



Business Management System
Inspection Report
Gourikwa – GT13 Minor
Inspection

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Document Type	Inspection Report
Outage ID	24387
Scope of Activity	GT13 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
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J Otto Design Engineer		2023/01/30

Functional Responsibility		
Name/Designation	Signature	Date
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Revision Details		
Date	Revision	Area

Accepted		
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SUMMARY

Gourikwa GT13 was removed from service on 04 October 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 October 04th until October 8th. Areas inspected included: Filter house, Compressor Inlet, Compressor Exhaust, Combustion Chambers, Turbine Inlet and the Turbine Exhaust. Additionally – based on grindings of GT11; the Generator TE and EE bearings were rolled out by ERI in order to replace the jacking oil flexible hoses.

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
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
2022/10/04	2361	14795	38964	462
Turbine Serial	Turbine Frame	Fuel(s)	Generator Serial	Generator Frame
800624	SGT5-2000E(6)	Fuel Oil	12008155	SGEN5-100A-2P 115/36

REFERENCES

1. Normative
 - a. Gas Turbine Minor Inspection Checklist: 3.5-0236-9420
 - b. Siemens SGTS-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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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 TE and EE bearings jacking oil flexibles were found to have been perished.	Flexibles were replaced. Bearings rolled back and oil baffles reinstalled as-is.
3.1	Filter house and clean room suffering from severe corrosion.	Corrosion maintenance plan to be addressed.
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
7	Numerous cracks noted downstream of the turbine outlet; internal cladding and expansion joint cover plates	Some crack arrests implemented.

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.

Corrective Measure(s):

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

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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. Slight seepage noted from pump 1.

Corrective Measure(s):

1. Site to clean skid.
2. Site to clean skid and report any leaks if noted.

2.4 Fuel Oil Skid

Finding(s):

1. Some oil noted on skid.
2. Commissioning thermocouple plugs not installed.
3. DO return & supply lines have support sheaths out of position.

Corrective Measure(s):

1. Site to clean skid and report any leaks if noted.
2. Site to adhere to FME requirements and install plugs.
3. Site to ensure adequate pipe supports.

2.5 Lubricating Oil and Jacking Oil Skid

Finding(s):

1. Significant oil noted on skid. Some oil near mist separator, filters, jacking oil filters and coolers.
2. Several drip trays installed on skid.

Corrective Measure(s):

1. Site to clean skid, and to report any leaks.
2. Site to ensure MO scope is generated to remedy relevant leaks.

2.6 Turbine

Finding(s):

1. CC drain line pipes overheated and discoloured.
2. White residue and corrosion observed on the cladding.
3. Cabling on exhaust casing appears disorganised.

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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. No remedial action required - to be monitored during the next MI.
3. Site to rectify cabling.

2.7 Combustion Chambers

Finding(s):

1. White residue on outside cladding.
2. Tags that are damaged / loose: 1-7, 2-6, 2-7.
3. Minor seepage at premix bellows of burners 1-7 & 2-6.
4. LHS ΔP pipe making contact with dome.
5. LHS fire suppression system support inadequate.

Corrective Measure(s):

1. White residue on cladding was caused by water from the leaking roof.
2. Site to replace tags.
3. No remedial action – to be monitored during the next MI.
4. Site to correct to prevent fretting damage.
5. Site to rectify.

2.8 Generator

Finding(s):

1. Old oil noted near the bearings.

Corrective Measure(s):

1. No intervention required.

TE and EE bearings were opened, and the jacking oil flexibles were found to have been perished. The flexibles were 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.

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3 AIR INTAKE SYSTEM

3.1 Filter House

Finding(s):

1. Significant corrosion of structure noted.
2. Drainage pipe supports corroded.
3. Water and black deposits noted in clean room.
4. Hole in clean room floor noted.
5. Light test failed in the periphery of 4 off filters.
6. Coalescing filters filthy and sagging.
7. Pre-filters extremely filthy.
8. Drain pipes lying on gen roof.

Corrective Measure(s):

1. Corrosion evaluation to be performed.
2. Site to replace with corrosion resistant material.
3. Site to investigate level for drainage and schedule intervention during MO.
4. Site to plan for repairs, and arrest areas of corrosion before they compromise seal integrity.
5. Removed and reinstalled by site to correct sealing to the clean room.
6. Filters replaced by site.
7. Site to procure a rotatable spare set that can be cleaned.
8. Site to reinstall drain pipes.

3.2 Compressor Inlet

Finding(s):

1. Compressor air inlet cone gasket incomplete with signs of ingress.
2. Compressor air inlet cone gasket saturated with oil.
3. Corrosion noted in several locations.
4. General flaking of paint noted in the inlet area.
5. Intake cone dirty.

Corrective Measure(s):

1. Site to clean area.
2. Compressor air inlet gasket to be replaced at the next MO.
3. Corrosion protection to be applied and the affected areas to be re-painted.
4. Historic – no effect on operation observed.
5. Corrosion protection to be applied, and the affected areas are to be re-painted.

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6. Site to clean.

4 COMPRESSOR

4.1 Inlet

4.2.1 VLe0

Finding(s):

1. VIGVs dirty.
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.

Corrective Measure(s):

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

4.2 Exhaust Diffusor

No anomalies noted.

5 COMBUSTION

5.1 LHS CC

5.1.1 Sight Glasses

Finding(s):

1. Manhole sight glass dirty.

Corrective Measure(s):

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

5.1.2 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.

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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.

5.1.2.1 Diffusion Burners

Finding(s):

1. Coking noted on all burner caps and several axial swirlers.
2. Cracks noted on the axial swirlers of burner 1-2 and 1-3.
3. Erosion noted on the axial swirler of burner 1-2.

Corrective Measure(s):

1. Coking cleaned during MI.
2. To be monitored during the next MI. Site to plan for the refurbishment of axial swirlers during the next MO.
3. To be monitored during the next MI. Site to plan for the refurbishment of axial swirlers during the next MO.

5.1.2.2 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. Cracks noted I burner 1-7 outlet bell.
5. 4 off plugged nozzles noted on burner 1-1.

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. To be monitored during next MI – site to plan for replacement/refurbishment during the next MO.
5. Blockages were cleared by site.

5.1.2.3 Ceramic Heat Shields

Finding(s)¹:

1. No tiles were found with defects outside of the tolerable limits.

5.1.2.4 Dome Plates & Burner Inserts

Finding(s):

1. Minor signs of fretting noted between dome plates and burner inserts.

¹ Tolerable limits as defined in: 37-1345-52KE00-DE-2013-12-003|004|005|006|007

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2. Cracks noted on burner insert ring(s) on 1-2.
3. Dome plates 1-2 and 1-7 appeared to have minor deformation.

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 MO.

5.1.3 Mixing Chamber

Finding(s):

1. Hammering noted between Flame Tube and Mixing Chamber {at castellations 9-11, 12-17, 19-21, 27-33}.
2. Average “t” between the FT and MC is below specification.
3. Hammering noted between Mixing Chamber and Inner Casing {at IC castellations 2, 4-6, 10-15, 16-19}
4. Slight rubbing of manhole insert at collar noted.
5. Clearance “B” between MC and IC below specification.
6. Cracks noted at TS inspection port.

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.
4. 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 – 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):

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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 the axial swirler outlet bell of burner 2-7.
3. Cracks noted on the axial swirlers of burner 2-1, 2-3, 2-4, 2-5 and 2-6.

Corrective Measure(s):

1. Coking cleaned during MI.
2. No remedial action required – to be monitored during the next MI.
3. To be monitored during the next MI. Site to plan for the refurbishment of axial swirlers during the next MO.

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.

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. To be monitored during the next MI.

5.2.2.3 Ceramic Heat Shields

Finding(s)²:

1. No tiles were found with defects outside of the tolerable limits.

5.2.2.4 Dome Plates & Burner Inserts

Finding(s):

1. Minor signs of fretting noted between dome plates and burner inserts.
2. BIR cracks noted on burners 2-3, 2-4 and 2-6.
3. Minor deformation noted on plates 2-5, 2-6 and 2-7.

Corrective Measure(s):

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

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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.

5.2.3 Mixing Chamber

Finding(s):

1. Hammering noted between Flame Tube and Mixing Chamber {at castellations 3-11, 18, 19-22, 23-24, 25-26}.
2. Average “s” between the FT and MC is below specification.
3. Hammering noted between Mixing Chamber and Inner Casing {at IC castellations 20-10}.
4. Clearance “B” between MC and IC is below specification.
5. Cracks noted at TS inspection port.

Corrective Measure(s):

2. 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 remedial action required – to be monitored during the next MI.

5.3 Inner Casing

Finding(s):

1. Cracks on the hub in the TBC were noted.
2. Some corrosion was noted on the IC walls (CC1).

Corrective Measure(s):

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

6 TURBINE

6.1 Inlet

Finding(s):

1. Minor flaking of TBC TLe1 vanes 3, 4, 5, 6, 7, 15, 22, 25, 26 and 27 observed.
2. Minor flaking of TBC on some TLa1 blades observed.
3. Almost all LE radial blade tip clearances were measured to be tight.
4. One off TLa1 noted with a dent on the TE of the aerofoil.

Corrective Measure(s):

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

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

6.2 Outlet

Finding(s):

1. Upper and lower radial blade tip clearances were measured to be tight – however there were no visible signs of rubbing.

Corrective Measure(s):

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

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. Crack near bottom spider support.

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. Site to drill hole to arrest propagation.

8 ACKNOWLEDGEMENTS

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

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APPENDIX A



Figure 1: Structure



Figure 5: Lubricating oil skid



Figure 2: Structure



Figure 6: Lubricating oil skid



Figure 3: Lubricating oil skid



Figure 7: Lubricating oil skid



Figure 4: Lubricating oil skid



Figure 8: Lubricating oil skid

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Figure 9: Lubricating oil skid



Figure 13: Control oil skid



Figure 10: Poorly supported pipe



Figure 14: Purge water skid



Figure 11: Poorly supported pipe



Figure 15: Fuel oil skid



Figure 12: Control oil skid



Figure 16: Fuel oil skid

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Figure 17: Fuel oil skid



Figure 21: Equipment cabling



Figure 18: Fuel oil skid



Figure 22: Cladding



Figure 19: Fuel oil skid



Figure 23: Burners



Figure 20: Fuel oil skid

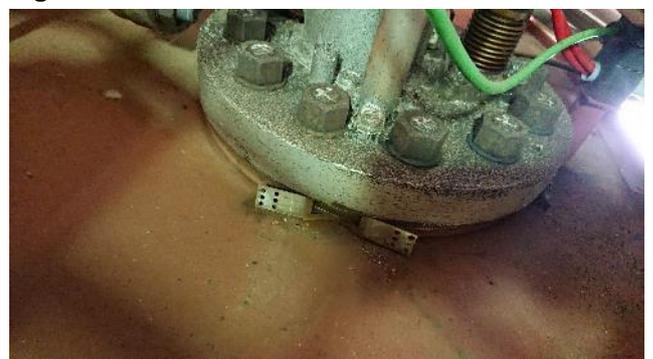


Figure 24: Burners

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Figure 25: Burners



Figure 29: ΔP pipe



Figure 26: Loose support



Figure 30: ΔP pipe



Figure 27: Cladding



Figure 31: Burners



Figure 28: Cladding



Figure 32: Fire suppression pipe

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Figure 33: Cladding



Figure 37: Equipment cables



Figure 34: Cladding



Figure 38: Compressor inlet cone (internal)



Figure 35: Cladding



Figure 39: Compressor inlet cone (internal)



Figure 36: Cladding



Figure 40: Compressor inlet cone (internal)

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Figure 41: SSS clutch



Figure 42: SSS clutch



Figure 43: Generator bearing



Figure 44: Generator bearing



Figure 45: Generator bearing



Figure 46: Generator bearing

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Figure 47: Jacking oil flexible



Figure 48: Jacking oil flexible



Figure 49: Generator bearing



Figure 50: Generator bearing



Figure 51: Generator bearing



Figure 52: Generator bearing



Figure 53: Generator bearing



Figure 54: Generator bearing

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Figure 55: Generator bearing



Figure 59: Generator hall roof



Figure 56: Generator bearing



Figure 60: Filter house



Figure 57: Generator bearing

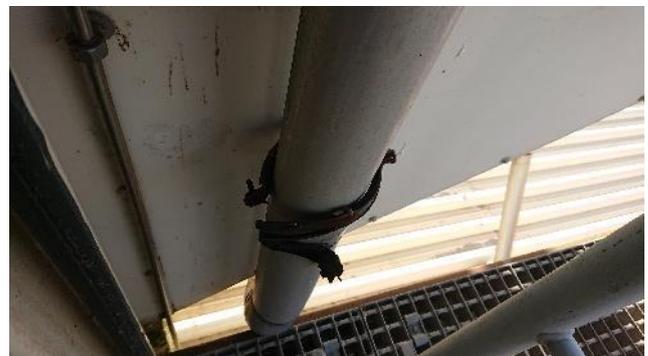


Figure 61: Filter house



Figure 58: Generator bearing



Figure 62: Coalescing filters

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Figure 63: Coalescing filters



