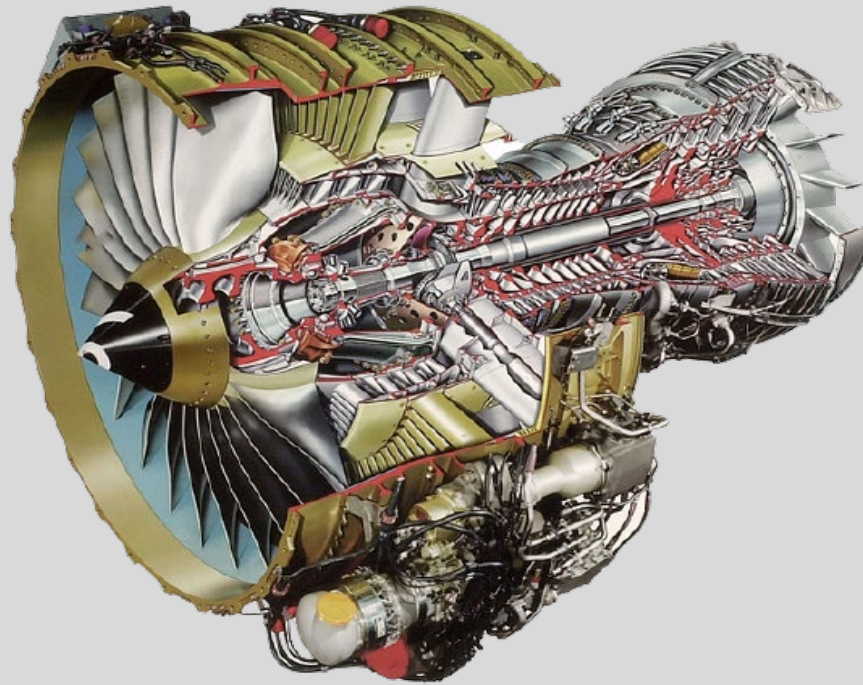




**FRM AVIATION SERVICES**

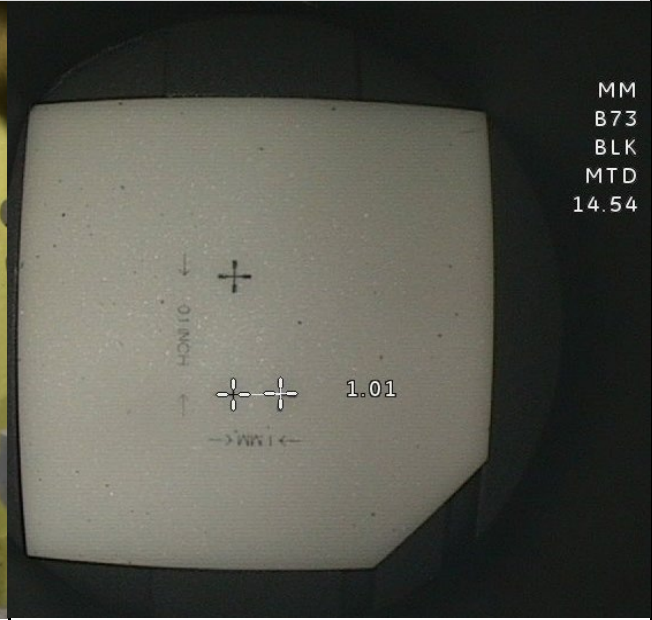
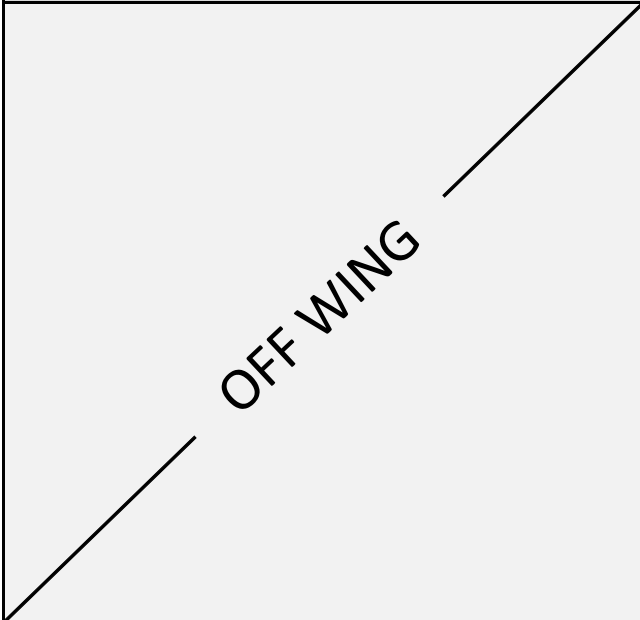
FLEET RELIABILITY MANAGEMENT



ESN: [REDACTED] - CFM56-7B BORESCOPE INSPECTION REPORT



# VERIFICATION



MM  
B73  
BLK  
MTD  
14.54

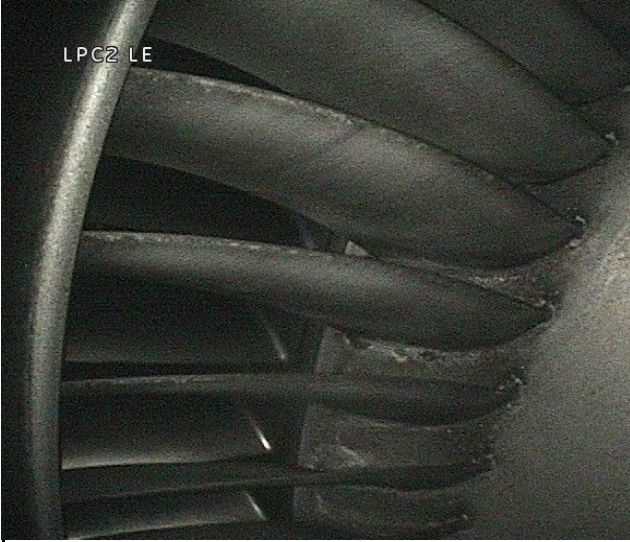
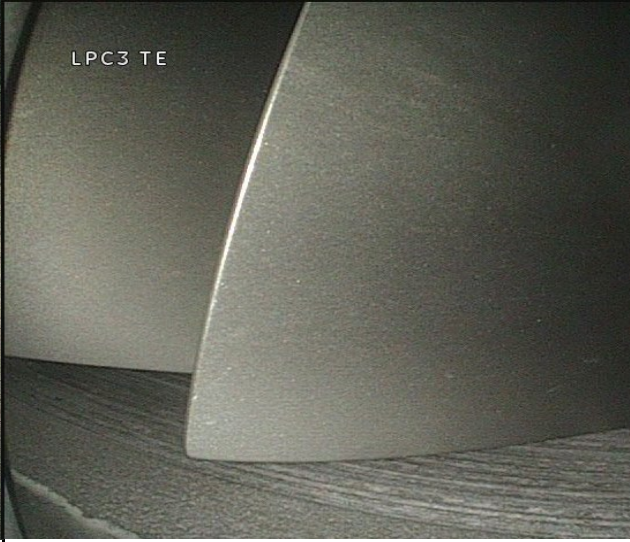



AIRCRAFT IDENT	ENGINE DATA PLATE	BORESCOPE CALIBRATION SCREEN
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CUSTOMER DATA:			ENGINE & AIRCRAFT DATA:		GENERAL ENGINE DISPOSITION	
CUSTOMER			A/C REG	OFF WING	LPC	MINOR DEFECT OBSERVED - SERVICEABLE
LOCATION	GT ENGINE SERVICES, STN		MSN	OFF WING	HPC	ALL OBSERVED DEFECTS WITHIN AMM LIMITATIONS
FRM WORKORDER	100040		A/C TYPE	OFF WING	COMBUSTOR	ALL OBSERVED DEFECTS WITHIN AMM LIMITATIONS
INSPECTION DATE:	09.09.2021		POSITION	OFF WING	HPT	ALL OBSERVED DEFECTS WITHIN AMM LIMITATIONS
TECHNICAL DATA:	B737-800 AMM		ENGINE P/N	CFM56-7B26	LPT	ALL OBSERVED DEFECTS WITHIN AMM LIMITATIONS
REVISION NO.	D633A101		ENGINE S/N		OVERALL	ALL OBSERVED DEFECTS WITHIN ENGINE MODULES WITHIN AMM LIMITATIONS WITHOUT REDUCED THRESHOLD INSPECTIONS. ENGINE SERVICEABLE
DATED	15.08.2021		HOURS (TSN)	71677:00		
FORM 1 REFERENCE	CAA FAA	100040	CYCLES (CSN)	29896		
FORM 1 REFERENCE	EASA	100040	LIMITATIONS	NONE	<b>ENGINE SERVICEABLE - NO LIMITATIONS</b>	



LP 3 STAGE BOOSTER- TASK REF 72-00-00-200-803-F00					
STAGE	NO. OF BLADES	STAGE CONDITION DISPOSITION	< ITEMISE ANY STAGE DEFECTS > < GENERAL STAGE OBSERVATIONS >	VIDEO / IMAGE FILE STORED	DEFECTS OBSERVED
STAGE 2 BLADES	74	NO STAGE DEFECTS OBSERVED	MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO BLADE LEADING EDGE- SERVICEABLE WITHOUT LIMITATION	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
STAGE 3 BLADES	78	MINOR DEFECT OBSERVED	MINOR DENT OBSERVED TO LPC3 TE IN LOWER 25% OF AIRFOIL BUT NOT AREA E, SEE LPC DEFECTS FOR CLARIFICATION	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
STAGE 4 BLADES	74	NO STAGE DEFECTS OBSERVED	MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO BLADE LEADING EDGE- SERVICEABLE WITHOUT LIMITATION	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
STAGE 2 VANES		NO STAGE DEFECTS OBSERVED	MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO VANE LEADING EDGE- SERVICEABLE WITHOUT LIMITATION	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
STAGE 3 VANES		NO STAGE DEFECTS OBSERVED	MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO VANE LEADING EDGE- SERVICEABLE WITHOUT LIMITATION	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
STAGE 4 VANES		NO STAGE DEFECTS OBSERVED	MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO VANE LEADING EDGE- SERVICEABLE WITHOUT LIMITATION	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
OVERALL MODULE SERVICEABILITY	MINOR DEFECTS OBSERVED WITHIN AMM LIMITS - MODULE SERVICEABLE		<b>MODULE SERVICEABLE - NO LIMITATIONS</b>		



		
<p><u>STAGE 2 BLADES:</u> MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO BLADE LEADING EDGE.</p>	<p><u>STAGE 3 BLADES:</u> MINOR DENT OBSERVED TO LPC3 TE IN LOWER 25%, SEE LPC DEFECTS PAGE FOR DETAILS</p>	<p><u>STAGE 4 BLADES:</u> MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO BLADE LEADING EDGE.</p>
<p>NO IMAGE AVAILABLE</p>		
<p><u>STAGE 2 VANES:</u> INSPECTION OF STAGE 2 VANES NOT CARRIED OUT</p>	<p><u>STAGE 3 VANES:</u> MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO VANE LEADING EDGE.</p>	<p><u>STAGE 4 VANES:</u> MINOR EROSION AND ENVIRONMENTAL BUILD UP OBSERVED TO VANE LEADING EDGE.</p>
<p>LPC STAGE PICTURES (2-4)</p>		



MINOR ROUND BOTTOM DENT OBSERVED TO 1 OFF LPC3 TE BLADES ON LOWER 25% OF AIRFOIL BUT NOT AREA E. OBSERVED DEFECT WITHIN AMM 72-00-00-200-803-F00.F.(6).(f).1) OF LESS THAN 1MM DAMAGE DEPTH - SERVICEABLE NO LIMITATION. SEE APPENDIX A FOR DETAILS

