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

Date of Report: October 30, 2025

Responsible Product Engineer: _____

Mr. Komkrit Rattanawong
Engineer

Report prepared by: _____

Ms. Chamaiporn Butsabong
Report writer

Report reviewed and approved by:_____

Mr. Pheerayawat Muadna
(Engineering Manager)

FINAL INSPECTION REPORT

1. INTRODUCTION:

92 pcs. Of MS6001FA 3rd STAGE BUCKET have been fully refurbished based on the requirements of the incoming inspection report findings.

Component Basic			
Quantity	91	1	-
Original part number	101T5421 G001	101T5421 G002	-
Material type	GTD 111	GTD 111	-
Manufacturer	GE	GE	-
As received coatings applied	No coating		
Configuration	-		

Customer supplied component history	
Total fired hours	24,000
Total starts	-
Total factor fired hours	-
# of previous repairs	-
Hours of operation since last repair	-
Operational fuel type	-
Mode of operation (base load / peaking)	-
Maintenance Intervals Combustion	-
Maintenance Intervals Hot gas path	-
Unloaded condition	
Incoming packing / container condition	Good
Signs of transit damage (if damaged upon receipt photos to be included within report)	-

3. ENGINEERING REPAIR SUMMARY:

All MS6001FA 3rd Stage Buckets were inspected, repaired, and certified in accordance with UNEW Proprietary Engineering Standards and the approved EthosEnergy Work Scope of Repair. Each component was confirmed to be within heavy repair classification, requiring full structural restoration and metallurgical rejuvenation.

Comprehensive incoming inspections were conducted, including visual examination, dimensional verification (CMM), metallurgical evaluation, and fluorescent penetrant inspection (FPI). Components exhibited oxidation, tip-seal erosion, angel-wing cracking, and localized base-metal thinning typical of prolonged high-temperature operation. Scrap parts were segregated, and the final repair scope was confirmed under UNEW authorization prior to execution.

The heavy-repair process included complete removal of damaged material by precision machining and blending, followed by GTAW weld build-up of tip-seal fins, cutter teeth, and angel-wing sections using Rene 80-compatible filler metal. Multi-pass, high-temperature welding restored the original material mass and geometry under controlled preheat and inter-pass conditions. Weld integrity was verified by 100% FPI and radiographic (X-ray) inspection. All repaired zones were blended to restore aerodynamic and dimensional accuracy, validated through CMM inspection.

Each bucket then underwent vacuum solution heat treatment to reconstitute the γ' microstructure and relieve residual weld stress, followed by final age-hardening to restore alloy strength and creep resistance. Sequential FPI inspections ensured the repaired components remained defect-free at every major step.

Finishing processes included light dust blasting to remove oxide film, shot-peening of fir-tree roots to enhance fatigue resistance, and moment-weight balancing to ensure rotor assembly uniformity. Each component was serialized, weighed, and documented on a balance chart to maintain turbine balance and mechanical stability.

All work was completed under UNEW technical oversight and EthosEnergy's ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, and ISO 17025:2017 certified quality management system.
Final dimensional, NDT, and metallurgical inspections confirmed complete compliance with UNEW's engineering criteria. The refurbished 3rd Stage Buckets were released in serviceable condition for reinstallation at Nghi Son Refinery & Petrochemical.

4. CERTIFICATE OF CONFORMANCE:

Component: MS6001FA 3rd Stage Bucket Assembly
Quantity: 92 Pieces
Material: Rene 80 / FSX-414 Equivalent
Repair Category: Heavy 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 heavy-repair process 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.
ll work was conducted under ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, and ISO 17025:2017 certified quality systems.
Final inspection results confirm that all components conform to UNEW engineering, metallurgical, and performance standards.
Accordingly, EthosEnergy (Thailand) Ltd. and UNEW, Inc. jointly certify that the above components meet all contractual and technical requirements and are hereby released in serviceable condition for reinstallation at Nghi Son Refinery & Petrochemical.

FINAL INSPECTION REPORT

5. SCOPE OF WORK:

MS6001FA STAGE 3 BLADE

Work scope	Inspect	Heavy
Inspect		
Perform receipt inspection and record serial numbers (highlight locking blade)	X	
Perform visual inspection and segregate obvious scrap components	X	
Perform metallurgical evaluation of base material and coating type, report on condition (if coated)	X	
Perform incoming solution heat treatment in full vacuum environment	X	
Perform fluorescent penetrant inspection and record all defects.	X	
Perform visual inspection and record all defects	X	
Perform dimensional inspection (CMM program)	X	
Compile incoming Inspection report and forward to customer.	X	
Hold points until Customer discussions and agreement on repair scopes have been held/reached.	X	
Repair		
Blend to remove all surface defects on external repairable areas		X
Remove defective material in repairable areas in preparation for weld repairs.		X
Perform fluorescent penetrant inspection of prepared areas		X
Weld build up tip seal fin and restore cutter tooth areas as required.		X
Weld build up angel wings as required.		X
Blend all welded area to restore component profile		X
Perform fluorescent penetrant inspection		X
Perform visual inspection to ensure component conformity		X

5. SCOPE OF WORK:(CONTINUE)

Perform post repair solution heat treatment in full vacuum environment.		X
Perform fluorescent penetrant inspection.		X
Perform dimensional inspection (CMM program)		X
Perform final Age heat treatment based on material specification		X
Perform fluorescent penetrant inspection		X
Perform light dust blast cleaning		X
Perform shot peen operation of firtree root		X
Perform moment weigh of blades and produce balance chart, label blade location		X
Perform final visual inspection		X
Compile Final Report, pack and ship components with all required documentation as listed in Purchase Order		X

6. ENGINEERING DETAIL WORK DONE:

6.1. Inspection Phase

Task	Detailed Description
Perform receipt inspection and record serial numbers (highlight locking blade)	Each bucket was received and logged by serial number. Locking blades were highlighted for tracking. Initial visual inspection confirmed quantity, proper packaging, and no transit damage.
Perform visual inspection and segregate obvious scrap components	All buckets were visually examined under magnification to detect severe cracking, overheating, or excessive erosion. Units beyond repair were segregated and tagged as scrap; remaining buckets proceeded to detailed inspection.
Perform metallurgical evaluation of base material and coating type, report on condition (if coated)	Representative samples were analyzed to verify Rene 80 composition, γ′ phase distribution, and grain boundary oxidation. Coating type and thickness were identified to define heat-treat and stripping procedures.
Perform incoming solution heat treatment in full vacuum environment	Vacuum solution heat treatment was performed to homogenize microstructure, dissolve carbides, and relieve service stresses before weld restoration.
Perform fluorescent penetrant inspection and record all defects	Full-surface FPI identified thermal cracks, oxidation pits, and erosion zones on airfoil, tip, and angel wing areas. All indications were charted and photographed for engineering evaluation.
Perform visual inspection and record all defects	Visual examination under 10× magnification documented surface condition, oxidation severity, and localized deformation for repair planning.
Perform dimensional inspection (CMM program)	Coordinate-measuring machine (CMM) scans captured airfoil, tip, platform, and root geometry. Out-of-tolerance dimensions were flagged for restoration during repair.
Compile incoming inspection report and forward to customer	Inspection results (FPI maps, CMM data, and photographs) were compiled into a report submitted for UNEW review and repair authorization.
Hold points until customer discussions and agreement on repair scopes have been held / reached	Repair activities paused pending UNEW and NSRP approval of the heavy-repair scope and limit definition.

