

REPORT

PO Box 8, N-2027 KJELLER
Telephone: + 47 64 84 57 60
Telefax: + 47 64 84 57 70

REP: 08/2000
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Aircraft

-type & reg.: DC 9-81, SE-DMZ / TU-134A
Radio call sign: SAS 308 / AUL 9203
Date and time: 12 April 1999, between 1040 - 1045 hrs
Location: On the border between Stavanger FIR and Oslo FIR, close to reporting point SOPAR
Type of occurrence: Air traffic incident, descent below cleared flight level
Type of flight: Commercial
Weather cond.: Both aircraft were in clouds
Light cond.: Daylight
Flight cond.: IMC
Flight plan: IFR
Injuries: None
Aircraft damage: None
Information sources: Report from the Commander on SE-DMZ, report from the General Manager of Arkhangelsk Airlines, including transcripts from the FDR on AUL 9203, reports from Stavanger and Oslo ATCC and the AAIB/N's own investigations.

All times given in this report is local time (UTC + 2 hours), if not otherwise stated.

SUMMARY

SAS 308, a DC 9-81 from Scandinavian Airlines System, was en route from Bergen Airport Flesland (ENBR) to Oslo Airport Gardermoen (ENGM), cruising at Flight Level (FL) 250. SAS 308 was at this time communicating with Stavanger ATCC. AUL 9203, a Tupolev TU-134A from Arkhangelsk Airlines, was en route from Arkhangelsk (ULAA) to Flesland (ENBR), descending from FL 350 towards FL 260. AUL 9203 was at this time communicating with Oslo ATCC. The descent to FL 260 was co-ordinated between Stavanger and Oslo ATCC, in relation to SAS 308, which was cruising at FL 250.

At 10:39:44 hrs AUL 9203 checked in with Stavanger control and reported FL 300 descending towards FL 260. Both AUL 9203 and SAS 308 were from this moment communicating with Stavanger ATCC.

At 10:42:35 the controller on Stavanger ATCC discovered that AUL 9203 had not levelled off at FL 260, but had continued below the cleared level. The controller immediately instructed the crew on AUL 9203 to climb back to FL 260, which they did. He also instructed the crew on SAS 308 to turn 20° left. At the same time the crew on SAS 9203 reported an ACAS- (Airborne Collision Avoidance System) alert and a Resolution Advisory (RA) to climb.

The Flight Data Recorder (FDR) transcript shows that AUL 9203 had continued 207 ft (63 m) below FL 260, and stopped the descent at FL 258. SAS 308 had due to the ACAS / RA-warning climbed to FL 255, before descending to FL 245 due to a new RA telling the crew to descend. The vertical distance between the two aircraft was 400 ft at minimum, and the controller at Stavanger control estimated the closest horizontal distance to 1 NM. At the time the two aircraft passed each other, the vertical distance had increased to 1 300 ft. After the incident SAS 308 and AUL 9203 continued to their destinations. Both aircrews and the controller agreed to report the incident.

COMMENTS FROM THE AAIB/N

It is the AAIB/N's opinion that there was a possible risk of collision in this incident.

As a matter of form, a few definitions seem necessary:

Airborne Collision Avoidance System (ACAS): A system onboard an aircraft, independent of any ground equipment and based on transponder signals from Secondary Surveillance Radar (SSR), which gives the pilot advice of any possible conflict with other aircraft that are transponder equipped.

Resolution Advisory (RA): An indication to the pilot that recommends:

- a) a manoeuvre, needed to obtain separation from any other aircraft that could inflict on flight safety, or
- b) a manoeuvre, needed to maintain separation already existing, to other aircraft.

In the report from Arkhangelsk Airlines it is explained that, during the descent towards FL 260, the autopilot pitch-mode disconnected. This was not immediately recognised by the crew, and the descent continued 207 ft (63 m) below cleared level. As the fault was recognised, the crew disconnected the autopilot, and performed a manual climb back to FL 260. It took 11 seconds from the time the autopilot was disconnected until the aircraft was levelled off at FL 260. In the report from the Commander on SAS 308, it is explained that the ACAS recognised an opposite aircraft descending towards their flight level. The ACAS issued a Resolution Advisory (RA) indicating a 3 000 ft/m climb, in order to get above the opposite traffic. As AUL 9203 levelled off another RA was issued, suggesting a descent of 2 000 ft/m to get below traffic.

It is obvious that the first RA indicating a climb actually made the situation worse. The vertical distance between the two aircraft was further reduced. The sudden climb of SAS 308 also surprised the controller at Stavanger ATCC. As he had instructed AUL 9203 to climb back to FL 260, he considered the situation to be under control.

Norwegian regulations (BSL G-1.2, pt. 19.2) state the following:

If an aircrew initiates an avoiding action due to a Resolution Advisory (RA) from the aircraft ACAS system, the ATC should not try to inflict on the aircraft flight-path until the crew reports that the initial instruction/clearance is being resumed, but issue traffic information as seemed necessary.

An aircrew acting according to an ACAS/RA-warning should immediately inform ATC. In this incident, the controller at Stavanger ATCC was not aware of the fact that the crew on SAS 308 had acted according to the ACAS/RA, at the time he issued instructions to the crew on AUL 9203. The controller and the crew on SAS 308 acted simultaneously, but independently of each other. This actually made the situation, for a short moment, more critical than it would have been if only one of them had acted. However, both were acting correctly according to the information that was available at the time of reaction.

In this incident, the situation was sorted out before the two aircraft passed each other, but things developed in a way that could have resulted in other, more serious consequences.