



Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

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Document Type	Inspection Report
Outage ID	24377
Scope of Activity	GT11 Minor Inspection at Gourikwa Peaking OCGT
Purpose	This is a technical report on the “as found” condition, remedial action performed and final condition of plant or components.

Compiled		
Name/Designation	Signature	Date
L Calana Gas Turbine System Engineer		2023/01/30
J Otto Design Engineer		2023/01/30

Functional Responsibility		
Name/Designation	Signature	Date
T Keyser SEM Turbine Engineering		2023-01-30

Revision Details		
Date	Revision	Area

Accepted		
Name/Designation	Signature	Date
P Mrubata Plant Manager OCGT		2023/01/30

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SUMMARY

Gourikwa GT11 was removed from service on 30 August 2022 at 06:00 in order to carry out Minor Inspection activities as identified in 240-136723367. Limited disassembly, intervention and reassembly activities were performed by site maintenance personnel, and inspections were performed internally by Eskom and ERI personnel and were carried out from August 30th until September 3rd. Areas inspected included: Compressor Inlet, Compressor Exhaust, Combustion Chambers, Turbine Inlet and the Turbine Exhaust. The filter house could not be inspected due to site being unable to facilitate access.

Additionally in order to address poor jacking oil lifts at the generator EE (based on the findings on the Generator TE bearing 2022/06/09) the bearing was opened for inspection and the jacking oil hose was replaced 27 September 2022.

LIST OF ABBREVIATIONS

BU	Business Unit
BIR	Burner Insert Ring
CC	Combustion Chamber
C&I	Control & Instrumentation
CS	Compressor Side
CV	Control Valve
DOH	Dynamic Hours
EOH	Equivalent Operating Hours
ERI	Eskom Rotek Industries
FT	Flame Tube
IC	Inner Casing
LE	Leading Edge
LHS	Open Cycle Gas Turbine
MC	Mixing Chamber
MI	Minor Inspection
MO	Major Inspection
OCGT	Right Hand Side
RHS	Right Hand Side
TBC	Thermal Barrier Coating
TE	Trailing Edge
TLa1	Turbine 1 st Stage Blades
TLa4	Turbine 4 th Stage Blades
TLe1	Turbine 1 st Stage Vanes
TLa4	Turbine 4 th Stage Blades
TLe4	Turbine 4 th Stage Vanes
TS	Turbine Side
TOT	Turbine Outlet Temperature
VIGV	Variable Inlet Guide Vane

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VLa1	Compressor 1 st Stage Blades
VLe0	Compressor 0 th Stage Vanes (VIGVs)

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UNIT INFORMATION

Date	Starts	Operating Hours	EOH	DOH
2022/08/30	2346	14005	38945	1146
Turbine Serial	Turbine Frame	Fuel(s)	Generator Serial	Generator Frame
800620	SGT5-2000E(6)	Fuel Oil	12008153	SGEN5-100A-2P 115/36

REFERENCES

1. Normative
 - a. Gas Turbine Minor Inspection Checklist: 3.5-0236-9420
 - b. Siemens SGT5-2000E Minor Inspection Philosophy: 240-136723367
2. Informative
 - c. Operating & Maintenance Manual – Gas Turbine Description
 - d. Intervals for Maintenance Work: 3.5-0022-9426

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Check Sheet 14: Compressor stage 1 radial blade tip clearances.....	Error! Bookmark not defined.
Check Sheet 15: Compressor diffuser - VI.....	Error! Bookmark not defined.
Check Sheet 16: CC1 FT - VI	Error! Bookmark not defined.
Check Sheet 17: CC1 ceramic tile inspection	Error! Bookmark not defined.
Check Sheet 18: CC2 FT - VI.....	Error! Bookmark not defined.
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Check Sheet 20: CC1 burner alignment.....	Error! Bookmark not defined.
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Check Sheet 31: CC1 MC - VI.....	Error! Bookmark not defined.
Check Sheet 32: CC1 MC - VI	Error! Bookmark not defined.
Check Sheet 33: CC2 MC - VI.....	Error! Bookmark not defined.
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1 EXECUTIVE SUMMARY OF FINDINGS

Section	Findings	Corrective Measures
2.1	Turbine and generator hall structure significantly corroded	Corrosion maintenance plan to be addressed
2.8	Generator EE bearing jacking oil hose was found perished.	Jacking oil hose was replaced by ERI.
3.1	Filter house structure and components found with significant corrosion.	Corrosion evaluation to be performed.
5.1.3, 5.2.3	Overlap wear found between mixing casing cooling ring and inner casing on both combustion chambers	No action – monitor at next MI
5.1.3, 5.2.3	Overlap wear noticed between flame tube and mixing casing castellation in both combustion chambers	No action – monitor at next MI
6.1	Flaking of TBC noted on several 1 st stage blades	No action – monitor at next MI
7	Numerous cracks noted downstream of the turbine outlet; internal cladding and expansion joint cover plates	No action – monitor at next MI

2 EXTERNAL INSPECTIONS

2.1 General

Finding(s):

1. General corrosion on cladding noted.
2. Cladding is filthy.
3. Structure has several areas of heavy corrosion.
 - a. Generator roof noted to have heavy corrosion.

Corrective Measure(s):

1. No remedial action required – to be monitored during the next MI.
2. Housekeeping to be improved.
3. Corrosion analysis and intervention plan required.

2.2 Ignition Gas

No anomalies noted

2.3 Control Oil Skid

Finding(s):

1. Dirt on skid.
2. Coupling spacer damaged.

Corrective Measure(s):

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1. Site to clean skid.
2. Spacer was replaced.

2.4 Fuel Oil Skid

Finding(s):

1. Some oil noted on skid.
2. Missing plugs on 11MBN13CT401 & 11MBN17CT401.

Corrective Measure(s):

1. Site to clean skid and report any leaks if noted.
2. Site to ensure FME standards are adhered to and install plugs.

2.5 Lubricating Oil and Jacking Oil Skid

Finding(s):

1. Oil near mist separator – drip tray present.
2. Oil on the skid in the vicinity of the coolers.
3. Oil near filters – drip tray present.
4. Oil seepage noted around the jacking oil pumps.
5. Jacking oil line in compressor cone is unsupported.

Corrective Measure(s):

1. Site to clean. Leak identification and repair to be scheduled for the next MO.
2. Site to clean skid and report leaks if noted.
3. Site to clean. Leak identification and repair to be scheduled for the next MO.
4. Site to clean skid and report leaks if noted.
5. Site to install adequate support bracket¹.

2.6 Turbine

Finding(s):

1. CC drain line pipes overheated and discoloured.
2. Rubber seal (turbine external cladding) at the wall was still pulling away – but in a similar condition to the previous MI.

Corrective Measure(s):

1. Similar damage was noted as historic at Ankerlig and recorded in Technical Notification ANK-41-BA-2017-MJ-001. The pipes should be internally inspected, cleaned and re-painted during the next MI.
2. To be monitored during the next MI.

¹ This is a repeat finding.

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2.7 Combustion Chambers

Finding(s):

1. White residue on outside cladding.
2. General corrosion and flaking of paint noted on all burners.
3. Protective rubber cladding around dome cladding is falling out of position.
4. Minor seepage noted at premix expansion bellows for burners 1-2, 2-8.

Corrective Measure(s):

1. White residue on cladding was caused by water from the leaking roof.
2. No remedial action required – to be monitored during the next MI.
3. Site to source material for replacement during the next MO.
4. No corrective action as of yet – to be monitored during the next MI.

2.8 Generator

EE bearing was opened and the jacking oil line was found to have been perished. The flexible was replaced.

Recommendations:

- Some overheating was visible in the white-metal; site to schedule bearing refurbishment during the next MO.
- Site to procure shaft-raising gear for EE and TE to simplify and increase safety during bearing-related activities.
- Site to ensure qualification of overhead lifting beam – scaffolding was costly, reduces available space, and increases time taken to execute activities.
- Site will require new oil baffles as clearances are above specification.
 - Baffle rig to be generated in order to ensure correct dimensions are obtained.

3 AIR INTAKE SYSTEM

3.1 Filter House

Finding(s):

1. Significant corrosion noted.
 - a. Drain pipe supports are extremely corroded and some have broken.
2. Coalescing filters out of position & dirty.
3. Clean room dirty and contains liquid.
4. Corrosion and flaking of paint noted.
5. Light test failed in the vicinity of 1 filter.

Corrective Measure(s):

1. Corrosion evaluation to be done, and site to plan for intervention.

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a. Site to replace drain pipe supports and ensure that the material used has a greater corrosion resistance.

2. Coalescing filters were replaced by site.
3. Cleaned by site.
4. Site to apply corrosion resistant paint at affected locations.
5. Filter was removed and reinstalled by site to rectify the seal.

3.2 Compressor Inlet

Finding(s):

1. Compressor Air Inlet cone gasket saturated with oil, likely due to seepage from lube oil drain flange internally to the cone.
2. Internal corrosion noted.
3. Intake cone dirty.
4. Some bubbling of paint noted.

Corrective Measure(s):

1. Possibly indicative of a leak - to be monitored during the next MI.
2. Corrosion protection to be applied and the affected areas to be re-painted. Additionally site to ensure Munters dryer is operated as required in order to prevent humidity in the inlet area.
3. Site to clean – to be monitored during the next MI.
4. Site to clean and re-paint at the next available opportunity. Site also to ensure that compressor wash cleaning agent has been adequately rinsed.

4 COMPRESSOR

4.1 Inlet

4.2.1 VLe0

Finding(s):

1. VIGVs quite filthy with dust debris.
2. Coating abrasion noted at leading edges of the aerofoils.

Corrective Measure(s):

1. Perform compressor washing.
2. No remedial action required – to be monitored during the next MI.

4.2.2 VLa1

Finding(s):

1. Deposits noted on blade aerofoils on suction and pressure sides.
2. Coating abrasion noted on leading edges of the aerofoils.

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- Radial blade tip clearance on RHS measured below specification , however no rubbing was observed in the vicinity.

Corrective Measure(s):

- Perform compressor washing.
- No remedial action required – to be monitored during the next MI.
- No remedial action required – to be monitored during the next MI. Readings similar to the previous MI.

4.2 Exhaust Diffusor

No anomalies noted.

5 COMBUSTION

5.1 LHS CC

5.1.1 Sight Glasses

Finding(s):

- Manhole sight glass dirty.
- 1 off sight glass in FT found damaged.

Corrective Measure(s):

- Sight glass removed, cleaned and re-installed.
- Sight glasses replaced.

5.1.2 Flame Tube

Finding(s):

- Overheating of tile support ring in several areas.
- Overheating of dome plate support ring in some areas.
- Some cracks noted in dome plate support ring.

Corrective Measure(s):

- No remedial action required – to be monitored during the next MI.
- No remedial action required – to be monitored during the next MI.
- No remedial action required – to be monitored during the next MI.

5.1.2.1 Diffusion Burners

Finding(s):

- Coking noted on all burner caps and several axial swirlers.
- Some erosion noted on axial swirlers of burners 1-1, 1-8.

Corrective Measure(s):

- Coking cleaned during MI.

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- No remedial action – to be monitored during the next MI. Site to plan for refurbishment of the axial swirlers during the next MO.

5.1.2.2 Premix Burners

Finding(s):

- Light coking noted on all burner assemblies.
- Several overheated diagonal swirlers on all burners; this is likely indicative of flashbacks having occurred.
- Unequal deposits on all diagonal swirler outlet cones.
- Significant overheating on the premix bell of burner 1-6 and 1-7 resulting in cracks.

Corrective Measure(s):

- Coking cleaned during MI.
- Procurement of adequate quality fuel to be ensured.
- No remedial action required – to be monitored during the next MI.
- To be monitored during the next MI.

5.1.2.3 Ceramic Heat Shields

Finding(s)²:

- No tiles were found with defects outside of the tolerable limits.
- Some missing material noted on tile B8 – however no intervention is required, to be monitored during the next MI.

5.1.2.4 Dome Plates & Burner Inserts

Finding(s):

- Minor signs of fretting noted between dome plates and burner inserts.
- Cracks noted on burner insert ring(s) on 1-1, 1-4, 1-6, 1-7 and 1-8. Mechanical damage on BIR 1-1 was also observed.
- Deformation noted of hot-side dome plates 1-1, 1-4, 1-6, and 1-7.

Corrective Measure(s):

- No remedial action required – to be monitored during the next MI.
- No remedial action required – to be monitored during the next MI. Site to consider application for reverse-engineering of Burner Insert Rings to alleviate replacement costs for the next MO. Burner 1-6 will require replacement during the next MO.
- No remedial action – to be monitored during the next MI.

5.1.3 Mixing Chamber

Finding(s):

² Tolerable limits as defined in: 37-1345-52KE00-DE-2013-12-003|004|005|006|007



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1. Hammering noted between Flame Tube and Mixing Chamber {at castellations 3, 4-5, 7, 8-9, 15-18, 19-20, 21, 27, 28, 30-31, 32-33}.
2. Average “t” between the FT and MC is below specification.
3. Hammering noted between Mixing Chamber and Inner Casing {at IC castellations 15, 16-14}.
4. Slight rubbing of manhole insert at collar noted.
5. Clearance “B” between MC and IC below specification.

Corrective Measure(s):

1. No remedial action required – to be monitored during the next MI.
2. No significant variation determined when compared to the previous MI. No remedial action required – to be monitored during the next MI.
3. No remedial action required – to be monitored during the next MI.
4. No remedial action required – to be monitored during the next MI.
5. No significant variation determined when compared to the previous MI. No remedial action required – to be monitored during the next MI.

5.2 RHS CC

5.2.1 Sight Glasses

Finding(s):

1. Manhole sight glass dirty.

Corrective Measure(s):

1. Sight glass removed, cleaned and re-installed.

5.2.2 Flame Tube

Finding(s):

1. Overheating of tile support ring in several areas.
2. Overheating of dome plate support ring in some areas.
3. Some cracks noted in dome plate support ring.

Corrective Measure(s):

1. No remedial action required – to be monitored during the next MI.
2. No remedial action required – to be monitored during the next MI.
3. No remedial action required – to be monitored during the next MI.

5.2.2.1 Diffusion Burners

Finding(s):

1. Coking noted on all burner caps and several axial swirlers.
2. Erosion noted on burners 2-1 and 2-7.
3. Cracks noted in axial swirlers of burners 2-1 and 2-3.

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Corrective Measure(s):

1. Coking cleaned during MI.
2. To be monitored during the next MI.
3. To be monitored during the next MI.

5.2.2.2 Premix Burners

Finding(s):

1. Light coking noted on all burner assemblies.
2. Several overheated diagonal swirlers on all burners; this is likely indicative of flashbacks having occurred.
3. Unequal deposits on all diagonal swirler outlet cones.
4. Significant overheating on the premix bell of burners 2-2, 2-4 and 2-6 resulting in missing material and cracks.
5. Blocked nozzles noted on burners 2-3 and 2-4.

Corrective Measure(s):

1. Coking cleaned during MI.
2. Procurement of adequate quality fuel to be ensured.
3. No remedial action required – to be monitored during the next MI.
4. No remedial action required – to be monitored during the next MI.
5. Blockages cleared by site.

5.2.2.3 Ceramic Heat Shields

Finding(s)³:

1. No tiles were found with defects outside of the tolerable limits.
2. Hexagonal bolt that was identified as stripped during the previous MI could not be replaced. Intervention during MO required.

5.2.2.4 Dome Plates & Burner Inserts

Finding(s):

1. Minor signs of fretting noted between dome plates and burner inserts.
2. Cracks noted on burner insert ring 2-3, 2-4, 2-7.
3. Deformation noted on plates 2-1, 2-2, 2-4 and 2-8.

Corrective Measure(s):

1. No remedial action required – to be monitored during the next MI.
2. No remedial action required – to be monitored during the next MI. Site to consider application for reverse-engineering of Burner Insert Rings to alleviate replacement costs for the next MO.
3. No remedial action required – to be monitored during the next MI.

³ Tolerable limits as defined in: 37-1345-52KE00-DE-2013-12-003|004|005|006|007

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5.2.3 Mixing Chamber

Finding(s):

1. Hammering noted between Flame Tube and Mixing Chamber Chamber {at castellations 7-11, 13, 15, 17-20, 21, 23, 25-30, 31, 33}.
2. Average “t” between the FT and MC is below specification.
3. Hammering noted between Mixing Chamber and Inner Casing {at IC castellations 12-13, 14-16, 19-11}.
4. Clearance “B” between MC and IC below specification.
5. Slight rubbing of manhole insert as well as cracks at collar noted.
6. Slight mechanical damage noted on the cooling air ring.

Corrective Measure(s):

1. No remedial action required – to be monitored during the next MI.
2. No significant variation determined when compared to the previous MI. No remedial action required – to be monitored during the next MI.
3. No remedial action required – to be monitored during the next MI.
4. No significant variation determined when compared to the previous MI. No remedial action required – to be monitored during the next MI.
5. No remedial action required – to be monitored during the next MI.
6. No remedial action required.

