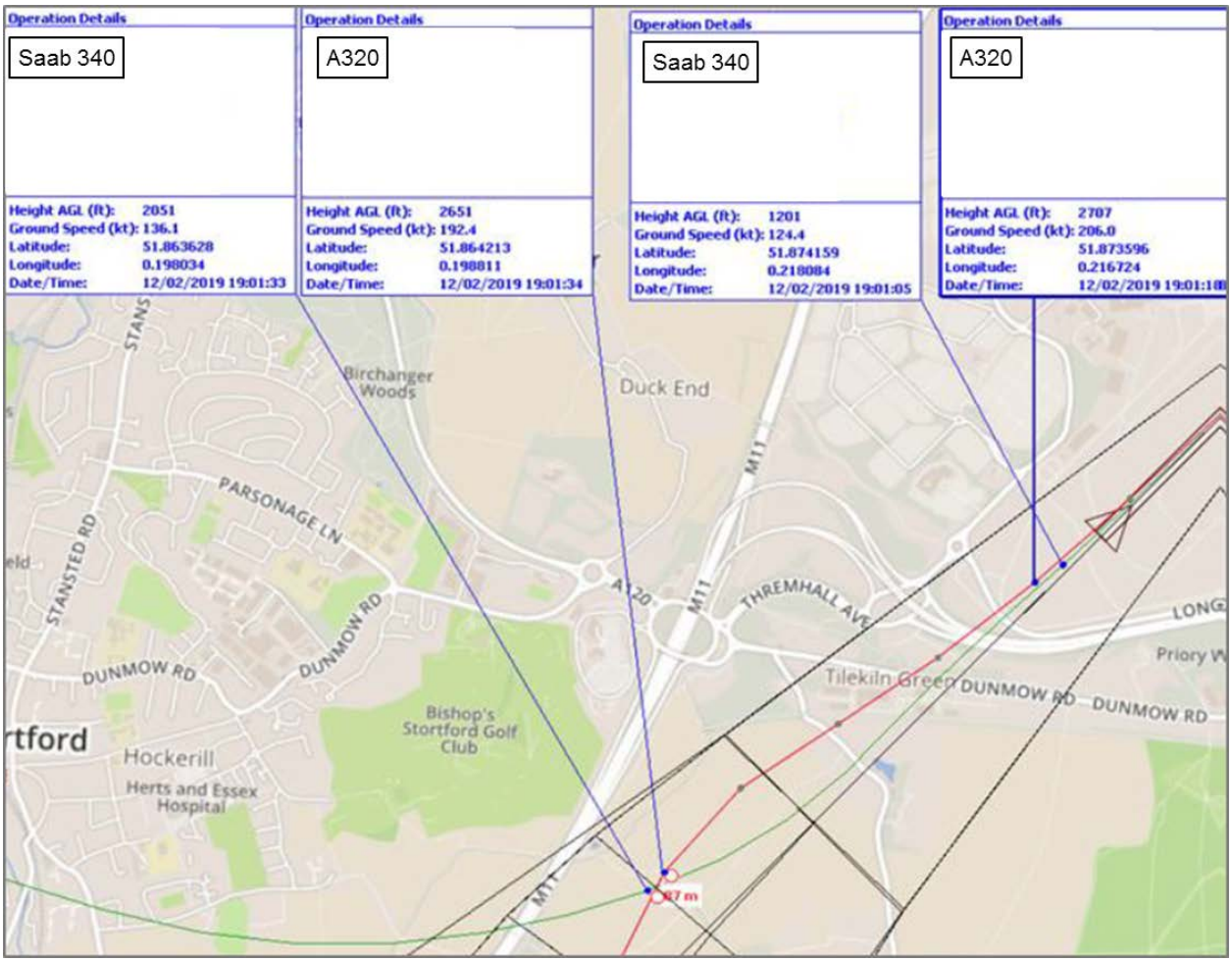


Figure 10 Airport NTK plot

19:01:35	SS INT	[A320 C/S], there's traffic in your, just underneath you in your twelve o'clock, turn left now heading of zero niner zero degrees, it is avoiding action, climb to altitude four thousand feet
19:01:45	[A320 C/S]	Four thousand feet and left heading zero niner zero **[See Figure 11 below]**

