

Annexure 4A	
Scope of work (TG & Aux) Unit 3 & 4	
SI No	JOB DESCRIPTION
1	<b>BFP-TURBINE/MOTOR DRIVEN</b>
	<p>PM of MDBFP/ TDBFP COMPLETE SET</p> <ul style="list-style-type: none"> <li>• Carry out external cleaning of equipment.</li> <li>• Check all holding down bolts for tightness and take corrective action if required.</li> <li>• Check lube oil level, if low top-up the hydraulic coupling.</li> <li>• Check the oil level in TDBFP oil Tank and fill up.</li> <li>• Check for oil leakages if any arrest it either by welding/replacement of gland/gaskets.</li> <li>• Clean the Hydraulic coupling oil filter.</li> <li>• Attend all oil &amp; water leakages</li> <li>• Removal of all coupling guards &amp; Check the condition of coupling/spacer, tightness of coupling bolt if loose then tighten.</li> <li>• Check oil level or leakage in coupling of gearbox to turbine-TDBFP.</li> <li>• Inspection /Replacement of Hydraulic Coupling fusible plugs.</li> <li>• Attending of BD flange leakage and all union leakages.</li> <li>• Attending any impulse line leakage either by welding or by tightening.</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p><b>BFP CARTRIDGE REPLACEMENT</b></p> <ul style="list-style-type: none"> <li>• Allow the pump to cool down to 50-60°C.</li> <li>• Disconnect all piping.</li> <li>• Decouple the pump.</li> <li>• Dismantle the pump of NDE side up to discharge flange.</li> <li>• Dismantle the pump up to stuffing box from DE side.</li> <li>• Pull the inside casing out of the pump with the help of crane/crow bars.</li> <li>• Transportation of new cartridge from stores to plant is in the scope of contractor.</li> <li>• Cleaning of new cartridge.</li> <li>• Place the new/repair cartridge inside the barrel.</li> <li>• Assemble the pump from suction side.</li> <li>• Assemble the pump from discharge side.</li> <li>• Check all clearances and adjust them.</li> <li>• Check and correct the pump float and center the pump.</li> <li>• Pump freeness to be checked by rotating the pump.</li> <li>• Alignment of pump with hydraulic coupling.</li> <li>• Couple the pump.</li> <li>• Connect all associated piping.</li> <li>• Attend any defects observed during trial run.</li> <li>• Housekeeping of the area, removal of all spill over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
	<p><b>Coupling inspection –MDBFP/TDBFP</b></p> <ul style="list-style-type: none"> <li>• Removal of all coupling covers</li> </ul>

	<ul style="list-style-type: none"> <li>• Tightness check of all coupling bolts.</li> <li>• Condition of disc to be checked.</li> <li>• Greasing /oil filling if required to be done.</li> <li>• After cleaning coupling covers to be placed and tightened properly.</li> <li>• Housekeeping of the area, removal of spills over oil / grease / cotton waste from location upto the satisfaction of EIC</li> </ul>
	<p>Coupling replacement –MDBFP/TDBFP-1No.</p> <ul style="list-style-type: none"> <li>• Removal of coupling cover.</li> <li>• Removal of coupling spacer and coupler properly.</li> <li>• Matching of new coupling bore &amp; key size with existing one, correction to be done if req.</li> <li>• Fitting of coupling properly and check tightness of all coupling bolts.</li> <li>• Greasing /oil filling if required to be done.</li> <li>• After cleaning coupling covers to be placed and tightened properly.</li> <li>• Housekeeping of the area, removal of spills over oil / grease / cotton waste from location upto the satisfaction of EIC</li> <li>•</li> </ul>
	<p>Renewal / servicing / replacement of bearings (DE / NDE) of BFP</p> <ul style="list-style-type: none"> <li>• Allow the pump to cool down to 50 °C.</li> <li>• Decouple the pump and check rotor freeness.</li> <li>• Disconnect associated water and oil pipelines.</li> <li>• Measure axial float with and without NDE side thrust pad.</li> <li>• Remove the DE / NDE bearing.</li> <li>• Assemble the new Bearing.</li> <li>• Oil clearance checking, if not found within limit, do be rectified.</li> <li>• Measure axial float with and without NDE side thrust pad.</li> <li>• Alignment of BFP &amp; Hydraulic coupling/Turbine.</li> <li>• Couple the BFP &amp; Hydraulic coupling/Turbine.</li> <li>• Assembly of all dismantled piping.</li> <li>• Trail run of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
	<p>Mechanical seal replacement of pump</p> <ul style="list-style-type: none"> <li>• Decouple the pump and check rotor freeness.</li> <li>• Disconnect associated water and oil pipelines.</li> <li>• Remove the Coupling.</li> <li>• Remove the bearing housing.</li> <li>• Lock the mechanical seal and remove it.</li> <li>• Proper cleaning of shaft.</li> <li>• Measure axial float and @ 50 % float lock the mechanical seal on shaft.</li> <li>• Assemble the bearing housing and put the motor on pump.</li> <li>• Alignment of pump and motor and then couple it.</li> <li>• Connect all water lines and fill oil in bearing housing</li> <li>• Remove mechanical seal lock.</li> </ul>

	<ul style="list-style-type: none"> <li>• Trail run of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul> <p>➤ Note: Payment of the alignment will be paid, only if the Motor is removed/mount by other department</p>
	<p>Oil catcher inspection /replacement OF BFP/Booster pump</p> <ul style="list-style-type: none"> <li>• Check for radial gap between catcher and rotor in both sides DE &amp; NDE.</li> <li>• If radial gap is more then remove the top half of bearing.</li> <li>• Remove the top and bottom oil catcher, do the correction or replacement as per EIC instruction.</li> <li>• Check the radial gap of catcher after installing in bearing housing.</li> <li>• If gap found ok then apply hylomer on bearing housing parting plane and assemble the top half.</li> <li>• Properly tighten the bolts of Bearing.</li> <li>• Trail run of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
	<p>Booster &amp; BFP Suction strainer cleaning</p> <ul style="list-style-type: none"> <li>• After strainer draining is done, open strainer flange.</li> <li>• Remove basket or conical strainer with Chain block or Nylon rope.</li> <li>• Clean the strainer properly with water.</li> <li>• Inspection to be done by EIC, if strainer mesh found damaged then replace with new one.</li> <li>• Check the condition of flange gasket, if damaged then replace with new one.</li> <li>• Assemble the strainer and tighten the flange bolts properly.</li> <li>• Fill the feed water line to check any leakages from strainer if any.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>ALIGNMENT OF MOTOR WITH HYDRAULIC COUPLING, BOOSTER PUMP, Hyd. Coupling &amp; MAIN PUMP Or ALIGNMENT OF TURBINE WITH GEAR BOX &amp; BOILER FEED PUMP, GEAR BOX &amp; BOOSTER PUMP</p> <ul style="list-style-type: none"> <li>○ Alignment of BFP motor with hydraulic coupling &amp; booster pump, main pump with hydraulic coupling.</li> <li>• Checking of alignment reading of Motor &amp; Hydraulic Coupling, Motor &amp; Booster Pump ,main pump &amp; hydraulic coupling , if not found within the limit, alignment is to be carried out.</li> <li>• At first the alignment of Motor &amp; Hydraulic Coupling is to be done. To bring the alignment reading within the limit Motor is to be adjusted.</li> <li>• After completion of alignment of Motor &amp; Hydraulic Coupling, Motor &amp; Booster Pump is to be done. To bring the alignment reading within the limit Booster Pump is to be adjusted.</li> <li>• Alignment of Main pump &amp; Hydraulic Coupling is to be done. To bring the alignment reading</li> </ul>