Figure 67: Pre-filters



Figure 64: Coalescing filters



Figure 68: Pre-filters



Figure 65: Coalescing filters



Figure 69: Pre-filters



Figure 66: Pre-filters



Figure 70: Filter house

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Figure 71: Filter house



Figure 75: Clean room



Figure 72: Filter house



Figure 76: Clean room



Figure 73: Filter house



Figure 77: Clean room



Figure 74: Filter house



Figure 78: Clean room

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Figure 79: Clean room



Figure 83: Clean room



Figure 80: Clean room



Figure 84: Clean room



Figure 81: Clean room



Figure 85: Clean room



Figure 82: Clean room



Figure 86: Clean room

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Figure 87: Clean room



Figure 91: Clean room



Figure 88: Clean room



Figure 92: Clean room

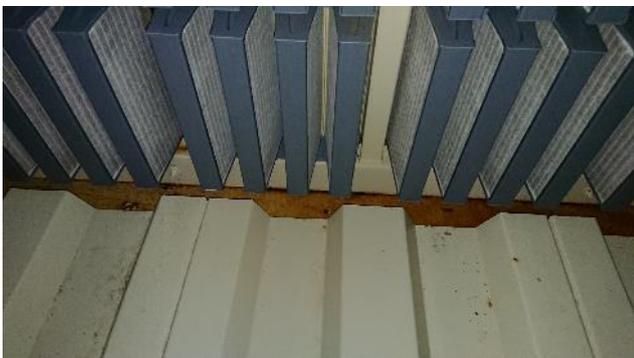


Figure 89: Clean room

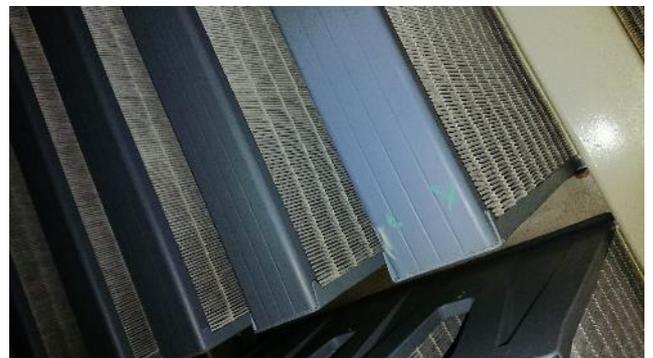


Figure 93: Clean room

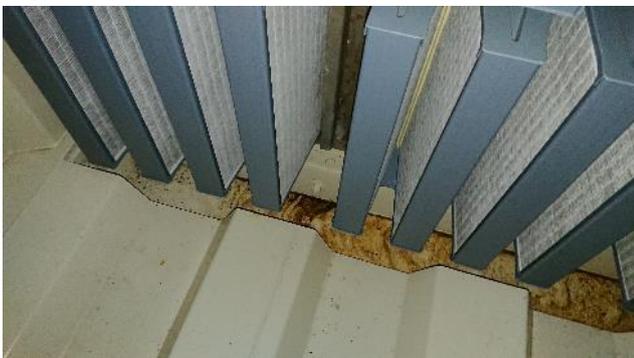


Figure 90: Clean room



Figure 94: Clean room

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Figure 95: Clean room



Figure 99: Compressor inlet



Figure 96: Clean room



Figure 100: Compressor inlet



Figure 97: Compressor inlet



Figure 101: Compressor inlet



Figure 98: Compressor inlet



Figure 102: Compressor inlet

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Figure 103: Compressor inlet



Figure 107: Compressor inlet



Figure 104: Compressor inlet



Figure 108: Compressor inlet



Figure 105: Compressor inlet



Figure 109: Compressor inlet



Figure 106: Compressor inlet



Figure 110: VLe0 & VLa1

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Figure 111: VLe0

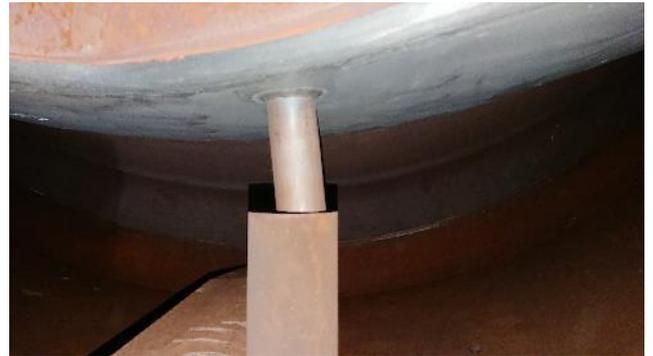


Figure 115: IC drain



Figure 112: VLe0



Figure 116: CC2 IC CS support palm



Figure 113: VLa1

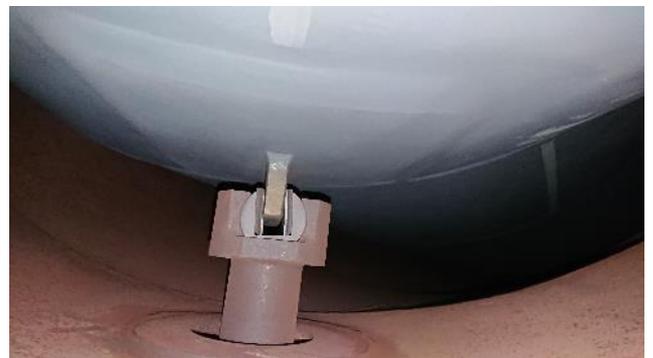


Figure 117: CC2 MC CS guide



Figure 114: IC bottom key

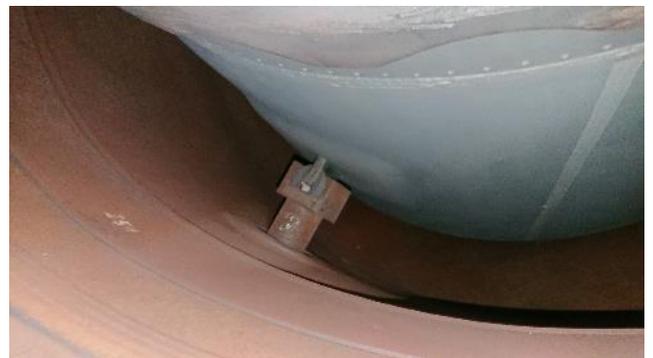


Figure 118: CC2 MC bottom guide

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Figure 119: CC1 IC CS support palm

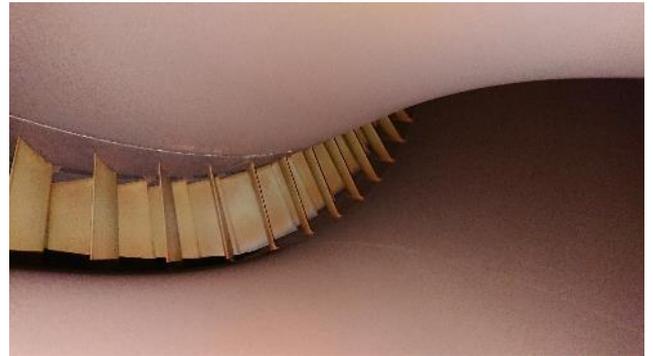


Figure 123: Compressor exhaust



Figure 120: CC1 MC CS guide



Figure 124: Compressor exhaust



Figure 121: CC1 MC bottom guide



Figure 125: CC1 ceramic tiles

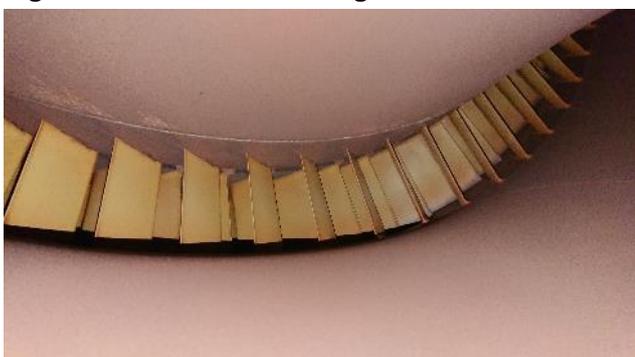


Figure 122: Compressor exhaust



Figure 126: CC1 ceramic tiles

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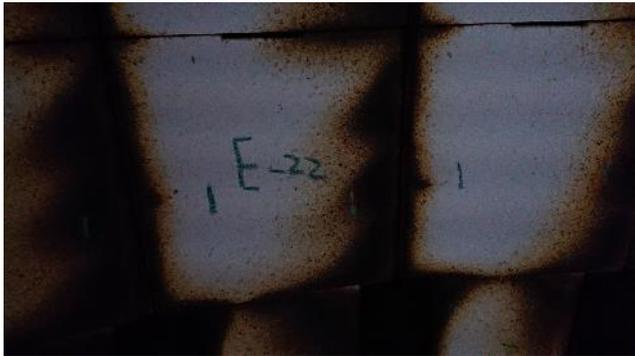


Figure 127: CC1 ceramic tiles



Figure 131: Burner 1-1



Figure 128: CC1 ceramic tiles



Figure 132: Burner 1-1



Figure 129: CC1 ceramic tiles



Figure 133: Burner 1-1



Figure 130: Burner 1-1

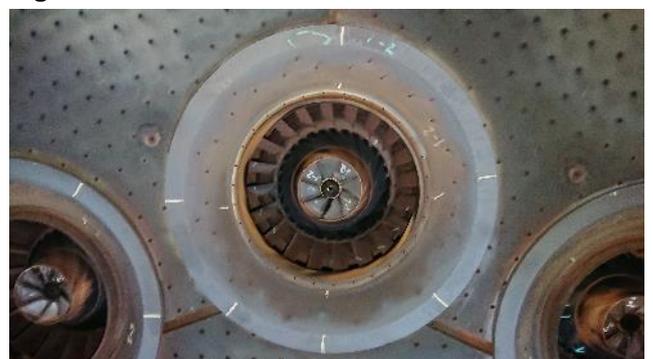


Figure 134: Burner 1-2

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Figure 135: Burner 1-2



Figure 139: Burner 1-2



Figure 136: Burner 1-2



Figure 140: Burner 1-3



Figure 137: Burner 1-2



Figure 141: Burner 1-3



Figure 138: Burner 1-2



Figure 142: Burner 1-3

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Figure 143: Burner 1-3



Figure 147: Burner 1-5



Figure 144: Burner 1-4



Figure 148: Burner 1-5



Figure 145: Burner 1-4



Figure 149: Burner 1-5



Figure 146: Burner 1-4



Figure 150: Burner 1-6

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Figure 151: Burner 1-6



Figure 155: Burner 1-7



Figure 152: Burner 1-6



Figure 156: Burner 1-7

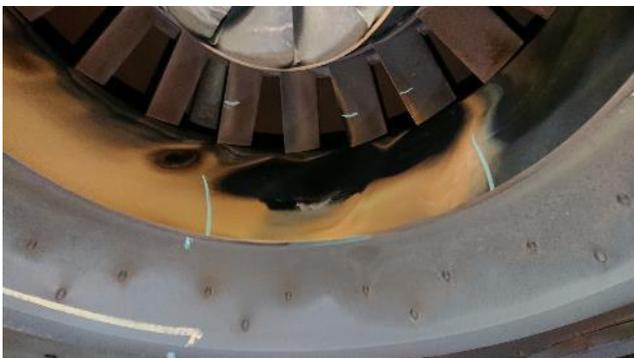


Figure 153: Burner 1-6



Figure 157: Burner 1-7



Figure 154: Burner 1-7



Figure 158: Burner 1-7

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Figure 159: Burner 1-8

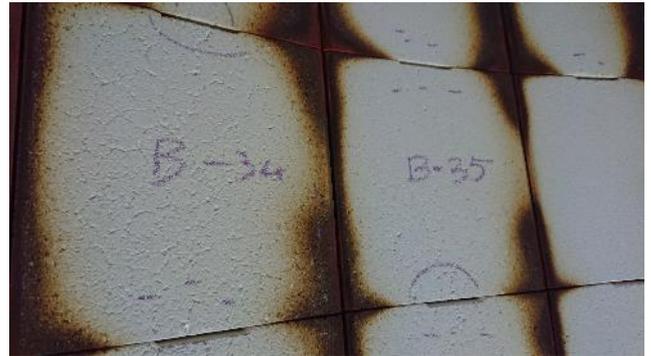


Figure 163: CC2 ceramic tiles



Figure 160: Burner 1-8

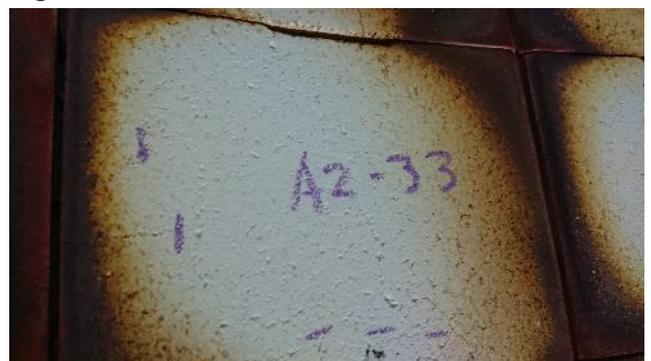


Figure 164: CC2 ceramic tiles



Figure 161: Burner 1-8



Figure 165: CC2 ceramic tiles



Figure 162: Burner 1-8



Figure 166: CC2 ceramic tiles

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Figure 167: CC2 ceramic tiles