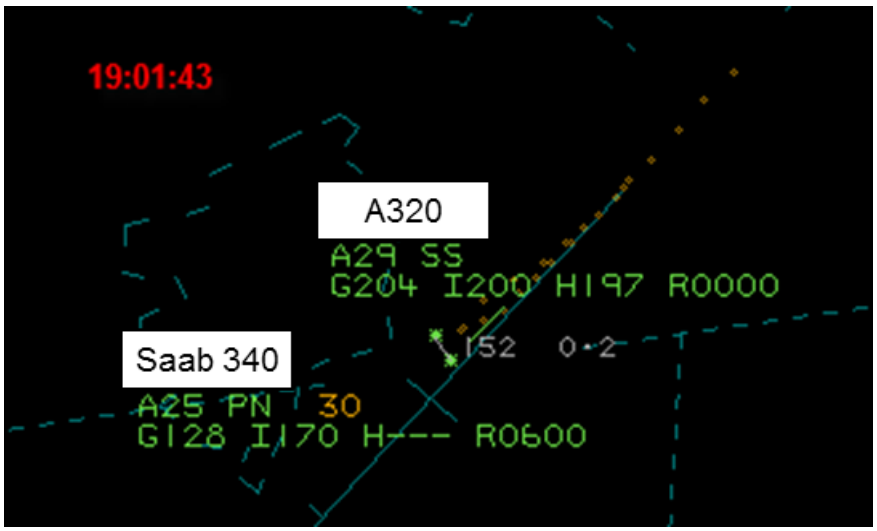


Figure 11 Minimum separation

TC GS advised separation was 0.26 mile and 500' at the closest point. [of separation loss]

3. Investigation:

Media and transcripts reviewed. Controllers interviewed. Airlines contacted. TCAS simulation obtained.

FIN Controller

An experienced controller with a number of years of radar experience behind them, they were rested and did not feel that there were any distractions present within the Ops room. They are of the opinion that Stansted is a complex sector. However ExCDS is good in the approach environment. It helps on the sector, especially with regard to releases, and the controller would not want to go back to work in paper.

It was towards the end of a 2nd afternoon shift. Stansted was bandboxed and he was alone with no coordinator. There were no distractions. There were sufficient staff available to split the sector if required. The traffic levels were such that the sector was “ticking over” but there wasn’t a high degree of complexity and most of the traffic was coming from the east.

When [A320 C/S] was at 24 miles, the controller thought the pilot was a little high, but nothing unusual. A range was given to the pilot and the pilot was then responsible for planning the descent accordingly. Continuous descent was given to the pilot. The controller stated that this happens “time and time again”. The pilot is in charge of the profile.

The Luton Approach controller (situated nearby) was one of the OJTIs who had trained the controller on Stansted and observed the event. They agreed throughout the event that the aircraft approach should be continued.

It appears that speed restrictions on the approach can cause aircraft to be high, however it seems to the controller that sometimes the pilot can’t factor this into the descent profile. Alternatively it may be that the pilot may not assimilate track mile information.

The APP controller coordinated with the AIR controller that [A320 C/S] would be fast. The APP controller meant that they would not be giving the final speed reduction on approach until a little later than usual to enable the pilot to lose height. Appropriate speed control instructions were issued but the [A320 C/S] was still high on profile and therefore high speed in order to reduce height. The radar replay shows that each time the crew of [A320 C/S] slowed down to meet the speed instruction their rate of descent also slowed.

When asked if they had considered breaking the aircraft off the approach or providing vectors to give additional track miles, the App controller stated that the crew of [A320 C/S] repeatedly stated that they were ok and did not need additional track miles to make the approach work. The data capture from the crew ASR's suggest that had the [A320 C/S] FMS not been erroneously set to 2000ft altitude capture they would have been able to fly a stable approach.

During the go-around, the AIR controller telephoned which alerted the APP controller to the event. The aircraft had been transferred to the tower frequency a little later than usual, which was not read back by the pilot. This quite often happens on approach resulting in approach telephoning AIR to see if the inbound aircraft is on the frequency.

At the time of the go around, the APP controller may not have seen at first from the radar because the TDB was hidden by another aircraft passing above. During the first instruction to turn left heading 135, they would never consider using avoiding action because of the aircraft configuration at that point.

With the second instruction to turn left heading 135, it was recognised that sometimes pilots will take a mile and a half to turn. In hindsight he should have given avoiding action at this stage. The APP controller was also hoping that the AIR controller would stop the departing [Saab 340] aircraft at 2000ft. At the time they did not consider coordinating a stop for the [Saab 340 C/S] at 2000ft, they believed that this was something the AIR controller might have considered. The APP controller thought at the time that the pilot of [A320 C/S] was simply not obeying any instructions. There was also other traffic within the sector which required time critical instructions – which were also dealt with. Further climb was not given to [A320 C/S] as 4000ft was not in the APP controllers airspace. Also he did not know if 4000ft was a good altitude to climb to.

