No: 9/91 **Ref: EW/G91/05/12** **Category: 1b**

Aircraft Type and Registration:	Beech E90, G-DEXY	
No & Type of Engines:	2 Pratt & Whitney PT6A-28 turboprop engines	
Year of Manufacture:	1975	
Date & Time (UTC):	27 May 1991 at 1912 hrs	
Location:	Southend Airport, Essex	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Abrasion damage to fuselage underside; scuffed propellers	
Commander's Licence:	Commercial Pilot's Licence with Instrument rating	
Commander's Age:	54 years	
Commander's Flying Experience:	4,806 hours (of which 114 were on type)	
Information Source:	Aircraft Accident Report Form submitted by the pilot and additional AAIB enquiries	

The aircraft was approaching Birmingham Airport when the landing gear failed to extend following 'down' selection. The commander observed that the gear motor circuit breaker had tripped and so he reset it. The landing gear was reselected 'down' and the motor was heard to operate, but without the normal gear operating sounds. After a short while, the circuit breaker tripped again. The emergency gear extension procedure was therefore carried out in accordance with flight manual instructions, but this also proved ineffective.

Following RT consultations with ATC and the operating company's engineering base, it was decided to divert the aircraft to Southend where, after further attempts to use the emergency extension system had failed, a 'wheels up' landing was carried out. The approach was flown without flap and the engines were shut down immediately prior to landing in order to minimise damage to the propellers.

Subsequent examination revealed that the nose landing gear actuator had seized. The actuator is chain driven from an electric motor located in the centre section. In the event of failure of the electric motor,

the actuator may be operated manually via the emergency system. However, a seized actuator precludes gear extension by either means.

The actuator had achieved fewer than 1,000 cycles of a 7,500 cycle life, and as such an occurrance was outside the experience of the operator, they sought the opinion of the organisation that had last overhauled the unit. Their reply was to the effect that a heavy landing on the nose landing gear can sometimes cause a tendency for the drag brace assembly to 'jump' out of its over centre position, thereby feeding landing loads directly into the actuator. The aircraft operating company have acknowledged this as the most likely explanation as they have so far been unable to dissassemble the actuator due to distortion of its casing. It is thus possible that a previous heavy landing had led to thread break-up within the actuator worm gear assembly during a subsequent retraction cycle, thereby preventing operation on this occasion.