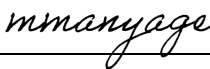
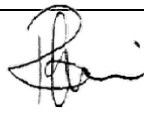


	OUTAGE SCOPE OF WORK FORM/TEMPLATE	Template Identifier	240-98982530 (Rev 1)
		Doc Identifier	<XXX-XXX>
		Doc Revision	<0>
		Effective Date	August 2015
		Eskom	Page 1 of 89

Duvha Power Station Medium Voltage (MV) Motors Repair Contract Scope of Work	Unit	U1-6 and OP
	Genix ID	
	Date	

All Unitised and Outside plant MV Motors	Breakdown and Outage Maintenance	Outage start date	TBC
Department	Electrical Engineering, Electrical Maintenance	System	MV Electric Motors
Scope review date	The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years.		

Details	System Engineer	Engineering Specialist	Engineering Line Manager
Name & Surname	Virginia Mangwiro	Marubini Manyage	Andile Nqayane
Signature			
Date	2026/02/05	09/02/2026	2026/02/10

Details	SCOPE APPROVAL	SCOPE ACCEPTANCE	SCOPE ACCEPTANCE
	Engineering Manager	Maintenance Coordinator	Maintenance Manager
Name & Surname	Maila Mamoleka	Millicent Phukuntsi	Fhatu Tshisikhawe
Signature			
Date	2026-03-17	2026/03/18	2026/03/18

SCOPE COMPILATION REFERENCES

SOURCE & Ref No.	Yes	No	N/A	Comments
Previous outage service reports	X			
Return to service data packages	X			
Maintenance Strategy with Rev number	X			
SAP defects (attach list as appendix)	X			
GHRMS (STEP) reports (Generation Heat Rate Management System)		X		
Online Condition Monitoring	X			
Pre-outage performance test results	X			
Post outage performance test results	X			
GPSS/ Plant Performance data on UCLF incurred	X			
OMS / IIRMS recommendations (Audits Reports)		X		
Risk controls (IRM system)		X		
Previous audits and reviews (e.g. ERAP)	X			
Engineering Change Requests (Projects)	X			
LOPP strategy reports	X			
URS		X		
Philosophy (Outage)	X			
Condition Monitoring Report	X			
VA/PHD Viewer trends	X			
Corrective Actions	X			
CARAB reports		X		
Statutory Requirements	X			
Grid code requirements		X		
Waivers and Exemptions		X		
Calibration requirements		X		
Previous Outage SOW variations	X			
Post Mortems Actions from previous outages	X			
Pre-Outage plant walks	X			
Risk based inspection (RBI) report	X			
Simulation, TOIs, OON, SI	X			

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SUBSYSTEM				Y / N	Page No
Electric Feed Pump (EFP) Motors				Y	
Condensate Extraction Pump (CEP) Motors				Y	
Induced Drought (ID) Fan Motors				Y	
Forced Draught (FD) Fan Motors				Y	
Primary Air (PA) Fan Motors				Y	
North Main Cooling Water Pump (NMCWP) Motors				Y	
South Main Cooling Water Pump (SMCWP) Motors				Y	
Mill Motors				Y	
Ash plant motors				Y	
All Unitised and Outside Plant MV Motors				Y	

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1. GOAL

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

- UCLF of zero (0).
- UAGS of zero (0).

2. OBJECTIVES

2.1 TECHNICAL CRITERIA

- Zero forced shut down for rework after the outage
- Zero trips as a result of outage poor workmanship
- All MV Electric Motors to be fully functional until the next scheduled service

2.2 SCOPE VARIATIONS

- N/A

2.3 FINANCIAL PERFORMANCE

- No access to Fin plan, outages and maintenance to share the cost with Engineers

2.4 TIME MANAGEMENT

- N/A

3. SUMMARY OF THE SCOPE

This scope includes the maintenance work to be done on all unitised and outside plant Medium voltage motors.

