FINAL INSPECTION REPORT
&
CERTIFICATE OF CONFORMANCE

UNEW's capital part refurbishment operations are governed by proprietary engineering technologies, precision standards, and rigorous QA/QC procedures developed for aviationgrade manufacturing. While refurbishment work is normally conducted at UNEW's U.S. facility, certain components from restricted regions are not eligible for import under U.S. national security and export control regulations.

To maintain uninterrupted service and consistent product quality, UNEW has partnered with EthosEnergy (United Kingdom)—a world-class turbine repair and overhaul organization operating one of the most advanced facilities in the industry. The EthosEnergy shop is equipped with fully automated precision systems, vacuum furnaces, electron beam welders, and advanced HVOF/TBC coating cells. Its quality system is certified to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, and ISO 17025:2017, ensuring full traceability, nvironmental stewardship, and occupational safety compliance.

All repair activities performed at EthosEnergy strictly follow UNEW's proprietary refurbishment procedures, material specifications, and inspection standards. The physical repair processes are executed by EthosEnergy, while UNEW retains full technical authority over repair methodology, metallurgical control, quality benchmarks, and final acceptance. This partnership guarantees that every refurbished component meets UNEW's aviation grade quality and reliability standards for power generation service.

Customer Name: Nghi Son Refinery & Petrochemical, LLC.

Component type: MS6001FA 3rd STAGE NOZZLE 824030

Date of Report: September 25, 2025

Responsible Product Engineer: _____

Mr. Komkrit Rattanawong
Engineer

Report prepared by: _____

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Report writer

Report reviewed and approved by:_____

Mr. Pheerayawat Muadna
(Engineering Manager)

1. INTRODUCTION

20 pcs. of MS6001FA 3rd stage Nozzle have been fully refurbished based on the requirements of the incoming inspection report findings.

Order Information	
EE Work Order no.	824030
Date of report	25 September 2025
Customer P.O. no.	PO04102025-HGP
Component Details	
Engine type	MS6001FA
Component type	3rd Stage Nozzle
Component part number	119E4885 G007 Rev.A
Qty. received	20
Material type	GTD262
As received coating type (s)	No coating
	-
	-
Additional items received with main set (if any)	-
	-
Customer supplied component history	
Total fired hours	24,000
Total starts	(No information supplied)
Total factor fired hours	(No information supplied)
# of previous repairs	(No information supplied)
FFH on Component Since last repair	(No information supplied)
Total FFS on Component	(No information supplied)
FFS on Component Since last repair	(No information supplied)
Hours of operation since last repair interval	(No information supplied)
Operational fuel type	(No information supplied)
Mode of operation (base load / peaking)	(No information supplied)
Maint.intervals combustion	(No information supplied)
Maint.intervals Hot gas path	(No information supplied)
Unloaded condition	
Incoming packing / container condition	Good
Signs of transit damage (if damaged upon receipt photos to be included within report)	-

2. INSPECTION SUMMARY:

Based on the findings of the incoming inspection process (results and details of inspection given further in the report) the following processes and refurbishments have been performed.

Repair requirements

Repair level required

DESCRIPTION		QTY	UNIT
Inspect	Incoming Inspections	1	Set
Medium Repair	Repair	1	Set
Coating	Diffused Aluminide coating	1	Set

Additional items

DESCRIPTION		QTY	UNIT
Required	Replace locking plate	20	PIECE
Required	Replace cloth seal and joint seal	1	Set
Scrap (If/any):	-		
Additional recommendations (If/any) :	-		

3. SPARE PART (Repair / Replace):

Item	Part description	Received/ Required	Condition	Quantity	Remark
1	Segment assy.seals (cloth seal type) (Material: L605),-ETH4059- 01 to 05	90/90 ea	Replaced	90 ea	Additional
2	Diaphragm seals (cloth seal type) ETH4059- 06 to 07	36/36 ea	Replaced	36 ea	Additional
3	Segment joint seals (flat seal types)- (Material: Hast-X), Seals 01 to 05 Ref. OEM P/N:119D3157 P03, P04, P05, P05, P06, P07	10/10 ea	Replaced	10 ea	Additional
4	Diaphragm Joint seals (flat seal types) (Material: Hast-X), 06 to 07 Ref. OEM P/N:119D3157 P101, P102	4/4 ea	Replaced	4 ea	Additional
5	Diaphragm retaining screw pin (Material: A286) Hex. Head Bolt (Ref. OEM P/N:207C3851P3) Size :5/8”, thread: 1/2"-20 UNC,L=48 mm	40/40 ea	Repaired Replaced	39 ea 1 ea	- Standard
6	Outer cover plate (Material: SS304) (Ref. OEM P/N: MP 109E910 P001 REV G)	20/20 ea	Repaired	20 ea	-
7	Impingement plate (Material: A286)	20/20 ea	Repaired	20 ea	-
8	Locking plate, EETH4062(Material: SS316)	20/20 ea	Replaced	20 ea	Additional
9	Bush /Sleeve (Material: A286) Dia.OD :20mm / ID :12.7 mm, L=23mm	20/20 ea	Repaired	20 ea	-
10	Thermocouple guide /Nipple for Segment no.13,19 EETH4083	2/2 ea	Replaced	2 ea	Standard
11	Honeycombs (Material: Haynes 214)	20/20 ea	Replaced	20 ea	Standard

4. ENGINEERING SUMMARY:

All MS6001FA 3rd Stage Nozzle assemblies were inspected and confirmed to be within the **medium repair limits** established by EthosEnergy Engineering and UNEW proprietary refurbishment standards. The complete refurbishment process followed the approved **Work Scope of Repair** and was verified through dimensional, metallurgical, and quality assurance inspections at each stage.

Each nozzle segment underwent full **non-destructive testing** including **fluorescent penetrant inspection (FPI)**, **dimensional measurement**, and **visual examination** to identify cracking, oxidation, and distortion. Defects were removed by **controlled blending and scalloping**, while **GTAW weld restoration** was applied to structural crack zones. Distorted airfoils were **mechanically straightened** to restore aerodynamic geometry.

Post-weld, all components were **vacuum heat-treated** to rejuvenate FSX-414 base-metal microstructure and relieve residual stresses. **EDM machining** was performed to recover precise cooling-hole and seal-slot geometry. Diaphragms were repaired through **weld and braze restoration**, and new **honeycomb sections** were fitted and vacuum-brazed to the pressure faces, then trimmed and blended to exact thickness and contour tolerances.

External gas-path surfaces were coated with a **diffused aluminide coating**, followed by **partial-vacuum diffusion heat treatment** to achieve full metallurgical bonding and oxidation protection. Final inspections, including **FPI, dimensional, visual, and assembly seal-alignment checks**, confirmed compliance with engineering tolerances and performance standards.

All work was conducted under **ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, and ISO 17025:2017-certified quality systems**, ensuring traceability and adherence to international standards. The refurbished 3rd Stage Nozzle assemblies were inspected, certified, and released in **serviceable condition** for reinstallation at NSRP.

5. CERTIFICATE OF CONFORMANCE:

Component: MS6001FA 3rd Stage Nozzle Assembly
Quantity: 24 Pieces
Material: FSX-414
Repair Category: Medium Repair
Work Order No.: (Insert Number)
Customer: Nghi Son Refinery & Petrochemical LLC
Repair Facility: EthosEnergy (Thailand) Ltd.
Technical Authority: UNEW, Inc. (USA)

EthosEnergy (Thailand) Ltd., operating under the technical authorization of UNEW, Inc., hereby certifies that all MS6001FA 3rd Stage Nozzle assemblies listed above have been **inspected, refurbished, and tested** in full accordance with the approved **EthosEnergy Work Scope of Repair** and **UNEW Engineering Standards**.

The performed medium-level refurbishment included:
• Removal of oxidation, corrosion, and surface defects by blending and scalloping.
• **GTAW weld restoration** of major structural cracking and distortion correction.
• **Vacuum solution heat treatment** to stabilize FSX-414 microstructure.
• **EDM re-machining** of cooling holes and seal slots to OEM geometry.
• **Diaphragm repair and honeycomb replacement**, vacuum-brazed and blended to specification.
• Application of **diffused aluminide coating**, followed by **diffusion heat treat** for metallurgical bonding and oxidation resistance.
• Replacement of all **cloth seals, joint seals, and locking plates** with new, certified parts.

All procedures were performed under **ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, and ISO 17025:2017 certified quality systems**.
Final inspections—including FPI, dimensional, airflow, and visual verification—confirmed full compliance with engineering and contractual specifications.

Accordingly, EthosEnergy (Thailand) Ltd. and UNEW, Inc. jointly certify that the subject components meet all applicable quality, metallurgical, and dimensional requirements and are hereby released in **serviceable condition** for reinstallation.

