

**EXECUTIVE SUMMARY**  
**AIRCRAFT ACCIDENT INVESTIGATION**  
**C-5B, 85-0004**  
**DOBBINS AIR RESERVE BASE, GEORGIA**  
**4 FEBRUARY 2004**

On 4 February 2004, at 1852 EST, a C-5B, Tail Number 85-0004, assigned to Warner Robins Air Logistics Center, Robins Air Force Base, Georgia, as part of the C-5 Avionics Modernization Program, was damaged during landing when the Right-Aft (R-A) Main Landing Gear (MLG) failed to properly extend. The aircraft sustained damages amounting to \$1,075,586. No personal injuries or damage to private property resulted from the accident.

While preparing to land at Dobbins Air Reserve Base, Georgia, the flight crew attempted to lower all the landing gear, but the R-A MLG remained in the wheel well. The flight crew followed the Flight Manual's emergency procedures to extend the R-A MLG. During this process the gear did not move from the wheel well. The flight crew believed the gear was mechanically stuck and they could safely land the aircraft.

The emergency procedures followed by crew leaves down hydraulic pressure on the malfunctioning gear. The procedure also leaves the MLG Control circuit breaker open. When this circuit breaker is open, the landing gear will not rotate 90 degrees to align with the landing runway. Somewhere on final approach, but before landing, the R-A MLG extended due to the down hydraulic pressure, but the gear could not rotate to the forward rolling position.

The primary cause of the accident supported by clear and convincing evidence was water in the R-A MLG's Forward Rotary Actuator that froze after exposure to over five hours of flight at minus 39 degrees Celsius. This frozen water caused the Forward Rotary Actuator to bind.

There were three factors that substantially contributed to the accident that are supported by substantial evidence. First, the emergency extension procedures do not address a situation where the emergency extension of the MLG is not successful. If an in-transit condition is not resolved, checklist procedures in TO 1C-5A-1, *Flight Manual*, Section III, *Emergency Procedures*, end with a condition that leaves down hydraulic pressure on the MLG. Second, the flight crew misunderstood when down hydraulic pressure is applied to the MLG. Most of the flight crew believed when the R-A MLG Control circuit breaker was open or "pulled," hydraulic pressure would not be applied to extend the MLG. Third, the C-5 technical orders do not provide maintenance personnel any guidance to inspect for water intrusion in the MLG Rotary Actuators. Water intrusion into the MLG Rotary Actuators is a known problem, yet technical orders had not been published to inspect for this problem prior to the accident.

**Under 10 U.S.C. 2254(d) any opinion of the accident investigators as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report may not be considered as evidence in any civil or criminal proceeding arising from an aircraft accident, nor may such information be considered an admission of liability of the United States or by any person referred to in those conclusions or statements.**