

General Electric LM2500 Gas Turbine

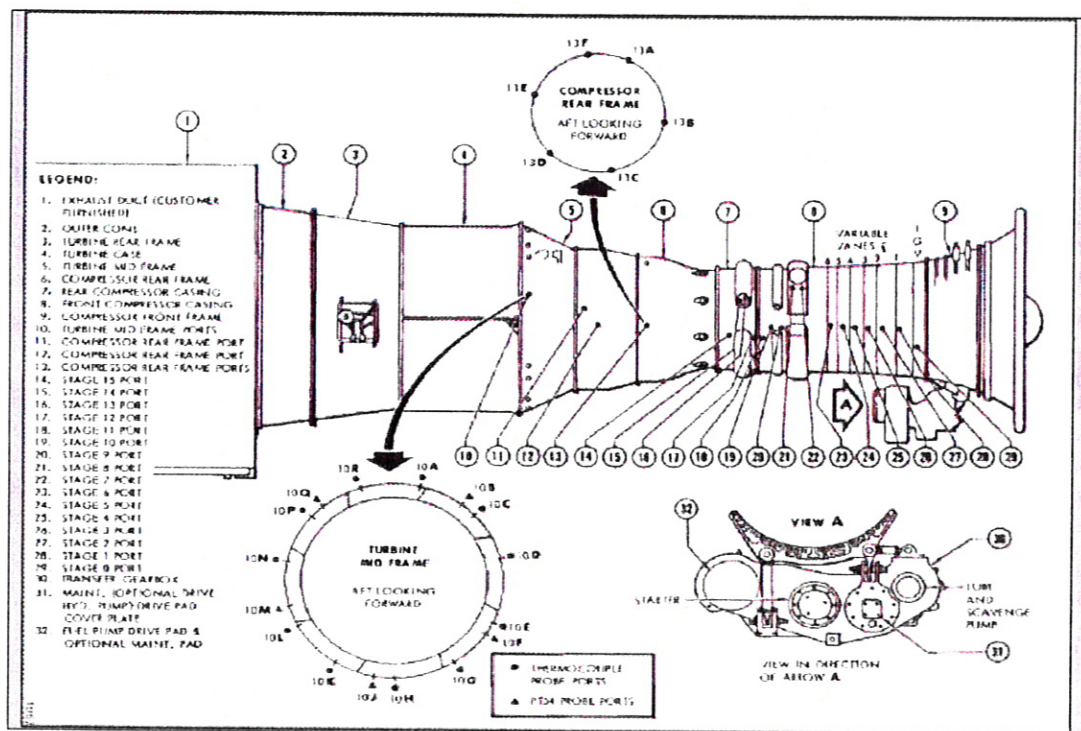
LM2500 SAC Borescope Inspection UNIT TM40

CUST – DOWANS

ENGINE SERIAL NUMBER:
481-364

TCT SALES ORDER NUMBER:
UK9000087

LM2500 SAC BORESCOPE REPORT	
Location:	Dar ES Salaam, Tanzania
Purchase order:	TBC, W/O UK80000157
Date of visit:	13-18 May 2008
Purpose:	Borescope inspection in accordance with GEK 97310, Vol. 1, Table 5-4 to Table 5-11
Purpose:	Lube and Scavenge Pump Inlet Screens Inspection and Cleaning in accordance with GEK 97310, Vol. 1, Table 5-3.18
Written by:	Mark Devine
Engine hours:	11236.35
Starts:	Not provided
Fuel type:	Dual
Overview:	Overall good condition, but VSV clevis assemblies must be corrected



BORESCOPE ACCESS PORT LOCATIONS.

