



ISSN 1400-5719

Report RL 2002:13e

***Aircraft accident to helicopter SE-JDL
at Vuolda, Arjeplog, BD county, Sweden,
on 12 December 2001***

Case L-086/01

SHK investigates accidents and incidents with regard to safety. The sole objective of the investigations is the prevention of similar occurrences in the future. It is not the purpose of this activity to apportion blame or liability.

Translated by Bob Arnesen
From the original Swedish at the request of the Board of Accident Investigation.

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

The material in this report may be reproduced free of charge provided due acknowledgement is made.

The report is also available on our Web site: www.havkom.se

Statens haverikommission (SHK) Board of Accident Investigation

Postaddress/Postal address
P.O. Box 12538
SE-102 29 Stockholm Sweden

Besöksadress/Visitors
Wennerbergsgatan 10
Stockholm

Telefon/Phone
Nat 08-441 38 20
Int +46 8 441 38 20

Fax/Facsimile
Nat 08 441 38 21
Int +46 8 441 38 21

E-mail Internet
info@havkom.se
www.havkom.se

2002-05-22

L-086/01

Swedish Civil Aviation Administration

601 79 NORRKÖPING

Report RL 2002:13e

The Board of Accident Investigation (Statens haverikommission, SHK) has investigated an aircraft accident that occurred on 12 December 2001 at Vuolda, near Arjeplog, BD county, Sweden involving an aircraft with registration SE-JDL.

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

Lena Svenaeus

Monica J Wismar

Henrik Elinder

Report RL 2002:13e

L-086/01
Finalized 2002-05-22

<i>Aircraft; registration and type</i>	SE-JDL , McDonnell Douglas 369E
<i>Class/ airworthiness</i>	Normal, valid Certificate of Airworthiness
<i>Owner/operator</i>	Fjällflygarna Arjeplog AB
<i>Time of occurrence</i>	2001-12-12, 0855 hours, during first light at sunrise. <i>Note: All times in the report are given in Swedish standard time (UTC + 1 hour)</i>
<i>Place</i>	Vuolda, approximately 20 km north of Arjeplog, BD county, Sweden (pos. 6609N 01755E, approx 500 m above sea level)
<i>Type of flight</i>	Utility aviation
<i>Weather</i>	According to SMHI ¹ s analysis: wind calm, visibility more than 10 km, possibility for the presence of stratus clouds in the area due to the inversion between 200–1000 ft, temp. –7°C, dew point –8°C, QNH 1033 hPa, official sunrise at 1030 hrs.
<i>Persons on board: crew</i>	1
<i>passengers</i>	–
<i>Injuries to persons</i>	Minor
<i>Damage to aircraft</i>	Substantially damaged
<i>Other damage</i>	Damage to a power line and a car.
<i>Pilot:</i>	
<i>Age, certificate</i>	33 years old, Helicopter Commercial with instructor qualification
<i>Total flying time</i>	2,945 hours, of which 47 hours on type
<i>Flying hours previous 90 days</i>	142 hours, of which 0.9 hours on type
<i>Number of landings previous 90 days</i>	570, of which 6 on type

The Board of Accident Investigation (SHK) was notified on 12 December 2001 that an aircraft with registration SE-JDL had an accident at 0855 hrs on that day at Vuolda, 20 km north of Arjeplog, BD county, Sweden.

The accident has been investigated by SHK represented by Lena Sve-naeus, Chairman, Monica J Wismar, Chief investigator flight operations, and Henrik Elinder, Chief technical investigator (aviation).

The investigation was followed by the Swedish Civil Aviation Administration represented by Nils von Kock.

History of the flight

The pilot had been contracted, together with its owner, to drive a herd of reindeer using the helicopter. The pilot met the herd owner the day prior to the drive in the municipality of Arjeplog, as he was refuelling the helicopter. They also filled the owners own fuel tank placed on a flat bed trailer which would to be used to refuel the aircraft on site. They both agreed that the fuel tank would be driven to the reindeer research station located at Vuolda,

¹ SMHI = Swedish Meteorological and Hydrological Institute

north of Arjeplog, the next morning and that the herd owner would be picked up there by the helicopter at 0900 hrs. The pilot had never landed there before and there was no further discussion about where at the site the landing would be made.

