



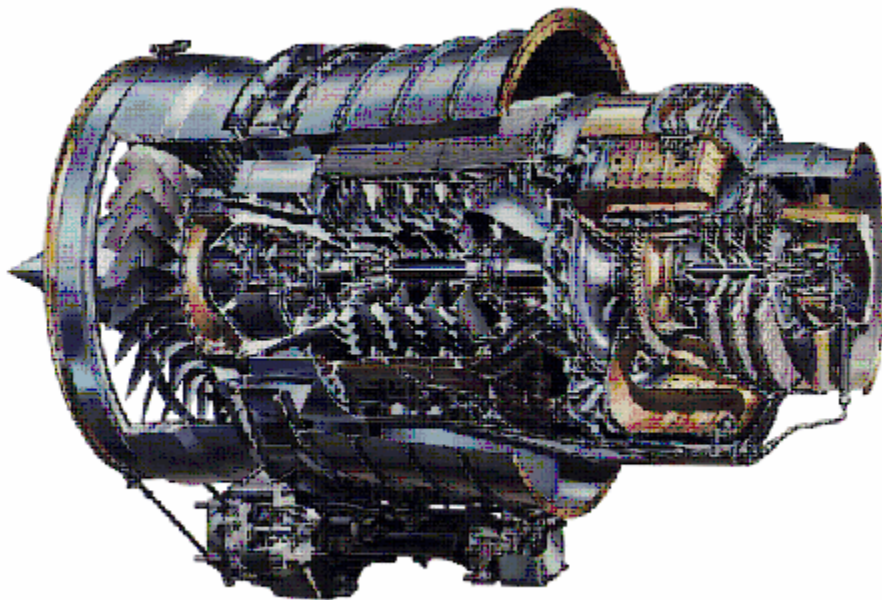
StandardAero

TFE731-20R-1B

S/N: P111178

Engine Teardown Report

Reference: Work Order 248971



Prepared by: Joseph Freeman
Turbine Engineer
Standard Aero - Houston
Date: 9/26/08



Work Order: 248971
 Customer: Secretaria de Gobernacion
 Engine S/N: 111178
 Engine Model: TFE731-20R-1B
 Total Time Since New: 2476.4
 Total Cycles Since New: 2260
 Time Since MPI: NA
 Time Since CZI: NA
 Cause for removal: Scheduled MPI
 Removed from aircraft: XC-VMC
 Removed from position: 2

BACKGROUND:

This engine is in house for a scheduled MPI event. During inspection, damage was found to the first stage LPC blades. Further disassembly and inspection revealed additional damage to the remainder of the LPC and HPC components.

SUMMARY OF DISASSEMBLY FINDINGS:

The engine was disassembled and inspected in accordance with the TFE731 heavy maintenance manual guidelines. The following items were noted as discrepancies:

Qty.	Part Number	Description	Discrepancy	Disposition
1	3060156-2	Fan Spinner	Bare metal on edge	Repair
1	3060435-1	Fan Inlet Housing	Acoustic material is damaged	Replace
30	3060154-2	Fan Blades	Rough leading edge	Repair
1	3071981-2	Fan Nut	Chipped on splines	Replace
5	3060129	Planetary Gearshaft Assy	Comply with SB 72-5173	Replace
1	3060121-7	Planetary Gear Carrier	Comply with SB 72-5173	Replace
31	3060341-1	1 st Stage LPC Blades	Damaged	Replace
1	3060359-3	1 st Stage LPC Stationary Shroud	Nicked on lip (Comply with SB 72-5199)	Replace
46	3060346-6	1 st Stage LPC Stator Vanes	Damaged	Replace
39	3060342-3	2 nd Stage LPC Blades	Damaged	Replace
1	3070289-9	2 nd Stage LPC Stationary Shroud	Damaged	Replace
27	3060347-4	2 nd Stage LPC Stator Vanes	Damaged	Replace
37	3060343-1	3 rd Stage LPC Blades	Damaged	Replace
2	3060343-1	3 rd Stage LPC Blades	Damaged	Repair
1	3070292-9	3 rd Stage LPC Stationary Shroud	Damaged	Replace
45	3060348-4	3 rd Stage LPC Stator Vanes	Damaged	Replace
42	3060344-1	4 th Stage LPC Blades	Damaged	Replace
1	3060361-4	4 th Stage LPC Stator Assy	Vanes are nicked	Replace
1	3060358-3	Interstage Diffuser	Struts are nicked on LE	Repair
1	3075639-2	#4 Carbon Seal Runner	Separated	Replace
1	3060316-4	HPC Impeller Shroud	Nicked	Replace