Volume 1, Tbl 5-4 – Tbl 5-11	LM2500 SAC Borescope inspection
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COMPRESSOR:

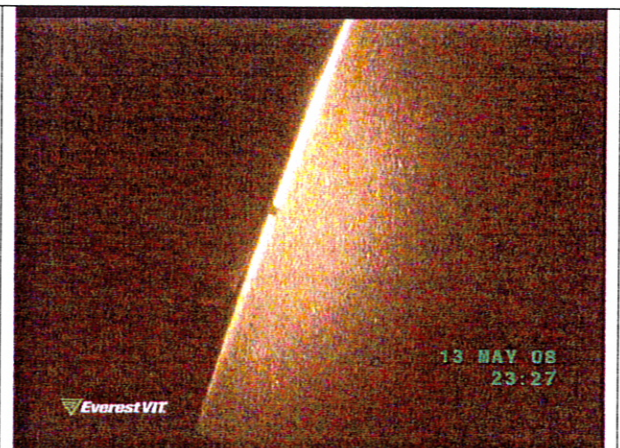
Component	Condition
Stages 1 through 9 Blades	<ul style="list-style-type: none"> Stage 3 blades minor FOD/nicks x 3 blades-acceptable Stage 4 blades minor FOD/nicks x 3 blades-acceptable Stage 9 blades minor FOD/nicks x 2 blades-acceptable Acceptable in accordance with GEK 97310 Vol. 1 table 5-4.

Stages 10 through 16 Blades	<ul style="list-style-type: none"> • Stage 10 blades minor FOD/nicks x 6 blades-acceptable • Stage 15 blades minor FOD/nicks x 2 blades-acceptable • Stage 16 blades, no defects found • Acceptable in accordance with GEK 97310 Vol. 1 table 5-4
Tip clanging contact stages 3-6	<ul style="list-style-type: none"> • No defects found • Acceptable
Stator Vanes (all)	<ul style="list-style-type: none"> • No defects found • Acceptable
All VSV Vanes	<ul style="list-style-type: none"> • No defects found • Acceptable
HPC Rotor and Stator Airflow Path Surfaces	<ul style="list-style-type: none"> • Normal levels of dirt/corrosion present. • Acceptable

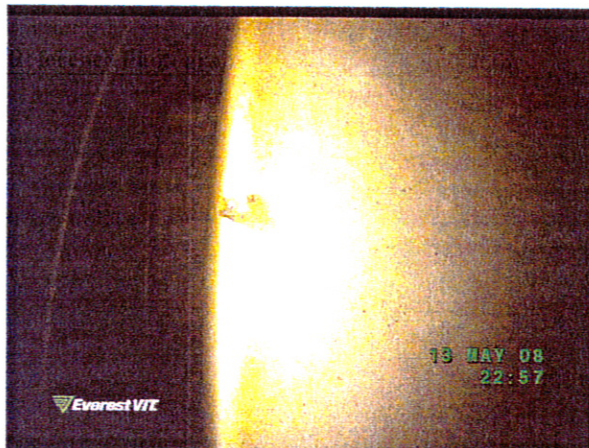
Reference Photographs - HPC Blades and Vanes