## LPC STAGE DEFECTS

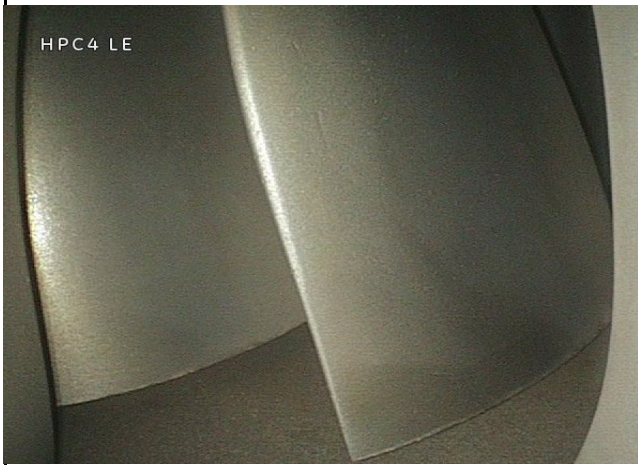


## HP COMPRESSOR - 9 STAGES - TASK REF: 72-00-00-200-804-F00

STAGE	NO. OF BLADES	STAGE CONDITION DESCRIPTION	< ITEMISE ANY STAGE DEFECTS > < GENERAL STAGE OBSERVATIONS >	VIDEO / IMAGE FILE STORED	STAGE DEFECTS OBSERVED
STAGE 1 HPC	38	MINOR DEFECTS OBSERVED TO STAGE	SEVERAL HPC1 LE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SEE DEFECTS PAGE FOR DETAILS	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
STAGE 2 HPC	53	DEFECTS OBSERVED WITHIN AMM LIMITS	SEVERAL HPC2 LE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SEE DEFECTS PAGE FOR DETAILS. 1 OFF BLADE WITH DENT IN DIM.B WITH HIGH METAL	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
STAGE 3 HPC	60	DEFECTS OBSERVED WITHIN AMM LIMITS	SEVERAL HPC3 LE&TE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SEE DEFECTS PAGE FOR DETAILS. 1 OFF BLADE WITH DENT IN DIM.B WITH HIGH METAL. SHOP BLEND OBSERVED TO TE ROOT RADIUS	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
STAGE 4 HPC	68	MINOR DEFECTS OBSERVED TO STAGE	SEVERAL HPC4 LE BLADES OBSERVED WITH MINOR ROUND BOTTOM DENTS & IMPACTS TO LE IN LOWER 25% & AIRFOIL CENTRE PANEL, MAJORITY INSIGNIFICANT AND HAD NO SIGNIFICANT DEPTH. WITHIN AMM LIMITS	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
STAGE 5 HPC	75	MINOR DEFECTS OBSERVED TO STAGE	STAGE 5 HPC: SEVERAL HPC5 LE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SERVICEABLE - NO LIMITATIONS	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
STAGE 6 HPC	82	DEFECTS OBSERVED WITHIN AMM LIMITS	DEFECTS OBSERVED TO TIP AREA, DIM.B & DIM.A WITHIN AMM LIMITS. TIP CURL OBSERVED TO 1 OFF HPC6 LE. DENT TO LE OBSERVED IN DIM.B WITHIN AMM LIMITS.	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
STAGE 7 HPC	82	NO SIGNIFICANT DEFECTS OBSERVED	MINOR DEFECTS OBSERVED TO LEADING EDGE WITH NO SIGNIFICANT DEPTH OF DEFECTS	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
STAGE 8 HPC	80	MINOR DEFECTS OBSERVED TO STAGE	MINOR DEFECTS OBSERVED TO LEADING EDGE IN DIM.B, DIM.A & TIP. 1 OFF HPC8 LE BLADE OBSERVED WITH MISSING LE TIP CORNER	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
STAGE 9 HPC	76	NO SIGNIFICANT DEFECTS OBSERVED	NO STAGE DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
OVERALL MODULE SERVICEABILITY		MINOR DEFECTS OBSERVED WITHIN AMM LIMITS - MODULE SERVICEABLE	<b>MODULE SERVICEABLE - NO LIMITATIONS</b>		



STAGE 1 HPC: SEVERAL HPC1 LE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SEE DEFECTS PAGE FOR DETAILS



STAGE 4 HPC: MINOR DEFECTS OBSERVED TO HPC4 LE WITH DENTS IN LOWER 25% AND AIRFOIL CENTRE PANEL. DENTS HAVE NO SIGNIFICANT DEPTH AND SERVICEABLE - NO LIMITATIONS



STAGE 2 HPC: SEVERAL HPC2 LE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SEE DEFECTS PAGE FOR DETAILS. 1 OFF HPC2 BLADE OBSERVED WITH LE DENT IN AMM LIMITS



STAGE 3 HPC: SEVERAL HPC3 LE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SEE DEFECTS PAGE FOR DETAILS. 1 OFF HPC3 BLADE OBSERVED WITH LE DENT IN AMM LIMITS. SHOP BLEND OBSERVED TO HPC3 TE ROOT RADIUS

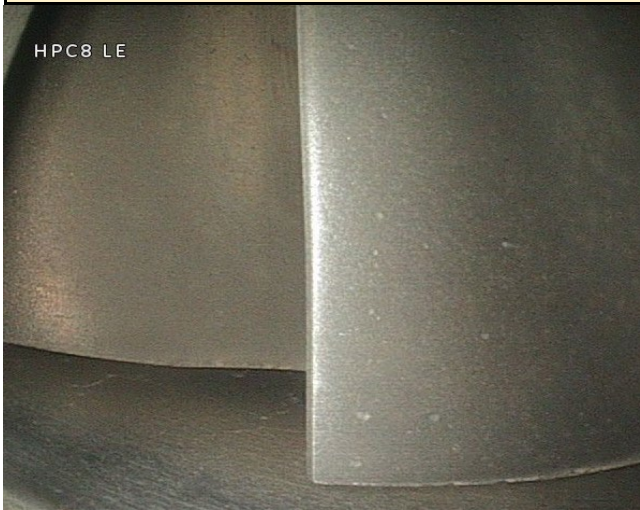


STAGE 5 HPC: SEVERAL HPC5 LE BLADES OBSERVED WITH MINOR DENTS TO LE IN LOWER 25%, DIM B & DIM A. ALL WITHIN AMM LIMITS. SERVICEABLE - NO LIMITATIONS

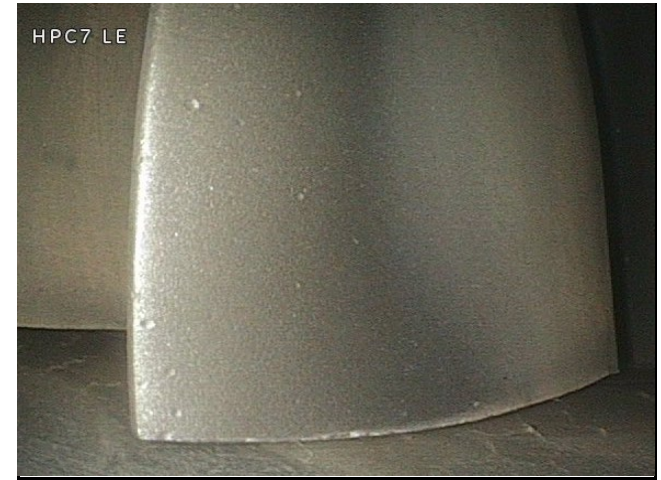
### HPC STAGE PICTURES (1-5)



STAGE 6 HPC. DEFECTS OBSERVED TO TIP AREA, DIM.B & DIM.A WITHIN AMM LIMITS. TIP CURL OBSERVED TO 1 OFF HPC6 LE. DENT TO LE OBSERVED IN DIM.B WITHIN AMM LIMITS.



STAGE 8 HPC: MINOR DEFECTS OBSERVED TO LEADING EDGE WITH NO SIGNIFICANT DEPTH OF DEFECTS. 1 OFF HPC8 LE OBSERVED WITH MISSING TIP CORNER. ALL DEFECTS OBSERVED WITHIN AMM LIMITS



STAGE 7 HPC: MINOR DEFECTS OBSERVED TO LEADING EDGE WITH NO SIGNIFICANT DEPTH OF DEFECTS



STAGE 9 HPC: NO STAGE DEFECTS OBSERVED

HPC STAGE PICTURES (6-9)



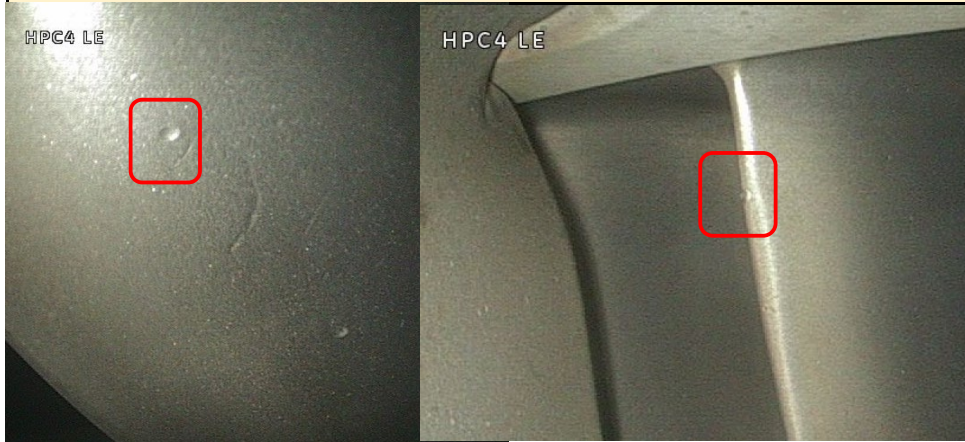


<p>HPC1 LE</p> <p>0.24</p> <p>Z</p> <p>Z=3.24</p>	<p>HPC2 LE</p> <p>0.33</p> <p>Z</p> <p>Z=0.94</p>
<p>SEVERAL HPC1 LE BLADES OBSERVED WITH MINOR ROUND BOTTOM DENTS &amp; IMPACTS TO LE IN LOWER 25%, DIM.B &amp; DIM.A. MAJORITY HAD NO SIGNIFICANT DEPTH. MEASURED DEFECTS AT 0.24MM DEPTIN LOWER 25% OF AIRFOIL. WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(h).2) OF UPTO 0.8MM ALLOWABLE. SEE APPENDIX B FOR CLARIFICATION.</p>	<p>1 OFF HPC2 LE BLADE OBSERVED WITH DENT / IMPACT DAMAGE TO LE WITH ASSOCIATED HIGH METAL. DAMAGE DEPTH MEASURED AT 0.33MM DEPTH AND LOCATED 9.66MM FROM TIP IN DIM.B. OBSERVED DAMAGE WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(i).2) OF UPTO 1.0MM ALLOWABLE. SEE APPENDIX C FOR CLARIFICATION.</p>
<p>HPC2 LE</p>	<p>HPC3 LE</p> <p>0.37</p> <p>Z</p> <p>Z=3.35</p>
<p>SEVERAL HPC2 LE BLADES OBSERVED WITH MINOR ROUND BOTTOM DENTS &amp; IMPACTS TO LE IN LOWER 25%, DIM.B &amp; DIM.A. MAJORITY HAD NO SIGNIFICANT DEPTH. WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(h).2); 5.G.(2)(i)2) &amp; 5.G.(2).(j).1). SEE APPENDIX B, C &amp; D FOR CLARIFICATION.</p>	<p>1 OFF HPC3 LE BLADE OBSERVED WITH DENT / IMPACT DAMAGE TO LE WITH ASSOCIATED HIGH METAL. DAMAGE DEPTH MEASURED AT 0.37MM DEPTH AND LOCATED 14.03MM FROM TIP IN DIM.B. OBSERVED DAMAGE WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(i).2) OF UPTO 1.0MM ALLOWABLE. SEE APPENDIX C FOR CLARIFICATION.</p>
<p><b>HPC STAGE DEFECTS 1/3</b></p>	

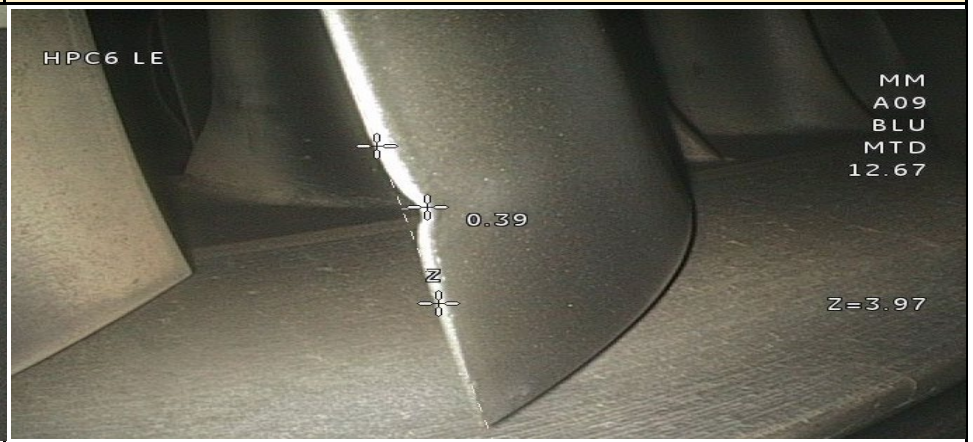


SEVERAL HPC3 LE & TE BLADES OBSERVED WITH MINOR ROUND BOTTOM DENTS & IMPACTS TO LE IN LOWER 25%, DIM.B & DIM.A. MAJORITY HAD NO SIGNIFICANT DEPTH. WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(h).2); 5.G.(2)(i)2) & 5.G.(2).(j).1). SEE APPENDIX B, C & D FOR CLARIFICATION.