As the aircraft got close, they were difficult to see on the radar. Eventually the controller gave avoiding action but did not use standard phraseology to do so. The controller needed the pilot of [A320 C/S] to visually acquire the traffic at the earliest opportunity and so gave traffic information first. (ATSI Note: Traffic information had also been given as a part of the second turn instruction onto heading 135 previously).

Within the controller report there was reference to giving a turn and climb instruction, but they thought TCAS would have intervened. The controller explained the rationale behind this as that TCAS was inhibited below 1000ft. they recognised that TCAS would now be available to the pilots, however continued to give positive control until such a time as the pilot reported a TCAS RA (which was never reported).

Following the event, the controller was relieved from the position quickly, offered CISM, to talk to a colleague, and to take a long break.

When asked about lessons to be learned from the incident, the controller said primarily that vertical separation should be used. He should have directed the AIR controller to stop the climb of the departing aircraft at 2000ft. It also came to light that the airport have a radar "hole" over the airport where the ATM does not detect aircraft in the radar overhead. The Approach controller was not aware of this.

VCR ATCO [AIR CONTROLLER]

An interview was conducted with the VCR ATCO who had an extremely good recollection of the event. They recalled the [A320 C/S] being higher than normal and also commented that a number of aircraft had been high on the approach, they did not deem it an issue at the time.

Being aware that they had a number of pending departures and the [Saab 340 C/S] already taxiing out they assessed the situation and determined that there was a sufficient gap in which to enable the [Saab 340 C/S] to depart. They did not feel any pressure to achieve this but were cognisant of the departing traffic and the mix of speed groups and therefore the possible ramifications if the [Saab

340 C/S] could not depart in the gap. The media was also reviewed by two members of the OCA who both agreed it was a workable gap and a good plan to deal with the traffic.

They recalled the [Saab 340 C/S] reporting ready for departure as they were taxiing out and therefore instructed them to expedite the line-up. Approximately 17 seconds later the [Saab 340 C/S] was cleared for an immediate departure, some thirty-six seconds later they noticed the [A320 C/S] going around. The AIR controller stated that they believed the [Saab 340 C/S] was further along the take-off run at the time they observed [A320 C/S] initiating the go around, on this basis they felt it better to let the [Saab 340 C/S] continue.

At the time that [A320 C/S] activates AFDAS, [Saab 340 C/S] is just lining up on the runway centreline. [Figure 12]