Qty.	Part Number	Description	Discrepancy	Disposition
1	3060371-1	HPC Impeller	Vanes are nicked on LE	Replace
1	3060318-8	HPC Diffuser	1 ea vane is nicked on LE	Replace
1	3060573-1	Outer Transition Liner	Comply with SN 72-5152	Replace
1	3060502-2	HPT Forward Coupler	PN and SN are unreadable	Repair
1	3060691-1	HPT Disc	Life limited	Replace
1	3060763-1	ITT Harness	Failed functional check	Replace
64	3060649-4	1 st Stage LPT Blade Retainers	Comply with SB 72-5204	Replace
2	3060695-2	1 st Stage LPT Shroud Segments	Honeycomb seal is damaged	Replace
2	3060665-1	1 st Stage LPT Retaining Ring Pins	Threads are damaged	Replace
1	3060666-7	1 st Stage LPT Stator Assy	3 ea loose rivets	Repair
52	3060649-5	2 nd Stage LPT Blade Retainers	Comply with SB 72-5204	Replace
52	3060608-2	2 nd Stage LPT Blades	Comply with SB 72-5140	Replace
1	3060685-2	2 nd Stage LPT Nozzle Retainer	Comply with SB 72-5165	Replace
9	3060654-3	2 nd Stage LPT Shroud Segments	Comply with SB 72-5165	Replace
1	3071383-2	#6 Carbon Seal	Chipped	Replace
1	3002780-8	Oil Filter Bypass Valve	Failed functional check, comply with SB 72-5159	Replace
1	3072156-2	Oil Pump Tube	Damaged	Replace
1	3060722-12	Ignition Lead	End is broken off	Repair
1	3074541-3	Igniter	Broken lead end	Replace

CONCLUSIONS:

There are sharp nicks on the majority of the LPC and HPC components; this type of damage is usually caused by metallic objects. Since no hardware seems to be missing from the engine, the object was most likely ingested from outside the engine.



