



COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION SUMMARY REPORT

Publication of this report is authorised by the Secretary under the provisions of Air Navigation Regulations 283 (1)

Reference No

SI/775/1017

1. LOCATION OF OCCURRENCE

2.5 km WNW of Breaksea Island, W.A.	Height a.m.s.l. Sea Level	Date 31.5.77	Time (Local) 1007 hours	Zone WST
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THE AIRCRAFT

Type and Model Hughes 369HS Helicopter	Registration VH-BBJ	Certificate of Airworthiness Valid from 12.12.75
Certificate of Registration issued to	Operator	Degree of damage to aircraft Destroyed Other property damaged -
Defects discovered Nil		

3. THE FLIGHT

Last or intended departure point Albany W.A.	Time of departure 0950 hours	Next point of intended landing Breaksea Island	Purpose of flight Carriage of passengers and cargo	Class of operation Charter
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THE CREW

Name	Status	Age	Class of licence	Hours on type	Total hours	Degree of injury
	Pilot	33	Commercial Helicopter	721	Fixed 1653 Rotary 3422	Serious

5. OTHER PERSONS (All passengers and persons injured on ground)

Name	Status	Degree of injury	Name	Status	Degree of injury
	Passenger	Serious		Passenger	Serious

RELEVANT EVENTS

The helicopter and pilot were hired by the Commonwealth of Australia, Department of Transport, to facilitate the inspection and survey of marine navigational aids in the southwestern area of Western Australia.

On the day preceding the accident the helicopter was refuelled to capacity (192 kg) following which it was flown from Perth to Albany with two passengers (Williamson and Howe), equipment and luggage. The flight time was 132 minutes. The following morning the helicopter was reloaded, the load included a glass reinforced plastic vessel containing 96 kg of JET A-1 fuel which was placed in the rear passenger compartment and an aluminium ladder 3.35 metres in length. The ladder was secured so that it lay across the rear passenger compartment with approximately 1 metre protruding beyond each side of the fuselage: the rear doors which are hinged at their leading edges could not be closed and each lay at an angle of some 50 degrees to the fuselage. The helicopter was not refuelled. A load manifest was not prepared. The gross weight of the helicopter was at or about the maximum permissible; the lateral centre-of-gravity was within limits; the longitudinal centre-of-gravity was not less than 18mm forward of the maximum permissible forward limit.

The intended flight was to be from Albany to Breaksea Island, a distance of 19.5 km involving 13.5 km of overwater flight on a direct route, with a stopover of some 3 hours before proceeding to Eclipse Island and return to Albany. The pilot did not obtain a meteorological forecast or submit a flight notification to airways operations; he did notify a SARTIME of 1630 hours to a company employee.

The pilot and the two passengers boarded the aircraft with all three persons being seated in the front compartment. One life jacket was readily available; other life jackets were stowed in the rear passenger compartment. The engine started and operated normally: some time previously the pilot had "pulled" the circuit breaker associated with the engine failure, low transmission oil pressure, and high oil temperature warning systems therefore these were inoperative. It is probable that the fuel quantity gauge was registering some 20 kg; calculations suggest that the actual quantity of fuel was some 20 kg. The helicopter departed at about 0950 hours; no notification was made to airways operations but the radio was ON and operating, and selected to the appropriate frequency.

6. Relevant Events (Cont'd)

During the enroute climb at 40 to 45 knots indicated airspeed some aerodynamic buffeting was experienced and the pilot reduced the airspeed to about 35 knots and cruised at 800 to 1000 feet. Subsequently he initiated a shallow descent. At 1006 hours when at an altitude of about 500 feet 2.5 km short of the destination, the engine stopped; this time is consistent with the calculated time for fuel exhaustion. The pilot transmitted a MAYDAY call, which was received; he increased the airspeed to 40 to 45 knots and attempted an auto-rotation landing. The helicopter struck the water at a high rate of descent with little, if any, forward speed. It was substantially damaged and overturned but remained afloat. Search and rescue action was initiated immediately and all occupants were recovered after approximately one hour in the water.

Conditions were: wind velocity north to northeast 5 to 7 knots, visibility 30 km, swell 1 metre trough to trough 8 to 10 metres.

The wreckage was recovered. No defect or malfunction was found which would indicate that the helicopter was not capable of normal operation. However, a plastic nozzle some 150 mm in length was found in the lefthand cell of the fuel tank, adjacent to the fuel float arm. Its presence in the tank system was known to the pilot. It is possible that this object rendered inoperative the fuel quantity gauge and the fuel low-level warning light.

OPINION AS TO CAUSE

The cause of the accident was that following stoppage of the engine due to fuel exhaustion, the potential energy (height, rotor speed, airspeed) available to carry out a safe auto-rotation landing was mismanaged.

Approved for
publication

(A. R. Woodward)
Delegate of the Secretary

Date 2.5.1978

DEFINITIONS

ACCIDENT - An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all those persons have disembarked and in which

- (a) any person suffers death or serious injury as a result of being in or upon the aircraft or by direct contact with the aircraft or anything attached to the aircraft; or

Note. - Specifically excluded are: death from natural causes and fatal or serious injury to any person on board whether self-inflicted or inflicted by another person, or to ground support personnel before or after flight, or fatal or serious injury which is not a direct result of the operation of the aircraft, or which concerns stowaways.

- (b) the aircraft suffers substantial damage or is destroyed; or
- (c) the aircraft is missing or is completely inaccessible.

FATAL INJURY - Any injury which results in death within 30 days.

SERIOUS INJURY - Any injury other than a fatal injury which

- (a) requires hospitalisation for more than 48 hours, commencing within seven days from the date the injury was received; or
- (b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
- (c) involves lacerations which cause severe haemorrhages, nerve, muscle or tendon damage; or
- (d) involves injury to any internal organ; or
- (e) involves second or third degree burns, or any burns affecting more than five percent of the body surface.

MINOR INJURY - Any injury other than as defined under "Fatal Injury" or "Serious Injury".

DESTROYED - Consumed by fire, demolished or damaged beyond repair.

SUBSTANTIAL DAMAGE - Damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft and which would normally require major repair or replacement of the affected component. The following types of damage are specifically excluded: engine failure; damage limited to an engine or its accessories, or to propeller blades; bent fairings or cowlings; small dents or puncture holes in the skin; damage to wing tips, antennas, tires, or brakes.

MINOR DAMAGE - Damage other than as defined under "Destroyed" or "Substantial Damage".