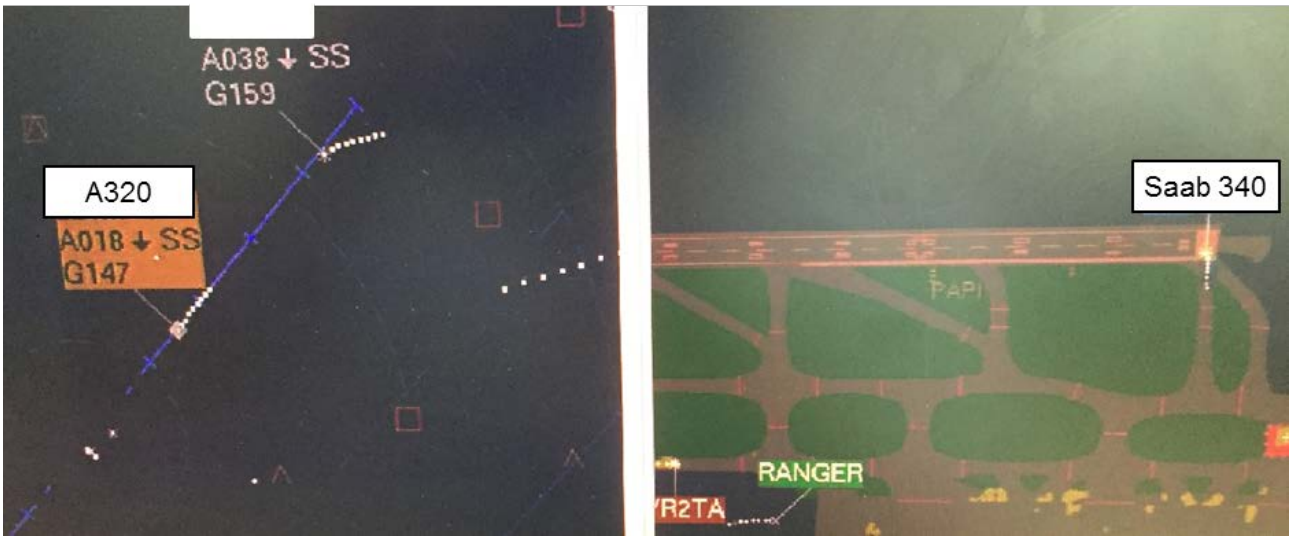


Figure 12

[Figure 13] below indicates the position of both aircraft as the [A320 C/S] calls going around. The AIR controller's mental picture meant they believed that [Saab 340 C/S] was further into the take-off roll.

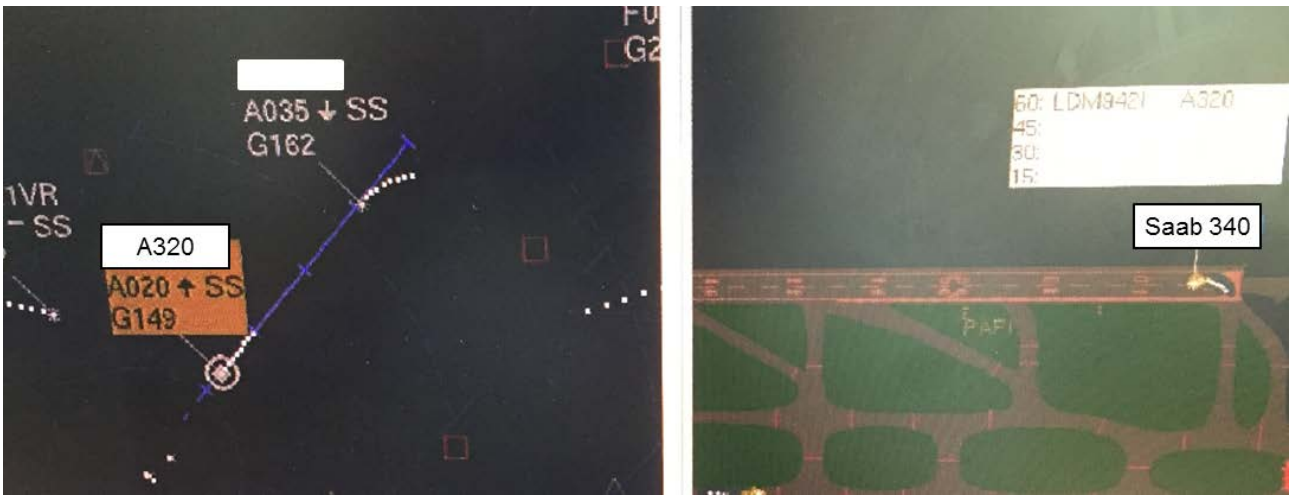


Figure 13

They felt that there may have been additional pressure to communicate the go around and subsequent plan to maintain separation to radar as the [A320 C/S] was not on the AIR frequency. A call was initiated to radar and they advised of the [A320 C/S] going around and coordinated a left turn to keep [A320 C/S] clear of the [Saab 340 C/S] who was departing on a UTAVA SID. The standard missed approach follows the UTAVA SID quite closely towards BKY.

After terminating the phone call the AIR controller selected Fq 136.2 and heard the radar controller acknowledge the go around call and issue the left turn heading 135 degrees and stop climb 3000ft, the readback from [A320 C/S] was also heard. The AIR controller does not consider this action to have had any influence on the event.

Due to the weather conditions the AIR controller had both aircraft in sight, they stood up and adjusted their position to keep [A320 C/S] in sight and believed they saw the left wing dip as if commencing the turn to the left. As they sat down they momentarily lost sight of the [A320 C/S] due to the VCR ceiling. A colleague in the VCR called out that the [A320 C/S] was not turning, this was almost simultaneous with the VCR controller regaining visual contact with [A320 C/S] and recognising that the aircraft hadn't turned.

Unsure of what the [A320 C/S] was doing the AIR controller immediately issued a right turn to a heading of 290 for the [Saab 340 C/S] in an attempt to gain separation [see Figure 14]. It is believed from the [Saab 340 C/S] ASR that the aircraft was below 2500ft at this point. The AIR controller stated that they had not considered using any form of vertical separation, rather they instructed [Saab 340 C/S] to stop climb at 3000ft, aware that the initial climb altitude was 4000ft which would mean they would climb through the [A320 C/S]. Prior to instructing the [Saab 340 C/S] to stop climb at 3000ft the aircraft was observed to be climbing at a rate of 2000ft per minute, after acknowledging the instruction to stop climb at 3000ft the rate of climb reduces to 600ft per minute. It is considered that this action unintentionally helped to provide a greater degree of separation between the two aircraft.