6. COMPONENT CORRELATION:

CORRELATION SHEET SEGMENT			
Item	**Part Number**	**Serial Number**	**Material**
1	103E3994 REV K P4T1	P3FE 05971	GTD262
2	103E3994 REV K P4T1	P3FE 05958	GTD262
3	103E3994 REV K P4T1	P3FE 05972	GTD262
4	103E3994 REV K P4T1	P3FE 05932	GTD262
5	103E3994 REV K P4T1	P3FE 05964	GTD262
6	103E3994 REV K P4T1	P3FE 05961	GTD262
7	103E3994 REV K P4T1	P3FE 05957	GTD262
8	103E3994 REV K P4T1	P3FE 05965	GTD262
9	103E3994 REV K P4T1	P3FE 05959	GTD262
10	103E3994 REV K P4T1	P3FE 05960	GTD262
11	103E3994 REV K P4T1	P3FE 05934	GTD262
12	103E3994 REV K P4T1	P3FE 05968	GTD262
13	103E3994 REV K P4T1	P3FE 05838	GTD262
14	103E3994 REV K P4T1	P3FE 05953	GTD262
15	103E3994 REV K P4T1	P3FE 05970	GTD262
16	103E3994 REV K P4T1	P3FE 05955	GTD262
17	103E3994 REV K P4T1	P3FE 05967	GTD262
18	103E3994 REV K P4T1	P3FE 05966	GTD262
19	103E3994 REV K P4T1	P3FE 05963	GTD262
20	103E3994 REV K P4T1	P3FE 05962	GTD262

CORRELATION SHEET DIAPHRAGM				HONEYCOMB
Item	Part Number	Serial Number	Material	Material
1	119E2448G003	15818-1	SS304	HAYNES 214
2	119E2448G003	15818-2	SS304	HAYNES 214
3	119E2448G003	15818-3	SS304	HAYNES 214
4	119E2448G003	15818-4	SS304	HAYNES 214
5	119E2448G003	15818-5	SS304	HAYNES 214
6	119E2448G003	15818-6	SS304	HAYNES 214
7	119E2448G003	15818-7	SS304	HAYNES 214
8	119E2448G003	15818-8	SS304	HAYNES 214
9	119E2448G003	15818-9	SS304	HAYNES 214
10	119E2448G003	15818-10	SS304	HAYNES 214
11	119E2448G003	15818-11	SS304	HAYNES 214
12	119E2448G003	15818-12	SS304	HAYNES 214
13	119E2448G003	15818-13	SS304	HAYNES 214
14	119E2448G003	15818-14	SS304	HAYNES 214
15	119E2448G003	15818-15	SS304	HAYNES 214
16	119E2448G003	15818-16	SS304	HAYNES 214
17	119E2448G003	15818-17	SS304	HAYNES 214
18	119E2448G003	15818-18	SS304	HAYNES 214
19	119E2448G003	15818-19	SS304	HAYNES 214
20	119E2448G003	15723-9	SS304	HAYNES 214

7 SCOPE OF WORK

MS6001FA STAGE 3 NOZZLE

Work scope	Inspect	Medium
Inspect		
Perform receipt inspection and record serial numbers	X	
Take digital photographs of components in a received condition	X	
Assemble in fixture, perform downstream deflection and nozzle twist inspection.	X	
Perform metallurgical evaluation of base material and coating type if applicable, report on condition	X	
Disassemble diaphragms from nozzle segments, identify diaphragm with matching segment, bag and tag hardware	X	
Remove cover plates and core plugs, bag and tag hardware with segment serial number	X	
Abrasive blast	X	
Perform incoming solution heat treat of nozzle segments in full vacuum environment	X	
Perform fluorescent penetrant inspection	X	
Perform visual inspection	X	
Compile incoming Inspection report and forward to customer.	X	
Blend to remove oxidation product on external areas		X
Repair		
Cold straighten any distorted/bulged areas.		X
Scallop to remove defective material in nozzle segments in preparation for welding		X
Perform weld repairs as determined by incoming inspection results of all major structural cracking		X
Blend all repaired areas to restore component profile		X

Perform fluorescent penetrant inspection and mark all defects for TPR.		X
Perform solution heat treat of nozzle segments in full vacuum environment		X
Perform fluorescent penetrant inspection and mark all defects		X
Electro Discharge Machine (EDM) to restore cooling holes & seal slots		X
Abrasive blast full component and blow out with dry compressed air to remove all blasting media		X
Perform fluorescent penetrant inspection (FPI) of component		X
Perform visual inspection to ensure component conformity		X
Set in fixture and perform dimensional inspection		X
Perform weld / blend repairs to diaphragms		X
Prepare and fit replacement honeycombs to diaphragm faces		X
Perform braze heat treatment		X
Perform visual inspection		X
Blend excess honeycomb section		X
Perform dimension inspection		X
Coating		
Apply diffused aluminide coating to external surfaces		X
Perform diffusion heat treat of nozzle segments in partial vacuum environment		X
Perform visual inspection to ensure component conformity		X
Perform final heat treatment in air or partial vacuum environment		X
Assemble segments to diaphragms		X
Perform final dimensional inspection		X
Perform post repair assembly build ensure correct seal alignment		X
Perform final visual inspection		X
Compile Final Report, pack and ship components with all required documentation as listed in Purchase Order		X

Required:

-Replace all cloth seals and joint seals

-Replace all locking plates

8. ENGINEERING WORK DESCRIPTIONS:

8.1 Inspection Phase

Task	Engineering Description
Perform receipt inspection and record serial numbers	Each nozzle segment was received, logged by part and serial number, and inspected for shipping or handling damage. Serial correlation ensured traceability for all parts through the repair process.
Take digital photographs of components in received condition	Detailed digital images were taken of each nozzle segment, including gas-path, shroud, and platform surfaces, to document initial oxidation, erosion, and coating condition.
Assemble in fixture, perform downstream deflection and nozzle twist inspection	Nozzles were placed in precision alignment fixtures to measure chord distortion, throat area deviation, and nozzle twist. Results established baseline geometry before repair.
Perform metallurgical evaluation of base material and coating type	Sample coupons from representative components were analyzed to assess the FSX-414 alloy microstructure and existing coating condition. Findings guided heat-treatment and coating restoration processes.
Disassemble diaphragms from nozzle segments; bag and tag hardware	Diaphragms were separated from nozzle segments to allow full access for repair and inspection. Each diaphragm and related hardware were bagged and tagged to maintain component identity.
Remove cover plates and core plugs; bag and tag hardware	Core plugs and impingement plates were removed to open internal cooling cavities for complete inspection, then tagged with matching serials for reinstallation after cleaning.
Abrasive blast	Controlled grit blasting removed surface oxide and corrosion products, preparing components for accurate inspection and subsequent welding.
Perform incoming solution heat treat in full vacuum environment	A vacuum solution heat-treatment cycle was applied to restore microstructural stability before inspection and repair, improving material ductility and reducing stress.
Perform fluorescent penetrant inspection (FPI)	FPI was conducted to detect cracks and porosity on all surfaces. Indications were mapped and documented for engineering evaluation.
Perform visual inspection	Engineers examined all surfaces under magnification to assess oxidation, corrosion, cracking, and distortion levels, forming the basis for the repair scope.
Compile incoming inspection report	All inspection results, photographs, and dimensional data were compiled and submitted to UNEW for review and confirmation of the approved repair scope.

Task	Engineering Description
Blend to remove oxidation product on external areas	External oxidation and thermal deposits were carefully blended off to reach clean base material, facilitating accurate defect assessment.

8.2 Repair Phase

Task	Engineering Description
Cold straighten any distorted/bulged areas	Airfoil and band distortions were corrected using precision straightening fixtures and controlled mechanical force to restore original geometry.
Scallop to remove defective material	Localized material degradation areas were scalloped using carbide tools to remove cracks and oxidized zones while minimizing base-metal removal.
Perform weld repairs (major structural cracking)	Cracks and worn regions were weld-restored using GTAW with FSX-414 filler metal. Inter-pass temperature was tightly controlled to prevent heat-affected zone embrittlement.
Blend all repaired areas to restore component profile	Weld-built regions were profiled and blended to match original aerodynamic contours and dimensional specifications.
Perform FPI and mark defects for TPR	Post-weld FPI confirmed soundness of welds. Any residual micro-cracks were marked for subsequent transient phase restoration.
Perform solution heat treat in full vacuum environment	Vacuum furnace heat treatment restored grain structure uniformity and relieved residual weld stresses, ensuring consistent mechanical properties.
Perform FPI and mark all defects	Another FPI confirmed the integrity of all repairs and verified absence of new surface indications.
EDM to restore cooling holes & seal slots	Electrical Discharge Machining re-cut and cleared all film cooling holes and seal slots to precise OEM geometry.
Abrasive blast full component and blow out with dry air	Final abrasive cleaning removed oxides, weld residues, and EDM debris, followed by compressed-air purge to eliminate entrapped media.
Perform FPI (full component)	Post-blast FPI was performed to ensure surface integrity and readiness for coating.
Perform visual inspection	Comprehensive visual inspection confirmed no surface contamination or mechanical distortion.
Set in fixture and perform dimensional inspection	Final measurements of chord, throat, and bolt hole patterns confirmed compliance with dimensional tolerances.
Perform weld/blend repairs	Diaphragm cracks and worn surfaces were restored by

Task	Engineering Description
to diaphragms	controlled GTAW welding and blending to specification.
Prepare and fit replacement honeycombs to diaphragm faces	New nickel-alloy honeycombs were fabricated, fitted to diaphragm faces, and tack-welded for brazing preparation.
Perform braze heat treatment	Vacuum brazing was conducted using Ni-based filler alloy to metallurgically bond honeycomb to diaphragm faces.
Perform visual inspection	Verified continuous braze fillets, full wetting, and absence of voids.
Blend excess honeycomb section	Honeycomb edges were machined and blended flush with surrounding surfaces to achieve smooth gas-path transition.
Perform dimension inspection	Verified overall thickness, concentricity, and alignment of honeycomb features to specification.