	<p>within the limit main Pump is to be adjusted.</p> <ul style="list-style-type: none"> <li>• Coupling of Motor to Hydraulic Coupling, Main pump to Hydraulic coupling &amp; Motor to Booster pump to be done after no load trail of motor.</li> <li>• Trail run of BFP.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul> <p>➤ Note: Payment of the alignment will be paid, only if the Motor of the BFP is removed/mount by other department.</p> <p>Alignment of turbine with main pump &amp; gear box, gearbox &amp; booster pump</p> <ul style="list-style-type: none"> <li>• At first the alignment of turbine and main pump. To bring the alignment reading within the limit Main pump is to be adjusted.</li> <li>• After completion of alignment of turbine and main pump, Turbine &amp; gearbox is to be done. To bring the alignment reading within the limit gearbox is to be adjusted.</li> <li>• After this, alignment of gearbox and booster pump is to be done. To bring the alignment reading within the limit Booster Pump is to be adjusted.</li> <li>• Coupling of turbine &amp; main pump, turbine &amp; gearbox, gearbox &amp; booster pump is to be done.</li> <li>• Trail run of BFP.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>ALIGNMENT OF BFP WITH HC/ TURBINE or ALIGNMENT OF BOOSTER PUMP WITH MOTOR/GEAR BOX</p> <ul style="list-style-type: none"> <li>• At first the alignment of turbine/HC and main pump. To bring the alignment reading within the limit Main pump is to be adjusted.</li> <li>• At first the alignment of Motor/Gear box with booster pump. To bring the alignment reading within the limit Booster pump is to be adjusted.</li> <li>• Coupling of turbine/HC &amp; main pump, or Motor/Gear box with booster pump is to be done.</li> <li>• Trail run of BFP.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
	<p>Hydraulic coupling fusible plug replacement if required</p> <ul style="list-style-type: none"> <li>• Open the Hydraulic coupling top cover.</li> <li>• Remove the fusible plug from coupling by Allen key.</li> <li>• Visual inspection of Plug by EIC, if found partially or fully fused then replaces.</li> <li>• Check all (two or three) fusible plugs in same manner.</li> <li>• Close the top cover properly.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Oil centrifuging/replacement if required in hyd. Coupling</p>

	<ul style="list-style-type: none"> <li>• Connect the I/L &amp; O/L hose pipe of Portable centrifuge with hydraulic coupling.</li> <li>• Run the centrifuge in purification mode, and collect the water discharge from oil in bucket.</li> <li>• Continuously monitor the running process for any leakage etc.</li> <li>• Stop the centrifuge if oil quality is found satisfactory.</li> <li>• For oil removal o/l of centrifuge should be connected to oil drum.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul>
	<p>MDBFP Lube Oil/working oil cooler cleaning</p> <ul style="list-style-type: none"> <li>• Ensure the oil cooler is drained and isolated.</li> <li>• Loosen the top cover bolts and remove cover</li> <li>• Remove cooler and its pipe connection and keep in cleaning bay.</li> <li>• Clean the tube internal with round brush &amp; Detergent in reciprocating manner.</li> <li>• Wash all parts thoroughly with steam/water.</li> <li>• Replace all O rings/gasket and assemble cooler at place.</li> <li>• Fill the cooler &amp; check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>DE/NDE bearing replacement/inspection – Booster Pump</p> <ul style="list-style-type: none"> <li>• Ensure the oil pump has been stopped.</li> <li>• Open bearing top half.</li> <li>• Check for any marks /scratch on bearing liner.</li> <li>• If bearing liner is damaged then replace with new one.</li> <li>• Check the blue match of bearing with rotor high points should be removed with scrapper.</li> <li>• Install the bearing, Check the top &amp; side oil clearance with lead wire.</li> <li>• Check the oil passage for dirt or debris clean if any.</li> <li>• Check oil catcher gap, adjust if any deviation.</li> <li>• Assemble the top half by applying Hylomer on parting plane.</li> <li>• Take the trail run of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>DE/NDE mechanical seal replacement of Booster pump</p> <ul style="list-style-type: none"> <li>• Ensure pump is drained fully.</li> <li>• Open coupling cover for DE Seal.</li> <li>• Remove coupling and spacer both.</li> <li>• Remove seal water and oil lines.</li> <li>• Remove DE bearing for DE Seal/ NDE bearing for NDE Seal.</li> <li>• Remove Mechanical seal cover bolts; lock the seal with lock key.</li> <li>• Slowly remove the seal from rotor.</li> <li>• Clean the rotor surface properly, remove any burr if any.</li> </ul>

	<ul style="list-style-type: none"> <li>• Insert the seal, tighten cover bolts and unlock the seal.</li> <li>• Assemble the bearing and then coupling.</li> <li>• Fill the pump with feed water and ensure proper venting of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul>
	<p>Internal inspection/parting plane gasket replacement of Booster pump</p> <ul style="list-style-type: none"> <li>• Ensure pump is drained fully.</li> <li>• Open coupling, remove spacer.</li> <li>• Open the top casing cover.</li> <li>• Check the pump rotor for any abnormal condition, casing for any damage in wear ring collar.</li> <li>• Check the condition of parting plane gasket, if damaged/worn out then replace with same thickness of sheet.</li> <li>• Clean the rotor surface properly, remove any burr if any.</li> <li>• Close the top half and tighten the bolts properly.</li> <li>• Assemble the coupling and cover with guard.</li> <li>• Fill the pump with water and take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>REMOVAL, INSPECTION &amp; BOXING UP OF TDBFP TURBINE BEARING PEDESTAL</p> <ul style="list-style-type: none"> <li>• Removal of all parting plane bolts of bearing pedestals.</li> <li>• Lifting of bearing pedestals top cover.</li> <li>• Cleaning &amp; Inspection of internals.</li> <li>• Cleaning of top half of pedestals.</li> <li>• Boxing up of top half.</li> <li>• Any other misc. work not mentioned above, but required to complete the job.</li> <li>• Housekeeping of the area, removal of spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
2	TDBFPS LUBE OIL SYSTEM
	<p>PM of TDBFP Lube oil pumps AC/DC/Jacking oil /transfer oil pumps/oil vapor extractors fans</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the condition of coupling/spider, tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>

	<p>Pump Alignment /Coupling replacement- TDBFP- LOP,EOP</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off.</li> <li>• Decouple the pump, remove spacer if any.</li> <li>• Before alignment ensure pump is normal filled with water/oil.</li> <li>• Use dial for radial reading and inside micrometer/dial for axial reading.</li> <li>• Take 2 set of readings and do the necessary correction if any.</li> <li>• If coupling is broken or worn out then replace with new one.</li> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Take the trial run of Pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Pump Mechanical seal replacement /Bearing replacement</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off and pump is drained fully.</li> <li>• Decouple the pump, remove spacer &amp; Coupler both.</li> <li>• Remove bearing housing and bearing with puller.</li> <li>• Remove mechanical seal, clean the rotor</li> <li>• Insert new seal properly.</li> <li>• Check the bearing freeness/damage if required then replace with new one.</li> <li>• Ensure preheating temp. Of 120 deg. C of bearing before insertion.</li> <li>• Assemble the bearing housing.</li> <li>• Insert the coupler and check for misalignment, do the necessary correction if required.</li> <li>• Fill the pump with water and take trial run.</li> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>TDBFP Jacking Oil Pump Servicing/coupling replacement</p> <ul style="list-style-type: none"> <li>• Ensure power isolation and cable removal of motor.</li> <li>• Remove motor with EOT crane.</li> <li>• Inspect motor and pump coupling and bushes, replace if required.</li> <li>• For repair/replacement of Pump pull out the pump from tank.</li> <li>• Inspect freeness of pump, check for any abnormality.</li> <li>• Replace/repair the pump as per instruction of EIC.</li> <li>• Assemble the pump and motor.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>TDBFP Lube Oil Cooler Leakages/Flange leakages</p>