6.2. Repair Phase

Task	Detailed Description
Blend to remove all surface defects on external repairable areas	Surface defects, oxidation, and minor FOD damage were mechanically blended to clean base metal while maintaining aerodynamic profile and wall thickness.
Remove defective material in repairable areas in preparation for weld repairs	Cracked and oxidized metal was machined out using carbide burrs and abrasive tools, creating sound weld-prep cavities with proper geometry.
Perform fluorescent penetrant inspection of prepared areas	Post-machining FPI confirmed complete removal of all cracks and defective zones prior to welding.
Weld build up tip seal fin and restore cutter tooth areas as required	Tip-seal fins and cutter teeth were rebuilt by GTAW welding using Rene 80 filler. Multiple controlled passes restored design height and geometry.
Weld build up angel wings as required	Eroded or cracked angel wings were repaired using multi-pass GTAW welds at elevated temperature under argon shielding to prevent HAZ cracking.
Blend all welded areas to restore component profile	After welding, all built-up regions were precision-ground and blended to OEM contours for airfoil, tip, and platform profiles.
Perform fluorescent penetrant inspection	Post-weld FPI confirmed weld integrity and verified absence of cracks, porosity, or lack of fusion.
Perform visual inspection to ensure component conformity	Visual examination verified weld surface finish, blending smoothness, and dimensional restoration accuracy.
Perform post-repair solution heat treatment in full vacuum environment	Vacuum solution heat treatment rejuvenated microstructure by re-solubilizing carbides and restoring γ′ phase uniformity, relieving weld residual stresses.
Perform fluorescent penetrant inspection	Post-heat-treat FPI ensured no cracks developed during thermal cycling.
Perform dimensional inspection (CMM program)	CMM verification confirmed airfoil chord, tip height, and root geometry were restored to within engineering tolerances.

Task	Detailed Description
Perform final age heat treatment based on material specification	A controlled age-hardening cycle was applied to Rene 80 alloy in vacuum to achieve desired mechanical strength and creep resistance.
Perform fluorescent penetrant inspection	A final FPI confirmed defect-free condition after aging process completion.
Perform light dust blast cleaning	Low-pressure alumina blast cleaning removed surface oxide film and prepared components for shot-peening and final inspection.
Perform shot peen operation of fir-tree root	Fir-tree roots were shot-peened to introduce compressive stresses that increase fatigue resistance and extend service life.
Perform moment weigh of blades and produce balance chart, label blade location	Each bucket was weighed and moment recorded to create a balance chart. Blade positions were labeled to ensure even mass distribution during rotor assembly.
Perform final visual inspection	Comprehensive visual inspection under magnification confirmed repair completeness, surface quality, and marking accuracy.
Compile Final Report, pack and ship components with all required documentation as listed in Purchase Order	All NDT records, heat-treat charts, CMM data, and photographs were compiled into the Final Inspection Report. Each component was cleaned, tagged, and packed for shipment to NSRP.

Result

All MS6001FA 3rd Stage Buckets successfully underwent heavy repair in accordance with UNEW Proprietary Engineering Procedures and EthosEnergy ISO-certified QA/QC standards. Dimensional, metallurgical, and non-destructive inspections confirmed that each component meets UNEW and OEM requirements for geometry, microstructure, and fatigue strength.
All buckets are certified serviceable for reinstallation at Nghi Son Refinery & Petrochemical.

6.0 MATERIAL EVALUATION

Report No.	L11075	Job order no.	824027
Serial no.(or ID)	E1SH025159 (Item# 92)	Cutting location	Shroud
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	9.5	14.0	Bal	4.9	3.8	2.8	-	-	4.0	Coating Type	No Coating
Result	9.5	12.9	59.7	4.4	4.2	3.1	-	-	4.0	Nearest Alloy	GTD111

Microstructure

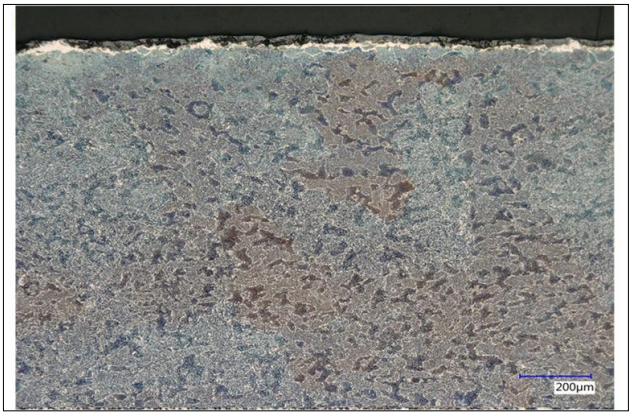


Fig.1 Showing the hot gas path surface condition.(Etched)

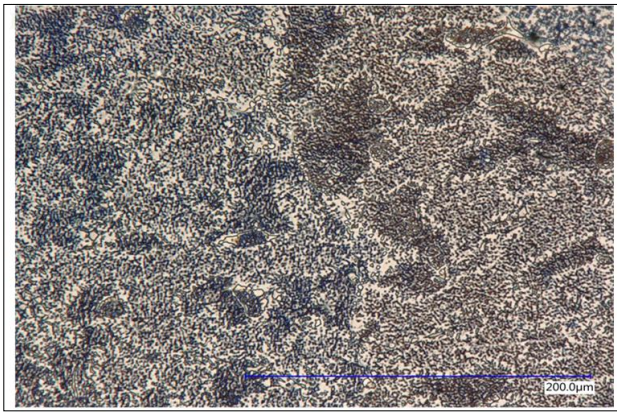


Fig.2 Showing the typical microstructure at higher magnification.(Etched)

The sample was mounted in L11075 to evaluate material integrity and determine the required repair classification. Analysis revealed that the hot gas path surface is uncoated and exhibits severe oxidation-corrosion, with evidence of substrate alloy depletion extending into the base metal, refer to Fig.1. Due to the extent of material loss and thermal degradation, this condition requires a UNEW-classified heavy repair to restore serviceability. The base material was confirmed as GTD111 alloy, consisting of fine grain boundary carbides within a gamma matrix, with well-dispersed primary and secondary gamma prime carbides, refer to Fig.2.

Recommendation

Based on the findings above, the base material has been evaluated and confirmed suitable for heavy repair. Restoration will require complete surface cleaning using controlled grit blasting, followed by advanced repair processes, including extensive weld restoration, dimensional recovery, and full reapplication of UNEW's proprietary protective coatings to return the component to a fully serviceable condition.

7.0 PHOTOGRAPHS

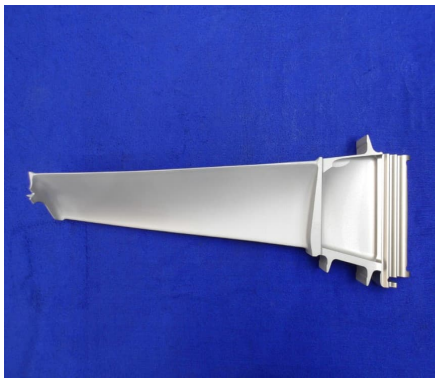


Figure 1. Final ispection.

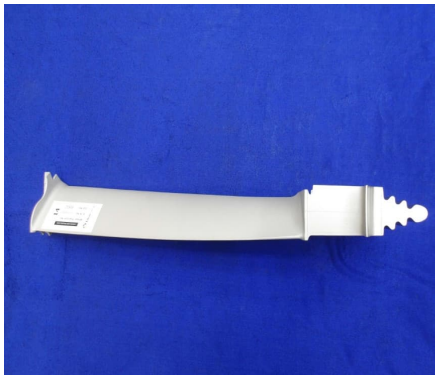


Figure 2. Final ispection.