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3.1 BATTERY LIMITS

PLANT	START	END	EXCLUSIONS	INCLUSIONS	P&ID DRAWINGS
MV Electric Motors System	11kV	3.3kV	380V AC and 220V DC LV Motors	EFM motors, CEP motors, ID Fan motors, FD Fan motors, PA Fan motors, North Main CWP motors South Main CWP motors. Mill Motors Ash Pump Motors Sluice Pump Motors FFP Compressors Electric Compressor AWR Sluice Water Booster Overland Conveyor 2 Overland Conveyor 3	0.57/55001

3.2 GENERAL ARRANGEMENT AND LOCATION DRAWINGS

No	DRAWING NUMBER	TITLE
1	0.57/517	Unit 6 MV & LV ELECTRIC DIAGRAM
2	0.57/55001	Duvha Unit 1-6 MV Motor Diagram

4. APPLICABLE CORPORATE/GENERATION/INTERNATIONAL GUIDELINES AND STANDARDS

No	REFERENCE NUMBER	DOCUMENT TITLE
1	QM 58	Eskom Quality Requirement
2	OHS ACT	Occupational Health and Safety Act, Number 85 of 1993
3	OPS 0002 (rev 2)	Operating and Maintenance Manuals
4	OPR 3305 (rev 3) / 240-150642762	Eskom Plant Safety Regulation
5	GGM1526	Core principles of Reliability Basis Optimisation
6	ENS0034	MV and LV Electrical Motor Maintenance Strategy
7	240-56361435	Transport of Power Station Electric Motors Standard
8	36-396	Storage of Power Station Electric Motors
9	240-56358854	Refurbishment of Power Station Electric Motors Standard
10	474-10983	Generation Plant Engineering Life Cycle Planning Strategic Report for Electric Motors and Drives for 2025
11	240-89217674	Refurbishment and Repair of Power Station Electric Motors Work Instruction
12	240-100457684	Electric Motor Commissioning Works Instruction

5. APPLICABLE DUVHA POWERSTATION STANDARDS AND PROCEDURES

No	REFERENCE NUMBER	DOCUMENT TITLE
1	240-72261425	Outage Philosophy for Duvha Power Station
2	LEP0011	Motor Breakdown and Repair Request
3	OPS Boiler, Turbine, and Auxiliary Plant System	OPS Boiler, Turbine, and Auxiliary Plant System

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No	REFERENCE NUMBER	DOCUMENT TITLE

6. GENERAL CONSIDERATIONS

ACTIVITIES	SPECIFICATIONS
PRE-REQUISITES / PRE-CONDITIONS	
MV Motors must be isolated from power supplies according to Duvha Power Station standard isolation procedures and Generation Plant Safety Regulations before work can be started	
SAFETY	
The work shall be carried as per Duvha Power Station SHE specifications for principal contractors	
MV Motors must be isolated from power supplies according to Duvha Power Station standard isolation procedures before work can be started.	
Adherence to all safety requirements	Generation Plant Safety Regulations
Open Isolate Bond earth and or insulate before touch. Always test before touch	Life saving rule
ENVIRONMENT	
Environmental requirements are detailed in the works instruction	
QUALITY	
Work to be carried as per Eskom Quality Requirements. Supplier Quality Management: Specification	QM58, 240-105658000
Process Quality Process/Procedure (PQP/QCP) Work on the MV Motors 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 Duvha TSS, Electrical Engineering and EMD at least 2 months before the outage for approval or before any work is executed. The QCP shall include the work that will be performed both outside the Power Station as well as on site	
Hold and witness points	

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➤ 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 Project Manager and Engineer or his/her 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 be delegated by Plant Engineers to 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 Duvha Power Station.	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.	

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Spares All the spares required must 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 Duvha Electrical Engineering for safe keeping and approval 30 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 of 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	

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7. DETAILED SCOPE OF WORK

7.1 TECHNICAL SPECIFICATION OF EACH MOTOR

7.2 SCOPE OF WORK AND PRICING DATA

Item 1: Electric Feed Pump (EFP) MOTORS –GEC/Actom, 13MW, 11kV, 35000kg

	Electric Feed Pump (EFP) MOTORS –GEC/Actom, 13MW, 11kV, 35000kg			
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformers)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			