1 OFF HPC3 TE BLADE OBSERVED WITH SHOP REPAIR BLEND TO ROOT RADIUS MEASURING 3.13MM RADIALLY & 1.15MM AXIALLY. LESSOR UNABLE TO PROVIDE SPECIFIC REPAIR DETAILS BUT CONFIRM THAT HPC3 BLADES INSTALLED SERVICEABLE AS OVERHAULED SET REF EASA FORM 1 282772/1. 12 AUG 2015. FORM 1 HELD IN FRM WORK ORDER FOLDER FOR FURTHER DETAILS.

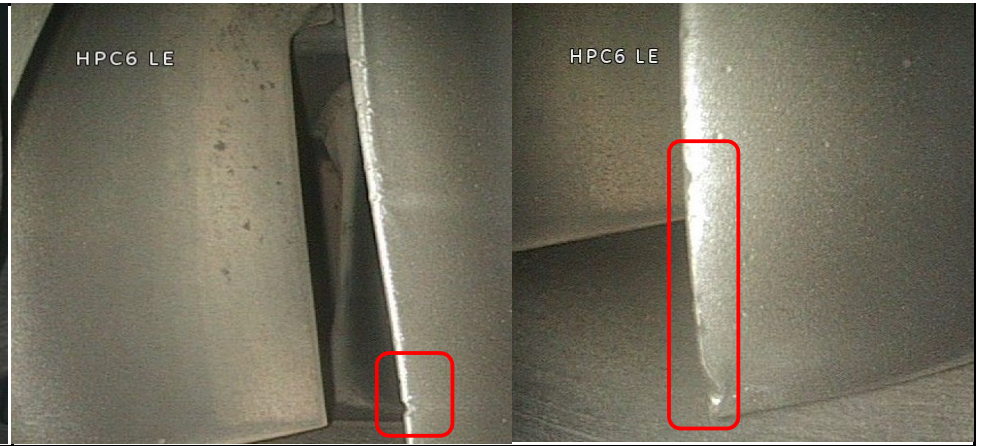
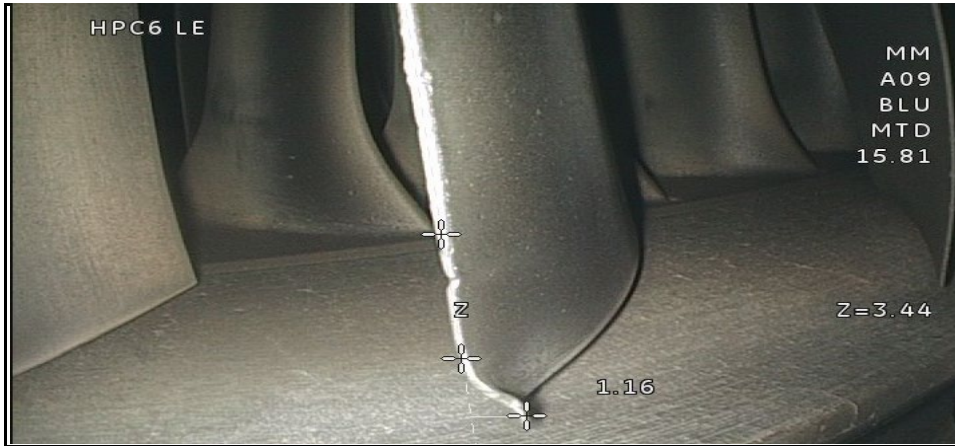


SEVERAL HPC4 LE BLADES OBSERVED WITH MINOR ROUND BOTTOM DENTS & IMPACTS TO LE IN LOWER 25% & AIRFOIL CENTRE PANEL, MAJORITY INSIGNIFICANT AND HAD NO SIGNIFICANT DEPTH. WITHIN AMM LIMITS



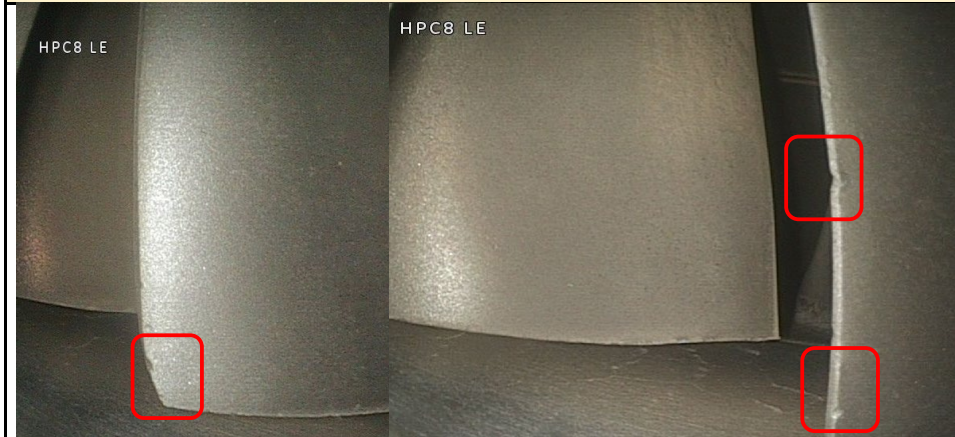
1 OFF HPC6 LE BLADE OBSERVED WITH DENT / IMPACT DAMAGE TO LE IN DIM.B. DAMAGE DEPTH MEASURED AT 0.39 MM DEFLECTION FROM ORIGINAL CONTOUR. OBSERVED DAMAGE WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(k).2) OF UPTO 1.5MM ALLOWABLE DEFLECTION FROM ORIGINAL CONTOUR. SEE APPENDIX E FOR CLARIFICATION.

**HPC STAGE DEFECTS 2/3**



1 OFF HPC6 LE BLADE OBSERVED WITH SIGNIFICANT TIP CURL MEASURING 1.16MM DEFLECTION FROM ORIGINAL CONTOUR. OBSERVED DAMAGE WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(n).2 OF UPTO 50% OF HPC5-9 STAGES WITH RADIAL DEFLECTION OF UPTO 7.6MM CHORD SPAN AND DOESN'T ENGAGE WITH STATIC PARTS OF ENGINE DURING OPERATION.SERVICEABLE - NO LIMITATION. SEE APPENDIX F FOR CLARIFICATION.

SEVERAL HPC6 LE BLADES OBSERVED WITH MINOR ROUND BOTTOM DENTS, IMPACTS & NICKS TO LE IN DIM.B, DIM.A & BLADE TIP. MAJORITY HAD NO SIGNIFICANT DEPTH. WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(k).1); 5.G.(2)(l)1) & 5.G.(2).(m). SEE APPENDIX E, G & H FOR CLARIFICATION.



SEVERAL HPC8 LE BLADES OBSERVED WITH MINOR ROUND BOTTOM DENTS, IMPACTS & NICKS TO LE IN DIM.B, DIM.A & BLADE TIP. MAJORITY HAD NO SIGNIFICANT DEPTH. ONE OFF HPC8 LE OBSERVED WITH MISSING TIP CORNER. ALL DEFECTS WITHIN AMM 72-00-00-200-804-F00 5.G.(2)(k).1); 5.G.(2)(l)1) & 5.G.(2).(m). SEE APPENDIX E, G & H FOR CLARIFICATION.

**HPC STAGE DEFECTS 3/3**



COMBUSTION CHAMBER - TASK REF: 72-00-00-200-805-F00				
SUB ASSEMBLY	STAGE CONDITION DESCRIPTION	< ITEMISE ANY STAGE DEFECTS > < GENERAL STAGE OBSERVATIONS >	VIDEO / IMAGE FILE STORED	STAGE DEFECTS OBSERVED
COMBUSTOR OUTER LINER	MINOR OBSERVED STAGE DEFECTS WITHIN AMM LIMITS	> MINOR EROSION & BURNBACK OBSERVED TO DOME PANEL DEFLECTOR EXTENSION EDGES > MINOR CARBON BUILDUP TO FSN SECONDARY SWIRL NOZZLES > 2 OFF COMBUSTOR OUTER LINERS OBSERVED WITH AXIAL CRACKS LESS THAN ONE PANEL WIDTH. SEE DEFECT PAGES FOR FURTHER DETAILS ALL OBSERVED DEFECTS WITHIN AMM LIMITS - SERVICEABLE - NO LIMITATIONS	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES
COMBUSTOR INNER LINER				<input type="checkbox"/> NO
DOMES PANEL ASSEMBLY, FUEL SPRAY NOZZLES & DEFLECTORS				
HP NOZZLE GUIDE VANES - TASK REF: 72-00-00-220-801-F00				
HPT NOZZLE GUIDE VANES	DEFECTS OBSERVED TO HPNGV WITHIN AMM LIMITS	> NO OBSERVED DEFECTS TO HPNGV LE > SEVERAL HPNGV TE OBSERVED WITH CRACKS > SEVERAL AREAS OF HPNGV T.B.C LOSS OBSERVED TO CONCAVE AND CONVEX SURFACES > ONE HPNGV TE OBSERVED WITH MISSING MATERIAL ALL OBSERVED DEFECTS WITHIN AMM LIMITS- SERVICEABLE - NO LIMITATIONS	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
HP TURBINE - I STAGE - TASK REF: 72-00-00-200-807-F00				
HP TURBINE BLADES (80 OFF)	MINOR OBSERVED STAGE DEFECTS WITHIN AMM LIMITS	> T.B.C LOSS OBSERVED TO HPT BLADE LEADING EDGE. ACCEPTABLE IN ANY AMOUNTS.	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
HP TURBINE SHROUD TASK REF: 72-00-00-200-815-F00	MINOR OBSERVED STAGE DEFECTS WITHIN AMM LIMITS	> SEVERAL HPT SHROUD PANELS OBSERVED WITH AXIAL DIRECTION CRACKS FROM COOLING HOLES. SERVICEABLE NO LIMITATION	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
HP TURBINE BLADE WEAR NOTCHES	NO DEFECTS OBSERVED	> 3 BLADES WITH 3 NOTCHES & 1 BLADE WITH 2 NOTCHES	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
OVERALL MODULE SERVICEABILITY	MINOR DEFECTS OBSERVED WITHIN AMM LIMITS - MODULE SERVICEABLE	<b>MODULE SERVICEABLE - NO LIMITATIONS</b>		



COMBUSTOR DOME PANEL & FSN

COMBUSTION CHAMBER: MINOR DEFECTS OBSERVED. SEE COMBUSTOR DEFECTS PAGE. SERVICEABLE - NO LIMITATIONS



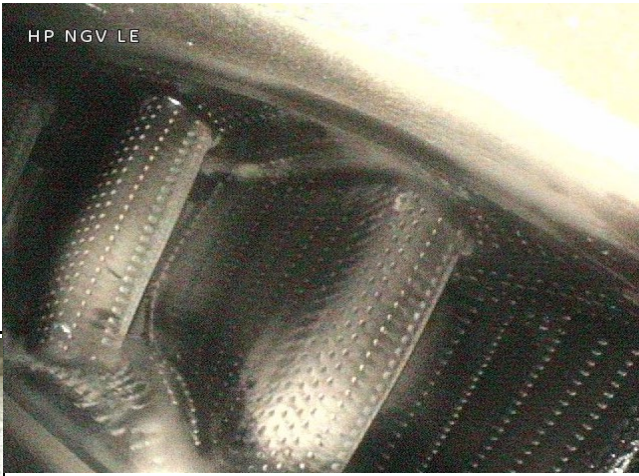
HPT WEAR NOTCHES

HPT BLADES: 3 BLADES OBSERVED WITH 3 NOTCHES, 1 BLADE OBSERVED WITH 2 NOTCHES.