Figure 171: Burner 2-1



Figure 168: CC2 ceramic tiles



Figure 172: Burner 2-1



Figure 169: CC2 ceramic tiles



Figure 173: Burner 2-1

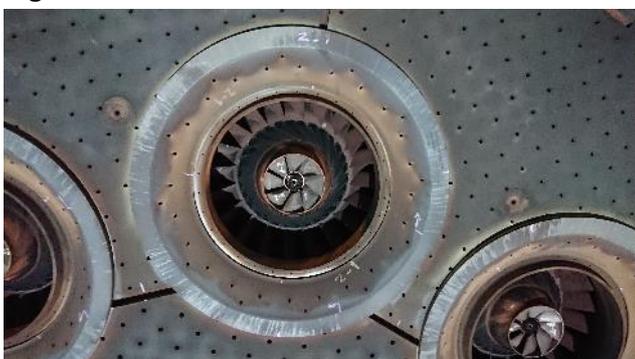


Figure 170: Burner 2-1



Figure 174: Burner 2-2

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Figure 175: Burner 2-2

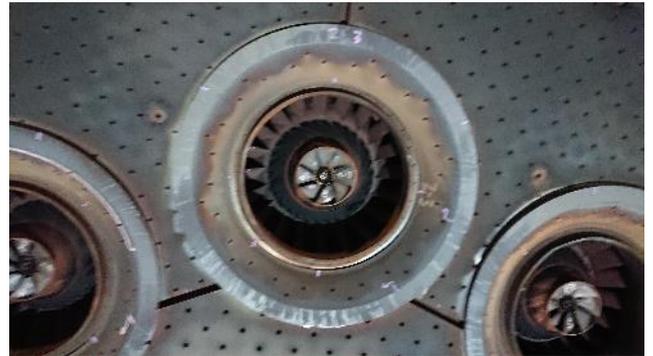


Figure 179: Burner 2-3



Figure 176: Burner 2-2



Figure 180: Burner 2-3



Figure 177: Burner 2-2



Figure 181: Burner 2-3



Figure 178: Burner 2-2



Figure 182: Burner 2-3

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Figure 183: Burner 2-3



Figure 187: Burner 2-4



Figure 184: Burner 2-4



Figure 188: Burner 2-4



Figure 185: Burner 2-4

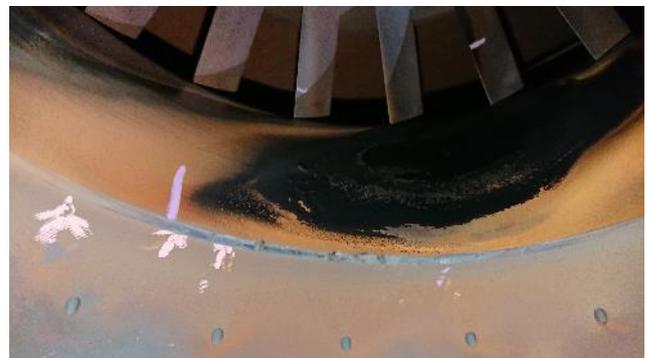


Figure 189: Burner 2-4



Figure 186: Burner 2-4



Figure 190: Burner 2-5

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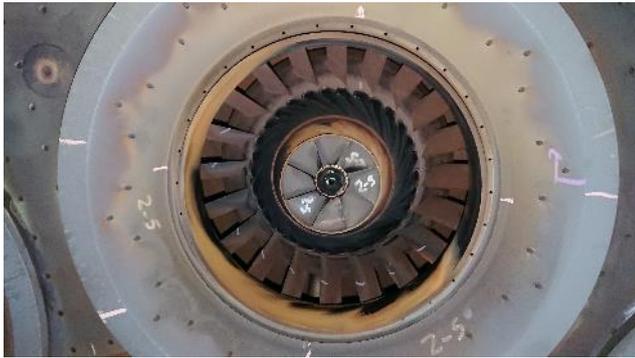


Figure 191: Burner 2-5



Figure 195: Burner 2-6



Figure 192: Burner 2-5



Figure 196: Burner 2-6



Figure 193: Burner 2-5



Figure 197: Burner 2-6



Figure 194: Burner 2-5



Figure 198: Burner 2-6

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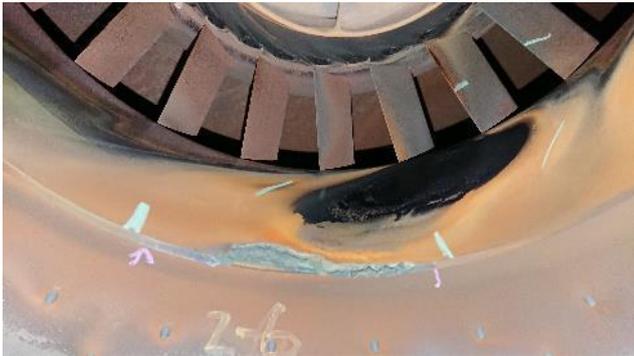


Figure 199: Burner 2-6



Figure 203: Burner 2-7



Figure 200: Burner 2-6



Figure 204: CC1 MC



Figure 201: Burner 2-7



Figure 205: CC1 MC

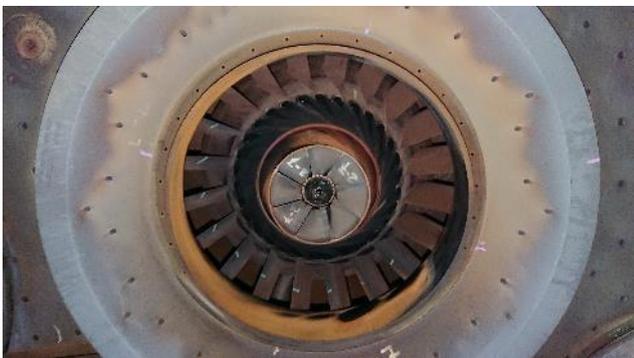


Figure 202: Burner 2-7



Figure 206: CC11 MC

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Figure 207: CC1 MC



Figure 211: CC1 FT to MC



Figure 208: CC1 FT to MC



Figure 212: CC1 MC



Figure 209: CC1 FT to MC



Figure 213: CC1 MC

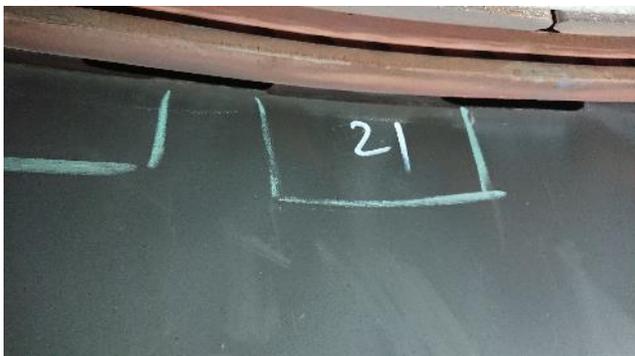


Figure 210: CC1 FT to MC

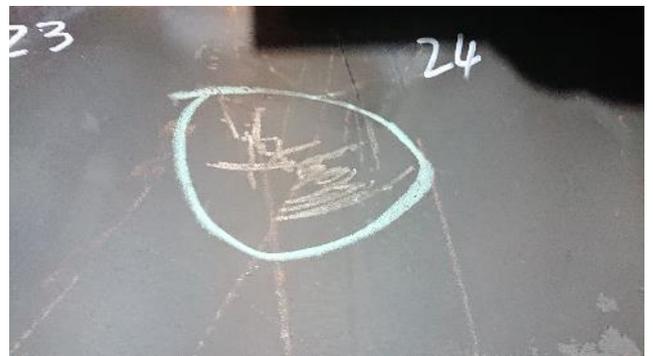


Figure 214: CC1 MC

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Figure 215: CC1 MC



Figure 219: CC1 MC



Figure 216: CC1 MC



Figure 220: CC1 MC



Figure 217: CC1 MC



Figure 221: CC1 MC



Figure 218: CC1 MC



Figure 222: CC1 MC

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Figure 223: CC1 MC to IC

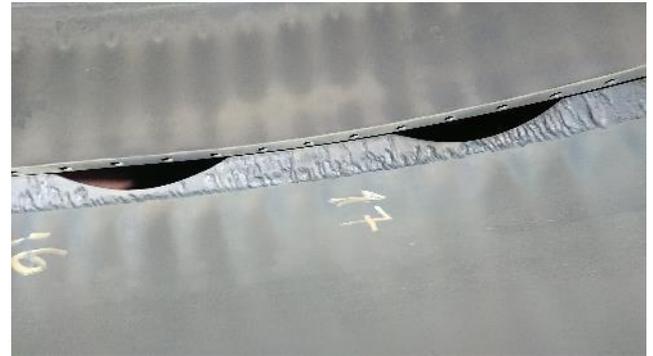


Figure 227: CC1 MC to IC



Figure 224: CC1 MC to IC



Figure 228: CC1 MC to IC



Figure 225: CC1 MC to IC



Figure 229: CC2 MC



Figure 226: CC1 MC to IC



Figure 230: CC2 MC

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Figure 231: CC2 FT to MC



Figure 235: CC2 MC



Figure 232: CC2 FT to MC



Figure 236: CC2 MC



Figure 233: CC2 FT to MC



Figure 237: CC2 MC



Figure 234: CC2 MC



Figure 238: CC2 MC

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Figure 239: CC2 MC



Figure 243: CC2 MC to IC

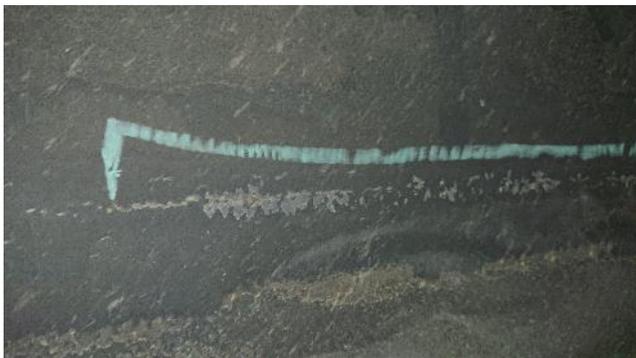


Figure 240: CC2 MC



Figure 244: IC

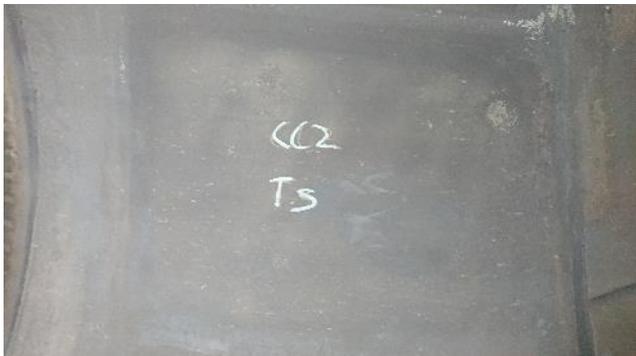


Figure 241: CC2 MC



Figure 245: IC



Figure 242: CC2 MC to IC

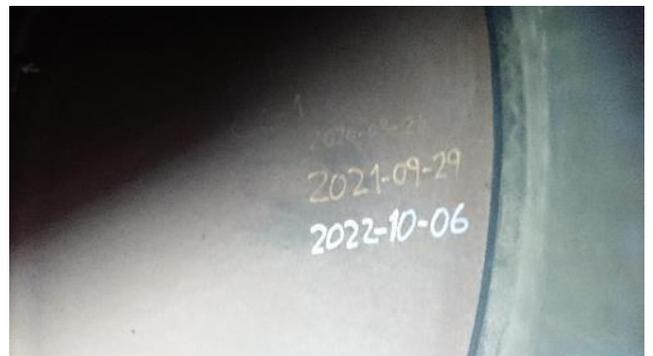


Figure 246: IC

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Figure 247: IC



Figure 251: TLe1



Figure 248: TLe1 & TLa1



Figure 252: TLe1



Figure 249: TLe1 & TLa1



Figure 253: TLe1



Figure 250: TLe1



Figure 254: TLe1

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Figure 255: TLe1



Figure 259: TLa1



Figure 256: TLa1



Figure 260: TLa1



Figure 257: TLe1 & TLa1



Figure 261: TLa1



Figure 258: TLe1



Figure 262: IC

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Figure 263: IC



Figure 267: IC hub

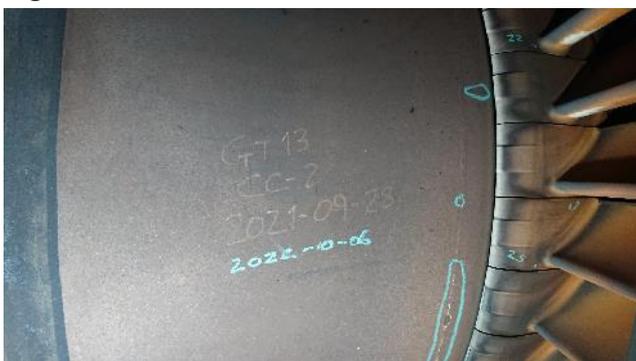


Figure 264: IC hub



Figure 268: TLe1



Figure 265: IC hub



Figure 269: TLe1



Figure 266: IC hub



Figure 270: TLe1

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Figure 271: TLa1



Figure 275: TLe1



Figure 272: TLe1 & TLa1



Figure 276: TLa4 & TLe4



Figure 273: TLe1 & TLa1

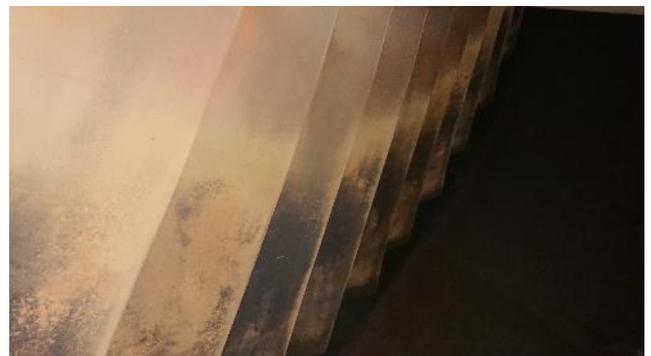


Figure 277: TLa4



Figure 274: TLe1



Figure 278: TLa4

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Figure 279: TLa4 & TLe4



Figure 283: TLa4 & TLe4



Figure 280: TLa4



Figure 284: Exhaust cushion



Figure 281: TLa4 & TLe4



Figure 285: FO in exhaust



Figure 282: TLe4



Figure 286: Exhaust – example of crack

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Figure 287: Exhaust – example of crack



Figure 291: Exhaust – example of rubbing



Figure 288: Exhaust – example of crack

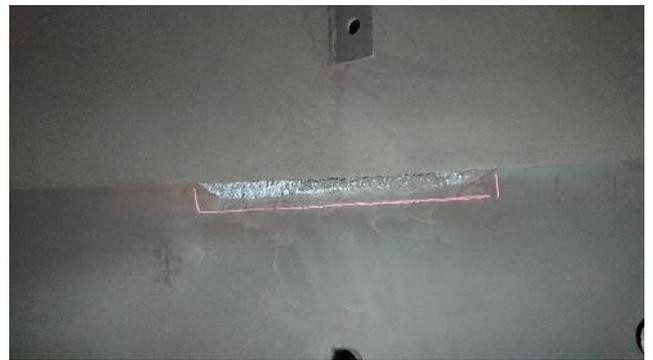


Figure 292: Exhaust – example of rubbing



Figure 289: Exhaust – example of rubbing



Figure 293: Exhaust – example of rubbing



Figure 290: Exhaust – example of rubbing



Figure 294: Exhaust – example of rubbing

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Figure 295: Exhaust – example of crack



Figure 299: Exhaust – example of crack



Figure 296: Exhaust – example of crack



Figure 300: Exhaust – example of rubbing



Figure 297: Exhaust – example of hammering



**Figure 301:
 Exhaust – example of crack**



Figure 298: Exhaust – example of crack

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Inspection Report
Gourikwa – GT13 Minor
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APPENDIX B

	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	3 of 5
	Gas Turbine	Project #:	GOU.M13
		Relevant Procedures:	Decommissioning

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.

