

ENQUIRY NO:

DT:

## Annexure II

SL NO	SCOPE OF SUPPLY IN PROCUREMENT OF SPARES FOR 800 KN DRAW BENCH REDUCTION GEARBOX	VENDOR'S RESPONSE ( Fill Accepted /Remarks if any)
1	<b>First Intermediate Pinion Shaft:</b>	
1a	Vendor has to manufacture and supply first intermediate pinion shaft (Part No: 103) in matching with its existing second intermediate mating bull gear (Part No :105) with existing first intermediate bull gear (Part No: 106) in assembled condition.	
1b	Bull gear (Part No:105) for matching purpose and bull gear (Part No:106) for assembling purpose will be provided by BHEL. Pinion shaft is in vendor scope. Pinion shaft (Part No: 103) shall be supplied in assembled condition with bull gear (Part No: 106 by vendor.	
1c	The following are reference BHEL drawings i)Reduction Gearbox Assembly: 2-7-0111-12-01685 ii) First intermediate pinion shaft (Part No:103): M&S-PD-22-006 iii) First intermediate bull gear (Part No.106): M&S- PD-22-005 iv) Second intermediate bull gear (Part No: 105): M&S —PD-22-008. The drawings provided by BHEL are only for reference. Material composition (18CrNiM07-6 -AS PER DIN 10084) & gear hardness requirements mentioned in BHEL drawing to be maintained. Other gear technical details to be designed by the vendor.	
1d	Vendor (suitable skilled person) shall visit SSTP/BHEL for measuring technical details in gearbox casing (Centre Distance & other details) required for the above work. Vendor shall carry the damaged first intermediate pinion shaft if necessary, existing first intermediate bull gear & second intermediate bull gear for matching purpose .The above activities are in scope of vendor .	
2	<b>Output Shaft Assembly:</b>	
2a	Vendor has to manufacture & supply output shaft (Part No:101) with the existing bull gear (Part No:100), 1 no bull gear spacer (Part No:119),2 no's 23164C bearings (Part No:104), 2 no's ID spacers (Part No: 120) ,2 no's Seal bush rings (Part No:156) ,2 no's OD spacers (Part No:127), 2 nos seals (Part No:151) , 2 nos bearing seal cover (Part No: 20) ,2 nos sprocket (Part No:107), 2nos -lock plate (Part No:130) in assembled condition.	
2b	Bull gear - 1 no, sprockets - 2 nos, bearing seal cover-2 nos, lock plates - 2 nos & Spacer -5 nos only will be provided by BHEL. Output shaft— 1 no, Bearings 23164C - 2 nos, Seal bush rings — 2 nos, oil seals —2 nos & keys for assembling bull gear / sprockets are in scope of vendor. Oil seal - Size: B2 350x390x18 / Material: Hard Neoprene Shore 80 Deg.A as per DIN3760 TYPE-C, Seal Bush ring- size: 320x350x80 mm/ Hardness: 45 to 50 HRC, Bearings 23164C with brass cage. Bearings shall be of SKF/FAG/TIMKEN make. Bearings shall be procured from OEM / Authorised Dealer. Incase of authorised dealer, Pre-despatch Inspection Certificate by the respective OEM is required. Oil seals shall be procured from OEM /Authorised dealer. Bull gear (Part No:100) deformed keyway (0.5 to 0.75 mm from original width) to be enlarged to match shaft key way with required fit by the vendor. Output shaft and other sub-assemblies to be supplied in assembled condition by the vendor.	

2c	<p>The following are reference BHEL drawings</p> <p>i) -Reduction Gearbox Assembly drawing: 2-7-0111-12-01685, ii) Output shaft (Part No: 101): M&amp;S-PD-22-009, iii) Output Bull gear (Part No: 100): M&amp;S-PD-22-007. The drawings provided by BHEL are only for reference. Material composition ( EN 24) &amp; hardness requirements mentioned in BHEL drawing to be maintained. Other technical details for shaft manufacturing shall be measured by the vendor at site.</p>	
2d	<p>Vendor (suitable skilled person) shall visit SSTP/BHEL for measuring technical details in shaft and gearbox casing (distance between bearings &amp; other details) required for the above work. Vendor shall carry the existing bull gear (Part No: 100), sprockets (Part No: 107) — 2 no's , bull gear spacer (Part No:119) — 1 no , ID spacers ( Part No: 120) — 2 nos ,OD spacers ( Part No:127) -2 nos , bearing seal cover (Part No: 20)- 2 nos, lock plate(Part No:130) -2nos for matching &amp; assembling purpose from BHEL to his works. The above activities are in scope of vendor .</p>	
3	<b>Other Technical Requirements for both (First Intermediate Pinion Shaft &amp; Output Shaft Assembly) shafts :</b>	
3a	<p>Transportation of finished components (including components if any taken from BHEL for sample purpose) to SSTP/Stores shall be in the scope of vendor. Vendor shall deliver the existing second intermediate mating bull gear (Part No :105) to SSTP stores /BHEL 4 weeks prior to delivery of both shafts in order to expedite assembling of other items in gearbox b BHEL.</p>	
3b	<p>Detailed manufacturing drawings of all the items in vendor scope shall be submitted by the vendor and shall be approved by BHEL before start of manufacturing.</p>	
3C	<p>a) Forged bars (raw material) shall be used for manufacturing of pinion shaft /output shaft. Raw material test certificate from source of supply shall be submitted.</p> <p>b) Vendor shall perform ultrasonic testing on raw material before machining and report for the same shall be submitted. Ultrasonic testing shall be carried out for forged round bars as per ASTM A 388. Acceptance Standard in accordance with Clause 3.3.4 of ASME Sec VIII Div.2. Test shall be certified by NDT Level II qualified personnel as per SNT-TC-IA.</p> <p>c)Vendor shall confirm the chemical composition of raw material from NABL accredited laboratory for all the items and report for the same shall be submitted to BHEL before start of manufacturing.</p>	
3d	<p>Necessary heat treatment shall be in vendor's scope. Heat treatment charts along with hardness test certificates from NABI-accredited laboratory shall be submitted by the vendor.</p>	
3e	<p>a) Dimensions inspection report for all individual items in the assembly shall be provided by the vendor.</p> <p>b) Liquid Penetrant Inspection shall be carried out on the job as per ASTM E165 after final machining and test shall be certified by NDT Level II qualified personnel as per SNT-TC-IA.</p> <p>c)Only after inspection of all individual items, vendor shall assemble the items. Inspection of finished components will be carried out by BHEL at vendor's work before despatch to SSTP/Stores.</p>	
3f	<p>After supply, both the shafts will be assembled in gearbox by BHEL. Vendor has to supervise and witness the same. The vendor has to ensure smooth engagement &amp; running of newly manufactured shafts with the existing mating components of gearbox. If any problem encountered in smooth engagement &amp; running, the same shall be rectified by vendor at their own cost.</p>	