HP TURBINE LE

HP TURBINE BLADES: T.B.C LOSS OBSERVED TO MAJORITY OF BLADE LE. ACCEPTABLE IN ANY AMOUNTS - SERVICEABLE - NO LIMITATION



HP NGV LE

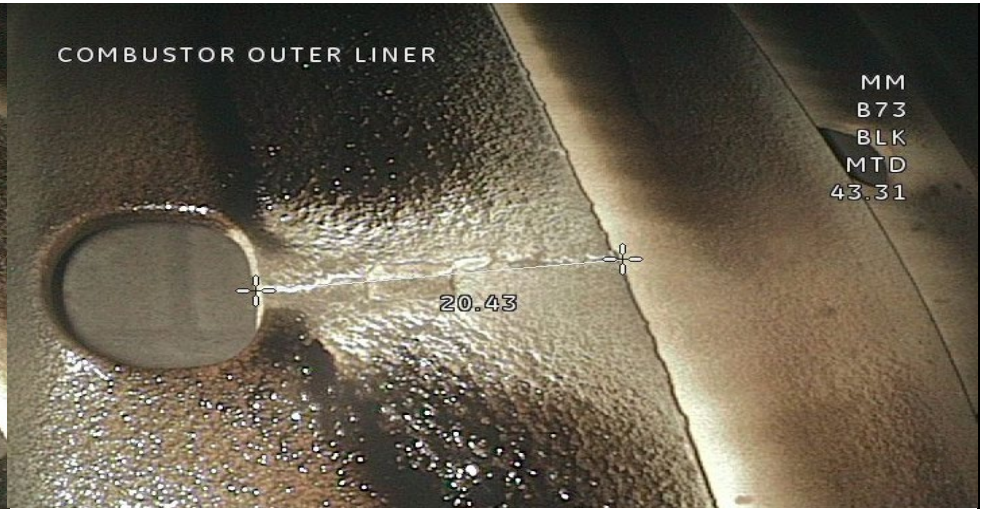
HPT NOZZLE: SEVERAL HPNGV OBSERVED WITH TE CRACKING & MISSING T.B.C.1 OFF TE OBSERVED WITH MISSING MATERIAL. ALL OBSERVED DEFECTS WITHIN AMM LIMITS. SERVICEABLE - NO LIMITATION



HP TURBINE SHROUD

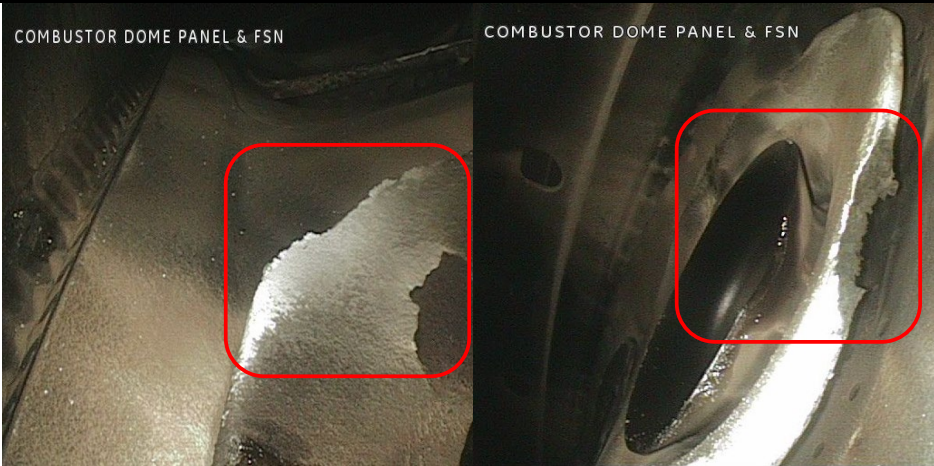
HP TURBINE SHROUD: SEVERAL HPT SHROUD PANELS OBSERVED WITH AXIAL CRACKS FROM COOLING HOLES. ACCEPTABLE IN ANY AMOUNT. SERVICEABLE - NO LIMITATION

COMBUSTOR, HPNGV & HPT STAGE PICTURES



1 OFF COMBUSTOR OUTER LINER OBSERVED WITH AXIAL CRACK MEASURING 20.54MM AND PROPAGATING LESS THAN ONE PANEL WIDTH.ACCEPTABLE AS PER 72-00-00-200-805-F00.7.G.(3).(a).1) OF ANY AMOUNT PERMITTED IF LESS THAN ONE PANEL WIDTH. SEE APPENDIX I FOR CLARIFICATION

1 OFF COMBUSTOR OUTER LINER OBSERVED WITH AXIAL CRACK MEASURING 20.43MM AND PROPAGATING LESS THAN ONE PANEL WIDTH.ACCEPTABLE AS PER 72-00-00-200-805-F00.7.G.(3).(a).1) OF ANY AMOUNT PERMITTED IF LESS THAN ONE PANEL WIDTH. SEE APPENDIX I FOR CLARIFICATION.



SEVERAL COMBUSTOR DOME PANEL EXTENSIONS OBSERVED WITH BURNBACK AND SMALL AMOUNT OF MISSING MATERIAL.ACCEPTABLE AS PER 72-00-00-200-805-F00.7.G.(2).(i).1) OF ANY AMOUNT PERMITTED IF LESS THAN 15 DOME COOLING HOLES EXPOSED. CURRENTLY NO DOME COOLING HOLES EXPOSED. SEE APPENDIX J FOR CLARIFICATION.

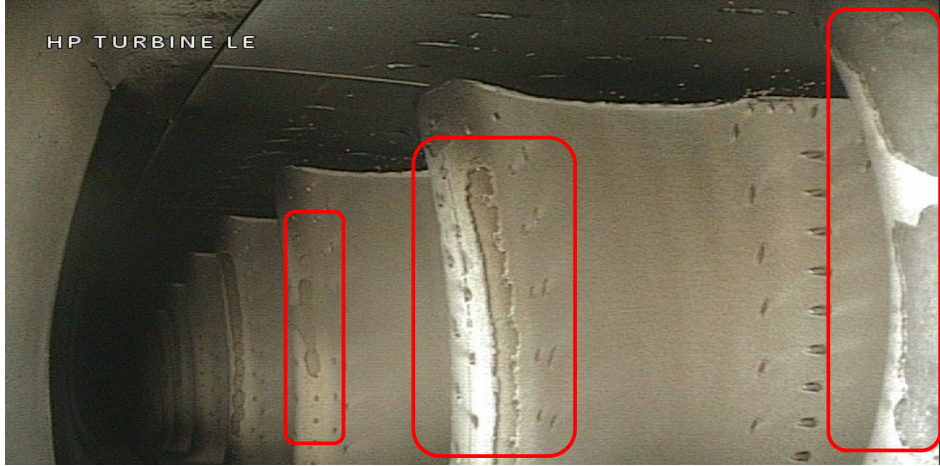
1 OFF HPNGV OBSERVED WITH MISSING MATERIAL TO TE. MISSING MATERIAL MEASURED AT 4.36MM AXIAL LENGTH .ACCEPTABLE AS PER 72-00-00-220-801-F00.8.G.(4).(c).1) OF UPTO 12.7MM AXIAL LENGTH PERMISSIBLE PER VANE. SERVICEABLE- NO LIMITATION. SEE APPENDIX K FOR CLARIFICATION.

**C.C, HPNGV & HPT STAGE DEFECTS I/2**



SEVERAL HPNGV TE OBSERVED WITH CRACKING TO TE. CRACKS.ACCEPTABLE IN ANY AMOUNTS AS PER 72-00-00-220-801-F00.8.G.(4).(a).1). SERVICEABLE- NO LIMITATION. SEE APPENDIX K FOR CLARIFICATION.

SEVERAL HPNGV TE OBSERVED WITH MISSING T.B.C TO BOTH CONCAVE AND CONVEX SURFACES.ACCEPTABLE IN ANY AMOUNTS AS PER 72-00-00-220-801-F00.8.G.2.(d).1) & (3).(c).1). SERVICEABLE- NO LIMITATION.



MAJORITY OF HP TURBINE BLADE LEADING EDGES OBSERVED WITH MISSING T.B.C..ACCEPTABLE AS PER 72-00-00-200-807-F00.10.G.(3).(g).1) OF ANY AMOUNT PERMITTED MISSING. SEE APPENDIX L FOR CLARIFICATION.

SEVERAL HPT SHROUD PANELS OBSERVED WITH AXIAL CRACKS STARTING FROM COOLING HOLES. ACCEPTABLE IN ANY AMOUNT AS PER AMM 72-00-00-200-815-F00.11.F.(1).(a).1) SERVICEABLE - NO LIMITATION. SEE APPENDIX M FOR CLARIFICATION.





**C.C, HPNGV & HPT STAGE DEFECTS 2/2**



LP TURBINE BLADES - 4 STAGES - TASK REF: 72-00-00-200-808-F00 & 72-00-00-200-809-F00					
LPT SUB ASSEMBLY	NO BLADES	STAGE CONDITION DESCRIPTION	< ITEMISE ANY STAGE DEFECTS > < GENERAL STAGE OBSERVATIONS >	VIDEO / IMAGE FILE STORED	STAGE DEFECTS OBSERVED
LP TURBINE STAGE 1	162	DEFECTS OBSERVED WITHIN AMM LIMITS	> SHROUD INTERLOCK GAP OBSERVED TO LPT1 LE > SHROUD INTERLOCK OUT OF FLUSH TO TE	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
LP TURBINE STAGE 2	150	DEFECTS OBSERVED WITHIN AMM LIMITS	> SHROUD INTERLOCK OUT OF FLUSH TO TE	<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
LP TURBINE STAGE 3	150	NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LP TURBINE STAGE 4	134	NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LP TURBINE NGV - 4 STAGES - TASK REF: 72-00-00-200-811-F00 & 72-00-00-200-812-F00					
LP NGV - STAGE 1				<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
LP NGV - STAGE 2		NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LP NGV - STAGE 3		NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LP NGV - STAGE 4		NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LP TURBINE OUTER STATIONARY AIR SEALS - 4 STAGES - TASK REF: 72-00-00-200-813-F00					
LPT - STAGE 1		NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LPT - STAGE 2		NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LPT - STAGE 3		NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LPT - STAGE 4		NO STAGE DEFECTS OBSERVED	> NO DEFECTS OBSERVED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
OVERALL STAGE SERVICEABILITY		MINOR DEFECTS OBSERVED WITHIN AMM LIMITS - MODULE SERVICEABLE		<b>MODULE SERVICEABLE - NO LIMITATIONS</b>	





 <p>LPT1 LE</p>	 <p>LPT2 LE</p>
<p><u>STAGE 1</u>: SHROUD INTERLOCK GAP OBSERVED TO LPT1 LE SHROUD INTERLOCK OUT OF FLUSH TO LPT1 TE.</p>	<p><u>STAGE 2</u>: SHROUD INTERLOCK OUT OF FLUSH TO LPT2 TE.</p>
 <p>LPT3 LE</p>	 <p>LPT4 LE</p>
<p><u>STAGE 3</u>: NO STAGE DEFECTS OBSERVED</p>	<p><u>STAGE 4</u>: NO STAGE DEFECTS OBSERVED</p>
<p>LPT BLADES (STAGE 1-4)</p>	



LPT2 NGV



STAGE 1 NGV: NO STAGE DEFECTS OBSERVED - 360 DEGREE INSPECTION PERFORMED

STAGE 2 NGV: NO STAGE DEFECTS OBSERVED



LPT3 NGV



LPT4 NGV

STAGE 3 NGV: NO STAGE DEFECTS OBSERVED

STAGE 4 NGV: NO STAGE DEFECTS OBSERVED

LPT NGV (STAGE 1-4)



LPT1 SEAL



LPT2 SEAL

STAGE 1 S.O.A.S: NO STAGE DEFECTS OBSERVED

STAGE 2 S.O.A.S: NO STAGE DEFECTS OBSERVED



LPT3 SEAL



LPT4 SEAL

STAGE 3 S.O.A.S: NO STAGE DEFECTS OBSERVED

STAGE 4 S.O.A.S: NO STAGE DEFECTS OBSERVED

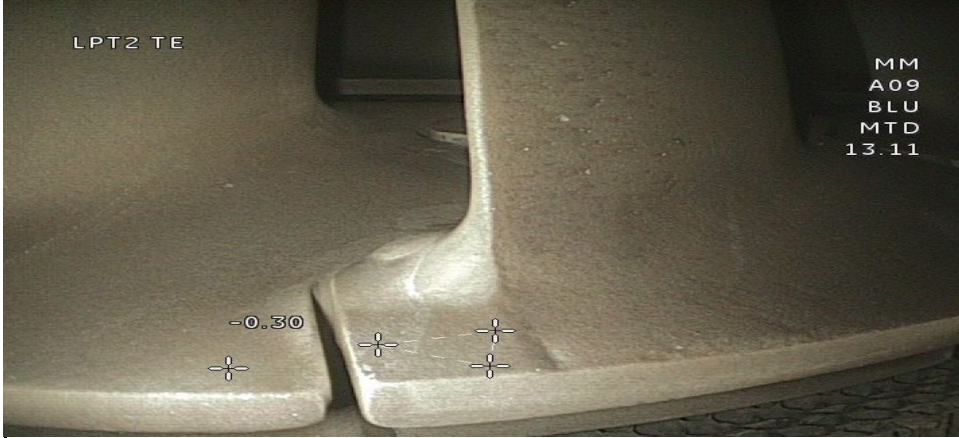
**LPT OUTER STATIONARY AIR SEAL (STAGE 1-4)**



LPT 1 BLADES OBSERVED WITH GAP IN THE TIP SHROUD INTERLOCK. ACCEPTABLE AS PER AMM 72-00-00-200-808-F00.12.G.(2).(h).1.(a) THAT INTERLOCK FACES SHOW NO SIGN OF WEAR. SEE APPENDIX N FOR CLARIFICATION.