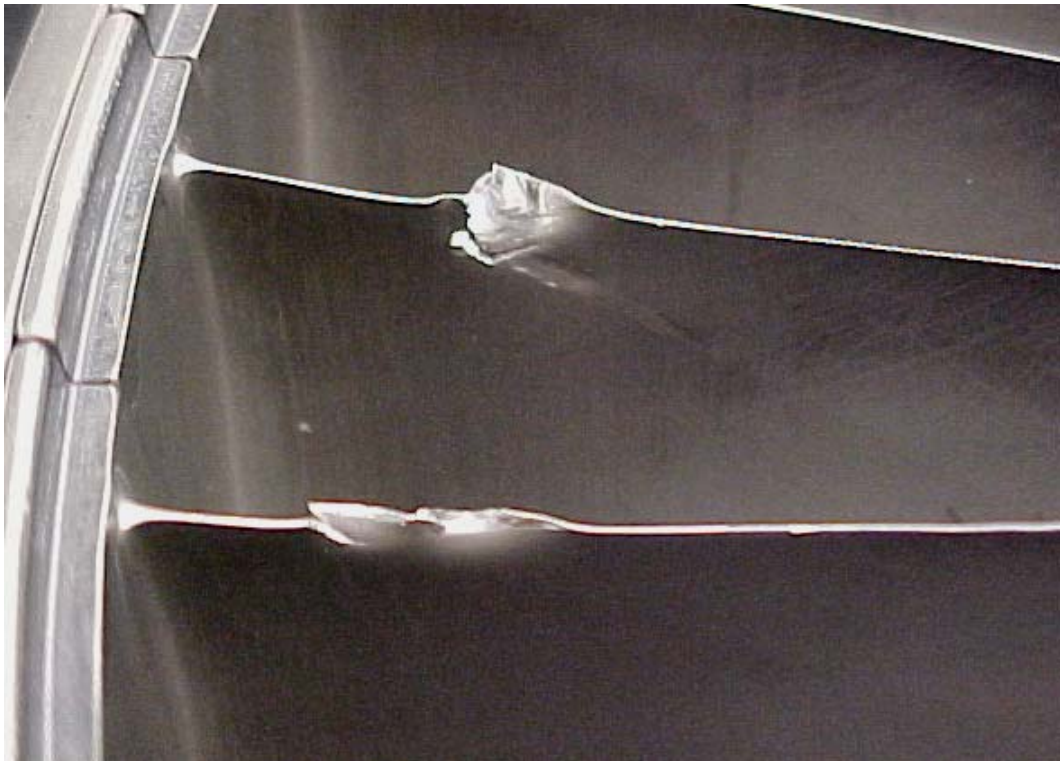
1ST STAGE LPC BLADE NICKED ON LEADING EDGE



1ST STAGE LPC BLADE NICKED ON TRAILING EDGE



1ST STAGE LPC STATOR VANE NICKED ON LEADING EDGE



1ST STAGE LPC STATOR VANE NICKED ON TRAILING EDGE