The next day the herd owner arrived at the landing site before the helicopter arrived. He had been at the site before and he chose to park his car and the flat bed trailer in an open area under a power line. His intention was to make room for the helicopter to land on a ploughed surface between two buildings that he knew was normally used as a helicopter landing site. The power line runs in a northeast-southwest direction and there are no poles near the site where the herd owner had parked. The power lines were at the time covered by frost.

The pilot departed from Arjeplog at 0846 hrs. and used a map with a scale of 1:250,000 to navigate. The power line was not indicated on the map. After just under ten minutes flying time he arrived at the research station and made visual contact with the car and the flat bed trailer in an open area. He believed that the vehicles had been parked at the site where the helicopter would later be refuelled. He did not see any obstacles in the area and judged the site to be suitable for landing. There was no radio contact between the pilot and the herd owner.

The pilot manoeuvred the aircraft from its original north-easterly course to a westerly one so as to set up for a final turn and approach towards the vehicles on a southern heading. At about a height of 10 meters the pilot suddenly discovered the presence of the power line. He attempted to turn away and avoid making contact but was unable to keep the tail boom from hitting the power line.

After the collision the helicopter entered an uncontrolled rotation and the pilot reduced the engine power causing the aircraft to sink and hit the ground and the car.

The pilot shut down the engine and was then able to leave from the helicopter by himself. He complained of back pains and was taken to the hospital, where it was determined that he had suffered a compressed disc.

The helicopter suffered extensive damage to the tail boom, the tail rotor and the landing gear. The car sustained various damages to the body. Two of the three cables on the power line were cut.

The Swedish Civil Air Regulations D-Manual, section 1.2, paragraph 3.2 states the following: "The commander shall always assure that the take-off and landing site, with regard to the aircraft's performance and the existing conditions at the site, has the necessary dimensions to safely manoeuvre the aircraft, that it is free from all obstacles, that the surface to be used meets the requirements to perform a safe take-off and landing and that the site has the equipment necessary to safely operate there."

The D-Manual section 1.2, paragraph 4.5.3 also states: "Temporary take-off and landing site may be used by utility commercial flights and training flights when the commander/instructor pilot deems that a safe operation of the aircraft can be maintained, taking into consideration aircraft performance, the actual physical make up of the site and the skill of the pilot manoeuvring the aircraft. In the case of maintaining a safe distance from the nearest moving obstacle, the helicopter shall at all times maintain an operating distance of at least one rotor diameter width measured from the tip of the blade. In the case of distance from the nearest fixed object, the rotor blade tip shall never be closer than three meters."

The normal procedure taught in all helicopter flying when landing at a temporary landing site is for the pilot to first fly an inspection run at about 500 ft. above the site, thereafter followed by at least one more inspection run at a lower altitude, prior to commencing the actual landing circuit.

There is nothing stated in the company's Flight Operations Manual (FOM) that permits the pilot to solely use the judgement of other parties in determining what may be considered a safe landing site.

Conclusion

When the pilot arrived at the research station and observed the positioning of the herd owner's car and flat bed trailer in the open area, he misunderstood the situation and was led to believe that the herd owner had picked it out as being a suitable place to land. He therefore concluded that it was not necessary to carry out an inspection run over the site, despite never having landed there previously.

It is a well-known fact that it is difficult to spot power lines from the air. This is especially difficult in the zone between two poles and in winter when the cables are covered with frost, which were the exact conditions in this case that existed on the day of the accident. This resulted in the pilot observing the power lines too late for him to safely manoeuvre the helicopter to avoid a collision. A factor that also contributed to the pilot observing the power line too late was that he was distracted by the light from the sunrise during the approach.

When landing a helicopter at a temporary landing site, the regulations state that it is the commander's responsibility to ensure that the site is suitable in every possible way and to at all times maintain a safe operating distance from all obstacles. In this case the pilot had neglected to ask the herd owner about the conditions at the planned landing site. He also had no idea of what previous experience the herd owner had in selecting a suitable helicopter landing site.

It can therefore be considered bad planning on the part of the pilot not to obtain the proper information about the planned landing site ahead of time and also not to carefully inspect the actual landing site from a safe altitude prior to carrying out the approach and landing. Had the pilot properly planned the flight he most likely would have at some point observed the power line ahead of time.

The accident was caused by the pilot failing to properly inspect the planned landing site with regards to obstacle clearance.