5.3 Inner Casing

Finding(s):

1. There were no findings on the TBC of the IC hub, and no coating spallation was observed.
2. Some corrosion was noted on the IC walls.

Corrective Measure(s):

1. No remedial action required.
2. No remedial action required – to be monitored during the next MI.

6 TURBINE

6.1 Inlet

Finding(s):

1. Slightly darker than normal discoloration of TLe1 and TLa1 TBC observed.
2. Minor flaking of TBC on some TLa1 blades observed.
3. Almost all radial blade tip clearances were measured to be tight.

Corrective Measure(s):

1. No remedial action required.
2. No remedial action required – to be monitored during the next MI.

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3. No remedial action required – to be monitored during the next MI.

6.2 Outlet

Finding(s):

1. Most radial blade tip clearances were measured to be tight – however there were no visible signs of rubbing.
2. High LE ΔS measured on radial blade tip clearances on the LHS.
3. Mottled deposits noted on the 4th stage blades and vanes, however the blades appeared quite clean.

Corrective Measure(s):

1. No remedial action required – to be monitored during the next MI⁴.
2. No remedial action required – to be monitored during the next MI⁵.
3. Water content in fuel to be investigated.

7 EXHAUST

Finding(s):

1. Cracks indications noted in several areas of the exhaust casing, expansion joint plates and turbine bearing hub.
2. Wear noted on turbine bearing hub cover plate, 1st and 2nd expansion joint plates.
3. White deposits noted as well as mottled deposits.

Corrective Measure(s):

1. Several cracks were weld-repaired. To be monitored during the next MI.
2. No remedial action required – to be monitored during the next MI.
3. Water content in fuel to be investigated

8 ACKNOWLEDGEMENTS

- Hadley Siebritz operations & maintenance senior supervisor, and his team for assisting with opening and closing the gas turbine access manholes

⁴ Measurements similar to what was recorded during the previous MI and as such not indicative of deterioration.

⁵ Measurements similar to what was recorded during the previous MI and as such not indicative of deterioration.

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APPENDIX A



Figure 1: Lubricating oil skid



Figure 5: Lubricating oil skid

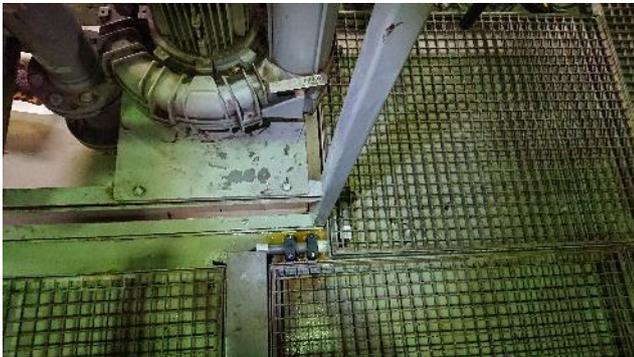


Figure 2: Lubricating oil skid



Figure 6: Lubricating oil skid



Figure 3: Lubricating oil skid

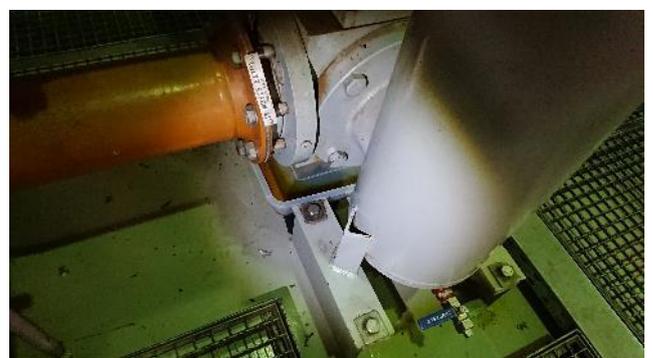


Figure 7: Lubricating oil skid



Figure 4: Lubricating oil skid



Figure 8: Slube oil skid

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Figure 9: Lubricating oil skid



Figure 13: Fuel oil skid



Figure 10: Lubricating oil skid



Figure 14: Fuel oil skid



Figure 11: Unsupported pipe



Figure 15: Fuel oil skid



Figure 12: Purge water skid



Figure 16: Fuel oil skid

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Figure 17: Fuel oil skid



Figure 21: Cladding



Figure 18: Fuel oil skid



Figure 22: Cladding



Figure 19: Fuel oil skid

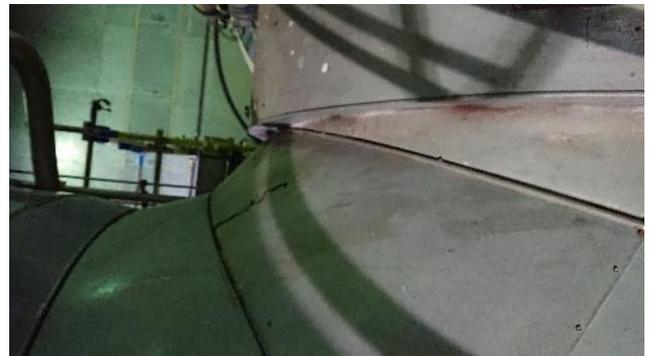


Figure 23: Cladding



Figure 20: Ignition gas skid



Figure 24: Cladding

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Figure 25: Burner overview



Figure 29: Burner overview



Figure 26: Burner overview



Figure 30: Cladding



Figure 27: Cladding



Figure 31: Structure



Figure 28: Cladding



Figure 32: Structure

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Figure 33: Cladding



Figure 37: Compressor inlet nose-cone (internal)



Figure 34: VIGV commander actuator



Figure 38: SSS clutch



Figure 35: Munters dryer pipes



Figure 39: Generator TE bearing



Figure 36: Compressor inlet nose-cone (internal)

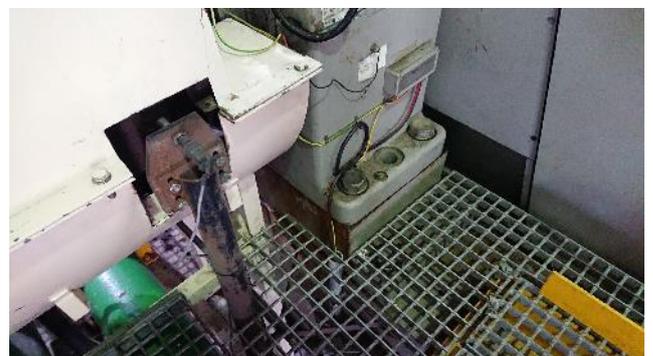


Figure 40: Generator TE bearing

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Figure 41: Generator EE bearing



Figure 45: Generator EE bearing



Figure 42: Generator EE bearing



Figure 46: Control oil pump coupling spacer

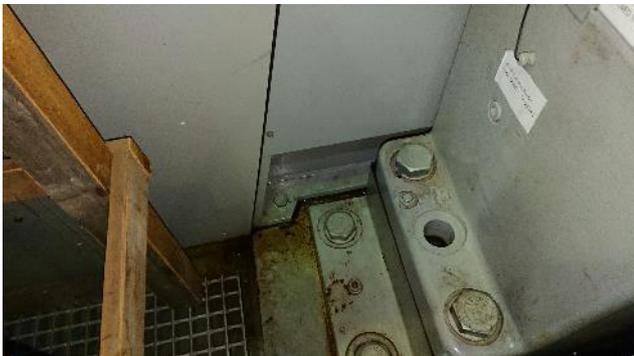


Figure 43: Generator EE bearing



Figure 47: Old control oil pump coupling spacer



Figure 44: Tool used to raise shaft



Figure 48: Exciter making shaft lift difficult

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Figure 49: Filter house

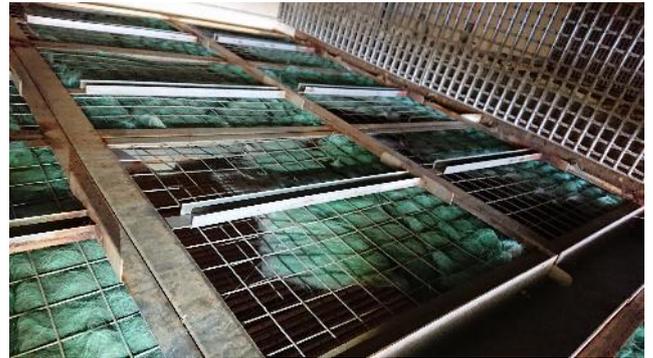


Figure 53: Coalescing filters



Figure 50: Filter house



Figure 54: Pre-filters



Figure 51: Filter house



Figure 55: Pre-filters



Figure 52: Coalescing filters



Figure 56: Pre-filters

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Figure 57: Pre-filters



Figure 61: Pre-filters



Figure 58: Pre-filters



Figure 62: Pre-filters



Figure 59: Coalescing filters



Figure 63: Coalescing filters



Figure 60: Pre-filters



Figure 64: Pre-filters

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Figure 65: Coalescing filters



Figure 69: Filter house



Figure 66: Pre-filters



Figure 70: Filter house



Figure 67: Pre-filters

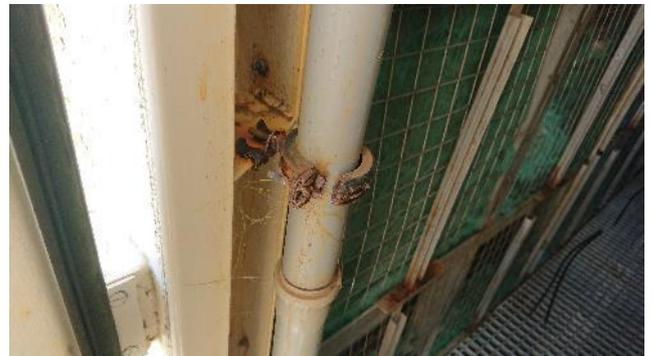


Figure 71: Filter house



Figure 68: Filter house

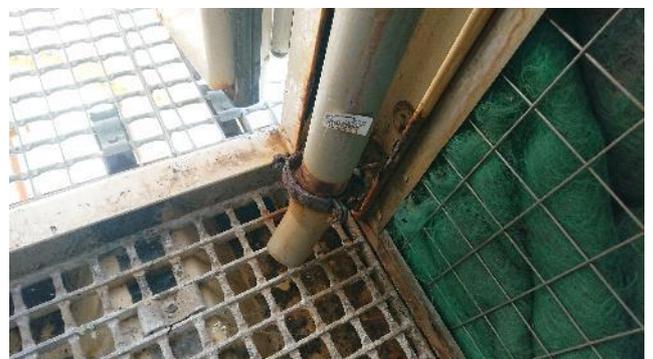


Figure 72: Filter house

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Figure 73: Filter house



Figure 77: Clean room



Figure 74: Filter house



Figure 78: Clean room



Figure 75: Clean room



Figure 79: Clean room

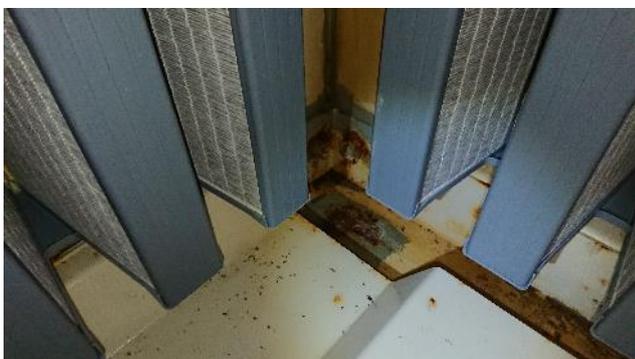


Figure 76: Clean room



Figure 80: Clean room

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Figure 81: Clean room



Figure 85: Clean room



Figure 82: Clean room



Figure 86: Clean room



Figure 83: Clean room



Figure 87: Clean room



Figure 84: Clean room



Figure 88: Clean room

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Figure 89: Clean room



Figure 93: Clean room



Figure 90: Clean room



Figure 94: Clean room



Figure 91: Clean room



Figure 95: Clean room



Figure 92: Clean room



Figure 96: Clean room

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Figure 97: Generator hall roof



Figure 101: Compressor inlet



Figure 98: Generator hall roof



Figure 102: Compressor inlet



Figure 99: Generator hall roof



Figure 103: Compressor inlet

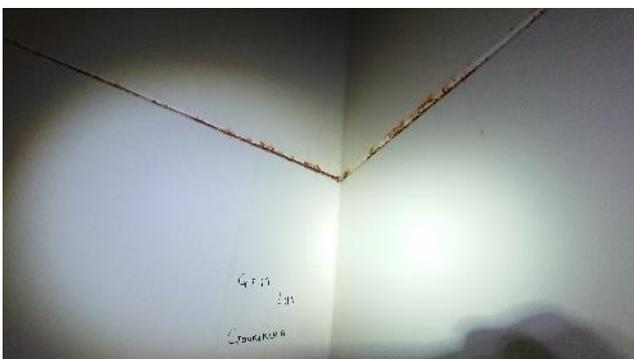


Figure 100: Compressor inlet

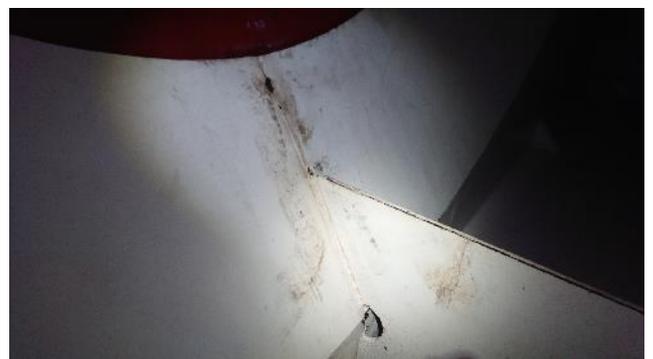


Figure 104: Compressor inlet

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Figure 105: Compressor inlet



Figure 109: Compressor inlet



Figure 106: Compressor inlet



Figure 110: Compressor inlet



Figure 107: Compressor inlet



Figure 111: VLe0



Figure 108: Compressor inlet



Figure 112: VLe0 & VLa1

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Figure 113: VLe0 & VLa1



Figure 117: VLe0 & VLa1



Figure 114: VLe0 & VLa1



Figure 118: IC bottom key



Figure 115: VLe0 & VLa1



Figure 119: IC drain



Figure 116: VLe0 & VLa1



Figure 120: CC2 IC CS support palm

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Figure 121: CC2 IC CS support palm



Figure 125: CC1 IC CS support palm



Figure 122: CC2 MC CT guide



Figure 126: CC1 MC CS guide



Figure 123: CC2 MC bottom guide



Figure 127: CC1 MC bottom guide



Figure 124: CC1 IC CS support palm

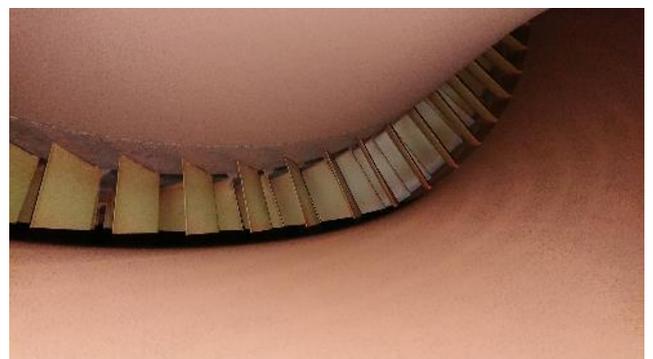


Figure 128: Compressor exhaust

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Document printed on: 30/01/2023

Form No.: 240-94066774 Rev 0



Figure 129: Compressor exhaust

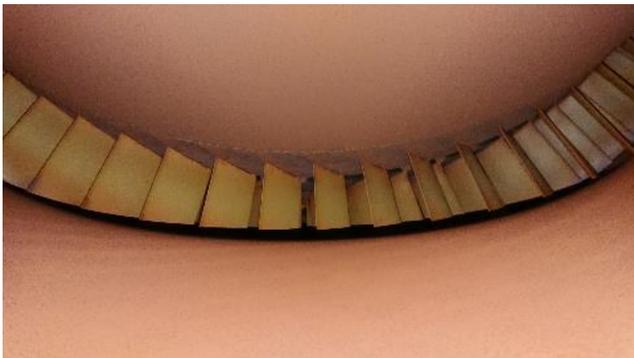


Figure 130: Compressor exhaust



Figure 131: CC1 ceramic tiles



Figure 132: CC1 ceramic tiles



Figure 133: CC1 ceramic tiles



Figure 134: CC1 ceramic tiles



Figure 135: CC1 dome plate support ring



Figure 136: CC1 dome plate support ring

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Figure 137: CC1 dome plate support ring