LPT 1 BLADES OBSERVED WITH OUT OF FLUSH IN THE TE TIP SHROUD INTERLOCK. OUT OF FLUSH MEASURED AT - 0.61MM. WITHIN AMM 72-00-00-200-808-F00.12.G.(2).(j).1.(a) THAT INTERLOCK FACES ARE NO MORE THAN 1.20MM OIUT OF FLUSH. SEE APPENDIX O FOR CLARIFICATION.



LPT 2 BLADES OBSERVED WITH OUT OF FLUSH IN THE TE TIP SHROUD INTERLOCK. OUT OF FLUSH MEASURED AT - 0.30MM. WITHIN AMM 72-00-00-200-808-F00.12.G.(2).(j).2.(a) THAT INTERLOCK FACES ARE NO MORE THAN 1.20MM OIUT OF FLUSH. SEE APPENDIX O FOR CLARIFICATION.

LPT STAGE DEFECTS



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- b) The radial length is less than 0.252 inch (6.4 mm).
- 2) The Continue-In-Service limit is 50 cycles or 75 flight hours with these conditions:
  - a) The radial length is less than 0.787 inch (20 mm).
  - b) The axial length is less than 0.492 inch (12.5 mm).
- (b) Cracks or tears in Area G
  - 1) There is no limit if the radial and the axial length is less than 0.256 inch (6.5 mm).
  - 2) The Continue-In-Service limit is 50 cycles or 75 flight hours with these conditions:
    - a) The radial length is less than 0.787 inch (20 mm).
    - b) The axial length is less than 0.492 inch (12.5 mm).
- (c) Worn areas or local distortion at the blade tip corner on the leading and trailing edges
  - 1) There is no limit with these conditions:
    - a) The radial length is less than 0.787 inch (20 mm).
    - b) The axial length is less than 0.492 inch (12.5 mm).
  - 2) The Continue-In-Service limit is 100 cycles or 150 flight hours with these conditions:
    - a) The radial length is less than 0.984 inch (25 mm).
    - b) The axial length is less than 0.59 inch (15 mm).
    - c) No more than 15 blades are damaged.
- (d) Nicks, dents, and scratches on the airfoil surfaces that are in area E
  - 1) Permitted with these conditions:
    - a) The damage is less than 0.019 inch (0.5 mm).
    - b) The damage does not go through the metal.
  - 2) The Continue-In-Service limit is 50 cycles or 75 flight hours with these conditions:
    - a) The diameter is less than 0.59 inch (1.5 mm).
    - b) The damage does not go through the metal.
- (e) Nicks, dents, and scratches on the airfoil surfaces that are not in Area E, and not on the leading and trailing edges
  - 1) Permitted with these conditions:
    - a) The diameter is less than 0.157 inch (4 mm).
    - b) The damage does not go through the metal.
  - 2) The Continue-In-Service limit is 50 cycles or 75 flight hours with these conditions:
    - a) The diameter is less than 0.236 inch (6 mm).
    - b) The damage does not go through the metal.
- (f) Nicks, dents, and scratches on the leading and trailing edges, but not in Area E
  - 1) Permitted if the maximum axial length is not more than 0.039 inch (1 mm).
  - 2) The Continue-In-Service limit is 50 cycles or 75 flight hours if the axial length is less than 0.059 inch (1.5 mm).
- (g) Distortion to the leading and trailing edges and not in Area E
  - 1) Permitted with these conditions:
    - a) The maximum axial length is 0.197 inch (5 mm).
    - b) The maximum radial length is 0.59 inch (15 mm).

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APPENDIX A: AMM 72-00-00-200-803-F00.F.(6).(f).1)

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- c) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.
- (c) Missing or chipped erosion coating on the stages 1 thru 9 blades:
  - 1) There is no limit with this condition.
- (d) Nicks, dents and scratches in the airfoil root radius, stages 1 thru 9, (does not include the trailing edge root radius of stage 2 and stage 3)
  - 1) There is no limit to the number with these conditions:
    - a) Elliptical, smooth, round bottom dents having no sharp edges with a maximum diameter of 0.030 inch (0.76 mm). Dents must not connect or overlap.
    - b) Any damage with 0.005 inch (0.13 mm) maximum in depth.
    - c) The scratches are not parallel to the platform.
- (e) Tears in the root radius, stages 1 thru 9
  - 1) Not serviceable.
- (f) Nicks, dents and scratches in the trailing edge root radius of stage 2 and stage 3
  - 1) There is no limit to the number of nicks, dents and scratches that are less than 0.03 inch (0.8 mm) in depth.
  - 2) Continue-In-Service limit is 10 cycles or 25 hours if the nicks, dents and scratches are more than 0.03 inch (0.8 mm) in depth but less than 0.08 inch (2.0 mm) in depth.
  - 3) There is no limit to the amount of wear on the adjacent HPC inner shroud lip.
- (g) Wear or scratches in the trailing edge platform of stage 2 and stage 3
  - 1) There is no limit to the amount of wear or scratches that are less than 0.03 inch (0.8 mm) in depth.
  - 2) Continue-In-Service limit is 10 cycles or 25 hours if the wear or scratch is more than 0.03 inch (0.8 mm) in depth but less than 0.08 inch (2.0 mm) in depth.
  - 3) There is no limit to the amount of wear on the adjacent HPC inner shroud lip.
- (h) Tears, nicks, dents, and missing material on the leading and trailing edge of stages 1 thru 9 compressor blades found in the lower 25% of the airfoil (but not in the root radius).
  - 1) Tears are not permitted.
  - 2) There is no limit of nicks, dents and missing material if the damage is less 0.03 inch (0.8 mm) in depth.
  - 3) The Continue-In-Service limit is 10 cycles or 25 hours if the damage is less than 0.08 inch (2.0 mm).
  - 4) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.
- (i) Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 1 thru 4 compressor blades found in Dim. B of the airfoil.
  - 1) Tears are not serviceable.
  - 2) No maximum number of nicks, missing material and erosion if the damage is less than 0.04 inch (1.0 mm) in depth, if the HPC blade is NOT a tech insertion stage 4 blade (P/N P394XXX).

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APPENDIX B: 72-00-00-200-804-F00 5.G.(2)(h).2)

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c) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

(c) Missing or chipped erosion coating on the stages 1 thru 9 blades:

- 1) There is no limit with this condition.

(d) Nicks, dents and scratches in the airfoil root radius, stages 1 thru 9, (does not include the trailing edge root radius of stage 2 and stage 3)

- 1) There is no limit to the number with these conditions:
  - a) Elliptical, smooth, round bottom dents having no sharp edges with a maximum diameter of 0.030 inch (0.76 mm). Dents must not connect or overlap.
  - b) Any damage with 0.005 inch (0.13 mm) maximum in depth.
  - c) The scratches are not parallel to the platform.

(e) Tears in the root radius, stages 1 thru 9

- 1) Not serviceable.

(f) Nicks, dents and scratches in the trailing edge root radius of stage 2 and stage 3

- 1) There is no limit to the number of nicks, dents and scratches that are less than 0.03 inch (0.8 mm) in depth.
- 2) Continue-In-Service limit is 10 cycles or 25 hours if the nicks, dents and scratches are more than 0.03 inch (0.8 mm) in depth but less than 0.08 inch (2.0 mm) in depth.
- 3) There is no limit to the amount of wear on the adjacent HPC inner shroud lip.

(g) Wear or scratches in the trailing edge platform of stage 2 and stage 3

- 1) There is no limit to the amount of wear or scratches that are less than 0.03 inch (0.8 mm) in depth.
- 2) Continue-In-Service limit is 10 cycles or 25 hours if the wear or scratch is more than 0.03 inch (0.8 mm) in depth but less than 0.08 inch (2.0 mm) in depth.
- 3) There is no limit to the amount of wear on the adjacent HPC inner shroud lip.

(h) Tears, nicks, dents, and missing material on the leading and trailing edge of stages 1 thru 9 compressor blades found in the lower 25% of the airfoil (but not in the root radius).

- 1) Tears are not permitted.
- 2) There is no limit of nicks, dents and missing material if the damage is less 0.03 inch (0.8 mm) in depth.
- 3) The Continue-In-Service limit is 10 cycles or 25 hours if the damage is less than 0.08 inch (2.0 mm).
- 4) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

(i) Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 1 thru 4 compressor blades found in Dim. B of the airfoil.

- 1) Tears are not serviceable.
- 2) **No maximum number of nicks, missing material and erosion if the damage is less than 0.04 inch (1.0 mm) in depth, if the HPC blade is NOT a tech insertion stage 4 blade (P/N P394XXX).**


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a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.04 inch (1.0 mm) but less than 0.08 inch (2.0 mm) in depth.

b) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

3) No maximum number of nicks, missing material and erosion on the leading and trailing edge found in Dim. B if the damage is less than 0.03 inch (0.8 mm) in depth, if the HPC blade is a Tech insertion stage 4 blade (P/N P394XXX).

- a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.03 inch (0.8 mm) but less than 0.08 inch (2.0 mm) in depth.
- b) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

4) No maximum number of dents in Dim. B if the damage is less than 0.04 inch (1.0 mm) maximum depth and less than 0.06 inch (1.5 mm) maximum deflection from the original contour.

- a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.04 inch (1.0 mm) but less than 0.08 inch (2.0 mm) in depth, and less than 0.06 inch (1.5 mm) deflection from the original contour.
- b) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

**(j) Tears, nicks, dents, missing material and erosion at the leading and trailing edge tip corners in Dim. A of stages 1 thru 4 compressor blades.**

- 1) No maximum number of tears, nicks and dents if the damage is less than 0.25 inch (6.4 mm) in depth.**
  - a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.25 inch (6.4 mm) in depth but less than 0.30 inch (7.6 mm) in depth.
  - b) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.
- 2) Missing material and erosion at the leading and trailing edge tip corners.
  - a) Individual blades with missing material greater than 0.30 x 0.30 inch (7.6 x 7.6 mm) on both leading and trailing edges are not permitted.
  - b) Any number of blades for each stage 1 thru 4, up to 0.30 x 0.30 inch (7.6 x 7.6 mm) if the downstream damage is serviceable.
  - c) For stage 2, a maximum of four blades up to 0.40 x 0.40 inch (10.2 x 10.2 mm), and 46 blades up to 0.30 x 0.30 inch (7.6 x 7.6 mm) for total of 50 blades with missing tip corners.
  - d) For stage 3, a maximum of five blades up to 0.40 x 0.40 inch (10.2 x 10.2 mm) and 51 blades up to .30 x 0.30 inch (7.6 x 7.6 mm) for a total of total of 56 blades with missing tip corners.
  - e) For stage 4, maximum of six blades up to 0.40 x 0.40 inch (10.2 x 10.2 mm) and 57 blades up to 0.30 x 0.30 inch (7.6 x 7.6 mm) for a total of total of 63 blades with missing tip corners.

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APPENDIX C: 72-00-00-200-804-F00 5.G.(2)(i).2)

APPENDIX D: 72-00-00-200-804-F00 5.G.(2)(j).1)

AMM APPENDIX 2/8



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f) A maximum service extension of 10 cycles or 25 hours is permitted if the stage 1 damage is more than 0.30 inch (7.6 mm) but less than 0.40 inch (10.2 mm) in depth.

g) A maximum service extension of 10 cycles or 25 hours is permitted if additional stage 2-4 blades have damage, which is more than 0.30 inch (7.6 mm) but less than 0.40 inch (10.2 mm) in depth.