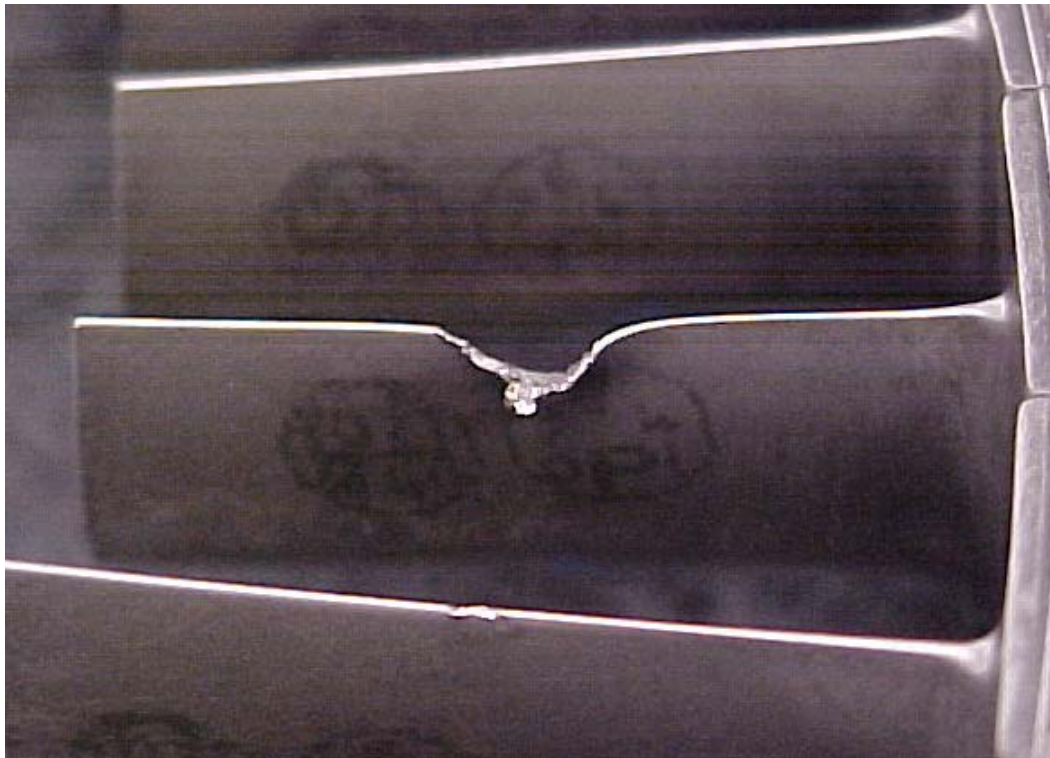
2ND STAGE LPC BLADE NICKED ON LEADING EDGE



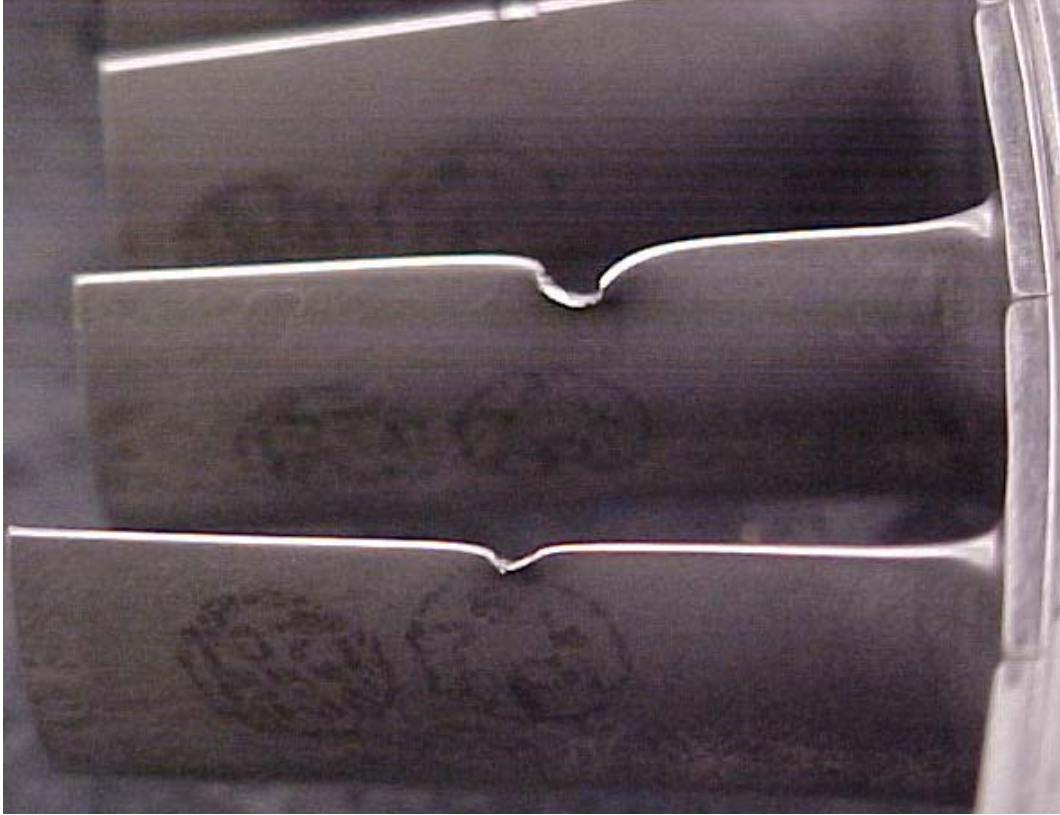
2ND STAGE LPC BLADE NICKED ON LEADING EDGE



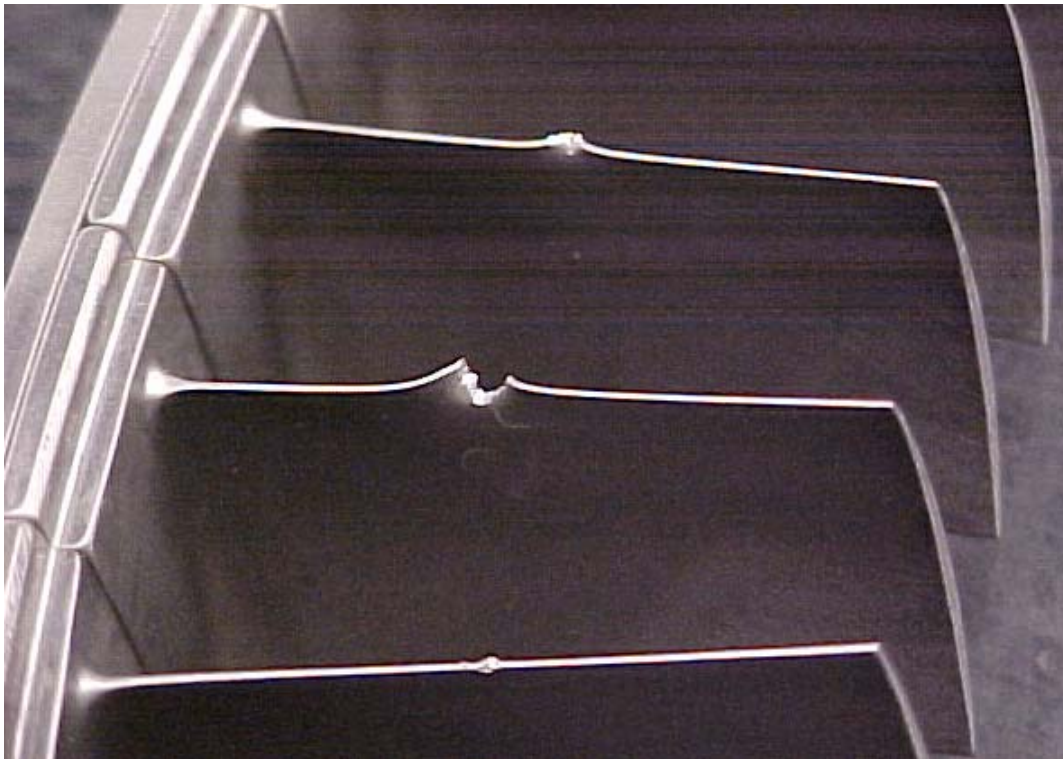
2ND STAGE LPC STATIONARY SHROUD NICKED ON INNER SURFACE



