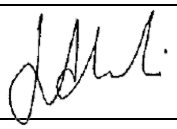
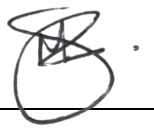
Grootvlei Power Station **Outage Scope of Work**	**Unit**	1
	Genix ID	38129
	Date	30/05/2021

Outage type	GO	**Outage start date**	
Department	Turbine Engineering	**System**	Turbine valves
Scope review date			

Details	**System Engineer**	**Engineering Specialist**	**Engineering Line Manager**
Name & Surname	Stanley Cele	Retabile Mvelo	~~Notemba Sobuwa~~ Mishack Mdluli
Signature		pp Smabilisa	
Date	21/12/2021		22/12/2021

Details	**SCOPE APPROVAL**	**SCOPE ACCEPTANCE**	**SCOPE ACCEPTANCE**
	Engineering Manager	**Outage Coordinator**	**Outage Manager**
Name & Surname	Thabo Montja		Themba Mokgosi Mxolisi Simelane
Signature			
Date	23/12/2021		22/12/2021

SCOPE COMPILATION REFERENCES				
SOURCE & Ref No.	**Yes**	**No**	**N/A**	**Comments**
Previous outage service reports			X	September 2014 IR
Return to service data packages			X	The current VA Viewer are used instead
Maintenance Strategy with Rev number			X	PG/MA*/001
SAP defects (attach list as appendix)			X	Awaiting Outage defects are in the Appendix
GHRMS (STEP) reports (Generation Heat Rate Management System)			X	
Online Condition Monitoring			X	Based on online and previous run-up and run-down vibration reports.
Pre-outage performance test results			X	Currently pre & post outage turbine performance tests are not conducted
Post outage performance test results			X	None
GPSS/ Plant Performance data on UCLF incurred			X	
OMS / IIRMS recommendations (Audits Reports)			X	CA's on OMD from audits reviewed
Risk controls (IRM system)			X	Current safety and production risks on IRM system have been checked and work to address them included in this SOW
Previous audits and reviews (e.g. ERAP)			X	ERAP audits actions reviewed for their relevance to this scope
Engineering Change Requests (Projects)			X	Registered EC's that are to be implemented during the outage have been considered during the compilation of this SOPW.
LOPP strategy reports			X	Recommendations in the turbine strategy reports reviewed & actions covered by SOW
URS			X	URS are covered by the Engineering Change
Philosophy (Outage)			X	Forms basis of this scope of work
Condition Monitoring Report			X	
VA/PHD Viewer trends			X	Latest VA viewer trends checked to ensure that faults/defects are covered on the SOW
Corrective Actions			X	CA's on OMD from audits reviewed
CARAB reports			X	

Statutory Requirements			X	Turbine Statutory tests are covered on this scope and the unit start-up procedures
Grid code requirements			X	Turbine grid code related test is covered on this scope
Waivers and Exemptions			X	The SOW will ensure where necessary that the waivers obtained as a result of deficiencies are addressed
Calibration requirements			X	
Previous Outage SOW variations			X	The scope is inclusive of the activities requested previous using variations
Post Mortems Actions from previous outages			X	Actions reviewed & considered for this SOW
Pre–Outage plant walks			X	The recent plant walks/inspections results forms part of this SOW
Risk based inspection (RBI) report			X	
Simulation, TOIs, OON, SI			x	All TOI's, OON's and SI's will be dealt with during outage meetings

SUBSYSTEM	**Y / N**	**Page №**
Cooling tower (PAD) & CW system (PAB)	Y	
Nitrogen system (PAX)	Y	

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1. GOAL

This outage prepares the unit to achieve the following performance targets with respect to the plant system this scope of work covers:

- UCLF of 10%
- UAGS of zero (0)

2. OJECTIVES

2.1 TECHNICAL CRITERIA

- Zero forced shut down for rework after the outage
- Zero trips as a result of outage poor workmanship

2.2 SCOPE VARIATIONS

- This will be the first outage where work will be done on this section of the plant as part of the outage activities. Due to this there is no history of scope variations on this plant. It is expected that some scope variations will arise based on the inspection of the large CW valves.

2.3 FINANCIAL PERFORMANCE

- This will be the first outage where work will be done on this section of the plant as part of the outage activities. Due to this there is no history of financial performance during outages on this plant.

2.4 TIME MANAGEMENT

- This will be the first outage where work will be done on this section of the plant as part of the outage activities. Due to this there is no history of time management performance during outages on this plant.

3. SUMMARY OF THE SCOPE

This scope includes the inspection, repair and functional testing of the large CW valves, inspection and cleaning of the CW flow meter, inspection of the CCW pump bottom bearings, cleaning and inspection of the cooling tower header tank and storage tank and resetting of the pressure relief valves on both tanks.

3.1 BATTERY LIMITS

PLANT	START	END	EXCLUSIONS	INCLUSIONS	P&ID DRAWINGS

3.2 GENERAL ARRANGEMENT AND LOCATION DRAWINGS

№	DRAWING NUMBER	TITLE
1		
2		

4. APPLICABLE CORPORATE/GENERATION/INTERNATIONAL GUIDELINES AND STANDARDS

№	REFERENCE NUMBER	DOCUMENT TITLE

5. APPLICABLE GROOTVLEI POWERSTATION STANDARDS AND PROCEDURES

№	REFERENCE NUMBER	DOCUMENT TITLE
1	240-72261425	Outage Philosophy for Grootvlei Power Station
2	240-44531738	Outage Philosophy Standards
3	240-40965809	Preservation of Grootvlei Power Plant Systems
4	240-38832138	Procedure for Blowing Through of Impulse Lines
5	240-36984447	Stroke Checking of AUMA Electrically-Operated Actuators Procedure
6	240-38832147	Procedure for Temperature Calibration and Verification
8	GVLRA 0034	Working in confined spaces

6. GENERAL CONSIDERATIONS

ACTIVITIES	SPECIFICATIONS
PRE-REQUISITES / PRE-CONDITIONS	
Walk down of the tower must be completed at least a month prior to the outage to identify air leaks while the tower is in service.	
SAFETY	
There will be work done in the CW ducts. This is a confined space and the relevant procedure must be adhered to in full.	GVLRA 0034