8.3 Coating and Final Assembly Phase

Task	Engineering Description
Apply diffused aluminide coating to external surfaces	Gas-path surfaces received a diffusion aluminide coating via pack cementation or vapor-phase process, forming an oxidation-resistant Al-rich surface layer.
Perform diffusion heat treat in partial vacuum environment	Heat treatment diffused the aluminide into the base FSX-414 substrate, ensuring metallurgical bonding and uniform coating thickness.
Perform visual inspection	Inspected all surfaces for uniform coating color, diffusion coverage, and adhesion quality.
Perform final heat treatment (air or partial vacuum)	Conducted stabilization cycle to relieve coating stress and achieve optimal surface hardness and oxidation resistance.
Assemble segments to diaphragms	Reassembled nozzle segments to corresponding diaphragms, ensuring proper orientation and fit per serial correlation.
Perform final dimensional inspection	Verified assembly throat area, seal alignment, and radial fit met final acceptance criteria.
Perform post-repair assembly build to ensure correct seal alignment	Full assembly inspection confirmed accurate honeycomb and seal-face alignment to prevent gas-path leakage.
Perform final visual inspection	Detailed final visual and magnified inspection confirmed coating quality, weld integrity, and overall conformity to specification.
Compile Final Report, pack	All inspection records, heat treatment charts, coating

Task	Engineering Description
and ship components	certificates, and NDT results were compiled. Components were packaged with identification labels and documentation per Purchase Order.
Replace all cloth seals and joint seals	Installed new cloth and joint seals across all nozzle assemblies to ensure proper sealing during reinstallation.
Replace all locking plates	All locking plates were replaced with new, certified components to ensure secure assembly and compliance with installation torque standards.

Result

All 3rd Stage Nozzle components have undergone full medium-level refurbishment under UNEW proprietary engineering standards and EthosEnergy's ISO-certified quality management system.

Post-repair inspections verified that all nozzles conform to dimensional, metallurgical, and coating requirements. Components were released in serviceable condition for reinstallation at Nghi Son Refinery & Petrochemical.

9. MATERIAL EVALUATION

Report No.	L11054	Job order no.	824030
Serial no.(or ID)	Item# 19	Cutting location	Leading Edge
Received status	☑ As-Received ☐ Pre-Weld HT ☐ Post-Weld HT ☐ Other		

Analysis Result

Main composition,%										Hardness Test	-
Element	**Co**	**Cr**	**Ni**	**Ti**	**W**	**Ta**	**Mo**	**Fe**	**Al**	Grain size	-
Nominal	19.0	22.5	Bal	2.2	2.0	0.0-1.1	-	-	1.7	Coating Type	No Coating
Result	19.5	21.3	51.2	2.5	2.0	0.4	-	-	1.7	Nearest Alloy	GTD262

Microstructure

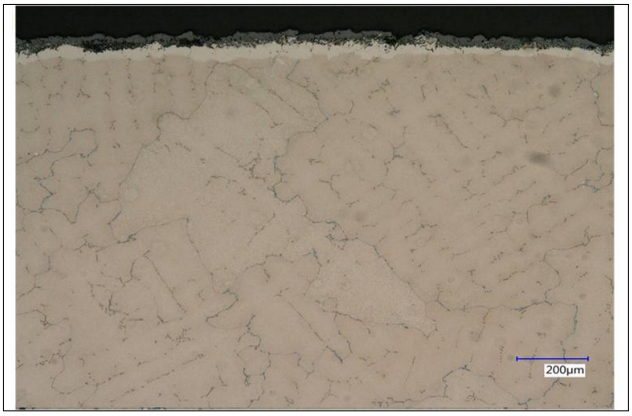


Fig.1 Showing the hot gas path surface condition.(Etched)

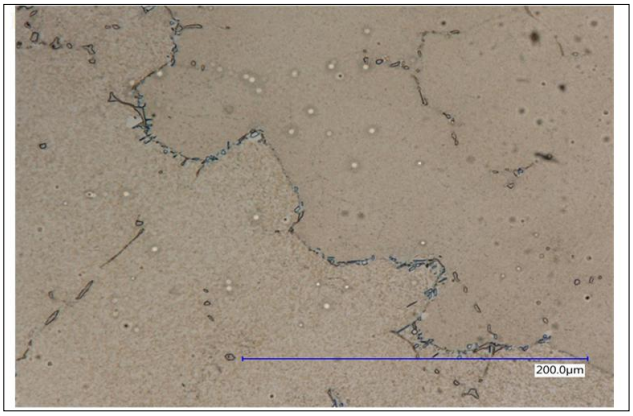


Fig.2 Showing the typical microstructure at higher magnification.(Etched)

The sample was mounted in L11054 to assess if the material would be acceptable for repair. The following was observed. Hot gas path was uncoated and exhibited a layer of oxidation-corrosion and associated substrate alloy depletion, refer to Fig.1. Base material was confirmed as GTD262 alloy, comprising of fine grain boundary carbide and a gamma matrix with fine gamma prime, primary carbide and dispersed secondary carbide, Fig.2.

Recommendation

Based on the finding above, the base material was considered suitable for repair following surface cleaning by grit blast.

Report No.	L11054-1	Job order no.	824030
Serial no.(or ID)	Item# 3	Cutting location	Leading edge
Received status	☐ As-Received ☑ Pre-Weld HT ☐ Post-Weld HT ☐ Other		

Analysis Result

Main composition,%										Hardness Test	37.9 HRC
Element	**Co**	**Cr**	**Ni**	**Ti**	**W**	**Ta**	**Mo**	**Fe**	**Al**	Grain size	-
Nominal	*(Refer to As-received analysis result)*									Coating Type	*(Refer to As-received analysis result)*
Result	*(Refer to As-received analysis result)*									Nearest Alloy	*(Refer to As-received analysis result)*

Microstructure

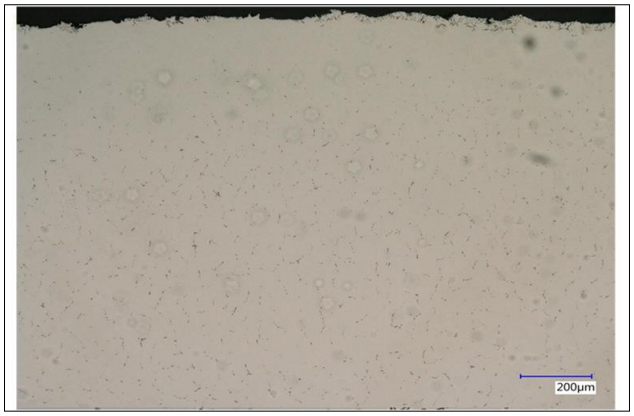


Fig.1 Showing heat treated material condition. (Etched)

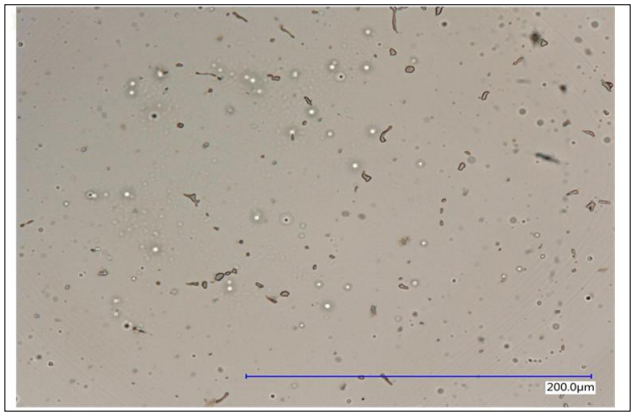


Fig.2 Showing the typical microstructure at higher magnification.(Etched)

The sample was mounted in L11054-1 to assess the material microstructure in pre-weld solution heat treated condition. Examination revealed that the base material has been significantly improved. The grain boundaries carbide and detrimental phase was satisfyingly refined (compare with the as-received microstructure in the report no.L11054). (Fig.1 and 2)

Recommendation

The base material was satisfyingly recovered by the used solution heat treatment program.

10. PHOTOGRAPHS:

Fig.1 Final inspection.

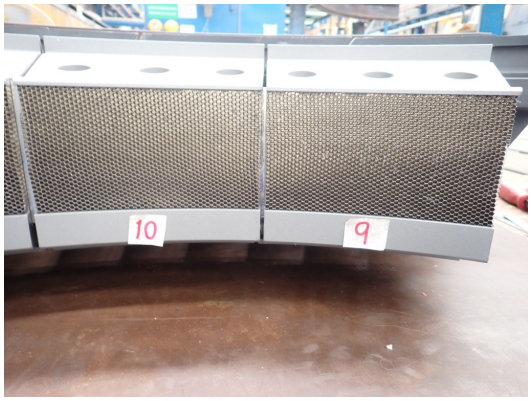


Fig.2 Final inspection.

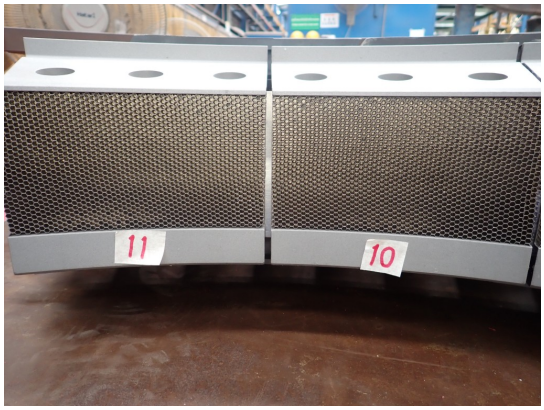


Fig.3 Final inspection.