Stg 4 blade damage



Stg 3 blade damage



Stg 9 blade damage



Stg 9 blade damage



Stg 10 blade damage



Stg 15 blade damage



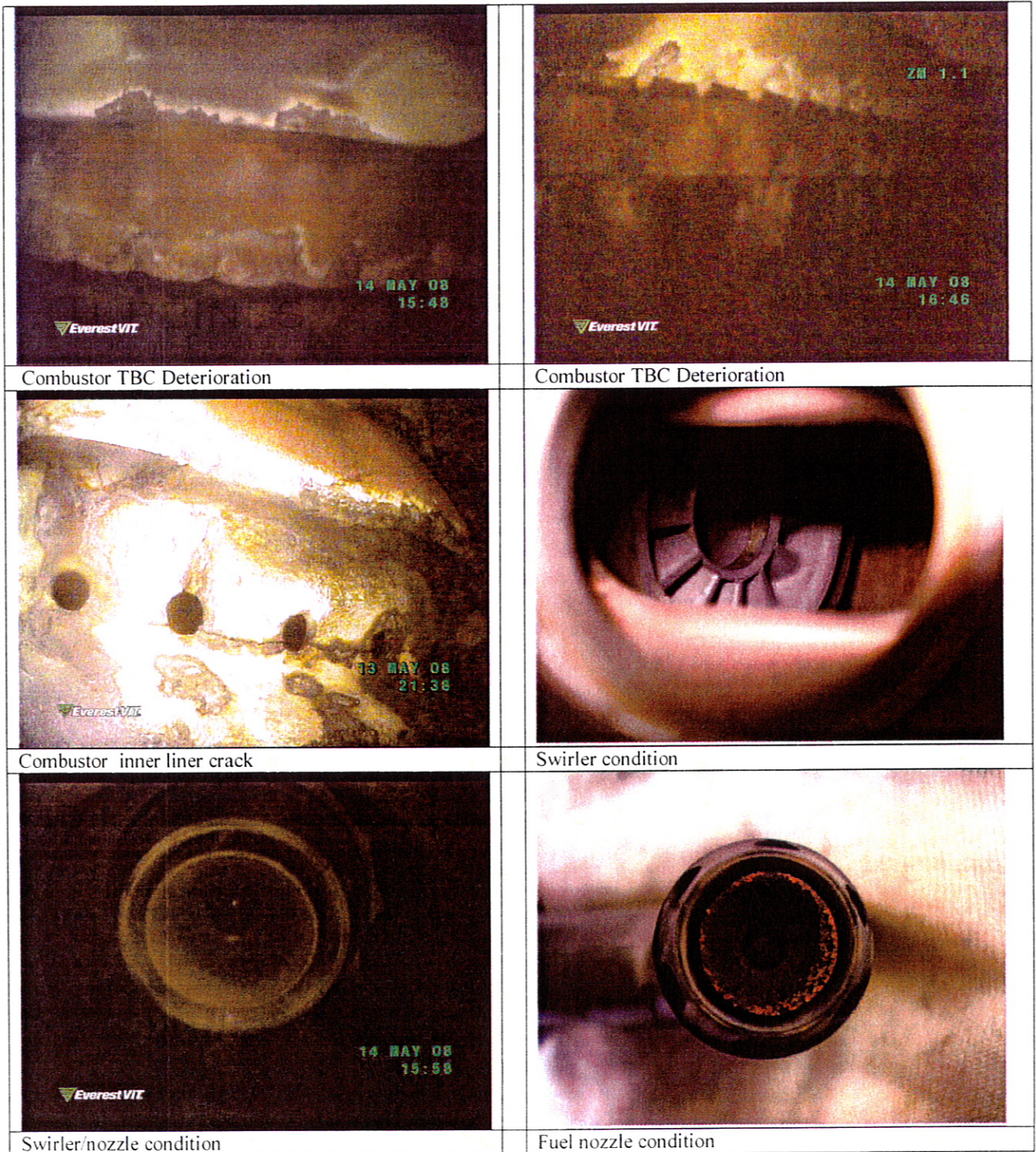
Stg 15 blade damage

Inspection References: GEK 97310 Vol. 1, Table 5-4 Compressor Blades and Vanes, paragraph 5-3.6 and figures 5-8, 5-9 and 5-10.