Control oil skid including pipework to Control valves

Skid slightly dirty - site to clean

Minor seepage noted

Site to clean

Lube oil and Jacking oil skid including pipework to all bearings

Some oil noted on skid

Minor oil near mist separator

Some oil near filters, tray installed

Some oil near jacking oil filters, tray installed

Seepage at cooler flanges

Site to clean and report any leaks if 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				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 1: Leak check - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	2 of 5
	Gas Turbine	Project #:	GOU.MI3
		Relevant Procedures:	Decommissioning

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.

Fuel oil skid including pipework to Combustion chambers

DO supply pipe support sheath incorrectly installed

DO return pipe support sheath incorrectly installed

Thermocouple plugs not installed

Some oil on skid - site to clean

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		2022/10/06	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: 2022/10/06

Check Sheet 2: Leak check - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Insulation	Checksheet Reference #:	V94-2-6004
Inspection	Siemens SGT5-2000E	Page #:	1 of 4
	Centreline	Project #:	GOU.MB
		Relevant Procedures:	13: Combustion chamber inspections; 12: Compressor Inspections; 33 - Turbine Inspections

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 & white deposits noted

Centre Casing

Corrosion & white deposits noted

Filthy - poor housekeeping

Exhaust Casing

Corosion & white deposits noted

Signal cables appear disorganised

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		2022/10/06	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: 2022/10/06

Check Sheet 3: Insulation - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	1 of 5
	Gas Turbine	Project #:	GOU.MI3
		Relevant Procedures:	Decommissioning

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.

LHS Combustion chamber

Paint flaking on all burners

Δ pipe making contact with dome - sie to correct

Minor seepage at burner 1-7 premix bellow

Tag missing @ burner 1-7

Fire supression system support inadequate

RHS Combustion chamber

Paint flaking on all burners

Minor deepage at burner 2-6 premix bellow

Tags missin @ burners 2-6 & 2-7

Bracket layin loose on dome

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CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/10/06	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: 2022/10/06

Check Sheet 6: leak check - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Insulation	Checksheet Reference #:	V94-2-6004
Inspection	Siemens SGT5-2000E	Page #:	3 of 4
	Centreline	Project #:	GOU.MB
		Relevant Procedures:	12: Compressor Inspections; 33: Inspection - Turbine Inspections

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

Compressor Bearing Casing

No findings

Inlet Guide Vane

No findings

Compressor Vane Carrier 1

Corrosion 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		2022/10/06	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: 2022/10/06

Check Sheet 7: Insulation - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Leak Check Visual Inspection	Checksheet Reference #:	9002
Decommissioning	Siemens SGT5-2000E	Page #:	4 of 5
	Gas Turbine	Project #:	GOU.MI3
		Relevant Procedures:	Decommissioning

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.

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

Insulation dirty

Seepage from SSS clutch

Generator (including bearings and oil seals)

Historic seepage from TE and EE bearings noted

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PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/20/06	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: 2022/10/06

Check Sheet 8: Leak check - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Insulation	Checksheet Reference #:	V94-2-6004
Inspection	Siemens SGT5-2000E	Page #:	4 of 4
	Centreline	Project #:	GOU.MB
		Relevant Procedures:	12: Compressor Inspections; 33: Inspection - Turbine Inspections

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

Some oil in compressor inlet cone

Some gen plates bent in compressor inlet cone

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VERIFIED BY - TECHNICIAN				
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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 9: Insulation - VI

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Business Management System
Inspection Report
Gourikwa – GT13 Minor
Inspection

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Date	30/01/2023		
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Filter House Visual Inspection	Checksheet Reference #:	V94-2-1901
Inspection	Siemens SGT5-2000E	Page #:	1 of 6
	Compressor	Project #:	GOU.M13
		Relevant Procedures:	15. NDT WI and 12. Inspection - Compressor inspections

Area	Inspection Type	Findings	Remarks
Dirty Side	Deposits	Yes	Drainage pipes on roof - corroded clamps Lights require replacement Corrosion on structure noted Water at edges, black deposits noted in troughs
	Damage	No	
	Filter Completeness	No	
	Detached parts / Loose Filters	Yes	
	Soiling of Filters	Yes	
	Non-Uniform alignment of Filters	No	
	Unexpected Modifications	No	
	Missing Filters	No	
Clean Side	Forgein Objects	Yes	On RHS 4th peak from silencer appears to be a hole in the structure (light in drain) 4 off filters to be removed and reinstalled due to light through periphery
	Deposits	Yes	
	Damage	Yes	
	Detached parts / Loose Filters	No	
	Formation of Gaps (Light Test)	Yes	
	Flaking of paint / Corrosion	Yes	
	Locking	No	
Structure	Forgein Objects	Yes	
	Damage to Door Seals	No	
	Damage to Door Locks	Yes	
	Damage to seals in the Wall region	No	
Silencer	Holes in the Wall	No	
	Detached Parts / Loose Elements	No	
	Deposits, Corrosion	No	
	Cracks	No	
	Damage	No	

Overview Photos to be taken			
Filter Cassettes		Clean Air Compartment	
Filter Compartment Floor		Compressor Inlet	

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
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Check Sheet 10: Filter house - VI

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Business Management System
Inspection Report
 Gourikwa – GT13 Minor
 Inspection

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Compressor Inlet Systems Visual Inspection	Checksheet Reference #:	V94-2-1901
Inspection	Siemens SGT5-2000E Compressor	Page #:	2 of 6
		Project #:	GOU.MI3
		Relevant Procedures:	15. NDT WI and 12. Inspection - Compressor inspections

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	
	Deposits	Yes	
	Oil	No	
	Proper installation of intake Gaskets	No	
Gasket between Cone and Inlet Structure	Damage	Yes	Historically marked gaps
	Oil Saturation	Yes	Significant oil saturation
Intake Cone Half-Joint Flat Gasket	Damage	No	
Air Intake Structure	Damage to Door Seals	Yes	
	Damage to Door Locks	No	
	Damage to seals in the Wall region	No	
	Hones in the Wall	No	
	Oil through the Wall	Yes	
	Flaking of Paint / Corrosion	Yes	
Intake Cone	Deposits / Oil Traces	Yes	
	Forgein Objects	No	
	Incomplete Painting	Yes	
	Corrosion	Yes	
Support Struts	Cracks	No	

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
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Check Sheet 11: Compressor inlet systems - VI

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Inspection Report
Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Compressor Inlet Systems Visual Inspection	Checksheet Reference #:	V94-2-1901
Inspection	Siemens SGT5-2000E	Page #:	3 of 6
	Compressor	Project #:	GOU.MI3
		Relevant Procedures:	15. NDT WI and 12. Inspection - Compressor inspections

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	Yes	
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	

Aerofoils dirty - recommend compressor wash

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 12: Compressor inlet systems - VI

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	ESKOM GOURIKWA POWER STATION Compressor Stage 1 Radial Blades Tip Clearances (VLA1)	Unit #:	GT13
	Siemens SGT5-2000E Centreline	Checksheet Reference #:	V94-2-6102
Disassembly		Page #:	1 of 2
		Project #:	GOU.MB
		Relevant Procedures:	03. Pre-disassembly inspections and measurements

Rotor blade

Stator casing

Remarks: _____

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

ΔS
0.0

2.1

2.1

ΔS
0.1

Theoretical Centre		
Top	Right	
0.00	0.03	

Specifications	Min	Max
Blade clearance	1.9	2.3
ΔS		0.1

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Check Sheet 13: VLa1 radial blade tip clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Diffuser Inspection	Checksheet Reference #:	V94-2-1604
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Compressor	Project #:	GOU.MB
		Relevant Procedures:	12. Inspection - Compressor Visual Inspections Work Instruction

Visual Inspection		
Area to Inspect	Findings	Remarks
Vanes - Lock Washers Damage	No	No findings
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		

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Check Sheet 14: Compressor diffusor - VI

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Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Flame Tube Inspection - LHS	Checksheet Reference #:	V94-2-2026-1
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MI3
		Relevant Procedures:	15. NDT WI and 13. Inspection of CC

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 Culinder with Heat Shield Removed	Discoloration		
	Scaling / Mechanical Material Thinning		
	Wear		
	Cracks		

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

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ERI ENGINEER	Johan Otto		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
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Check Sheet 15: CC1 FT - VI

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Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Flame Tube Inspection - RHS	Checksheet Reference #:	V94-2-2026-2
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.M13
		Relevant Procedures:	15. NDT WI and 13. Inspection of CC

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 Culinder with Heat Shield Removed	Discoloration		
	Scaling / Mechanical Material Thinning		
	Wear		
	Cracks		

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

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 17: CC2 FT - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	LHS CC Burner Alignment	Checksheet Reference #:	V94-2-2010-1
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	07. Disassembly of Combustion Chambers

Viewed from below

Viewed from Above

Location	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8
A	6.2	5.6	6.5	5.5	5.3	5.4	5.3	6.0
B	6.1	5.8	6.0	5.3	5.6	5.5	5.3	5.5
C	5.3	5.6	5.9	5.6	5.6	6.1	6.2	5.9
D	5.6	5.1	5.6	5.2	5.2	5.1	5.5	5.3
A-C	0.9	0.1	0.6	0.1	0.3	0.7	1.0	0.1
B-D	0.5	0.7	0.4	0.0	0.4	0.4	0.2	0.2

Spec	Max
Mis-alignment	1.5

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
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Check Sheet 19: CC1 burner alignment

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Inspection Report
 Gourikwa – GT13 Minor
 Inspection

Document Identifier	194/1354	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	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:	03. Pre-disassembly inspections and measurements

Bottom plate Left
 View in opposite flow direction

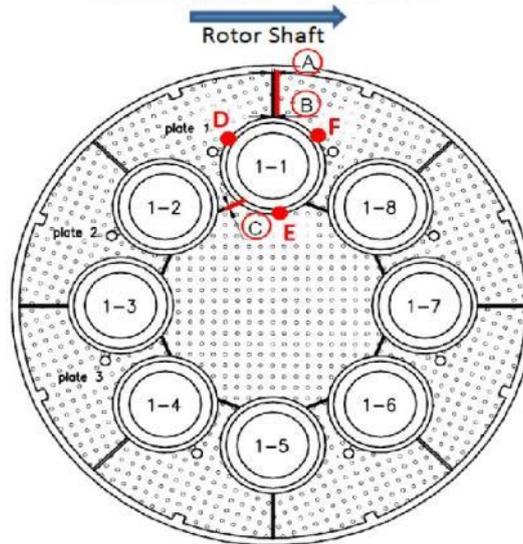


Plate	A	B	C	D	E	F
1	13.5	12.7	17.0	16.6	12.4	14.0
2	9.3	9.8	14.5	16.9	11.8	15.0
3	13.5	12.4	9.8	15.1	13.1	18.7
4	10.4	11.2	6.3	13.7	13.2	16.2
5	10.8	11.0	6.3	13.4	12.9	16.0
6	12.8	11.9	10.3	16.9	12.4	13.7
7	11.9	11.4	14.3	20.9	12.4	15.5
8	9.0	9.3	17.5	15.9	13.1	18.5

Remarks: _____

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

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 20: CC1 dome plate clearances

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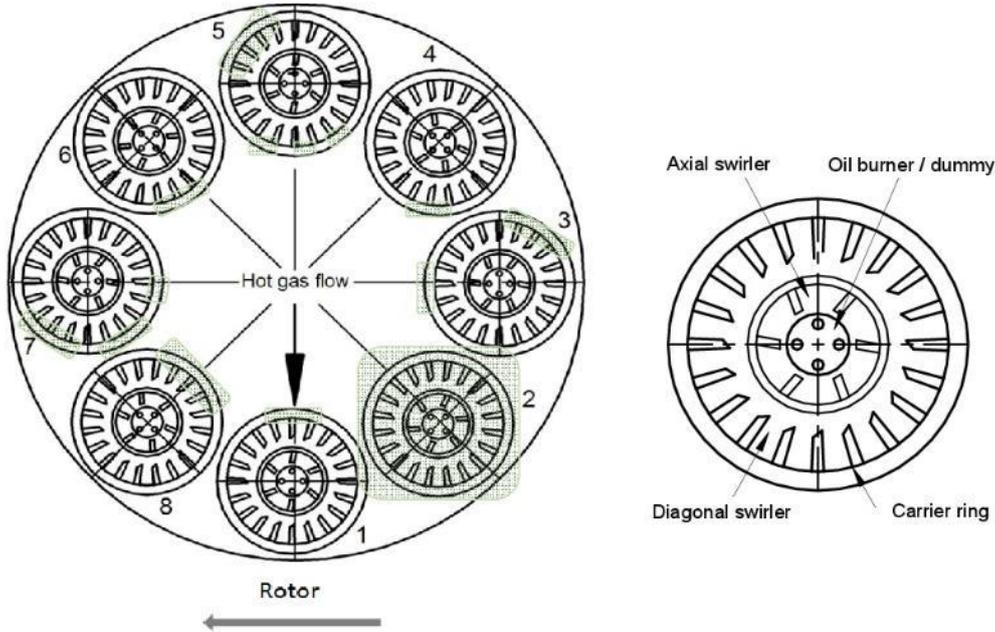
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Gourikwa – GT13 Minor
Inspection

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	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:	03. Pre-disassembly inspections and measurements



Remarks: BIR cracks @ 1-3

Key	
Corrosion	

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ERI ENGINEER	Johan Otto		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 21: CC1 burner assembly - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	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:	15. NDT WI and 13. Inspection of CC