Fig.4 Final inspection.

Fig.5 Final inspection.

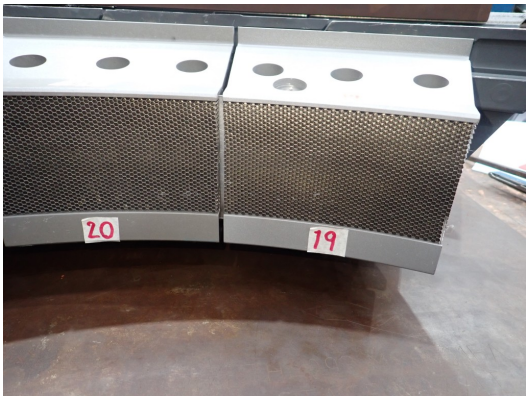


Fig.6 Final inspection.

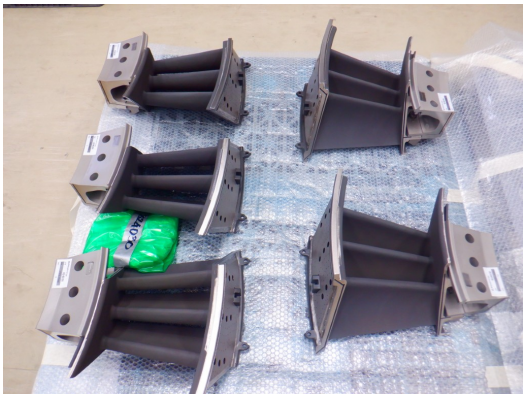


Fig.7 Final inspection.

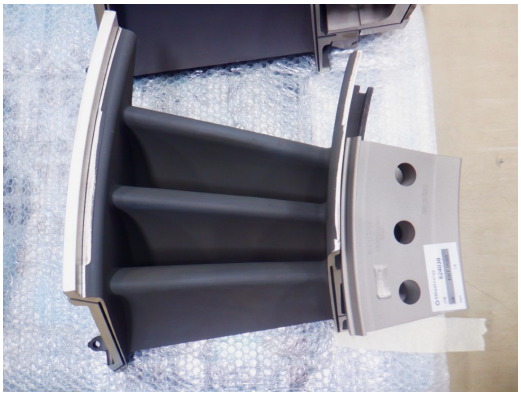


Fig.8 Final inspection.

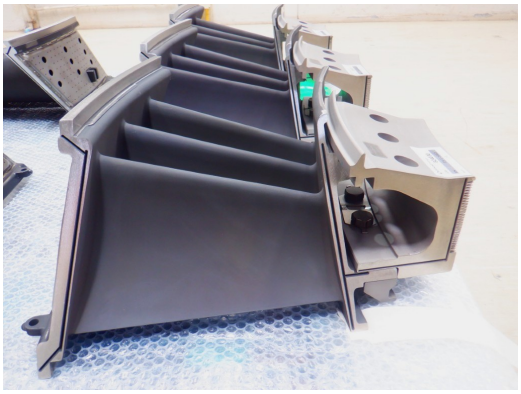


Fig.9 Final inspection.

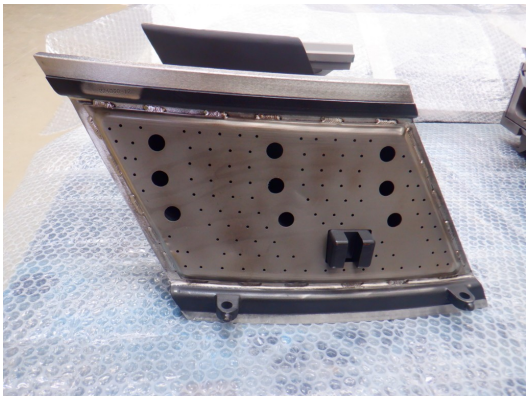


Fig.10 Final inspection.

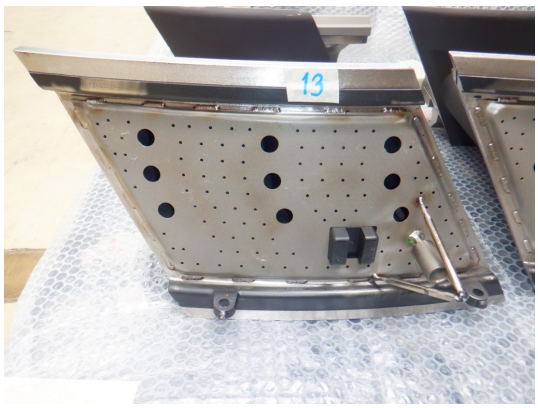


Fig.11 Final inspection.

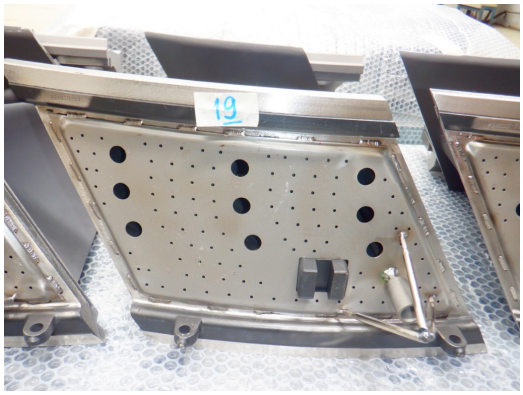


Fig.12 Final inspection.

Fig.13 Final inspection.

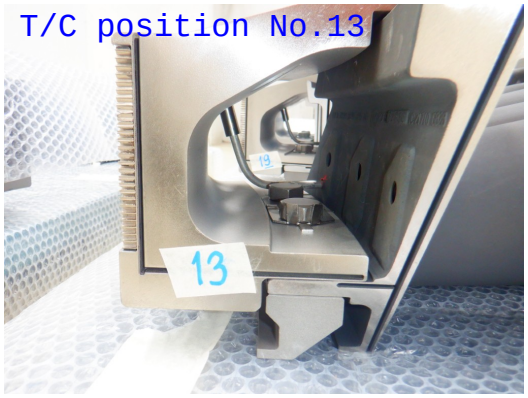


Fig.14 Final inspection.

Fig.15 Final inspection.

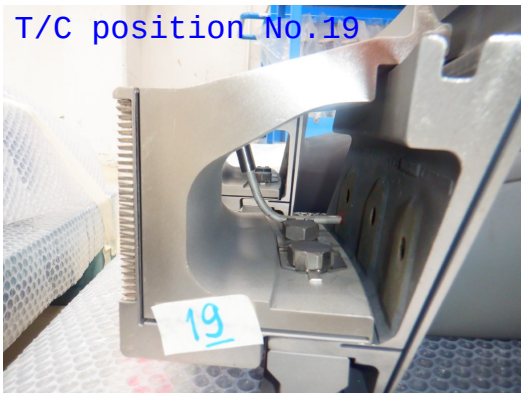


Fig.16 Final inspection.

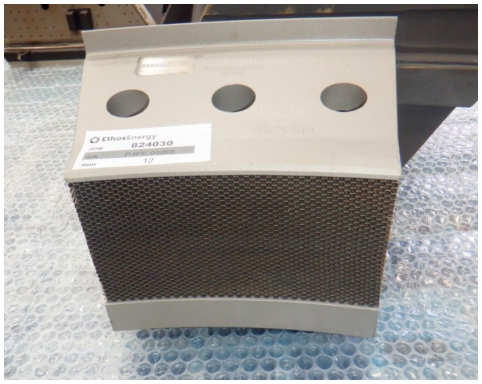


Fig.17 Final inspection.

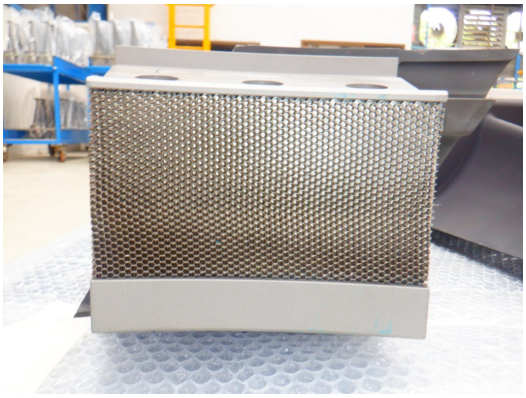


Fig.18 Final inspection.

Fig.19 Final inspection.

Fig.20 Final inspection.

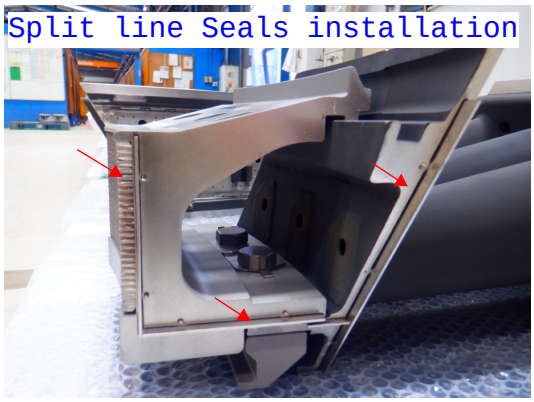


Fig.21 Final inspection.

Fig.22 Final inspection.

