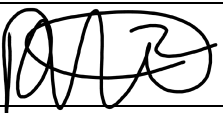
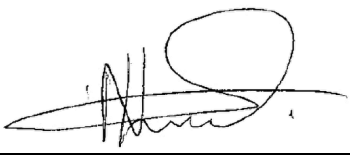


	Hydraulic Scope of Work	Doc. no. F/290/007
		Rev.1.0
		Total pages 1 of 2
Matimba Power Station		Reference Document: PS/290/003

Unit:	1	☒	2	☒	3	☒	4	☒	5	☒	6	☒	O/P	☐
Outage	IR	☒	GO	☒	OTHER	☒								
Outage Date	N/A													
Function	Engineering													

	Compiled	Date
Mechanical Engineer Sizwe Buthelezi		2024/09/11
Senior Engineer Mkhulu Mokoena		2024/09/11

	Approval	Date
Auxiliary Engineering Manager Gift Nkuna		2024/09/01
Engineering Manager Jacky Mathobela		2024/09/11

1. Introduction

The scope involves the refurbishment of the; flopper gate actuators, hydraulic power packs for lifting lowering the submerged scrapper conveyor (SSC), hydraulic power pack for the opening and closing the immersion damper doors. It further covers the accumulators for the evaporator warming steam regulating valves (LBG40AA001), the storage vessel blowdown high and low flow regulating valves (HAG81AA002 and HAG82AA002), the HP bypass valve power pack (LBF01BB001) and reheat safety valves (LBB23BB001). It also covers the boiler feed pumps/electric feed pump (EFP) leak-off valves power packs, cold reheat (LBC01/02AA101) and the bled steam (LBS21/22/30/40AA101 and LBQ50AA101) hydraulic cylinders.

2. Purpose

The purpose of this document is to outline the scope of work to be executed by the contractor during outage to restore optimal condition, ensuring reliable performance and enhance safety.

3. Scope of work

The scope covers the system as outlined below.

3.1. Submerged Scrapper Conveyor (SSC)

3.1.1. SSC lifting hydraulic cylinder 1 to cylinder 14.

- Replace 14 dust covering boots on all cylinders.
- Check operation of SSC hydraulic lifting system when unit comes down.
- overhaul all the cylinders that are found defective during the function check(polish/replace the gland, polish/replace the piston, polish/replace the shaft, horn/replace the barrel, replace oil seals, and Replace the O rings).
- Pressure tests the cylinders after overhaul (Test pressure = 190MPa Test duration = 0.25hours) and Lubricate Clevis pins

3.1.2. Hydraulic Power Packs

- Clean the oil tanks and fill up with the new oil (400 litres).
- Replace the breather filter for the oil tanks.
- Overhaul the oil pumps (replace the radial seals, replace the O rings, replace the bearings, and replace the fitting keys).
- Replace and change oil on the pump suction breather filter.
- Replace air filter and return oil filter.

3.1.3. SSC immersion for sided damper 1 cylinder and rear damper cylinder. Individual front and rear, internal 1 to 13 and external 1 to 17 damper cylinders.

- Check the operation of the damper's cylinders from Local Control Panel immediately after the unit shut down.
- Check for oil leaks on the cylinders.
- Check the condition of the oil supply and return flexible rubber pipes.
- Replace oil supply and return flexible rubber pipes.
- Overhaul all the defective cylinders.
- Pressure tests the cylinders after overhaul (Test pressure = 24MPa Test duration = 0.25hours).
- Replace immersion damper hydraulic oil tank breather, filter, and oil.

3.1.4. SSC Flopper Gate Actuators

- Remove, overhaul, and replace the four (4) flopper gate actuators (replace hydraulic pump, replace dowty washers, polish/replace the shaft, polish/replace the piston, polish/replace the gland, polish/replace the piston, replace the gland seal, replace the O rings, replace the NRVs, replace 2 control valves, and replace the oil.

3.2. Boiler, turbine valves power pack, and hydraulic cylinders.

The scope of works below covers the power pack for LBG40AA control valves, HAG81/82AA002, the HP bypass power pack accumulators (LBF01BB001) and reheat safety valves accumulators (LBB23BB001).

