

Gas Turbine Repair Summary by Module for ESN's 191-327 and 191-346

Unit History (ESN 191-327):

- Unit was acquired by ProEnergy in 2014. Time since new is 11,881.6. Prior to purchase by ProEnergy, unit was last at GE Depot in Houston in March 2008. Main purpose for the visit was for Hot Section Work and SB (Service Bulletin) implementation. During the time of this visit the unit had 9,464.3 operating hours.

Unit History (ESN 191-346):

- Unit was acquired by ProEnergy in 2014. Time since new is 13,609.1. Prior to purchase by ProEnergy, unit was last at TCT Depot in Calgary in November 2007. Main purpose for the visit was for IGB (Inlet Gearbox) repair after IGB failure and SB (Service Bulletin) implementation. During the time of this visit the unit had 7,320 operating hours.

Summary of Repairs

INLET FRAME			
Module Number	Description	191-327	191-346
100	Disassemble from LPC	X	X
100	Cleaned Inlet Frame	X	X
100	Inspected Inlet Frame	X	X
100	Assembled onto LPC	X	X

LOW PRESSURE COMPRESSOR			
Module Number	Description	191-327	191-346
200	Disassembled from CFF	X	X
200	Cleaned LPCR and LPCS	X	X
200	Inspected LPCR and LPCS	X	X
200	Assembled onto CFF	X	X

COMPRESSOR FRONT FRAME			
Module Number	Description	191-327	191-346
300	Disassembled Module	X	X
300	Cleaned Module	X	X
300	Inspected Module	X	X
300	Overhauled No. 2R Bearing	X	X
300	Overhauled No. 3R Bearing	X	X
300	Inspected No. 2R Bearing Housing	X	X
300	Inspected No. 3R Bearing Housing	X	X
300	Inspected and Repaired No. 3R Air/Oil Seals	X	X
300	Inspected and Repaired VBV Actuators as required	X	X
300	Inspected and Repaired VBV Door Seals	X	X
300	Flow Tested and Repaired Spring Nozzles as Required	X	X
300	Pressure Tested Sump	X	X
300	Reassembled Module	X	X

LP MID SHAFT			
Module Number	Description	191-327	191-346
240	Disassembled Mid Shaft	X	X
240	Cleaned Mid Shaft	X	X
240	Inspected Mid Shaft	X	X
240	Inspected No. 1B Bearing	X	X
240	Overhauled No. 1B Bearing	X	X
240	Overhauled No. 1 Air/Oil Seal	X	X
240	Reassembled LP Mid Shaft	X	X

HIGH PRESSURE COMPRESSOR STATOR			
Module Number	Description	191-327	191-346
410	Disassembled Module	X	X
410	Cleaned HPCS	X	X
410	Inspected HPCS	X	X
410	Assembled onto CFF	X	X
410	Inspected and Repaired VSV Actuators as required	X	X
410	Reassembled Module	X	X

HIGH PRESSURE COMPRESSOR ROTOR			
Module Number	Description	191-327	191-346
420	Disassembled Module	X	X
420	Cleaned HPCR	X	X
420	Inspected HPCR	X	X
420	Repaired HPCR as Required	X	X
420	Ground HPCR	X	X
420	Balanced HPCR	X	X
420	Reassembled Module	X	X

1. Notes (191-327) – HPC stages 3-5 GE blades overhauled. All other blades and vanes cleaned, inspected and reinstalled as serviceable. All VSV bushings replaced with new.
2. Notes (191-346) – HPC stages 3-5 GE blades overhauled. All other blades and vanes cleaned, inspected and reinstalled as serviceable. All VSV bushings replaced with new.

COMPRESSOR REAR FRAME			
Module Number	Description	191-327	191-346
440	Disassembled Module	X	X
440	Cleaned CRF	X	X
440	Inspected CRF	X	X
440	Overhauled Sumps	X	X
440	Overhauled No. 4B Bearing	X	X
440	Overhauled No. 4R Bearing	X	X
440	Overhauled No. 5R Bearing	X	X
440	Pressure Tested Sumps	X	X
440	Reassembled Module	X	X

COMBUSTOR

Module Number	Description	191-327	191-346
450	Removed Module	X	X
450	Cleaned Combustor	X	X
450	Inspected Combustor	X	X
450	Routed Combustor to Overhaul	X	
450	Installed Combustor	X	X

- Notes (191-327) – GE G42 Combustor overhauled.
- Notes (191-346) – GE G42 Combustor cleaned, inspected (including detailed measurements) and reinstalled due to extremely minimal wear.