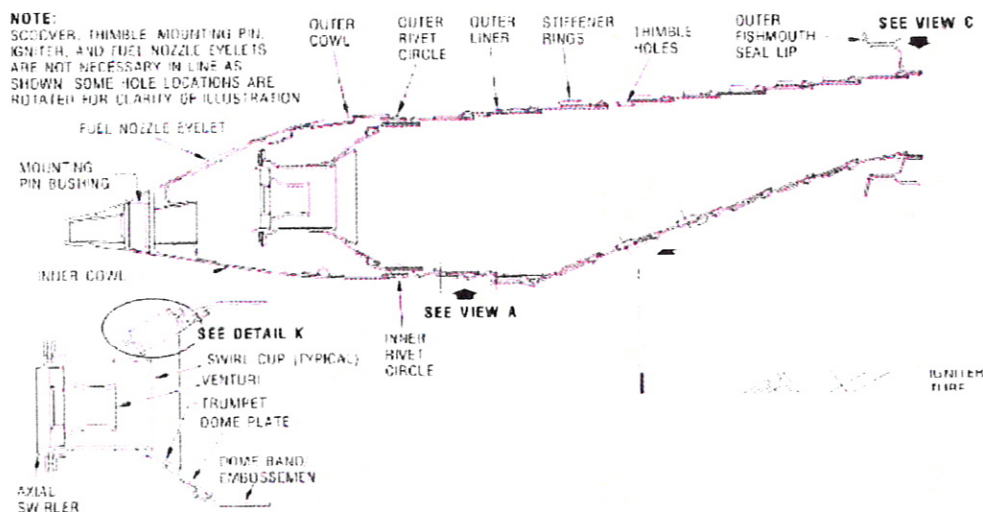
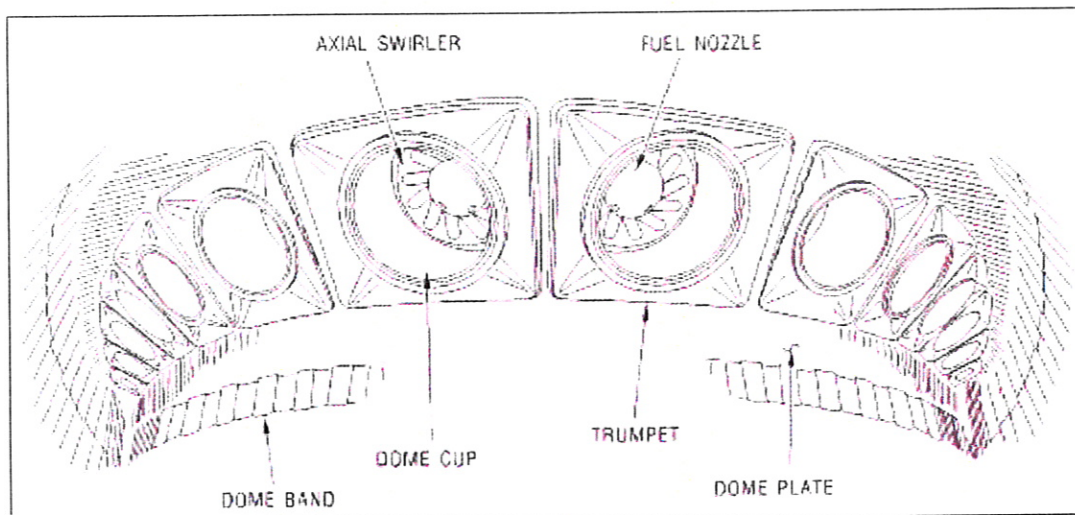
COMBUSTOR and FUEL NOZZLES:

Component	Condition
All Combustor Surfaces	<ul style="list-style-type: none"> General condition acceptable.
Dome Band/Dome Plate	<ul style="list-style-type: none"> Minor thermal barrier coating loss/degradation-acceptable
Riveted Joints	<ul style="list-style-type: none"> No defects found
Trumpet and swirler cups	<ul style="list-style-type: none"> Minor thermal barrier coating loss/degradation-acceptable.
Dome Assembly	<ul style="list-style-type: none"> No defects found
Igniter Ferrule	<ul style="list-style-type: none"> No defects found
Combustor Cowl	<ul style="list-style-type: none"> No defect found
Inner and Outer Liner	<ul style="list-style-type: none"> Circumferential crack found at inner liner (approx 1"), acceptable in accordance with GEK 97310 Vol. 1 Table 5-5 inspection 7.
Fuel nozzle	<ul style="list-style-type: none"> 3 fuel nozzles removed for visual inspection and re - installed, S/N PHCGP878, S/N PHCGP770, S/N PHCGP889. Spray orifices unacceptable for liquid fuel use.