In hindsight the AIR controller stated that they could have also used some degree of vertical separation, instructing the [Saab 340 C/S] to just stop climb, they also felt that they could have used Avoiding Action phraseology to emphasise the situation. The AIR controller stated that attempting to use vertical separation did not readily feature in their thought processes until they were reviewing the situation at home later the next day.

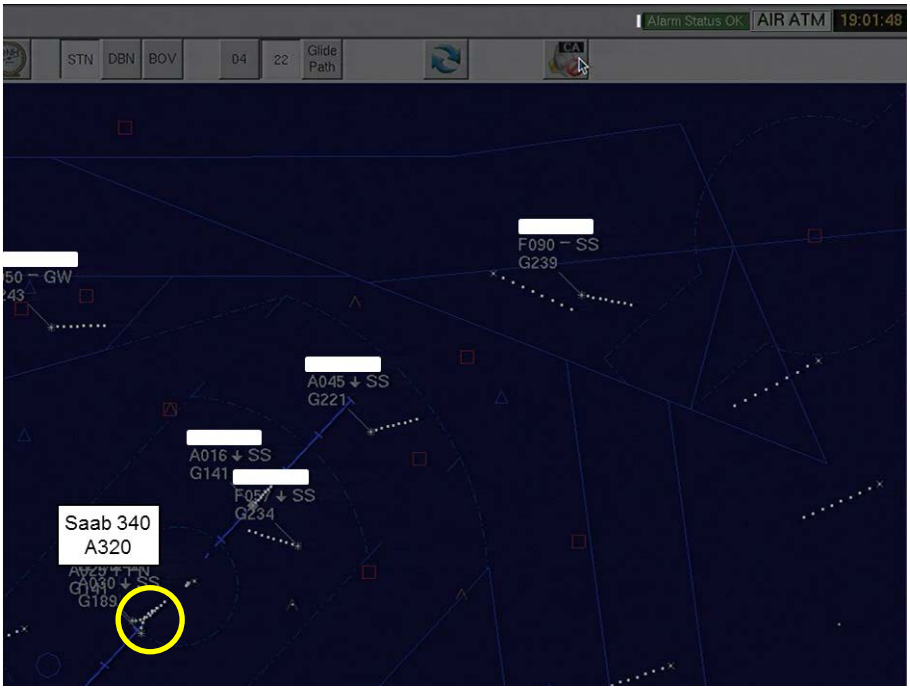


Figure 14 both aircraft turning away

It is worth noting that the VCR ATM does not show any radar plots as aircraft pass through the overhead, aircraft usually stop painting on radar at 1nm on the approach and start to show again at 1nm on the climb out. This would make it extremely difficult for the AIR controller to use the ATM to assist in gaining separation against two aircraft in close proximity to the Airfield. Whereas the FIN controller was able to see both targets painting on their radar picture throughout, due to using more than one radar source.

[A320 C/S] crew reports

The flight was a command upgrade training flight with the pilot in command (under supervision) occupying the left hand seat, the first officer in the right hand seat (pilot flying) and the Aircraft commander occupying the jump seat.

All three crew members indicated that ATC issued a shortcut to the approach which resulted in them being high and fast, the aircraft was being vectored to an 8 mile final. Fin provided range calls to keep the crew advised.

The crew of [A320 C/S] were issued with descent instructions and also speed instructions, the radar replay shows the rate of descent reduced when the crew attempted to comply with the speed instructions, at no point did the crew indicate there was a problem in managing the flight profile. The crew were also offered additional miles to assist in losing the height, these were also declined, with the flight passing 7000ft the crew reports indicate that the crew believed the approach was possible.

As the flight began to intercept the ILS the FMS had been set with a 2000ft altitude capture, as they approached 2000ft the rate of descent reduced. In attempting to rectify this the pilot flying interacted with the Autopilot in such a way as to cause the aircraft to start climbing, Mode S briefly shows a selection of 15000 is made see figure 8 above. The flight briefly climbs to 2400ft before starting to descend again see figure 5.

Shortly after the pilot monitoring (under training) called out for a go around as they decided a stable approach could not be successfully completed from that position.