ENVIRONMENT	
While draining the cooling tower and cleaning of relevant vessels care must be taken not to flood the area under the tower.	
All oil and grease must be contained to prevent oil spills from contaminating the station drains.	
QUALITY	
Process Quality Process/Procedure (PQP/QCP) Work on the turbine shall be carried out in accordance with the relevant approved PQP. The PQP shall be compiled by the contractor based on this scope of work and submitted to Grootvlei Engineering at least 2 months before the outage for approval. The QCP shall include the work that will be performed both outside the Power Station as well as on site	
Hold and witness points ➢ H&W points that form part of the QCP and have been approved prior to the start date, shall not be by-passed under any circumstances without the written concession of an authorised member of the Engineering Department. It is the Contractors responsibility to inform the Plant Engineer or his representative at the daily progress meetings when an activity will be ready for QC.	
Check Sheets Inspections to be carried out in accordance with check sheets as attached in master quality plan (QCP). All disassembly and assembly values to be recorded in relevant check sheets. No incomplete check sheets will be accepted unless the prior exemption in terms of the technical notification is obtained from Engineering. NCR will be issued for incomplete check sheets. Repair or replace all damaged/worn components out of specification or obtain a concession from engineering staff. All abnormalities to be recorded and reported with technical notifications.	OEM requirements specifications to be used on specifications unless approval to be obtained from Engineering
Quality technicians QC Technicians will ensure quality standards and quality assurance is exercised during the repairs, replacement or refurbishment.	
Experience of staff All Engineers, technicians, supervisors and quality assurance related staff should have adequate experience to work on specified activities. All artisans should have adequate experience on specified activities and it is the responsibility of the contractor to provide assurance to Eskom that the artisan has the required experience to perform work at Grootvlei.	Short CV's of all supervisors, quality technicians, and artisans stating qualifications and relevant experience must be provided at least two weeks before commencement of outage.

General Requirements	
The importance of correct equipment spares and procedures should be included in structured toolbox talk sessions with all contractors.	
Spares It should be kept in mind that lead time of turbine spares required during major overhauls can be as much as 12 months. Therefore all the spares required will be ordered in time. Spares ordered and used will be reported by always quoting the ESKOM stock number (if applicable) as well as the Group and item number from the spares manuals.	
Documentation Full service reports must be compiled and submitted to the XXX documentation centre for safe keeping and approval 40 days after unit is synchronised on load	
Equipment Lifting equipment: An up to date test certificate will be available for all lifting equipment that will be used. Measuring equipment: An up to date calibration certificate must be available for all measuring equipment that will be used. Special tools will be serviced before the outage, will be available on site and will be on good working condition. A list if all special tools must be compiled before the outage and submitted to Engineering. The special tools must be readily available for inspection by QC and Engineering.	
Use of SAP PM to record history and costs SAP PM will be used to record history of work done and the related costs to at least the second level of headings as listed in this document.	
EXISTING DEFECTS	
A list of all defects loaded before the submission of this SOW are attached	Attached defect list

7. DETAIL SCOPE OF WORK

SUBSYSTEM	FEED HEATING/FEED WATER VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	LAB23AA501	ELECTRIC FEED PUMP A LEAK-OFF ISOLATING VALVE	Inspect, and if necessary repair			H
	LAB22AA501	ELECTRIC FEED PUMP B LEAK-OFF ISOLATING VALVE	Inspect, and if necessary repair			H
	LAB22AA103	EFP B E.O. DISCHARGE EQUALISING VALVE	Inspect, and if necessary repair			H
	LAB23AA103	EFP A E.O. DISCHARGE EQUALISING VALVE	Inspect, and if necessary repair			H
	LCH14AA001	H.P. HEATER 3 TO DEAERATOR DISTILLATE CONTROL VALVE	Inspect, and if necessary repair			H
	LBQ30AA201	HP Heater 1 Hydraulic Trip Valve (Oil and Steam systems)	Inspect, and if necessary repair			H
	LBQ20AA201	HP Heater 2 Hydraulic Trip Valve (Oil and Steam systems)	Inspect, and if necessary repair			H
	LBQ10AA201	HP Heater 3 Hydraulic Trip Valve (Oil and Steam systems)	Inspect, and if necessary repair			H
	LCH14AA001	HPH1 to DA Distillate Control Valve	Inspect, and if necessary repair			H
	LCH13AA001	HPH2 to DA Distillate Control Valve	Inspect, and if necessary repair			H
	LCH13AA002	HPH2 to HPH1 Distillate Control Valve	Inspect, and if necessary repair			H
	LCH12AA001	HPH3 to HPH2 Distillate Control Valve	Inspect, and if necessary repair			H
	LCH14AA002	HPH1 to Flash Box Distillate Control Valve	Inspect, and if necessary repair			H

SUBSYSTEM	FEED HEATING/FEED WATER VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	LCH13AA003	HPH2 to Flash Box Distillate Control Valve	Inspect, and if necessary repair			H
	LCH12AA003	HPH3 to Flash Box Distillate Control Valve	Inspect, and if necessary repair			H
	LBS50AA201	DA Low Load Bled Steam Control Valve	Inspect, and if necessary repair			H
	LBS30AA201	LP Heater 2 Hydraulic Trip Valve (Oil and Steam systems)	Inspect, and if necessary repair			H
	LBS10AA201	Bled Steam to DA Hydraulic Trip Valve (Oil and Steam systems)	Inspect, and if necessary repair			H
	LBR10AA201	Water Separator Hydraulic Trip Valve (Oil and Steam systems)	Inspect, and if necessary repair			H
	LAB31AA102	HPH1 FW Inlet Equalising Valve	Inspect, and if necessary repair			H
	LAB31AA501	HPH1 FW Outlet Equalising Valve	Inspect, and if necessary repair			H
	LAB32AA102	HPH2 FW Inlet Equalising Valve	Inspect, and if necessary repair			H
	LAB32AA501	HPH2 FW Outlet Equalising Valve	Inspect, and if necessary repair			H
	LAB33AA102	HPH3 FW Inlet Equalising Valve	Inspect, and if necessary repair			H
	LAB33AA501	HPH3 FW Outlet Equalising Valve	Inspect, and if necessary repair			H
	LCH14AA601	HPH1 to DA NRV	Inspect, and if necessary repair			H
	LCH13AA503	HPH 2 to DA CV inlet IV	Inspect, and if necessary repair			H
	LCH13AA601	HPH2 to DA NRV	Inspect, and if necessary repair			H
	LCH12AA601	HPH3 to DA NRV	Inspect, and if necessary repair			H

SUBSYSTEM	FEED HEATING/FEED WATER VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LAB22AA101	EFP A suction isolating v/v	Inspect, and if necessary repair			H
	LAB23AA101	EFP B suction isolating v/v	Inspect, and if necessary repair			H
	LBS51AA201	DA low load Bled Steam Control v/v	Inspect, and if necessary repair			H
	LBS10AA504	DA Low load bypass valve	Inspect, and if necessary repair			H
	LBQ10AA503	HPH3 bled steam bypass valve	Inspect, and if necessary repair			H
	LBQ20AA503	HPH2 bled steam bypass valve	Inspect, and if necessary repair			H
	LBQ30AA503	HPH1 bled steam bypass valve	Inspect, and if necessary repair			H
	LBS10AA102	Bled steam to DA isolating v/v	Inspect, and if necessary repair			H
	LBS10AA503	Bled steam to DA equalising v/v	Inspect, and if necessary repair			H
	LBS10AA601	Bled steam to DA NRV	Inspect, and if necessary repair			H
	LBQ10AA103	HPH1 to RH Condenser Flash Box EO isolating v/v	Inspect, and if necessary repair			H
	LBQ10AA404	HPH1 to RH Condenser Flash Box isolating v/v	Inspect, and if necessary repair			H
	LBQ20AA103	HPH2 to RH Condenser Flash Box EO isolating v/v	Inspect, and if necessary repair			H
	LBQ20AA402	HPH2 to RH Condenser Flash Box isolating v/v	Inspect, and if necessary repair			H
	LBQ30AA103	HPH3 to RH Condenser Flash Box EO isolating v/v	Inspect, and if necessary repair			
	LBQ30AA402	HPH3 to RH Condenser Flash Box isolating v/v	Inspect, and if necessary repair			
	LBS30AA102	LPH2 to RH Condenser Flash Box EO isolating v/v	Inspect, and if necessary repair			
	LBS30AA402	LPH2 to RH Condenser Flash Box isolating v/v	Inspect, and if necessary repair			