**(k) Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 5-9 compressor blade found in Dim. B.**

1) No maximum number of tears, nicks, missing material and erosion if the damage is less than 0.04 inch (1.0 mm) in depth.

a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.04 inch (1.0 mm) but less than 0.08 inch (2.0 mm).

b) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

2) No maximum number of dents if the damage is less than 0.04 inch (1.0 mm) maximum depth and less than 0.06 inch (1.5 mm) maximum deflection from original contour.

a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is less than 0.08 inch (2.0 mm) in depth, and less than 0.06 inch (1.5 mm) maximum deflection from the original contour.

b) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

**(l) Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 5-9 compressor blade found in Dim. A.**

1) No maximum number of tears, nicks and dents if the damage is less than 0.15 inch (3.8 mm) in depth.

a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.15 inch (3.8 mm) but less than 0.20 inch (5.1 mm) in depth.

b) If you find damage that is more than the limits, do this task: **Repair** the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

2) Missing material and erosion at the leading edge and trailing edge tip corners.

a) All blades can have missing material and erosion at the tip corner up to 0.15 inch x 0.15 inch (3.8 mm x 3.8 mm) if the downstream damage is serviceable.

b) Up to a total of 25 blades across stages 5 thru 9, with missing material up to 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm) if the downstream damage is serviceable.

c) If more than 25 blades across stages 5-9 have damage that is more than 0.15 inch x 0.15 inch (3.8 mm x 3.8 mm) but less than 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm), a maximum service extension of 100 cycles is permitted.

d) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm) but less than 0.30 inch x 0.30 inch (7.6 mm x 7.6 mm) on a maximum of 20% in each stage.

**(m) Any amount of tears, nicks, dents, missing material, erosion, bends and burrs found on the stage 1 thru 9 compressor blade tip is serviceable.**

**NOTE:** The blade tip is the top 0.10 inch (2.5 mm) of the blade.

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**(n) Curl on the end of the of the stage 1 thru 9 blades**

1) Up to 25% of the stages 1 thru 4 blade chord, and maximum radial length of 0.30 inch (7.6 mm), when it does not engage the stationary parts during operation.

2) Up to 50% of the stages 5 thru 9 blade chord radially down 0.30 inch (7.6 mm) from the tip when it does not engage the stationary parts during operation.

a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is up to 75% of the blade chord radially down 0.30 inch (7.6 mm) from the tip when it does not engage the stationary parts during operation.

**(o) Nicks, dents, erosion, and scratches on the stages 1 thru 9 blade airfoil center panel**

1) There is no limit to the quantity of erosion and scratches.

2) There is no maximum number of nicks and dents if the damage is not cracked on either side of the blade.

**(p) Platforms of blades.**

1) Clearance between the blade platforms is permitted.

2) There is no maximum limit to the size and quantity of distortions on a blade.

3) Cracks in the material are not serviceable.

4) Shingling is not serviceable.

**(q) Blade locks for the stages 4-9 blades**

1) Any number of cracks on one lock is permitted for each stage.

a) A maximum service extension of 10 cycles or 25 hours is permitted for two blade locks in the same stage with any number of cracks, if no blade locks are loose in the given stage.

2) Loose blade locks are not permitted.

a) A maximum service extension of 10 cycles or 25 hours is permitted for one loose blade lock on a stage, if the other blade lock on the same stage is not loose or cracked.

**(r) Material on blades**

1) No maximum amount of material which is found on the blades.

**(s) Compressor stator vane shrouds, stages (Figure 610)**

1) No maximum limit of wear caused by rubbing on vanes.

**(t) The rub coat at the stator flow path**

**NOTE:** The area adjacent to the borescope ports is the only rub coat you can examine.

1) No maximum limit of areas where the rub coat is gone.

2) No maximum number of cracks which are crazed.

**(u) Through holes on stage 1 thru 9 blades**

1) Through holes are not serviceable.

**SUBTASK 72-00-00-080-002-F00**

**(3) If the inspection is complete, remove the borescope equipment.**

a) Turn the lightsource to OFF, but keep the blower ON until the lamp and case are cool.

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APPENDIX E: 72-00-00-200-804-F00 5.G.(2)(k).1) & 2)

APPENDIX F: 72-00-00-200-804-F00 5.G.(2)(n).2)

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f) A maximum service extension of 10 cycles or 25 hours is permitted if the stage 1 damage is more than 0.30 inch (7.6 mm) but less than 0.40 inch (10.2 mm) in depth.

g) A maximum service extension of 10 cycles or 25 hours is permitted if additional stage 2-4 blades have damage, which is more than 0.30 inch (7.6 mm) but less than 0.40 inch (10.2 mm) in depth.

(k) Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 5-9 compressor blade found in Dim. B.

- 1) No maximum number of tears, nicks, missing material and erosion if the damage is less than 0.04 inch (1.0 mm) in depth.
  - a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.04 inch (1.0 mm) but less than 0.08 inch (2.0 mm).
  - b) If you find damage that is more than the limits, do this task: Repair the HPC Rotor Blades, TASK 72-00-00-300-801-F00.
- 2) No maximum number of dents if the damage is less than 0.04 inch (1.0 mm) maximum depth and less than 0.06 inch (1.5 mm) maximum deflection from original contour.
  - a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is less than 0.08 inch (2.0 mm) in depth, and less than 0.06 inch (1.5 mm) maximum deflection from the original contour.
  - b) If you find damage that is more than the limits, do this task: Repair the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

(l) **Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 5-9 compressor blade found in Dim. A.**

- 1) **No maximum number of tears, nicks and dents if the damage is less than 0.15 inch (3.8 mm) in depth.**
  - a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.15 inch (3.8 mm) but less than 0.20 inch (5.1 mm) in depth.
  - b) If you find damage that is more than the limits, do this task: Repair the HPC Rotor Blades, TASK 72-00-00-300-801-F00.
- 2) Missing material and erosion at the leading edge and trailing edge tip corners.
  - a) All blades can have missing material and erosion at the tip corner up to 0.15 inch x 0.15 inch (3.8 mm x 3.8 mm) if the downstream damage is serviceable.
  - b) Up to a total of 25 blades across stages 5 thru 9, with missing material up to 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm) if the downstream damage is serviceable.
  - c) If more than 25 blades across stages 5-9 have damage that is more than 0.15 inch x 0.15 inch (3.8 mm x 3.8 mm) but less than 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm), a maximum service extension of 100 cycles is permitted.
  - d) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm) but less than 0.30 inch x 0.30 inch (7.6 mm x 7.6 mm) on a maximum of 20% in each stage.

(m) Any amount of tears, nicks, dents, missing material, erosion, bends and burrs found on the stage 1 thru 9 compressor blade tip is serviceable.  
**NOTE:** The blade tip is the top 0.10 inch (2.5 mm) of the blade.


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f) A maximum service extension of 10 cycles or 25 hours is permitted if the stage 1 damage is more than 0.30 inch (7.6 mm) but less than 0.40 inch (10.2 mm) in depth.

g) A maximum service extension of 10 cycles or 25 hours is permitted if additional stage 2-4 blades have damage, which is more than 0.30 inch (7.6 mm) but less than 0.40 inch (10.2 mm) in depth.

(k) Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 5-9 compressor blade found in Dim. B.

- 1) No maximum number of tears, nicks, missing material and erosion if the damage is less than 0.04 inch (1.0 mm) in depth.
  - a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.04 inch (1.0 mm) but less than 0.08 inch (2.0 mm).
  - b) If you find damage that is more than the limits, do this task: Repair the HPC Rotor Blades, TASK 72-00-00-300-801-F00.
- 2) No maximum number of dents if the damage is less than 0.04 inch (1.0 mm) maximum depth and less than 0.06 inch (1.5 mm) maximum deflection from original contour.
  - a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is less than 0.08 inch (2.0 mm) in depth, and less than 0.06 inch (1.5 mm) maximum deflection from the original contour.
  - b) If you find damage that is more than the limits, do this task: Repair the HPC Rotor Blades, TASK 72-00-00-300-801-F00.

(l) Tears, nicks, dents, missing material and erosion on the leading and trailing edge of stages 5-9 compressor blade found in Dim. A.

- 1) No maximum number of tears, nicks and dents if the damage is less than 0.15 inch (3.8 mm) in depth.
  - a) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.15 inch (3.8 mm) but less than 0.20 inch (5.1 mm) in depth.
  - b) If you find damage that is more than the limits, do this task: Repair the HPC Rotor Blades, TASK 72-00-00-300-801-F00.
- 2) Missing material and erosion at the leading edge and trailing edge tip corners.
  - a) All blades can have missing material and erosion at the tip corner up to 0.15 inch x 0.15 inch (3.8 mm x 3.8 mm) if the downstream damage is serviceable.
  - b) Up to a total of 25 blades across stages 5 thru 9, with missing material up to 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm) if the downstream damage is serviceable.
  - c) If more than 25 blades across stages 5-9 have damage that is more than 0.15 inch x 0.15 inch (3.8 mm x 3.8 mm) but less than 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm), a maximum service extension of 100 cycles is permitted.
  - d) A maximum service extension of 10 cycles or 25 hours is permitted if the damage is more than 0.20 inch x 0.20 inch (5.1 mm x 5.1 mm) but less than 0.30 inch x 0.30 inch (7.6 mm x 7.6 mm) on a maximum of 20% in each stage.

(m) **Any amount of tears, nicks, dents, missing material, erosion, bends and burrs found on the stage 1 thru 9 compressor blade tip is serviceable.**  
**NOTE:** The blade tip is the top 0.10 inch (2.5 mm) of the blade.

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APPENDIX G: 72-00-00-200-804-F00 5.G.(2)(l).1)

APPENDIX H: 72-00-00-200-804-F00 5.G.(2)(m)

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**(a) Axial cracks on the outer liner**

**NOTE:** The dome band is counted as a panel.

**NOTE:** Axial cracks that become circumferential cracks for a length that is less than one dilution land, should be counted as one continuous axial crack.

**1) Cracks that go across only one panel are permitted.**

- 2) A maximum of 4 cracks that go across more than one panel are permitted with this condition:
  - a) The cracks cannot go across more than 3 panels.
- 3) If a crack is longer than 3 panels, do the borescope inspection of the cold side of the outer liner.
 

**NOTE:** Do the inspection of the cold side only if you have no more than 3 cracks that are longer than 3 panels. More than 3 cracks that are longer than 3 panels are not permitted.
- 4) A continue-in-service limit of 100 cycles is permitted with these conditions:
  - a) There are not more than 5 cracks that go across more than one panel.
  - b) A crack cannot go across more than 5 panels in sequence.

**(b) The cold side of the outer liner for cracks**

**NOTE:** Do this inspection of the cold side only if you find not more than 3 cracks that are longer than 3 panels during the hot side inspection. More than 3 cracks that are longer than 3 panels is not permitted.

- 1) The cracks must not go through more than one of the last three cooling ribs (cooling ribs 4, 5, or 6).
- 2) Cooling rib 1 must not be cracked through.
- 3) Do this inspection again after 750 cycles.
- 4) A continue-in-service limit of 25 cycles is permitted with these conditions:
  - a) There are no more than 5 cracks that go across more than one panel.
  - b) There are no cracks that go across more than 5 panels.
  - c) At least one of the cooling ribs (3, 4, 5, or 6) do not have cracks that go through to the cold side.
  - d) Cooling rib 1 does not have a crack that goes through.

**(c) Axial cracks on the inner liner**

- 1) Permitted if the cracks do not go across more than one panel.
- 2) There are not more than 4 cracks that go across more than one panel.
- 3) Only one crack can go across more than three panels with these conditions:
  - a) The crack does not go across more than 4 panels.
  - b) The crack is connected to a hole caused by burn-through or missing material which is not more than 3 times the size of a dilution hole.
  - c) The crack is not connected to a circumferential crack that is more than 0.50 inch (12.7 mm) in length.
  - d) Do this inspection again after each 750 cycles.
- 4) A continue-in-service limit of 100 cycles is permitted with these conditions:
  - a) There are not more than 5 cracks that go across more than one panel.

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- 2) A continue-in-service limit of 25 cycles is permitted with these conditions:
  - a) The radial crack is not more than 0.6 in. (15 mm) in length.
  - b) The circumferential crack is not more than 0.9 in. (23 mm) in length.

**(i) Missing material from the extensions on the deflector**

**NOTE:** Examine the deflector surface as close to perpendicular as possible.

**1) Up to 15-exposed dome cooling holes permitted in each deflector quadrant (Figure 612 or Figure 613, View C2).**

- 2) Not more than 20-exposed dome cooling holes in any deflector (Figure 612 or Figure 613, View C3).
- 3) Do this inspection again after 750 cycles if up to 25 dome cooling holes total in any deflector are exposed.
- 4) More than 25-exposed dome cooling holes total in any deflector, the continue-in-service limit is 25 cycles.

**(j) Missing material from the extensions on the sleeve**

- 1) Permitted if the depth is not more than 0.20 in. (5.08 mm).
- 2) A continue-in-service limit of 50 cycles is permitted if the depth is not more than 0.240 in. (6.10 mm).

