



Statens haverikommission
Swedish Accident Investigation Board

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Report RL 2009:13e

**Aircraft incident to LN-RPW in airspace
between Oslo, Norway and Stockholm,
Sweden on 24 October 2008**

Case L-25/08

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Statens haverikommission
Swedish Accident Investigation Board

2009-08-25

L-25/08

The Swedish Transport Agency
SE-601 73 NORRKÖPING, Sweden

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The Swedish Accident Investigation Board has investigated an incident that occurred on 24 October 2008 in airspace between Oslo and Stockholm, to an aircraft registered LN-RPW.

In accordance with section 14 of the Ordinance on the Investigation of Accidents (1990:717) the Agency herewith submits a report on the investigation.

Göran Rosvall

Henrik Elinder

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Report finalised 2009-08-25

<i>Aircraft: registration and type</i>	LN-RPW, Boeing 737-600
<i>Class, airworthiness</i>	Normal, valid Certificate of Airworthiness
<i>Registered owner/Operator</i>	Babcock & Brown Aircraft Management, 2 Harrison Street 6 th floor, San Francisco CA 94105, USA/SAS
<i>Time of occurrence</i>	24 October 2008, at 14:20 in daylight Note: All times are given in Swedish standard time (UTC + 1 hour)
<i>Place</i>	Airspace between Oslo and Stockholm at flight level (FL) 330
<i>Type of flight</i>	Commercial air transport
<i>Weather</i>	According to the SMHI (Swedish Meteorological and Hydrological Institute) analysis: General weather situation at FL 330; A cold front moving eastwards with cloud tops at FL 300-350. Västerås airport; Wind 210° 14 knots, CAVOK, QNH 1012 hPa
<i>Persons on board:</i>	
<i>crew members</i>	6
<i>passengers</i>	97
<i>Injuries to persons</i>	None
<i>Damage to the aircraft</i>	None
<i>Other damage</i>	None
<i>The commander</i>	
<i>Sex, age, licence</i>	Male, 41 years, ATPL
<i>Total flying time</i>	9461 hours, of which 3859 hours on type
<i>Flying hours previous 90 days</i>	92 hours, all on type
<i>Number of landings previous 90 days</i>	34
<i>Co-pilot:</i>	
<i>Sex, age, licence</i>	Male, 60 years, ATPL
<i>Total flying time</i>	5228 hours, of which 517 hours on type
<i>Flying hours previous 90 days</i>	128 hours, all on type
<i>Number of landings previous 90 days</i>	37

The Swedish Accident Investigation Board (SHK) was notified on 27 October 2008 that an aircraft of Boeing 737-600 type with registration LN-RPW had an incident at about 14:20 hours on that day in the airspace between Oslo and Stockholm.

The incident has been investigated by SHK represented by Göran Rosvall, Chairperson and Stefan Christensen, chief investigator until 21 April 2009 and Henrik Elinder thereafter.

The investigation was followed by Nicklas Svensson, Swedish Transport Agency.

Sequence of events, etc.

The aircraft departed from Oslo/Gardemoen airport in Norway for a normal scheduled flight (SK 496) to Stockholm/Arlanda airport.

During its previous flight (SK 495) the warning lamp for the left engine generator had lit during the approach to Oslo. The system was checked while the aircraft was on the ground by a flight technician and no fault or abnormality was found in the generator system. The aircraft was then cleared for the return flight to Stockholm.

The commander was the PF (Pilot Flying) for this particular route. About 15 minutes into the flight, when the aircraft had reached the cruise altitude at FL 330, the pilots could smell burnt electronics. At about the same time the cabin staff reported that there was a smell of burning in the passenger cabin.

Soon thereafter the MASTER WARNING lamp lit, and simultaneously the left generator warning lamp lit.

The pilots then decided to leave the cruise altitude and speed up the flight towards Stockholm/Arlanda. After receiving permission from air traffic control they began to start with a descent to FL 110 as a safeguard in case the situation deteriorated.

During the descent the smell became stronger and the pilots declared an emergency, also putting on their oxygen masks. Since they did not know the extent of the problem or the cause of the smell they decided to land immediately at Västerås airport, which they assessed as the most suitable alternative. They ordered the cabin staff to prepare the cabin for an immediate landing.

At this point the commander decided that the first officer should take over the rest of the flight as PF so that he himself would be able to take the necessary actions in accordance with the emergency check list and keep the passengers informed.

After a rapid descent a normal approach and landing were performed on to runway 19 at Västerås airport. After the landing there was a strong smell of burned electronics in the cabin, and the pilots stopped the aircraft on the runway, ordering that there should be an emergency evacuation of the aircraft there and then.

The airport rescue services were informed about the emergency landing and met the aircraft after it had stopped. The rescue personnel assisted with the emergency evacuation but did not need to make any other intervention.

The evacuation was hindered by the service doors at the right side being difficult to open. Once the doors had opened, the automatic escape slides did not inflate. Despite this the evacuation was rapid and without personal injury, through the left side doors where the escape slides worked normally. After the evacuation the commander informed the passengers of what had happened.

The aircraft was taken out of service for technical investigation.

Conclusions

During the troubleshooting that was undertaken at Västerås it was found that the Generator Control Unit (GCU), part of the generator system for the left engine, and located in the electronics space close to the cockpit, had overheated. It was suspected that the burning smell came from this.

After the unit had been replaced and the system tested on the ground, the aircraft was cleared for a ferry flight to Arlanda airport. During the flight to Arlanda the same burning smell without smoke again appeared in the cabin.

During subsequent troubleshooting it was found that the GCU had again overheated. Continued examination showed that the overheating of the GCU was caused by a flash-over in an electrical connector in the generator system for the left engine, located on the engine firewall. During the flash-over the GCU became overloaded, with resulting overheating.

The same type of fault had previously occurred on this type of aircraft with resulting overheating of the GCU. This induced the aircraft manufacturer to issue a Service Bulletin (SB) 737-24-1176. SB 737-24-1176, which is not mandatory, states that some of the connector pins in the affected connector, should be repositioned in order to reduce the risk of an electrical flash-over.

In association with the troubleshooting on this particular aircraft the modification was incorporated in accordance with SB 737-24-1176. A further decision was taken to modify all the aircraft of this type within the airline fleet in accordance with this SB.

The problem with the service doors on the right side was caused by the release wires for the automatic escape slides not being correctly positioned and hence catching in the locking mechanism of their storage boxes. Because of this the doors could not be opened completely as the escape slide release mechanism was not activated either.

The same faulty function had on several previous occasions occurred on this type of aircraft. The manufacturers of the aircraft and the escape slide are working together in order to find a solution to the problem. Until a final solution has been found, the operator has introduced a special check on the placing of the release wires.

Incorrect operation of the emergency evacuation system did not result in any serious consequences in this case but in a different situation could have introduced a greater risk for those on board.

Recommendations

None.