

7FA Inspection Recommendations

Full Borescope: This includes the following areas:

Number one lift oil lines.

All stages of the compressor: The inlet to R-13 at the top, bottom and along both case breaks.

All of the aft-compressor stages-Ensure all stator vanes are inspected.

Full Combustion Section including all liners, the interior and exterior of the transition pieces and impingement sleeves.

Turbine and Exhaust

Frequency: Annual or semi-annual depending on run hours and starts

S-0 to S-4 Shim Map: This inspection will document whether there are shims at any of the 20-ring segment locations.

Frequency: Once to determine if and or where the shims are located. If there are properly seated shims this inspection should be done during each subsequent borescope inspection.

Frequency if there are shims protruding: If any shims are protruding from the case less than ½” they should be monitored every 5 starts until they reach ½”. At that point removal or grinding should be performed per TIL 1562. If shims are found ½” or more out of the case the unit should not be run until removal or grinding has taken place.

TIL 1509-1: Remote dye penetrant testing of the R-0 and R-1 blade tips to check for radial tip cracks that may have occurred due to the blades rubbing the compressor case.

Frequency: Annual with no signs of a rub

Frequency with Rubs: Every 25-starts if there is tip discoloration or rolled metal on the blades. We have determined that this interval is most likely to identify cracks prior to the liberation of material from the blades. This interval is not affected by tip grinding. We have found cracks on three units consistently every spring and fall since 2001. No new rubs have occurred since the tip grinding in 2001.

Phased Array Ultrasonic Inspection of the R-0 and R-1 blade platforms: This inspection is designed to identify dovetail or other cracks in the standard or P-Cut compressor blades. We've identified cracks on approximately 20% of the units inspected that have standard compressor blades. We know of one documented R-0 standard blade failure that occurred in 2008.

Frequency: Annual or semi-annual depending on starts and hours.

Eddy Current Inspection of the S-0 to S-3 Stator Vanes: This inspection is designed to identify cracks or linear indications in the stator vanes that have lead to at least 16 catastrophic compressor failures.

Frequency: Annual or semi-annual depending on starts, hours and condition of the vanes

Frequency with known pitting or minor FOD: Every 25-50 starts until the vanes can be replaced.

S-0 to S-3 High Resolution Corrosion Pitting Inspection: This inspection is designed to identify corrosion pitting, minor impact damage or linear indications in the stator vanes that may contribute to catastrophic compressor failure.

Frequency: Annual or semi-annual depending on starts, hours and condition of the blades

Frequency with known pitting or minor FOD: Every 25-50 starts until the vanes can be replaced.