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						
	Clogging of bores	No							
	Deformation of Vanes	No							
	Scaling	No							
	Erosion	No	Yes	No	No	No	No	No	No
	Cracks	No	Yes	Yes	No	No	No	No	No
Burner Support	Discoloration								
	Signs of Overheating								
	Cracks								
	Damage								
Igniter	Spark Test								
	Damage								
Thermo-couples	Damage								

Remarks: _____

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APPROVED BY - ENGINEER	Johan Otto		2022/10/05	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
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Check Sheet 22: CC1 diffusion burners - VI

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Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Premix Burner LHS Visual Inspections	Checksheet Reference #:	V94-2-2028
Inspection	Siemens SGT5-2000E	Page #:	1 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	15. NDT WI and 13. Inspection of CC

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	Yes	No						
	Hub - Deposits / Coking	No	Yes						
	Hub - Fit of Nozzles								
Diagonal Swirler Entire Surface	Deposits / Coking / Plugging								
	Corrosion	No	No	Yes	No	No	No	No	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	No	Yes	Yes	Yes
Expansion Joint	Cracks	No	No	No	No	No	No	Yes	No
	Damage								
Hold-downs for Diagonal Swirler	Wear								
	Cracks								
	Tight fit								
Gas Distributor (Spider)	Corrosion								
	Cracks								
	Deposits "Boroscopic Inspection"								

Remarks: Pugged nozzles; 1-1:4
 Axial swirler overheating: 1-1:6, 1-8, 1-3:7, 1-4:8, 1-5:7, 1-6:6, 1-7:7, 1-8:5

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		2022/10/05	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Galana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 23: CC1 premix burners - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	RHS CC Burner Alignment	Checksheet Reference #:	V94-2-2010-2
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	07. Disassembly of Combustion Chambers

Viewed from below

Flow

Viewed from Above

Location	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8
A	5.4	5.5	5.5	6.0	5.5	5.9	5.5	5.6
B	5.2	5.3	5.3	5.6	5.5	5.8	5.6	5.4
C	5.5	6.1	5.8	6.3	5.8	6.1	6.0	5.9
D	5.4	6.0	5.4	5.6	5.2	5.2	5.3	5.6
A-C	0.1	0.6	0.3	0.2	0.3	0.2	0.5	0.3
B-D	0.3	0.7	0.1	0.0	0.3	0.6	0.3	0.2

Spec	Max
Mis-alignment	1.5

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		2022/10/06	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: 2022/10/06

Check Sheet 24: CC2 burner alignment

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	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:	03. Pre-disassembly inspections and measurements

Bottom plate Right
View in opposite flow direction

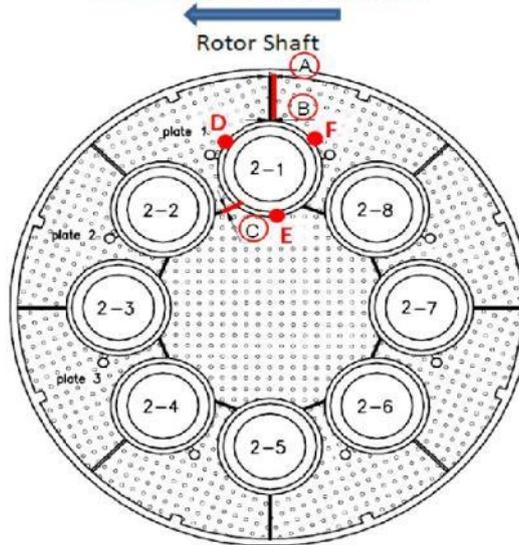


Plate	A	B	C	D	E	F
1	11.0	10.8	11.9	17.0	12.7	15.7
2	9.4	10.7	12.2	18.1	13.3	16.2
3	13.4	12.2	11.6	15.3	12.4	16.2
4	10.7	10.5	12.0	18.0	12.1	15.2
5	8.9	9.5	10.4	19.1	12.0	14.8
6	9.8	9.7	11.4	19.9	13.0	19.7
7	11.0	11.8	11.4	18.6	13.0	19.0
8	10.6	10.9	10.4	17.1	13.6	19.4

Remarks: _____

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

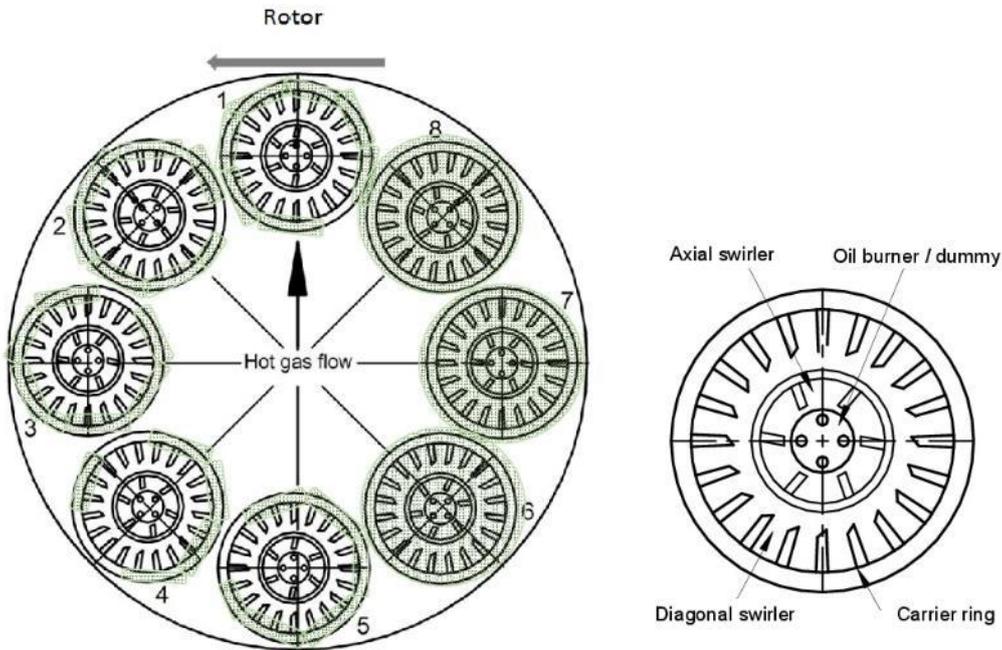
RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 25: CC2 dome plate clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	RHS CC Burner Assembly Visual Inspection	Checksheet Reference #:	V94-2-2012-2
Inspection	Siemens SGT5-2000E	Page #:	1 of 1
	Combustion	Project #:	GOU.MI3
		Relevant Procedures:	03. Pre-disassembly inspections and measurements



Remarks: BIR Cracks: 2-3, 2-4, 2-6

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				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 26: CC2 burner assembly - VI

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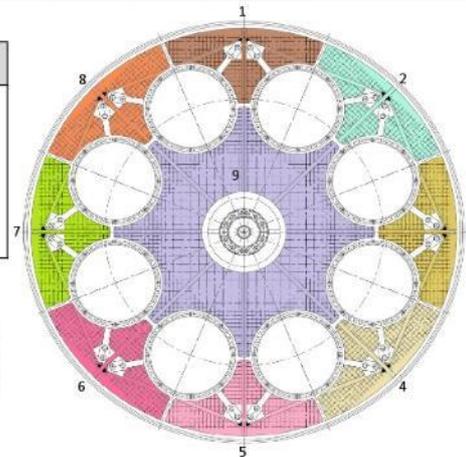
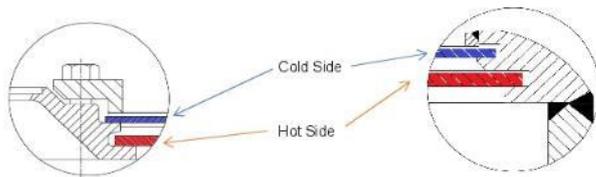
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Dome Plates Visual Inspection	Checksheet Reference #:	V94-2-2020
Inspection	Siemens SGT5-2000E Combustion	Page #:	1 of 2
		Project #:	GOU.MB
		Relevant Procedures:	15. NDT WI and 13. Inspection of CC

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	Yes							
		Scaling	No	No							
		Cracks	No	No							
	Deformation	No	Yes	No	No	No	No	Yes	No	No	
RHS CC	Cold Side	Hammering Marks									
		Scaling									
		Cracks									
	Hot Side	Hammering Marks	Yes	Yes							
		Scaling	No	No							
		Cracks	No	No							
	Deformation	No	No	No	No	Yes	Yes	Yes	No	No	

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



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CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/10/05	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P. L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:		DATE:		DATE: 2022/10/06

Check Sheet 27: Dome plates - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	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:	13. Inspection of CC

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	Yes	Yes	No	Yes	No	Yes	No
	Clogging of bores	No							
	Deformation of Vanes	No							
	Scaling	No							
	Erosion	No	No	No	No	No	No	Yes	No
	Cracks	Yes	No	Yes	Yes	Yes	Yes	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		2022/10/06	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: 2022/10/06

Check Sheet 28: CC2 diffusion burners - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Premix Burner RHS Visual Inspections	Checksheet Reference #:	V94-2-2028
Inspection	Siemens SGT5-2000E	Page #:	2 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	13. Inspection of CC

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							
	Hub - Deposits / Coking	No							
	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							
	Cracks	No							
Expansion Joint	Damage								
Hold-downs for Diagonal Swirler	Wear								
	Cracks								
	Tight fit								
Gas Distributor (Spider)	Corrosion								
	Cracks								
	Deposits "Boroscopic Inspection"								

Remarks: Blocked nozzles; 2-2:1
 Diagonal swirlers overheating: 2-1:5, 2-2:5, 2-3:5, 2-4:6, 2-5:10, 2-6:7, 2-7:9, 2-8:8

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		2022/10/06	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: 2022/10/06

Check Sheet 29: CC2 premix burners - VI

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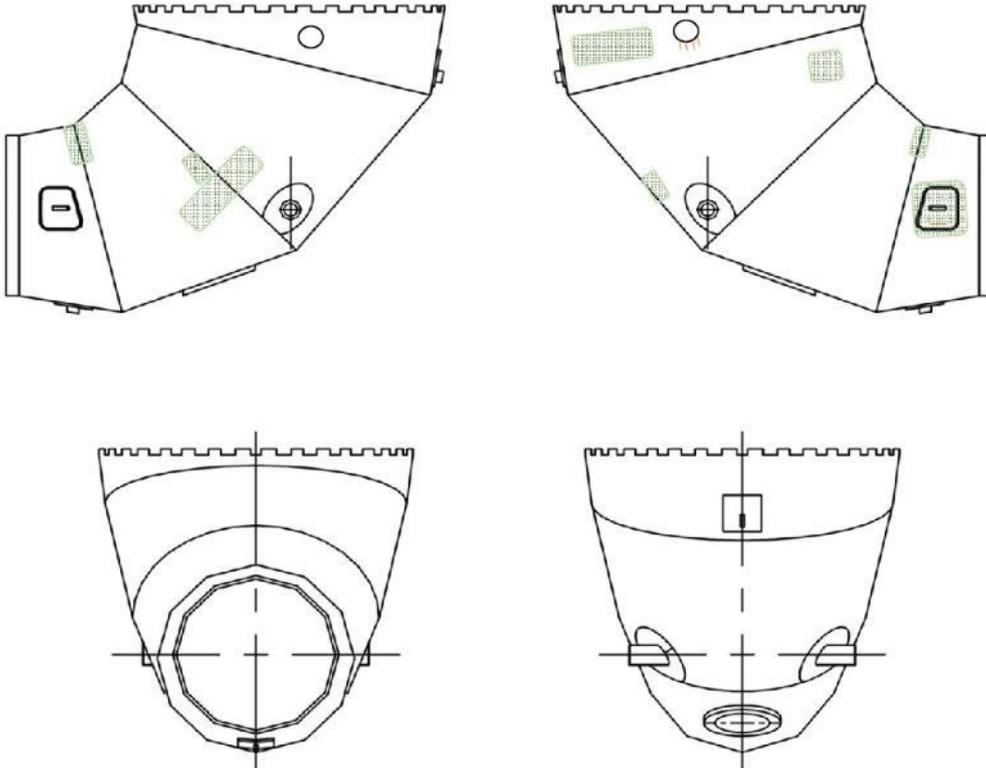
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	LHS Mixing Chamber Visual Inspection	Checksheet Reference #:	V94-2-2011-1
Inspection	Siemens SGT5-2000E	Page #:	1 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	15. NDT WI and 13. Inspection of CC



Remarks: _____

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				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 30: CC1 MC - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	LHS Mixing Chamber Visual Inspection	Checksheet Reference #:	V94-2-2011-1
Inspection	Siemens SGT5-2000E	Page #:	2 of 3
	Combustion	Project #:	GOU.M13
		Relevant Procedures:	27 Reassembly - CCs

Area	Inspection	Findings	Remarks
Complete Surface	Corrosion	Yes	
	Scaling	Yes	
	Mechanical Material Thinning	No	
	Cracks	Yes	TS inspection port
	Deformation	No	
Reinforcement and Guide Plate Regions	Corrosion	Yes	Mechanical damage noted near castellations - likely due to installation of the FT platform
	Scaling	Yes	
	Mechanical Material Thinning	No	
	Cracks	Yes	TS 9-1, 12-17, 19-20, 21, 27-33
Castellations	Scoring Marks / Wear	Yes	
	Deformation	No	
Guides	LHS - Wear		
	Bottom - Wear		
	RHS - Wear		
Bushing Supports	LHS - Wear		
	RHS - Wear		
Cooling Air Ring	Wear / Hammering Marks	Yes	2, 46, 10-15, 16-19
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		2022/10/06	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME:
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE:

