Short Brothers SD3-60 Variant 100, G-VBAC

AAIB Bulletin No: 7/2004	Ref: EW/G2004/03/04	Category: 1.1
INCIDENT		
Aircraft Type and Registration:	Short Brothers SD3-60 Variant 100, G-VBAC	
No & Type of Engines:	2 Pratt & Whitney Canada PT6A-67R turboprop engines	
Year of Manufacture:	1988	
Date & Time (UTC):	4 March 2004 at 1923 hrs	
Location:	London Stansted Airport, Essex	
Type of Flight:	Public Transport (Passenger)	
Persons on Board:	Crew - 3	Passengers - 20
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Left engine starter generator overheated internally	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	52 years	
Commander's Flying Experience:	4067 hours (of which 1615 were on type)	
	Last 90 days - 60 hours	
	Last 28 days - 24 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Having boarded the passengers and obtained start clearance from Air Traffic Control (ATC), prior to pushback, the flight crew successfully started the right (No 2) engine. An attempt was then made to start the left (No 1) engine. Although the left propeller turned slowly, no reading registered on the No 1 gas generator (Ng) gauge. The crew would normally expect the gauge to show an acceleration to about 18%, enabling them to select ignition above 10% and introduce fuel to the engine with the Ng stable above 12%. The start was aborted and, in the absence of any unusual noises, two further attempts were made but with the same results. The crew abandoned the start sequence on the left engine and shortly afterwards both pilots became aware of a mild electrical burning smell. The crew shut down the right engine and the commander instructed the co-pilot to advise ATC of the problem and request the attendance of the Airport Fire Service (AFS) as a precautionary measure. Meanwhile the commander ordered the cabin crew to carry out a 'rapid disembarkation'. ('Rapid disembarkation' is a company procedure which requires the cabin crew to direct the passengers to vacate the aircraft, without their hand baggage, via the normal exits. In this case the exit was the door at the rear left hand side of the cabin.) The AFS arrived shortly after being requested and the rapid disembarkation was completed without incident.

After the passengers had disembarked, the ground crew attending the aircraft advised the flight crew that they could see a pool of fluid on the ground beneath the left engine and a flame emerging from the top of the engine. The commander ordered the co-pilot to discharge one extinguisher into the left engine, after which the ground crew reported that there was no longer any evidence of a flame. The AFS subsequently declared the aircraft safe.

Engineering investigation revealed that the starter generator on the left engine had overheated internally. However, there was no evidence of any external burning. Also, the No 1 Ng transducer was found to have failed and was replaced. Since this rectification action was carried out the engine has started and operated normally. This indicates that the lack of a reading on that Ng gauge during the attempted left engine start was probably the result of an indication problem and not that the engine had failed to turn.

The pool of oil beneath the left engine measured about two feet by nine inches. The engine manufacturer has advised that some of that oil could have been vented during the three attempts to start the engine; however, there is doubt that that much oil would have resulted from this incident alone. The origin of the remaining oil is unclear, although there is no evidence to connect it to this engine which has continued to operate normally. The commander considered that the 'flame' seen by the ground crew might well have been the result of a reflected light, the sun having set one and a half hours previously.

The Flight Manual states that during an engine start 'light up' should occur within 25 seconds of the beginning of the start sequence and within 10 seconds of introducing fuel. There is also a limitation on the starting system of a maximum of three start cycles in a 20 minute period, which was recognised by the crew.

The advisory call to ATC, although not a recognised emergency call, prompted them to initiate an 'aircraft ground incident', which was an appropriate response to the circumstances. It would also have been appropriate for the flight crew to make a PAN call, which could subsequently have been upgraded or downgraded as the situation dictated.