



**CASE STUDY**

**P&W FT8 – Power Turbine Bearing Failure**

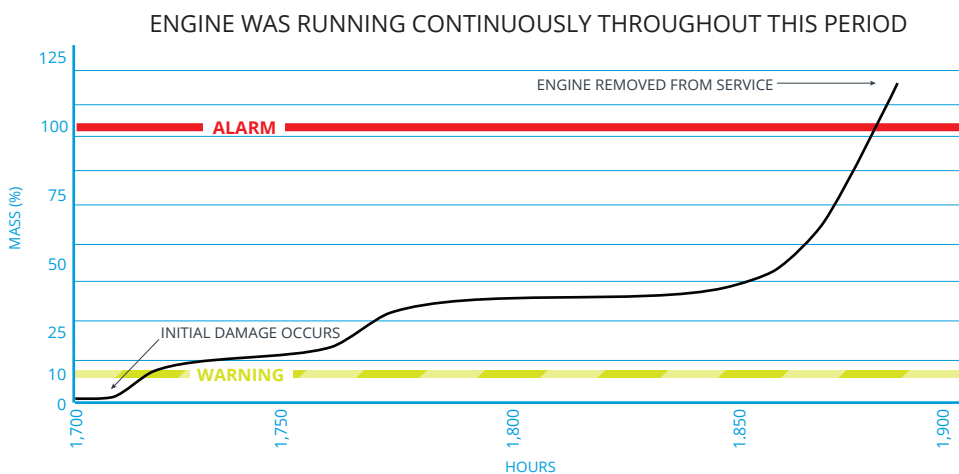
**Background**

An FT8 had run for 1,700 hours with no debris detection. Debris began to be detected on the power turbine MetalSCAN sensor. Peak demand for power is on weekdays, the unit is curtailed on weekends.

**Event Description**

MetalSCAN first began to detect particles on the PT sensor on a Tuesday and climbed steadily through the warning level by early Wednesday. With close monitoring of the MetalSCAN data the engine continued to be run at full load until the weekend, with the particle counts continuing to rise. With reduced power demand on the weekend the engine operation was curtailed to 70% load which resulted in a flattening of the particle count trend. As the load was increased again after the weekend, the particle count trend increased at a steeper rate and the alarm level was surpassed before the middle of the week. The operator was able to easily and effectively monitor the bearing damage severity with MetalSCAN, with no chip detector or vibration abnormalities indicated, and keep the engine running through the peak revenue generating periods. The engine teardown confirmed that the damage was contained to the bearing inner race (spallation) and correlated well with the MetalSCAN alarm limit. Secondary damage was avoided and down time was minimized.

**Time History of Events**



Damaged Bearing

**Benefits**

- ✓ Only last eight days shown
- ✓ Engine ran for ~1,700 hours with virtually no debris detected
- ✓ 175 hour planning period provided
- ✓ Curtailed operation to 70% load through weekend
- ✓ Secondary damage avoided
- ✓ Damage isolated to the power turbine

**LONG LIVE EQUIPMENT**



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