Fig.23 Final inspection.

Fig.24 Final inspection.

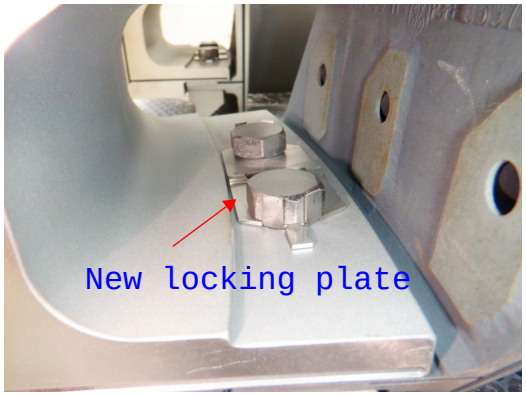


Fig.25 Final inspection.

Fig.26 Final inspection.

Fig.27 Final inspection.

Fig.28 Final inspection.

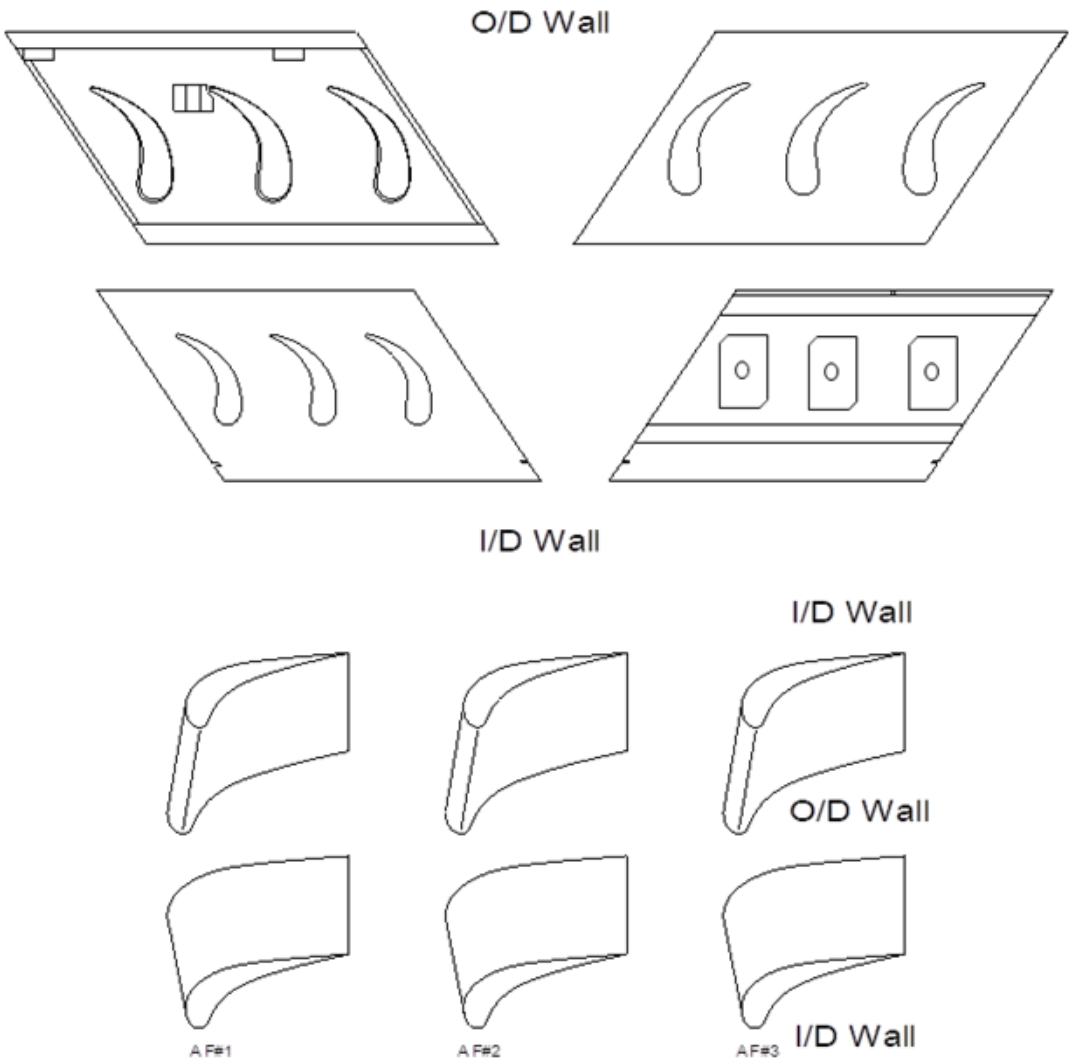
Fig.29 Final inspection.

Fig.30 Final inspection.

	
Fig.31 Final inspection.	Fig.32 Final inspection.

11. DEFECT LEGEND TABLE:

FOR SEGMENTS



FINAL INSPECTION REPORT

Information		NOZZLE SEGMENT INSPECTION FINDINGS																																										
		Airfoil														Gas path Inner & Outer shrouds												Non- Gas path Inner & Outer shrouds												Nozzle Cavity				
Segment No.	S/N	Corr / Erosion		Cracks		FOD		Deform.		Missing material		Porosity		Bowing Airfoil		Corr / Erosion		Cracks		FOD		Deform.		Missing material		Frettage		Corr / Erosion		Cracks		FOD		Deform.		Missing material		Frettage		Typical flake			Missing material	
		C.C - A/F	C.V - A/F	C.C - A/F	C.V - A/F	C.C - A/F	C.V - A/F	C.C - A/F	C.V - A/F	C.C - A/F	C.V - A/F	C.C - A/F	C.V - A/F	C.C - A/F	C.V - A/F	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	A/F #1	A/F #2	A/F #3	C.C - A/F	C.V - A/F
1	P3FE 05971											WB	WB																	WB														
2	P3FE 05958											WB	WB						WB											WB														
3	P3FE 05972											WB	WB						WB																									
4	P3FE 05932											WB	WB						WB											WB														
5	P3FE 05964											WB	WB						WB																									
6	P3FE 05961											WB	WB																															
7	P3FE 05957											WB	WB																	WB														
8	P3FE 05965											WB	WB						WB											WB														
9	P3FE 05959											WB	WB						WB											WB														
10	P3FE 05960											WB	WB						WB											WB														
11	P3FE 05934											WB	WB																	WB														
12	P3FE 05968											WB	WB						WB											WB														
13	P3FE 05838											WB	WB						WB											WB														
14	P3FE 05953											WB	WB						WB											WB														
15	P3FE 05970											WB	WB																	WB														
16	P3FE 05955											WB	WB						WB																									
17	P3FE 05967											WB	WB																	WB														
18	P3FE 05966											WB	WB						WB																									
19	P3FE 05963											WB	WB																															
20	P3FE 05962											WB	WB						WB											WB														

B = Blend repair to be performed in accordance with the location blend limits.

JK = jacking and contouring to be performed based on the deformation and distortion detected.

WB = Weld and Blend to be performed based on the area limits and defects detected.

WM = Weld and Machining to be performed to build material dimensions and restore original dimensions and contours.

WE = Welding and Electric discharge machining (EDM) to be performed to build material dimensions and restore original dimensions.

TPR = Transient Phase Restoration to be performed based on the defects detected.

R = Replace with new.

ACC = Acceptable as is.

Rej = Dimension unacceptable and will require repair or cause of scrap.