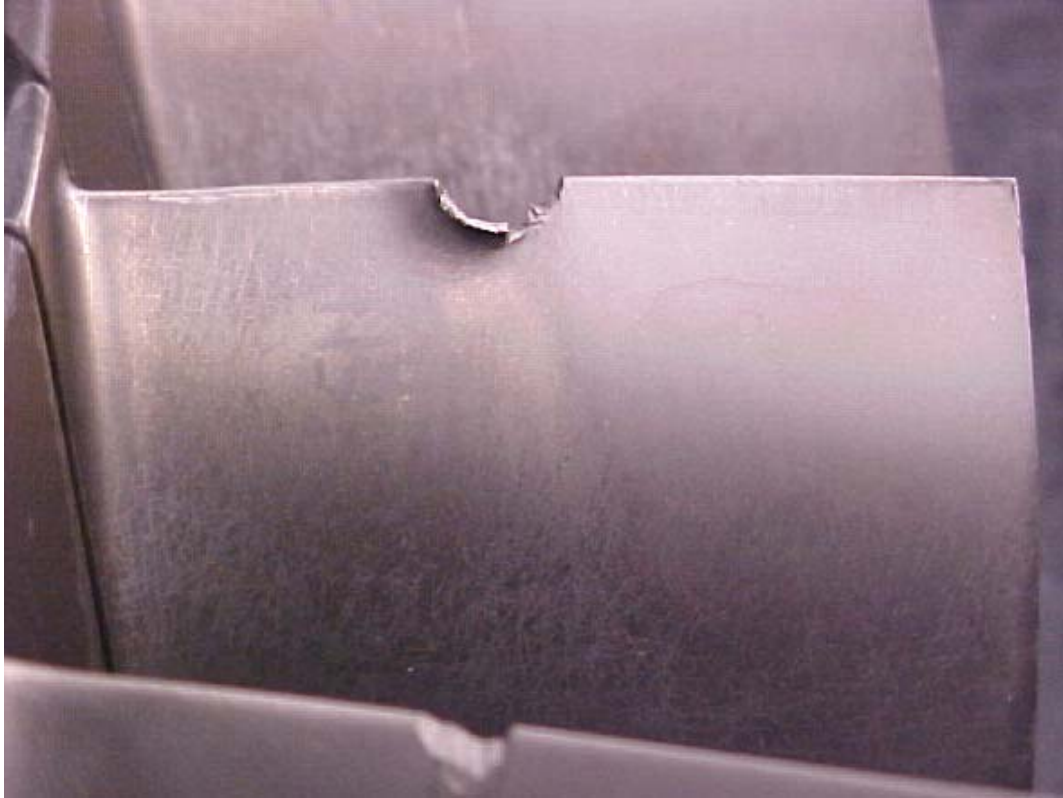
2ND STAGE LPC STATOR VANE NICKED ON LEADING EDGE



2ND STAGE LPC STATOR VANE NICKED ON LEADING EDGE



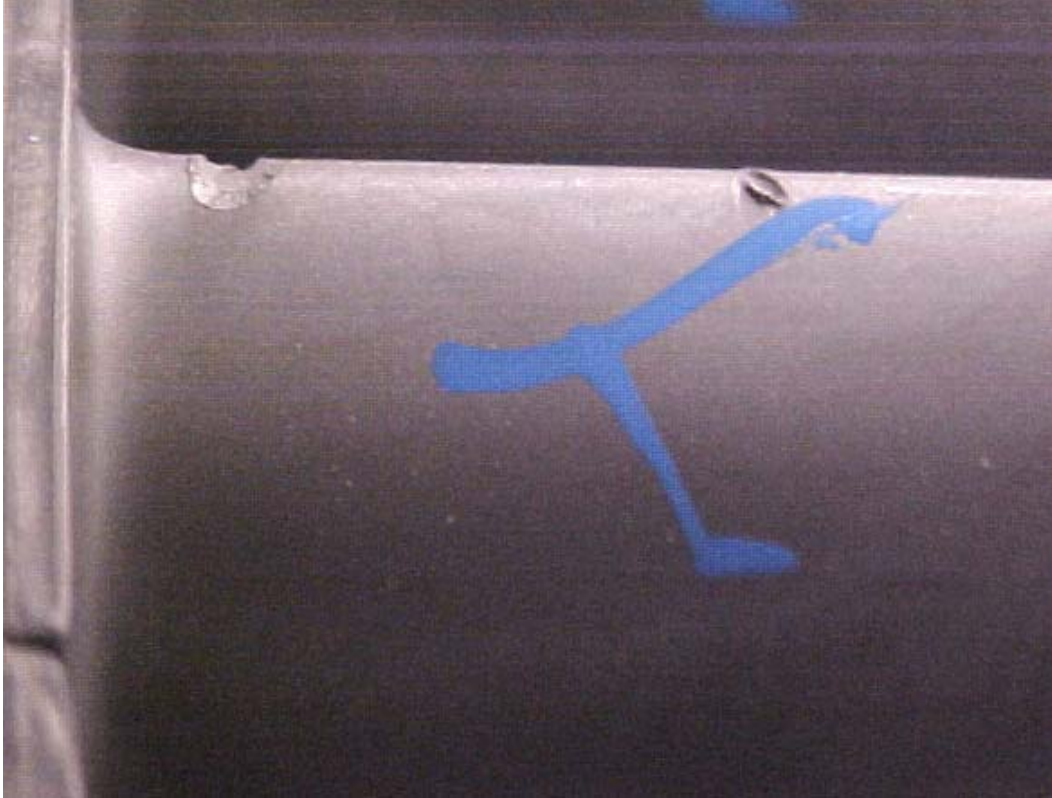
2ND STAGE LPC STATOR VANE NICKED ON TRAILING EDGE