3.2.1. HP bypass (LBF01BB001) and reheat safety valves (LBB23BB01) (HV350)

- Compile quality control plan (QCP), this must be sent Engineering and Quality for review and approval.
- Before draining the hydraulic oil out of the system, run the pump and observe motor, any out of ordinary noise from the motor will require the motor to be replaced. Check the pump for unusual noises during operation, which may indicate a problem with the gears or bearings.
- Check hydraulic oil quality/condition, drain a refill when required, check for any external leaks on oil tanks.
- Inspection, cleaning and flushing of the hydraulic units.
- Disconnect the pump from the hydraulic system. Remove any connecting hoses or lines, carefully disassemble the pump following the manufacturer's instructions and documentation.
- Check gears, bearings and shafts for wear, damage, or breakage. Check the casing and casing for cracks or deformation. Check seals and gaskets for signs of wear or leaks.
- Clean all components thoroughly using an appropriate cleaning solution. Remove any debris or contaminants that may have accumulated inside the pump.
- Replace damaged or worn gears, bearings, seals, and gaskets. Make sure replacement parts meet manufacturer's specifications. Pay special attention to the clearance between gears and other moving parts.
- Reassemble the pump, making sure all components are properly aligned and seated. Follow the manufacturer's guidelines for torque specifications when reassembling.
- Re-assemble pump and motor, the pump-motor spider coupling must be replaced.
- Strip and inspect/assess all direction control valves and any of hydraulic blocks. Clean all passages and ensure that it is free of any blockages and debris. Check solenoid valves and the coil ensuring

that it is free from cracks or any damages and replace where needed. Re-assembly directional control valves, blocks and replace with new O-rings (Viton).

- Visual inspections on accumulators, check for any sign of leakages.
- Remove accumulators from the power pack. Ensure there are no rust spots or cracks in the pain. Look for loose mounting points, worn rubber and any indication of movement during operation. Check all fittings for leaks.
- Check accumulator nitrogen pressure and replenish nitrogen, if necessary.
- Perform a hydrotest on the accumulators as per pressure equipment regulation in accordance with the safety standard. Provide a test certificate, the test certificate shall accompany the calibration certificate of the instruments used for the pressure and temperature done by an independent third party who is SANAS accredited.
- Compile a service report and submit to the Outage Management department.

3.2.2. High/low flow (HAG81/82AA002) vessel blowdown regulating valve and LBG40 (3MA-72-209)

- Compile quality control plan (QCP), this must be sent Engineering and Quality for review and approval.
- Check accumulator pre-charge pressure and oil quality.
- Open, clean tank. Inspect the actuator shaft for any damage and replace all seals. Repair/replace shaft if any damage is found.
- Check solenoid valves for any damage and replace if needed. Reset system pressure.
- Replace the accumulator bladders. Inspect hydraulic hoses and replace if damaged. The old "c" 3/2 directional control valves must be replaced.
- Overhaul gear pumps, cylinders, and relief valve. Replace pump if required.
- Install new directional control valve, level gauge and coupling sleeve.
- Strip and inspect/assess all direction control valves and any of hydraulic blocks. Clean all passages and ensure that it is free of any blockages and debris. Check solenoid valves and the coil ensuring that it is free from cracks or any damages and replace where needed. Re-assembly directional control valves, blocks and replace with new O-rings (Viton) or seals.
- Visual inspections on accumulators, check for any sign of leakages.
- Remove accumulators from the power pack. Ensure there are no rust spots or cracks in the pain. Look for loose mounting points, worn rubber and any indication of movement during operation. Check all fittings for leaks.
- Check accumulator nitrogen bladder pressure and replenish nitrogen, if necessary.
- New kit for bladder, filter seal, flow control valve, and relief valve.
- Perform a hydrotest on the accumulators as per pressure equipment regulation in accordance with the safety standard. Provide a test certificate, the test certificate shall accompany the calibration certificate of the instruments used for the pressure and temperature done by an independent third party who is SANAS accredited.
- Compile a service report and submit to the Outage Management department.

3.2.3. EFP leak-off valve power pack (REINEKE HAS-2-MMMV-2007)

- Compile quality control plan (QCP), this must be sent Engineering and Quality for review and approval.
- Strip, clean and inspect.
- New hydraulic pump, accumulator bladder and valve kit, accumulator recharge
- Replace all seals, new pressure gauge, filter element and directional control valve.
- Test unit and cylinder
- Perform a hydrotest on the accumulators as per pressure equipment regulation in accordance with the safety standard. Provide a test certificate, the test certificate shall accompany the calibration certificate of the instruments used for the pressure and temperature done by an independent third party who is SANAS accredited.
- Compile a service report and submit to the Outage Management department.

3.2.4. Cold reheat and bled steam hydraulic cylinders

DESCRIPTION	SIZE	UNIT	QTY	MATERIAL
PISTON ROD NUT INNER SEAL	45 x 56 x 7	EA	1	U-SEAL VITON
PISTON ROD NUT OUTER SEAL - COLD REHEAT GLAND NUT	47,3 x 2,6	EA	1	O-RING VITON
PISTON ROD DUST SCRAPER	45 x 55 x 5/8	EA	1	VITON
BLED STEAM CYLINDER PIPE FLANGES	25 x 2,6	EA	1	O-RING VITON
PIPE	19,3 x 2,62	EA	1	O-RING VITON
PISTON SEAL	100 x 88 x 8	EA	1	U-SEAL VITON
SHAFT SEAL	46 x 36 x 7	EA	1	U-SEAL VITON
CYLINDER SEAL	90,4 x 5,34	EA	1	O-RING VITON