	<ul style="list-style-type: none"> <li>• Ensure the oil cooler is drained and isolated.</li> <li>• Remove the floor gratings above cooler &amp; cordon the area.</li> <li>• Loosen the top cover bolts and remove cover by EOT CRANE/Hoist.</li> <li>• Check the top cover O ring for damage/deformation, if any then replace.</li> <li>• If leakage in bottom flange then remove cooler and its pipe connection too.</li> <li>• Check the bottom O ring for damage/deformation, if any then replace.</li> <li>• Apply Joint sealant and assemble cooler &amp; pipe.</li> <li>• Place the top half and tighten in criss cross way.</li> <li>• Place the floor grating.</li> <li>• Fill the cooler &amp; check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul>
3	Condensate Extraction pumps
	<p>PM of CEP</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the oil level of pump bearings if low top-up oil.</li> <li>• Check the tightness of foundation bolt if loose then tighten.</li> <li>• Removal of all coupling guards &amp; Check the condition of coupling, tightness of coupling bolt if loose then tighten.</li> <li>• Check for any leakages in mech seal &amp; associated piping</li> <li>• Check the flow of water through bearing cooler if interrupt noticed flush the water line or take corrective action.</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Clean the strainer if damaged replaced / repaired the same</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>Replacement of CEP cartridge</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off and pump is drained fully.</li> <li>• Remove all impulse/water line connections connected to pump.</li> <li>• Remove platform gratings above pump.</li> <li>• Remove the motor after cable disconnection and decoupling.</li> <li>• Remove the canister bolts, suction and discharge flange bolts.</li> <li>• Pull out the pump with EOT crane, wire rope should be in good condition and D shackled properly.</li> <li>• Insert the new pump; replace all flange gaskets before insertion.</li> <li>• Tighten all flange bolts properly and connect impulse lines.</li> <li>• Adjust the pump float.</li> <li>• Assemble the coupler in pump, and place motor.</li> <li>• Check the alignment and do the correction if any.</li> <li>• Fill the pump with water and take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>



	<p>REPLACEMENT OF MECHANICAL SEAL</p> <ul style="list-style-type: none"> <li>● Decouple the motor and pump after electrical isolation of motor.</li> <li>● Disconnect associated water and oil pipelines.</li> <li>● Remove the Coupling.</li> <li>● Remove the bearing housing.</li> <li>● Lock the mechanical seal and remove it.</li> <li>● Assemble the new seal in position.</li> <li>● Connect all the water and oil lines.</li> <li>● Check the alignment of pump and motor, if not found within the limit, alignment is to be carried out.</li> <li>● Couple the motor and pump.</li> <li>● Trail run of CEP.</li> <li>● Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul> <p>➤ Note: Payment of the alignment will be done, only if the Motor of the CEP is removed/refixed by other department.</p>
	<p>Coupling inspection &amp; alignments</p> <ul style="list-style-type: none"> <li>● Checking of alignment reading of Motor CEP, if not found within the limit, alignment is to be carried out.</li> <li>● Coupling of Motor to CEP to be done after no load trail of motor.</li> <li>● Trail run of CEP.</li> <li>● Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul> <p>➤ Note: Payment of the alignment will be done, only if the Motor of the CEP is removed/refixed by other department.</p>
	<p>Replacement -Bearing/coupling-CEP</p> <ul style="list-style-type: none"> <li>● Ensure the power supply of motor is off and pump is drained fully.</li> <li>● Remove platform gratings above pump.</li> <li>● Remove the motor after cable disconnection and decoupling.</li> <li>● If coupler is damaged then replace with new one.</li> <li>● Check the pump float; remove journal, thrust bearing and housing.</li> <li>● Remove the mechanical seal and clean the rotor.</li> <li>● Insert the new seal, adjust the pump float now lock the seal on rotor.</li> <li>● If bearing is worn out/scratches then replace the pads.</li> <li>● Assemble the coupler in pump, and place motor.</li> </ul>

	<ul style="list-style-type: none"> <li>• Check the alignment and do the correction if any.</li> <li>• Fill the pump with water and take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Suction strainer cleaning</p> <ul style="list-style-type: none"> <li>• After strainer draining is done, open strainer flange.</li> <li>• Remove basket or conical strainer with Chain block or Nylon rope.</li> <li>• Clean the strainer properly with water.</li> <li>• Inspection to be done by EIC, if strainer mesh found damaged then replace with new one.</li> <li>• Check the condition of flange gasket, if damaged then replace with new one.</li> <li>• Assemble the strainer and tighten the flange bolts properly.</li> <li>• Fill the feed water line to check any leakages from strainer if any.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
4	<p>Condenser Vacuum Pumps</p>
	<p>PM of Vacuum pump &amp; Recirculation Pump</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the condition of bearing lubrication, rectify if required</li> <li>• Check the tightness of foundation bolt if loose then tighten.</li> <li>• Check the condition of coupling/rectify if any defect.</li> <li>• Check for any leakages from gland/rectify the same</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Clean all the strainer if damaged replaced / repaired the same</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>DE/NDE bearing inspection/Replacement</p> <ul style="list-style-type: none"> <li>• Ensure the oil pump has been stopped.</li> <li>• Open bearing top half.</li> <li>• Check for any marks /scratch on bearing liner.</li> <li>• If bearing liner is damaged then replace with new one.</li> <li>• Check the blue match of bearing with rotor high points should be removed with scrapper.</li> <li>• Install the bearing, Check the top &amp; side oil clearance with lead wire.</li> <li>• Check the oil passage for dirt or debris clean if any.</li> <li>• Check oil catcher gap, adjust if any deviation.</li> <li>• Assemble the top half by applying Hylomer on parting plane.</li> <li>• Take the trail run of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul>

	<p>Coupling inspection &amp; alignments</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off.</li> <li>• Decouple the pump, remove spacer if any.</li> <li>• Before alignment ensure pump is normal filled with water/oil.</li> <li>• Use dial for radial reading and inside micrometer/dial for axial reading.</li> <li>• Take 2 set of readings and do the necessary correction if any.</li> <li>• If coupling is broken or worn out then replace with new one.</li> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Take the trial run of Pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC</li> </ul>
	<p>Cleaning of Plate heat exchanger</p> <ul style="list-style-type: none"> <li>• Ensure draining of PHE from ACW side &amp; DMCW side.</li> <li>• Loosen all tie bolts.</li> <li>• Clean both side of plates with plastic brush and detergent powder.</li> <li>• Wash thoroughly with clean water.</li> <li>• Replace the tie rod bearings if found damaged.</li> <li>• Check the gasket condition repair/replace if damaged.</li> <li>• Tighten the tie rods properly.</li> <li>• Charge the PHE from ACW side and DMCW side check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
5	SG & TG Dmcw Pumps & PHE
	<p>PM of TG/SG DMCW Pumps</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the condition of bearing lubrication, rectify if required</li> <li>• Check the tightness of foundation bolt if loose then tighten.</li> <li>• Removal of all coupling guards &amp; Check the condition of coupling/spacer, tightness of coupling bolt if loose then tighten.</li> <li>• Check for any leakages from mech seal &amp; associated piping/rectify the same</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Clean all the strainer if damaged replaced / repaired the same</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	SG/TG DMCW Pump Alignment /Coupling replacement

	<ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off.</li> <li>• Decouple the pump, remove spacer if any.</li> <li>• Before alignment ensure pump is normal filled with water/oil.</li> <li>• Use dial for radial reading and inside micrometer/dial for axial reading.</li> <li>• Take 2 set of readings and do the necessary correction if any.</li> <li>• If coupling is broken or worn out then replace with new one.</li> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Take the trial run of Pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>SG/TG DMCW Pump Mechanical seal replacement /Bearing replacement</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off and pump is drained fully.</li> <li>• Decouple the pump, remove spacer &amp; Coupler both.</li> <li>• Remove bearing housing and bearing with puller.</li> <li>• Remove mechanical seal, clean the rotor</li> <li>• Insert new seal properly.</li> <li>• Check the bearing freeness/damage if required then replace with new one.</li> <li>• Ensure preheating temp. Of 120 deg. C of bearing before insertion.</li> <li>• Assemble the bearing housing.</li> <li>• Insert the coupler and check for misalignment, do the necessary correction if required.</li> <li>• Fill the pump with water and take trial run.</li> </ul> <ul style="list-style-type: none"> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Overhauling/servicing-SG/TG Dmcw Pump</p> <ul style="list-style-type: none"> <li>• Ensure line and power isolation of equipment.</li> <li>• Drain the line and pump fully.</li> <li>• Decouple the pump and open the top cover and keep aside.</li> <li>• Remove the rotor assembly from casing.</li> <li>• Dismantle impeller, wear ring, bearing etc.</li> <li>• Check the rotor run out it should be &lt; 0.05 mm, replace rotor if higher.</li> <li>• Check the condition of impeller, wear ring, bearing, mechanical seal/gland and bush etc. replace if worn out/damaged.</li> <li>• Replace the gaskets, grease or oil.</li> <li>• Clean the parts and assemble properly.</li> <li>• Take trial run of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Discharge NRV inspection/Repair-SG/TG Dmcw Pump</p>