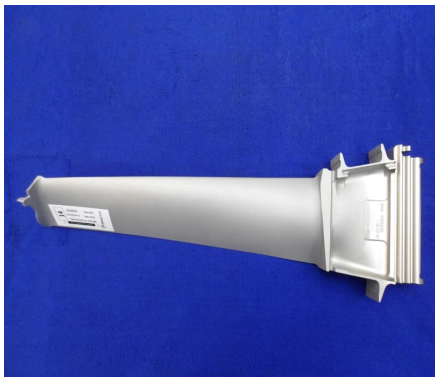


Figure 3. Final ispection.

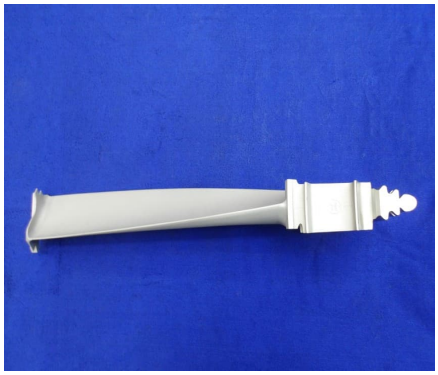


Figure 4. Final ispection.

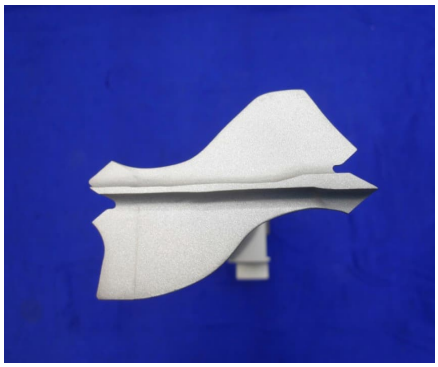


Figure 5. Final ispection.

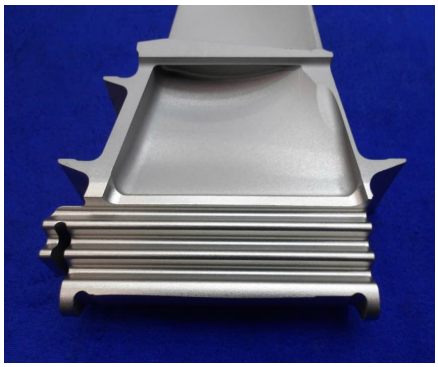
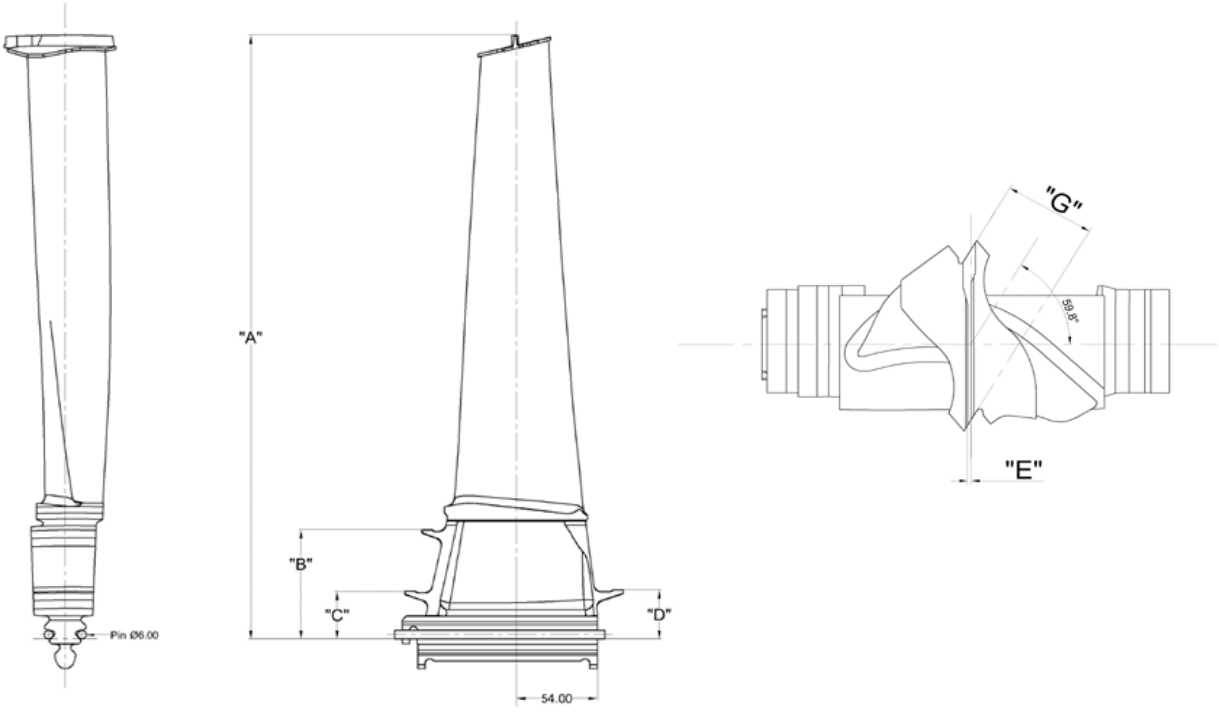


Figure 6. Final ispection.

8.0 GENERAL DIMENSION



8.0 GENERAL DIMENSION (CONTINUE)

GENERAL DIMENSION DATA TABLE							
DIMENSIONS (Unit : mm.)							
ITEM	A	B	C	D	E	G	RESULT
1	416.54	75.80	32.88	33.84	1.75	32.71	ACC
2	416.66	75.73	32.85	33.77	1.65	32.68	ACC
3	416.67	75.86	32.93	34.06	1.70	32.82	ACC
4	416.64	75.80	32.94	34.11	1.86	32.88	ACC
5	416.58	75.82	32.91	33.84	1.72	32.86	ACC
6	416.56	75.82	32.92	33.88	1.75	32.71	ACC
7	416.73	75.70	32.83	34.07	1.73	32.81	ACC
8	416.45	75.79	32.99	33.87	1.74	32.70	ACC
9	416.54	75.72	32.89	33.82	1.66	32.75	ACC
10	416.47	75.74	32.84	33.83	1.71	32.74	ACC
11	416.61	75.78	32.88	33.85	1.74	32.84	ACC
12	416.44	75.76	32.84	33.83	1.76	32.75	ACC
13	416.66	75.77	32.86	33.90	1.50	32.84	ACC
14	416.55	75.72	32.83	33.81	1.69	32.70	ACC
15	416.55	75.84	32.93	33.86	1.52	32.77	ACC
16	416.58	75.73	32.83	33.81	1.79	32.72	ACC
17	416.67	75.73	32.85	33.83	1.71	32.82	ACC
18	416.48	75.83	32.94	33.87	1.80	32.71	ACC
19	416.59	75.88	32.96	33.89	1.47	32.72	ACC
20	416.55	75.79	32.89	33.85	1.57	32.72	ACC
21	416.57	75.69	32.81	33.80	1.54	32.89	ACC
22	416.57	75.78	32.86	33.82	1.55	32.79	ACC
23	416.62	75.81	32.91	33.88	1.56	32.72	ACC
24	416.58	75.75	32.85	33.80	1.60	32.67	ACC
25	416.57	75.79	32.88	33.88	1.78	32.66	ACC
26	416.66	75.80	32.86	34.12	1.64	32.80	ACC
27	416.53	75.74	32.83	33.82	1.39	32.96	ACC
28	416.48	75.90	33.00	33.93	1.72	32.76	ACC
29	416.57	75.80	32.90	33.91	1.55	32.78	ACC
30	416.56	75.83	32.91	33.88	1.59	32.78	ACC
31	416.58	75.86	32.95	33.91	1.59	32.75	ACC
32	416.62	75.89	32.99	33.91	1.34	32.78	ACC
33	416.58	75.82	32.89	33.94	1.67	32.76	ACC
34	416.46	75.92	32.98	33.91	1.38	32.81	ACC
35	416.59	75.85	32.96	33.88	1.55	32.82	ACC
36	416.55	75.85	32.93	33.90	1.69	32.79	ACC
37	416.56	75.79	32.90	33.84	1.74	32.75	ACC
38	416.55	75.76	32.86	33.84	1.73	32.70	ACC
39	416.65	75.78	32.87	33.86	1.82	32.65	ACC
40	416.64	75.91	32.96	33.89	1.62	32.71	ACC
41	416.67	75.77	32.84	34.05	1.76	32.75	ACC
42	416.62	75.85	32.94	34.12	1.75	32.86	ACC
43	416.60	75.86	32.72	33.91	1.73	32.85	ACC
44	416.58	75.87	32.93	33.91	1.66	32.73	ACC
45	416.51	75.85	32.93	33.89	1.55	32.76	ACC
46	416.57	75.79	32.84	33.82	1.72	32.72	ACC
47	416.64	75.85	32.93	33.88	1.62	32.81	ACC