Figure 141: Burner 1-1



Figure 138: Burner 1-1



Figure 142: Burner 1-1



Figure 139: Burner 1-1



Figure 143: Burner 1-2

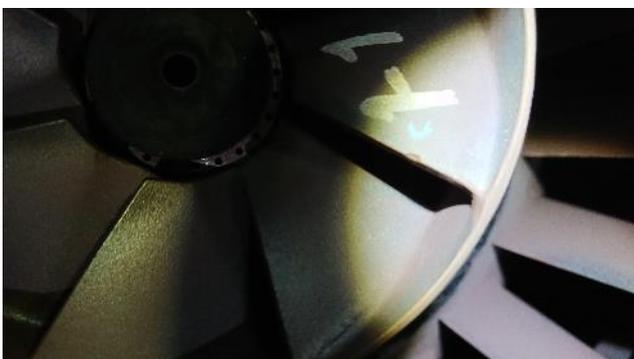


Figure 140: Burner 1-1



Figure 144: Burner 1-2

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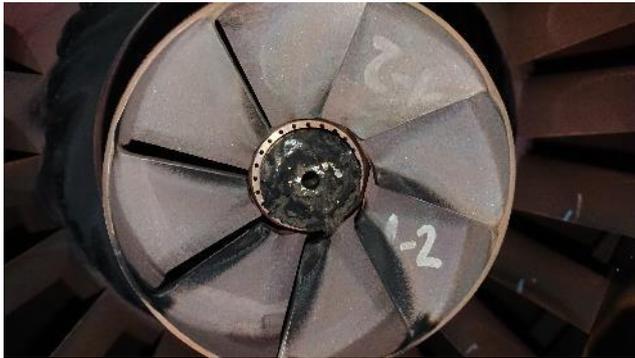


Figure 145: Burner 1-2



Figure 149: Burner 1-3



Figure 146: Burner 1-2



Figure 150: Burner 1-3



Figure 147: Burner 1-2



Figure 151: Burner 1-3



Figure 148: Burner 1-3



Figure 152: Burner 1-3

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Figure 153: Burner 1-4



Figure 157: Burner 1-4



Figure 154: Burner 1-4



Figure 158: Burner 1-4



Figure 155: Burner 1-4



Figure 159: Burner 1-5



Figure 156: Burner 1-4



Figure 160: Burner 1-5

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Figure 161: Burner 1-5



Figure 165: Burner 1-6



Figure 162: Burner 1-5



Figure 166: Burner 1-6



Figure 163: Burner 1-6



Figure 167: Burner 1-6



Figure 164: Burner 1-6



Figure 168: Burner 1-6

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Figure 169: Burner 1-6



Figure 173: Burner 1-6



Figure 170: Burner 1-6



Figure 174: Burner 1-7



Figure 171: Burner 1-6



Figure 175: Burner 1-7



Figure 172: Burner 1-6

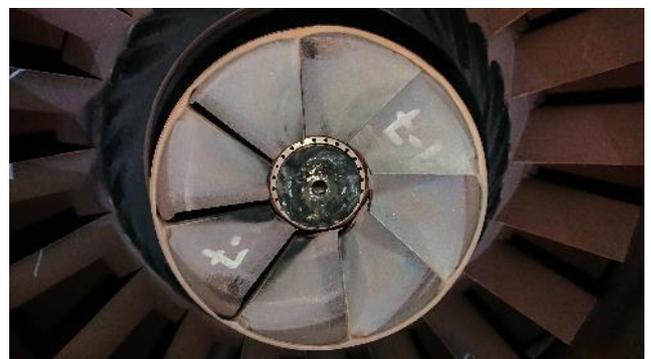


Figure 176: Burner 1-7

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Figure 177: Burner 1-7



Figure 181: Burner 1-8



Figure 178: Burner 1-7



Figure 182: Burner 1-8



Figure 179: Burner 1-7



Figure 183: Burner 1-8



Figure 180: Burner 1-7



Figure 184: Burner 1-8

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Figure 185: Burner 1-8



Figure 189: CC2 ceramic tiles



Figure 186: Burner 1-8



Figure 190: CC2 ceramic tiles



Figure 187: CC2 ceramic tiles



Figure 191: CC2 ceramic tiles



Figure 188: CC2 ceramic tiles



Figure 192: CC2 ceramic tiles

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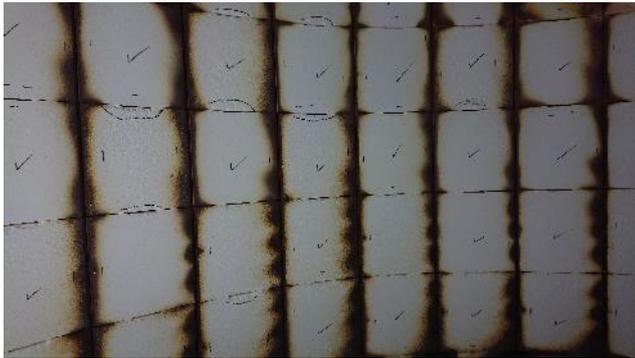


Figure 193: CC2 ceramic tiles



Figure 197: Burner 2-1



Figure 194: CC2 ceramic tiles



Figure 198: Burner 2-1



Figure 195: CC2 ceramic tiles



Figure 199: Burner 2-1



Figure 196: CC2 ceramic tiles



Figure 200: Burner 2-1

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Figure 201: Burner 2-1



Figure 205: Burner 2-2



Figure 202: Burner 2-1



Figure 206: Burner 2-2



Figure 203: Burner 2-1



Figure 207: Burner 2-2



Figure 204: Burner 2-2



Figure 208: Burner 2-2

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Figure 209: Burner 2-2

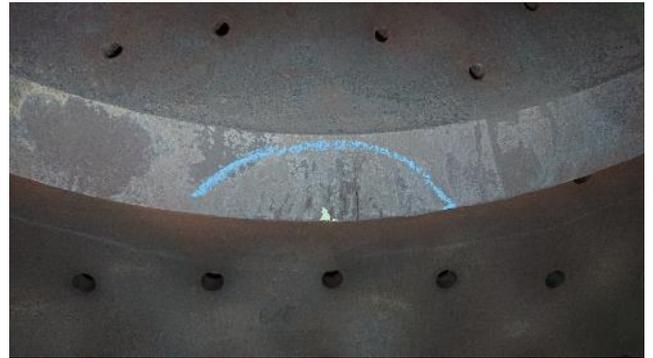


Figure 213: Burner 2-3



Figure 210: Burner 2-3



Figure 214: Burner 2-3



Figure 211: Burner 2-3



Figure 215: Burner 2-3



Figure 212: Burner 2-3



Figure 216: Burner 2-3

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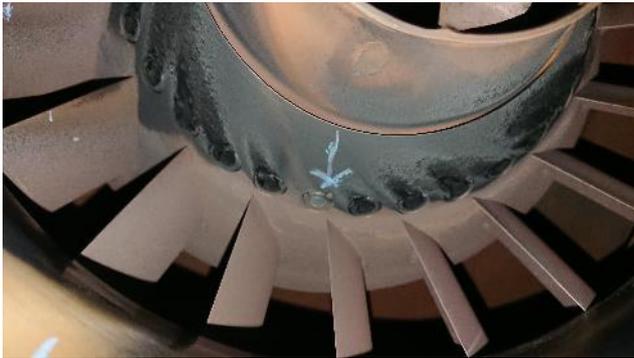


Figure 217: Burner 2-3



Figure 221: Burner 2-4



Figure 218: Burner 2-3



Figure 222: Burner 2-4



Figure 219: Burner 2-3



Figure 223: Burner 2-4



Figure 220: Burner 2-4



Figure 224: Burner 2-4

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Figure 225: Burner 2-4

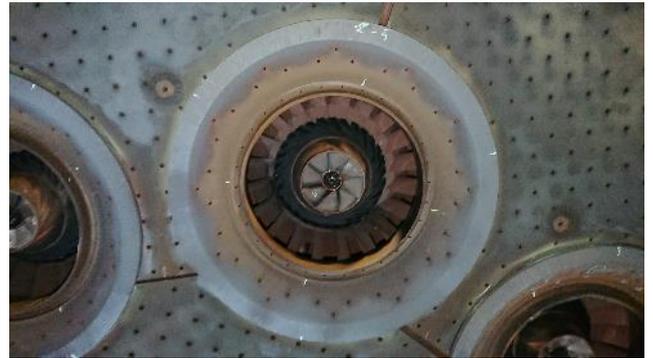


Figure 229: Burner 2-5



Figure 226: Burner 2-4



Figure 230: Burner 2-5



Figure 227: Burner 2-4



Figure 231: Burner 2-5



Figure 228: Burner 2-4



Figure 232: Burner 2-5

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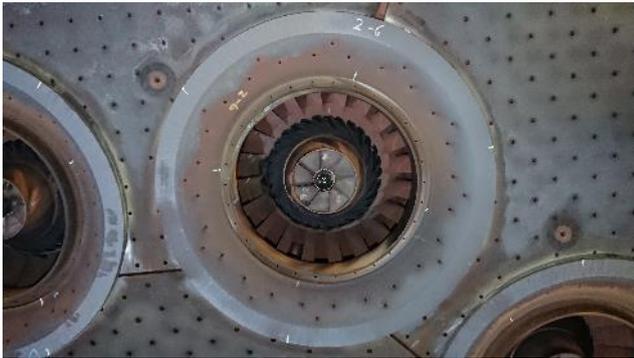


Figure 233: Burner 2-6



Figure 237: Burner 2-6



Figure 234: Burner 2-6



Figure 238: Burner 2-6



Figure 235: Burner 2-6



Figure 239: Burner 2-7



Figure 236: Burner 2-6



Figure 240: Burner 2-7

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Figure 241: Burner 2-7

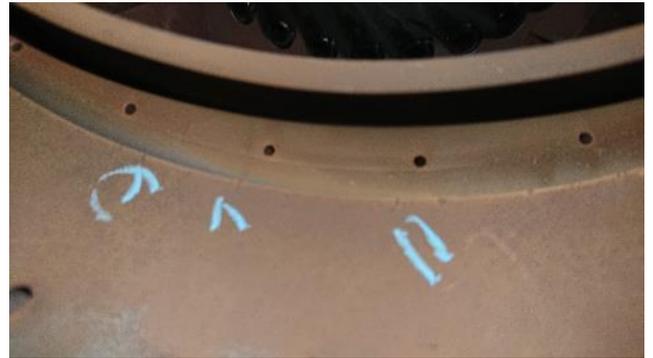


Figure 245: Burner 2-7

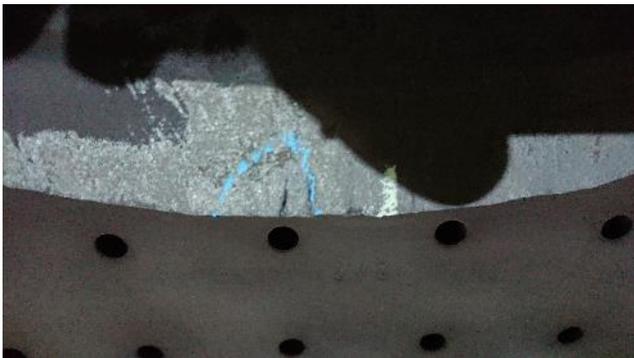


Figure 242: Burner 2-7



Figure 246: Burner 2-8



Figure 243: Burner 2-7



Figure 247: Burner 2-8



Figure 244: Burner 2-7



Figure 248: Burner 2-8

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Figure 249: CC1 FT to MC



Figure 253: CC1 FT to MC



Figure 250: CC1 FT to MC



Figure 254: CC1 MC



Figure 251: CC1 FT to MC



Figure 255: CC1 MC



Figure 252: CC1 FT to MC

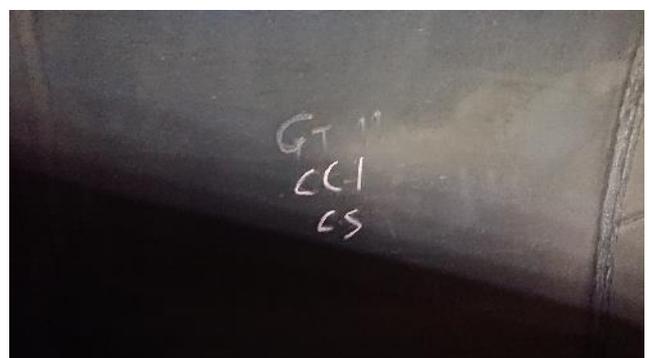


Figure 256: CC1 MC

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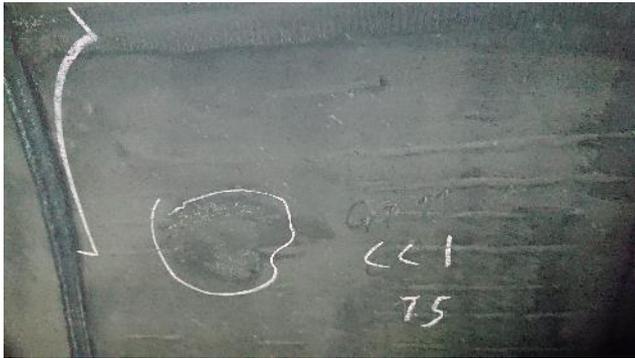


Figure 257: CC1 MC



Figure 261: CC1 MC to IC



Figure 258: CC1 MC



Figure 262: CC1 MC to IC



Figure 259: CC1 MC to IC



Figure 263: CC2 FT to MC



Figure 260: CC1 MC to IC



Figure 264: CC2 FT to MC

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Figure 265: CC2 FT to MC



Figure 269: CC2 FT to MC



Figure 266: CC2 FT to MC



Figure 270: CC2 FT to MC



Figure 267: CC2 FT to MC



Figure 271: CC2 FT to MC

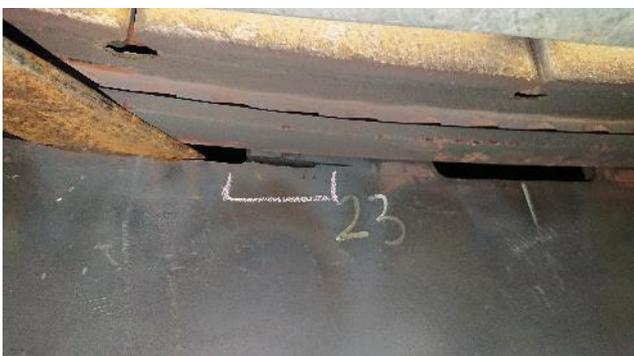


Figure 268: CC2 FT to MC



Figure 272: CC2 MC

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Figure 273: CC2 MC

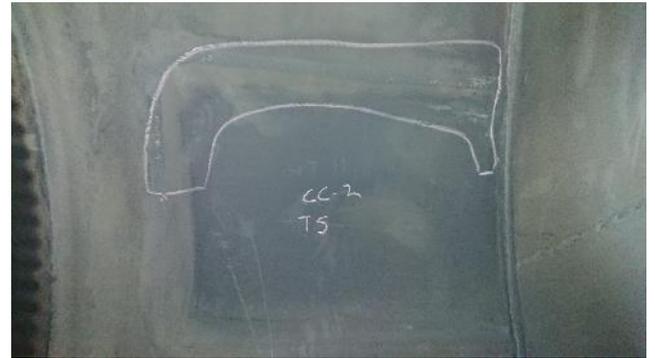


Figure 277: CC2 MC



Figure 274: CC2 MC



Figure 278: CC2 MC



Figure 275: CC2 MC

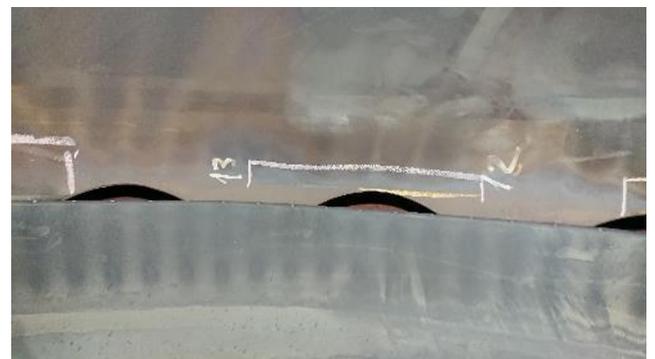


Figure 279: CC2 MC to IC



Figure 276: CC2 MC



Figure 280: CC2 MC to IC

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Figure 281: CC2 MC to IC



Figure 285: IC hub



Figure 282: CC2 MC to IC



Figure 286: TLe1



Figure 283: CC2 MC to IC

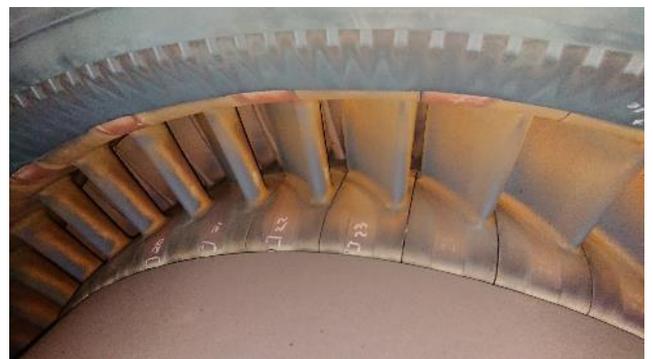


Figure 287: TLe1



Figure 284: IC



Figure 288: TLe1 & TLa1

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Figure 289: TLa1



Figure 293: IC



Figure 290: TLe1



Figure 294: TLe1



Figure 291: TLe1



Figure 295: TLe1 & TLa1



Figure 292: TLe1



Figure 296: TLe1 & TLa1

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Figure 297: TLe1 & TLa1



Figure 301: TLe1



Figure 298: TLa1



Figure 302: TLa4



Figure 299: TLa1



Figure 303: TLa4



Figure 300: TLe1



Figure 304: TLa4

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Figure 305: TLa4 & TLe4



Figure 309: TLa4



Figure 306: TLa4 & TLe4



Figure 310: Exhaust external



Figure 307: TLa4 tip



Figure 311: Exhaust cushion



Figure 308: TLa4 & TLe4



Figure 312: Exhaust

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Figure 313: Exhaust



Figure 317: Exhaust – example of crack



Figure 314: Exhaust



Figure 318: Exhaust – example of rubbing



Figure 315: Exhaust – example of crack



Figure 319: Exhaust – example of rubbing



Figure 316: Exhaust – example of rubbing



Figure 320: Exhaust – example of rubbing

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Figure 321: Exhaust – example of rubbing



Figure 325: Exhaust – example of hammering



Figure 322: Exhaust – example of crack



Figure 326: Exhaust – example of hammering



Figure 323: Exhaust – example of hammering



Figure 327: Exhaust – example of crack



Figure 324: Exhaust – example of crack



Figure 328: Exhaust – example of crack

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Figure 329: Exhaust – example of crack



Figure 330: Exhaust – example of crack



Figure 331: Exhaust – example of crack



Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
Date	30/01/2023		
Page	65 of 113		

APPENDIX B

	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	3 of 5
	Gas Turbine	Project #:	GOU.M13
		Relevant Procedures:	240-136723367

Notes:

- All fuel, gas and oil piping systems need to be inspected for possible leakage with the machine on load.
- When inspecting gas pipelines, use a foam-forming agent or gas detectors.
- High-frequency blowing noises during GT operation are normally associated with leaks at the half-joints, housing connections or manhole covers.
- Request from the client a list of any / all leakage-related non-conformities prior to the outage.
- Record all anomalies in the spaces below, and add photos of all anomalies to the back of this checksheet.