SUBSYSTEM	FEED HEATING/FEED WATER VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LBS20AA101	LPH2 to RH Condenser Flash Box EO isolating v/v	Inspect, and if necessary repair			
	LBS20AA402	LPH1 to RH Condenser Flash Box isolating v/v	Inspect, and if necessary repair			
	LCH15AA001	HPH1 to LPH1 distillate control v/v	Inspect, and if necessary repair			
	LCH15AA501	HPH1 to LPH1 distillate isolating v/v	Inspect, and if necessary repair			
	LCH31AA501	HPH1 to LPH2 distillate control v/v	Inspect, and if necessary repair			
	LCH31AA001	HPH1 to LPH2 distillate isolating v/v	Inspect, and if necessary repair			
	LCJ20AA001	LPH2 to LPH1 distillate control v/v	Inspect, and if necessary repair			
	LCJ20AA507	LPH2 to LPH1 distillate isolating v/v	Inspect, and if necessary repair			
	LCJ20AA501	LPH2 to Middle Condenser Flash Box inlet isolating v/v	Inspect, and if necessary repair			
	LCJ20AA502	LPH2 to Middle Condenser Flash Box outlet isolating v/v	Inspect, and if necessary repair			
	LCJ20AA001	LPH2 to Middle Condenser Flash Box control v/v	Inspect, and if necessary repair			
	LCJ11AA501	LPH1 to Middle Condenser Flash Box inlet isolating v/v	Inspect, and if necessary repair			
	LCJ11AA502	LPH1 to Middle Condenser Flash Box outlet isolating v/v	Inspect, and if necessary repair			
	LCJ11AA001	LPH1 to Middle Condenser Flash Box control v/v	Inspect, and if necessary repair			
	LCH14AA401	HPH1 distillate drain v/v	Inspect, and if necessary repair			

SUBSYSTEM	FEED HEATING/FEED WATER VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LCH13AA401	HPH2 distillate drain v/v	Inspect, and if necessary repair			
	LCH12AA401	HPH3 distillate drain v/v	Inspect, and if necessary repair			
	LCJ11AA403	LPH1 distillate drain v/v	Inspect, and if necessary repair			
	LCH20AA403	LPH2 distillate drain v/v	Inspect, and if necessary repair			
	PCB01AT001	Inspect and clean Auxiliary cooling pump 1 suction strainer	Strip, inspect and refurbish			
	PCB02AT001	Inspect and clean Auxiliary cooling pump 2 suction strainer	Strip, inspect and refurbish			
	PCB10 AT001	Seal Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			
	PCB60 AT001	Main Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			
		Cooling Water Valves: Open, inspect, blue check and repair if necessary	Strip, inspect and refurbish			
	PCB02AA601	Auxiliary Cooling Pump 02 Discharge NRV :	Strip, inspect and refurbish			
	PCB01AA601	Auxiliary Cooling Pump 01 Discharge NRV	Strip, inspect and refurbish			
	PBC11AA602	Hydrogen CW Booster Pump B Discharge NRV	Strip, inspect and refurbish			
	PCB11AA603	Hydrogen CW Booster Pump A Discharge NRV	Strip, inspect and refurbish			
	PCB11AA601	Hydrogen CW Booster Pumps Suction NRV	Strip, inspect and refurbish			
	PCB20AA601	Hydrogen Cooling Water Recirculating NRV	Strip, inspect and refurbish			
	PCB20AA002	Hydrogen CW Recirculating Control Valve	Strip, inspect and refurbish			

SUBSYSTEM	FEED HEATING/FEED WATER VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	LCA01AA601	CEP A discharge isolating NRV	Strip, inspect and refurbish			
	LCA01AT001	CEP A discharge strainer	Strip, inspect and refurbish			
	LCA02AA601	CEP B discharge isolating NRV	Strip, inspect and refurbish			
	LCA02AT001	CEP B discharge strainer	Strip, inspect and refurbish			
	PCB01AA601	Aux cooling pump 1 discharge NRV	Strip, inspect and refurbish			
	PCB02AA601	Aux cooling pump 2 discharge NRV	Strip, inspect and refurbish			
	LCA31AA502	Feed pumps emergency supply control valve bypass valve	Strip, inspect and refurbish			
	LBG35AA101	Aux steam to high pressure turbine casing heating steam EO IV	Strip, inspect and refurbish			
	MAW01AA501	Gland steam 3-way valve inlet isolating	Strip, inspect and refurbish			
	MAW01AA501	Gland steam 3-way valve outlet isolating	Strip, inspect and refurbish			
	MAV20AA602	Main oil cooler outlet PRV	Strip, inspect and refurbish			
	MAV50AA601	DC Oil pump discharge NRV	Strip, inspect and refurbish			
	MAV50AA502	DC Oil pump discharge IS	Strip, inspect and refurbish			
	MAX01AA601	Control oil discharge NRV	Strip, inspect and refurbish			
	MAV01AA503	AC Bearing oil pump discharge IS	Strip, inspect and refurbish			
	MAV01AA402	AC Bearing oil pump discharge drain valve	Strip, inspect and refurbish			
	MAV02AA402	AC Booster oil pump discharge drain valve	Strip, inspect and refurbish			
	MAV10AA602	Discharge NRV	Strip, inspect and refurbish			
	MAV10AA402	Mechanical pump discharge drain valve	Strip, inspect and refurbish			

SUBSYSTEM		FEED HEATING/FEED WATER VALVES				
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
		DA emergency filling	Strip, inspect and refurbish			
	LBG02AT003	Aux steam drain steam trap	Strip, inspect and refurbish			