8.0 GENERAL DIMENSION (CONTINUE)

GENERAL DIMENSION DATA TABLE							
DIMENSIONS (Unit : mm.)							
ITEM	A	B	C	D	E	G	RESULT
48	416.60	75.87	32.95	33.89	1.67	32.76	ACC
49	416.53	75.81	32.89	33.84	1.56	32.78	ACC
50	416.51	75.80	32.89	33.87	1.69	32.78	ACC
51	416.64	75.85	33.01	33.88	1.65	32.69	ACC
52	416.58	75.82	32.90	33.94	1.64	32.77	ACC
53	416.65	75.79	32.86	34.09	1.58	32.70	ACC
54	416.52	75.81	32.93	33.87	1.58	32.74	ACC
55	416.72	75.87	32.95	33.87	1.61	32.84	ACC
56	416.51	75.85	32.86	33.84	1.73	32.71	ACC
57	416.66	75.81	32.89	33.93	1.73	32.70	ACC
58	416.49	75.85	32.89	33.87	1.67	32.70	ACC
59	416.53	75.82	32.92	33.88	1.57	32.59	ACC
60	416.58	75.81	32.89	33.86	1.58	32.64	ACC
61	416.45	75.72	32.81	33.80	1.83	32.75	ACC
62	416.60	75.88	32.96	33.92	1.61	32.74	ACC
63	416.62	75.85	32.92	33.89	1.78	32.55	ACC
64	416.61	75.80	32.88	33.84	1.71	32.76	ACC
65	416.45	75.76	32.87	33.79	1.49	32.71	ACC
66	416.54	75.85	32.93	33.89	1.52	32.88	ACC
67	416.50	75.72	32.82	33.79	1.58	32.60	ACC
68	416.60	75.69	32.79	33.77	1.69	32.75	ACC
69	416.60	75.77	32.86	33.86	1.68	32.91	ACC
70	416.57	75.78	32.87	33.87	1.66	32.74	ACC
71	416.68	75.82	32.92	34.10	1.83	32.65	ACC
72	416.59	75.89	32.97	33.93	1.65	32.72	ACC
73	416.64	75.87	32.96	33.89	1.81	32.65	ACC
74	416.57	75.78	32.86	33.85	1.61	32.75	ACC
75	416.62	75.89	32.99	33.95	1.51	32.74	ACC
76	416.57	75.80	32.88	33.88	1.83	32.75	ACC
77	416.53	75.84	32.95	33.88	1.50	32.79	ACC
78	416.53	75.94	32.98	34.00	1.54	32.63	ACC
79	416.68	75.79	32.87	34.08	1.64	32.85	ACC
80	416.62	75.89	32.97	33.89	1.57	32.63	ACC
81	416.42	75.91	33.00	33.93	1.34	32.72	ACC
82	416.51	75.84	32.93	33.87	1.53	32.71	ACC
83	416.60	75.84	32.92	33.88	1.55	32.71	ACC
84	416.67	75.88	32.97	33.93	1.60	32.67	ACC
85	416.53	75.81	32.91	33.84	1.66	32.76	ACC
86	416.58	75.82	32.92	33.87	1.75	32.73	ACC
87	416.63	75.77	32.86	33.85	1.63	32.61	ACC
88	416.55	75.89	32.97	33.90	1.63	32.78	ACC
89	416.51	75.80	32.88	33.84	1.66	32.57	ACC
90	416.60	75.85	32.92	33.92	1.77	32.68	ACC
91	416.55	75.75	32.85	33.82	1.56	32.85	ACC
92	416.50	75.73	32.87	33.80	1.53	32.83	ACC

10.0 SERIAL NUMBER CORRELATION

Incoming inspection part number correlation sheet. This sheet not to be used for blade assembly or positioning. Reference final inspection report moment weigh report for position during assembly.