3RD STAGE LPC BLADE NICKED ON LEADING EDGE



3RD STAGE LPC STATIONARY SHROUD NICKED ON INNER SURFACE



3RD STAGE LPC STATOR VANE NICKED ON LEADING EDGE



3RD STAGE LPC STATOR VANE NICKED ON TRAILING EDGE



4TH STAGE LPC BLADE NICKED ON LEADING EDGE



4TH STAGE LPC BLADE NICKED ON LEADING EDGE



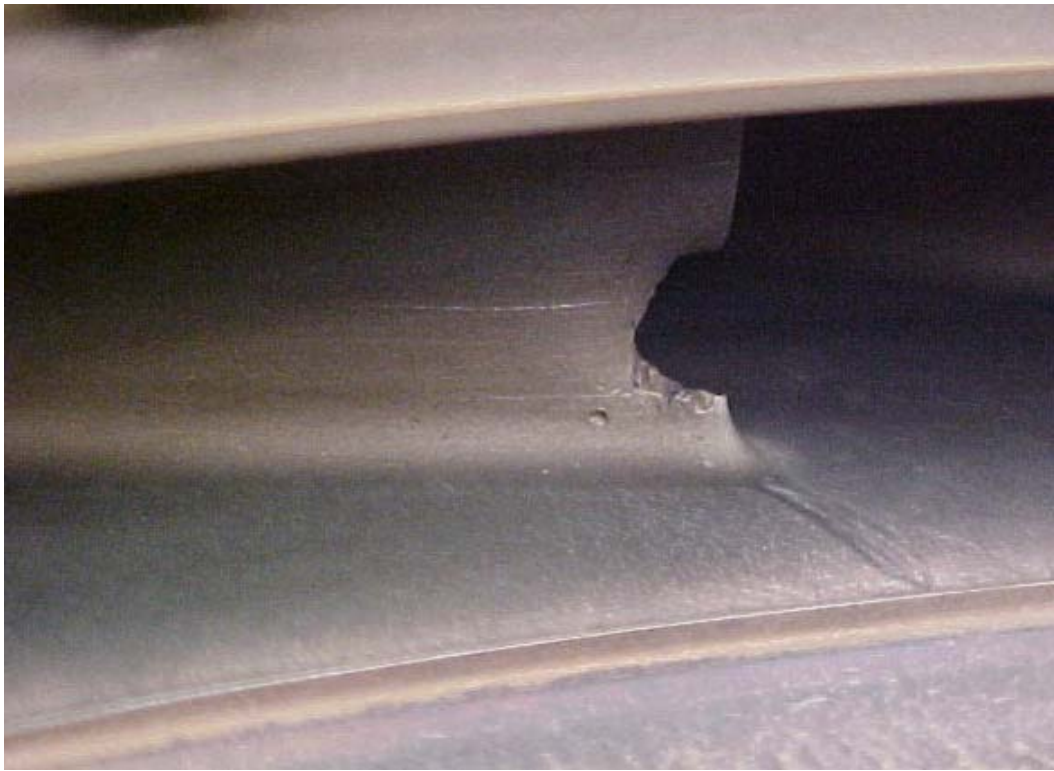
4TH STAGE LPC STATOR VANES NICKED ON LEADING EDGE



HPC IMPELLER SHROUD NICKED ON INNER SURFACE



HPC IMPELLER VANE NICKED ON LEADING EDGE



HPC DIFFUSER VANE NICKED ON LEADING EDGE