STAGE 1 HIGH PRESSURE TURBINE NOZZLE

Module Number	Description	191-327	191-346
530	Disassembled Module	X	X
530	Cleaned HPTS1N	X	X
530	Inspected HPTS1N	X	X
530	Routed HPTS1N to Overhaul	X	
530	Assembled Module	X	X

- Notes (191-327) – Stage 1 Nozzles are GE Airfoils Overhauled by Chromalloy to GE specifications
- Notes (191-346) – Stage 1 Nozzles are GE Airfoils Overhauled by Chromalloy to GE specifications

HIGH PRESSURE TURBINE ROTOR

Module Number	Description	191-327	191-346
520	Disassembled Module	X	X
520	Cleaned HPTR	X	X
520	Inspected HPTR	X	X
520	Routed S1 Blades to Overhaul	X	X
520	Routed S2 Blades to Overhaul	X	X
520	Assembled Module	X	X
520	Ground Rotor	X	X
520	Balanced Rotor	X	X

- Notes (191-327) – 59 Stage 1 Blades are GE Airfoils overhauled by Chromalloy to GE specifications and 21 are new GE Airfoils due to fallout at inspection prior to overhaul. Complete set of 74 Stage 2 Blades are GE Airfoils overhauled by Chromalloy.
- Notes (191-346) – Complete set of 80 Stage 1 Blades are GE Airfoils overhauled by Chromalloy to GE specifications. Complete set of 74 Stage 2 Blades are GE Airfoils overhauled by Chromalloy.

STAGE 2 HIGH PRESSURE TURBINE NOZZLE

Module Number	Description	191-327	191-346
510	Disassembled Module	X	X
510	Cleaned S2HPTN	X	X
510	Inspected S2HPTN	X	X
510	Overhauled S2HPTN	X	X
510	Overhauled S1 and S2 HPT Shrouds	X	X
510	Assembled Module	X	X
510	Ground S1 and S2 HPT Shrouds	X	X

- 1) Notes (191-327) – Stage 2 HPT Nozzles are GE Airfoils overhauled by Chromalloy to GE specifications. Stage 1 and 2 HPT Shrouds are GE hardware overhauled by Chromalloy.
- 2) Notes (191-346) – Stage 2 HPT Nozzles are GE Airfoils overhauled by Chromalloy to GE specifications. Stage 1 and 2 HPT Shrouds are GE hardware overhauled by Chromalloy.

LOW PRESSURE TURBINE

Module Number	Description	191-327	191-346
600	Disassembled Module	X	X
600	Cleaned LPT	X	X
600	Inspected LPT	X	X
600	Assembled Module	X	X
600	Balanced LPTR	X	X

TURBINE REAR FRAME

Module Number	Description	191-327	191-346
640	Disassembled Module	X	X
640	Cleaned TRF	X	X
640	Inspected TRF	X	X
640	Overhauled No. 6R Bearing	X	X
640	Overhauled Route No. 7R Bearing	X	X
640	Cleaned Sumps	X	X
640	Inspected Sumps	X	X
640	Assembled Module	X	X

TRANSFER/ACCESSORY GEAR BOX

Module Number	Description	191-327	191-346
700	Removed Module	X	X
700	Overhauled TGB/AGB	X	X
700	Overhauled HCU	X	X
700	Overhauled VG Pump	X	X
700	Installed Module	X	X

INLET GEAR BOX			
Module Number	Description	191-327	191-346
310	Removed Module	X	X
310	Overhauled IGB	X	X
310	Installed Module	X	X

FUEL NOZZLES			
Module Number	Description	191-327	191-346
810	Removed Nozzles	X	X
810	Flow Tested	X	X
810	Repaired as Required	X	X

- 1) Notes (191-327) – Fuel Nozzles are GE Nozzles overhauled by ProEnergy to GE specifications.
- 2) Notes (191-346) – Fuel Nozzles are GE Nozzles overhauled by ProEnergy to GE specifications.