CORRELATION SHEET							
Item	Part number	Serial number	Material	Item	Part number	Serial number	Material
1	101T5421 G002	E1SH025195	GTD111	47	101T5421 G001	E1SH025225	GTD111
2	101T5421 G001	E1SH023939	GTD111	48	101T5421 G001	E1SH025149	GTD111
3	101T5421 G001	E1SH025237	GTD111	49	101T5421 G001	E1SH025270	GTD111
4	101T5421 G001	E1SH025250	GTD111	50	101T5421 G001	E1SH025147	GTD111
5	101T5421 G001	E1SH025238	GTD111	51	101T5421 G001	E1SH025253	GTD111
6	101T5421 G001	E1SH025289	GTD111	52	101T5421 G001	E1SH025279	GTD111
7	101T5421 G001	E1SH025242	GTD111	53	101T5421 G001	E1SH025276	GTD111
8	101T5421 G001	E1SH025153	GTD111	54	101T5421 G001	E1SH025267	GTD111
9	101T5421 G001	E1SH025202	GTD111	55	101T5421 G001	E1SH025189	GTD111
10	101T5421 G001	E1SH025251	GTD111	56	101T5421 G001	E1SH025131	GTD111
11	101T5421 G001	E1SH025239	GTD111	57	101T5421 G001	E1SH025272	GTD111
12	101T5421 G001	E1SH025151	GTD111	58	101T5421 G001	E1SH025263	GTD111
13	101T5421 G001	E1SH025207	GTD111	59	101T5421 G001	E1SH025243	GTD111
14	101T5421 G001	E1SH025291	GTD111	60	101T5421 G001	E1SH025146	GTD111
15	101T5421 G001	E1SH025188	GTD111	61	101T5421 G001	E1SH025247	GTD111
16	101T5421 G001	E1SH025248	GTD111	62	101T5421 G001	E1SH025219	GTD111
17	101T5421 G001	E1SH025204	GTD111	63	101T5421 G001	E1SH025198	GTD111
18	101T5421 G001	E1SH025150	GTD111	64	101T5421 G001	E1SH025283	GTD111
19	101T5421 G001	E1SH025161	GTD111	65	101T5421 G001	E1SH025221	GTD111
20	101T5421 G001	E1SH025269	GTD111	66	101T5421 G001	E1SH025215	GTD111
21	101T5421 G001	E1SH025115	GTD111	67	101T5421 G001	E1SH025284	GTD111
22	101T5421 G001	E1SH025286	GTD111	68	101T5421 G001	E1SH025285	GTD111
23	101T5421 G001	E1SH025211	GTD111	69	101T5421 G001	E1SH025266	GTD111
24	101T5421 G001	E1SH025261	GTD111	70	101T5421 G001	E1SH025256	GTD111
25	101T5421 G001	E1SH025241	GTD111	71	101T5421 G001	E1SH025240	GTD111
26	101T5421 G001	E1SH025045	GTD111	72	101T5421 G001	E1SH025234	GTD111
27	101T5421 G001	E1SH025268	GTD111	73	101T5421 G001	E1SH025200	GTD111
28	101T5421 G001	E1SH025148	GTD111	74	101T5421 G001	E1SH025244	GTD111
29	101T5421 G001	E1SH025227	GTD111	75	101T5421 G001	E1SH025226	GTD111
30	101T5421 G001	E1SH025271	GTD111	76	101T5421 G001	E1SH025252	GTD111
31	101T5421 G001	E1SH025209	GTD111	77	101T5421 G001	E1SH025134	GTD111
32	101T5421 G001	E1SH025230	GTD111	78	101T5421 G001	E1SH025160	GTD111
33	101T5421 G001	E1SH025280	GTD111	79	101T5421 G001	E1SH025262	GTD111
34	101T5421 G001	E1SH025163	GTD111	80	101T5421 G001	E1SH025190	GTD111
35	101T5421 G001	E1SH025114	GTD111	81	101T5421 G001	E1SH025170	GTD111
36	101T5421 G001	E1SH025129	GTD111	82	101T5421 G001	E1SH025158	GTD111
37	101T5421 G001	E1SH025199	GTD111	83	101T5421 G001	E1SH025260	GTD111
38	101T5421 G001	E1SH025282	GTD111	84	101T5421 G001	E1SH025228	GTD111
39	101T5421 G001	E1SH025003	GTD111	85	101T5421 G001	E1SH025196	GTD111
40	101T5421 G001	E1SH025222	GTD111	86	101T5421 G001	E1SH025236	GTD111
41	101T5421 G001	E1SH025246	GTD111	87	101T5421 G001	E1SH025278	GTD111
42	101T5421 G001	E1SH025152	GTD111	88	101T5421 G001	E1SH025235	GTD111
43	101T5421 G001	E1SH025224	GTD111	89	101T5421 G001	E1SH025265	GTD111
44	101T5421 G001	E1SH025127	GTD111	90	101T5421 G001	E1SH025275	GTD111
45	101T5421 G001	E1SH025245	GTD111	91	101T5421 G001	E1SH025258	GTD111
46	101T5421 G001	E1SH025264	GTD111	92	101T5421 G001	E1SH025159	GTD111

11.0 DEFECT LEGEND TABLE

DEFECT LEGEND TABLE RECORD SHEET

Information		INSPECTION FINDINGS																																					
Blade Number	Serial Number	Seal fin wear	Seal fin cracks	Seal fin erosion / corrosion	Seal fin FOD / missing material	Cutter teeth wear	Shroud wear	Shroud cracks	Shroud erosion / corrosion	Shroud FOD / missing material	Z-notch wear	Z-notch cracks	Z-notch erosion / corrosion	Z-notch FOD / missing material	Angel wing wear	Angel wing cracks	Angel wing casting defect	Angel wing FOD / missing material	A/F cracks		A/F erosion /corrosion		A/F missing material		A/F FOD		A/F pitting		Platform cracks	Platform corrosions	Platform FOD	Shank cracks	Shank FOD / missing material	Pin slot wear	Pin slot cracks	Pin slot deform	Root wear	Root cracks	Root FOD
																			Loc.	Rep.	Loc.	Rep.	Loc.	Rep.	Loc.	Rep.	Loc.	Rep.											
1		B				WB					B										ALL	B																	
2		B				WB					B										ALL	B																	
3		B				WB					B							WB			ALL	B																	
4		B				WB					B										ALL	B			LE	B													
5		B				WB					B							WB			ALL	B																	
6		B				WB					B										ALL	B																	
7		B				WB					B										ALL	B																	
8		B				WB					B										ALL	B			LE	B													
9		B				WB					B										ALL	B																	
10		B				WB					B										ALL	B																	
11		B				WB					B										ALL	B																	
12		B				WB					B										ALL	B																	
13		B				WB					B										ALL	B																	
14		B				WB					B										ALL	B																	
15		B				WB					B						B				ALL	B																	
16		B				WB					B										ALL	B																	
17		B				WB					B										ALL	B																	
18		B				WB					B										ALL	B																	
19		B				WB					B										ALL	B																	
20		B				WB					B										ALL	B																	
21		B				WB					B										ALL	B																	
22		B				WB					B										ALL	B																	
23		B				WB					B										ALL	B																	
24		B				WB					B										ALL	B																	
25		B				WB					B										ALL	B																	
26		B				WB					B										ALL	B																	
27		B				WB					B										ALL	B																	
28		B				WB					B										ALL	B																	
29		B				WB					B										ALL	B																	
30		B				WB					B										ALL	B																	
31		B				WB					B										ALL	B																	
32		B				WB					B										ALL	B																	
33		B				WB					B										ALL	B																	
34		B				WB					B										ALL	B																	
35		B				WB					B										ALL	B																	
36		B				WB					B										ALL	B																	
37		B				WB					B										ALL	B																	
38		B				WB					B										ALL	B																	
39		B				WB					B										ALL	B																	
40		B				WB					B										ALL	B																	
41		B				WB					B										ALL	B																	
42		B				WB					B										ALL	B																	
43		B				WB					B										ALL	B																	
44		B				WB					B										ALL	B																	
45		B				WB					B							WB			ALL	B																	
46		B				WB					B										ALL	B																	
47		B				WB					B										ALL	B																	
48		B				WB					B										ALL	B																	
49		B				WB					B										ALL	B																	
50		B				WB					B										ALL	B																	

FINAL INSPECTION REPORT

11.0 DEFECT LEGEND TABLE (CONTINUE)

DEFECT LEGEND TABLE RECORD SHEET

Information		INSPECTION FINDINGS																																					
Blade Number	Serial Number	Seal fin wear	Seal fin cracks	Seal fin erosion / corrosion	Seal fin FOD / missing material	Cutter teeth wear	Shroud wear	Shroud cracks	Shroud erosion / corrosion	Shroud FOD / missing material	Z-notch wear	Z-notch cracks	Z-notch erosion / corrosion	Z-notch FOD / missing material	Angel wing wear	Angel wing cracks	Angel wing casting defect	Angel wing FOD / missing material	A/F cracks		A/F erosion /corrosion		A/F missing material		A/F FOD		A/F pitting		Platform cracks	Platform corrosions	Platform FOD	Shank cracks	Shank FOD / missing material	Pin slot wear	Pin slot cracks	Pin slot deform	Root wear	Root cracks	Root FOD
																			Loc.	Rep.	Loc.	Rep.	Loc.	Rep.	Loc.	Rep.	Loc.	Rep.											
51		B				WB					B						B	WB			ALL	B																	
52		B				WB					B										ALL	B																	
53		B				WB					B										ALL	B																	
54		B				WB					B										ALL	B																	
55		B				WB					B										ALL	B																	
56		B				WB					B										ALL	B																	
57		B				WB					B										ALL	B																	
58		B				WB					B							WB			ALL	B																	
59		B				WB					B										ALL	B																	
60		B				WB					B										ALL	B																	
61		B				WB					B										ALL	B																	
62		B				WB					B										ALL	B																	
63		B				WB					B										ALL	B																	
64		B				WB					B										ALL	B																	
65		B				WB					B										ALL	B																	
66		B				WB					B										ALL	B																	
67		B				WB					B										ALL	B																	
68		B				WB					B										ALL	B																	
69		B				WB					B										ALL	B																	
70		B				WB					B										ALL	B																	
71		B				WB					B										ALL	B																	
72		B				WB					B										ALL	B																	
73		B				WB					B										ALL	B																	
74		B				WB					B										ALL	B																	
75		B				WB					B						B				ALL	B																	
76		B				WB					B										ALL	B																	
77		B				WB					B										ALL	B																	
78		B				WB					B										ALL	B																	
79		B				WB					B										ALL	B																	
80		B				WB					B										ALL	B																	
81		B				WB					B										ALL	B																	
82		B				WB					B										ALL	B																	
83		B				WB					B										ALL	B																	
84		B				WB					B										ALL	B																	
85		B				WB					B										ALL	B																	
86		B				WB					B										ALL	B																	
87		B				WB					B										ALL	B																	
88		B				WB					B										ALL	B																	
89		B				WB					B										ALL	B																	
90		B				WB					B										ALL	B																	
91		B				WB					B										ALL	B																	
92		B				WB				WB	B							WB			ALL	B																	

