

## REPORT

PO Box 213, N-2001 LILLESTRØM

Telephone: + 47 64 84 57 60

Telefax: + 47 64 84 57 70

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

### Aircraft

-type & reg.: Cessna 172N D-EQCO  
 -year of man.: 1978  
 -engine: Textron Lycoming O-320-H2AD

### Radio call sign:

Date and time: 19th of July 2000, at 11.20 hrs  
 Location: 250 m west of the airport at Frøya, S.-Trøndelag, Norway  
 Type of occurrence: Aviation accident, collision with terrain shortly after take off  
 Type of flight: Privat  
 Weather cond.: Wind: 300° 7-8 kt. Visibility: + 10 km.  
 Clouds: few at 1 500 ft. Temp: 13° C. QNH: 1010 hPa

Light cond.: Daylight

Flight cond.: VMC

Flight plan: None

No. of persons onb. : 1

Injuries: One, seriously

Aircraft damage: Complete after collision with terrain and fire

Other damage: None

### Commander

-sex/age: Male , 43 years  
 -licence: PPL-A with instrument license  
 -fl. experience: Approx. 250 flight hours since 1991. 50 flight hours on type.

Information sources: Interview with pilot, witnesses and owner. AAIB/N (HSL) investigation.

## SUMMARY

The pilot was one in a group of 14 persons, all from Germany, on their way to Nordkapp (Cape North). The group had 7 aircraft at their disposal and consisted of both persons with PPL-A and students. The pilot flying the accident aircraft served as the safety pilot of the group and he flew together with a student. This student had been flying most of the trip from the start in Germany (EDML) on Saturday the 15<sup>th</sup> of July. On Tuesday the 18<sup>th</sup> of July, due to the bad weather forecast, the group decided to delay the trip further north and remain at Trondheim Airport Værnes (ENVA) until weather improved. Same afternoon 4 persons took the accident aircraft and one other aircraft and left Værnes for Frøya. Before leaving both aircraft were fueled at Værnes from the same fuel truck. After arriving Frøya

several local flights where performed with landings in both directions at the airfield with head- and tailwind. No problems where experienced. Runway directions are 04 and 22 and length is 800 m. The pilot of the accident aircraft did not fly this aircraft on Tuesday.

The group of 4 put up tents and created a campground in the north - eastern corner of the lake Sandvatnet, ref. enclosed map. The pilot left the others for dining at a local hotel. After the dinner he walked 10 km back to the camp. He went for a swim, had a short stay together with rest of the group around the fire before going to bed at approx. 0100 hrs. Shortly after waking up at 1000 hrs the next day he went up to the airfield in order to make a local flight.

Since there is no Flight Information Service at the field he judged the wind to 5-6 kt. westerly. He adjusted the altimeter to the airfield altitude, 152 ft (QNH). This was later confirmed at the accident site. Thereafter he taxied the aircraft to the northern part of the airfield before taking off from rwy 22. According to the pilot he took off with full flap, 30°. He stated this was according to the "short field procedure" (This is a misunderstanding, since procedure is maximum 10°). He thought acceleration and climb both where as expected and reduced flap somewhat before making a sharp right hand turn over the lake Sandvatnet and the camp. The pilot can not remember the flapsetting, but the student standing in the camp estimated setting to between 10- and 20°, which the pilot finds reasonable. The trainee saw the aircraft passing low and slow over the camp before he lost it out of sight behind a small hill. Shortly after he observed the aircraft just before it hit the terrain.

The pilot remembers he experienced some turbulence when he came over the lake and he experienced a loss of height. He tried to regain height by increasing engine power. He can remember neither speed nor altitude at that time. Shortly after the stall warning horn came on. The nose of the aircraft was lowered in order to gain speed. Since he already was low he did not have much height to lose and he was not capable of picking up enough speed, so once again he tried to increase engine power. Shortly thereafter the left wing dropped and the aircraft made a sharp left turn at a height of between 5 and 10 m above ground. The aircraft struck a small hill at an elevation of 55 m, 10 m higher than the airfield. The aircraft came to a rest lying above a 2 m wide and 2 m deep groove with the wings on both sides. The pilot did not wear safety belts and was thrown to the left out through the windshield. He lost consciousness for a while and when he woke up he was laying on the outside of the wreck.

