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## EFIS failure, Incident on board aircraft SE-LGX in the air space north-east of Stockholm/Arlanda Airport, AB county, 13 November 2002

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**Micro-summary: Two independent electrical faults result in an EFIS failure on this ATP.**

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**Event Date: 2002-11-13 at 2240 UTC**

**Investigative Body: Swedish Accident Investigation Board (AIB), Sweden**

**Investigative Body's Web Site: <http://www.havkom.se/>**

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**Statens haverikommission**  
Swedish Accident Investigation Board

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## **Report RL 2004:13e**

***Incident on board aircraft SE-LGX  
in the air space north-east of Stockholm/Arlanda  
Airport, AB county, 13 November 2002***

Case no L-094/02

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Translated by Tim Crosfield from the original Swedish at the request of SHK, the Swedish Accident Investigation Board.

In case of discrepancies between the English and the Swedish texts, the Swedish text is to be considered the authoritative version.

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2004-04-13

L-094/02

Civil Aviation Administration

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Sweden

### **Report RL 2004: 13e**

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The Swedish Accident Investigation Board (Statens haverikommission, SHK) has investigated an incident that occurred on 13 November 2002 in the air space north-east of Stockholm/Arlanda Airport, AB county, Sweden, on board an aircraft with registration SE-LGX.

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

The Swedish Accident Investigation Board will be grateful to receive, by 13 October 2004 at the latest, notification of how the recommendations in the Report are being followed up.

Carin Hellner

Mats Öfverstedt

Henrik Elinder

## Rapport RL 2004:13

L-094/02  
Report completed 2004-04-13

<i>Aircraft; registration and type</i>	SE-LGX, British Aerospace ATP
<i>Class/airworthiness</i>	Normal, valid Certificate of Airworthiness
<i>Owner/operator</i>	European Turboprop Management AB/ West Air Sweden
<i>Time of occurrence</i>	13-11-2002, 23.40 h in darkness <i>Note:</i> All times are given in Swedish standard time (UTC + 1 hr)
<i>Place</i>	North-east of Stockholm/Arlanda Airport, AB county (approx. posn. 6016N 01823E; 2 100 m above sea level)
<i>Type of flight</i>	Freight
<i>Weather</i>	According to SMHI <sup>1</sup> analysis: wind 090°/10 kts., visibility 3 000 m in light snowfall, cloud 8/8 stratus with base 500 feet, temp./dew point -1/-1 °C, QNH 997 hPa.
<i>Persons on board</i>	
<i>crew members</i>	2
<i>passengers</i>	0
<i>Injuries to persons</i>	None
<i>Damage to aircraft</i>	None
<i>Other damage</i>	None
<i>Pilot:</i>	
<i>Sex, age, licence</i>	Man, 41 years, D licence
<i>Total flying time</i>	4 900 hours, of which 350 on type
<i>Flying hours, previous 90 days</i>	120 hours, of which 110 hours on type
<i>Number of landings, previous 90 days</i>	115
<i>Co-pilot</i>	
<i>Sex, age, licence</i>	Man, 47 years, ATPL (A)
<i>Total flying time</i>	11 410 hours, of which 275 on type
<i>Flying hours previous 90 days</i>	47 hours of which 34 hours on type
<i>Number of landings previous 90 days</i>	36

The Swedish Accident Investigation Board (SHK), was informed on 21 November 2002 that an incident had occurred on board an aircraft with registration SE-LGX in the air space north/east of Stockholm/Arlanda airport, AB county on 13 November 2002 at 23.40 hrs.

The incident was investigated by SHK represented by Lena Svenaeus, chairman until 31 January 2004, subsequently Carin Hellner; Monica J Wismar, chief investigator operations until 30 September 2003, subsequently Mats Öfverstedt and Henrik Elinder, chief technical investigator.

The investigation was followed by the Civil Aviation Administration in the person of Max Danielsson.

<sup>1</sup> SMHI – Swedish Meteorological and Hydrological Institute

## Summary

During the approach for landing at Stockholm/Arlanda airport, a power loss occurred in the aircraft's left electrical system, whereupon, among other functions, all the flight and navigational instruments (EFIS<sup>2</sup>) on the pilot's side 'went down'. In connection with the loss of electricity the main emergency lamp started to blink and the Master Caution horn to sound.

The pilots did not consider that any point in the emergency checklist matched the fault. Instead of attempting to fault-find the electrical system with the risk of making the situation worse, they chose to declare an emergency and land as soon as possible. By air traffic control, they were radar-vectoring the shortest route for direct landing on runway 19 R. The landing was effected without problems.

The power cut was caused by two independent faults, of which one arose in a component of an earlier version with known deficiencies. The problem in the electrical system on this aircraft type is known to the aircraft manufacturer and steps have been taken, both by the manufacturer and the operator, to deal with it. It would probably have been possible for the pilots to regain full electrical function by cross-connecting from the right-hand electrical system, as to some extent emerges from the emergency checklist.

In SHK's view the present emergency checklist is not user-friendly and does not represent the natural aid for pilots to identify a possible fault and take the most suitable steps from the point of view of flight safety. It is complicated, the logic is not self-evident, the typeface is small, the text on the warning panel is not given as headlines for steps to be taken, etc. SHK notes that there is no international standard for the arrangement of emergency checklists.

The incident was caused by two independent faults in the aircraft's electrical system occurring simultaneously.

## Recommendations

The Swedish Civil Aviation Administration is recommended:

- In connection with the issuance of AOCs<sup>3</sup> to observe specially the arrangement of emergency checklists from the point of view of comprehensibility and user-friendliness (*RL 2004:13e R1*), and
- in its work on international flight safety to seek the establishment of an international standard for the arrangement, logic and layout of emergency checklists used in professional aviation. (*RL 2004:13e R2*).

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<sup>2</sup> EFIS / Electronic Flight Instrument Systems

<sup>3</sup> AOC – Air Operator Certificate