

Aerospatiale AS355N Twin Squirrel, G-DPPS, 21 April 1996

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Aircraft Type and Registration: Aerospatiale AS355N Twin Squirrel, G-DPPS

No & Type of Engines: 2 Turbomeca Arrius 1A turboshaft engines

Year of Manufacture: 1991

Date & Time (UTC): 21 April 1996 at 1030 hrs

Location: Near Llanarthney, Carmarthen, South Wales

Type of Flight: Aerial Work (Police Patrol)

Persons on Board: Crew - 1 Passengers - 3

Injuries: Crew - None Passengers - None

Nature of Damage: Right skid broken, front equipment pod detached, damage to nose and belly panels, engines overtorqued

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 49 years

Commander's Flying Experience: 6,329 hours (of which 1,190 were on type)

Last 90 days - 101 hours

Last 28 days - 34 hours

Information Source:

Aircraft Accident Report Form submitted by the pilot

The aircraft was operating on a Police Air Support flight. About four minutes after take off from base, where the wind velocity was from 170° at less than 5 kt, the 'DOORS' caution illuminated on the central warning panel. The caution extinguished after about 20 seconds, but the pilot decided to carry out a precautionary landing in order to check the security of the doors. The helicopter was over a river valley and a landing field adjacent to the river and a disused railway was chosen. The pilot reported that he made a normal approach and intended to terminate with a helipad landing about two-thirds of the way into the field. The final approach track was in a south westerly direction. On reaching the decision point at 90 feet agl, the rate of descent was reported as being 200 feet per minute reducing. At about 50 feet agl, the aircraft suddenly pitched nose down and descended rapidly towards the ground. Full take-off power was applied without effect and a hard landing seemed inevitable, so maximum power was then applied. The aircraft touched down in a nose low, right skid low attitude. The right skid penetrated the surface of the field to a depth of some 25 cm and detached the front section. The aircraft continued forward and the equipment pod broke off, rolling underneath the cabin. The nose hit the ground before lifting again, as full power was still applied. The aircraft lifted off again, banked and turned right. The pilot noted that he had cyclic and collective pitch control, but that the tail rotor pedals were jammed. The aircraft was cushioned back onto the surface, having turned some 210° right from the original landing direction and travelled some 87 metres from the initial impact point. Photographs taken soon after the accident were provided to AAIB along with the relevant measurements taken at the time. The length of the field, in a south-westerly direction, was some 260 metres. The equipment pod came to rest some 40 metres from the end of the field, close to the marks made by the right skid and nose. A tree was located some 35 metres distant from and 50° to the right of the initial impact point.

The pilot reported that after coming to rest, the surface wind was gusting strongly from a direction about 30° away from the intended landing direction. An aftercast from the Met Office indicated that at the time of the accident, there was an area of low pressure to the south-west of Cornwall maintaining an unstable south-easterly airflow over south-west England and Wales, with occasional outbreaks of rain or showers, moderate at times. The cloud was scattered, base at 2,500 feet amsl, with broken cloud base 6,000 feet, becoming occasionally broken cloud base 1,000 feet in precipitation. The surface wind was estimated as being from 120° at 15 to 20 kt, with gusts of 25 to 35 kt, temperature $+13^\circ\text{C}$. The wind at 2,000 feet altitude was from 150° at 35 kt.

The helicopter was operating at about 35 kg below the maximum allowable take-off weight at the time of the accident. Upwind of the accident site was a ridge of high ground of between 500 to 1,000 feet in elevation. The pilot considered that a sudden increase in the wind speed at the critical stage of the approach coupled with the attitude of the helicopter caused a disruption of the flow around the main rotor disc. He did not consider that he had encountered the 'vortex ring' state during the final stage of the approach.