During the execution of the go around it is apparent from the crew reports that both pilots attempted simultaneous control inputs during the go-around which prevented a timely turn on to heading 135 degrees. This rendered INTs attempts to resolve the confliction with the departure ineffective and resulted in [A320 C/S] continuing straight ahead and into confliction with the departing traffic. It took some time for the crew to recognise their issues but once they had done so, they were able to quickly rectify them and turn the aircraft left onto heading 090 degrees.

4. Conclusions:

[Contributory Factors (CF) included in this section refer to those determined by the NATS investigation (not included in this summary) and are not the same as the UKAB CF as stated later in this report].

The management of the flight during the approach phase significantly aggravated the event (CF1), in addition the crew attempted to manage the speed in association with the speed instructions issued, this resulted in a reduced rate of descent which further exacerbated the issues with the flight profile (CF2). At no stage did the crew accept the offer of additional track miles nor did they advise ATC that complying with the speed instructions was a problem (CF3).

The incorrect setting of the Autopilot was a significant causal factor (CF4), having failed to identify that it was set to Altitude capture at 2000ft, which influenced the rate of descent. In rectifying that error the aircraft initially started to climb (CF5) before starting to descend, this put the aircraft into an unstable situation (CF6) and a go around was executed.

The coordination between the AIR and FIN controllers would have resolved any further confliction if the instructions had been complied with (MF1). The AIR controller believed [Saab 340 C/S] to be further down the runway at the point of [A320 C/S] going around, they believed that the need to advise radar of the go around and coordinate a plan of action may have prevented them from stopping the [Saab 340 C/S] prior to them commencing their take off run (CF7).

Whilst the crew of [A320 C/S] acknowledge the ATC instructions, issues on the flight deck result in the instruction [not being followed] (CF8). The breakdown in CRM should be considered as a significant

causal factor (CF9) at this stage and it also results in the second heading instruction [not being followed] (CF10).

The AIR controller remained visual with both aircraft and believed that the [A320 C/S] was initiating a turn to the left as instructed (CF11), upon realising the aircraft wasn't turning [they] then issued a turn instruction to the [Saab 340 C/S] (MF2) but failed to consider using any kind of vertical separation (CF12). The AIR controller went back to [Saab 340 C/S] and instructed them to stop climb at 3000ft this inadvertently slowed the rate of climb which resulted in some vertical separation. The AIR controller did not use avoiding action phraseology at any stage of the recovery (CF13).

FIN instructed [A320 C/S] to turn onto a heading of 090 (MF3) giving traffic information first to enable [A320 C/S] to be aware of the departing [Saab 340 C/S], they then added avoiding action to the instruction. The crew of [A320 C/S] have by now resolved the CRM issues and the Aircraft commander under training takes control of the aircraft (MF4) and separation is quickly regained.

The lack of available radar data to the AIR controller on the ATM is considered to be a situational factor (CF14), with no information being displayed on the tracks they would be unable to take any effective action if the aircraft were not visible to them.

5. Recommendations for future action

	Recommendation
1	USSM and OCAM to roll out unit lesson learning across all Watches, using the combined media from both Swanwick and the Airport, particular focus should be made on the recovery actions of the AIR controller and lack of vertical separation.
2	NSL safety to review the lesson learning material and to use as required across the NSL portfolio.
3	NERL to make lesson learning material available for all approach controllers
4	GM Stansted, through the interface agreement, to define a clear transfer of control point for aircraft on final approach.
5	GM Stansted and the Engineering Manager to determine whether multiple radar sources can be used to enhance the current ATM in use at Stansted. Changes to the ATM feeds should be made at the earliest opportunity. In the event that multiple radars cannot be used on the Stansted ATM then the configuration of the ATM displays in the VCR should be such that different radar sources are used for each display, these selections should be defined within the MATS Pt 2.

UKAB Secretariat

The A320 and Saab 340 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[4].

The weather at Stansted was recorded as follows:

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METAR EGSS 121920Z AUTO 21009KT 9999 NCD 08/05 Q1032=
METAR EGSS 121850Z AUTO 22011KT 9999 NCD 08/05 Q1032=
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Summary

An Airprox was reported when an A320 and a Saab 340 flew into proximity 2NM southwest of Stansted Airport at 1902Z on Tuesday 12th February 2019. Both pilots were operating under IFR in VMC at night, the A320 pilot in receipt of a Radar Control Service from Stansted Approach and the Saab 340 pilot in receipt of an Aerodrome Control Service from Stansted Tower.

