INCIDENT

Aircraft Type and Registration:	BAe 146-200, G-JEAY
No & Type of Engines:	4 Lycoming ALF502R-5 turbofan engines
Year of Manufacture:	1989
Date & Time (UTC):	13 April 2006 at 0640 hrs
Location:	Shortly after departure from Southampton
Type of Flight:	Public Transport (Passenger)
Persons on Board:	Crew - None Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Overheated vertical gyro unit
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	45 years
Commander's Flying Experience:	10,900 hours (of which 4,600 were on type) Last 90 days - Not known Last 28 days - Not known
Information Source:	Aircraft Accident Report Form submitted by the pilot and follow up inquiries to operator's maintenance organisation

Synopsis

Shortly after takeoff, a fault in the power supply to a 'vertical gyro' caused instrument malfunctions and an electrical burning smell throughout the aircraft. A PAN was declared and the aircraft returned to Southampton where an uneventful landing was made.

History of the flight

Shortly after departure from Southampton, the 'attitude' warning flag appeared on the Captain's Attitude/Direction Indicator (ADI) and, simultaneously, the TCAS failed. Both ADIs were selected to the No 2 system and the 'attitude' flag cleared; however, the TCAS remained inoperative. A few minutes later, an electrical burning smell became apparent on the flight deck and, at about the same time, the cabin crew called the flight crew to advise that they could smell something odd in the forward galley area. A decision was made to return to Southampton and, after declaring a PAN, an uneventful landing was made. Since the smell did not appear to be getting any worse, and there was no sign of smoke, the aircraft was taxied to a stand where the passengers disembarked normally.

Investigation by the operator's maintenance organisation identified a defective 'vertical gyro' in the avionics bay as the source of the problems. Upon replacement of

this unit, both the TCAS and ADI faults cleared and the aircraft operated subsequently with no further problems being reported. The 'vertical gyro' was returned to the manufacturer for investigation, where a defect was found in the unit's power supply. This had caused its transformer and associated components to overheat. After replacement of the affected components, the unit was tested and performed to specification.