No: 12/87 **Ref: 1a**

Aircraft type and registration:	Fokker Friendship (F27-200) G-BAUR
No & Type of engines:	2 Rolls Royce Dart 528-7E turbo prop engines
Year of Manufacture:	1963
Date and time (UTC):	23 September 1987 at 1042 hrs
Location:	Stansted Airport, Essex
Type of flight:	Scheduled domestic passenger
Persons on board:	Crew — 4 Passengers — 31
Injuries:	Crew — None Passengers — None
Nature of damage:	Nose landing gear doors and underside of fuselage scraped by runway contact
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	39 years
Commander's Total Flying Experience:	7431 hours (of which 1000 were on type)
Information Source:	AAIB Field Investigation

The aircraft was inbound to Stansted from Leeds/Bradford. At 1030 hrs it was cleared by Stansted ATC for a visual approach to runway 23. At 1033 hrs the commander reported cockpit indications of an unsafe condition of the nose landing gear. The crew had been monitoring closely the operation of the nose landing gear since they had noticed an abnormally long delay in obtaining the green lights when the gear was selected down for the previous landing at Leeds. Permission was given to fly adjacent to the runway and past the control tower so that a visual inspection of the landing gear could be made. An ATCO inspected the gear through binoculars and reported that it appeared to be lowered, but possibly not in the "down" position. The aircraft was flown in the circuit whilst the landing gear was recycled and the emergency lowering system activated. An unsafe condition of the nose-gear continued to be indicated. At the suggestion of ATC, another fly-past was made so that the commander of a similar type of company aircraft, which was about to leave the apron, could inspect the landing gear. He reported that the nose landing gear appeared to be in the normal position. The commander of 'UR' elected to make a landing. The airport emergency services, which had been on local stand-by, were brought to full emergency status.

The aircraft touched-down lightly and the co-pilot, who was the handling pilot at the time, held the nose of the aircraft off the runway for as long as aerodynamic forces permitted. It eventually contacted the runway and the nose landing gear collapsed as the weight of the nose came onto it. The aircraft continued the remainder of its landing run straight-ahead with the nose strut scraping along the runway. The commander shut-down and feathered the engines. Some smoke penetrated the flight deck, but there was no fire.

Before touch-down the commander had instructed the passengers to occupy the most rearward seats in order to move the aircraft's centre of gravity towards the rear. As soon as the aircraft came to rest the passengers quickly evacuated the aircraft assisted by the cabin staff and commander. The co-pilot switched off the fuel and electrics before he left the aircraft.

The aircraft was subsequently ferried to the operator's maintenance base for inspection with the landing gear pinned down. The aircraft was placed on jacks and the landing gear was cycled several times. It operated satisfactorily, but it was noted that the downlock mechanism on the nose landing gear was slow to engage. Subsequently it was found possible to reproduce the failure to lock-down which had caused the accident. A strip examination revealed that the retraction crank, which couples the retraction jack to the downlock mechanism, was stiff in operation.

Several problems were found within the retraction crank mechanism. The crank had been repaired in accordance with Dowty-Rotol repair scheme RS 00443RA240 which called for the inside diameter to be bored out and a steel repair sleeve to be fitted. The repair sleeve had a hole drilled in it which aligned with the grease nipple in the crank to allow lubrication. It was found that the sleeve had rotated approximately 110° within the crank thus cutting off the supply of fresh grease to the moving surfaces. The repair scheme called for the sleeve to be assembled with 'Loctite 270', but analysis of the deposits found on it showed that it had been assembled using ordinary jointing compound. This work had been carried out during the last overhaul when the repair sleeve had been removed from the retraction crank, to facilitate non-destructive testing of the crank.

The aluminium alloy bush on which the retraction crank was fitted was examined and found to be oversize. This reduced the normal clearance of between .003 and .010 inch to less than .001 inch. In addition, it was found that the internal diameter of the steel repair sleeve had no protective treatment and had suffered from some corrosion which had further reduced the normal clearance between the two parts. The repair scheme called for the inside diameter of the sleeve to be check-reamed, but no subsequent protective treatment was specified.

The nose landing gear, including the downlock mechanism and retraction crank, had been overhauled by the manufacturer in 1979 at which time the repair to the retraction crank had been carried out. It was fitted to G-BAUR and then accumulated 2279 landings before being removed for overhaul during 1981. At that overhaul it was noted that the repair sleeve was corroded and had migrated from its correct position. The most recent overhaul was carried out in 1985 and subsequently the nose landing gear, including the downlock mechanism and retraction crank, had been refitted to G-BAUR and had accumulated 2418 landings prior to the accident. The operator has since decided to discontinue this particular repair scheme.