SUBSYSTEM	CONDENSATE VALVES					
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LCA20AA001	Main Condenser Condensate Level Control Bypass Valve	Inspect and refurbish. Replace valve if necessary			H
	LCA22AA001	Main Condenser Condensate Level Control Valve	Inspect and refurbish. Replace spindle if necessary			H
	LCA23AA001	Main Condenser Re-Circulation Valve	Inspect and refurbish. Replace spindle if necessary			H
	LCA50AA101	Main Condenser 4% Make-Up Valve	Inspect and refurbish. Replace valve if necessary			H
	LCA41AA001	Main Condenser 10% Make-Up Valve	Inspect and refurbish. Replace spindle if necessary			H
	LCA30AA001	Main Condenser Dumping Valve	Inspect and refurbish. Replace spindle if necessary			H
	LCA41AA101	Main Condenser Overriding Valve	Inspect and refurbish. Replace spindle if necessary			H
	MAG10AA101	Main Condenser Vacuum Breaker	Open and inspect			H
	MAG10AA001	Main Condenser Vacuum Reducer	Open and inspect			H
	MAG10AA410	Main Condenser Atmospheric Valve	Open and inspect. Ensure seal water tank has a level			H
	MAG10AA601	Main Condenser Rupture Valve	Inspect			H
	MAG10AA602	Main Condenser Rupture Valve	Inspect			H
	LBG32AA001	Main Condenser Quick Start Air Ejector Auxiliary Steam Control Valve	Open and inspect			H
	LBG53AA101	Main Condenser Air Ejector A Primary Venturi Auxiliary Steam Control Valve	Inspect and refurbish. Replace spindle if necessary			H

SUBSYSTEM	CONDENSATE VALVES					
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LBG54AA101	Main Condenser Air Ejector A Secondary Venturi Auxiliary Steam Control Valve	Inspect and refurbish. Replace valve if necessary			H
	LBG52AA101	Main Condenser Air Ejector B Primary Venturi Auxiliary Steam Control Valve	Inspect and refurbish. Replace spindle if necessary			H
	LBG51AA101	Main Condenser Air Ejector B Secondary Venturi Auxiliary Steam Control Valve	Inspect and refurbish. Replace valve if necessary			H
	MAJ50AA102	Main Condenser Air Ejector A Primary Cooler Distillate Control Valve	Inspect and refurbish. Replace spindle if necessary			H
	MAJ40AA102	Main Condenser Air Ejector B Primary Cooler Distillate Control Valve	Inspect and refurbish. Replace spindle if necessary			H
	MAJ30AA101	Main Condenser Air Line to Quick Start Air Ejector Control Valve	Inspect and refurbish. Replace spindle if necessary			H
	MAJ50AA101	Main Condenser Air Line to Air Ejector A Primary Venturi Control Valve	Inspect and refurbish. Replace spindle if necessary			H
	MAJ40AA101	Main Condenser Air Line to Air Ejector B Primary Venturi Control Valve	I Inspect and refurbish. Replace spindle if necessary			H
	LCM20AA001	Clean Drains Tank Control Valve	Inspect and refurbish. Replace valve if necessary			H
	MAJ50AA401	Main Condenser Air Ejector A Secondary Cooler Distillate to Clean Drains Tank	Inspect and refurbish			H
	MAJ40AA401	Main Condenser Air Ejector B Secondary Cooler Distillate to Clean Drains Tank	Inspect and refurbish. Replace spindle if necessary			H
	MAW41BB001	GSVC HP Catch Pot to Clean Drains Tank	Open and inspect			H
	MAW42BB001	GSVC LP Catch Pot to Clean Drains Tank	Open and inspect			H
	LBW10AA401	Auxiliary Steam Supply to Turbine Glands drain to Clean Drains Tank	Open and inspect			H

SUBSYSTEM		CONDENSATE VALVES				
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LBW10AA402	Auxiliary Steam Supply to Turbine Glands drain to Clean Drains Tank	Open and inspect			H
	LCM10AA501	Clean Drains Tank Make Up	Open and inspect			H
	LCM10AA502	Clean Drains Tank Make Up	Open and inspect			H
	LCM10AA503	Clean Drains Tank Make Up	Open and inspect			H
	LCM10AA601	Clean Drains Tank Float Valve	Inspect and refurbish. Replace spindle if necessary			H
	LCM10AA401	Clean Drains Tank Overflow to Station Drains Valve	Inspect and refurbish. Replace valve if necessary			H
	LCA01AA601	CEP A discharge isolating NRV	Strip, inspect and refurbish			
	LCA01AT001	CEP A discharge strainer	Strip, inspect and refurbish			
	LCA02AA601	CEP B discharge isolating NRV	Strip, inspect and refurbish			
	LCA02AT001	CEP B discharge strainer	Strip, inspect and refurbish			
	LCA31AA502	Feed pumps emergency supply control valve bypass valve	Strip, inspect and refurbish			

SUBSYSTEM	AUXILIARY COOLING VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	PCB01AT001	Inspect and clean Auxiliary cooling pump 1 suction strainer	Strip, inspect and refurbish			H
	PCB02AT001	Inspect and clean Auxiliary cooling pump 2 suction strainer	Strip, inspect and refurbish			H
	PCB10 AT001	Seal Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			H
	PCB60 AT001	Main Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			H
		Cooling Water Valves: Open, inspect, blue check and repair if necessary	Strip, inspect and refurbish			H
	PCB02AA601	Auxiliary Cooling Pump 02 Discharge NRV :	Strip, inspect and refurbish			H
	PCB01AA601	Auxiliary Cooling Pump 01 Discharge NRV	Strip, inspect and refurbish			H
	PBC11AA602	Hydrogen CW Booster Pump B Discharge NRV	Strip, inspect and refurbish			H
	PCB11AA603	Hydrogen CW Booster Pump A Discharge NRV	Strip, inspect and refurbish			H
	PCB11AA601	Hydrogen CW Booster Pumps Suction NRV	Strip, inspect and refurbish			H
	PCB20AA601	Hydrogen Cooling Water Recirculating NRV	Strip, inspect and refurbish			H

SUBSYSTEM	AUXILIARY COOLING VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	PCB20AA002	Hydrogen CW Recirculating Control Valve	Strip, inspect and refurbish			H
	PCB01AA601	Aux cooling pump 1 discharge NRV	Strip, inspect and refurbish			H
	PCB02AA601	Aux cooling pump 2 discharge NRV	Strip, inspect and refurbish			
	PCB01AT001	Inspect and clean Auxiliary cooling pump 1 suction strainer	Strip, inspect and refurbish			
	PCB02AT001	Inspect and clean Auxiliary cooling pump 2 suction strainer	Strip, inspect and refurbish			
	PCB10 AT001	Seal Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			
	PCB60 AT001	Main Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			
	PCB02AA601	Auxilliary Cooling Pump 02 Discharge NRV :	Strip, inspect and refurbish			
	PCB01AA601	Auxilliary Cooling Pump 01 Discharge NRV	Strip, inspect and refurbish			
	PBC11AA602	Hydrogen CW Booster Pump B Discharge NRV	Strip, inspect and refurbish			
	PCB11AA603	Hydrogen CW Booster Pump A Discharge NRV	Strip, inspect and refurbish			
	PCB11AA601	Hydrogen CW Booster Pumps Suction NRV	Strip, inspect and refurbish			