P = Planishing to be reclaimed to the profile.
B = Blend repair to be performed in accordance with the location blend limits.
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.
ACC = Acceptable as is.
REJ = Dimension unacceptable and will require repair or cause of scrap
DT = Performed destructive testing.
REP = Replacement component. (For final Inspection Report)

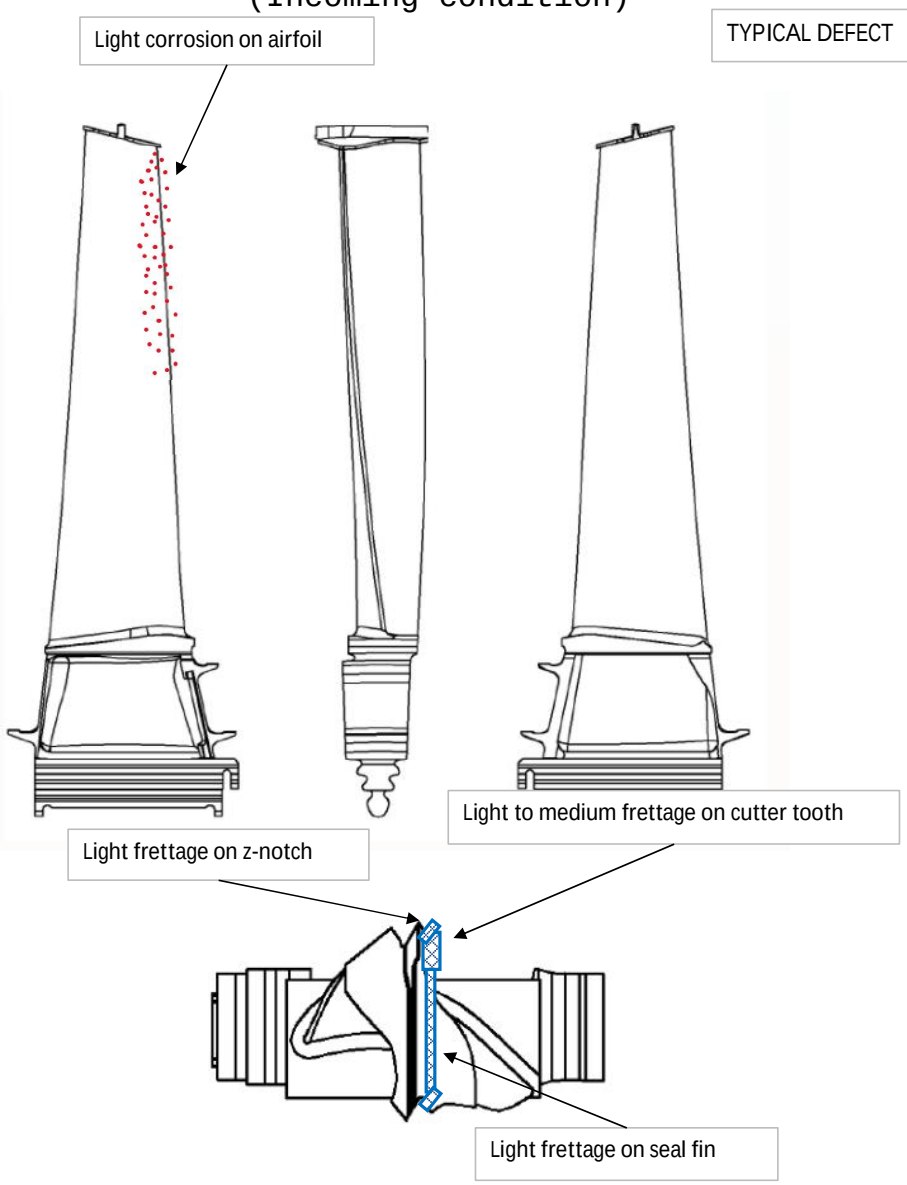
Loc.= Concave side CC, convex side CV, Leading edge LE, Trailing edge TE
S = Non-Repairable / Scrap.
L = Light repair category
M = Medium repair category
H = Heavy repair category
EX = Salvation repair category

12.0 DEFECT MAP

INSPECTION AND PROCESS RECORD SHEET	MS6001FA 3rd STAGE BUCKET	IPRS NO.	3067-40
	PART NUMBER : GEBL03M6FA	REV.	00
CUSTOMER :	Nghi Son Refinery &	CUSTOMER PO :	PO04102025-HGP
JOB NUMBER :	824027	OP.	210
INSPECTED BY :	Anirut D.	DATE :	08/08/2025

(mm) Crack (mm) Foreign Object Damage (L/M/H) Frettage (L/M/H) Deformation area(mm^2) Corrosion (L/M/H) Missing Material (mm^2)

(Incoming condition)



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12.0 DEFECT MAP (CONTINUE)