	<ol style="list-style-type: none"> <li>1. Ensure pump &amp; header is drained fully.</li> <li>2. Open NRV top cover.</li> <li>3. Inspect the NRV for any foreign objector debris if any.</li> <li>4. Check NRV flap and its hinge pin, repair if required.</li> <li>5. Close the top half and tighten the bolts properly.</li> <li>6. Fill the pump with water and take trial run.</li> <li>7. Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ol>
	<p>Cleaning of Plate heat exchanger-DMCW</p> <ul style="list-style-type: none"> <li>• Ensure draining of PHE from ACW side &amp; DMCW side.</li> <li>• Loosen all tie bolts.</li> <li>• Clean both side of plates with plastic brush and detergent powder.</li> <li>• Wash thoroughly with clean water.</li> <li>• Replace the tie rod bearings if found damaged.</li> <li>• Check the gasket condition repair/replace if damaged.</li> <li>• Tighten the tie rods properly.</li> <li>• Charge the PHE from ACW side and DMCW side check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
<b>6</b>	<b>Seal Oil System</b>
	<p>PM of AC/DC seal oil system</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the condition of coupling/spider, tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	<p>PM of Seal Oil Vacuum pump</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the condition of coupling/spider, tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> </ul>

	<ul style="list-style-type: none"> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	<p>PM of oil vapor Extractors fans/GSC Blowers</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of screw of cover of fan</li> <li>• Check the condition of suction &amp; discharge valve</li> <li>• Drain the OVEF collector tank</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> <li>•</li> </ul>
	<p>Servicing of Seal Oil Vacuum pump</p> <ul style="list-style-type: none"> <li>• Decouple the motor.</li> <li>• Drain oil from pump &amp; Chambers.</li> <li>• Open the pump casing &amp; remove barrel.</li> <li>• Check the vanes &amp; spring, replace if worn out.</li> <li>• Check the gaskets if damaged then replace.</li> <li>• Clean all parts by oil &amp; air.</li> <li>• Assemble the pump properly, fill with adequate oil.</li> <li>• Couple the motor and lines.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC</li> </ul>
	<p>Horizontal Pump Alignment /Coupling replacement</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off.</li> <li>• Decouple the pump, remove spacer if any.</li> <li>• Before alignment ensure pump is normal filled with water/oil.</li> <li>• Use dial for radial reading and inside micrometer/dial for axial reading.</li> <li>• Take 2 set of readings and do the necessary correction if any.</li> <li>• If coupling is broken or worn out then replace with new one.</li> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Take the trial run of Pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>

Pump Mechanical seal replacement /Bearing replacement

- Ensure the power supply of motor is off and pump is drained fully.
- Decouple the pump, remove spacer & Coupler both.
- Remove bearing housing and bearing with puller.
- Remove mechanical seal, clean the rotor
- Insert new seal properly.
- Check the bearing freeness/damage if required then replace with new one.
- Ensure preheating temp. Of 120 deg. C of bearing before insertion.
- Assemble the bearing housing.
- Insert the coupler and check for misalignment, do the necessary correction if required.
- Fill the pump with water and take trial run.
- Couple the pump & motor, and place the guard on coupling.
- Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.

Seal Oil Pump Replacement/Serviceing

- Ensure line and power isolation of equipment.
- Drain the line and pump fully.
- Decouple the pump and open the top cover and keep aside.
- Remove the rotor assembly from casing.
- Dismantle impeller, wear ring, bearing etc.
- Check the rotor run out it should be < 0.05 mm, replace rotor if higher.
- Check the condition of impeller, wear ring, bearing, mechanical seal/gland and bush etc. replace if worn out/damaged.
- Replace the gaskets, grease or oil.
- Clean the parts and assemble properly.
- Take trial run of pump.
- Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.

Serviceing/Replacement of Brg. Chamber exh. Fan

- Decouple the motor from fan.
- Check the fan cover gasket replace if required.
- Assemble the Fan properly.
- Couple the motor and lines.
- Take trial run.
- Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.

	<p>Cleaning of Plate heat exchanger-Seal oil</p> <ul style="list-style-type: none"> <li>• Ensure draining of PHE from ACW side &amp; DMCW side.</li> <li>• Loosen all tie bolts.</li> <li>• Clean both side of plates with plastic brush and detergent powder.</li> <li>• Wash thoroughly with clean water.</li> <li>• Replace the tie rod bearings if found damaged.</li> <li>• Check the gasket condition repair/replace if damaged.</li> <li>• Tighten the tie rods properly.</li> <li>• Charge the PHE from ACW side and DMCW side check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC</li> </ul>
	<p>Refrigerant filling in gas drier</p> <ul style="list-style-type: none"> <li>• Check the refrigerant pressure in compressor running condition.</li> <li>• Fill the specified refrigerant safely.</li> <li>• Take trial run and check pressure.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
7	Dosing System
	<p>PM of Chemical Dosing Pumps</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the oil level of pump bearings/gear box if low top-up oil.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Inspect the pump foundation frame for any defects, rectify the same</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>PM of Agitators</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the oil level of gear box if low top-up oil.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages</li> <li>• Check the agitators shaft &amp; blades/replace or rectify if needed</li> <li>• Inspect the pump foundation frame for any defects, rectify the same</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to</li> </ul>



	the satisfaction of EIC
	<p>Coupling/NRV replacement of Pump/agitator</p> <ul style="list-style-type: none"> <li>• Ensure power isolation of equipment.</li> <li>• Decouple pump/agitator from motor.</li> <li>• Replace damaged/worn out coupling with new one of same specification.</li> <li>• For NRV replacement drain the line</li> <li>• Open NRV check the internals, if required then replace/repair.</li> <li>• Assemble the parts.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Service/repair of Dozing Pumps-ammonia/hydrazine</p> <ul style="list-style-type: none"> <li>• Decouple actuator.</li> <li>• Drain oil from pump, inspect internal parts.</li> <li>• Replace/Repair damaged parts.</li> <li>• Check the piston gland, if worn out then replace.</li> <li>• Check suction and discharge nrv.</li> <li>• Assemble the pump properly.</li> <li>• Couple the actuator and fill oil in pump.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
<b>8</b>	<b>Primary water System</b>
	<p>PM of Primary water pump</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check for proper lubrication of pump bearings housing if low top-up oil/replenish grease.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Removal of all coupling guards &amp; Check the condition of coupling/spacer, tightness of coupling bolt if loose then tighten.</li> <li>• Check for any leakages from mech seal &amp; associated piping/rectify the same</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>Primary water Pump Mechanical seal replacement /Bearing replacement</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off and pump is drained fully.</li> <li>• Decouple the pump, remove spacer &amp; Coupler both.</li> </ul>

	<ul style="list-style-type: none"> <li>• Remove bearing housing and bearing with puller.</li> <li>• Remove mechanical seal, clean the rotor</li> <li>• Insert new seal properly.</li> <li>• Check the bearing freeness/damage if required then replace with new one.</li> <li>• Ensure preheating temp. Of 120 deg. C of bearing before insertion.</li> <li>• Assemble the bearing housing.</li> <li>• Insert the coupler and check for misalignment, do the necessary correction if required.</li> <li>• Fill the pump with water and take trial run.</li>   <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Main filter cleaning</p> <ul style="list-style-type: none"> <li>• After filter draining is done, open filter flange.</li> <li>• Remove filter elements.</li> <li>• Clean the filter elements properly if washable type, otherwise replace with new set.</li> <li>• Inspection to be done by EIC.</li> <li>• Check the condition of flange gasket, if damaged then replace with new one.</li> <li>• Assemble the filter and tighten the flange bolts properly.</li> <li>• Fill the water line to check any leakages if any.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Conical Mesh cleaning/Expansion bellow replacement of Primary water</p> <ul style="list-style-type: none"> <li>• Ensure the primary water pump &amp; isolation valve is closed.</li> <li>• Loosen the connecting pipe flange &amp; remove it.</li> <li>• Loosen the expansion bellow bolts carefully and remove it.</li> <li>• Pull out the conical mesh, and clean it properly.</li> <li>• Insert the mesh and assemble the bellow.</li> <li>• Connect the pipe and tighten the flange bolts carefully to avoid leakage.</li> <li>• Charge the line and check for leakages if any.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul>
	<p>Cleaning of Plate heat exchanger-Primary water</p> <ul style="list-style-type: none"> <li>• Ensure draining of PHE from ACW side &amp; DMCW side.</li> <li>• Loosen all tie bolts.</li> <li>• Clean both side of plates with plastic brush and detergent powder.</li> <li>• Wash thoroughly with clean water.</li> <li>• Replace the tie rod bearings if found damaged.</li> <li>• Check the gasket condition repair/replace if damaged.</li> </ul>

