

Rolls-Royce Field Notes

Exam Date: 7MAY2019

Exam Location: Keystone Turbine Services, Coatesville, PA

Aircraft Type: 369HS

Aircraft Reg: N119T

Engine Model: T63-A700 / M250-C10D

Engine S/N: AE 403786 ABCF

Engine Rating: 317 shp (takeoff)



The engine was removed from the shipping container and installed in a turnover stand under the supervision of the Philadelphia FAA FSDO inspector. The magnetic chip detectors were inspected with no chips or ferrous debris noted. When the technician loosened the pneumatic air line from the compressor scroll to the Pc filter in order to perform a pneumatic leak check, he noted the b-nut on the scroll end was not torqued properly. The pneumatic leak check revealed no leaks.

During preparation for the engine run, a helicoil on the gearbox torquemeter output orifice became dislodged from the gearbox. This anomaly is common with old gearboxes and would not have affected the engine performance during the mishap. A replacement helicoil was inserted to permit testing.

The b-nut on the Pc filter line was marked with arrows to indicate the position of the nut as found after the mishap. The Pc line was then tightened for the engine start.

The engine started on the first attempt and stabilized at ground idle. Several test points were recorded to include max power. When deceleration and acceleration checks were performed, a test stand irregularity was experienced where the dynamometer became unstable. The engine was shut down to troubleshoot the test stand issue. The engine was then restarted successfully and the remainder of the overhaul manual defined testing was completed. After the power calibration test points were recorded, the b-nut connecting the Pc filter to the scroll was loosened to replicate the condition of the connector as found during the wreckage examination. The engine continued to run at a cruise power setting with the loosened b-nut with no anomalies noted. The engine was then shut down and testing was concluded.

Summary: The engine started, idled, and accelerated as designed during the testing with no flame outs or abnormal operation noted. No anomalies were observed during testing which would have caused the reported sudden power loss during the event. Although the engine did not meet specified power per the table below, the low power observed (2.4% to 3.2 % below minimum specification) was within Rolls-Royce experience for an engine mid-life and would not have contributed to the reported power loss during the event.

Engine predicted power based on test data:

		Cruise B	Max Continuous	Takeoff
SPEC GPTOT		1148	1280	1380
PRED SHP @ SPEC MGT		198	262	307
SPEC SHAFT PWR		203	270	317
% DELTA FROM SPEC PWR		-2.4	-2.9	-3.2
Predicted SFC		0.778	0.720	0.700
SPEC SFC		0.762	0.706	0.697
% DELTA FROM SPEC SFC		2.1	2.0	0.5

Regards,



Jon-Adam Michael
Chief of Air Safety (U.S.)