SUBSYSTEM	AUXILIARY COOLING VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	PCB****	Inspect the following cooling water pipes and clean/clear debris and scaling	Strip, inspect and refurbish			
	PCB11BR011	Hydrogen Cooling Water Booster Pump A Suction Pipe	Strip, inspect and refurbish			
	PCB11BR012	Hydrogen Cooling Water Booster Pump B Suction Pipe	Strip, inspect and refurbish			
	PCB11BR021	Hydrogen Cooling Water Booster Pump A Discharge Pipe	Strip, inspect and refurbish			
	PCB11BR022	Hydrogen Cooling Water Booster Pump B Discharge Pipe	Strip, inspect and refurbish			
	PCB12BR010	Seal Oil Coolers Water Supply Pipe	Strip, inspect and refurbish			
	PCB12BR011	Seal Oil Cooler A Water Inlet Supply Pipe	Strip, inspect and refurbish			
	PCB12BR012	Seal Oil Cooler B Water Inlet Supply Pipe	Strip, inspect and refurbish			
	PCB12BR030	Seal Oil Coolers Water Return Pipe	Strip, inspect and refurbish			
	PCB01BR010	Boiler Auxiliary Cooling Pump 01 Suction Pipe	Strip, inspect and refurbish			
	PCB02BR010	Boiler Auxiliary Cooling Pump 02 Suction Pipe	Strip, inspect and refurbish			
	PCB11BR011& BR012	Hydrogen Coolers Cooling Water Booster Pump Suction Piping	Strip, inspect and refurbish			

SUBSYSTEM	AUXILIARY COOLING VALVES		
COMPONENT ACTIVITIES			GOVERNING DOCUMENTS

№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	PCB40BB001	Hydrogen Coolers Cooling Water Manifold	Strip, inspect and refurbish			
	PCB60BR010	Main Oil Coolers Supply Pipe	Strip, inspect and refurbish			
	PCB01AT001	Inspect and clean Auxiliary cooling pump 1 suction strainer	Strip, inspect and refurbish			
	PCB02AT001	Inspect and clean Auxiliary cooling pump 2 suction strainer	Strip, inspect and refurbish			

SUBSYSTEM	STEAM TRAPS		
COMPONENT ACTIVITIES			GOVERNING DOCUMENTS

№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	XAL10AT001	Gland steam to FP drain	• Strip and clean • overhaul			H
	LBG35AT001	High Pressure casing heating	• Strip and clean • overhaul			H
	LBG30AT00X	Aux steam supply	• Strip and clean • overhaul			H
	LBG34AT002	Aux steam to Gland steam to CDT	• Strip and clean • overhaul			H
	LBW10AT002	Drains auxiliary steam supply gland steam system MT to CDT	• Strip and clean • overhaul			H
	MAL90AT001	Gland steam drain steam filter	• Strip and clean • overhaul			H

SUBSYSTEM		STEAM TRAPS				
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	LBS10AT001	Unit 1 Dearator bled steam drain trap	• Strip and clean • overhaul			H
	MAW02AT001	Gland steam system after Gland steam condenser	• Strip and clean • overhaul			H
	LBG33AT001	Deaerator heating line drain	• Strip and clean • overhaul			H
	LBG32AT001	Quick steam ejectors Aux steam	• Strip and clean • overhaul			H
	MALXXAT001	Float trap for Barometric loop	• Strip and clean • overhaul			H
	LBQ10AT001	Turbine 1 High pressure heater 3 bled steam pipe	• Strip and clean • overhaul			H
	LBU20AT001	Right hand final steam	• Strip and clean • overhaul			H
	MAL30AT001	HP Casing drain steam trap	• Strip and clean • overhaul			H
	MAL53AT001	Gland steam system leak off before leak off valve Left hand	• Strip and clean • overhaul			H
	MAL52AT001	Gland steam system leak off after leak off valve Right hand	• Strip and clean • overhaul			H
	MAL10AT001	Steam chest to condensate left hand Flash box	• Strip and clean • overhaul			H
	LBU10AT001	Left hand final steam	• Strip and clean • overhaul			H
	LBG03AAXXX	Aux steam range	• Strip and clean • overhaul			H

SUBSYSTEM		**STEAM TRAPS**				
COMPONENT ACTIVITIES					**GOVERNING DOCUMENTS**	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LBG20AT002	Aux steam drain line steam trap	• Strip and clean • overhaul			
	LBG31AT002		• Strip and clean • overhaul			
			•			

SUBSYSTEM	AUX STEAM/GLAND STEAM VALVES					
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LBG20AA001	Main boiler aux steam Pressure Reducing Valve (14 – 8 MPa)	• Strip and clean • Ensure tight isolation			H
	LAE05AA001	Aux steam attemperator valve	• Strip and clean • Ensure tight isolation			H
	LAE05AA101	Feed water attemperator	• Strip and clean • Ensure tight isolation			H
	LBG34AA001	Aux steam to gland steam Pressure Reducing Valve (8 – 1.3 MPa)	• Strip and clean • Ensure tight isolation			H
	LBG34AT001	Aux Steam Strainer	• Strip and clean • Ensure tight isolation			H
	LBG20AA601	Aux steam NRV	• Strip and clean • Ensure tight isolation			H
	LBG34AA101	Aux steam to gland steam EO bypass	• Strip and clean • Ensure tight isolation			H
	LBG20AA601	Aux steam NRV	• Strip and clean • Ensure tight isolation			H
	MAW10AA001	Gland Steam 3 way valve	• Strip and clean • Ensure tight isolation			
	LBG20AT001	Aux steam drain line strainer	• Strip and clean • Clean the strainer			
	LBG35AA101	Aux steam to high pressure turbine casing heating steam EO IV	Strip, inspect and refurbish			
	MAW01AA501	Gland steam 3-way valve inlet isolating	Strip, inspect and refurbish			
	MAW01AA501	Gland steam 3-way valve outlet isolating	Strip, inspect and refurbish			
	LBG32AA102	Aux steam drain EO i/s valve	Strip, inspect and refurbish			
	LBG02AT003	Aux steam drain steam trap	Strip, inspect and refurbish			

SUBSYSTEM		SAFETY VALVES				
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	LBQ30AA601	HPH1 shell side safety valve	Inspect and perform statutory testing			H
	LAB31AA601	HPH1 tube side safety valve	Inspect and perform statutory testing			H
	LBQ20AA601	HPH2 shell side safety valve	Inspect and perform statutory testing			H
	LAB32AA601	HPH2 tube side safety valve	Inspect and perform statutory testing			H
	LBQ10AA601	HPH3 shellside safety valve	Inspect and perform statutory testing			H
	LAB33AA601	HPH3 tubeside safety valve	Inspect and perform statutory testing			H
	LBS20AA601	LPH1 shellside safety valve	Inspect and perform statutory testing			H
	LCA22AA601	LPH1 tubeside safety valve	Inspect and perform statutory testing			H
	LBS30AA601	LPH2 shellside safety valve	Inspect and perform statutory testing			H
	LCA22AA602	LPH2 tubeside safety valve	Inspect and perform statutory testing			H
	LBS10AA603	DA A safety valve	Inspect and perform statutory testing			H
	LBS10AA604	DA A safety valve	Inspect and perform statutory testing			H
	LBS10AA605	DA C safety valve	Inspect and perform statutory testing			H
	LBS10AA606	DA C safety valve	Inspect and perform statutory testing			H
	LBG40AA601	Aux Steam safety valve	Inspect and perform statutory testing			H
	LAB20AA601	Feedwater Suction safety valve	Inspect and perform statutory testing			H

