

SERIOUS INCIDENT

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

G-LGNK

The aircraft was routing from Stansted to Dundee and cleared for an UTAVA 1R Standard Instrument Departure (SID) with a cleared altitude of 4,000 ft. As the aircraft approached

holding point R1 for Runway 22, the crew reported to ATC that they were "READY FOR DEPARTURE". They were cleared for an immediate takeoff, and the departure was expeditious but routine. As the aircraft passed approximately 1,000 ft, the crew were advised by ATC that an aircraft on approach had initiated a go-around. ATC advised the crew to continue with the planned UNTA 1R SID. Shortly after this, ATC instructed the crew to turn right onto a heading of 290°. By this point the autopilot (AP) was engaged so the commander initiated the turn using the AP. A further ATC 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 3,000 ft.

On passing approximately 2,500 ft, 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 2,700 ft 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 3,000 ft 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 Dundee and reported the event to Stansted ATC upon arrival.

OE-IHD

During the arrival into Stansted, while at approximately 14,000 ft, ATC gave OE-IHD a short-cut and a speed reduction to 250 kt. 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 7,000 ft, ATC cleared OE-IHD to descend to 2,000 ft and the crew decided they could reach the final approach fix at 2,000 ft by using the speed brakes to increase the descent rate.

ATC restrictions led to further reductions in speed to 220 kt and then 200 kt with the consequent effect of a reduced descent rate. ATC offered to increase the distance to landing but 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 point, 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 2,000 ft 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 autothrottle, 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 3,000 ft, the published go-around altitude. At 3,000 ft 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, ATC instructed OE-IHD to climb to 4,000 ft and fly a heading of 135°M. This was shortly followed by a further turn to 090°M. 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°M. 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 4,000 ft. The departing Saab 340 indicated on the TCAS as a TA with the associated amber visual indications. The crew believed the aircraft were approximately 900 ft apart vertically, and the TA disappeared during the climb to 4,000 ft. The commander retained control and subsequently flew an uneventful approach to land at Stansted.

Recorded Information

The radar and ATC transponder data from both aircraft were 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 600 ft vertically. A 3D representation is at Figure 2.