5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			

5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			

8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE

14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			

46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			

77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Polish Base Plate Feet and Top Pads			
85	Retap all mounting Holes			
86	Manufacture new Dowls			
87	Supply and fit new marine type Oil Sight Glasses			
88	Supply and fit new Felt Seals			
89	Manufacture End Plates			
90	Check and Rectify Nips			
91	Consumables			
92	Supply New Connector blocks, Din Rails & Stoppers			
93	Supply &Fit New Lugs			
94	Pressure Test Radiator "A"			
95	Pressure Test Radiator "B"			
96	Sandblast & paint Radiator Canopy			
97	Supply & fit New Winding Thermocouples			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			

8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 2 : U1-6 Forced Draught (FD), U4-6 Induced Draught (ID), Fan Motors -MITSUBISHI/GEC/WEG, 3600 KW, 3.3KV 15000 KG

	U1-6 Forced Draught (FD), U4-6 Induced Draught (ID), Fan Motors -MITSUBISHI/GEC/WEG, 3600 KW, 3.3KV 15000 KG			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections: Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression fingers and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			

5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			

5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			

8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			

18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			

50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads (Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			

80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Manufacture 250mm Labyrinth Seals			
85	Rectify Bearing Nips			
86	Supply and Fit New Top Inspection Covers			
87	Repair Cracks at The End of Shaft Ribs & Repair			
88	Consumables			
89	Re-tap all Mounting holes			
90	Clean All Spigots & Faces			
91	Supply & fit New Connector Blocks, Din Rails & Stoppers			
92	Clean and Pressure Test Radiator 'A'			
93	Clean and Pressure Test Radiator 'B'			
94	Manufacture new 200mm Labyrinth Seals			
95	Manufacture New 280mm Labyrinth Seals			
96	Machine Seals Clean & Polish			
97	Plastic Wrap for Transportation & Storage			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			

10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 3 : U1-6 Primary Air (PA) Fan Motors – GEC/Actom, 2000 KW, 3.3KV, 7000 KG,

	U1-6 Primary Air (PA) Fan Motors – GEC/Actom, 2000 KW, 3.3KV, 7000 KG,			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			

5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			

6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			

8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			

19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			

51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			

81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Clean, polish & rectify ovality on Oil Rings			
85	Machine seals,Re-metal & machine back to standard			
86	Supply & fit new Marine type Oil sight glasses			
87	Re-Insulate Bearing OD & machine back to standard			
88	Supply & fit new set of Pipes and clamps			
89	Replace Stripped and Missing Plugs			
90	Polish all Spigot Faces			
91	Re-tap All Mounting Holes & Jacking Holes & Fit New Jacking Screws			
92	Clean Bundle "A" Tubes			
93	Clean Bundle "B" Tubes			
94	Plastic Wrap Motor for Storage			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			

14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 4 : U1-3 Induced Draught (ID) Fan Motors – ABB 5130kW, 11kV, 29752kg

	U1-3 Induced Draught (ID) Fan Motors – ABB 5130kW, 11kV, 29752kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE

1	Collect motor from Site and transport to contracto's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard		
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection		
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection		
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling		
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment		
5.1	Stator and Housing		
5.1.1	Inspect winding for corona discharge activities		
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)		
5.1.3	Check insulation for cracks, frays, signs of brittleness		
5.1.4	Check for signs of overheating (stator windings, heater cables, RTD cables, Current Transformer)		
5.1.5	Check for foreign objects in housing		
5.1.6	Check for blocked Vent ducts		
5.1.7	Check for loose wedges		
5.1.8	Check for signs of visual stator core rub		
5.1.9	Check for loose compression fingures and plates		
5.2	Rotor, Shaft and Fan		
5.2.1	Inspect for signs of overheating		
5.2.2	Inspect cleanliness (oil, dust, moisture)		
5.2.3	Inspect for loose rotor bars		
5.2.4	Inspect for blocked vent ducts		
5.2.5	Check for core migration		
5.2.6	Check for missing clamping fingers		
5.2.7	Check for security of end rings		
5.2.8	Inspect looseness between the fan and its hub		
5.2.9	Inspect journals for scratch marks and grooves		
5.3	Bearings (DE,NDE)		

5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			

8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Offline Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			

8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			

26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			

57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84				

Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			

31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 5 : North Main Cooling Water Pump (MCW), Motors – GEC/ABB, 2020kW, 3.3kV, 25000kg

	North Main Cooling Water Pump (MCW), Motors – GEC/ABB, 2020kW, 3.3kV, 25000kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			