SUBSYSTEM		SAFETY VALVES				
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	LAB23AA602	EFP A Leak-Off safety valve	Inspect and perform statutory testing			H
	LAB22AA602	EFP B Leak-Off safety valve	Inspect and perform statutory testing			H
	LCA20AA601	LP Drains Cooler Condensate safety valve	Inspect and perform statutory testing			H
	LCA21AA601	Gland Steam Condenser Condensate safety valve	Inspect and perform statutory testing			H
	LBG40AA601	Aux steam safety valve	Inspect and perform statutory testing			H
		Lube oil safety valve	Inspect and perform statutory testing			H

SUBSYSTEM		VALVES				
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	PCB01AT001	Inspect and clean Auxiliary cooling pump 1 suction strainer	Strip, inspect and refurbish			
	PCB02AT001	Inspect and clean Auxiliary cooling pump 2 suction strainer	Strip, inspect and refurbish			
	PCB10 AT001	Seal Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			

SUBSYSTEM	VALVES					
COMPONENT ACTIVITIES					GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	PCB60 AT001	Main Oil Cooler Auxiliary Cooling Water Strainer Unit : Clean and Inspect basket condition	Strip, inspect and refurbish			
		Cooling Water Valves: Open, inspect, blue check and repair if necessary	Strip, inspect and refurbish			
	PCB02AA601	Auxiliary Cooling Pump 02 Discharge NRV :	Strip, inspect and refurbish			
	PCB01AA601	Auxiliary Cooling Pump 01 Discharge NRV	Strip, inspect and refurbish			
	PBC11AA602	Hydrogen CW Booster Pump B Discharge NRV	Strip, inspect and refurbish			
	PCB11AA603	Hydrogen CW Booster Pump A Discharge NRV	Strip, inspect and refurbish			
	PCB11AA601	Hydrogen CW Booster Pumps Suction NRV	Strip, inspect and refurbish			
	PCB20AA601	Hydrogen Cooling Water Recirculating NRV	Strip, inspect and refurbish			
	PCB20AA002	Hydrogen CW Recirculating Control Valve	Strip, inspect and refurbish			
	LCA01AA601	CEP A discharge isolating NRV	Strip, inspect and refurbish			
	LCA01AT001	CEP A discharge strainer	Strip, inspect and refurbish			
	LCA02AA601	CEP B discharge isolating NRV	Strip, inspect and refurbish			

SUBSYSTEM	**VALVES**					
COMPONENT ACTIVITIES					**GOVERNING DOCUMENTS**	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LCA02AT001	CEP B discharge strainer	Strip, inspect and refurbish			
	PCB01AA601	Aux cooling pump 1 discharge NRV	Strip, inspect and refurbish			
	PCB02AA601	Aux cooling pump 2 discharge NRV	Strip, inspect and refurbish			
	LCA31AA502	Feed pumps emergency supply control valve bypass valve	Strip, inspect and refurbish			
	LBG35AA101	Aux steam to high pressure turbine casing heating steam EO IV	Strip, inspect and refurbish			
	MAW01AA501	Gland steam 3-way valve inlet isolating	Strip, inspect and refurbish			
	MAW01AA501	Gland steam 3-way valve outlet isolating	Strip, inspect and refurbish			
	MAV20AA602	Main oil cooler outlet PRV	Strip, inspect and refurbish			
	MAV50AA601	DC Oil pump discharge NRV	Strip, inspect and refurbish			
	MAV50AA502	DC Oil pump discharge IS	Strip, inspect and refurbish			
	MAX01AA601	Control oil discharge NRV	Strip, inspect and refurbish			
	MAV01AA503	AC Bearing oil pump discharge IS	Strip, inspect and refurbish			
	MAV01AA402	AC Bearing oil pump discharge drain valve	Strip, inspect and refurbish			

SUBSYSTEM	VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	MAV02AA402	AC Booster oil pump discharge drain valve	Strip, inspect and refurbish			
	MAV10AA602	Discharge NRV	Strip, inspect and refurbish			
	MAV10AA402	Mechanical pump discharge drain valve	Strip, inspect and refurbish			

SUBSYSTEM	SAFETY VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	**COMPONENT FLOC (KKS CODE)**	**COMPONENT DESCRIPTION**	**ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)**	**WORK SPECIFICATIONS**	**CHECK SHEET NO.**	**INTERVENTION POINTS (H/W/R)**
	LBQ30AA601	HPH1 shell side safety valve	Inspect and perform statutory testing			H
	LAB32AA601	HPH2 tube side safety valve	Inspect and perform statutory testing			H
	LBQ10AA601	HPH3 shell side safety valve	Inspect and perform statutory testing			H
	LAB33AA601	HPH3 tube side safety valve	Inspect and perform statutory testing			H
	LBS20AA601	LPH1 shell side safety valve	Inspect and perform statutory testing			H

SUBSYSTEM	SAFETY VALVES				
COMPONENT ACTIVITIES				GOVERNING DOCUMENTS	
№	COMPONENT FLOC (KKS CODE)	COMPONENT DESCRIPTION	ACTIVITY TYPE (INSPECTION / TEST / REFURBISH / REPLACE)	WORK SPECIFICATIONS	CHECK SHEET NO.	INTERVENTION POINTS (H/W/R)
	LCA22AA601	LPH1 tube side safety valve	Inspect and perform statutory testing			H
	LBS30AA601	LPH2 shell side safety valve	Inspect and perform statutory testing			H
	LCA22AA602	LPH2 tubeside safety valve	Inspect and perform statutory testing			H
	LBS10AA603	DA A safety valve	Inspect and perform statutory testing			H
	LBS10AA604	DA A safety valve	Inspect and perform statutory testing			H
	LBS10AA605	DA C safety valve	Inspect and perform statutory testing			H
	LBS10AA606	DA C safety valve	Inspect and perform statutory testing			H
	LBG40AA601	Aux Steam safety valve	Inspect and perform statutory testing			H
	LAB20AA601	Feedwater Suction safety valve	Inspect and perform statutory testing			H
	LAB23AA602	EFP A Leak-Off safety valve	Inspect and perform statutory testing			H
	LAB22AA602	EFP B Leak-Off safety valve	Inspect and perform statutory testing			H
	LCA21AA601	Gland Steam Condenser Condensate safety valve	Inspect and perform statutory testing			H
	LBG40AA601	Aux steam safety valve	Inspect and perform statutory testing			H
	MAV20AA602	Lube oil safety valve	Inspect and perform statutory testing			H