[4] SERA.3205 Proximity.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the AAIB and NATS. 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.

The Board first discussed the A320 crew's actions. Members noted that the crew were conducting a night approach under a command upgrade training flight with the pilot in command (under supervision) occupying the left hand seat, the first officer in the right hand seat (pilot flying) and a Training Captain, supervising the training from the jump seat. As such, civil airline pilot members commented that the crew were facing additional complexity under circumstances where there may have been perceived pressure to complete the approach rather than discontinue at the early signs that the aircraft was steep and fast. They commented that it was ultimately for the aircraft commander to assess the viability of the approach and make the decision to continue or not, and that it appeared that there had been a break-down in CRM on the A320 flight deck at the very start of the approach that had precipitated the subsequent loss of separation and Airprox.

Members then discussed the design of the Stansted Missed Approach Procedure (MAP), and concern was raised that the UTAVA 1R SID mirrored the MAP, climbing through it. Members were informed by NATS members that the airspace in that area was of such complexity and high utilisation that a go-around or discontinued approach always required correct ATC intervention ***and*** correct pilot responses to instructions. The Board accepted that this was the case but pointed out that such a system was therefore not 'fail safe'. In the event, the A320 crew had accepted that they were high on the approach but were in the descent and managing the situation until the AP entered an altitude-capture mode, which resulted in the aircraft starting to level off. The Captain attempted to rescue the situation but the FO's inadvertent selection of an AP climb mode meant that a stabilised approach was then not possible and the Captain ordered a go-around. The civil airline pilot members commented that the decision to discontinue the approach was correct, but that that did not mean that the A320 crew were required to immediately conduct the missed approach. In their opinion, the crew would have been better served by initially continuing their flight path (as expected by ATC), conducting a 'mini-brief' of the MAP and associated crew actions, informing ATC of their intentions, and then conducting the MAP (or following ATC's instructions if different) in a more measured way (**CF6**, **CF7**, **CF9**). Members agreed that, once the AP was disconnected, the crew workload would have increased significantly, which was probably the point at which the FO lost situational awareness and then inadvertently hindered the Captain's attempts to comply with ATC instructions to turn left (**CF8**, **CF10**). The crew were at that point correctly prioritising 'Aviate' in the 'Aviate, Navigate, Communicate' mantra but it was unfortunate that ATC procedures were unable to accommodate the resultant delayed response to their instructions.

Turning to ATC aspects of the Airprox, members questioned whether it had been appropriate to clear the Saab 340 for take-off with the A320 on final approach, and were assured by controller members that the gap was such that it was an entirely reasonable decision to do so. It was unfortunate that the AIR controller had not assimilated that the Saab 340 had only just started his take-off roll when the A320 pilot called going-around, but members agreed that once the A320 was committed to its go-around and the Saab 340 to its take-off, the ATC team had attempted to effect separation by instructing the A320 pilot to turn left. However, the A320 cockpit dynamics had broken down to such an extent that the Captain was not able to comply with the turn instruction in a timely manner, but ATC were not to know this. ATC then reacted to the unfolding situation by simply repeating the turn instruction to the A320 pilot on the assumption that he would comply, rather than proactively managing the rapidly reducing separation through other means. This was partially due to a paucity of information available to the AIR controller because their ATM did not provide aircraft tracks within about 1nm of the radar overhead (**CF1**).

Opining that the controllers did not coordinate effectively to ensure continued separation (**CF5**) in the knowledge that the Saab 340 was planning to fly through the A320 level and that the A320 was overtaking the Saab 340, the Board debated who was responsible for satisfying the requirement to achieve the Reduced Separation in the Vicinity of an Aerodrome (RSVA) criteria, and what those criteria were. Members were informed that there were no specific separation criteria, and that in this

circumstance, the NATS report asserted that 'Both a/c were visual from the VCR at all times and the AIR controller was applying RSVA'; i.e. it was essentially for the AIR controller to ensure that the aircraft remained 'adequately' separated. The Board disagreed with this assertion. Whilst both aircraft may have been visual at all times 'from the VCR' the controller providing reduced separation at least momentarily lost sight of the A320 due to the position of the VCR ceiling as he sat down. The Board noted that, with regard to RVSA, MATS Part 1, Section 1, Chapter 3 states as follows (UKAB emphasis in bold):

3. Reduced Separation

3.1 In addition to the following paragraphs, standard separation may be reduced when authorised by the CAA and published in MATS Part 2.