5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression fingures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			

5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			

8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			

Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			

44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			

75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Polish all Spigot Faces and flange face			
85	Re-tap all mounting holes			
86	Re-metal & Machine 18off Thrust Pads			
87	Re-metal & Machine 360mm Guide Bearing			
88	Re-metal & Machine 400mm Guide Bearing			
89	Pressure test bearing cooler, Acid wash and repair leak			
90	Fit new "O" Ring Cord			
91	Supply and fit new Air Breathers			
92	Supply and fit new Magnetic Transmitters			
93	Supply and fit x3 Transmitters for Bearing RTD's			
94	Supply and fit new Connector Blocks, Din Rails & Stoppers			
95	Supply and fit new oil sight Glasses			
96	Supply and fit new Oil sight Oil Level Gauge			
97	Supply and fit New Air Grids			
98	Plastic Wrap for Transportation & Storage			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			

5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 6 : South Main Cooling Water Pump (MCW), Motors – GEC/ABB/Actom, 1540kW, 3.3kV, 21000kg

	South Main Cooling Water Pump (MCW), Motors – GEC/ABB/Actom, 1540kW, 3.3kV, 21000kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression fingers and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			

5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			

5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			

8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			

17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			

49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			

80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Supply and fit new Sight Glasses			
85	Pressure Test Cooler			
86	Polish Collar			
87	Re-metal x12 Thrust Pads and Machine			
88	Manufacture new Journal Pad Ring			
89	Supply and fit New Desiccators			
90	Supply and fit Connectors, Din Rails & Stoppers			
91	Ret-ap all Mounting Holes & Jacking Holes and fit new bolts			
92	Polish all Spigots & Faces			
92	Supply and fit new sponges on x2 Silencer Boxes			
94	Manufacture New Fan Blades for Rotor			
95	Plastic Wrap			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			

13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 7 : Extraction Pump (CEP), Motors - GEC, 3.3 KV, 1200KW, 4500kg

	Extraction Pump (CEP), Motors - GEC, 3.3 KV, 1200KW, 4500kg			
	Total Price			Total price

Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contracto's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating (stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression fingures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			

5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			

8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short cicuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			

8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			

25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			

57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Repair Bearing Nips Back to Standard (x2)			
85	Manufacture new 160mm Labyrinth Seals (x4)			

86	Supply and fit new desiccator			
87	Supply and fit new connector Blocks, Din Rails & Stoppers			
88	Re tap Mounting Holes & Jacking Holes & Fit New Jacking Bolts			
89	Polish All Spigots and Spigot Faces			
90	Pallet and Plastic Wrap Motor			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			

24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 8 : Ash pump, Sluice pump, Ash Water Return (AWR) Motors, - 440kW, 450kW, 500kW, 560kW, 484kW, 3.3kV, 3500kg

	Ash pump, Sluice pump, Ash Water Return (AWR) Motors, - 440kW, 450kW, 500kW, 560kW, 484kW, 3.3kV, 3500kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contracto's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			

5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression fingures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxillaries			
5.4.1	Check for any signs of overheating			

5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			

8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			

9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			

39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring,			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			

70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84				
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			

13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 9 : Fabric Filter Plant (FFP), Sluice Booster, Overland Conveyor 2 and 3 Motors – 260kW, 250kW, 300kW, 3000kg

	Fabric Filter Plant (FFP), Sluice Booster, Overland Conveyor 2 and 3 Motors – 260kW, 250kW, 300kW, 3000kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE

1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard		
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection		
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection		
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling		
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment		
5.1	Stator and Housing		
5.1.1	Inspect winding for corona discharge activities		
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)		
5.1.3	Check insulation for cracks, frays, signs of brittleness		
5.1.4	Check for signs of overheating (stator windings, heater cables, RTD cables, Current Transformer)		
5.1.5	Check for foreign objects in housing		
5.1.6	Check for blocked Vent ducts		
5.1.7	Check for loose wedges		
5.1.8	Check for signs of visual stator core rub		
5.1.9	Check for loose compression figures and plates		
5.2	Rotor, Shaft and Fan		
5.2.1	Inspect for signs of overheating		
5.2.2	Inspect cleanliness (oil, dust, moisture)		
5.2.3	Inspect for loose rotor bars		
5.2.4	Inspect for blocked vent ducts		
5.2.5	Check for core migration		
5.2.6	Check for missing clamping fingers		
5.2.7	Check for security of end rings		
5.2.8	Inspect looseness between the fan and its hub		
5.2.9	Inspect journals for scratch marks and grooves		
5.3	Bearings (DE,NDE)		