8. BILL OF MATERIAL

(SOW OF WORK VARIATION WILL BE ISSUED ONLY IF REFURBISMENT OR REPLACEMENT COMPONENTS EXCEED BUDGET. OTHERWISE CUTTING INSTRUCTION WILL BE USED TO COMMUNICATE WHICH COMPONENTS MUST BE REPLACED OR REFURBISHED)

SUBSYSTEM							
№	**REPLACE/ REFURBISH**	**COMPONENT DESCRIPTION**	**COMPONENT / MATERIAL SPECIFICATION**	**OPERATING PARAMETERS**	**PART / NUMBER**	**STOCK NUMBER**	**DESIGN QUANTITY**
		Nori 160, DN20 – DN50 KSB Globe valves	16Mo3 (KSB)	PN160/540degC			5 of each
		EFP suction isolating valves (Hopkinson)	WCB (Hopkinson)	PN10/200degC			6 off
		HPH bled Steam i/s valves	WCB (Hopkinson)	PN40/400degC			6 off
		Sempel safety valves	Sempel	as per each vessel			2 off

STEAM TRAPS

G Loc Seq	KKS No	Description	Press. Bar	Temp °C	Manuf.	Size	Design	Model	Press. Ra	Flow kg/l	Material	Connections	Length mm	GESTRA Code
1	XAL30AT001	Gland steam system SFPT before barometric loop	1.03	241	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK45	PN 40	120	C 22.8	Butt-weld (33,7 X 3,4 mm)	200	708150073
2	LBG31AT002	Desuperheated steam to SFPT before Sec ESV	80	380	GESTRA	DN 20 (3/4")	Th.(Bimetallic)	BK212	PN 320	360	10 CrMo 9 10	Butt-weld to DIN 3239-1-R6 edge form 22 according to DIN 2559 (26,9 x 4 mm)	330	715140065
3	XAL20AT001	SFPT Drain after CV4 Governer valve drain	14	380	GESTRA	DN 25 (1")	Ball float	UNA26v-AO13 S	PN 40	1000	C 22.8	Flanged to DIN PN 40	160	7811518
4	LBG31AT005	SFPT Aux steam drain to Cond Flash Box	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK29	PN 160	220	13 CrMo 44	Butt-weld to DIN 3239-2-R4 edge form 22 according to DIN 2559 (33,7 x 3,2 mm)	160	7141500
5	XAL10AT001	Gland steam to FP drain	19.84	360	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK45	PN 40	500	C 22.8	Butt-weld (33,7 X 3,4 mm)	200	708150073
6	LBR10AT002	Steam feed pump Turbine 1 bled steam water separator drain steam trap	3.93	135	GESTRA	DN 50 (2")	Ball float	UNA26h-AO4 D	PN 40	5500	C 22.8	Flanged to DIN PN 40	230	7801815-
7	LBG35AT00X	Hig Pressure casing heating	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK29	PN 160	220	13 CrMo 44	Butt-weld to DIN 3239-2-R4 edge form 22 according to DIN 2559 (33,7 x 3,2 mm)	160	7141500
8	LBG30AT00X	Aux steam supply	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK29	PN 160	220	13 CrMo 44	Butt-weld to DIN 3239-2-R4 edge form 22 according to DIN 2559 (33,7 x 3,2 mm)	160	7141500
9	LBG34AT002	Aux steam to Gland steam to CDT	15.71	300	GESTRA	DN 20 (3/4")	Th.(Bimetallic)	BK45	PN 40	450	C 22.8	Flanged to DIN PN 40	150	7081400
10	LBW10AT002	Drains auxiliary steam supply gland steam	12.75	266	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK45	PN 40	420	C 22.8	Butt-weld (33,7 X 3,4 mm)	200	708150073
11	MAL90AT001	Gland steam drain steam filter			GESTRA	DN 50 (2")	Ball float	UNA27h-AO16 S	PN 63	1600	6522 Mo 4	Flanged to DIN PN 63	416	8201805-
12	LBS10AT001	Unit 1 Dearator bled steam drain trap	3.93	135	GESTRA	DN 50 (2")	Th.(Bimetallic)	BK15	PN 40	1500	C 22.8	Flanged to BS 10 Table D	230	7161800
13	LBR10AT001	Steam feed pump Turbine 1 bled steam drain trap	3.93	135	GESTRA	DN 50 (2")	Th.(Bimetallic)	BK15	PN 40	1500	C 22.8	Flanged to BS 10 Table D	230	7161800
14	MAW02AT001	Gland steam system after Gland steam	1.96	360	GESTRA	DN 40 (1 1/2")	Ball float	UNA26h-AO2 D	PN 40	6500	C 22.8	Flanged to DIN PN 40	230	7801716-
15	LBG33AT001	Dearator heating line drain	117.82	543	GESTRA	DN 20 (3/4")	Th.(Bimetallic)	BK212	PN 320	360	10 CrMo 9 10	Butt-weld to DIN 3239-1-R6 edge form 22 according to DIN 2559 (26,9 x 4 mm)	330	715140065
16	LBG32AT001	Quick steam ejectors Aux steam	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK29	PN 160	220	13 CrMo 44	Butt-weld to DIN 3239-2-R4 edge form 22 according to DIN 2559 (33,7 x 3,2 mm)	160	7141500
17	MALXXAT001	Float trap for Barometric loop	0.75	450	GESTRA	DN 50 (2")	Ball float	UNA27h-AO16 S	PN 63	1600	6522 Mo 4	Flanged to DIN PN 63	416	8201805-
18	LBQ10AT001	Turbine 1 High pressure heater 3 bled steam pipe	29.37	350	GESTRA	DN 25 (1")	Continuous Blow dow	BA47	PN 63	1750	C 22.8	Flanged to DIN PN 63	190	181500
19	LBU20AT001	Right hand final steam	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK212	PN 320	360	10 CrMo 9 10	Butt-weld to DIN 3239-1-R6 edge form 22 according to DIN 2559 (26,9 x 4 mm)	330	715140065
20	MAL30AT001	HP Casing drain steam trap	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK212	PN 320	360	10 CrMo 9 10	Butt-weld to DIN 3239-1-R6 edge form 22 according to DIN 2559 (26,9 x 4 mm)	330	715140065
21	MAL53AT001	Gland steam system leak off before leak off valve Left hand	46.85	496	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK29	PN 160	480	13 CrMo 44	Butt-weld to DIN 3239-2-R4 edge form 22 according to DIN 2559 (33,7 x 3,2 mm)	160	7141500
22	MAL52AT001	Gland steam system leak off after leak off valve Right hand	2.96	477	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK29	PN 160	220	13 CrMo 44	Butt-weld to DIN 3239-2-R4 edge form 22 according to DIN 2559 (33,7 x 3,2 mm)	160	7141500
23	MAL10AT001	Steam chest to condensate left hand Flash box	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK212	PN 320	360	10 CrMo 9 10	Butt-weld to DIN 3239-1-R6 edge form 22 according to DIN 2559 (26,9 x 4 mm)	330	715140065
24	LBU10AT001	Left hand final steam	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK212	PN 320	360	10 CrMo 9 10	Butt-weld to DIN 3239-1-R6 edge form 22 according to DIN 2559 (26,9 x 4 mm)	330	715140065
A	LBG03AAXXX	Aux. steam range	TBC	TBC	GESTRA	DN 25 (1")	Th.(Bimetallic)	BK29	PN 160	220	13 CrMo 44	Butt-weld to DIN 3239-2-R4 edge form 22 according to DIN 2559 (33,7 x 3,2 mm)	160	7141500