**(k) Burn holes**

- 1) 3 areas for each dome are permitted if the maximum area of each hole is not more than 1.0 x 1.0 inch (25 x 25 mm).
- 2) A continue-in-service limit of 25 cycles is permitted with these conditions:
  - a) There are not more than 3 areas on each dome that have missing material.
  - b) Each area is not more than 1.2 x 1.2 inch (30 x 30 mm).

**(l) Cracks in the primary swirl nozzle**

- 1) Permitted.

**(m) Cracks and missing material from the secondary swirl nozzle venturi.**

- 1) Any number of secondary swirl nozzle venturis with indications (cracks) permitted.
- 2) Any number of secondary swirl nozzle venturis with total missing material at each venturi up to 0.100 in. (2.5 mm) in width permitted (Figure 612 or Figure 613, View C1).
- 3) Up to six secondary swirl nozzle venturis with total missing material at each venturi over 0.100 in. (2.5 mm), but not more than 0.300 in. (7.6 mm) in width permitted.
- 4) Do this inspection again after 750 cycles if there is up to ten secondary swirl nozzle venturis with total missing material at each venturi over 0.100 in. (2.5 mm), but not more than 0.300 in. (7.6 mm) in width.
- 5) The Continue-In-Service limit is 25 cycles for:
  - a) Any of the secondary swirl nozzle venturis that have total missing material over 0.300 in. (7.6 mm) in width, or
  - b) More than ten secondary swirl nozzle venturis that have total missing material at each venturi over 0.100 in. (2.5 mm).

SUBTASK 72-00-00-210-030-F50

**(3) Examine the inner and outer liners as follow:**

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APPENDIX I: 72-00-00-200-805-F00.7.G.(3).(a).1

APPENDIX J: 72-00-00-200-805-F00 7.G.(2).(i).1)

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- a) The total area of missing material is not more than 0.05 in<sup>2</sup> (32.3 mm<sup>2</sup>) per vane. Maximum of 4 vanes per 90° arc (1.57 rad).
  - b) Cracking does not occur aft of cooling hole row 16.
  - 3) The Continue-In-Service limit is 200 cycles with this condition:
    - a) The missing material is not larger than 0.20 in<sup>2</sup> (129 mm<sup>2</sup>) in diameter.
  - 4) The Continue-In-Service limit is 25 cycles with this condition:
    - a) The missing material caused by cracks is not larger than 0.45 in<sup>2</sup> (290 mm<sup>2</sup>) in diameter.
  - (b) Burns or bulges
- NOTE:** An open area of the cavity caused by bulging is to be interpreted as missing material where the following limits apply.
- 1) Permitted if there is no missing material.
  - 2) If there is missing material, do the inspection again after each 800 cycle interval with these conditions:
    - a) The total area of missing material is not more than 0.05 in<sup>2</sup> (32.3 mm<sup>2</sup>) per vane. Maximum of 4 vanes per 90° arc (1.57 rad).
    - b) Bulging does not occur aft of cooling hole row 16.
  - 3) The Continue-In-Service limit is 200 cycles with this condition:
    - a) The missing material is not larger than 0.20 in<sup>2</sup> (129 mm<sup>2</sup>) in diameter.
  - 4) The Continue-In-Service limit is 25 cycles with this condition:
    - a) The missing material caused by cracks is not larger than 0.45 in<sup>2</sup> (290 mm<sup>2</sup>) in diameter.
  - (c) Missing thermal barrier coating (TBC)
    - 1) There is no limit to the quantity of TBC that can be missing.

SUBTASK 72-00-00-220-006-F00

**(4) Examine the trailing edges as follows:**

- (a) Cracks or burns
  - 1) There is no limit to the number of cracks or the amount of burns permitted.
- (b) Buckled or bowed material
  - 1) There is no limit.
- (c) Missing material
  - 1) The maximum quantity of missing material from each vane is 0.5 in. (12.7 mm) length in the axial direction.
  - 2) The Continue-In-Service limit is 25 cycles with these conditions:
    - a) The missing material is not larger than 0.75 in. (19.05 mm) in the axial direction.
    - b) Make sure that the HPT blades are in limits. **HPT** Blades Borescope Inspection, TASK 72-00-00-200-807-F00.

SUBTASK 72-00-00-211-001-F00

**(5) Examine all airfoil surfaces:**

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APPENDIX K: 72-00-00-220-801-F00.8.G.(4).(c).1) & (4).(a).1

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- 1) Exposed interior cooling passages are not permitted unless the condition is acceptable per trailing edge inspection for Missing Material or Leading Edge Inspection for Through wall hole in area A and B.
- 2) The Continue-In-Service (C-I-S) limit is 10 cycles if the hole is less than 0.050 inch (1.27 mm) in diameter (or equivalent area).
- (b) Radial cracks on the convex side that connect to the blade tip that are more than 0.50 inch (12.7 mm) distance from the trailing edge.
  - 1) Permitted, if the radial cracks are not more than 0.15 inch (3.8 mm) in length.
  - 2) The Continue-In-Service (C-I-S) limit is 50 cycles if the radial cracks are not more than 0.35 inch (8.9 mm) in length.
- (c) Radial cracks on the concave side that connect to the blade tip that are more than 0.50 inch (12.7 mm) distance away from the trailing edge.
  - 1) Permitted, if the radial cracks are not more than 0.70 inch (17.8 mm) in length.
  - 2) The Continue-In-Service (C-I-S) limit is 50 cycles if the radial cracks are not longer than 1.00 inch (25.4 mm).
- (d) Radial cracks on either side of the airfoil that connect to the blade tip, 0.50 inch (12.7 mm) or closer to the trailing edge.
  - 1) Permitted.
- (e) Bent, curled, or missing material
  - 1) Permitted, if the damage is in the tip area and none of the blade internal cavities are exposed.
  - 2) The Continue-In-Service (C-I-S) limit is 10 cycles if missing material is below the tip shelf and the internal cavity is exposed with a size of less than 0.050 inch (1.27 mm) in diameter (or equivalent area).
- (f) Distortions or signs of melting
  - 1) Distortions or melting are not permitted.
  - 2) The Continue-In-Service limit is 25 cycles if a maximum of 10 blades have distortions or melting.
- (g) Missing thermal barrier coating (TBC)
  - 1) Any amount of TBC can be missing.
  - 2) Oxidation related to the missing TBC is permitted.

SUBTASK 72-00-00-210-055-F00

**(4) Examine the convex and concave surfaces that are not in the leading edge, trailing edge, or tip as follows:**

- (a) Nicks or dents on the convex and concave surfaces in Areas A and B
  - 1) Permitted, with these conditions:
    - a) In Area A, the damage is not more than 0.25 inch (6.3 mm) in length.
    - b) In Area B, the damage is not more than 0.10 inch (2.5 mm) in length.
  - 2) The Continue-In-Service (C-I-S) limit is 25 cycles with this condition:
    - a) Cracks or missing material is not permitted.
- (b) Nicks or dents on the convex and concave surfaces in Area C
  - 1) Three nicks or dents are permitted with these conditions:

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APPENDIX L: 72-00-00-200-807-F00.10.G.(3).(g).1)

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(Continued)

Reference	Description	Specification
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	CFM CP8006, M50 TF 9 CL-A

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Prepare for the Inspection

SUBTASK 72-00-00-840-020-F00

- (1) If not already done, do this task: **Borescope** Inspection Preparation, TASK 72-00-00-200-802-F00.

SUBTASK 72-00-00-010-019-F00

- (2) Remove the S16-S17 borescope plugs (**Figure** 628).

SUBTASK 72-00-00-480-024-F00

- (3) Do these steps to prepare for the inspection of the HPT shrouds:
  - (a) Connect the applicable borescope to the light source.
    - 1) rigid borescope, COM-2195 and light source, SPL-4305
    - 2) Rigid Borescope, COM-4302 and light source, SPL-4306
    - 3) rigid borescope, COM-4303 and light source, SPL-2197
    - 4) Rigid Borescope, COM-4304 and light source, SPL-4308
    - 5) Use the rigid borescope with the yellow band to get a general view.
  - (b) Connect the rigid borescope to a 90 degree right-angle viewer and a 60 degree field of vision.
  - (c) Put the rigid borescope through the borescope port (**Figure** 628).
  - (d) Make sure the borescope is correctly adjusted.
  - (e) Turn the light source ON.

F. HPT Shrouds Borescope Inspection

SUBTASK 72-00-00-290-001-F00

- (1) Examine the HPT shrouds as follow (**Figure** 627):

(a) Axial cracks

- 1) Any amount.

(b) Circumferential cracks

- 1) There is no limit to the number of circumferential cracks that do not connect and are no more than 1.0 inch (25 mm) long in Surface A and Surface B.
- 2) The Continue-In-Service limit is 25 cycles if the circumferential cracks are connected and are more than 1.0 inch (25 mm) long.
- 3) Circumferential cracks that are connected to axial cracks cannot be more than 0.25 in. (6.35 mm) long and not less than 0.25 in. (6.35 mm) from the shroud edge.
- 4) The Continue-In-Service limit is 25 cycles if the circumferential cracks connected to axial cracks are more than 0.25 in. (6.35 mm) long.

- (c) Burning, erosion or chipped/missing TDC exposing the backstrip.

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APPENDIX M: 72-00-00-200-815-F00.11.F.(1).(a).1

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- (f) Excess material on airfoil
  - 1) Not more than 0.04 in<sup>2</sup> (25.8 mm<sup>2</sup>) surface of cluster, 0.004 in. (0.1 mm) height, 0.02 in. (0.5 mm) diameter for each indication and maximum 5 percent of blade span impacted.
- (g) Leading edges for distortion caused by over-temperature
 

**NOTE:** Over-temperature damage is seen as melted areas or parallel grooves in the hard coat of the blade.

  - 1) Distortion of the leading edge is not permitted.
  - 2) The Continue-In-Service limit is 15 cycles or 25 hours with these conditions:
    - a) The distortion is less than 0.8 in. (20 mm) on stage 1 blades.
    - b) The distortion is less than 0.08 in. (2 mm) on stage 2 and 3 blades.
- (h) Gaps in the tip shroud interlocks
 

**1) There is no limit, with these conditions:**

  - a) The interlocks must not show wear.
  - b) Stage 2 and 3 gaps are not permitted.
  - 2) The Continue-In-Service limit is 5 cycles.
- (i) Shingled or unlatched tip shrouds
  - 1) Shingled or unlatched tip shrouds are not permitted.
  - 2) The Continue-In-Service limit is 5 cycles or 10 hours, with this condition:
    - a) The rotor must turn freely, with a vibration level that is not more than the advisory limit (**TASK** 71-00-00-800-806-F00).
- (j) Tip shroud out-of-flush
 

**NOTE:** If this out-of-flush condition is caused by over welding and if there is no evidence of unusual wear on the mating or hard faces all along the notch and if the interlocks do fit one in another, this condition is serviceable. If different, refer to the criteria that follow.

  - 1) Stage 1 blades
    - a) Not more than 0.0472 in. (1.20 mm), and not more than 0.0413 in. (1.05 mm) on the hard faces.
  - 2) Stage 2 blades
    - a) Not more than 0.0472 in. (1.20 mm), and not more than 0.0354 in. (0.90 mm) on the hard faces.
  - 3) Stage 3 blades
    - a) Not more than 0.0472 in. (1.20 mm), and not more than 0.0433 in. (1.10 mm) on the hard faces.
- (k) Root platform out-of-flush
  - 1) Stage 1 blades
    - a) Not more than 0.0198 in. (0.50 mm).
  - 2) Stage 2 and 3 blades
    - a) Not more than 0.0236 in. (0.60 mm).
- (l) Circumferential looseness
  - 1) There is no limit to circumferential looseness.

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APPENDIX N: 72-00-00-200-808-F00.12.G.(2).(h).1).(a)

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- (f) Excess material on airfoil
  - 1) Not more than 0.04 in<sup>2</sup> (25.8 mm<sup>2</sup>) surface of cluster, 0.004 in. (0.1 mm) height, 0.02 in. (0.5 mm) diameter for each indication and maximum 5 percent of blade span impacted.
- (g) Leading edges for distortion caused by over-temperature
 

**NOTE:** Over-temperature damage is seen as melted areas or parallel grooves in the hard coat of the blade.

  - 1) Distortion of the leading edge is not permitted.
  - 2) The Continue-In-Service limit is 15 cycles or 25 hours with these conditions:
    - a) The distortion is less than 0.8 in. (20 mm) on stage 1 blades.
    - b) The distortion is less than 0.08 in. (2 mm) on stage 2 and 3 blades.
- (h) Gaps in the tip shroud interlocks
  - 1) There is no limit, with these conditions:
    - a) The interlocks must not show wear.
    - b) Stage 2 and 3 gaps are not permitted.
  - 2) The Continue-In-Service limit is 5 cycles.
- (i) Shingled or unlatched tip shrouds
  - 1) Shingled or unlatched tip shrouds are not permitted.
  - 2) The Continue-In-Service limit is 5 cycles or 10 hours, with this condition:
    - a) The rotor must turn freely, with a vibration level that is not more than the advisory limit (TASK 71-00-00-800-806-F00).
- (j) Tip shroud out-of-flush
 

**NOTE:** If this out-of-flush condition is caused by over welding and if there is no evidence of unusual wear on the mating or hard faces all along the notch and if the interlocks do fit one in another, this condition is serviceable. If different, refer to the criteria that follow.