5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxillaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			

8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			

8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			

26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			

57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring,			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
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Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			

31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 10 : Mill Motors 683kW, 3.3kV

	Mill Motors 683kW, 3.3kV			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			

5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			

5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			

8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			

Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			

44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			

75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Re-tap all mounting holes and fit new Jacking Bolts			
85	Polish all Spigot Faces			
86	Re metal & machine 155mm & 145mm Seals			
87	Manufacture Bearing Stops			
88	Supply and fit New Marine Type Oil Sight Glasses			
89	Check and Rectify Bearing Nips			
90	Reinsulate Bearing OD & Machine Back to Standard			
91	Supply and fit New Felt Seals			
92	Supply and fit New Connector Blocks, Din Rails and Stoppers			
93	Supply and Fit New Coupling			
94	Machine Bore of Coupling and cut keyway			
95	Overhaul Heat Exchanger (Wash and Clean Tubes)			
96	Manufacture new Step Key			
97	Extend Stator Leads			
98	Plastic Wrap Motor for Storage			
99	Re-tap all mounting holes and fit new Jacking Bolts			
100	Polish all Spigot Faces			
101	Re metal & machine 155mm & 145mm Seals			
102	Manufacture Bearing Stops			

Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			

31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

8. BUDGET BILLS OF MATERIAL

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

SUBSYSTEM							
No	REPLACE/ REFURBISH	COMPONENT DESCRIPTION	COMPONENT / MATERIAL SPECIFICATION	OPERATING PARAMETERS	PART / NUMBER	STOCK NUMBER	DESIGN QUANTITY
1	MOTOR,AC13000KW 1494RPM 11KV 1K0004	0179118	EFP U1-6	15			
2	MOTOR,AC 3600KW 735RPM 3,3KV 800LL	0179111	FD Fan U1-6	15			
3	MOTOR,ELECT:5130KW,746RPM	247754	ID Fan U1-3	10			
4	MOTOR,AC 3600KW 746RPM 3,3KV IK8003	0179110	ID Fan U4-6	15			
5	MOTOR,AC 2000KW 1480RPM 3,3KV 500LL	0179112	PA Fan U1-6	15			
6	MOTOR,AC 1200KW 1483RPM 3,3KV	0140100	CEP U1-6	15			
7	MOTOR,ELECT;2020 KW.239 RPM	246874	North Main CWP	15			

8	MOTOR,ELECT;1540 KW.239 RPM	246873	South Main CWP	15			
9	MOTOR,AC 683KW 980RPM 3,3KV 630L1	179109	Mill Motors	30			
10	MOTOR,ELECT:440KW,3300VAC,99A,982 RPM	218932	Ash Pump Motors	30			
11	MOTOR,ELECT:560KW,3300VAC 50HZ,12A	218794	Sluice Pump Motors	30			
12	MOTOR,ELECT:260KW,2978RPM,3300VAC 3PH	2384922	FFP Compressors	10			
13	MOTOR,ELECT:350KW,2973RPM,3300V	221718	Electric Compressor	10			
14	MOTOR,ELECT;484KW,1489 RPM	246872	AWR	15			
15	MOTOR,ELECT:250KW,3.3KVAC, 979rpm	223908	Sluice Water Booster	30			
16	MOTOR,ELECT;300KW,1483RPM	256016	Overland Conveyor 2	10			
17	MOTOR,ELECT;250KW,1483RPM	256014	Overland Conveyor 3	10			
4	MOTOR,AC 3600KW 746RPM 3,3KV IK8003	0179110	ID Fan U4-6	15			
5	MOTOR,AC 2000KW 1480RPM 3,3KV 500LL	0179112	PA Fan U1-6	15			
6	MOTOR,AC 1200KW 1483RPM 3,3KV	0140100	CEP U1-6	15			

9. APPENDICES