Aviation Safety Investigation Report 199801668

Embraer-Empresa Brasileira de Aeronautica
Piper Chieftain

11 May 1998

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Occurrence Number: 199801668 **Occurrence Type:** Accident
Location: Scone, (ALA)
State: NSW **Inv Category:** 4
Date: Monday 11 May 1998
Time: 1100 hours **Time Zone** EST
Highest Injury Level: None

Aircraft Manufacturer: Embraer-Empresa Brasileira de Aeronautica
Aircraft Model: EMB-820-C
Aircraft Registration: VH-HVA **Serial Number:** 820C-045
Type of Operation: Air Transport Domestic Low Capacity Passenger
Damage to Aircraft: Substantial
Departure Point: Scone NSW
Departure Time: 1100 EST
Destination: Gunnedah NSW

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Commercial	1000.0	2400

Approved for Release: Thursday, July 2, 1998

After taking off from Scone, the pilot of an Embraer 820C aircraft reported that when retracting the landing gear, the landing gear selector failed to return to the neutral position, and the gear unsafe light remained on. The emergency checklist was actioned and the emergency hand pump was used by the pilot to extend the landing gear, however, the nose gear failed to lock down. The pilot requested emergency services to be in attendance prior to returning for a landing. When the aircraft subsequently landed, the nose gear collapsed during the landing roll. The pilot and passenger vacated the aircraft without injury.

An investigation revealed that the right engine driven hydraulic pump was leaking from a loose suction line fitting, and that most of the hydraulic fluid had been lost overboard. Inspection of the hydraulic hand pump found contamination of the check valve. This was probably enough to hold the valve off its seat so that insufficient pressure was available to lock the nose gear in the down position.

Further investigation determined that the right engine had been changed prior to the accident flight. As the engine had been supplied without a hydraulic pump, a serviceable pump was fitted. During engine ground running, the right hydraulic pump failed to pressurise the system and it was assumed that, because the left and right engines rotate in opposite directions, the pump was configured for left engine rotation. On completion of the engine run, the hydraulic pump lines were reconfigured for correct rotation. A very short engine run confirmed that the pump pressurised the system and that no leaks were apparent. However, the suction line had not been properly tightened, which was not detected. Sometime later, at about the time the aircraft departed, hydraulic fluid commenced to leak from the loose suction line fitting.

It is likely that whilst the pump was operating in the reverse rotation mode during the first engine run, the reversed hydraulic flow disturbed any sediment that was in the hydraulic system. The contamination then found its way into the hand pump when it was operated by the pilot during the emergency extension of the landing gear.