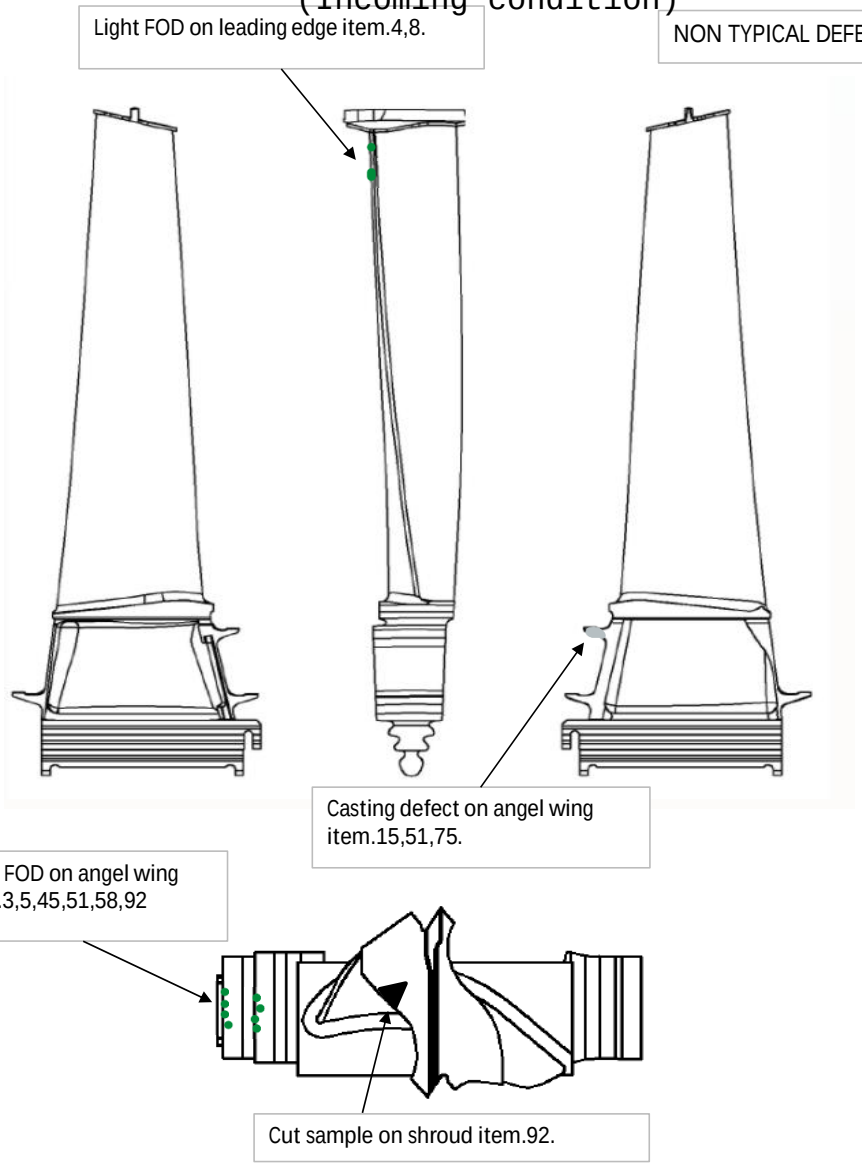
EthosEnergy

INSPECTION AND PROCESS RECORD SHEET	MS6001FA 3rd STAGE BUCKET	IPRS NO.	3067-40
	PART NUMBER : GEBL03M6FA	REV.	00

CUSTOMER :	Nghi Son Refinery &	CUSTOMER PO :	PO04102025-HGP
JOB NUMBER :	824027	OP.	210
INSPECTED BY :	Anirut D.	DATE :	08/08/2025

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

(Incoming condition)



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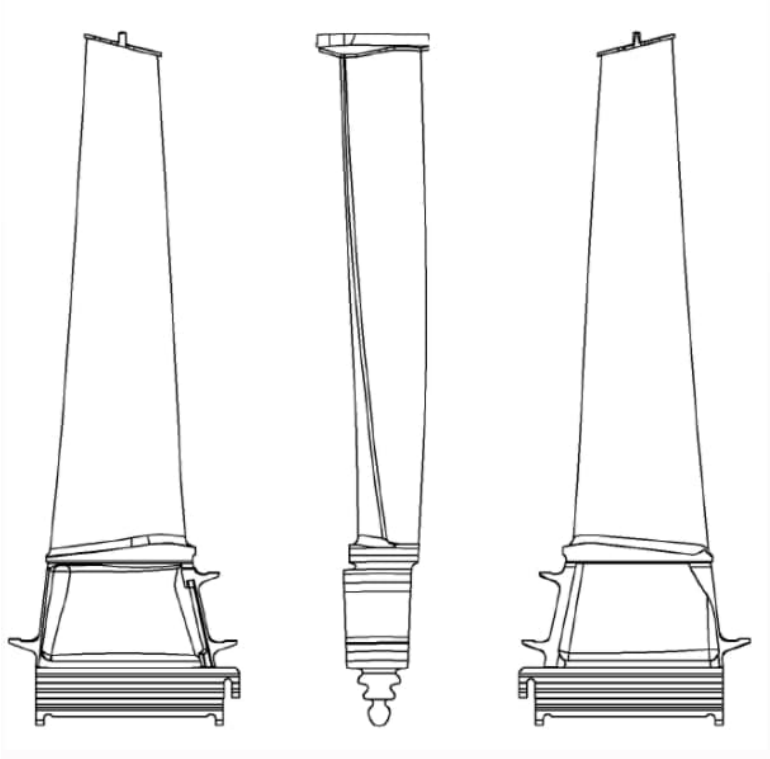
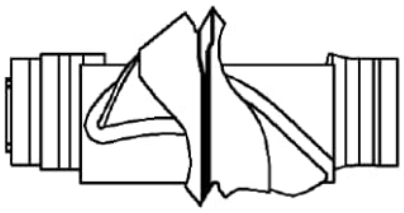
12.0 DEFECT MAP (CONTINUE)

INSPECTION AND PROCESS RECORD SHEET	MS6001FA 3rd STAGE BUCKET	IPRS NO.	3067-40
	PART NUMBER : GEBL03M6FA	REV.	00

CUSTOMER :	Nghi Son Refinery &	CUSTOMER PO :	PO04102025-HGP
JOB NUMBER :	824027	OP.	FINAL
INSPECTED BY :	ANUCHID K.	DATE :	26/09/2025

mm Crack (mm) Foreign Object Damage (L/M/H) Frettage (L/M/H) Deformation area(mm^2) Corrosion (L/M/H) Missing Material (mm^2)





13.0 MOMENT WEIGHT

SCHENCK Balancing and Diagnostic Systems	EthosEnergy (Thailand) Limited 39/9 Sermsuwan Road, Tambon Maptaphut Amphur Muang, Rayong 21150, Thailand Tel: +66 (38) 698900	EthosEnergy
Operator: BucketTH	**BladisNET** Revision 3.0 © 2006 | Schenck RoTec GmbH | Germany	26/09/2025 Page 1

Blade Type: GEBL03M6FA

Engine type:	MS6001FA
Stage:	3
No. of blades:	92
No. of locking blades:	1
Positions of locking blades:	1
Moment of master blade or preload moment:	2153400 gmm
Admissible variation for measurement:	3 digits
Type of matching:	None
Tolerance:	1000 gmm
Predistribution Pattern:	7 - Sequence of Weighing

Blade Set: 824027

Generated by:	Wanchaloeam putpa
Order:	Nghi son Refinery
\	
New reduced tolerance:	20 gmm
Matching type:	None
Predistribution Pattern:	7 - Sequence of Weighing
Calculated unbalance:	18 gmm
Calculated Angle:	198 deg

State:
Blade Predistribution optimized.
Set in tolerance.
Set in reduced tolerance.

Caution:
Buckets/Blades need to be installed by "Pos. No." in order to minimize any vibration issues!

Operator: BucketTH	BladisNET Revision 3.0 © 2006 | Schenck RoTec GmbH | Germany	26/09/2025 Page 2

Blade Type: **GEBL03M6FA**

Blade Set: **824027**

Blade Distribution

Caution:
Buckets/Blades need to be installed by "Pos. No." in order to minimize any vibration issues!

Pos No.	Moment [gmm]	Serial No.
1	2156400	E1SH025195
2	2186800	E1SH023939
3	2141000	E1SH025237
4	2178600	E1SH025250
5	2144600	E1SH025238
6	2177600	E1SH025289
7	2148400	E1SH025242
8	2175800	E1SH025153
9	2148400	E1SH025202
10	2176200	E1SH025251
11	2151000	E1SH025239
12	2174400	E1SH025151
13	2146600	E1SH025207
14	2172200	E1SH025291
15	2153000	E1SH025188
16	2171000	E1SH025269
17	2150600	E1SH025204
18	2172200	E1SH025150
19	2155600	E1SH025161
20	2171200	E1SH025248
21	2152200	E1SH025115
22	2171000	E1SH025286
23	2152600	E1SH025211
24	2169600	E1SH025261
25	2153400	E1SH025241
26	2170000	E1SH025045

Operator: BucketTH	BladisNET Revision 3.0 © 2006 | Schenck RoTec GmbH | Germany	26/09/2025 Page 3

Blade Type: **GEBL03M6FA**

Blade Set: **824027**

Blade Distribution

Caution:
Buckets/Blades need to be installed by "Pos. No." in order to minimize any vibration issues!