Check Sheet 31: CC1 MC - VI

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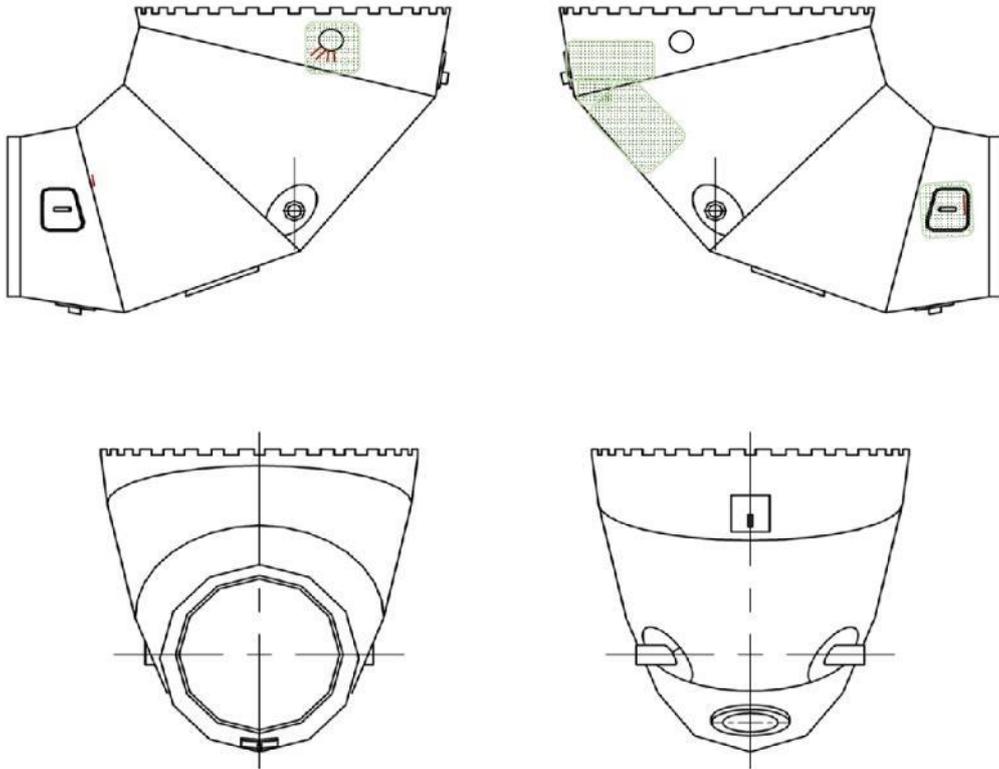
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 Gourikwa – GT13 Minor
 Inspection

Document Identifier	194/1354	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	RHS Mixing Chamber Inspection	Checksheet Reference #:	V94-2-2011-2
Inspection	Siemens SGT5-2000E	Page #:	1 of 3
	Combustion	Project #:	GOU.MB
		Relevant Procedures:	15. NDT WI and 13. Inspection of CC



Remarks: _____

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		2022/10/06	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: 2022/10/06

Check Sheet 32: CC2 MC - VI

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Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	RHS Mixing Chamber Inspection	Checksheet Reference #:	V94-2-2011-2
Inspection	Siemens SGT5-2000E	Page #:	2 of 3
	Combustion	Project #:	GOU.MI3
		Relevant Procedures:	27 Reassembly - CCs

Area	Inspection	Findings	Remarks
Complete Surface	Corrosion	Yes	
	Scaling	Yes	
	Mechanical Material Thinning	No	
	Cracks	Yes	TS inspection port
	Deformation	No	
Reinforcement and Guide Plate Regions	Corrosion	Yes	
	Scaling	Yes	
	Mechanical Material Thinning	No	
	Cracks	Yes	
Castellations	Scoring Marks / Wear	Yes	3-11, 18, 19-22, 23-24, 25, 26
	Deformation	No	
Guides	LHS - Wear		
	Bottom - Wear		
	RHS - Wear		
Bushing Supports	LHS - Wear		
	RHS - Wear		
Cooling Air Ring	Wear / Hammering Marks	Yes	20-10
Manhole Insert	Mechanical Material thinning	No	
	Scaling	No	
Manhole Collar	Scaling	No	
	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		2022/10/06	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.J. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 33: CC2 MC - VI

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Mixing Chamber to Inner Casing Clearances	Checksheet Reference #:	V94-2-2005
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.M13
		Relevant Procedures:	03. Pre-disassembly inspections and measurements

Side-view of castellations
inner casing
mixing chamber
B C

Cross-sectional view
S
inner casing
mixing chamber
A

Remarks: _____

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	19.3	12		
2	7.6	13		
3	16.4	12		
4	14.7	11		
5	12.5	13		
6	13.2	14		
7	15.8	10		
8	18.0	11		
9	17.8	11		
10	15.8	10		
11	17.5	11		
12	17.9	11		
13	17.4	12		
14	15.7	13		
15	14.8	16		
16	17.2	14		
17	17.0	12		
18	17.7	11		
19	19.4	11		
20	21.3	10		
Average	16.4	11.9		

RHS CC				
Location	A	B	C	S
1	19.9	13		
2	9.9	11		
3	16.2	11		
4	14.7	17		
5	15.5	15		
6	16.4	13		
7	17.1	12		
8	17.8	12		
9	18.7	11		
10	16.3	11		
11	18.0	11		
12	15.5	10		
13	15.5	10		
14	14.7	10		
15	14.2	16		
16	14.1	16		
17	14.6	10		
18	15.9	10		
19	18.6	10		
20	20.2	11		
Average	16.2	12.0		

RESponsible Person	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:		DATE:		DATE: 2022/10/06

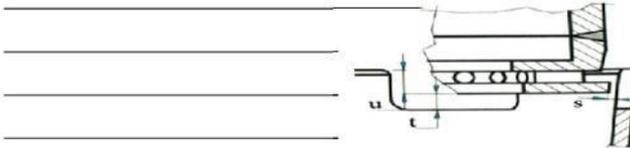
Check Sheet 34: MC to IC clearances

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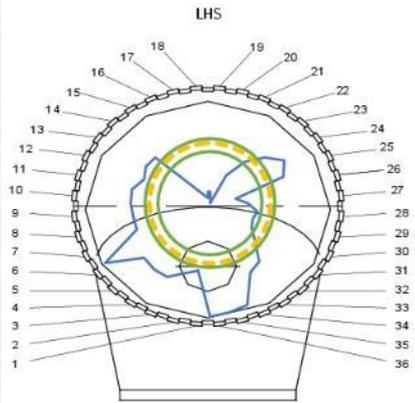
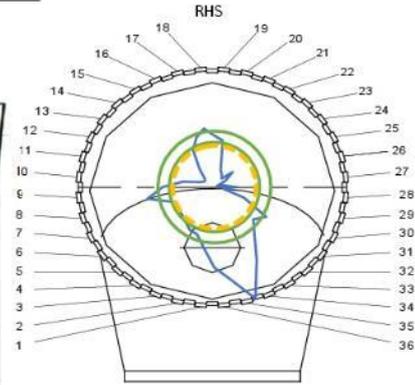
	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Flame Tube Clearances	Checksheet Reference #:	V94-2-2008
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Combustion	Project #:	GOU.MI3
		Relevant Procedures:	03. Pre-disassembly inspections and measurements

Remarks: _____



LHS			
Point	s	t	u
1	8.8	7	
2	5.3	7	
3	5.8	6	
4	6.6	7	
5	6.7	6	
6	6.6	8	
7	9.3	8	
8	6.0	8	
9	6.0	9	
10	6.1	7	
11	6.1	6	
12	5.4	7	
13	5.7	5	
14	5.5	5	
15	1.0	2	
16	0.6	3	
17	0.4	5	
18	0.9	4	
19	0.9	4	
20	0.3	5	
21	0.0	5	
22	2.5	5	
23	4.2	6	
24	5.5	5	
25	6.6	7	
26	6.0	6	
27	2.0	7	
28	2.9	6	
29	3.7	7	
30	3.5	7	
31	3.7	9	
32	4.5	6	
33	5.9	7	
34	6.2	7	
35	8.4	7	
36	8.6	6	
Ave	4.7	6.2	

RHS			
Point	s	t	u
1	7.2	6	
2	5.5	5	
3	4.5	7	
4	4.4	7	
5	4.0	5	
6	3.8	5	
7	3.7	6	
8	3.9	9	
9	6.0	6	
10	4.6	5	
11	2.8	6	
12	1.3	7	
13	1.0	9	
14	1.1	8	
15	2.0	10	
16	3.8	10	
17	4.7	10	
18	5.3	8	
19	4.6	10	
20	4.2	10	
21	1.6	7	
22	1.3	7	
23	1.0	8	
24	2.1	7	
25	1.1	7	
26	0.2	8	
27	0.8	10	
28	2.0	6	
29	0.8	8	
30	2.8	7	
31	5.3	7	
32	4.5	8	
33	5.5	8	
34	7.5	9	
35	10.6	9	
36	8.4	8	
Ave	3.7	8	



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

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:		DATE:		DATE: 2022/10/06

Check Sheet 35: FT to MC clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Inner Casing Visual Inspection	Checksheet Reference #:	V94-2-2805
Inspection	Siemens SGT5-2000E Combustion	Page #:	1 of 3
		Project #:	GOU.M13
		Relevant Procedures:	22. Inspection - Inner Casing

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)	Yes	
	Net of Cracks	No	
	Spalling of TBC	Yes	
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		

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ERI ENGINEER	Johan Otto		2022/10/06	NCR OR WORK ORDER NUMBER:
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		
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Check Sheet 36: IC - VI

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Inspection Report
 Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION Stage 1 Vanes Visual Inspection	Unit #: GT13
	Siemens SGT5-2000E Turbine	Checksheet Reference #: V94-2-3005-1 Page #: 2 of 6 Project #: GOU.MB
Inspection		Relevant Procedures: 26. Reassembly - Turbine Stator Vane WI

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	

Key			
TBC spallation		Cracks	
FOD		Overheating	
Damage due to disass		Corrosion	

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 37: TLe1 - VI

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Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Stage 1 Blades Visual Inspection	Checksheet Reference #:	V94-2-3802-1
Inspection	Siemens SGT5-2000E Turbine	Page #:	2 of 7
		Project #:	GOU.MB
		Relevant Procedures:	33. Inspection- Turbine Inspections

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

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

Remarks: Some blades with TBC spallation on aerofoil LE noted

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 38: TLa1 - VI

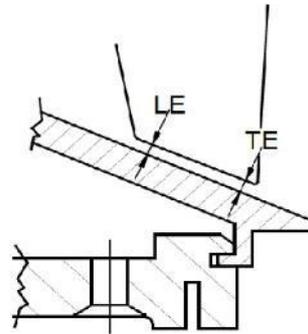
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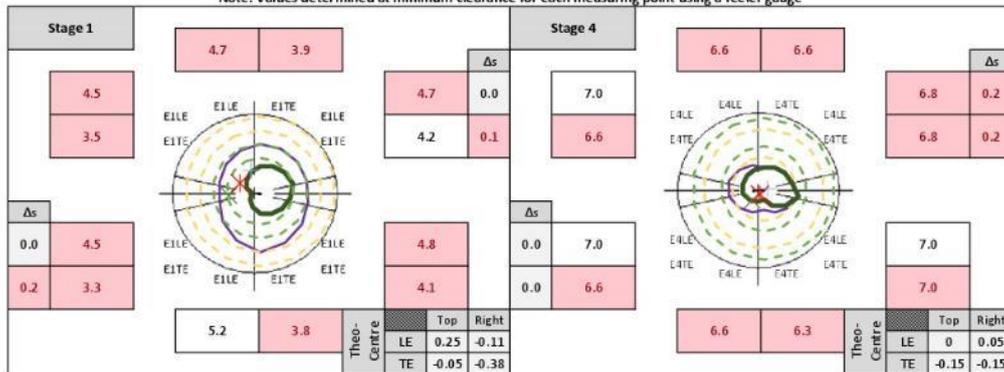
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 Disassembly	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Turbine Radial Blade Tip Clearances	Checksheet Reference #:	V94-2-6301
	Siemens SGT5-2000E	Page #:	1 of 2
	Centreline	Project #:	GOU.M13
		Relevant Procedures:	03. Pre-disassembly inspections and measurements



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



Remarks: No signs of rubbing observed at stage 1
 No signs of rubbing observed at stage 4

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

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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VERIFIED BY - TECHNICIAN				NCR OR WORK ORDER NUMBER:
ERI ENGINEER	Johan Otto		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 39: TLa1 & TLa4 radial blade tip clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Exhaust Casing Inspections	Checksheet Reference #:	V94-2-5002
Inspection	Siemens SGT5-2000E Exhaust	Page #:	1 of 1
		Project #:	GOU.M13
		Relevant Procedures:	15. Work and 33. Disassembly - Pre-disassembly and 33. Inspection - Turbine Inspection

Area	Sub-Area	Inspection	Findings	Remarks
Casing Lining	Inside Wall Surface	Deposits	No	
		Deformation / Dents	No	
		Foreign 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	Plate replacement on RHS bottom has left significant gap to stage 4 shrouds - to be corrected during the next MO
		Lack of Overlap	No	
		Cracks	Yes	
		Deformation / Dents	No	
	Expansion Joint	Weld Bead - Cracks	Yes	
		Cracks		Boroscopic Inspection
Exhaust Casing	Horizontal Joint Faces	Scoring Marks		
		Marks indicating that Hot Air has Escaped		Crack near bottom spider support - site to drill hole to arrest
	Partition Plate to TVC	Gapping (Horizontal / Vertical)		
		Mechanical Material Thinning		
Vertical Flange	Scoring Marks			
Hub Cover Plate	Sheet Metal Jacketing	Galling Marks		
	Weld Beads	Scuffing Marks / Wear	Yes	
		Cracks	Yes	