HP and LP Extraction Valve Servo Actuators

HP and PL Extraction Valve Servo Actuator				

ESKOM MATERIAL NO.	ESKOM SAP DESCRIPTION	DRAWING NUMBER	COMPONENT GROUP	COMPONENT	SCOPE DESCRIPTION	GROUP NO.	ITEM NO.	QUANTITY PER Component	QUANTITY PER Unit	MINIMUM ON STOCK	TO BE ORDERED	General Comment	Material
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	BUSH, THREADED	7560	005	1	3		**3**		
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	SPINDLE	7560	006	1	3		**3**		
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	PISTON	7560	007	1	3		**3**		
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	BUSH	7560	013	1	3		**3**		
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	SPRING	7560	017	1	3		**3**		
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	RING, LOCK	7560	030	1	3		**3**	52x2	

		B42.7560 0-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	RING, SEAL	7560	035	1	3		**6**	21x26x1,5	
		B42.7560 0-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	RING, SEAL	7560	036	2	6		**12**	18x22x1,5	
		B42.7560 0-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	SQUARE RING	7560	038	2	6		**12**	130x119,2 x4	
		B42.7560 0-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	CUP SPRING	7560	039	4	12		**12**	70x25,5x2	
		B42.7560 0-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	THRUST BALL BEARING	7560	040	1	3		**6**		
		B42.7560 0-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	RING, SEAL	7560	041	3	9		**18**	35x50x10	

		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	RING, SEAL	7560	043	1	3		**6**		
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	RING, SUPPORT	7560	044	1	3		**6**		
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	O-RING	7560	045	1	3		**6**	50,2x3	
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	O-RING	7560	046	2	6		**12**	35,2x3	
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	O-RING	7560	047	1	3		**6**	100x4	
		B42.75600-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	O-RING	7560	048	1	3		**6**	150x4	

		B42.7560 0-0020	VALVE	ACTUATOR FOR HP ESV NON-RETURN EXTRACTION VALVES	O-RING	7560	049	1	3		**6**	130x4	
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	SPINDLE	7565	003	1	3		**3**		
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	PISTON	7565	004	1	3		**3**		
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	Bearing Bush	7565	008	1	3		**3**		
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	Compression Spring	7565	009	1	3		**3**		
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	O-RING	7565	013	1	2		**2**	32,2 - 3	

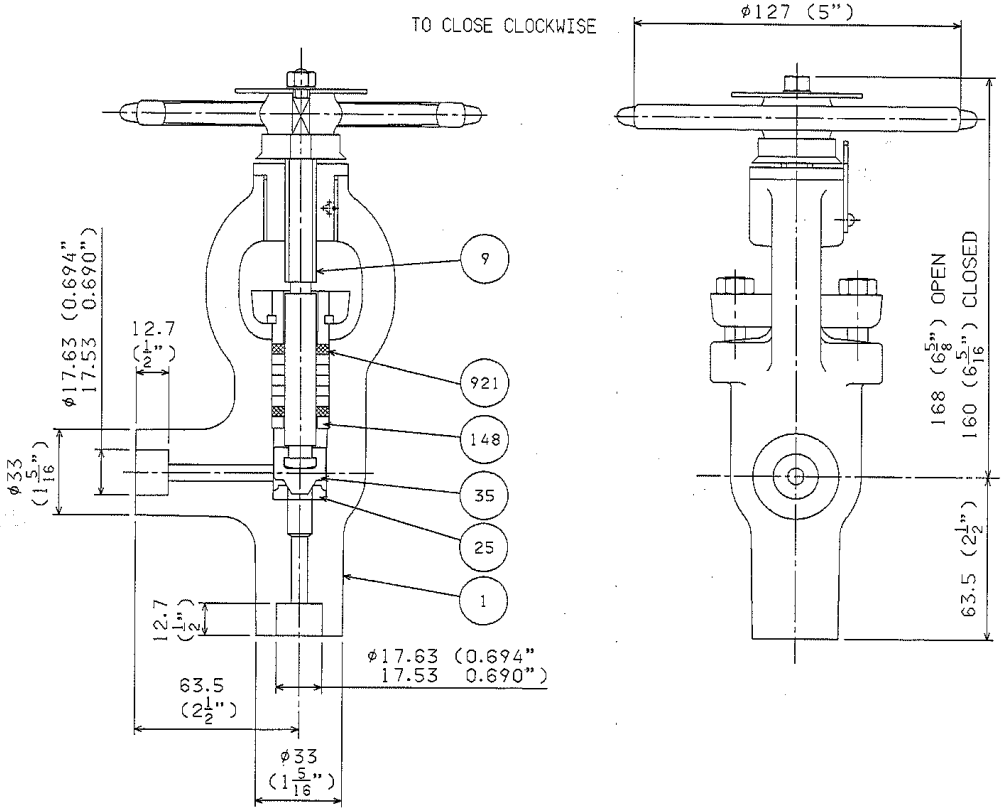
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	O-RING	7565	014	2	6		**6**	52 - 3	
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	O-RING	7565	015	1	3		**3**	100 - 3	
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	O-RING	7565	016	1	3		**3**	125 - 3	
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	Oil Seal	7565	017	1	3		**3**	32-45-7-10 AS	
		A42.7560 0-0112	VALVE	ACTUATOR FOR LP ESV NON-RETURN EXTRACTION VALVES	O-RING	7565	034	1	3		**3**	19,2 - 3	

FW Bypass Valves

3001280

IF IN DOUBT ASK

REF	NAME OF PART	NO. OFF	MATERIAL
1	BODY	1	ASTM A105
9	STEM	1	BS 2S.143
25	SEAT	1	NI.MO. ALLOY
35	VALVE HEAD	1	NI.MO. ALLOY
148	GLAND RING	1	ASTM A276-420
921	GLAND PACKING	1 SET	EXFOLIATED GRAPHITE AND BRAIDED GRAPHITE



CUSTOMER	ATWOOD AND MORRILL
A & M P.O. No.	101100
HOPKINSONS CONTRACT No.	42300068
HOPKINSONS ITEM No.	000010
VALVE WEIGHT	5 Kg

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED — FIRST ANGLE PROJECTION — DO NOT SCALE

DATE	SCALE
23-10-02	-/-/-
DRAWN PKH	CHECKED MA
TRACED.	.

HOPKINSONS
SCREW DOWN STOP VALVE
10mm FIGURE M862420S

DRAWING NO. 3001280