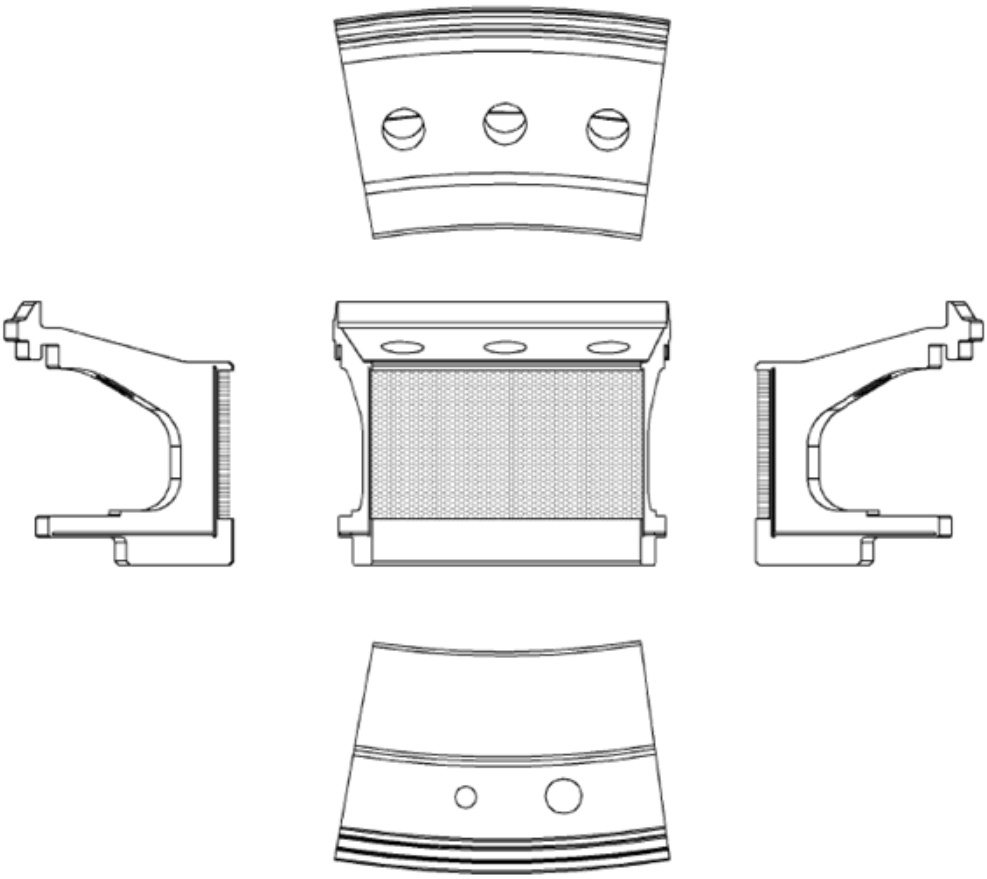
S = Non-repairable / Scrap

L = Light repair category

M = Medium repair category

H = Heavy repair category

FOR DIAPHRAGMS



FINAL INSPECTION REPORT

Information		INSPECTION FINDINGS											
		Honeycombs						Body					
Segment No.	S/N	Corr. / Erosion	Cracks	FOD	Deform.	Missing material	Frettage	Corr.	Cracks	FOD	Deform.	Missing material	Frettage
1	15818-1						R	B		WB			B
2	15818-2						R	B					B
3	15818-3						R	B		WB			B
4	15818-4						R	B		WB			B
5	15818-5						R	B		WB			B
6	15818-6						R	B		WB			B
7	15818-7						R	B					B
8	15818-8						R	B					B
9	15818-9						R	B					B
10	15818-10						R	B		WB			B
11	15818-11						R	B					B
12	15818-12						R	B					B
13	15818-13						R	B					B
14	15818-14						R	B					B
15	15818-15						R	B					B
16	15818-16						R	B					B
17	15818-17						R	B					B
18	15818-18						R	B					B
19	15818-19						R	B					B
20	15723-9						R	B					B

B = Blend repair to be performed in accordance with the location blend limits.

JK = jacking and contouring to be performed based on the deformation and distortion detected.

WB = Weld and Blend to be performed based on the area limits and defects detected.

WM = Weld and Machining to be performed to build material dimensions and restore original dimensions and contours.

WE = Welding and Electric discharge machining (EDM) to be performed to build material dimensions and restore original dimensions.

TPR = Transient Phase Restoration to be performed based on the defects detected.

R = Replace with new.

ACC = Acceptable as is.

Rej = Dimension unacceptable and will require repair or cause of scrap.

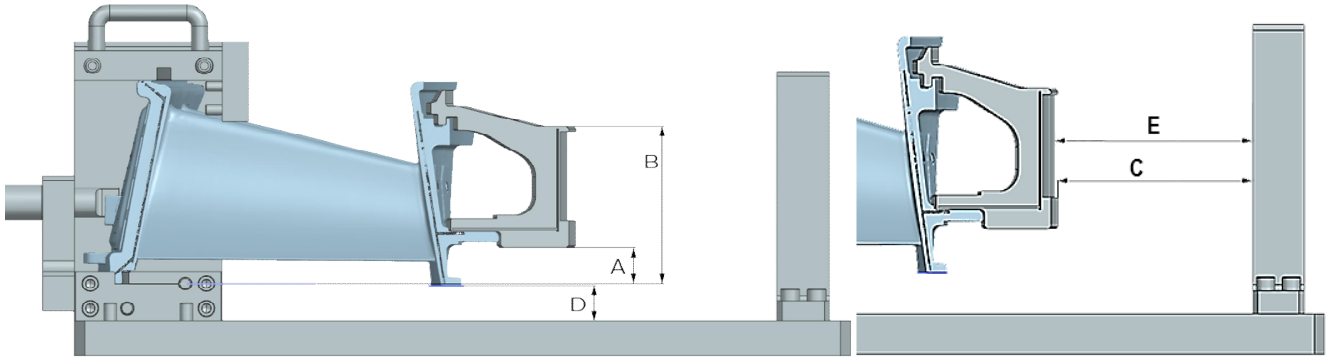
S = Non-repairable / Scrap

L = Light repair category

M = Medium repair category

H = Heavy repair category

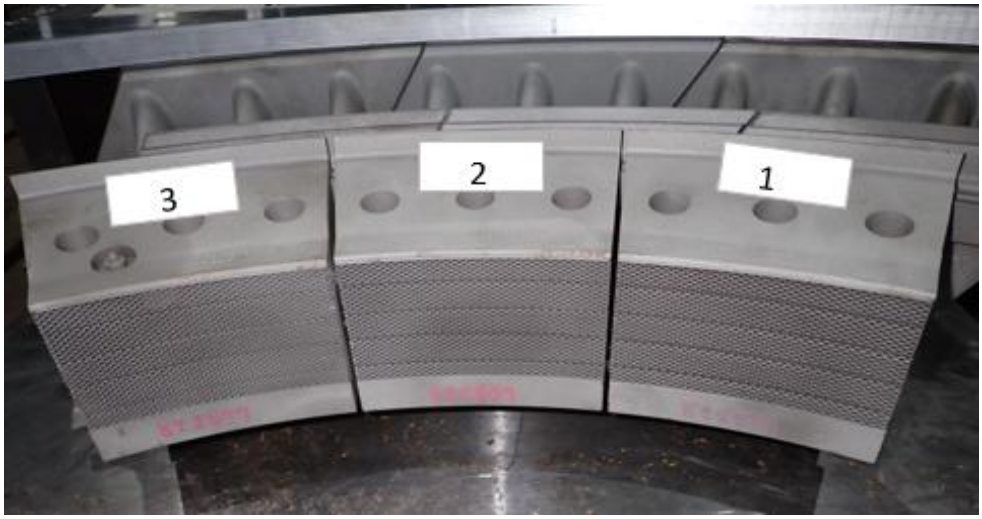
DOWNSTREAM DIMENSION



Location	A		B		C Diaphragm radius	D Base plate to segment	E Honeycomb	Result
Segment no.	L	R	L	R				
1	38.88	38.71	160.14	160.18	200.47	38.37	201.23	ACC
2	38.95	38.88	160.29	160.23	200.18	38.47	201.63	ACC
3	38.68	38.58	160.02	160.01	199.89	38.56	201.65	ACC
4	38.70	38.63	160.25	160.10	199.95	38.47	201.61	ACC
5	38.80	38.61	160.14	160.10	200.09	38.57	201.74	ACC
6	38.76	38.76	160.06	160.04	201.70	38.53	200.05	ACC
7	38.93	38.72	160.22	159.99	200.14	38.55	201.42	ACC
8	38.73	38.61	160.14	160.04	200.53	38.55	202.54	ACC
9	38.68	38.56	160.11	159.97	200.26	38.37	201.76	ACC
10	38.70	38.60	160.09	160.14	200.10	38.40	201.76	ACC
11	38.83	38.83	160.13	160.23	201.81	38.44	200.20	ACC
12	38.95	38.88	160.30	160.15	200.14	38.56	201.83	ACC
13	38.74	38.67	160.05	160.11	200.22	38.54	201.77	ACC
14	38.50	38.58	159.90	159.95	200.36	38.27	201.87	ACC
15	38.77	38.65	160.07	160.09	200.11	38.55	201.70	ACC
16	38.50	38.52	159.90	159.91	200.14	38.38	201.76	ACC
17	38.50	38.54	159.99	160.01	200.37	38.41	202.08	ACC
18	38.60	38.58	160.00	159.90	200.39	38.42	201.77	ACC
19	38.75	38.61	160.20	160.08	200.07	38.58	201.82	ACC
20	38.55	38.59	159.90	159.98	200.36	38.39	201.90	ACC

Unit:mm

3 PCS ASSEMBLY CHECK



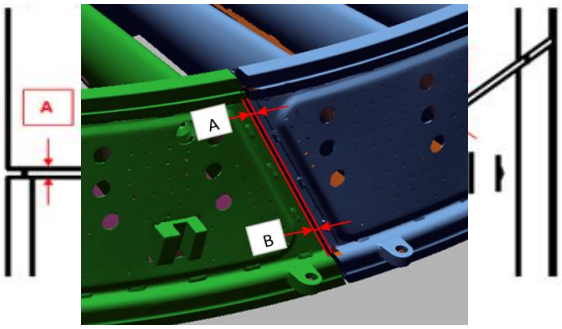
Segments No.	1	2	3	4	5	6	7	8	9	10
Position (Acc / Rej)	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc
Segments No.	11	12	13	14	15	16	17	18	19	20
Position (Acc / Rej)	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc

Unit:mm

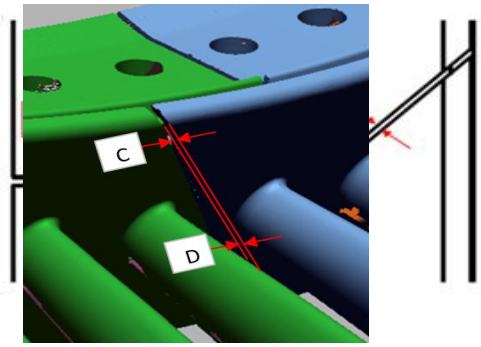
3 PCS ASSEMBLY CHECK

Outer wall/Inner wall abutment face gaps

Outer platform of Nozzle



Inner platform of Nozzle

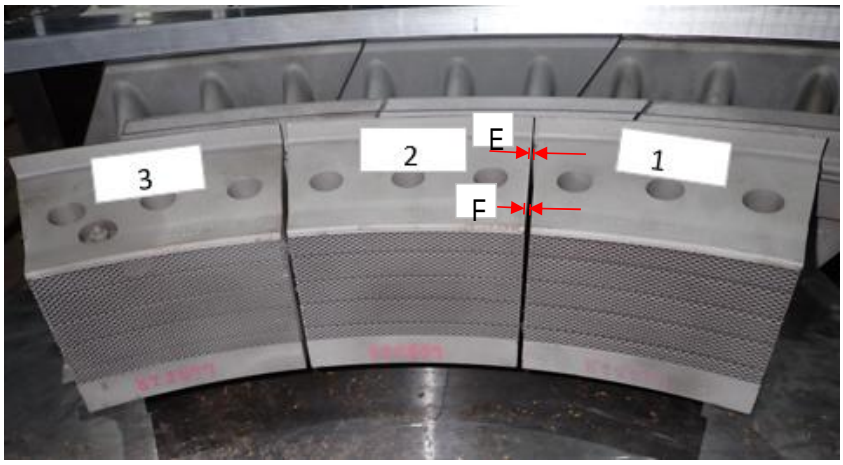


	A	B	C	D	Result
1-2	3.09	3.15	2.98	3.10	ACC
2-3	3.16	3.37	3.16	3.51	ACC
3-4	3.55	3.52	3.59	3.44	ACC
4-5	3.11	3.32	3.15	3.21	ACC
5-6	3.03	3.04	2.89	3.10	ACC
6-7	2.91	3.17	2.97	3.10	ACC
7-8	3.23	3.48	2.91	3.07	ACC
8-9	3.26	3.51	3.16	3.31	ACC
9-10	3.40	3.52	2.94	2.95	ACC
10-11	3.22	3.12	3.31	3.68	ACC
11-12	3.25	3.49	2.97	3.18	ACC
12-13	3.15	3.35	3.03	3.16	ACC
13-14	3.09	3.15	3.00	3.23	ACC
14-15	3.22	3.53	3.31	3.43	ACC
15-16	3.33	3.52	3.12	3.29	ACC
16-17	3.12	3.34	3.09	3.08	ACC
17-18	3.02	3.42	3.14	3.29	ACC
18-19	3.28	3.44	3.21	3.41	ACC
19-20	3.22	3.31	3.13	3.12	ACC
20-1	3.18	3.01	3.14	3.01	ACC

Unit:mm

3 PCS ASSEMBLY CHECK

Diaphragm top face abutment face gaps

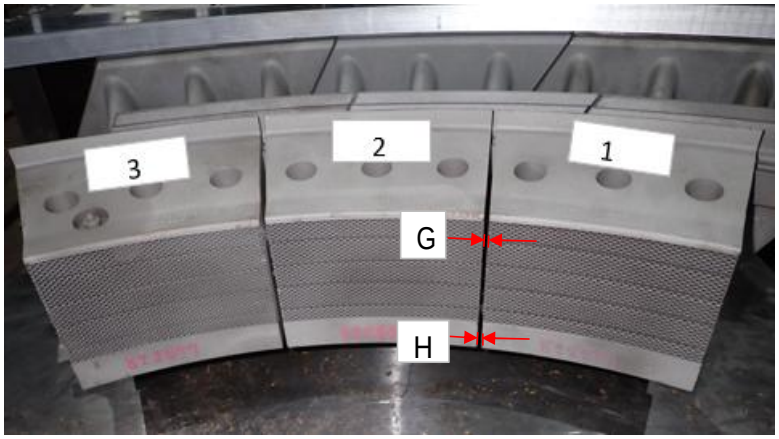


	E	F	Result
1-2	3.89	3.78	ACC
2-3	3.10	3.06	ACC
3-4	3.36	3.48	ACC
4-5	3.32	3.26	ACC
5-6	3.30	3.63	ACC
6-7	3.21	3.46	ACC
7-8	3.54	3.72	ACC
8-9	3.38	3.17	ACC
9-10	3.32	3.25	ACC
10-11	3.34	3.74	ACC
11-12	3.54	3.51	ACC
12-13	3.37	3.50	ACC
13-14	4.12	4.01	ACC
14-15	3.23	3.27	ACC
15-16	3.28	3.57	ACC
16-17	3.76	3.73	ACC
17-18	3.06	3.24	ACC
18-19	3.24	3.30	ACC
19-20	3.52	3.70	ACC
20-1	3.37	3.34	ACC

Unit:mm

3 PCS ASSEMBLY CHECK

Diaphragm front face abutment face gaps

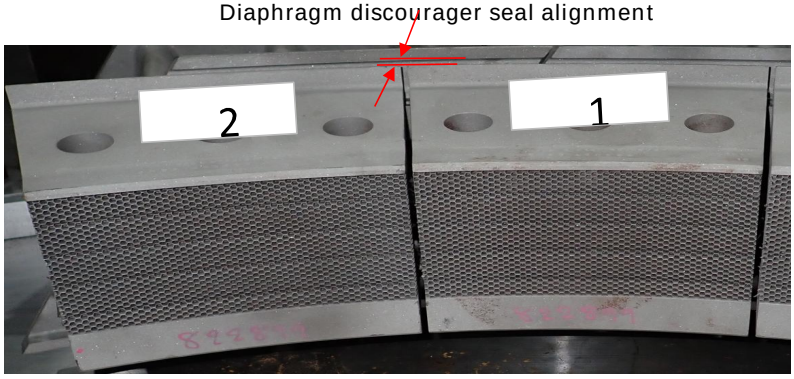


	G	H	Result
1-2	3.79	3.84	ACC
2-3	3.10	3.10	ACC
3-4	3.47	3.41	ACC
4-5	3.28	3.28	ACC
5-6	3.68	3.55	ACC
6-7	3.45	3.33	ACC
7-8	3.40	3.55	ACC
8-9	3.17	3.21	ACC
9-10	3.08	3.10	ACC
10-11	3.71	4.05	ACC
11-12	3.47	3.69	ACC
12-13	3.34	3.14	ACC
13-14	4.01	3.93	ACC
14-15	3.37	3.31	ACC
15-16	3.84	3.44	ACC
16-1	3.70	3.75	ACC
17-18	3.15	3.12	ACC
18-19	3.36	3.21	ACC
19-20	3.78	3.50	ACC
20-1	3.37	3.25	ACC

Unit:mm

3 PCS ASSEMBLY CHECK

Diaphragm discourager seal alignment



	Seal alignment	Result
1-2	0.10	ACC
2-3	0.09	ACC
3-4	0.02	ACC
4-5	0.11	ACC
5-6	0.01	ACC
6-7	0.04	ACC
7-8	0.11	ACC
8-9	0.08	ACC
9-10	0.17	ACC
10-11	0.09	ACC
11-12	0.20	ACC
12-13	0.15	ACC
13-14	0.27	ACC
14-15	0.14	ACC
15-16	0.18	ACC
16-17	0.21	ACC
17-18	0.15	ACC
18-19	0.19	ACC
19-20	0.11	ACC
20-1	0.14	ACC