Reference Photographs – Combustor, Pre-mixers



GEK 937310 Inspection References:




HPT ASSEMBLY:

Component	Condition		
	Defect	Location	Findings/GEK limits
HPT Stage 1 Nozzle Assembly	Nozzle airfoil		
	N/A	N/A	No defects found in areas inspected
	Inner and Outer Platform		
	N/A	N/A	No defects found in areas inspected
	General remarks		Condition satisfactory for continued use.
HPT Rotor Blade-Stage 1	Defect	Location	Findings/GEK limits
	HPT Rotor Blades-Leading Edge Area A		
	N/A	N/A	No defects found
	HPT Rotor Blades-Leading Edge Area B		

	N/A	N/A	No defects found
	HPT Rotor Blade Tips		
	N/A	N/A	No defects found
	HPT Rotor Blade-Trailing Edge Area A		
	N/A	N/A	No defects found
	HPT Rotor Blade-Trailing Edge Area B		
	N/A	N/A	No defects found
	HPT Rotor Blade-Concave Surface Area A		
	N/A	N/A	No defects found
HPT Stages 1 and 2 Nozzle Shroud	Defect		Location Findings/GEK limits
	N/A		No defects found in areas inspected
	General remarks		Condition satisfactory for continued use
HPT Stage 2 Nozzle Assembly	Defect		Location Findings/GEK limits
	N/A		No defects found in areas inspected
	General remarks		Condition satisfactory for continued use
HPT Rotor Blade-Stage 2	Defect		Location Findings/GEK limits
	HPT Rotor Blades-Leading Edge Area A		
	N/A	N/A	No defects found
	HPT Rotor Blades-Leading Edge Area B		
	N/A	N/A	No defects found
	HPT Rotor Blade Tips		
	N/A	N/A	No defects found
	HPT Rotor Blade-Trailing Edge Area A		
	N/A	N/A	No defects found
	HPT Rotor Blade-Trailing Edge Area B		
	N/A	N/A	No defects found
	HPT Rotor Blade-Concave Surface Area A		
	N/A	N/A	No defects found
HPT Stage 2 Nozzle Shroud	Defect		Location Findings/GEK limits
	N/A		No defects found in areas inspected
	General remarks		Condition satisfactory for continued use

Reference Photographs – HPT assembly

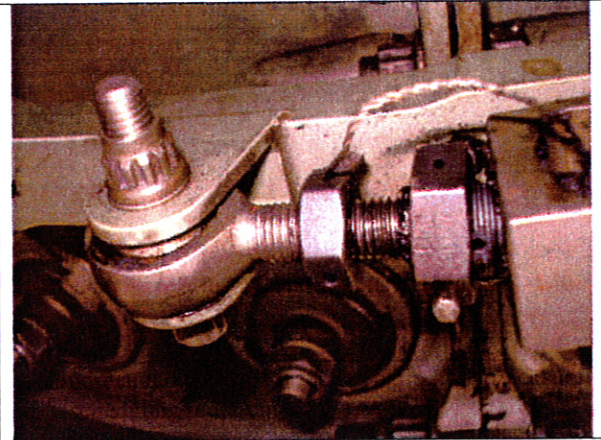
	
	Stg 1 Nozzle condition

PACKAGE INSPECTION RECORD:

Component	Condition
Lube and Scavenge Pump Inlet Screens Inspection.	<ul style="list-style-type: none"> Plastic type debris found in AGB filter screen Minor plastic debris contamination in A,C and D filter screens B sump screen clear
Gas Turbine External Inspection	<ul style="list-style-type: none"> IGV clevis nut/barrel loose and out of rig – requires calibration to ensure operation within VSV scheduling requirements. Fuel hose, deterioration of outer protective sheath on several hoses – replace at with spares at next outage



L&S filter screen contamination



IGV clevis assy loose

Recommendations Borescope inspection

- Adjust IGV clevis assy and check rigging IAW GEK 97310 Vol. 2 WP118 00 and WP 206 00 – recommend full system (VIGV – HP6)
- Monitor and replace damaged fuel supply hoses as required to minimize potential leakages

Parts used during outage:

Parts used			
Part #	Component Description	Source	Issued
C10-218	SAFETY-CABLE W/FERRULE	NEW	25
4058T39P01	GASKET	NEW	3
M83248/1-121	PREFORMED PACKING	NEW	1
J221P910	PREFORMED PACKING	NEW	2
J221P912	PREFORMED PACKING	NEW	3
J221P905	PREFORMED PACKING	NEW	5