The student who had been seeing the accident from the camp ran together with one of the others, who had woken up by the noise from the accident, the 3 – 400 m up to the accident site where they managed to pull the pilot further away from the wreck. At that time it was burning around the engine and in some interior details inside the cockpit. Shortly after the first fuel-tank popped open and the fire increased intensity. Then the last fuel-tank exploded. Only the empenage and the outer part of the wings remained after the fire, the rest of the aircraft melted and slided down into the grove. Engine and propeller remained at the point of impact.

A witness observing the accident from a nearby road reported the accident to the emergency medical communication central (AMK) at Orkanger only few minutes after the occurrence.

The aircraft had passed the annual inspection on 13<sup>th</sup> of July, i.e. shortly before the accident. Both pilot and student experienced the aircraft as stable and reliable. The aircraft was equipped for IFR flights, but had no autopilot. According to the owner and the pilot the aircraft was equipped with Emergency Locator Transmitter (ELT). Findings at the accident site confirm this statement. The search and rescue co-ordination centre (Hovedredningsentralen) never received any signal from the ELT. Additionally the aircraft was equipped with personal float gear, fire axe and fire extinguisher.

When performing the daily inspection (DI) the pilot normally drained the fuel system for water before moving the aircraft, but he only drained the water separator at the engine. Since he never had experienced water in the fuel-tanks, he used this “short procedure”, also on the day of the accident. There was enough fuel in the tanks for the intended flight.

Fuel-selector was always in position “both”. According to both trainee and pilot “nobody would use any other position” and the pilot claims this was the case this day. Position could not be confirmed at the accident site.

The horn for stall warning will activate approx.10 kt above actual stall speed. Stall-speed is lower by approx.5 kt when using flaps.

It was confirmed that all control surfaces and cable connections were present. Both propeller blades were bent and twisted due to rotation at impact. Engine oil was present in engine. The position of flaps was impossible to determine, but it could be concluded that flaps had been extended.

The first hit was with left wing. The left wing was low as the terrain was rising against right wing.

Position of wreckage was determined by use of police laser, ref. to enclosure.

## **COMMENTS FROM THE ACCIDENT BOARD**

Based on propeller-damage it could be stated that the engine was producing power at impact. This is emphasised by pilot statement “there was nothing wrong with the aircraft”. AAIB/N has no reason to believe that a defective engine caused this accident.

That the left wing was low at impact was confirmed by witness marks at the accident site. The aircraft must have been flown low over the water with 10 –20° flaps and on the lee side of the hill. There it met downdraft and lost height. The pilot had neither height nor engine-power to overcome the stall situation and he lost control.

The pilot's opinion of “short field procedure” and use of 30° flap is neither according to normal procedure nor the Pilot Operating Handbook. Normally a take off would be made

with max 10° flap. When using more the drag will increase, rate of climb will decrease and it will take longer to reach normal cruise speed.

The opinion of AAIB/N (HSL) is that the pilot should have used a proper take off procedure, continued to climb, at least until the legal minimum height of 500 ft, and established a proper speed before making the turn to overfly the camp. This together with a better understanding of the terrain's effect on the wind would have avoided this accident. Sufficient airmanship has not been demonstrated on this flight.

The pilot's neglect of using safety belts is unacceptable. However, due to a lucky coincidence this neglect probably saved his life. AAIB/N do also dislike the "short procedure" for control of water in the fuel and also the neglect of verifying the position of the fuel selector.

The reason why the signal from the ELT was not heard is unknown, but due to the complete fire damage the ELT was impossible to examine. It is not abnormal that a signal from an ELT is not detected within the short time between accident and complete destruction in fire.