Unit:mm

12. DEFECT MAP:

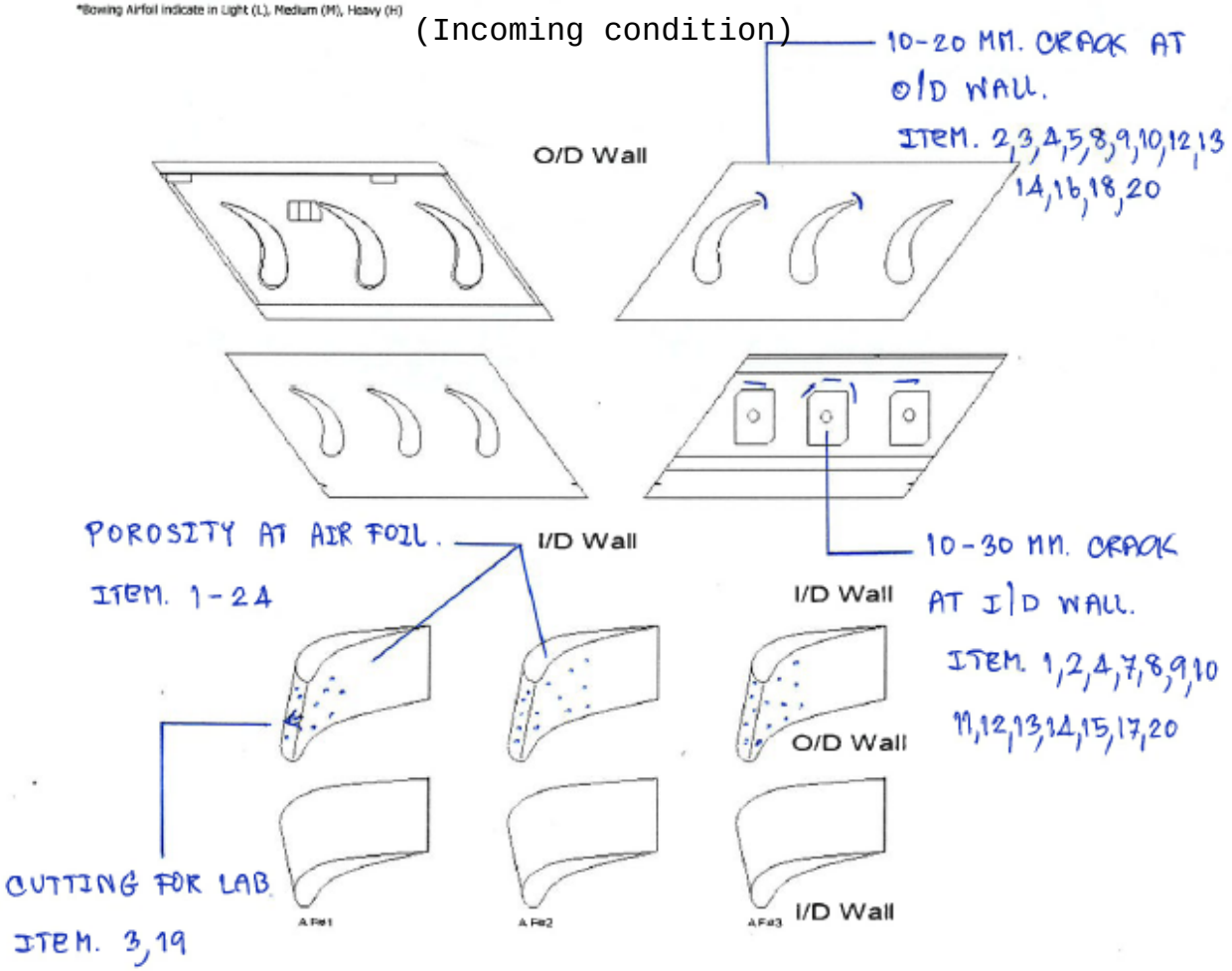
EthosEnergy

INSPECTION AND PROCESS RECORD SHEET	MS6001FA 3rd STAGE NOZZLE	IPRS NO.	3064-50
	PART NUMBER : GENZ03M6FA	REV.	00
CUSTOMER :	Nghi Son Refinery &	CUSTOMER PO :	PO04102025-HGP
JOB NUMBER :	824030	OP.	0260
INSPECTED BY :		DATE :	09 JUL 2025

Crack (mm) Foreign Object Damage (L/M/H) Fretage (L/M/H) Deformation area(mm²) Corrosion (L/M/H) Missing Material (mm²)

*Bowing Airfoil indicate in Light (L), Medium (M), Heavy (H)

(Incoming condition)

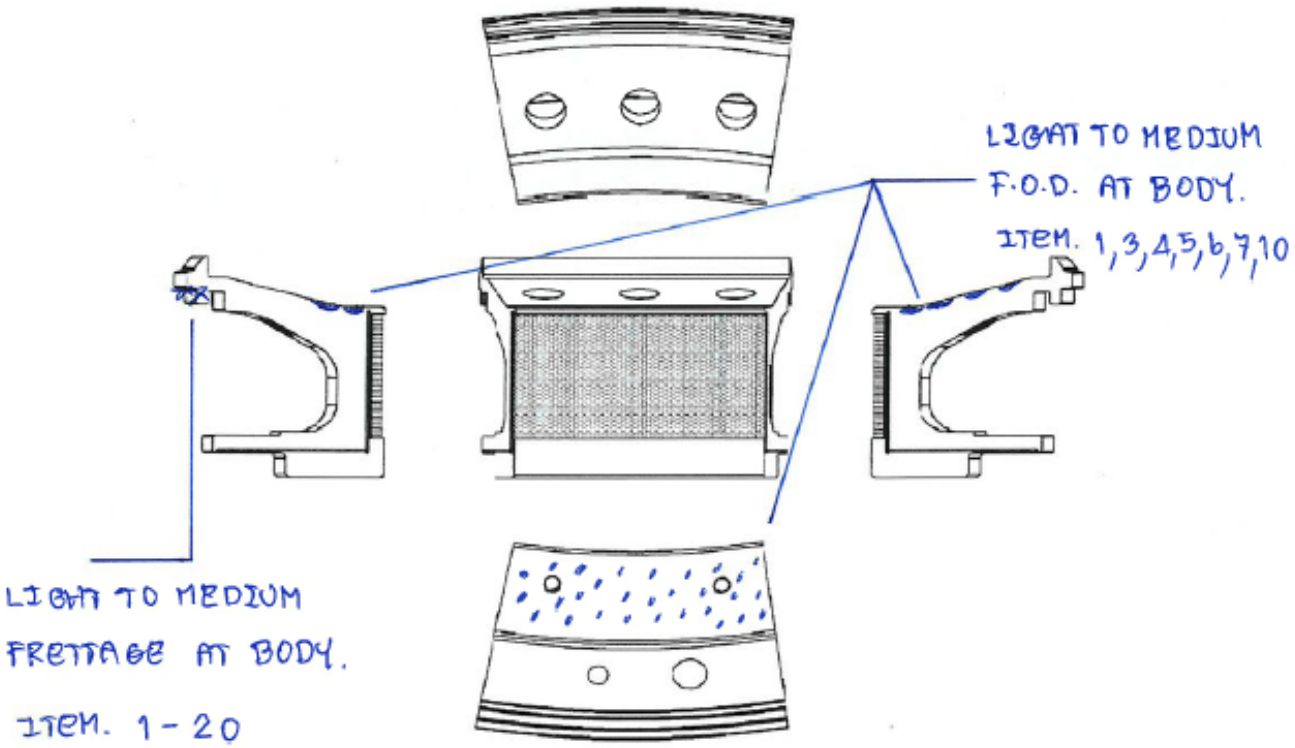


EthosEnergy

INSPECTION AND PROCESS RECORD SHEET	MS6001FA 3rd STAGE DIAPHRAGM	IPRS NO.	3064-50
	PART NUMBER : GENZ03M6FA	REV.	00
CUSTOMER :	Nghi Son Refinery &	CUSTOMER PO :	PO04102025-HGP
JOB NUMBER :	824030	OP.	0260
INSPECTED BY :	QC 43	DATE :	10 JUL 2025

Crack (mm) | Foreign Object Damage (L/M/H) | Fretage (L/M/H) | Deformation area(mm²) | Corrosion (L/M/H) | Missing Material (mm²)

(Incoming condition)

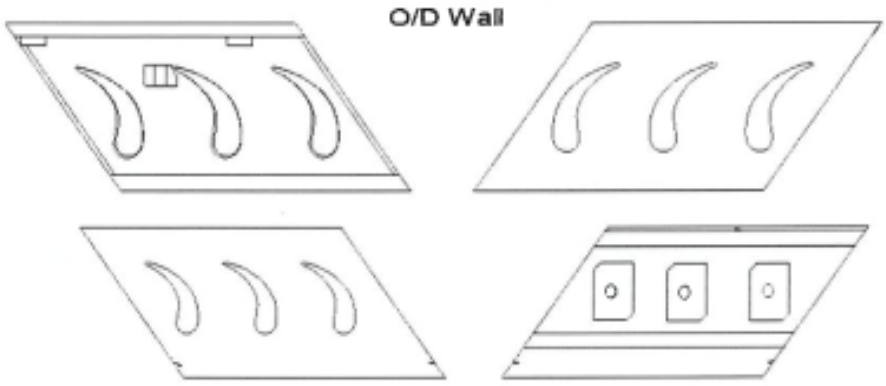


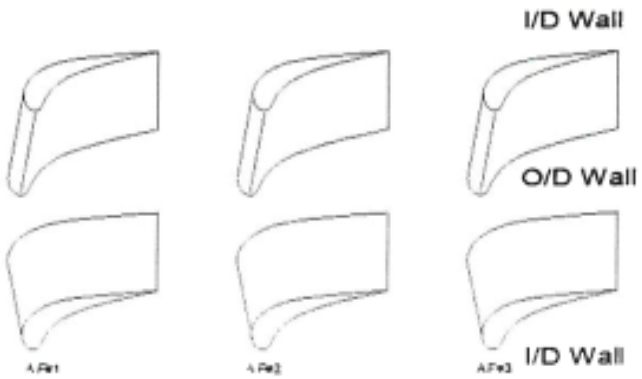
EthosEnergy

INSPECTION AND PROCESS RECORD SHEET	MS6001FA 3rd STAGE NOZZLE	IPRS NO.	3064-50
	PART NUMBER : GENZ03M6FA	REV.	00
CUSTOMER :	Nghi Son Refinery &	CUSTOMER PO :	PO04102025-HGP
JOB NUMBER :	824030	OP.	Final
INSPECTED BY :		DATE :	23 SEP 2025

Crack (mm) Foreign Object Damage (L/M/H) Fretage (L/M/H) Deformation area(mm²) Corrosion (L/M/H) Missing Material (mm²)

*Bowing Airfoil indicate in Light (L), Medium (M), Heavy (H)





EthosEnergy

INSPECTION AND PROCESS RECORD SHEET	MS6001FA 3rd STAGE DIAPHRAGM	IPRS NO.	3064-50
	PART NUMBER : GENZ03M6FA	REV.	00
CUSTOMER :	Nghi Son Refinery &	CUSTOMER PO :	PO04102025-HGP
JOB NUMBER :	824030	OP.	Final
INSPECTED BY :		DATE :	23/10/25

Crack (mm) Foreign Object Damage (L/M/H) Fretage (L/M/H) Delamination area(mm²) Corrosion (L/M/H) Missing Material (mm²)