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 40: Exhaust casing - VI

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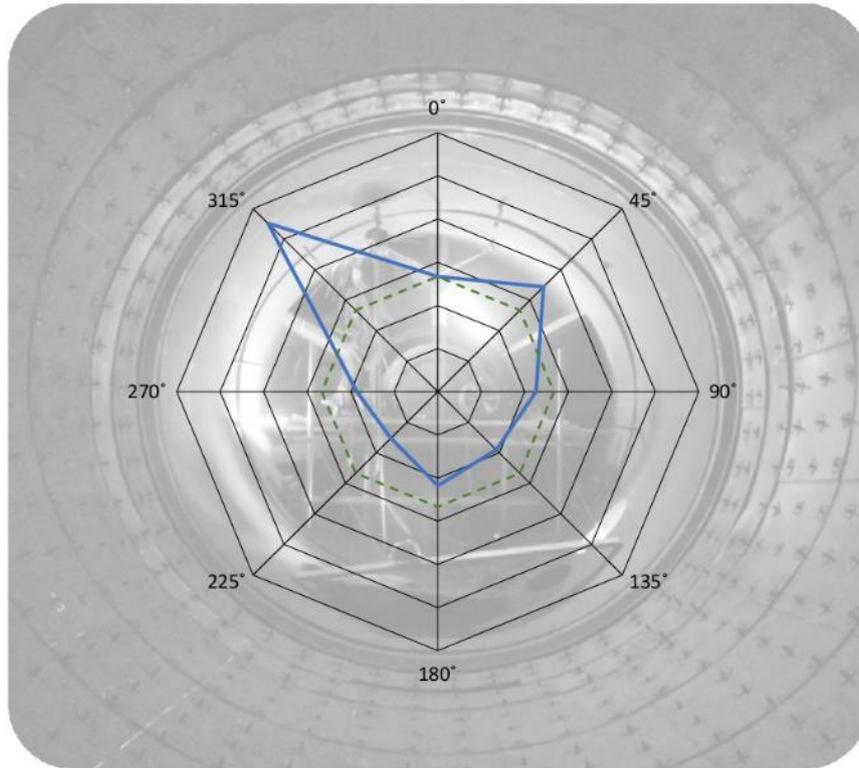
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Document Identifier	194/1354	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Casing to Cover Plate Measurements	Checksheet Reference #:	V94-2-5003
Inspection	Siemens SGT5-2000E Exhaust	Page #:	1 of 1
		Project #:	GOU.MI3
		Relevant Procedures:	05. Disassembly of GT Body - Work Instruction



Gap between Exhaust Casing and Cover Plate for Expansion Joint								
0°	45°	90°	135°	180°	225°	270°	315°	Average
13.3	17.2	11.3	9.5	10.9	7.6	9.3	27.6	13.3

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ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
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Check Sheet 41: Exhaust casing to cover plate clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Downstream of Exhaust Casing Inspections	Checksheet Reference #:	V94-2-5004
Inspection	Siemens SGT5-2000E Exhaust	Page #:	1 of 1
		Project #:	GOU.MI3
		Relevant Procedures:	33. Inspection -Turbine Inspections

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	
	Mamhoie Contact Surfaces	Scoring Marks	No	
	Cover Plate for Expansion Joint	Scuffing Marks	No	
Thermocouples		Cracks	Yes	
		Corrosion	Yes	
		Loosened / Detached	No	
		Cracks (Weld beads at screw-in head)	No	
		Damage	No	

RESPONSIBLE PERSON	NAME (BLOCK LETTERS)	SIGNATURE	DATE	SERIAL NUMBERS:
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VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/10/05	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: 2022/10/06

Check Sheet 42: Downstream of exhaust casing - VI

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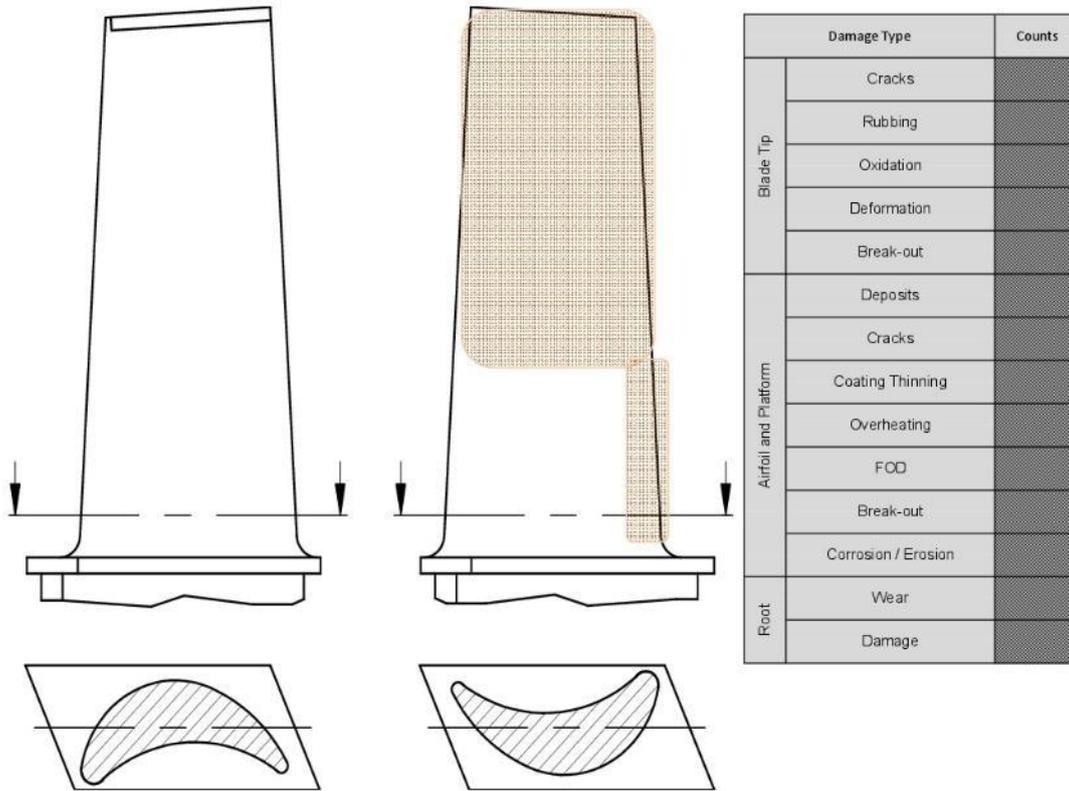
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Stage 4 Blades Visual Inspection	Checksheet Reference #:	V94-2-3802-4
Inspection	Siemens SGT5-2000E Turbine	Page #:	2 of 6
		Project #:	GOU.MB
		Relevant Procedures:	33. Inspection- Turbine Inspections



Key			
FOD		Cracks	
Wear		Over-heating	
Deposits		Corrosion	

Remarks: Dark deposits, no concern (unit)

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		2022/10/05	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: 2022/10/06

Check Sheet 43: TLa4 - VI

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	ESKOM GOURIKWA POWER STATION Generator TE Bearing Outer Oil Baffle radial clearances	Unit #: GT13 Checksheet Reference #: V94-2-4A01 Page #: 1 of 2 Project #: GOU.M13
	Disassembly Siemens SGT5-2000E Centerline	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			
0.20	0.10	0.20	0.15	0.20	0.10	0.20	0.15
0.00	0.10	0.05	0.15	0.05	0.08	0.00	0.1
0.00	0.10	0.10	0.04	0.10	0.04	0.10	0.04

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:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
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VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/10/04	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: 2022/10/06

Check Sheet 44: Generator TE outer oil baffle clearances

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	ESKOM GOURIKWA POWER STATION Generator TE Bearing Outer Oil Baffle radial clearances	Unit #: GT13 Checksheet Reference #: V94-2-4A01 Page #: 2 of 2 Project #: GOU.M13
	Reassembly Siemens SGT5-2000E Centerline	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			
0.20				0.25			
ΔS	0.10	(RHS) Uj	(LHS) Ur	ΔS	0.10	(RHS) Uj	(LHS) Ur
0.00	0.10	Lj	Lr	0.00	0.0	Lj	Lr
Theoretical Centre				Theoretical Centre			
Top				Top			
Right				Right			
0.00				0.00			
0.10				0.13			
0.03				0.03			

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:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/10/06	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: 2022/10/06

Check Sheet 45: Generator TE outer oil baffle clearances

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	ESKOM GOURIKWA POWER STATION Generator EE Bearing Outer Oil Baffle radial clearances	Unit #: GT13 Checksheet Reference #: V94-2-4A02 Page #: 1 of 2 Project #: GOU.MI3
	Disassembly Siemens SGT5-2000E Centerline	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			
0.25	0.05	0.30	0.05	0.25	0.00	0.25	0.00
0.00	0.05	0.25	0.05	0.00	0.00	0.25	0.25
0.05	0.05	0.05	0.05	0.00	0.00	0.13	0.13
0.05	0.05	0.05	0.05	0.00	0.00	0.13	0.13

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:
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		2022/10/04	

ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER	
NAME:		NAME:		NAME:	P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:	
DATE:	Log #:	DATE:		DATE:	2022/10/06

Check Sheet 46: Generator EE outer oil baffle clearances

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	ESKOM GOURIKWA POWER STATION Generator EE Bearing Outer Oil Baffle radial clearances	Unit #:	GT13
	Siemens SGT5-2000E Centerline	Checksheet Reference #:	V94-2-4A02
Reassembly		Page #:	2 of 2
		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			
0.25				0.55			
0.28	U	0.30	Lr	0.35	U	0.30	Lr
0.10	Lr	0.25	Lr	0.10	Lr	0.25	Lr
0.18				0.30			
	L				L		
	0.00	Theoretical Centre			0.00	Theoretical Centre	
		Top	Right			Top	Right
		0.13	0.02			0.28	-0.03

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:	
PERFORMED BY - ARTISAN					
CHECKED BY - SUPERVISOR				M & TE NUMBER:	
CHECKED BY - QC				TECHNICAL NOTIFICATION:	
VERIFIED BY - TECHNICIAN					
ERI ENGINEER	Johan Otto		2022/10/06	NCR OR WORK ORDER NUMBER:	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER	
NAME:		NAME:		NAME:	P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:	
DATE:		DATE:		DATE:	2022/10/06

Check Sheet 47: Generator EE outer oil baffle clearances

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	ESKOM GOURIKWA POWER STATION Generator EE Bearing Inner Oil Baffle radial clearances	Unit #:	GT13
	Siemens SGT5-2000E Centerline	Checksheet Reference #:	V94-2-4A04
Disassembly		Page #:	1 of 2
		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			
0.50				0.60			
ΔS	0.25	(RHS) Uj	(LHS) Ur	ΔS	0.30	(RHS) Uj	(LHS) Ur
0.05	0.20	Lj	Lr	0.05	0.1	Lj	Lr
Theoretical Centre				Theoretical Centre			
Top				Top			
0.00				0.04			
Right				Right			
0.25				0.30			
0.05				0.05			

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:
PERFORMED BY - ARTISAN				
CHECKED BY - SUPERVISOR				M & TE NUMBER:
CHECKED BY - QC				TECHNICAL NOTIFICATION:
VERIFIED BY - TECHNICIAN				
ERI ENGINEER	Johan Otto		2022/10/04	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: 2022/10/04

Check Sheet 50: Generator EE inner oil baffle clearances

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	ESKOM GOURIKWA POWER STATION Generator EE Bearing Inner Oil Baffle radial clearances	Unit #:	GT13
	Siemens SGT5-2000E Centerline	Checksheet Reference #:	V94-2-4A04
Reassembly		Page #:	2 of 2
		Project #:	GOU.MI3
		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			

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:
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		2022/10/06	
ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER
NAME:		NAME:		NAME: P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:
DATE:	Log #:	DATE:		DATE: 2022/10/06

Check Sheet 51: Generator EE inner oil baffle clearances

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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Generator TE Bearing Casing to Shaft Clearance	Checksheet Reference #:	V94-2-4A05
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Centerline	Project #:	GOU.MI3
		Relevant Procedures:	##

Remarks: _____

Note: LHS and RHS are based on standing on the Generator EE and facing towards the Turbine

TE					EE				
		48.13					47.83		
ΔS	47.16	(RHS) Uj	(RHS) Ur	47.75	ΔS	47.76	(RHS) Uj	(RHS) Ur	47.70
0.48	47.64	Li	Lr	47.78	0.03	0.0	Li	Lr	47.73
		47.10					47.41		
Theoretical Centre					Theoretical Centre				
Top					Top				
Right					Right				
24.07					23.92				
0.18					-0.01				

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		2022/10/04	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: 2022/10/04

Check Sheet 52: Generator TE casing to shaft clearances

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Gourikwa – GT13 Minor
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Generator EE Bearing Casing to Shaft Clearance	Checksheet Reference #:	V94-2-4A06
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Centerline	Project #:	GOU.MI3
		Relevant Procedures:	##

Remarks: _____

Note: LHS and RHS are based on standing on the Generator EE and facing towards the Turbine

TE				EE			
	47.78				48.15		
	U				U		
ΔS	47.64	(RHS) UI	47.73	ΔS	47.74	(RHS) UI	47.78
0.01		LI	47.74	0.01	0.0	LI	47.73
	47.63				47.70		
	L				L		
	47.37				47.13		
			Theoretical Centre				Theoretical Centre
			Top				Top
			Right				Right
			23.89				24.08
			0.05				0.02

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		2022/10/04	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: 2022/10/04

Check Sheet 54: Generator EE casing to shaft clearances

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Gourikwa – GT13 Minor
Inspection

Document Identifier	194/1354	Rev	0
Date	30/01/2023		
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 Disassembly	ESKOM GOURIKWA POWER STATION Generator TE Bearing to Shaft axil Clearance Siemens SGT5-2000E Centerline	Unit #: GT13 Checksheet Reference #: V94-2-4A07 Page #: 1 of 2 Project #: GOU.MI3 Relevant Procedures: ##																																																					
<table border="1"> <thead> <tr> <th>Clearance</th> <th>TE</th> <th>EE</th> </tr> </thead> <tbody> <tr> <td>LHS</td> <td>37.92</td> <td>28.8</td> </tr> <tr> <td>RHS</td> <td>37.91</td> <td>28.71</td> </tr> </tbody> </table>	Clearance	TE	EE	LHS	37.92	28.8	RHS	37.91	28.71	<table border="1"> <thead> <tr> <th rowspan="2">Specifications</th> <th colspan="2">TE</th> <th colspan="2">EE</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Clearance</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Specifications	TE		EE		Min	Max	Min	Max	Clearance					Remarks: _____ _____ _____																														
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SIGNATURE:		SIGNATURE:		SIGNATURE:																																																			
DATE:		DATE:		DATE:	2022/10/04																																																		