Lube oil and Jacking oil skid including pipework to all bearings

Dirty below mist separator _____

Oil seepage at cooler _____

Oil seepage from 11MBV23BP521 _____

Drip tray below filters _____

Oil near jacking oil pumps _____

Drip tray below jacking oil filters _____

Significant oil in general - may require intervention before MO; site to clean skid so that leaks can be reported & monitored _____

Control oil skid including pipework to Control valves

Skid filthy - site to clean _____

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/08/31	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME:
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE:

Check Sheet 1:Leak check - VI

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Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
Date	30/01/2023		
Page	66 of 113		

	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	2 of 5
	Gas Turbine	Project #:	GOU.MI3
		Relevant Procedures:	240-136723367

Notes:

- 1 All fuel, gas and oil piping systems need to be inspected for possible leakage with the machine on load.
- 2 When inspecting gas pipelines, use a foam-forming agent or gas detectors.
- 3 High-frequency blowing noises during GT operation are normally associated with leaks at the half-joints, housing connections or manhole covers.
- 4 Request from the client a list of any / all leakage-related non-conformities prior to the outage.
- 5 Record all anomalies in the spaces below, and add photos of all anomalies to the back of this checksheet.

Fuel oil skid including pipework to Combustion chambers

Missing plugs on 11MBN13CT401 & 11MBN17CT401

Some oil on skid

Ignition Gas skid including pipework to Combustion chambers

No findings

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 2: Leak check - VI

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Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
Date	30/01/2023		
Page	67 of 113		

	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Insulation	Checksheet Reference #:	V94-2-6004
Inspection	Siemens SGT5-2000E	Page #:	1 of 4
	Centreline	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Notes:
 The term "Insulation" refers to cladding, lagging, cushions and any other form of insulation used on the centreline
 Inspect the insulation for:
 Mechanical damage,
 Thermal degradation,
 Moisture contamination,
 Fastener integrity

Combustion Chambers

Corrosion and some white deposits

Rubber around dome pulling off

Centre Casing

Corrosion

Some loose screws noted

Exhaust Casing

Corrosion and white deposits noted

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 3: Insulation - VI

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Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Combustion Chamber Outer Pipework Visual Inspections - LHS	Checksheet Reference #:	V94-2-2016
Inspection	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Findings	Remarks
Fuel Oil Return Line	Signs of overheating / Discoloration	No	
	Paint Burned Off	No	
	Coking / Soot	No	
Fuel Oil Supply Line	Corrosion	No	
	Damage	No	
Fuel Gas Line	Damage	No	
	Discoloration	No	
Fuel Gas Expansion Joints	Damage	No	
	Corrosion	No	
	Deformation (Stretching / Axial Offset of Bellows)	No	
	Stress-free installation	No	
Thread Lockers, Lock Washers, and Nord-Lock Positive Lock Washers	Adequate Locking (Flanges that are not normally loosened)	No	
Remaining Pipework	Cracks	No	
	Abraded regions	No	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
APPROVED BY - ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 4: CC1 - VI

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Gourikwa – GT11 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Combustion Chamber Outer Pipework Visual Inspections - RHS	Checksheet Reference #:	V94-2-2016
Inspection	Siemens SGT5-2000E	Page #:	2 of 2
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Findings	Remarks
Fuel Oil Return Line	Signs of overheating / Discoloration	No	
	Paint Burned Off	No	
	Coking / Soot	No	
Fuel Oil Supply Line	Corrosion	No	
	Damage	No	
Fuel Gas Line	Damage	No	
	Discoloration	No	
Fuel Gas Expansion Joints	Damage	No	
	Corrosion	No	
	Deformation (Stretching / Axial Offset of Bellows)	No	
	Stress-free installation	No	
Thread Lockers, Lock Washers, and Nord-Lock Positive Lock Washers	Adequate Locking (Flanges that are not normally loosened)	No	
Remaining Pipework	Cracks	No	
	Abraded regions	No	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
APPROVED BY - ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 5: CC2 - VI

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Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	1 of 5
	Gas Turbine	Project #:	GOU.MI3
		Relevant Procedures:	240-136723367

Notes:

- 1 All fuel, gas and oil piping systems need to be inspected for possible leakage with the machine on load.
- 2 When inspecting gas pipelines, use a foam-forming agent or gas detectors.
- 3 High-frequency blowing noises during GT operation are normally associated with leaks at the half-joints, housing connections or manhole covers.
- 4 Request from the client a list of any / all leakage-related non-conformities prior to the outage.
- 5 Record all anomalies in the spaces below, and add photos of all anomalies to the back of this checksheet.

LHS Combustion chamber
Seepage from premix bellow on burner 1-2

RHS Combustion chamber
Seepage from premix bellow on burner 2-8
General corrosion

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 6: Leak check - VI

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Inspection Report
Gourikwa – GT11 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Insulation	Checksheet Reference #:	V94-2-6004
Inspection	Siemens SGT5-2000E	Page #:	2 of 4
	Centreline	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Notes:
 The term "Insulation" refers to cladding, lagging, cushions and any other form of insulation used on the centreline
 Inspect the insulation for:
 Mechanical damage,
 Thermal degradation,
 Moisture contamination,
 Fastener integrity

Exhaust Diffusor

Some corrosion and white deposits noted

Blow-off Pipes

Some corrosion and white deposits noted

Fuel Oil Lines

No findings

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 7: Insulation - VI

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Gourikwa – GT11 Minor
Inspection

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	4 of 5
	Gas Turbine	Project #:	GOU.MI3
		Relevant Procedures:	240-136723367

Notes:

- 1 All fuel, gas and oil piping systems need to be inspected for possible leakage with the machine on load.
- 2 When inspecting gas pipelines, use a foam-forming agent or gas detectors.
- 3 High-frequency blowing noises during GT operation are normally associated with leaks at the half-joints, housing connections or manhole covers.
- 4 Request from the client a list of any / all leakage-related non-conformities prior to the outage.
- 5 Record all anomalies in the spaces below, and add photos of all anomalies to the back of this checksheet.

GT centerline (under GT, at the Intermediate shaft, Compressor Bearing housing, Turning gear, and SSS Clutch if installed)

No findings

Generator (including bearings and oil seals)

Oil at EE bearing

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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 8: Leak check - VI

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Inspection Report
Gourikwa – GT11 Minor
Inspection

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Insulation	Checksheet Reference #:	V94-2-6004
Inspection	Siemens SGT5-2000E	Page #:	4 of 4
	Centreline	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Notes:
The term "Insulation" refers to cladding, lagging, cushions and any other form of insulation used on the centreline
Inspect the insulation for:
Mechanical damage,
Thermal degradation,
Moisture contamination,
Fastener integrity

Turbine Bearing Hub Cover Plate

No findings

Generator

No findings

Intermediate shaft

Jacking oil pipe in cone unsupported

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 9: Insulation - VI

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Inspection Report
Gourikwa – GT11 Minor
Inspection

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Date	30/01/2023		
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Filter House Visual Inspection	Checksheet Reference #:	V94-2-1901
Inspection	Siemens SGT5-2000E	Page #:	1 of 6
	Compressor	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection Type	Findings	Remarks
Dirty Side	Deposits	Yes	Corrosion noted
	Damage	Yes	Coalescing filters out of position
	Filter Completeness	No	
	Detached parts / Loose Filters	Yes	Drain pipe supports are extremelu corroded & compromised
	Soiling of Filters	Yes	
	Non-Uniform alignment of Filters	No	
	Unexpected Modifications	No	
	Missing Filters	No	
Clean Side	Forgein Objects	Yes	
	Deposits	Yes	Black particles similar to what was found in the compressor inlet
	Damage	No	
	Detached parts / Loose Filters	No	
	Formation of Gaps (Light Test)	Yes	1 off filter identified to be removed and reinstalled
	Flaking of paint / Corrosion	Yes	Moderate - intervention required
	Locking	No	
Structure	Forgein Objects	Yes	Liquid
	Damage to Door Seals	No	
	Damage to Door Locks	No	
	Damage to seals in the Wall region	No	
Silencer	Holes in the Wall	No	
	Detached Parts / Loose Elements	No	
	Deposits, Corrosion	Yes	
	Cracks	No	
	Damage	No	

Overview Photos to be taken

Filter Cassettes	Clean Air Compartment
Filter Compartment Floor	Compressor Inlet

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/08/31

Check Sheet 10: Filter house - VI

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Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Compressor Inlet Systems Visual Inspection	Checksheet Reference #:	V94-2-1901
Inspection	Siemens SGT5-2000E Compressor	Page #:	2 of 6
		Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection Type	Findings	Remarks
Air Intake Flap	Proper Operation	No	
	Loose Parts	No	
	Forgein Objects	No	
	Corrosion	Yes	
	Damage	No	
Air Intake	Loose Parts	No	
	Forgein Objects	Yes	Black particles noted
	Deposits	Yes	
	Oil	Yes	Moderate
	Proper installation of intake Gaskets	No	
Gasket between Cone and Inlet Structure	Damage	No	
	Oil Saturation	Yes	
Intake Cone Half-Joint Flat Gasket	Damage	No	
Air Intake Structure	Damage to Door Seals	No	
	Damage to Door Locks	No	
	Damage to seals in the Wall region	No	
	Hones in the Wall	No	
	Oil through the Wall	No	
	Flaking of Paint / Corrosion	Yes	Moderate
Intake Cone	Deposits / Oil Traces	No	
	Forgein Objects	No	
	Incomplete Painting	Yes	Bubbling of paint
	Corrosion	No	
Support Struts	Cracks	No	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:		DATE:		DATE: 2022/08/31

Check Sheet 11: Compressor inlet systems - VI

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Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Compressor Inlet Systems Visual Inspection	Checksheet Reference #:	V94-2-1901
Inspection	Siemens SGT5-2000E	Page #:	3 of 6
	Compressor	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection Type	Findings	Remarks
Compressor Washing System	Tack Welds Cracks	No	
	Tack Welds Number of Welds	No	
	Pipe Clamps Damage	No	
	Pipe Clamps Cracks	No	
	Nozzles Correct Alignment	No	
	Deposits	No	
	Clogging	No	
	Missing Components	No	
	Corrosion	No	
Dehumidification System and Unit	Damage	No	
	Forgein Objects	No	
	Pipe Damage	No	
	Soiling / Clogging of Filters	No	
	Corrosion of Pipes in Intake Region	No	
	Damage / Deformation of Pipes in Flow Path	No	
Area of VIGV adjustment range	Inner Wall Scoring	No	
	Outer Wall Scoring	No	
Stage 1 Blades	Rubbing between Blades and Casing	No	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:		DATE:		DATE: 2022/09/01

Check Sheet 12: Compressor inlet systems - VI

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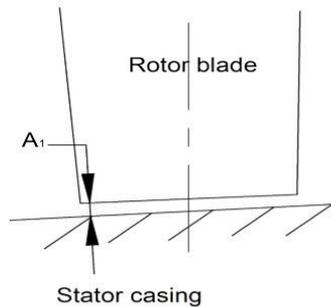
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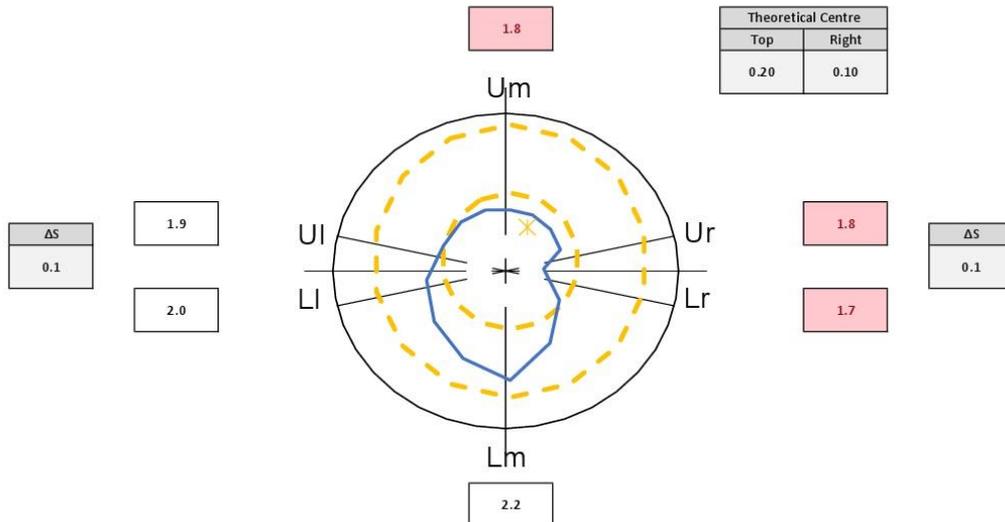
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Compressor Stage 1 Radial Blades Tip Clearances (VLA1)	Checksheet Reference #:	V94-2-6102
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Centreline	Project #:	GOU.MB
		Relevant Procedures:	240-136723367



Remarks: _____

Note: Values determined at minimum clearance for each measuring point using a feeler gauge



Specifications	Min	Max
Blade clearance	1.9	2.3
ΔS		0.1

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 13: VLa1 radial blade tip clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Diffuser Inspection	Checksheet Reference #:	V94-2-1604
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Compressor	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Visual Inspection		
Area to Inspect	Findings	Remarks
Vanes - Lock Washers Damage	No	
Vanes - Lock Washers Installation Configuration	No	
Vanes - Lock Washers Loose Components	No	
Vanes - Lock Washers Offset	No	
Vanes Deformation	No	
Vanes FOD	No	
Vanes Cracks	No	
Vane Screws Tightness	No	
Seal Tips Wear		
Seal Tips Material break-out		
Seal Tips Cracks		
Seal Tips Bending Deformation		
Seal Tips Height Uniformity Deviations		
Inner Casing Slot Mechanical Material Thinning		
Anti-rotation Pin Pressure marks		
Anti-rotation Pin Wear		
Anti-rotation Pin Fracture		
Half-joint Faces Cracks		

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 14: Compressor diffusor - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Flame Tube Inspection - LHS	Checksheet Reference #:	V94-2-2026-1
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Visual Inspections			
Area	Inspection	Findings	Remarks
Sight Glass	Soiling	Yes	<hr/>
	Damage	Yes	
Tile Support Ring (F-ring)	Scaling / Mechanical Material Thinning	No	
	Scuffing Marks / Hammering Marks	Yes	
	Cracks	Yes	
Centering Guide	Scoring Marks		
Pressure Sensing Lines	Cracks		
	Unobstructed Cross Section		
Flame Cylinder with Heat Shield Removed	Discoloration		
	Scaling / Mechanical Material Thinning		
	Wear		
	Cracks		