	<ul style="list-style-type: none"> <li>• Tighten the tie rods properly.</li> <li>• Charge the PHE from ACW side and DMCW side check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Pump Alignment /Coupling replacement</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off.</li> <li>• Decouple the pump, remove spacer if any.</li> <li>• Before alignment ensure pump is normal filled with water/oil.</li> <li>• Use dial for radial reading and inside micrometer/dial for axial reading.</li> <li>• Take 2 set of readings and do the necessary correction if any.</li> <li>• If coupling is broken or worn out then replace with new one.</li> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Take the trial run of Pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
9	<p>HP bypass, LP Bypass oil supply unit</p>
	<ul style="list-style-type: none"> <li>• PM of HP/LP Bypass oil supply/recirculation/regeneration pump</li> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the condition of coupling/spider, tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul> <ul style="list-style-type: none"> <li>• PM of TG Control Oil Pumps</li> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the condition of coupling/spider, tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	<p>Oil tank cleaning &amp; Pump Suction filter cleaning of HP/LP bypass oil unit</p> <ul style="list-style-type: none"> <li>• Drain the oil from tank by recirculation pump.</li> <li>• Decouple all motors and disconnect oil lines.</li> </ul>

	<ul style="list-style-type: none"> <li>• Open the top cover of tank &amp; keep aside.</li> <li>• Clean the tank with cloths/sponge.</li> <li>• Clean the pump suction filter of HPBP, replace if damaged/choked.</li> <li>• Check the internal paint coating, remove flakes if any.</li> <li>• Check the gaskets if damaged then replace.</li> <li>• Assemble the top cover of tank properly; fill with adequate Fresh/cleaned oil.</li> <li>• Couple the motor and lines.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p><b>OVERHAULING OF HP/LP BYPASS STOP &amp; CONTROL VALVES</b></p> <ul style="list-style-type: none"> <li>• Removal of actuator.</li> <li>• Removal of bonnet bolts with the help of hydraulic torque wrench for both Sop &amp; Control valves.</li> <li>• Removal of Internals.</li> <li>• Cleaning and Inspection of Internals.</li> <li>• Replacement of damaged internals.</li> <li>• Lapping of both Stop &amp; Control Valves Plug assy. with the mating seat.</li> <li>• Boxing up of the valves.</li> <li>• Final tightening of bonnet bolts with hydraulic torque wrench.</li> <li>• Any other misc. work not mentioned above, but required to complete the job.</li> <li>• Housekeeping of the area, removal of spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
	<p><b>OVERHAULING OF HP/LP BYPASS SPRAY VALVES.</b></p> <ul style="list-style-type: none"> <li>• Removal of actuator.</li> <li>• Removal of bonnet bolts with the help of hydraulic torque wrench.</li> <li>• Removal of Internals.</li> <li>• Cleaning and Inspection of Internals.</li> <li>• Replacement of damaged internals.</li> <li>• Lapping of Spray Valves Plug assy. with the mating seat.</li> <li>• Boxing up of the valves.</li> <li>• Final tightening of bonnet bolts with hydraulic torque wrench.</li> <li>• Any other misc. work not mentioned above, but required to complete the job.</li> <li>• Housekeeping of the area, removal of spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
	<p><b>Replacement of Accumulator bladder</b></p> <ul style="list-style-type: none"> <li>• Isolate the accumulator filling line and depressurize the oil unit.</li> <li>• Remove the accumulator oil pipe connection and fittings.</li> <li>• Remove oil side cover &amp; drain the oil.</li> <li>• Remove the gas side lock nut.</li> <li>• Pull out the bladder from oil side hole.</li> </ul>

	<ul style="list-style-type: none"> <li>• Insert the new bladder by pulling towards gas side.</li> <li>• Assemble the oil &amp; gas side fittings.</li> <li>• Fill the N2 up to req. pressure.</li> <li>• Charge the oil unit, take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
10	HP heater, LP Heater, Dearator & FST
	<p>Flange Leakage attending from Shell side safety valve</p> <ul style="list-style-type: none"> <li>• Ensure draining &amp; Isolation of Heater from shell side.</li> <li>• Support the blow down pipe with chain block.</li> <li>• Open the Safety valve flange bolts when it gets cooled.</li> <li>• Remove the gasket and clean the flange surface properly.</li> <li>• Replace the gasket and tighten flange bolts.</li> <li>• Remove chain block for pipe support &amp; recheck flange bolt tightness.</li> <li>• Fill the heater from shell side and check for leakages from safety valve.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Attending leakage from level gauge glass</p> <ul style="list-style-type: none"> <li>• Ensure draining &amp; Isolation of Gauge glass.</li> <li>• Open the Gauge glass flange bolts when it gets cooled.</li> <li>• Remove the gasket &amp; Glass and clean the flange surface properly.</li> <li>• Replace the gasket/glass if damaged and tighten flange bolts.</li> <li>• Check for any leakage from union/joint, repair or weld it.</li> <li>• Fill the Gauge glass and check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Attending tube leakage in heater.</p> <ul style="list-style-type: none"> <li>• Removal of manhole covers of water boxes.</li> <li>• Identify leakage of tube either by hydro test or by water fill test of condenser.</li> <li>• Plugging of leaky tubes.</li> <li>• Again hydro test / water fill test of condenser.</li> <li>• Assembly of manhole covers.</li> <li>• Charging of Condenser.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
	Repair /Replacement of Tube side Safety valve

	<ul style="list-style-type: none"> <li>• Ensure draining &amp; Isolation of Heater from tube side.</li> <li>• Remove the safety valve from line with grinding machine.</li> <li>• Open the Safety valve internals replace the parts or replace the complete safety valve.</li> <li>• Assemble the safety valve in line and high pressure welding to be done.</li> <li>• Fill the heater from tube side and check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Inspection of Dearator</p> <ul style="list-style-type: none"> <li>• Removal of manhole covers.</li> <li>• Inspection of nozzles &amp; trays inside the deareator.</li> <li>• Cleaning of internals.</li> <li>• Inspection of internals.</li> <li>• Assembly of manhole covers.</li> <li>• Charging of the deareator.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC</li> <li>•</li> </ul>
	<p>CLEANING OF FST</p> <ul style="list-style-type: none"> <li>○ Removal of manhole covers.</li> <li>○ Cleaning of internals.</li> <li>○ Inspection of internals.</li> <li>○ Assembly of manhole covers.</li> <li>○ Charging of the FST Tank.</li> <li>○ Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> </ul>
11	Main TG- Lubrication & Control oil System
	<p>Removal, cleaning, inspection of TG bearing pedestal</p> <ul style="list-style-type: none"> <li>• Ensure the AOP &amp; EOP is stopped &amp; instrumentation probes removed.</li> <li>• Check the bearing oil catcher gap.</li> <li>• Loosen the parting plane bolts and top oil catcher bolts, remove top half with EOT Crane.</li> <li>• Check the internals for maintenance, remove any debris if any.</li> <li>• Clean the bottom half &amp; top half parting plane carefully.</li> <li>• Clean top half cover with cloth.</li> <li>• Apply joint sealant/Hylomer on parting plane.</li> <li>• Place the top half carefully, and tighten all bolts.</li> <li>• Check the bearing oil catcher gap.</li> <li>• Start the oil supply, check for leakages if any.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>