Check Sheet 56: Generator TE bearing axial clearances

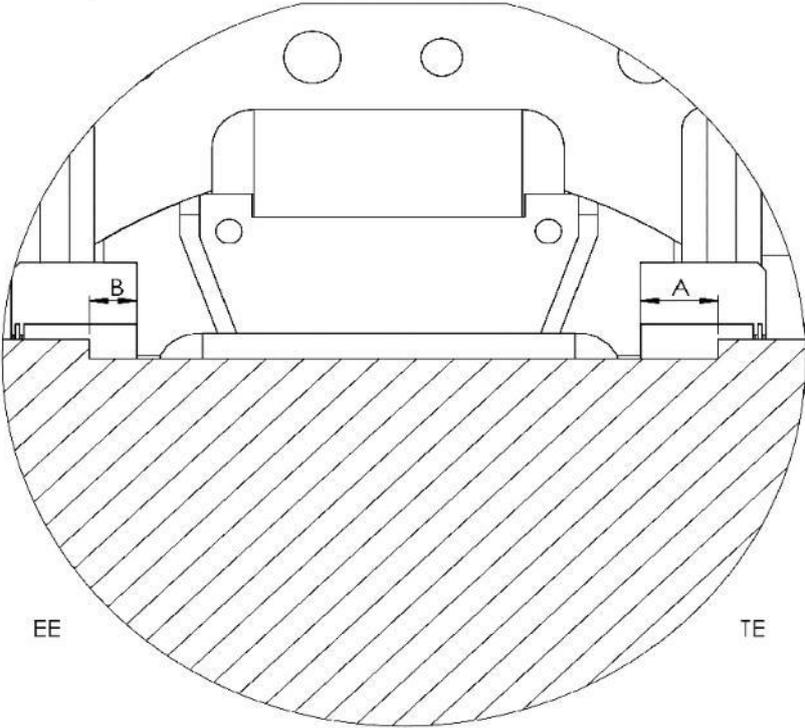
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Form No.: 240-94066774 Rev 0

 Reassembly	ESKOM GOURIKWA POWER STATION Generator TE Bearing to Shaft axial Clearance	Unit #: GT13 Checksheet Reference #: V94-2-4A07 Page #: 2 of 2 Project #: GOU.MI3
	Siemens SGT5-2000E Centerline	Relevant Procedures: ##



Clearance	TE		EE	
	LHS	RHS	LHS	RHS
	38.11	28.63		
	38.03	28.57		

Specifications	TE		EE	
	Min	Max	Min	Max
Clearance				

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		2022/10/06	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: 2022/10/06

Check Sheet 57: Generator TE bearing axial clearances

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 Disassembly	ESKOM GOURIKWA POWER STATION Generator EE Bearing to Shaft axial Clearance Siemens SGT5-2000E Centerline	Unit #: GT13 Checksheet Reference #: V94-2-4A08 Page #: 1 of 2 Project #: GOU.MI3 Relevant Procedures: ##																																																				
<table border="1"> <thead> <tr> <th>Clearance</th> <th>TE</th> <th>EE</th> </tr> </thead> <tbody> <tr> <td>LHS</td> <td>35.73</td> <td>31.03</td> </tr> <tr> <td>RHS</td> <td>35.71</td> <td>31.05</td> </tr> </tbody> </table>		Clearance	TE	EE	LHS	35.73	31.03	RHS	35.71	31.05	<table border="1"> <thead> <tr> <th rowspan="2">Specifications</th> <th colspan="2">TE</th> <th colspan="2">EE</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Clearance</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Specifications	TE		EE		Min	Max	Min	Max	Clearance																																	
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SIGNATURE:		SIGNATURE:		SIGNATURE:																																																		
DATE:	Log #:	DATE:		DATE: 2022/10/04																																																		

Check Sheet 58: Generator EE bearing axial clearances

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 Reassembly	ESKOM GOURIKWA POWER STATION Generator EE Bearing to Shaft axial Clearance	Unit #: GT13 Checksheet Reference #: V94-2-4A08 Page #: 2 of 2 Project #: GOU.MI3
	Siemens SGT5-2000E Centerline	Relevant Procedures: ##

Clearance	TE		EE	
	LHS	RHS	LHS	RHS
	35.66	31.8		
	35.21	31.07		

Specifications	TE		EE	
	Min	Max	Min	Max
Clearance				

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		2022/10/06	NCR OR WORK ORDER NUMBER:

ESKOM QUALITY CONTROL		ESKOM TECHNICIAN		ESKOM ENGINEER	
NAME:		NAME:		NAME:	P.L. Calana
SIGNATURE:		SIGNATURE:		SIGNATURE:	
DATE:		DATE:		DATE:	2022/10/06

Check Sheet 59: Generator EE bearing axial clearances

Controlled Disclosure

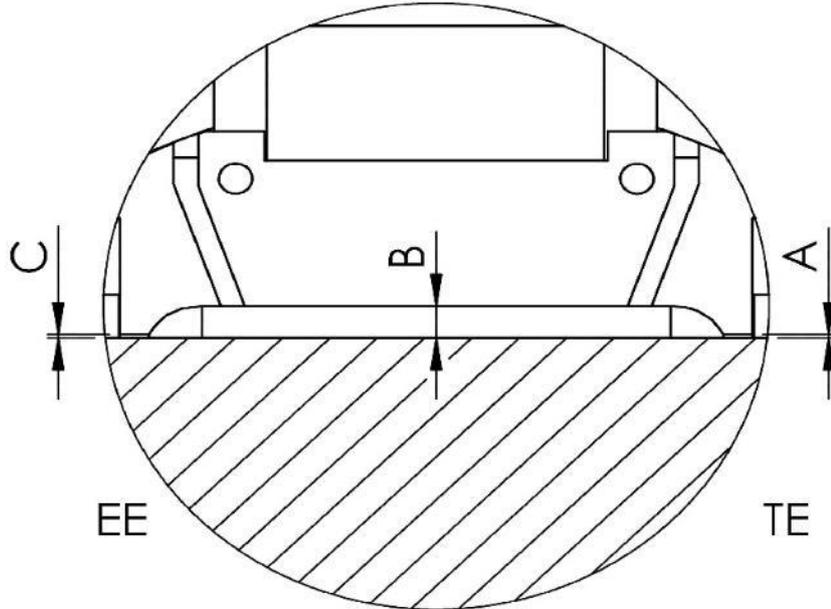
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Business Management System
Inspection Report
Gourikwa – GT13 Minor
Inspection

Document Identifier	194/1354	Rev	0
Date	30/01/2023		
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 Disassembly	ESKOM GOURIKWA POWER STATION Generator TE Bearing White Metal to Shaft Clearance Siemens SGT5-2000E Centerline	Unit #: GT13 Checksheet Reference #: V94-2-4A09 Page #: 1 of 2 Project #: GOU.MI3 Relevant Procedures: ##
------------------------	--	--



Clearance	A	B	C
LHS	0.55	20.14	0.6
Top	-	-	-
RHS	0.65	20.12	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		2022/10/04	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: 2022/10/04

Check Sheet 60: Generator TE bearing clearances

Controlled Disclosure

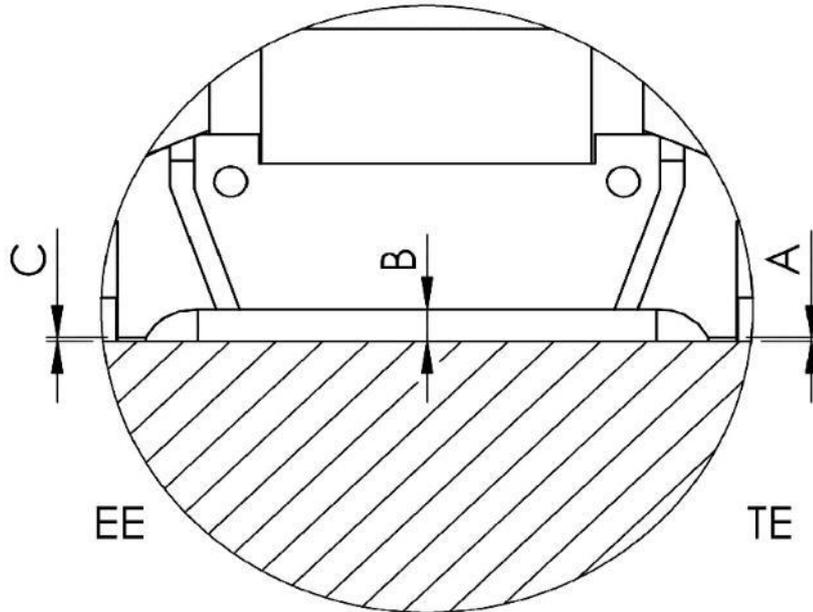
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Business Management System
Inspection Report
Gourikwa – GT13 Minor
Inspection

Document Identifier	194/1354	Rev	0
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 Reassembly	ESKOM GOURIKWA POWER STATION Generator TE Bearing White Metal to Shaft Clearance Siemens SGT5-2000E Centerline	Unit #: GT13 Checksheet Reference #: V94-2-4A09 Page #: 2 of 2 Project #: GOU.MI3 Relevant Procedures: ##
-----------------------	--	--



Clearance	A	B	C
LHS	0.6	20.13	0.6
Top	-	-	-
RHS	0.6	20.11	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		2022/10/06	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: 2022/10/06

Check Sheet 61: Generator TE bearing clearances

Controlled Disclosure

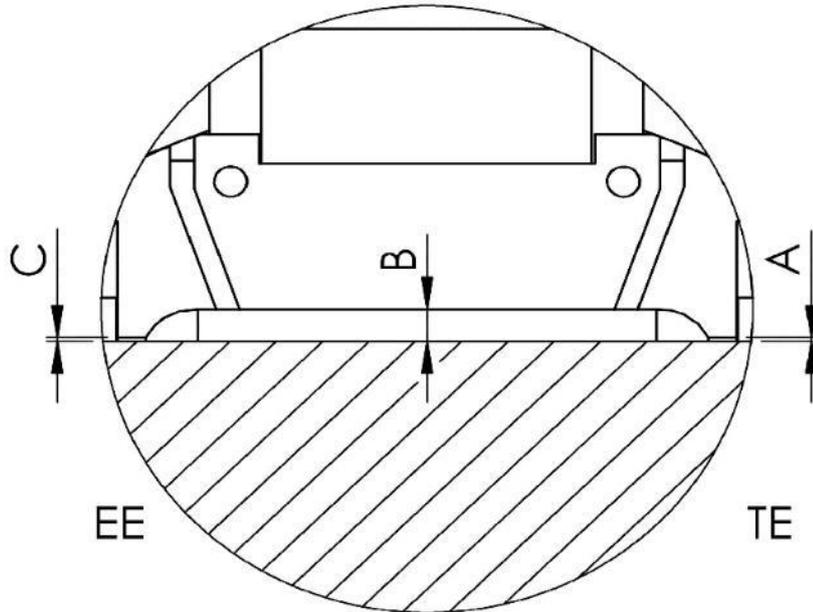
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Inspection Report
Gourikwa – GT13 Minor
Inspection

Document Identifier	194/1354	Rev	0
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Generator EE Bearing White Metal to Shaft Clearance	Checksheet Reference #:	V94-2-4A10
Disassembly	Siemens SGT5-2000E	Page #:	1 of 2
	Centerline	Project #:	GOU.M13
		Relevant Procedures:	##



Clearance	A	B	C
LHS	0.6	20.11	0.6
Top	-	-	-
RHS	0.65	20.09	0.6

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

Remarks: Top measurements were not deemed necessary

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		2022/10/04	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: 2022/10/04

Check Sheet 62: Generator EE bearing clearances

Controlled Disclosure

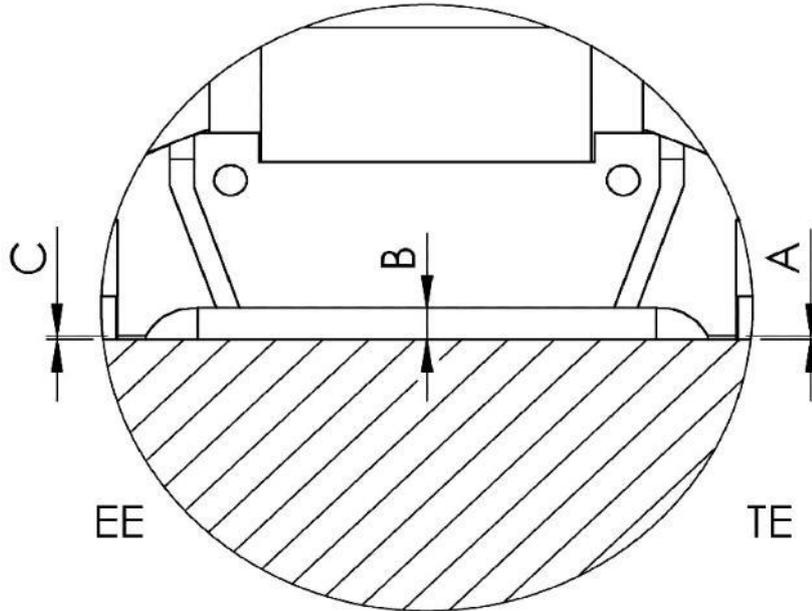
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Inspection Report
Gourikwa – GT13 Minor
Inspection

Document Identifier	194/1354	Rev	0
Date	30/01/2023		
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	ESKOM GOURIKWA POWER STATION	Unit #:	GT13
	Generator EE Bearing White Metal to Shaft Clearance	Checksheet Reference #:	V94-2-4A10
Reassembly	Siemens SGT5-2000E	Page #:	2 of 2
	Centerline	Project #:	GOU.M13
		Relevant Procedures:	##



Clearance	A	B	C
LHS	0.65	20.13	0.6
Top	-	-	-
RHS	0.6	20.1	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		2022/10/06	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: 2022/10/06

Check Sheet 63: Generator EE bearing clearances

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