NDE Inspections		
Inspection	Findings	Remarks
Outer Brick Holder Welds PT - 432 off		<hr/>

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 15: CC1 FT- VI

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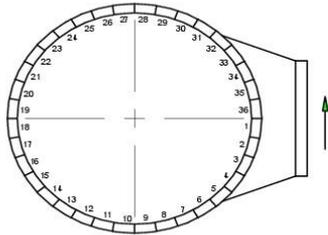
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Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	LHS Flame Tube - Ceramic Tile Inspection	Checksheet Reference #:	V94-2-2006-1
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.M13
		Relevant Procedures:	240-136723367



Remarks: B8 does not require replacement at this time - missing material does not appear to be a risk to tile integrity

Row	K	J	I	H	G	F	E	D	C	B	A1	A2	A3
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													

Tiles to be Removed	5
Tiles to be Replaced	1

Key	
Crack	C
Partial Crack	P
Missing Tile	M
Partly Missing Tile	G
Loose Tile (clearance > 7mm)	L
No deviations	
Damage detected during disassembly	D
Tile holder damage	^
Replace	
Remove	

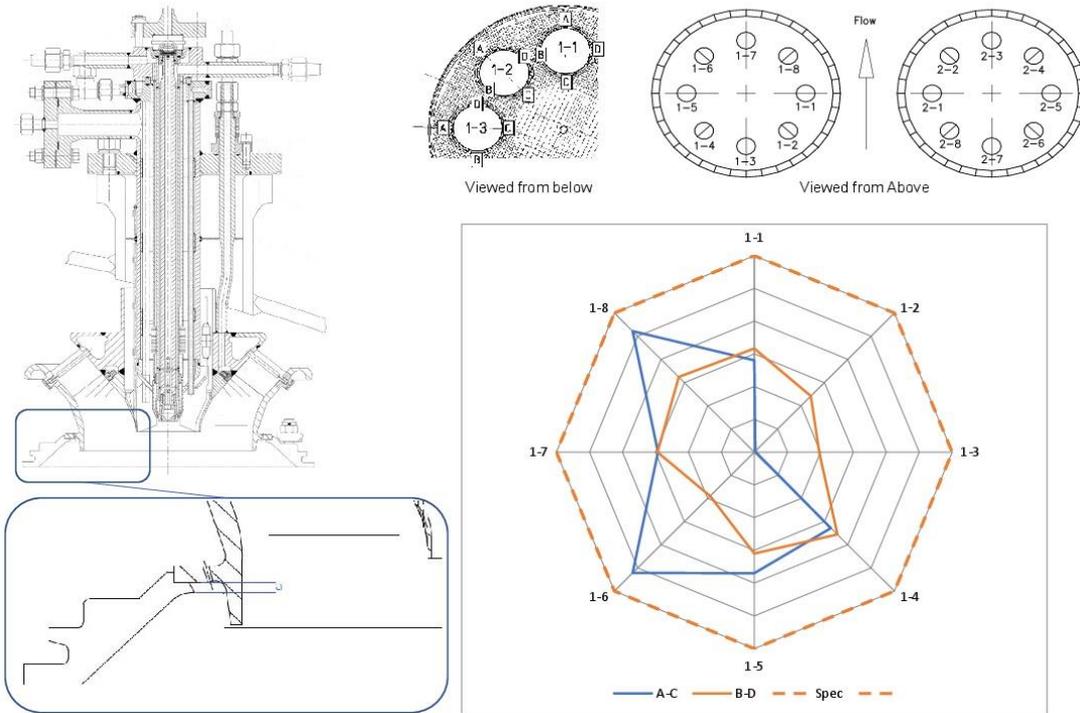
*Note: Tiles to be removed in order to reach/replace damaged tiles

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 16: CC1 ceramic tile inspection

Controlled Disclosure

	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	LHS CC Burner Alignment	Checksheet Reference #:	V94-2-2010-1
Disassembly	Siemens SGT5-2000E Combustion	Page #:	1 of 2
		Project #:	GOU.MB
		Relevant Procedures:	240-136723367



Location	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8
A	5.5	5.4	5.8	6.5	6.1	6.1	5.4	5.7
B	5.3	5.9	6.1	6.1	5.5	4.9	5.0	5.0
C	5.6	6.9	7.2	6.4	5.7	5.0	5.4	4.5
D	5.2	6.2	6.6	5.8	5.5	5.4	5.0	4.8
A-C	0.1	1.5	1.5	0.1	0.4	1.1	0.0	1.1
B-D	0.1	0.3	0.5	0.3	0.0	0.6	0.0	0.1

Spec	Max
Mis-alignment	1.5

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 17: CC1 burner alignment

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Hot Side Dome Plate LHS CC	Checksheet Reference #:	V94-2-2009-1
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Bottom plate Left
 View in opposite flow direction

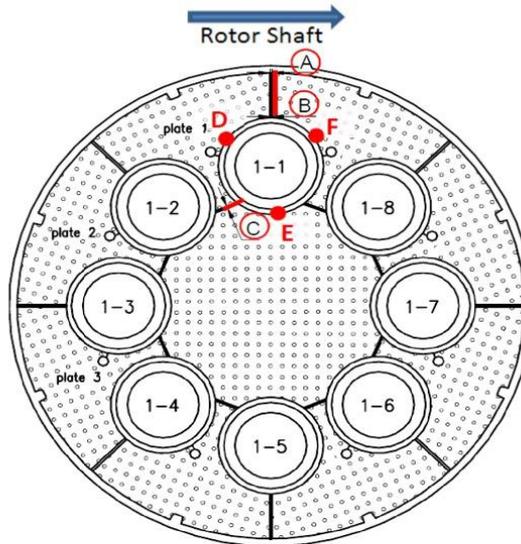


Plate	A	B	C	D	E	F
1	11.9	11.9	12.9	19.3	12.4	17.2
2	10.5	10.3	13.4	19.5	12.0	19.1
3	10.9	10.5	11.8	12.5	12.4	17.9
4	9.7	11.2	10.9	18.7	13.9	13.6
5	13.2	11.9	9.0	13.8	13.1	19.9
6	9.1	9.3	10.6	19.7	13.7	13.4
7	13.6	11.2	11.2	21.1	12.7	20.4
8	10.3	10.3	11.9	17.9	12.1	17.6

Remarks: _____

Spec	Min	Max
A	8	12
B	8	12
C	8	12

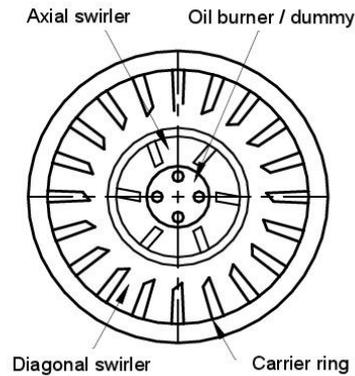
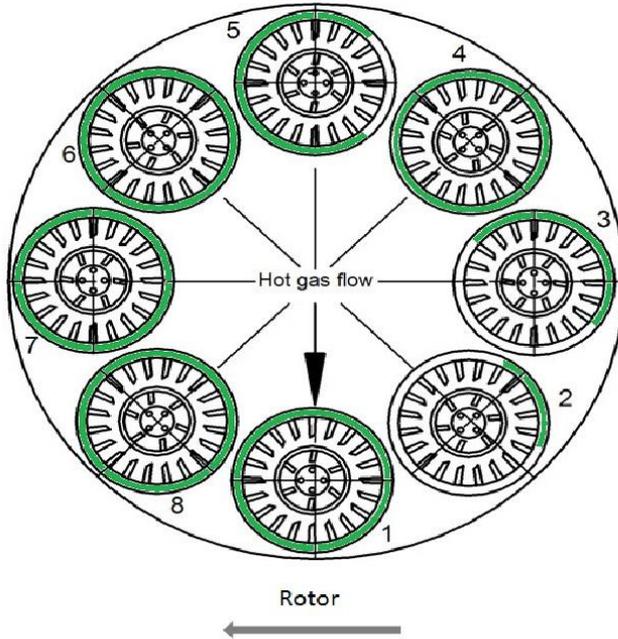
RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:	P.L. Calana	
SIGNATURE:		SIGNATURE:		
DATE:	Log #:	DATE:	2022/09/01	

Check Sheet 18: CC1 dome plate clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	LHS CC Burner Assembly Visual Inspection	Checksheet Reference #:	V94-2-2012-1
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MI3
		Relevant Procedures:	240-136723367



Remarks: BIR cracks: 1-1, 1-4, 1-6, 1-7, 1-8

1-6 cracks seem deep - replace at next MO

Key	
Corrosion	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 19: CC1 burner assembly - VI

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Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Diffusion Burners LHS Visual Inspections	Checksheet Reference #:	V94-2-2023-1
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Burner 1-1	Burner 1-2	Burner 1-3	Burner 1-4	Burner 1-5	Burner 1-6	Burner 1-7	Burner 1-8
Fuel Oil Lance	Discoloration	No							
	Erosion *Boroscopic Inspection*								
	Seat								
	Scaling								
	Deposits								
	Discoloration								
Burner Needle	Signs of overheating								
	Cracks *Boroscopic Inspection*								
	Correct Installation *Boroscopic Inspection*								
Axial Swirlers	Deposits	No	Yes	Yes	Yes	Yes	Yes	Yes	No
	Clogging of bores	No							
	Deformation of Vanes	No							
	Scaling	No							
	Erosion	Yes	No	No	No	No	No	No	Yes
	Cracks	No							
Burner Support	Discoloration								
	Signs of Overheating								
	Cracks								
	Damage								
Igniter	Spark Test								
	Damage								
Thermo-couples	Damage								

Remarks: _____

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
APPROVED BY - ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 20: CC1 diffusion burners - VI

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Gourikwa – GT11 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Premix Burner LHS Visual Inspections	Checksheet Reference #:	V94-2-2028
Inspection	Siemens SGT5-2000E	Page #:	1 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Burner 1-1	Burner 1-2	Burner 1-3	Burner 1-4	Burner 1-5	Burner 1-6	Burner 1-7	Burner 1-8
Nozzles	Deposits / Coking / Plugging	No							
	Hub - Deposits / Coking	Yes							
	Hub - Fit of Nozzles								
Diagonal Swirler Entire Surface	Deposits / Coking / Plugging								
	Corrosion	No							
	Deformation	No							
	Material Break-out	No							
	Hammering Marks to Burner Insert Ring								
	Hammering Marks to Axial Swirler								
	Tight fit of Vanes								
	Misalignment								
	Clogging of Premix Gas Nozzles								
	Signs of Overheating	No	No	No	No	Yes	Yes	Yes	Yes
	Cracks	No	No	No	No	No	Yes	Yes	No
Expansion Joint	Damage								
Hold-downs for Diagonal Swirler	Wear								
	Cracks								
	Tight fit								
Gas Distributor (Spider)	Corrosion								
	Cracks								
	Deposits *Boroscopic Inspection*								

Remarks: _____

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 21: CC1 premix burners - VI

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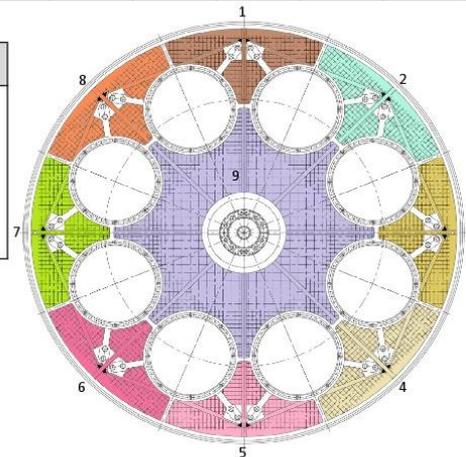
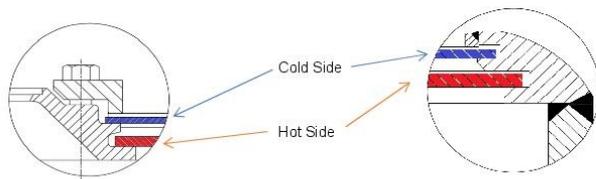
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Inspection Report
 Gourikwa – GT11 Minor
 Inspection

Document Identifier	194/1353	Rev	0
Date	30/01/2023		
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Dome Plates Visual Inspection	Checksheet Reference #:	V94-2-2020
Inspection	Siemens SGT5-2000E Combustion	Page #:	1 of 2
		Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6	Plate 7	Plate 8	Plate 9
LHS CC	Cold Side	Hammering Marks								
		Scaling								
		Cracks								
	Hot Side	Hammering Marks	Yes							
		Scaling	No							
		Cracks	No							
	Deformation	Yes	No	No	Yes	No	Yes	Yes	No	
RHS CC	Cold Side	Hammering Marks								
		Scaling								
		Cracks								
	Hot Side	Hammering Marks	Yes							
		Scaling	No	Yes	No	No	No	Yes	No	No
		Cracks	No							
	Deformation	Yes	Yes	No	Yes	No	No	Yes	No	

Inspection	Findings	Remarks
End Plate Material (Cold Side)	LHS	
	RHS	



RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 22: Hot side dome plates - VI

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Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Flame Tube Inspection - RHS	Checksheet Reference #:	V94-2-2026-2
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Visual Inspections			
Area	Inspection	Findings	Remarks
Sight Glass	Soiling	No	<hr/>
	Damage	No	
Tile Support Ring (F-ring)	Scaling / Mechanical Material Thinning	No	
	Scuffing Marks / Hammering Marks	Yes	
	Cracks	Yes	
Centering Guide	Scoring Marks		
Pressure Sensing Lines	Cracks		
	Unobstructed Cross Section		
Flame Cylinders with Heat Shield Removed	Discoloration		
	Scaling / Mechanical Material Thinning		
	Wear		
	Cracks		

NDE Inspections		
Inspection	Findings	Remarks
Outer Brick Holder Welds PT - 432 off		<hr/>

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 23: CC2 FT - VI

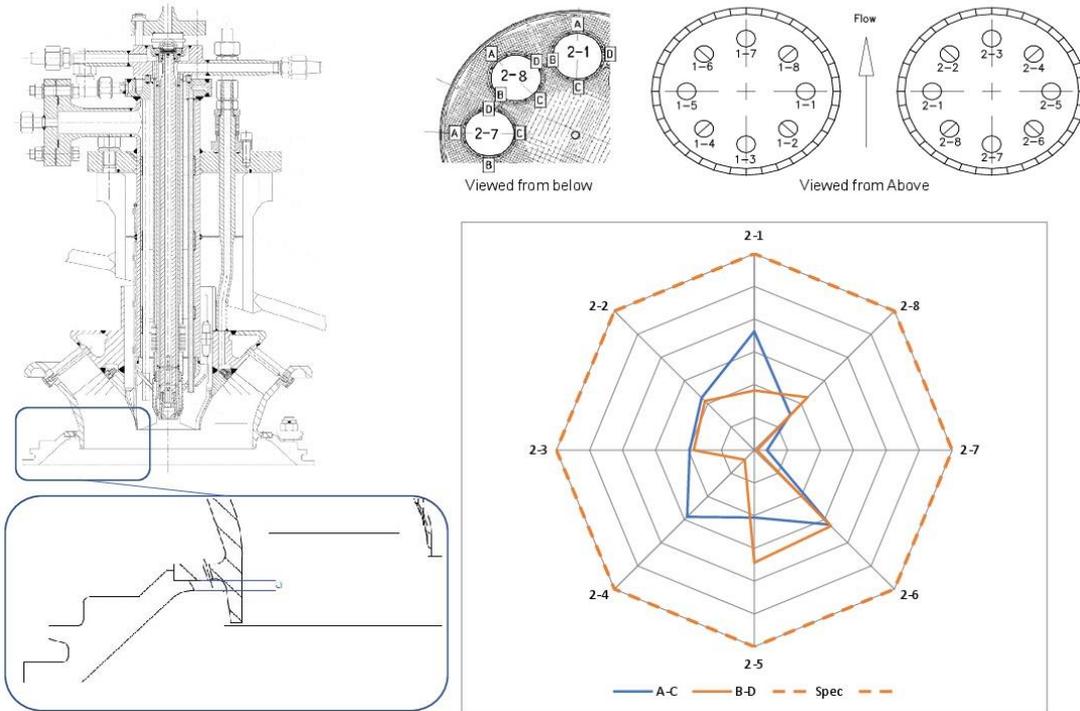
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Form No.: 240-94066774 Rev 0

	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	RHS CC Burner Alignment	Checksheet Reference #:	V94-2-2010-2
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367