Pos No.	Moment [gmm]	Serial No.
27	2156000	E1SH025268
28	2165600	E1SH025160
29	2152200	E1SH025227
30	2167600	E1SH025271
31	2154600	E1SH025209
32	2170400	E1SH025230
33	2153400	E1SH025280
34	2170600	E1SH025163
35	2156600	E1SH025114
36	2168000	E1SH025129
37	2155400	E1SH025199
38	2167000	E1SH025282
39	2155400	E1SH025003
40	2157600	E1SH025196
41	2156600	E1SH025246
42	2169600	E1SH025152
43	2157000	E1SH025224
44	2168200	E1SH025127
45	2157800	E1SH025245
46	2166800	E1SH025264
47	2157600	E1SH025225
48	2165200	E1SH025149
49	2161200	E1SH025270
50	2167600	E1SH025147
51	2154000	E1SH025253
52	2164600	E1SH025279

Operator: BucketTH	BladisNET Revision 3.0 © 2006 | Schenck RoTec GmbH | Germany	26/09/2025 Page 4

Blade Type: **GEBL03M6FA**

Blade Set: **824027**

Blade Distribution

Caution:
Buckets/Blades need to be installed by "Pos. No." in order to minimize any vibration issues!

Pos No.	Moment [gmm]	Serial No.
53	2157800	E1SH025276
54	2166400	E1SH025267
55	2159400	E1SH025189
56	2165200	E1SH025131
57	2156600	E1SH025272
58	2163800	E1SH025263
59	2157800	E1SH025243
60	2166800	E1SH025146
61	2159600	E1SH025247
62	2163800	E1SH025219
63	2160200	E1SH025198
64	2161800	E1SH025283
65	2161800	E1SH025221
66	2166000	E1SH025215
67	2154800	E1SH025284
68	2161800	E1SH025285
69	2160000	E1SH025266
70	2163200	E1SH025256
71	2160000	E1SH025240
72	2162600	E1SH025234
73	2162000	E1SH025200
74	2164800	E1SH025244
75	2158400	E1SH025226
76	2164200	E1SH025252
77	2160800	E1SH025258
78	2168000	E1SH025148

Operator: BucketTH	BladisNET Revision 3.0 © 2006 | Schenck RoTec GmbH | Germany	26/09/2025 Page 5

Blade Type: **GEBL03M6FA**

Blade Set: **824027**

Blade Distribution

Caution:
Buckets/Blades need to be installed by "Pos. No." in order to minimize any vibration issues!

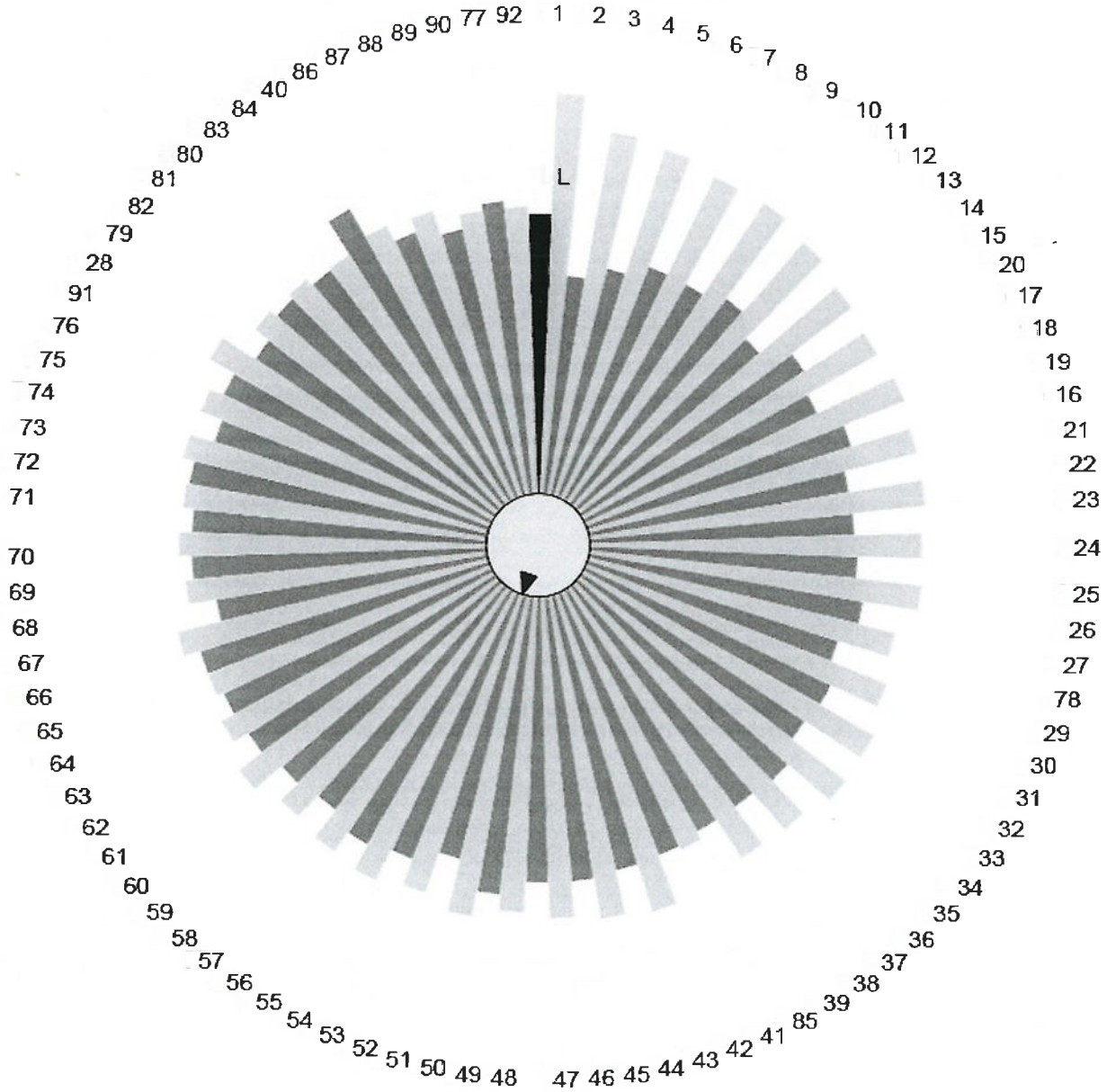
Pos No.	Moment [gmm]	Serial No.
79	2158200	E1SH025262
80	2162600	E1SH025158
81	2160600	E1SH025170
82	2161800	E1SH025190
83	2159800	E1SH025260
84	2160200	E1SH025228
85	2170200	E1SH025222
86	2162000	E1SH025236
87	2157600	E1SH025278
88	2161200	E1SH025235
89	2154800	E1SH025265
90	2158400	E1SH025275
91	2160000	E1SH025134
92	2158200	E1SH025159

Operator: BucketTH QC 26	**BladisNET** Revision 3.0 © 2006 | Schenck RoTec GmbH | Germany	26/09/2025 Page 6

Blade Type: **GEBL03M6FA**

Caution:
Buckets/Blades need to be installed by "Pos. No." in order to minimize any vibration issues!

Blade Set: **824027**



Predistribution Pattern:	7 - Sequence of Weighing
Calculated Unbalance:	18 gmm
Calculated Angle:	198 deg
State of Blade Set:	In Tolerance (1000 gmm)
	In reduced Tolerance (20 gmm)