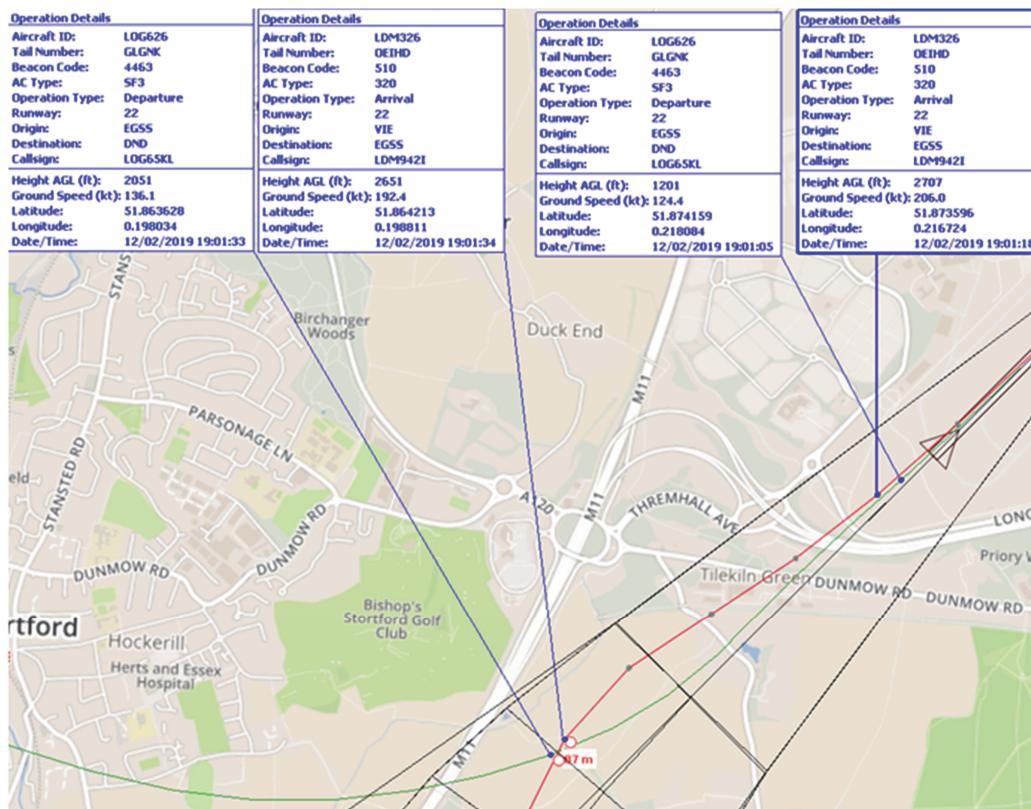


Figure 1
ATC Radar information

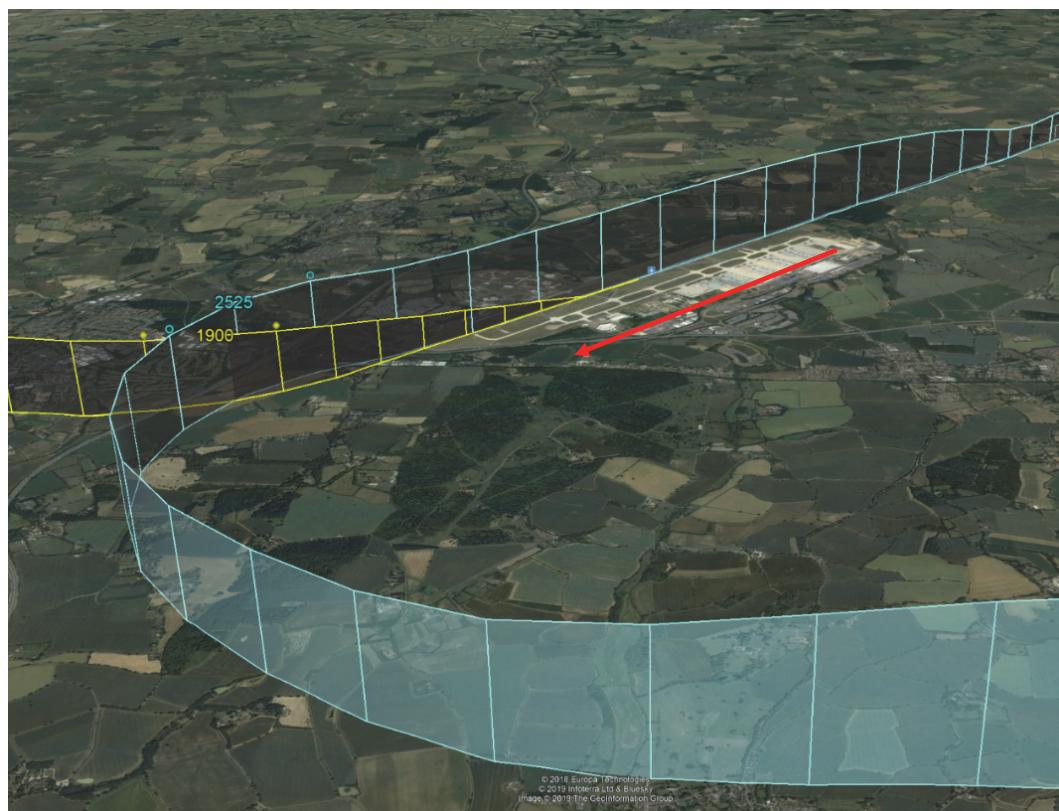


Figure 2

3D Tracks with the red arrow indicating the direction of travel
 G-LGNK in yellow, OE-IHD in blue with altitudes based on 1013 mb

Human factors - OE-IHD

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 2,000 ft. The AP capture of 2,000 ft 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 although TOGA thrust was set. The crew workload was now significantly above normal. The go-around altitude was 3,000 ft 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 ATC directed the turn to 135°M and then 090°M. 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 OE-IHD who was PF. The AP capture of 2,000 ft 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 OE-IHD 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.