  - 1) Stage 1 blades
    - a) Not more than 0.0472 in. (1.20 mm), and not more than 0.0413 in. (1.05 mm) on the hard faces.
  - 2) Stage 2 blades
    - a) Not more than 0.0472 in. (1.20 mm), and not more than 0.0354 in. (0.90 mm) on the hard faces.
  - β) Stage 3 blades
    - a) Not more than 0.0472 in. (1.20 mm), and not more than 0.0433 in. (1.10 mm) on the hard faces.
- (k) Root platform out-of-flush
  - 1) Stage 1 blades
    - a) Not more than 0.0198 in. (0.50 mm).
  - 2) Stage 2 and 3 blades
    - a) Not more than 0.0236 in. (0.60 mm).
- (l) Circumferential looseness
  - 1) There is no limit to circumferential looseness.

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APPENDIX O: 72-00-00-200-808-F00.12.G.(2).(j).1.(a) & G.(2).(j).2.(a)

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1. Approving Competent Authority/Country <b>CAA / UNITED KINGDOM</b>		2. AUTHORISED RELEASE CERTIFICATE <b>CAA FORM 1</b>			3. Form Tracking Number: <b>100040</b>	
4. Organisation Name and Address: <b>FRM AVIATION SERVICES LTD</b> 30 CLAYDON GARDENS, RIXTON, CHESHIRE, WA3 6FA, UNITED KINGDOM   Email: contact@frmaviation.aero   Tel:+44(0)7972242774				5. Work Order/Contract/Invoice:		
6. Item:	7. Description:	8. Part No.:	9. Qty.:	10. Serial No.:	11. Status/Work:	
ONE	AERO ENGINE	CFM56-7B26	ONE		Inspected/Tested	
12. Remarks:						
ENGINE P/N: CFM56-7B26 S/N: 875183 WAS INSPECTED AT GT ENGINE SERVICES, STANSTED (STN) IAW WORK ORDER & MAINTENANCE DATA REFERENCED BELOW.						
THE FOLLOWING TASKS HAVE BEEN ACCOMPLISHED:						
72-00-00-200-803-F00 - BORESCOPE INSPECTION STAGE 2-4 BOOSTER BLADES & VANES; 72-00-00-200-804-F00 - BORESCOPE INSPECTION OF HP COMPRESSOR BLADES; 72-00-00-200-805-F00 - BORESCOPE INSPECTION OF COMBUSTION SECTION; 72-00-00-200-818-F00 - BORESCOPE INSPECTION OF HPT NOZZLE GUIDE VANES; 72-00-00-200-807-F00 - BORESCOPE INSPECTION OF HPT BLADES; 72-00-00-200-815-F00 - BORESCOPE INSPECTION OF HPT SHROUDS; 72-00-00-200-808-F00 - BORESCOPE INSPECTION OF LPT STAGE 1-3 BLADES; 72-00-00-200-809-F00 - BORESCOPE INSPECTION OF LPT STAGE 4 BLADES; 72-00-00-200-811-F00 - BORESCOPE INSPECTION OF LPT1 NOZZLE GUIDE VANES; 72-00-00-200-812-F00 - BORESCOPE INSPECTION OF LPT STAGE 2-4 NOZZLE GUIDE VANES; 72-00-00-200-813-F00 - BORESCOPE INSPECTION OF LPT STAGE 1-4 OUTER STATIONARY AIR SEALS.						
Date of Inspection: 09 SEPTEMBER 2021    Hours - TSN: 71677.0    Cycles - CSN: 29896    FRM Work Order Ref: 100040    FRM Borescope Report Reference: 100040 - CFM56-7B BSI REPORT    Maintenance Data Reference: 737-800 AMM; EFF: GEF; REVISION: D633A101; DATED: 15.08.21						
The work identified in Block 11 and described herein has been accomplished in accordance with 14 CFR part 43 and in respect to that work, the items are approved for return to service under certificate no. FRMY924D						
13. a Certifies that the items identified above were manufactured in conformity to:				14a. <input checked="" type="checkbox"/> Part-145.A.50 Release to Service <input checked="" type="checkbox"/> Other regulation specified in block 12		
<input type="checkbox"/> Approved design data and are in condition for safe flight				Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was accomplished in accordance with Part 145 and in respect to that work the items are considered ready for release to service		
<input type="checkbox"/> Non-approved design data specified in block 12						
13b. Authorised Signature		13c. Approval/Authorisation Number		14c. Certificate/Approval Ref. No.:		
				UK.145.01447		
13d. Name		13e. Date (dd.mmm yyyy)		14e. Date (dd mmm yyyy):		
				09.SEP.2021		
USER/INSTALLER RESPONSIBILITIES This certificate does not automatically constitute authority to install the item(s). Where the user/installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts items from the airworthiness authority specified in block 1. Statements in blocks 13a and 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.						

CAA / FAA RELEASE DOCUMENTATION



1. Approving Competent Authority/Country <b>EASA</b>		2. AUTHORISED RELEASE CERTIFICATE <b>EASA FORM 1</b>			3. Form Tracking Number: <b>100040</b>	
4. Organisation Name and Address: <b>FRM AVIATION SERVICES LTD</b> 30 CLAYDON GARDENS, RIXTON, CHESHIRE, WA3 6FA, UNITED KINGDOM   Email: contact@frmaviation.aero   Tel:+44(0)7972242774				5. Work Order/Contract/Invoice:		
6. Item: <b>ONE</b>	7. Description: <b>AERO ENGINE</b>	8. Part No.: <b>CFM56-7B26</b>	9. Qty.: <b>ONE</b>	10. Serial No:	11. Status/Work: <b>Inspected/Tested</b>	
12. Remarks:  ENGINE P/N: CFM56-7B26 S/N: 875183 WAS INSPECTED AT GT ENGINE SERVICES, STANSTED (STN) IAW WORK ORDER & MAINTENANCE DATA REFERENCED BELOW.  THE FOLLOWING TASKS HAVE BEEN ACCOMPLISHED:  72-00-00-200-803-F00 - BORESCOPE INSPECTION STAGE 2-4 BOOSTER BLADES & VANES; 72-00-00-200-804-F00 - BORESCOPE INSPECTION OF HP COMPRESSOR BLADES; 72-00-00-200-805-F00 - BORESCOPE INSPECTION OF COMBUSTION SECTION; 72-00-00-200-818-F00 - BORESCOPE INSPECTION OF HPT NOZZLE GUIDE VANES; 72-00-00-200-807-F00 - BORESCOPE INSPECTION OF HPT BLADES; 72-00-00-200-815-F00 - BORESCOPE INSPECTION OF HPT SHROUDS; 72-00-00-200-808-F00 - BORESCOPE INSPECTION OF LPT STAGE 1-3 BLADES; 72-00-00-200-809-F00 - BORESCOPE INSPECTION OF LPT STAGE 4 BLADES; 72-00-00-200-811-F00 - BORESCOPE INSPECTION OF LPT1 NOZZLE GUIDE VANES; 72-00-00-200-812-F00 - BORESCOPE INSPECTION OF LPT STAGE 2-4 NOZZLE GUIDE VANES; 72-00-00-200-813-F00 - BORESCOPE INSPECTION OF LPT STAGE 1-4 OUTER STATIONARY AIR SEALS.						
Date of Inspection: 09 SEPTEMBER 2021	Hours - TSN: 71677.0	Cycles - CSN: 29896	FRM Work Order Ref: 100040	FRM Borescope Report Reference: 100040 - CFM56-7B BSI REPORT	Maintenance Data Reference: 737-800 AMM; EFF: GEF; REVISION: D633A101; DATED: 15.08.21	
13.a Certifies that the items identified above were manufactured in conformity to: <input type="checkbox"/> Approved design data and are in condition for safe flight <input type="checkbox"/> Non-approved design data specified in block 12				14a. <input checked="" type="checkbox"/> Part-145.A.50 Release to Service <input type="checkbox"/> Other regulation specified in block 12 Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was accomplished in accordance with Part 145 and in respect to that work the items are considered ready for release to service		
13b. Authorised Signature		13c. Approval/Authorisation Number		14c. Certificate/Approval Ref. No.: <b>EASA.UK.145.01447</b>		
13d. Name		13e. Date (dd mmm yyyy)		14e. Date (dd mmm yyyy): <b>09.SEP.2021</b>		
<b>USER/INSTALLER RESPONSIBILITIES</b> This certificate does not automatically constitute authority to install the item(s). Where the user/installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts items from the airworthiness authority specified in block 1. Statements in blocks 13a and 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.						

## EASA RELEASE DOCUMENTATION



**ALL REFERENCE TO BLADE QUANTITIES AND DIMENSIONS ARE FOR QUICK REFERENCE ONLY AND ANY OBSERVED DEFECTS MUST BE ASSESSED AGAINST THE AUTHORISED MAINTENANCE DATA FOR WHICH RELEASE DOCUMENTATION IS ISSUED IAW.**

## DECLARATION FOR AND ON BEHALF OF FRM AVIATION SERVICES LTD

This report is submitted subject to the condition that it is understood and agreed that the contents are based on diligent inspection and are exclusive of latent defects in materials, rigging, or systems not detectable without removal or disassembly; but are believed to be correct and are fairly representative of the condition of the engine at the time of inspection and prior to any subsequent operation. This survey is submitted without prejudice and in confidence to the named client and is without responsibility to others to whom it may be shown. This report is to be read in conjunction with captured video files and/or still imagery listed on the applicable pages within the report.

**The signature and approval stamp below denotes that I confirm the inspection has been carried out IAW FRM Aviation Services LTD authorised MOE & all relevant approved company procedures.  
UK Approval Ref: UK.145.01447 | EASA Approval Ref: EASA.UK.145.01447 | FAA Approval Ref: FRMY624D**

**STAMP:**



REPORT PREPARED BY :	DATE OF REPORT:	DATE OF INSPECTION:	SIGN:
[Blurred]	12.09.2021	09.09.2021	[Blurred]

ENGINE PART NUMBER:	ENGINE SERIAL NUMBER:	POSITION	HOURS (TSN)	CYCLES (CSN)	LIMITATIONS	FORM I REFERENCE NUMBER	FRM WORKORDER				
CFM56-7B26	[Blurred]	OFF WING	71677:00	29896	NONE	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(CAA FAA)</td> <td style="width: 50%; text-align: center;">100040</td> </tr> <tr> <td>(EASA)</td> <td style="text-align: center;">100040</td> </tr> </table>	(CAA FAA)	100040	(EASA)	100040	100040
(CAA FAA)	100040										
(EASA)	100040										

### STANDARD REPORT TERMINOLOGY: MODULE SERVICEABILITY & STAGE CONDITION DESCRIPTION

NOT APPLICABLE (N/A)	NOT APPLICABLE TO THIS WORKORDER
NIL DEFECT APPARENT	NIL DEFECT OBSERVED IN STAGE OR MODULE. (MAY INCLUDE ADVISORIES & OBSERVATIONS)
MINOR DEFECTS WITHIN AMM LIMITS	MINOR DEFECTS OBSERVED WITHIN STAGE OR MODULE. ALL DEFECTS WITHIN AMM LIMITS
SIGNIFICANT DEFECTS WITHIN AMM LIMITS	SIGNIFICANT DEFECTS OBSERVED WITHIN STAGE OR MODULE, ALL DEFECTS WITHIN AMM LIMITS.
DEFECTS OVER SERVICEABLE AMM LIMITS.	DEFECTS OBSERVED OVER SERVICEABLE LIMITS, WITH AMM EXTENSION FOR REDUCED THRESHOLD INSPECTION OR LIFE LIMITATION.
MODULE UNSERVICEABLE	DEFECT(S) OBSERVED WHICH MEANS THE MODULE, STAGE OR ENGINE IS OF UNSERVICEABLE STATUS

REVISION NO.	DATED	REASON FOR REVISION
R0	12.09.2021	INITIAL CUSTOMER ISSUE