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	<p>TG Bearing lifts adjustment</p> <ul style="list-style-type: none"> <li>• Ensure the JOP is stopped &amp; turbine rotor is standstill.</li> <li>• Place the dial gauge on each bearing and pointer on rotor.</li> <li>• Start jop and note each bearing lift, take 2 set of readings.</li> <li>• Cross check with commissioning protocol.</li> <li>• If required do the correction through JOP line throttle.</li> <li>• Starts JOP check the freeness of rotor by hand barring.</li> <li>• Open barring valve and put rotor on barring speed.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Attending oil leakage in Oil Supply Throttle/JOP hose union etc.</p> <ul style="list-style-type: none"> <li>• Ensure the AOP, EOP &amp; JOP is stopped.</li> <li>• Open the Bearing Oil supply throttle cover.</li> <li>• Check the O ring, if damaged/deformed then replace with new one.</li> <li>• In JOP line check the union joints, if loose then properly tighten it.</li> <li>• If pipe line clamps are loose then tighten it.</li> <li>• If leakage from joints then use copper washer and retighten.</li> <li>• Start the oil supply, check for leakages if any.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Mot/Central Lube. - Centrifuge Servicing/Repair</p> <ul style="list-style-type: none"> <li>• Ensure the motor supply and oil line valves isolated.</li> <li>• Check the gear box housing, vertical shaft for any damage/abnormal sound.</li> <li>• Check the vertical /horizontal shaft bearings, replace if damaged.</li> <li>• Check the pump and wear gasket.</li> <li>• Check the level ring and gravity disk.</li> <li>• Assemble the parts and fill oil in gear box.</li> <li>• Rotate with hand, observe any abnormality.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Attending MOT cooler Flange Leakage</p> <ul style="list-style-type: none"> <li>• Ensure the oil cooler is drained and isolated.</li> <li>• Remove the floor gratings above cooler &amp; cordon the area.</li> </ul>

	<ul style="list-style-type: none"> <li>• Loosen the top cover bolts and remove cover by EOT CRANE/Hoist.</li> <li>• Check the top cover O ring for damage/deformation, if any then replace.</li> <li>• If leakage in bottom flange then remove cooler and its pipe connection too.</li> <li>• Check the bottom O ring for damage/deformation, if any then replace.</li> <li>• Apply Joint sealant and assemble cooler &amp; pipe.</li> <li>• Place the top half and tighten in criss cross way.</li> <li>• Place the floor grating.</li> <li>• Fill the cooler &amp; check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>MOT Cooler Cleaning</p> <ul style="list-style-type: none"> <li>• Ensure the oil cooler is drained and isolated.</li> <li>• Remove the floor gratings above cooler &amp; cordon the area.</li> <li>• Loosen the top cover bolts and remove cover by EOT CRANE/Hoist.</li> <li>• Remove cooler and its pipe connection and keep in cleaning bay.</li> <li>• Clean the tube internal with round brush &amp; Detergent in reciprocating manner.</li> <li>• Wash all parts thoroughly with steam/water.</li> <li>• Replace all O rings and assemble cooler at place.</li> <li>• Place the floor grating.</li> <li>• Fill the cooler &amp; check for leakages.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<ul style="list-style-type: none"> <li>• PM of TG Control Oil /leakage oil/COT/DOT Pumps</li> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the condition of coupling/spider, tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	<p>Coupling/Bearing/Mechanical seal- Replacement/Serviceing of Pump</p> <ul style="list-style-type: none"> <li>• Ensure the power supply of motor is off.</li> <li>• Decouple the pump, remove spacer if any.</li> <li>• Before alignment ensure pump is normal filled with water/oil.</li> <li>• Use dial for radial reading and inside micrometer/dial for axial reading.</li> <li>• Take 2 set of readings and do the necessary correction if any.</li> <li>• If coupling is broken or worn out then replace with new one.</li> </ul>



	<ul style="list-style-type: none"> <li>• Couple the pump &amp; motor, and place the guard on coupling.</li> <li>• Take the trial run of Pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
12	Gland Steam system, Condenser, Hot well & DMCW Tank
	<p>PM of oil vapor Extractors fans/GSC Blowers</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of screw of cover of fan</li> <li>• Check the condition of suction &amp; discharge valve</li> <li>• Drain the OVEF collector tank</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	<p>Replacement/Decoupling of Gland steam blower</p> <ul style="list-style-type: none"> <li>• Decouple the motor from fan.</li> <li>• Check the fan cover gasket replace if required.</li> <li>• Assemble the Fan properly.</li> <li>• Couple the motor and lines.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>PM OF COLTCS PUMP</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check for proper lubrication of pump bearings housing if low top-up oil/replenish grease.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Removal of coupling guards &amp; Check the condition of coupling/spacer, tightness of coupling bolt if loose then tighten.</li> <li>• Check for any leakages from mech seal &amp; associated piping/rectify the same</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	PM of Condenser pit pump

	<ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check for proper lubrication of pump bearings housing if low top-up oil/replenish grease.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Removal of coupling guards &amp; Check the condition of coupling/spacer, tightness of coupling bolt if loose then tighten.</li> <li>• Check for any leakages from gland, rectify it</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Cleaning of suction strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>Replacement/Serviceing of Condenser Pit pump</p> <ul style="list-style-type: none"> <li>• Ensure line and power isolation of equipment.</li> <li>• Drain the line and pump fully.</li> <li>• Decouple the pump and open the top cover and keep aside.</li> <li>• Remove the rotor assembly from casing.</li> <li>• Dismantle impeller, wear ring, bearing etc.</li> <li>• Check the rotor run out it should be &lt; 0.05 mm, replace rotor if higher.</li> <li>• Check the condition of impeller, wear ring, bearing, mechanical seal/gland and bush etc. replace if worn out/damaged.</li> <li>• Replace the gaskets, grease or oil.</li> <li>• Clean the parts and assemble properly.</li> <li>• Take trial run of pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul>
	<p>HOTWELL/DMCW TANK CLEANING</p> <ul style="list-style-type: none"> <li>• Opening of Hot well/DMCW Tank manhole</li> <li>• Flushing of Hot well/DMCW Tank with DM water.</li> <li>• Cleaning of inside the Hot well/DMCW Tank with markine cloth.</li> <li>• Inspection of internals.</li> <li>• Assembly of manholes.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> <li>•</li> </ul>
	<p>Attending tube leakage of condenser.</p> <ul style="list-style-type: none"> <li>• Removal of manhole covers of water boxes.</li> <li>• Identify leakage of tube either by hydro test or by water fill test of condenser.</li> <li>• Scaffolding Platform to be made to identify &amp; Attend leakage.</li> <li>• Plugging of leaky tubes.</li> <li>• Again hydro test / water fill test of condenser.</li> </ul>

	<ul style="list-style-type: none"> <li>• Assembly of manhole covers.</li> <li>• Charging of Condenser.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto the satisfaction of EIC.</li> <li>•</li> </ul>
	<p>Flood test of condenser</p> <ul style="list-style-type: none"> <li>• Ensure all condenser jack bolts or jacked up.</li> <li>• Connect a transparent water tube in flash tank level gauge up to 12 m elevation.</li> <li>• Fill the hot well up to required level.</li> <li>• Check &amp; Mark the leakage points in lines connected to flash tank.</li> <li>• After leakages attended then repeat filling procedure.</li> <li>• Check for leakages, if not found then drain the hot well.</li> <li>• After draining is done, lower the jack bolts and remove tube</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>Condenser Water box Opening for Inspection</p> <ul style="list-style-type: none"> <li>• Ensure condenser water box is drained fully.</li> <li>• Make scaffolding platform for manhole &amp; open it.</li> <li>• Ensure dc lamp for inside lighting and platform over pipe mouth.</li> <li>• Remove inside debris, and item clogged in water tubes.</li> <li>• Inspection by operation and maintenance team.</li> <li>• Check manhole gasket condition, replace if required.</li> <li>• Close the manholes and tighten bolts properly.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>•</li> </ul>
13	<p>CPU Regeneration system</p>
	<p>PM of CPU System Pumps</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check for proper lubrication of pump bearings housing if low top-up oil/replenish grease.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Removal of coupling guards &amp; Check the condition of coupling/spacer, tightness of coupling bolt if loose then tighten.</li> <li>• Check for any leakages from mech seal &amp; associated piping/rectify the same</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>PM Of Air Blower</p>

	<ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check for proper lubrication of bearings /replenish grease.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of belt if loose then tighten/replace.</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	<p>PM of Hot well make up Pumps</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check for proper lubrication of pump bearings housing if low top-up oil/replenish grease.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Removal of coupling guards &amp; Check the condition of coupling/spacer, tightness of coupling bolt if loose then tighten.</li> <li>• Check for any leakages from mech seal &amp; associated piping/rectify the same</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>PM of Chemical Unloading Pumps</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the oil level of pump bearings/gear box if low top-up oil.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Inspect the pump foundation frame for any defects, rectify the same</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>PM of Chemical Dosing Pumps</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the oil level of pump bearings/gear box if low top-up oil.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages.</li> <li>• Inspect the pump foundation frame for any defects, rectify the same</li> </ul>

