

**Aviation Safety Investigation Report
199101663**

**Agusta, SPA, Costruzioni Aeronautiche
Power**

25 April 1991

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NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 199101663 **Occurrence Type:** Accident
Location: Sydney
State: NSW **Inv Category:** 4
Date: Thursday 25 April 1991
Time: 1406 hours **Time Zone** EST
Highest Injury Level: Serious
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	0	1	0	0	1
Ground	0	0	0	0	0
Passenger	0	1	0	0	1
Total	0	2	0	0	2

Aircraft Manufacturer: Agusta, SPA, Costruzioni Aeronautiche
Aircraft Model: A109A II
Aircraft Registration: VH-JVH **Serial Number:** 7300
Type of Operation: Non-commercial Business
Damage to Aircraft: Destroyed
Departure Point: Batemans Bay NSW
Departure Time: 1310 EST
Destination: Sydney NSW

Crew Details:

		Hours on	
Role	Class of Licence	Type	Hours Total
Pilot-In-Command	Commercial	500.0	8000

Approved for Release: Wednesday, October 13, 1993

CIRCUMSTANCES

On arrival at Sydney, the helicopter landed near the helipad and ground- taxied to the concrete apron in the general aviation parking area. The pilot intended to park in a confined space, adjacent to buildings and hangars on the north-eastern extremity of the apron. A number of aircraft were parked in close proximity to the west and south of the intended parking position. A grassed area to the east was free of obstacles. Ground marshalling assistance was not available. The surface wind was from the south-east at 10-15 kts.

The helicopter taxied to the intended parking position and stopped on an easterly heading. Witness evidence concerning the events which followed was not consistent. The pilot reported sensing a rocking motion which he interpreted as the onset of ground resonance. The helicopter was lifted off and turned towards the building. During this manoeuvre, an extreme vibration commenced which caused the pilot to experience a loss of vision and led to a loss of control of the helicopter. The passenger later recalled that the helicopter completed a 180 degree turn on the ground onto a westerly heading before the rocking motion was felt and the pilot lifted the helicopter off the ground. A ground witness seated inside the building observed the helicopter come to a halt on an easterly heading. It then became airborne and completed a hover turn left onto a westerly heading, at a height of approximately 8-10 feet. As the helicopter settled momentarily, it appeared to be rocking slightly and touched down on each wheel individually, suggesting the pilot was experiencing minor control difficulties.

The helicopter became airborne a second time and was observed to turn right onto a northerly heading, facing a building adjacent to the apron. Severe pitching oscillations commenced as the helicopter climbed to a height of about 30 ft. After several oscillations, the helicopter yawed and rolled to the left, travelling in a westerly direction towards a parked Learjet. The angle of bank increased to 90 degrees and the nose began to drop at about the time the main rotor blades struck the tailplane of the Learjet and the concrete apron. Debris was scattered over a wide area. The fuselage was propelled forward such that the nose of the helicopter collided with the closed doors of a hangar. The helicopter then impacted heavily with the apron on its left side. The tail boom separated and the extensively damaged fuselage came to rest lying on its left side, with the left engine continuing to run.

An extensive technical investigation, which was hampered by the degree of impact damage, did not reveal any evidence of a pre-existing mechanical fault or defect. The investigation was unable to positively establish the reasons for the oscillations reported by the pilot as being the onset of ground resonance, or the source of the extreme vibration which caused the pilot to lose vision and control of the helicopter. However, it was noted that the helicopter was operated in close proximity to a building in wind conditions which favoured recirculation of airflow through the main rotor disc. A possible source of vibration was the interaction of main rotor downwash and the tailrotor. It was also noted that the helicopter was taxied into a confined area where the manoeuvring options available to the pilot were limited.

SIGNIFICANT FACTORS

The following factors were considered relevant to the development of the accident:

1. The helicopter was ground-taxed to a parking position which was in close proximity to buildings and hangars.
2. The parking position and the wind conditions were conducive to the onset of main rotor recirculation.
3. The pilot reported the suspected onset of ground resonance.
4. During an attempt to recover from suspected ground resonance, an extreme vibration developed which led to the loss of control of the helicopter.