Aviation Safety Investigation Report 199002013

Aerospatiale SA365C-2

14 October 1990

Readers are advised that the Australian Transport Safety Bureau investigates for the sole purpose of enhancing transport safety. Consequently, Bureau reports are confined to matters of safety significance and may be misleading if used for any other purposes.

Investigations commenced on or before 30 June 2003, including the publication of reports as a result of those investigations, are authorised by the CEO of the Bureau in accordance with Part 2A of the Air Navigation Act 1920.

Investigations commenced after 1 July 2003, including the publication of reports as a result of those investigations, are authorised by the CEO of the Bureau in accordance with the Transport Safety Investigation Act 2003 (TSI Act). Reports released under the TSI Act are not admissible as evidence in any civil or criminal proceedings.

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.

This accident was not the subject of an on-scene investigation.

Occurrence Number: 199002013 **Occurrence Type:** Accident
Location: 5 km W Prospect NSW
Date: 14 October 1990 **Time:** 1030
Highest Injury Level: Serious
Injuries:

	Fatal	Serious	Minor	None
Crew	0	1	3	3
Ground	0	0	0	-
Passenger	0	0	0	0
Total	**0**	**1**	**0**	**3**

Aircraft Details: Aerospatiale SA365C-2
Registration: VH-HCF
Serial Number: 5068
Operation Type: Aerial Work
Damage Level: Nil
Departure Point: Westmead Hospital NSW
Departure Time: 950
Destination: Westmead Hospital NSW

Approved for Release: 23 September 1991

Circumstances:

The helicopter was hovering at a height of 35 ft as part of a training exercise to provide a doctor and a paramedic with experience in winching procedures. The doctor, who was in the sling suspended on the winch cable, was raised to within 5 ft of the helicopter when there was an uncommanded firing of the explosive cable cutter. The doctor fell 30 ft and sustained serious injuries. Investigation revealed the uncommanded firing had resulted from a short circuit in the winch electrical system caused by a blown power resistor in the winch motor circuit. This allowed a substantial current flow in the cable cutter, sufficient to fire the squib. The current flow was not contained within the body of the hoist because of poor bonding between the winch motor and its mounting. The resistor failed due to inadequate heat dissipation at high current flow. The Civil Aviation Authority (CAA) subsequently issued a mandatory requirement to remove pyrotechnic cable cutting devices from helicopter hoists when used to raise or lower personnel. Additionally, both the CAA and the manufacturer have issued mandatory requirements to rectify the bonding problem pending a technical solution to preclude power resistor overheating.

Significant Factors:

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

1. Inadequate heat dissipation of the motor power resistor resulted in the failure of the resistor at high current load.

2. Inadequate bonding (high resistance) between the hoist, mount and airframe caused the current to flow through the squib (low resistance), resulting in uncommanded activation of the squib.

Reccomendations:

1. That the CAA evaluate all hoist types for potentially similar problems.

2. That the CAA consider a modification of hoist circuit control to isolate the cable cutter squib by means of a close proximity relay to prevent stray currents from firing the squib.

3. That the CAA amend or re-issue Airworthiness Directive AD/SUPP/12 to activate squibs for all operations other than training exercises when personnel are to be winched.

4. That the CAA amend Civil Aviation Order 29.11 to include in the personnel briefing that a pyrotechnic cutting device is installed and will be used if required during an emergency.