	<ul style="list-style-type: none"> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC.</li> </ul>
	<p>PM of Agitators</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the oil level of gear box if low top-up oil.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges joint if loose then tighten and attend all leakages</li> <li>• Check the agitators shaft &amp; blades/replace or rectify if needed</li> <li>• Inspect the pump foundation frame for any defects, rectify the same</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> </ul>
	<p>Vessel inspection</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Opening of man hole door</li> <li>• Carry out cleaning and inspection with suitable safety arrangements</li> <li>• Check the condition of rubber lining/coating</li> <li>• Rectification of defects if any</li> <li>• Box up the manhole door with new gasket &amp; fasteners</li> <li>• Erection of scaffolding wherever required to perform the job shall be done by contractor</li> <li>• Shifting of all spares &amp; consumables from store to site &amp; vice versa or as directed by EIC is in the contractor's scope.</li> <li>• Shifting of scrap/materials to the designated place is in contractor's scope.</li> <li>• Housekeeping after completion of work.</li> <li>•</li> </ul>
	<p>Servicing of Ejectors</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Dismantle the injector/check the venturi throat area.</li> <li>• check the alignment of convergent &amp; divergent part/replace if required</li> <li>• Shifting of all spares &amp; consumables from store to site &amp; vice versa or as directed by EIC is in the contractor's scope.</li> <li>• Shifting of scrap/materials to the designated place is in contractor's scope.</li> <li>• Housekeeping after completion of work.</li> </ul>
	<p>De-chocking of power water line</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Take appropriate safety measure before working in power water line</li> <li>• Keep sufficient cold water ready for dilution of acid.</li> </ul>

	<ul style="list-style-type: none"> <li>• Dismantle the chocked lines/flanges &amp; flush with water.</li> <li>• Replace the line with new pipe or do necessary maintenance.</li> <li>• Erection of scaffolding wherever required to perform the job shall be done by contractor</li> <li>• Shifting of all spares &amp; consumables from store to site &amp; vice versa or as directed by EIC is in the contractor's scope.</li> <li>• Shifting of scrap/materials to the designated place is in contractor's scope.</li> <li>• Housekeeping after completion of work.</li> </ul>
14	EOT Crane
	<p>PM OF EOT crane</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Greasing of bearings</li> <li>• Check the quality oi gear box oil, replace if required</li> <li>• Check the oil level of thruster brake, if low top-up with transformer oil.</li> <li>• Lubrication of rope with cardium compound/servo coat.</li> <li>• Check the brake adjustment / liner condition.</li> <li>• Check the foundation bolt tightness.</li> <li>• Check the rail alignment and holding down bolts of rail.</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned upto the satisfaction of EIC.</li> <li>•</li> </ul>
	<p>PM of Electric/manual hoist, chain pulley block , under slung crane etc</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Check the condition of lubrication in bearings/gear box</li> <li>• Check the condition of coupling bushes.</li> <li>• Check the break adjustment / liner condition.</li> <li>• Lubricate the wire rope with cardium compound.</li> <li>• Check the foundation bolt tightness.</li> <li>• Check the quality of oil &amp; level if level is low top-up.</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned upto the satisfaction of EIC</li> </ul>
	<p>PM OF EOT crane TDBFP</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Greasing of bearings</li> <li>• Check the quality oi gear box oil, replace if required</li> <li>• Check the oil level of thruster brake, if low top-up with transformer oil.</li> <li>• Lubrication of rope with cardium compound/servo coat.</li> <li>• Check the brake adjustment / liner condition.</li> <li>• Check the foundation bolt tightness.</li> <li>• Check the rail alignment and holding down bolts of rail.</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned upto the satisfaction of EIC.</li> </ul>

	<ul style="list-style-type: none"> <li>•</li> </ul>
	<p>Load testing of hoist</p> <ul style="list-style-type: none"> <li>• Ensure availability of more than 10 % of weight for specified SWL at site.</li> <li>• If weight not available then transport it to site.</li> <li>• Availability of wire rope slings, D shackle &amp; cage etc. to lift weight.</li> <li>• Lifting of desired weight in presence of safety officer.</li> <li>• After successful test, transport weight to location.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
15	Miscellaneous Job
	<p>Servicing/Lapping of MAL valve /MS Drain Valve</p> <ul style="list-style-type: none"> <li>• Ensure isolation of valve &amp; header.</li> <li>• Remove the actuator &amp; cable.</li> <li>• Open valve bonnet, check for foreign materials if any.</li> <li>• Check the blue match of Plug with seat.</li> <li>• If required then do lapping with lapping paste.</li> <li>• Check bonnet gasket, replace if damaged.</li> <li>• Check the blue match of spindle with seat if found ok then stop lapping.</li> <li>• Box up the valve bonnet and actuator.</li> <li>• After cable connection take trial run of valve.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul> <ul style="list-style-type: none"> <li>•</li> </ul>
	<p>Servicing of Gas Drier</p> <ul style="list-style-type: none"> <li>• Ensure power supply isolation and H2 line isolation.</li> <li>• Check healthiness of compressor, fan, and copper tubes, repair if damaged.</li> <li>• Check Refrigerant Pressure, fill if required.</li> <li>• Clean all parts with cloth /blower.</li> <li>• Take trial run.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
	<p>ALIGNMENT OF MOTORS (30 KW To 1000 KW)</p> <ul style="list-style-type: none"> <li>• Checking of alignment reading of Motor &amp; Pump, if not found within limit, alignment is to be carried out.</li> <li>• Coupling of Motor to pump to be done after no load trail of motor.</li> <li>• Trail run of Pump.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>

	<p>➤ Note: Payment of the alignment will be done, only if the Motor is removed/mount by other department.</p>
	<p>Removal &amp; Assembly of Motorized actuators of valves above 1.5KW</p> <ul style="list-style-type: none"> <li>• Ensure power isolation and cable removal of valve.</li> <li>• Remove actuator bolts connected to valve body.</li> <li>• Engage the valve and manually rotate the wheel.</li> <li>• Pull out the actuator from stem with help of chain block/Nylon rope.</li> <li>• After completion of job in valve assemble the actuator.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul> <p>➤ Note: Payment of the actuator removal will be done, only if required by other department (ELD/C&amp;I).</p>
	<p>Replacement of LP Turbine Rupture diaphragm</p> <ul style="list-style-type: none"> <li>• Ensure PTW and complete PPE for Hot working condition.</li> <li>• Remove LPT diaphragm assy. By EOT crane.</li> <li>• Replace the Diaphragm and gasket.</li> <li>• Assemble it at location, and tighten all bolts properly.</li> <li>• Check for any leakage from diaphragm by Pouring water.</li> <li>• Return PTW.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
16	Pneumatic control valves
	<p>Servicing/pressure seal replacement of Pneumatic control valves size 100 to 500 NB</p> <ul style="list-style-type: none"> <li>• Remove the actuator if necessary.</li> <li>• Dismantle the valve completely.</li> <li>• Check the seat, disc, stem, bushing and other parts.</li> <li>• Repair/replace bonnet, seat, disc, bearing bushing by building up / welding, grinding, lapping, etc.</li> <li>• Replace bonnet and flange gaskets/self sealing rings and gland packing.</li> <li>• Repair disc/seat by lapping if necessary. Blue match the seat and disc.</li> <li>• Servicing of all fasteners, hand wheels and other parts.</li> <li>• Assemble the valve with new gland packing and gaskets, apply new lubricants and graphite powder as required.</li> <li>• Attend defects if any after charging. Hot tightening of bonnet, gland and flange to be carried out.</li> <li>• Hot tightening of bonnet/gland as to be done after charging.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location upto</li> </ul>