3A. In the Vicinity of Aerodromes

3A.1 In the vicinity of aerodromes, the standard separation minima may be reduced if:

***(1) adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller**; or*
(2) each aircraft is continuously visible to the pilots of other aircraft concerned and the pilots report that they can maintain their own separation; or
(3) when one aircraft is following another, the pilot of the succeeding aircraft reports that he has the other aircraft in sight and can maintain own separation.

Members noted that, in recognising the potential conflict, the Saab 340 pilot had been instructed by the AIR controller to level at 3000ft, which reduced his rate of climb as the aircraft converged, but this was the same level at which the A320 was flying and was not an effective measure to maintain separation. In this respect, the Board strongly agreed with the AIR controller's analysis that an instruction to the Saab 340 pilot to simply stop climb when it became apparent that the A320 was not turning, would have helped to maintain separation. Members also noted that the AIR controller had visually assessed that the A320 was turning left when it was not. Noting that, at night, the assessment of such a turn using aircraft lights would have been challenging, some members wondered whether this was perhaps a result of confirmation bias, and that an ATM that showed tracks in the overhead would have provided the AIR controller with timely information of the A320 pilot's actual track. In sum, it appeared that the ATC team had controlled in the expectation of compliance, not in the light of what was actually transpiring. The net result being that conflict resolution had not been adequate (**CF2**), and that separation had not been adequately maintained (**CF4**).

In the event, the Saab 340 pilot received a TCAS TA and RA (**CF12**, **CF11**) at about the same time as the 3000ft level-off instruction. The Board discussed whether it had been the level-off instruction or the RA that had been more effective in reducing the Saab 340 rate of climb but were unable to make a definitive assessment in the absence of FDR data. The Board also felt that the provision of Traffic Information had also been inaccurate given the AIR controller's communication to the Saab 340 pilot, "*[Saab 340 C/S] er' just going around behind you is er' an airbus A320 they're making a left turn heading 130 continue on the UTAVA departure*" which, although entirely understandable given the AIR controller's flawed mental model, meant that the Saab 340 pilot was not aware that the A320 was overtaking from above and behind (**CF3**).

The Board discussed the risk and noted that the 2 aircraft had closed to 87m horizontally, albeit 600ft vertically separated, at their closest point. However, the 600ft vertical separation belied the fact that although the Saab 340 pilot had reacted to the TCAS RA and/or ATC instruction, he was still climbing at that point, and in fact the vertical separation reduced to only 400ft as the aircraft began to diverge. As such, members agreed that the risk level should reflect the degree to which existing protections and mitigations had not functioned as intended and that, in this case, the uncontrolled separation at CPA merited a risk assessment of Category B to reflect the fact that safety had been much reduced below the norm.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2019207		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Manning and Equipment		
1	Organisational	• Aerodrome and ATM Equipment	Inadequate or unavailable equipment
	• Situational Awareness and Action		
2	Human Factors	• Conflict Resolution- Inadequate	
3	Human Factors	• Traffic Management Information Provision	Not provided, inaccurate, inadequate, or late
4	Human Factors	• Separation Provision	Not Achieved
5	Human Factors	• ATM Coordination	Inadequate or ineffective
	Flight Elements		
	• Tactical Planning and Execution		
6	Human Factors	• No Decision/Plan	Inadequate planning
7	Human Factors	• Insufficient Decision/Plan	Inadequate plan adaption
8	Human Factors	• Action Performed Incorrectly	Incorrect or ineffective execution
	• Situational Awareness of the Conflicting Aircraft and Action		
9	Human Factors	• Mentoring	Sub-Optimal
10	Human Factors	• Distraction - Job Related	Pilot was engaged in other tasks
	• Electronic Warning System Operation and Compliance		
11	Contextual	• ACAS/TCAS RA	TCAS RA event
12	Contextual	• ACAS/TCAS TA	TCAS TA / CWS indication
	• See and Avoid		
13	Contextual	• Poor Visibility Encounter	One or both aircraft were obscured from the other

Degree of Risk: B

Recommendation: Nil.

Safety Barrier Assessment[5]

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

Ground Elements:

Manning and Equipment were assessed as **ineffective** because the Stansted ATM did not display aircraft positions near the overhead.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the controller actions did not resolve the confliction.

[5] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the A320 crew did not comply in a timely manner with the instructions to turn left.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the A320 crew were distracted by the breakdown in CRM.

See and Avoid were assessed as **ineffective** because neither crew saw the other aircraft prior to CPA.