Location	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8
A	5.7	5.5	5.2	5.8	5.6	6.1	5.4	5.4
B	5.5	5.4	4.9	4.8	5.6	5.6	5.1	5.1
C	5.4	5.9	5.7	5.9	6.1	6.0	6.7	6.2
D	6.1	5.8	5.5	6.1	5.4	5.5	6.6	5.4
A-C	0.3	0.4	0.5	0.1	0.5	0.1	1.3	0.7
B-D	0.6	0.4	0.6	1.3	0.2	0.1	1.5	0.4

Spec	Max
Mis-alignment	1.5

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/09/01	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 24: CC2 burner alignment

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 Gourikwa – GT11 Minor
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Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Hot Side Dome Plate RHS CC	Checksheet Reference #:	V94-2-2009-2
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Bottom plate Right
 View in opposite flow direction

Rotor Shaft

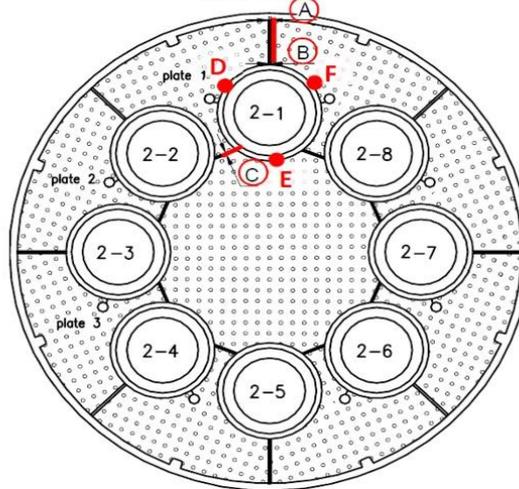


Plate	A	B	C	D	E	F
1	10.2	11.5	19.3	19.4	12.2	19.7
2	9.7	9.7	20.4	19.9	11.5	20.3
3	10.6	11.3	14.3	19.6	12.4	19.1
4	10.6	10.2	9.0	18.9	12.8	20.5
5	13.2	12.4	4.6	14.2	13.6	20.3
6	9.2	9.7	4.1	19.6	13.0	13.9
7	11.7	13.1	6.8	15.4	14.7	19.4
8	9.7	9.5	14.4	19.1	12.7	13.0

Remarks: _____

Spec	Min	Max
A	8	12
B	8	12
C	8	12

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 25: CC2 dome plate alignment

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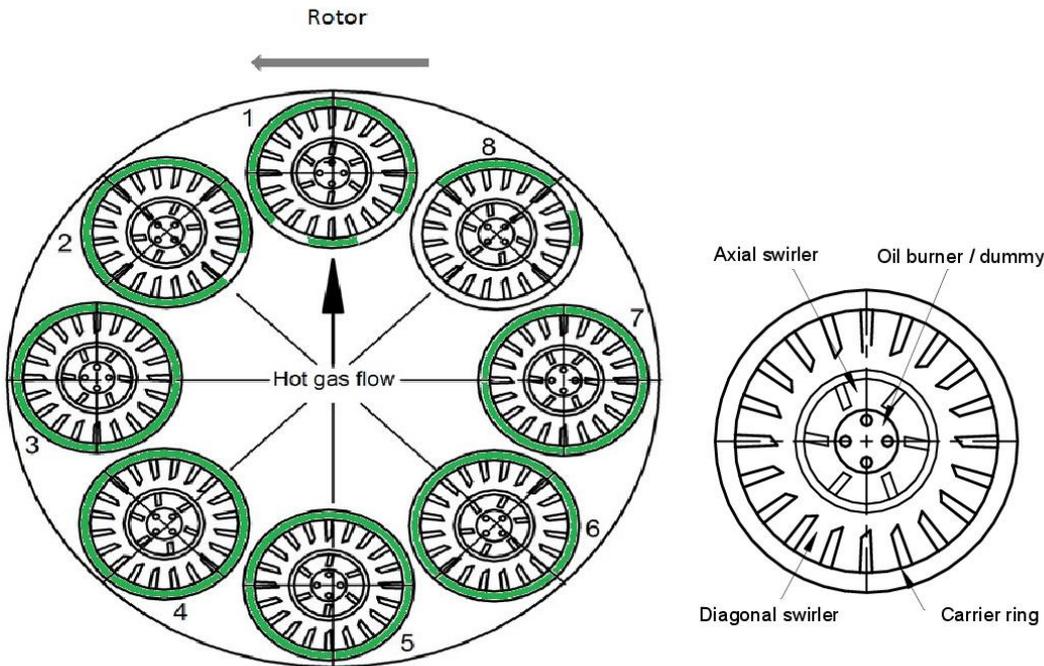
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Business Management System
Inspection Report
 Gourikwa – GT11 Minor
 Inspection

Document Identifier	194/1353	Rev	0
Date	30/01/2023		
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	RHS CC Burner Assembly Visual Inspection	Checksheet Reference #:	V94-2-2012-2
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367



Remarks: BIR cracks: 2-3, 2-4, 2-7

2-4 will require replacement in the next MO

Key	
Corrosion	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 26: CC2 burner assembly - VI

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Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Diffusion Burners RHS Visual Inspections	Checksheet Reference #:	V94-2-2023-2
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Burner 2-1	Burner 2-2	Burner 2-3	Burner 2-4	Burner 2-5	Burner 2-6	Burner 2-7	Burner 2-8
Fuel Oil Lance	Discoloration	No							
	Erosion *Boroscopic Inspection*								
	Seat								
	Scaling								
	Deposits								
	Discoloration								
Burner Needle	Signs of overheating								
	Cracks *Boroscopic Inspection*								
	Correct Installation *Boroscopic Inspection*								
Axial Swirlers	Deposits	Yes							
	Clogging of bores	No							
	Deformation of Vanes	No							
	Scaling	No							
	Erosion	Yes	No	No	No	No	No	Yes	No
	Cracks	Yes	No	Yes	No	No	No	No	No
	Discoloration	No							
Burner Support	Corrosion / Damage								
	Discoloration								
	Signs of Overheating								
	Cracks								
Igniter	Damage								
	Spark Test								
Thermo-couples	Damage								

Remarks: _____

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
APPROVED BY - ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:		DATE:		DATE: 2022/09/01

Check Sheet 27: CC2 diffusion burners - VI

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Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Premix Burner RHS Visual Inspections	Checksheet Reference #:	V94-2-2028
Inspection	Siemens SGT5-2000E	Page #:	2 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Burner 2-1	Burner 2-2	Burner 2-3	Burner 2-4	Burner 2-5	Burner 2-6	Burner 2-7	Burner 2-8
Nozzles	Deposits / Coking / Plugging	No	No	Yes	Yes	No	No	No	No
	Hub - Deposits / Coking	Yes	Yes	Yes	Yes	Yes	No	No	No
	Hub - Fit of Nozzles								
Diagonal Swirler Entire Surface	Deposits / Coking / Plugging								
	Corrosion	No							
	Deformation	No							
	Material Break-out	No	Yes	No	Yes	No	Yes	No	No
	Hammering Marks to Burner Insert Ring								
	Hammering Marks to Axial Swirler								
	Tight fit of Vanes								
	Misalignment								
	Clogging of Premix Gas Nozzles								
	Signs of Overheating	No	Yes	Yes	Yes	No	Yes	No	No
	Cracks	No	Yes	No	Yes	No	Yes	No	No
Expansion Joint	Damage								
Hold-downs for Diagonal Swirler	Wear								
	Cracks								
	Tight fit								
Gas Distributor (Spider)	Corrosion								
	Cracks								
	Deposits *Boroscopic Inspection*								

Remarks: Blocked nozzles; 2-3:1, 2-4:1
 DS OH; 2-1:6, 2-2:7, 2-3:3, 2-4:5, 2-5:2, 2-6:3, 2-7:4, 2-8:3

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 28: CC2 premix burners - VI

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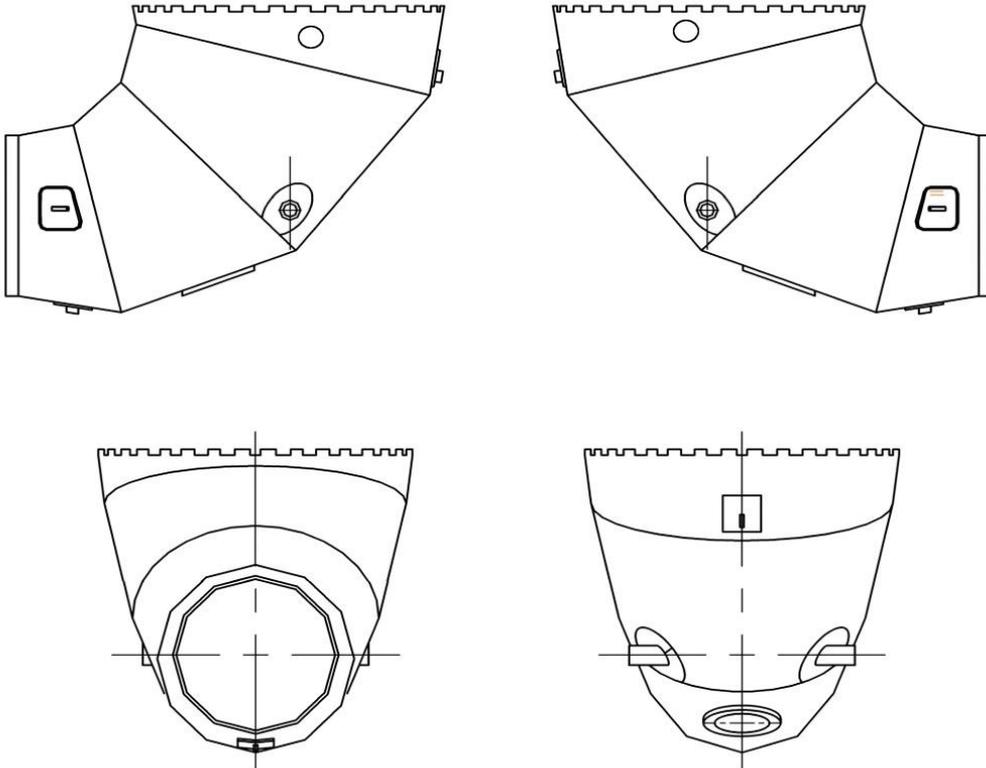
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	LHS Mixing Chamber Visual Inspection	Checksheet Reference #:	V94-2-2011-1
Inspection	Siemens SGT5-2000E	Page #:	1 of 3
	Combustion	Project #:	GOU.MI3
		Relevant Procedures:	240-136723367



Remarks: _____

Key	
Corrosion	
Cracks	

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PERFORMED BY - ARTISAN				
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 29: CC1 MC - VI

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Gourikwa – GT11 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	LHS Mixing Chamber Visual Inspection	Checksheet Reference #:	V94-2-2011-1
Inspection	Siemens SGT5-2000E	Page #:	2 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Findings	Remarks
Complete Surface	Corrosion	Yes	Minor
	Scaling	No	
	Mechanical Material Thinning	No	
	Cracks	No	
	Deformation	No	
Reinforcement and Guide Plate Regions	Corrosion	Yes	TS
	Scaling	No	
	Mechanical Material Thinning	No	
	Cracks	Yes	TS
Castellations	Scoring Marks / Wear	Yes	3, 4-5, 7, 8-9, 15-18, 19-20, 21, 27, 28, 29, 30-31, 32-33
	Deformation	No	
Guides	LHS - Wear		
	Bottom - Wear		
	RHS - Wear		
Bushing Supports	LHS - Wear		
	RHS - Wear		
Cooling Air Ring	Wear / Hammering Marks	Yes	15, 16-14
Manhole Insert	Mechanical Material thinning	No	
	Scaling	No	
Manhole Collar	Scaling	No	
	Cracks	No	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 30: CC1 MC - VI

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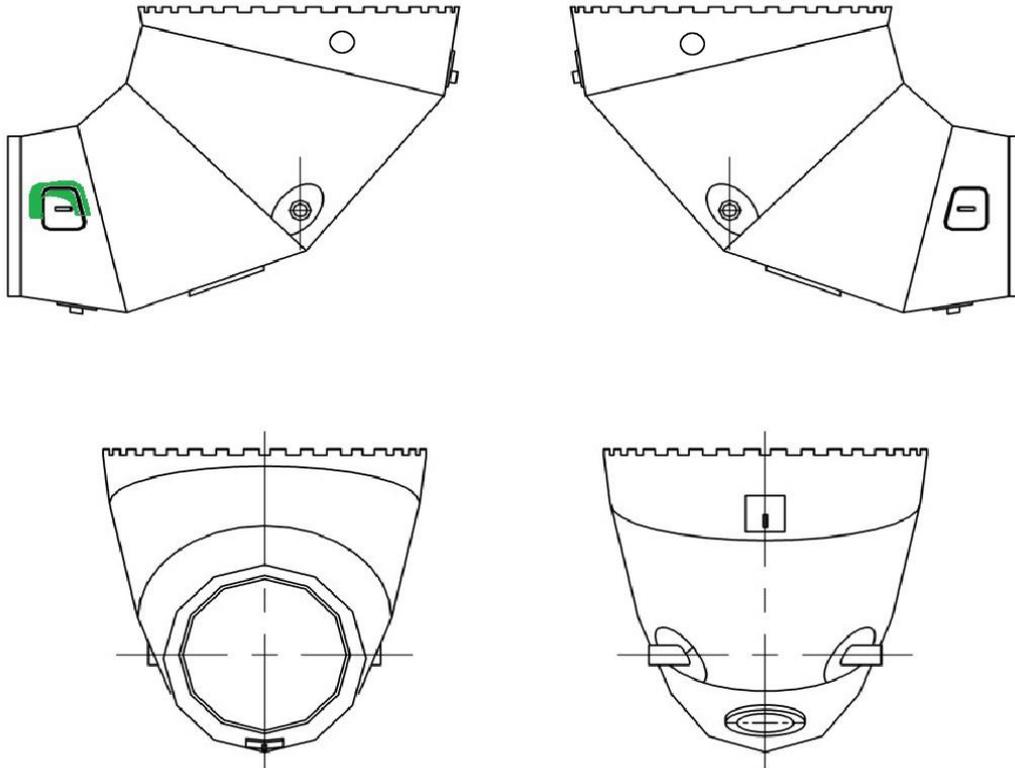
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Gourikwa – GT11 Minor
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Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	RHS Mixing Chamber Inspection	Checksheet Reference #:	V94-2-2011-2
Inspection	Siemens SGT5-2000E	Page #:	1 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367



Remarks: Very good condition

Key	
Corrosion	
Cracks	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 31: CC2 MC - VI

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Gourikwa – GT11 Minor
Inspection

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	RHS Mixing Chamber Inspection	Checksheet Reference #:	V94-2-2011-2
Inspection	Siemens SGT5-2000E	Page #:	2 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Findings	Remarks
Complete Surface	Corrosion	Yes	Minimal
	Scaling	No	
	Mechanical Material Thinning	No	
	Cracks	Yes	CS eccentric key
	Deformation	No	
Reinforcement and Guide Plate Regions	Corrosion	Yes	TS minimal
	Scaling	No	
	Mechanical Material Thinning	No	
	Cracks	No	
Castellations	Scoring Marks / Wear	Yes	7-11, 15, 17-20, 23, 25-27, 28-30, 31, 33
	Deformation	No	
Guides	LHS - Wear		
	Bottom - Wear		
	RHS - Wear		
Bushing Supports	LHS - Wear		
	RHS - Wear		
Cooling Air Ring	Wear / Hammering Marks	Yes	12-13, 25-16, 19-11
Manhole Insert	Mechanical Material thinning	No	
	Scaling	No	
Manhole Collar	Scaling	No	
	Cracks	Yes	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

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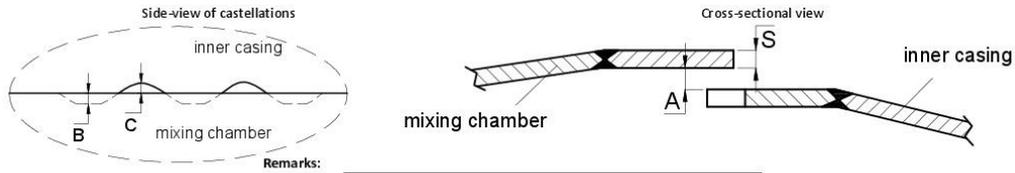
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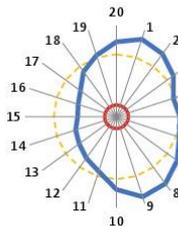
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Gourikwa – GT11 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Mixing Chamber to Inner Casing Clearances	Checksheet Reference #:	V94-2-2005
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.M3
		Relevant Procedures:	240-136723367

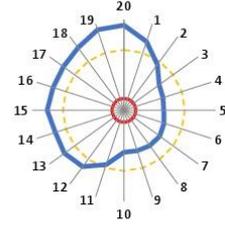


"A"="A"+"S"