	<p>the satisfaction of EIC.</p> <ul style="list-style-type: none"> <li>•</li> </ul>
17	<p><b>REPLACEMENT OF HP/LP VALVES</b></p>
	<ul style="list-style-type: none"> <li>• Shifting of new valve to location.</li> <li>• Removal of old/damage valve by grinding.</li> <li>• Edge preparation, Pre weld heat treatment for HP Valves.</li> <li>• Placement of valve in position.</li> <li>• Welding of valve. If the welding joint is socket weld, root run &amp; final welding will be done by arc welding. If the welding joint is butt weld, root run will be done by TIG welding &amp; final welding will be done by arc welding.</li> <li>• DPT of root run. Rectification of defect if any will be done immediately.</li> <li>• Stress relieving of HP valve welding joints.</li> <li>• Shifting of old/damage valve to the location as designated by EIC.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
18	<p><b>GLAND &amp; GASKET REPLACEMENT/SERVICING OF VALVES</b></p>
	<p>Replacement of Gland Packing &amp; bonnet gasket</p> <ul style="list-style-type: none"> <li>• Removal of actuators, if motor operated valves.</li> <li>• Removal of gland pushers/followers and removal of old gland packing.</li> <li>• Removal of bonnet after removal of bonnet bolts.</li> <li>• Replacement of bonnet gaskets.</li> <li>• Assembly of bonnet &amp; tightening of bonnet bolts.</li> <li>• Insertion of new gland packing and even tightening of gland pusher/follower.</li> <li>• Assembly of actuators, if motor operated valves.</li> <li>• Hot tightening of gland bolts for High Pressure/ temperature Valves.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul> <p>SERVICING OF VALVES</p> <ul style="list-style-type: none"> <li>• Remove the actuator if necessary.</li> <li>• Dismantle the valve completely.</li> <li>• Check the seat, disc, stem, bushing and other parts.</li> <li>• Repair/replace bonnet, seat, disc, bearing bushing by building up / welding, grinding, lapping, etc.</li> <li>• Replace bonnet and flange gaskets/self sealing rings and gland packing.</li> <li>• Repair disc/seat by lapping if necessary. Blue match the seat and disc.</li> <li>• Servicing of all fasteners, hand wheels and other parts.</li> <li>• Assemble the valve with new gland packing and gaskets, apply new lubricants and graphite powder as required.</li> <li>• Attend defects if any after charging. Hot tightening of bonnet, gland and flange to be carried out.</li> <li>• Valve having provision for seal water line are to be cut during work and to be welded after work.</li> <li>• Hot tightening of bonnet/gland as to be done after charging.</li> <li>• For Butterfly valves check the seat. Replace the seat ring &amp; seal ring. Replace the valve with new</li> </ul>

	<p>gaskets.</p> <ul style="list-style-type: none"> <li>● Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul> <p>➤ Note. Rate for servicing of valves will be 1.5 times of gland &amp; gasket replacement for each size of valves.</p>
19	Welding leakages: as per scope of work, terms and conditions: Welding of LP piping
	<p>For welding pipes (LP/HP piping)</p> <ul style="list-style-type: none"> <li>● Cutting of pipe/valve by gas or cutting wheel as instructed by area engineer.</li> <li>● Preparation of edge for welding.</li> <li>● Preheating of piping where welding to be done.</li> <li>● Root should be welded by the argon and then are welding will be carried out.</li> <li>● Stress relieving of the lines if thickness is more than 12 mm and as per instruction of area engineer.</li> <li>● Radiography or DPT of HP joints to be done as per requirement and instruction of area engineer.</li> <li>● For each layer of welding, grinding will be done to weld another layer if required.</li> <li>● Repair of joint if required on the basis of Radiography report for HP joints.</li> </ul>
20	ATTENDING LEAKAGE-OIL/WATER/STEAM
	<ul style="list-style-type: none"> <li>● Attending flange leakage/union leakage/ Replacing Gasket</li> <li>● Ensure isolation of line/header.</li> <li>● Tighten the flange if found loose.</li> <li>● Open the flange and check the gasket condition.</li> <li>● Clean the flange surface, replace gasket(water/steam/oil)</li> <li>● Tighten the flange bolt in criss cross way.</li> <li>● If union is loose then apply PTFE tape and tighten it.</li> <li>● Fill the &amp; check for leakages.</li> <li>● Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
21	Fabrication & Erection - Pipes & Structure Steel
	<p>Fabrication and erection of piping</p> <ul style="list-style-type: none"> <li>● Prepare edge and clean the pipe</li> <li>● Lay the pipe in position &amp; make necessary support as per requirement.</li> <li>● Weld the pipe as per requirement.</li> <li>● Transportation of piping material from store to plant will be in the scope of the contractor.</li> </ul> <p>➤ Note: For Fabrication &amp; Erection of piping two No. of weld joints will be for every six meters of</p>

	<p>pipe lay will be inclusive of the rate for laying pipe line.</p> <p>Fabrication and erection of structural steel</p> <ul style="list-style-type: none"> <li>• Fabrication of platform, hand railing, toe guard, ladder, stool etc. as per instruction of EIC.</li> <li>• Shifting of structure material from store to site.</li> <li>• Fitting, erection, welding &amp; Painting to be done by contractor.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> <li>• All consumables welding electrode, grinding wheel, LPG/O2 cylinder etc. except structure steel and Paint are in contractor scope.</li> </ul>
	<p>Erection &amp; dismantle of scaffolding</p> <ul style="list-style-type: none"> <li>• Erection of scaffolding at site as per instruction of EIC</li> <li>• Shifting of scaffolding material from store to site and vice versa.</li> <li>• Dismantle of scaffolding at site as per instruction of EIC</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
<b>22</b>	<b>ADDITIONAL MANPOWER SUPPLY FOR MISC. WORKS (RATES SHOULD BE ON 8 HOURS BASIS)</b>
	<ul style="list-style-type: none"> <li>• Manpower will be taken from the contractor for those activities which are not envisaged and covered in Scope of work and BOQ of the contract.</li> <li>• The amount will be paid for the same as per agreed manpower rate in addition to the fixed amount (i.e. PM activities).</li> </ul>
<b>23</b>	<b>Opportunity based jobs</b>
	<p>PM of TG lube oil pumps</p> <ul style="list-style-type: none"> <li>• Ensure PTW</li> <li>• Carry out external cleaning of equipment.</li> <li>• Check the tightness of foundation bolt if loose then tighten/replace if required.</li> <li>• Check the condition of coupling/spider, tightness of coupling bolt if loose then tighten.</li> <li>• Check the tightness of bolts in all flanges/union joint if loose then tighten and attend all leakages.</li> <li>• Removal of grating &amp; fixing the same.</li> <li>• Cleaning of associated filters &amp; strainers</li> <li>• Spill over oil / water / grease / cotton waste / etc in surrounding area and floor to be cleaned up to the satisfaction of EIC</li> <li>•</li> </ul>
	<p>Basket strainer cleaning of TG MOT-1no.</p> <ul style="list-style-type: none"> <li>• Ensure the all TG Oil supply pumps are stopped.</li> <li>• Remove floor grating above MOT.</li> <li>• Open the manhole cover and pull out the strainer by EOT crane.</li> <li>• Clean the strainer with air and remove any debris if any.</li> </ul>

	<ul style="list-style-type: none"> <li>• Check the strainer mesh condition, if damaged then replace.</li> <li>• Assemble the strainer and cover the manhole.</li> <li>• Housekeeping of the area, removal of all spills over oil / grease / cotton waste from location up to the satisfaction of EIC.</li> </ul>
24	Round the clock shift assistance for TG & BOP Area
	<ul style="list-style-type: none"> <li>• Filter cleaning of- TDBFP lube. Oil, TG lube. Oil, TG Control oil, seal oil, MDBFP hydraulic coupling, HP/LP bypass/LP bypass oil unit, TG control oil unit, filter cleaning at BOP area equipment as instructed by EIC.</li> <li>• Oil top up- TDBFP lube. Oil tank, TG lube. Oil tank, seal oil vacuum pump, MDBFP hydraulic coupling, HP bypass/LP bypass oil unit, primary water pump, dosing pump, TG control oil unit, centrifuge gear box-MOT &amp; TDBFP, all equipments of BOP area etc.</li> <li>• Oil draining from pots, cleaning of oil skid or floor.</li> <li>• Assistance to operation or other department on needs basis.</li> <li>• Material shifting to maintain housekeeping in plant.</li> <li>• Maintaining site store.</li> <li>• Any other misc. work not mentioned above, but required for smooth running of plant to be done.</li> </ul>