View in flow direction

Specification	Min	Max
Average A	3	3.5
B	16	19



View in flow direction

LHS CC				
Location	A	B	C	S
1	22.4	11		
2	21.4	12		
3	19.2	12		
4	16.3	11		
5	17.3	14		
6	18.0	11		
7	20.5	12		
8	22.7	16		
9	23.1	12		
10	20.0	11		
11	15.8	11		
12	14.0	11		
13	12.6	11		
14	11.8	10		
15	10.6	10		
16	11.0	10		
17	12.2	6		
18	15.3	8		
19	17.7	11		
20	20.6	11		
Average	17.1	11.0		

RHS CC				
Location	A	B	C	S
1	19.9	12		
2	15.5	11		
3	11.9	10		
4	11.2	10		
5	10.9	12		
6	11.5	12		
7	12.1	11		
8	12.0	12		
9	11.7	11		
10	11.5	13		
11	15.7	10		
12	19.1	10		
13	20.1	11		
14	19.7	10		
15	20.9	16		
16	20.3	18		
17	20.4	14		
18	21.3	14		
19	23.3	10		
20	23.4	10		
Average	16.6	11.8		

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:		DATE:		DATE: 2022/09/01

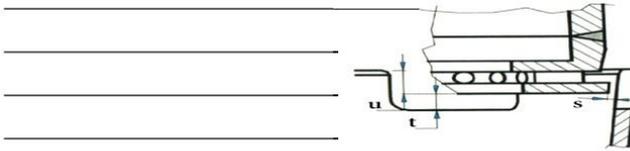
Check Sheet 33: MC to IC clearances

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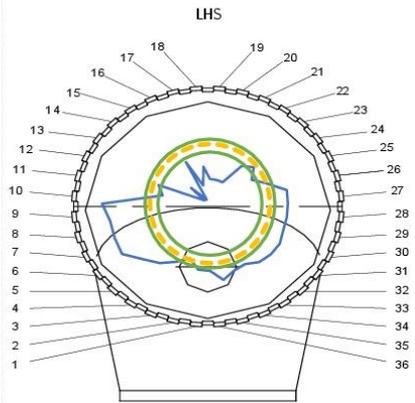
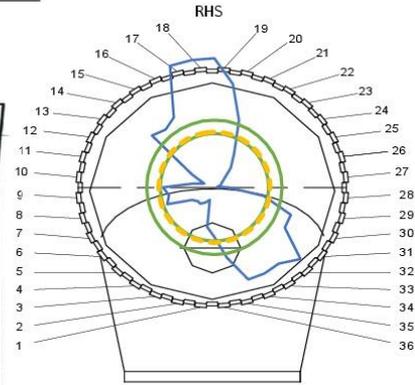
	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Flame Tube Clearances	Checksheet Reference #:	V94-2-2008
Disassembly	Siemens SGT5-2000E Combustion	Page #:	1 of 2
		Project #:	GOU.MI3
		Relevant Procedures:	240-136723367

Remarks: _____



LHS			
Point	s	t	u
1	5.2	5	
2	5.2	5	
3	4.5	7	
4	5.2	7	
5	6.0	7	
6	6.7	7	
7	7.8	9	
8	7.8	8	
9	7.8	9	
10	8.3	8	
11	3.7	9	
12	4.2	8	
13	0.5	7	
14	1.9	7	
15	0.4	8	
16	3.7	8	
17	1.5	6	
18	2.9	5	
19	1.9	4	
20	1.9	4	
21	1.9	3	
22	1.9	4	
23	3.8	5	
24	4.4	5	
25	3.7	7	
26	4.6	7	
27	6.0	7	
28	6.0	7	
29	6.0	7	
30	6.0	7	
31	6.2	8	
32	6.1	8	
33	5.9	5	
34	5.4	5	
35	5.5	5	
36	6.0	5	
Ave	4.6	6.5	

RHS			
Point	s	t	u
1	3.7	6	
2	3.0	6	
3	1.0	6	
4	1.3	7	
5	1.6	7	
6	1.6	6	
7	1.9	7	
8	3.7	7	
9	3.4	7	
10	3.8	8	
11	1.6	9	
12	0.8	8	
13	1.9	7	
14	6.0	8	
15	5.6	10	
16	6.0	9	
17	9.6	8	
18	9.6	6	
19	9.6	7	
20	7.8	5	
21	5.3	5	
22	2.9	5	
23	1.9	5	
24	0.9	5	
25	0.6	7	
26	0.5	7	
27	0.2	7	
28	1.0	6	
29	3.7	8	
30	6.0	7	
31	6.0	8	
32	8.3	8	
33	7.4	7	
34	7.4	8	
35	7.3	8	
36	5.3	7	
Ave	4.1	7.0	



Specification	Min	Max
Radial Clearance s	4	5
t	8	9
Nominal		
Overlap u	30	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
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VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 34: FT to MC clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Inner Casing Visual Inspection	Checksheet Reference #:	V94-2-2805
Inspection	Siemens SGT5-2000E Combustion	Page #:	1 of 3
		Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Inspection	Findings	Remarks
Support Paws (4 off)	Mechanical Material Thinning (towards shim)	No	
	Mechanical Material Thinning (towards hold-down)	No	
Hold-downs (4 off)	Mechanical Material Thinning	No	
Hold-down shims (4 off)	Mechanical Material Thinning	No	
Center Guide	Mechanical Material Thinning	No	
Surface	Corrosion	Yes	
	Scaling	Yes	
	Mechanical Material Thinning	No	
	Dents / Bulges	No	
	Cracks (Isolated)	No	
	Net of Cracks	No	
	Spalling of TBC	No	
Inlet Shell	Scaling / Erosion		
	Cracks		
	Mechanical Material Thinning At Shrink-fit Connection		
Anti-rotation Pin	Mechanical Material Thinning		
	Fracture / Cracks		
K-ring Guide	Mechanical Material Thinning		
	Cracks		
Cooling Air Ring Guide Rib	Mechanical Material Thinning	Yes	
	Cracks	No	
Clamping Bolt for Protective Liner and Flow Baffle	Wear		
	Thermal Stress Cracks On Transition Radius of Bolt		
	Cracks in other Locations		

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 35: IC - VI

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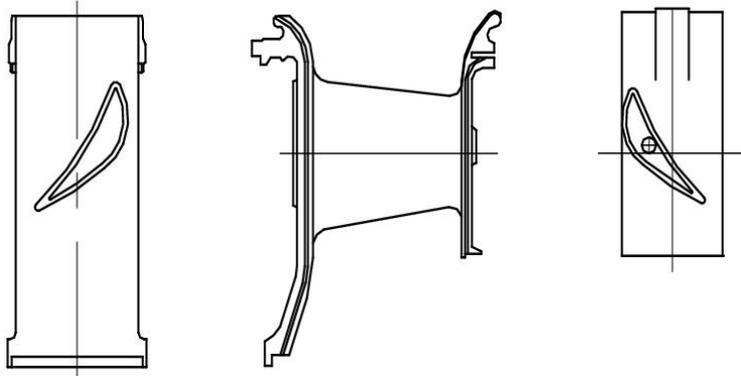
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Business Management System
Inspection Report
Gourikwa – GT11 Minor
Inspection

Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Stage 1 Vanes Visual Inspection	Checksheet Reference #:	V94-2-3005-1
Inspection	Siemens SGT5-2000E Turbine	Page #:	2 of 6
		Project #:	GOU.M13
		Relevant Procedures:	240-136723367



Remarks: _____ TBC scuffing on hub 20, 21, 222, 23 slightly 3, 4

 _____ Standard deposits

Key			
FOD		Cracks	
Wear		Over-heating	
Damage due to disass		Corrosion	

Damage Type	Counts	
Outer Shroud	Wear or Cracks on Groove for Anti-rotation Pin	
	Wear or Cracks on Fitting Surface	
	Wear or Cracks on Groove for Seals	
	Overheating	
	Rubbing Marks	
	Cracks	
	Deformation	
	Coating Abrasion / Thinning	
	Mechanical Material Thinning	
Airfoil	Cracks	
	FOD	
	Break Out	
	Overheating	
	Corrosion / Erosion	
	Deformation of Trailing Edge	
	Coating Abrasion / Thinning	
Inner Shroud	Wear or Cracks on Groove for Seals	
	Cracks	
	Axial Rubbing Marks	
	Overheating	
	Coating Abrasion / Thinning	
	Wear or Cracks on Circumferential Seal	
	Deformation	
Mechanical Material Thinning		

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 36: TLe1 - VI

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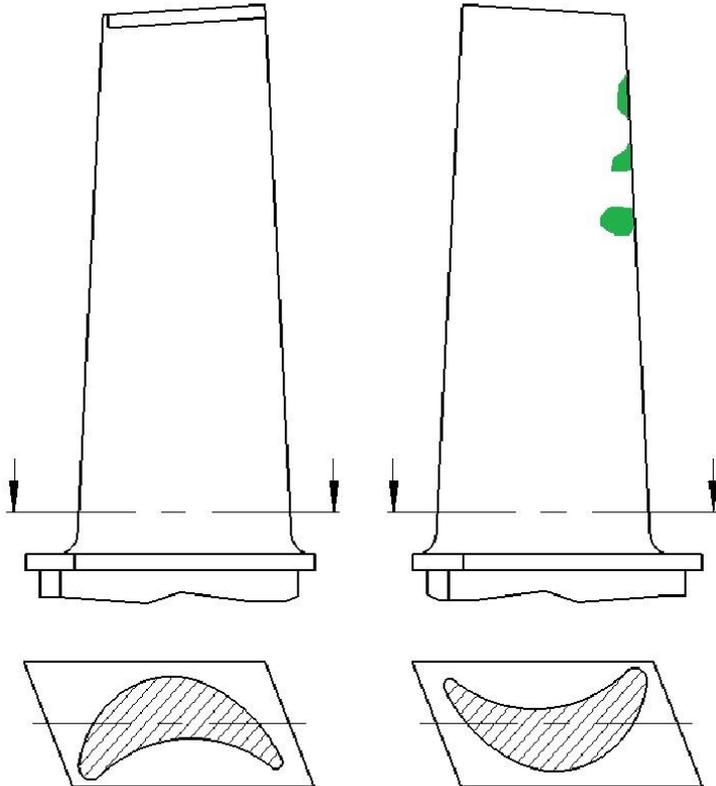
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Inspection Report
Gourikwa – GT11 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Stage 1 Blades Visual Inspection	Checksheet Reference #:	V94-2-3802-1
Inspection	Siemens SGT5-2000E Turbine	Page #:	2 of 7
		Project #:	GOU.MI3
		Relevant Procedures:	240-136723367



	Damage Type	Counts
Blade Tip	Cracks	
	Rubbing	
	Oxidation	
	Deformation	
	Break-out	
Airfoil and Platform	Deposits	
	Cracks	
	Coating Thinning	
	Overheating	
	FOD	
	Break-out	
Root	Wear	
	Damage	

Key			
FOD		Cracks	
TBC Spallation		Over-heating	
Damage due to disass		Corrosion	

Remarks: General flaking of TBC on LE tip

Standard deposits

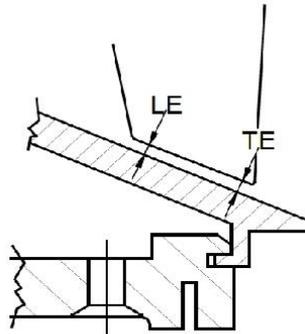
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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/01	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 37: TL1 - VI

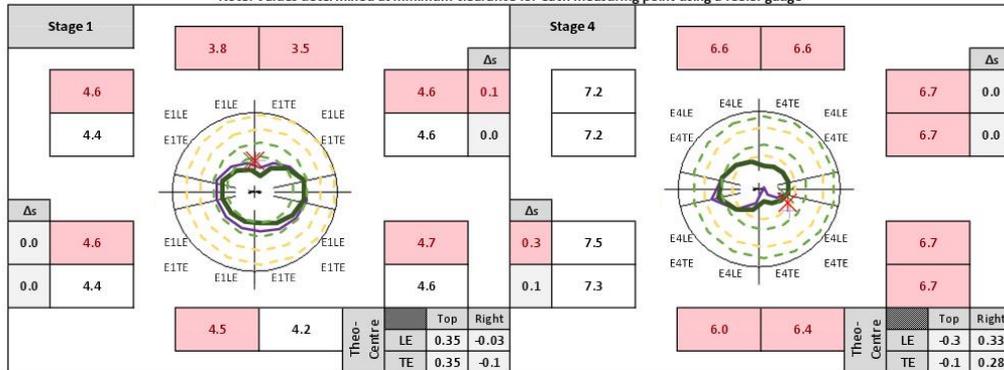
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 Disassembly	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Turbine Radial Blade Tip Clearances	Checksheet Reference #:	V94-2-6301
	Siemens SGT5-2000E	Page #:	1 of 2
	Centreline	Project #:	GOU.M13
		Relevant Procedures:	240-136723367



Note: Values determined at minimum clearance for each measuring point using a feeler gauge



Remarks: Stage 1 - no signs of rubbing noted - values similar to previous outage

unit hot when stage 4 was measured - no signs of rubbing noted

Specifications	E1LE		E1TE		E4LE		E4TE	
	Min	Max	Min	Max	Min	Max	Min	Max
Nominal	5.2	5.7	4.2	4.7	6.9	7.7	7.2	8.0
Δs		0.1		0.1		0.1		0.1

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VERIFIED BY - TECHNICIAN				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/09/01	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 38: TLa1 & TLa4 radial blade tip clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Exhaust Casing Inspections	Checksheet Reference #:	V94-2-5002
Inspection	Siemens SGT5-2000E Exhaust	Page #:	1 of 1
		Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Sub-Area	Inspection	Findings	Remarks	
Casing Lining	Inside Wall Surface	Deposits	No	Very clean	
		Deformation / Dents	No		
		Forgein Object Impact	No		
		Cracks	Yes		
	Transition to Hub	Wear	Yes		NDE Report Number
	Weld Beads	PT - Upper Half			
		PT - Bottom Half			
Radial Displacement relative to TB4 Root Plate	Offset (Radial, Inward or Outward)				
Exhaust Diffuser	Cover Plate for Expansion Joint	Scuffing Marks	Yes		
		Lack of Overlap	No		
		Cracks	Yes		
		Deformation / Dents	No		
	Weld Bead - Cracks	Yes			
Expansion Joint	Cracks		Boroscopic Inspection		
Exhaust Casing	Horizontal Joint Faces	Scoring Marks			
		Marks indicating that Hot Air has Escaped			
	Partition Plate to TVC	Gaping (Horizontal / Vertical)			
		Mechanical Material Thinning			
Vertical Flange	Galling Marks				
Hub Cover Plate	Sheet Metal Jacketing	Scuffing Marks / Wear	Yes		
	Weld Beads	Cracks	Yes		

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CHECKED BY - QC				TECHNICAL NOTIFICATION:
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ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P. L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 39: Exhaust casing - VI

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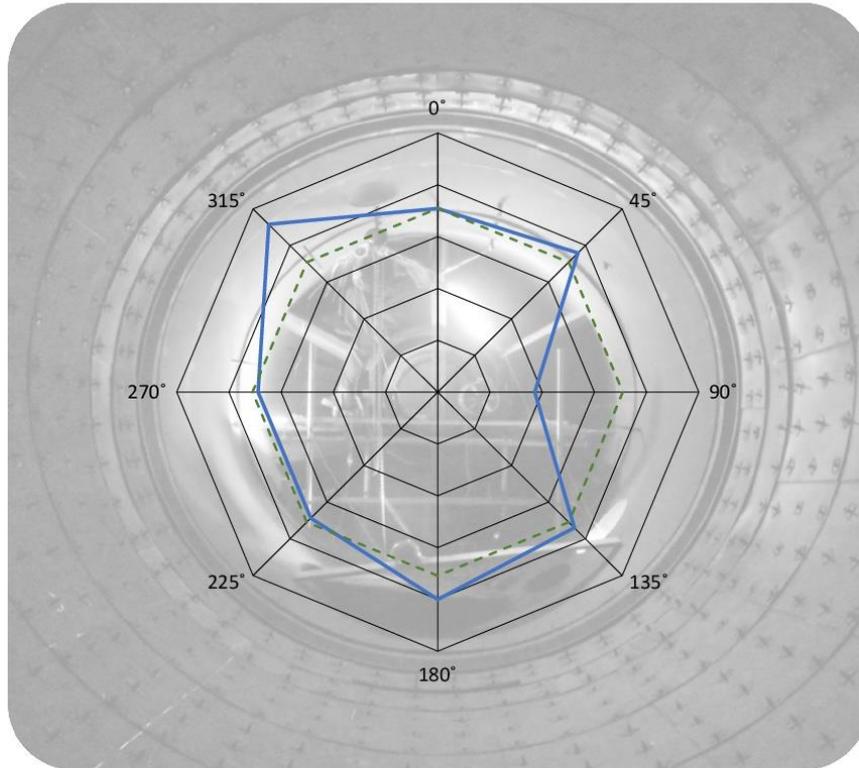
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Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Casing to Cover Plate Measurements	Checksheet Reference #:	V94-2-5003
Inspection	Siemens SGT5-2000E Exhaust	Page #:	1 of 1
		Project #:	GOU.MB
		Relevant Procedures:	240-136723367



Gap between Exhaust Casing and Cover Plate for Expansion Joint								
0°	45°	90°	135°	180°	225°	270°	315°	Average
17.7	19	9.3	18.5	20	17.2	17.2	22.9	17.7

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ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 40: Exhaust casing to cover plate clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Downstream of Exhaust Casing Inspections	Checksheet Reference #:	V94-2-5004
Inspection	Siemens SGT5-2000E Exhaust	Page #:	1 of 1
		Project #:	GOU.MB
		Relevant Procedures:	240-136723367

Area	Sub-Area	Inspection	Findings	Remarks
Exhaust Diffuser	Surface of Inside Walls	Deformation / Dents	No	
		Forgein Object Impact	No	
		Cracks	Yes	
	Weld Beads	Cracks	Yes	
	Manhole Contact Surfaces	Scoring Marks	No	
	Cover Plate for Expansion Joint	Scuffing Marks	No	
Thermocouples		Cracks	Yes	
		Corrosion	No	
		Loosened / Detached	No	
		Cracks (Weld beads at screw-in head)	No	
		Damage	No	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/01

Check Sheet 41: Downstream of exhaust - VI

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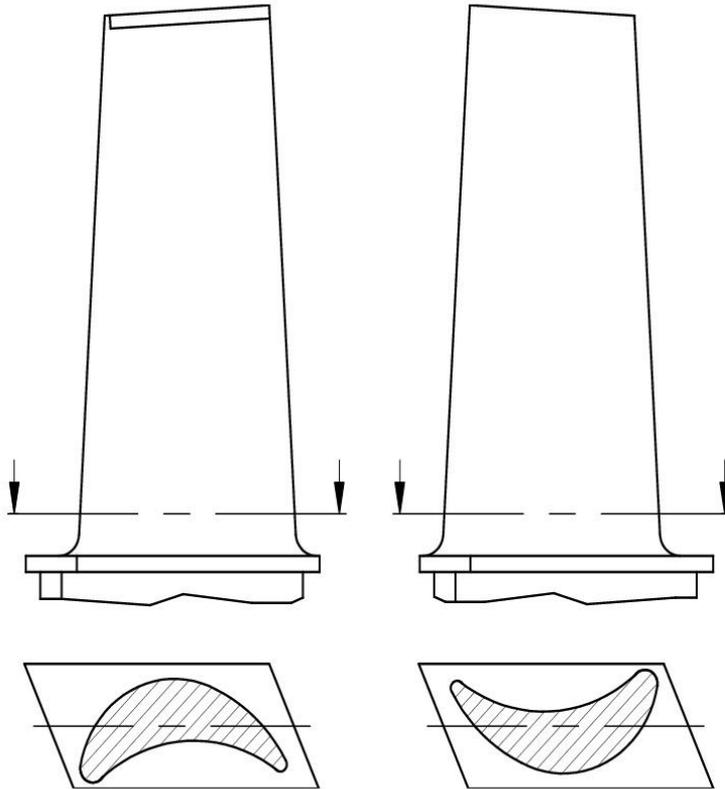
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Stage 4 Blades Visual Inspection	Checksheet Reference #:	V94-2-3802-4
Inspection	Siemens SGT5-2000E Turbine	Page #:	2 of 6
		Project #:	GOU.MI3
		Relevant Procedures:	240-136723367



Damage Type		Counts
Blade Tip	Cracks	
	Rubbing	
	Oxidation	
	Deformation	
	Break-out	
Airfoil and Platform	Deposits	
	Cracks	
	Coating Thinning	
	Overheating	
	FOD	
	Break-out	
Root	Corrosion / Erosion	
	Wear	
	Damage	

Key			
FOD		Cracks	
Wear		Over-heating	
Damage due to disass		Corrosion	

Remarks: Standard deposits

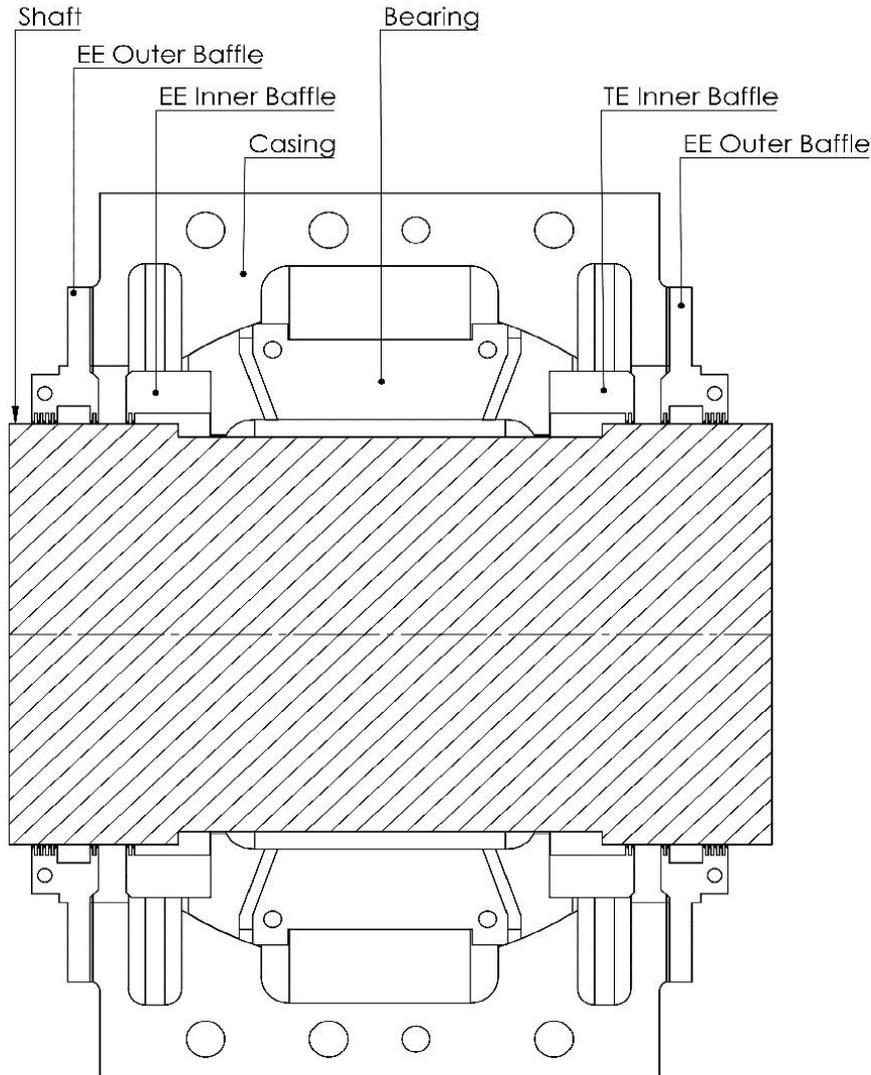
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ERI ENGINEER	Johan Otto		2022/08/31	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 42: TL4 - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Generator Bearing Overview	Checksheet Reference #:	V94-2-4A00
Information	Siemens SGT5-2000E	Page #:	1 of 1
	Centerline	Project #:	GOU.M13
		Relevant Procedures:	##



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ERI ENGINEER				
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME:
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE:

Check Sheet 43: Generator bearing overview

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Generator EE Bearing Outer Oil Baffle radial clearances	Checksheet Reference #:	V94-2-4A02
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Centerline	Project #:	GOU.MI3
		Relevant Procedures:	##

Remarks: _____

Note: Values determined at minimum clearance for each measuring point using a feeler gauge
 Note: LHS and RHS are based on standing on the Generator EE and facing towards the Turbine

TE				EE			
0.55				0.25			
0.07	U	0.25	Ur	0.06	U	0.20	Ur
0.00	Lr	0.00	0.0	0.06	Lr	0.20	0.0
0.07							
	L				L		
0.03				0.25			
	Theoretical Centre				Theoretical Centre		
	Top	Right			Top	Right	
	0.28	0.09			0.13	0.07	

Specifications	LHS / RHS		Top		Bottom	
	Min	Max	Min	Max	Min	Max
Blade clearance	0.07	0.15	0.14	0.29	0.00	0.00

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CHECKED BY - QC				TECHNICAL NOTIFICATION:	
VERIFIED BY - TECHNICIAN					
ERI ENGINEER	Johan Otto		2022/09/27	NCR OR WORK ORDER NUMBER:	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER	
NAME:		NAME:		NAME:	P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:	
DATE:		DATE:		DATE:	2022/09/27

Check Sheet 44: Generator EE outer oil baffle clearances

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	ESKOM GOURIKWA POWER STATION Generator EE Bearing Outer Oil Baffle radial clearances	Unit #:	GT11
	Siemens SGT5-2000E Centerline	Checksheet Reference #:	V94-2-4A02
Reassembly		Page #:	2 of 2
		Project #:	GOU.MI3
		Relevant Procedures:	##

Baffle Clearance

Remarks: Reassembled as-is

Clearances above specification - site to plan replacement of baffles

Note: Values determined at minimum clearance for each measuring point using a feeler gauge
 Note: LHS and RHS are based on standing on the Generator EE and facing towards the Turbine

TE				EE			
0.60				0.50			
ΔS	0.18	Lr	0.18	ΔS	0.17	Lr	0.20
1.32	1.50	Lr	0.20	0.02	0.0	Lr	0.0
Theoretical Centre				Theoretical Centre			
Top				Top			
Right				Right			
0.00				0.00			
0.30				-0.33			
0.25				0.01			

Specifications	LHS / RHS		Top		Bottom	
	Min	Max	Min	Max	Min	Max
Baffle Clearance	0.07	0.15	0.14	0.29	0.00	0.00

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ERI ENGINEER	Johan Otto		2022/09/28	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/28

Check Sheet 45: Generator EE outer oil baffle clearances

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 Gourikwa – GT11 Minor
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Document Identifier	194/1353	Rev	0
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	ESKOM GOURIKWA POWER STATION Generator EE Bearing Inner Oil Baffle radial clearances	Unit #:	GT11
	Siemens SGT5-2000E Centerline	Checksheet Reference #:	V94-2-4A04
Reassembly		Page #:	2 of 2
		Project #:	GOU.M13
		Relevant Procedures:	##

Remarks: Reassembled as-is.

Clearances above specification - site to plan replacement of baffles

Note: Values determined at minimum clearance for each measuring point using a feeler gauge
 Note: LHS and RHS are based on standing on the Generator EE and facing towards the Turbine

TE				EE			
0.60				0.55			
ΔS	0.30	(LHS) UI	(RHS) Ur	ΔS	0.25	(LHS) UI	(RHS) Ur
0.05	0.25	LI	Lr	0.05	0.1	LI	Lr
0.04				0.00			
Theoretical Centre		Top		Theoretical Centre		Top	
		0.30	0.03			0.28	0.06

Specifications	LHS / RHS		Top		Bottom	
	Min	Max	Min	Max	Min	Max
Baffle Blade clearance	0.07	0.15	0.14	0.29	0.00	0.00

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:	
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CHECKED BY - QC				TECHNICAL NOTIFICATION:	
VERIFIED BY - TECHNICIAN				NCR OR WORK ORDER NUMBER:	
ERI ENGINEER	Johan Otto		2022/09/27		
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER	
NAME:		NAME:		NAME:	P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:	
DATE:	Log #:	DATE:		DATE:	2022/09/27

Check Sheet 46: Generator EE inner oil baffle clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Generator EE Bearing Casing to Shaft Clearance	Checksheet Reference #:	V94-2-4A06
Reassembly	Siemens SGT5-2000E	Page #:	2 of 2
	Centerline	Project #:	GOU.MI3
		Relevant Procedures:	##

Remarks: _____

Top clearances could not be measured - casing was already removed

Bottom clearance on EE could not be measured - lifting block was in the w

Note: Values determined at minimum clearance for each measuring point using a feeler gauge
Note: LHS and RHS are based on standing on the Generator EE and facing towards the Turbine

TE				EE			
ΔS	[]	[]	[]	ΔS	[]	[]	[]
47.78	Lr	Lr	Lr	47.66	Lr	Lr	Lr
47.33	L	L	L	47.65	L	L	L
Theoretical Centre	Top	Right	0.00	Theoretical Centre	Top	Right	0.00

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CHECKED BY - QC				TECHNICAL NOTIFICATION:
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ERI ENGINEER	Johan Otto		2022/09/27	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/27

Check Sheet 47: Generator EE shaft to casing clearances

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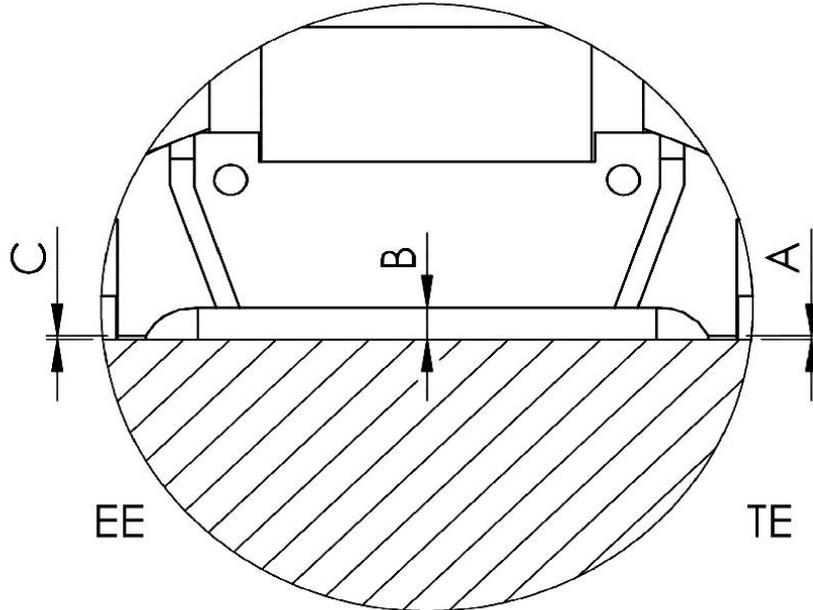
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Generator EE Bearing White Metal to Shaft Clearance	Checksheets Reference #:	V94-2-4A10
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Centerline	Project #:	GOU.MI3
		Relevant Procedures:	##



Clearance	A	B	C
LHS	0.6	-	0.6
Top	-	-	-
RHS	0.6	-	0.6

Specifications	Min	Max
B LHS	0.68	0.71
B Top	0.56	0.62
B RHS	0.68	0.71

Remarks: _____

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/27

Check Sheet 48: Generator EE Bearing to shaft clearances

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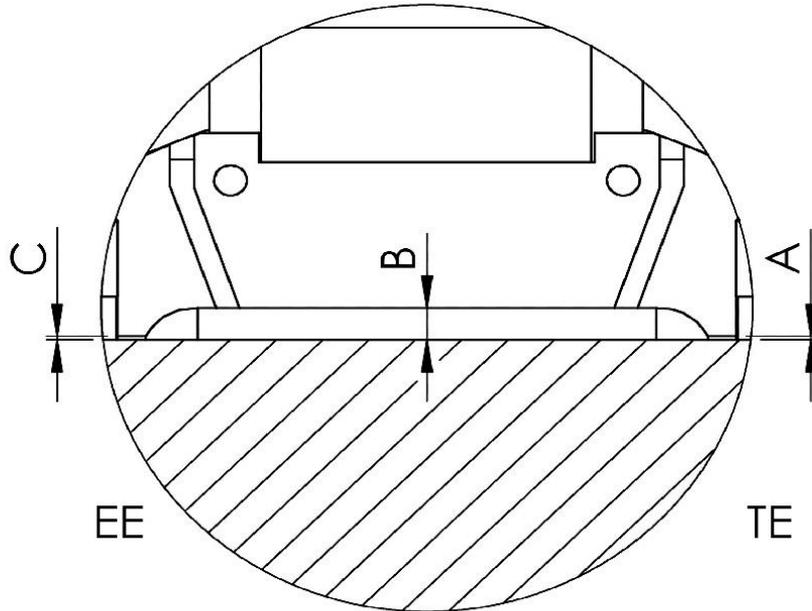
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Gourikwa – GT11 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT11
	Generator EE Bearing White Metal to Shaft Clearance	Checksheet Reference #:	V94-2-4A10
Reassembly	Siemens SGT5-2000E	Page #:	2 of 2
	Centerline	Project #:	GOU.MI3
		Relevant Procedures:	##



Clearance	A	B	C
LHS	0.6	-	0.6
Top	-	-	-
RHS	0.6	-	0.6

Specifications	Min	Max
B LHS	0.68	0.71
B Top	0.56	0.62
B RHS	0.68	0.71

Remarks: _____

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/09/27	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/09/27

Check Sheet 49: Generator EE bearing to shaft clearances

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