



**PRODUCT STANDARD
HYDERABAD
TC ENGINEERING**

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Integral Piping -Hook up Material (TDBFP)

1.0 BRIEF of SPECIFICATION:

This specification defines the qualification, scope of supply, sub vendor qualification, quality requirements, inspection, packing and dispatch of piping materials as per variant mentioned in BHEL enquiry from variant table.

1.1 Vendor Qualification:

Vendor shall be experienced with fabrication of carbon steel and stainless steel piping. Vendors shall submit experience list along with offer for BHEL scrutiny. The vendor's for whom the enquiry is sent by BHEL is eligible to quote provided they meet above experience criteria.

1.2 Full coverage of scope:

Vendor shall quote for all items. Offers with partial scope consideration will be rejected.

1.3 Scope of Supply:

The piping assemblies shall be fabricated as per BHEL drawings called in variant table and other cross referred specifications of BHEL. All welding joints are full penetration type except for some joints where kept in tack weld condition for final fit up at site.

All welds shall be As Per **GT54160** for piping and **GT54031** for other welds. Welds shall be Radio graphed as per BHEL specification **GT54160** and **13550051001** and records shall be maintained for BHEL or third party inspection.

All welding shall be carried as per BHEL approved welding procedure. Welding shall be carried out by qualified welders (qualification by third party).

Material specifications: As per BHEL BOM and generally in line with the following.

- AS piping: Seamless ASTM A 335P11/P22
- SS piping: seamless ASTM A 312 TP 321
- CS piping: seamless ASTM A 106 Gr B
- CS fittings: ASTM A 105
- SS fittings: ASTM A 182 Gr F321
- CS Flanges: meant for CS piping: ASTM A 105 Forging.
- SS flanges: meant for SS piping: ASTM A 182 F 321 Forging.
- Flange dimensions and tolerances: As per ANSI B16.5

All piping shall be mechanically and chemically cleaned both internally and externally as per BHEL spec. **GT10722 & H0674162**

All flanges and stubs in SS lines shall be SS material. This over rides BOM listings.

All Cs piping and supports shall be blast cleaned and painted as per BHEL spec. **GT10112**.

SS piping needs no painting.

All piping shall be flushed as per BHEL spec. **GT10634**.

All parts shall be marked with drawing no., variant no. and part no.



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Each packing shall be identified with contents with BOM listing.

Piping assemblies shall be tested for leaks with hydraulic test for pressure as indicated in respective drawings.

For piping assemblies fit up shall be shown to BHEL or third party before final welding.

Bought out items shall be procured from BHEL approved suppliers only.

Quality plan shall be submitted which shall be reflecting the raw material TC's, weld procedure qualification and welder qualification, fit up assembly (hold point) cleaning and painting.

All piping ends shall be protected with secure plastic caps to prevent ingress of rain water at site open storage.

In case of conflict of requirements, issues shall be brought to BHEL T&C engineering by vendor for resolution.

2.0 CODE & STANDARDS:

The latest issue in effect at the time of the purchase order of the following codes and standards are part of this specification to the extent specification herein.

- a. American Institute of Steel Construction (AISC)
- b. American Welding Society (AWS)
- c. American Society For Testing and Materials (ASTM)
- d. American Society for Non-destructive Testing (ASNT)
- e. American Society of Civil Engineers (ASCE)
- f. Uniform Building code (UBC-USA)
- g. Occupational Safety and Health Administration (OSHA-USA)
- h. Any Other relevant codes & Standards if called for in the enclosed drawing.
- i. Sea Worthy packing BHEL spec. HY0490569(guideline)
- j. Steel structure painting council (SSPC)
- k. National electrical code (NEC)
- l. International standards organization (ISO)
- m. Technical delivery conditions: **AA0851402.**

3.0 MARKING:

All dispatch able parts assemblies, and shipping packets & containers etc. shall be individually, permanently and legibly marked/tagged for material number identification as per the BOM, so as to store, locate & identify the item conveniently, easily & quickly at site.



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4.0 SHIPMENT:

For specific shipping instructions, see the purchase order or quotation request. Approval to ship must be obtained from the BUYER'S purchasing department. If certain shipment items become the late dispatching due to unavoidable reasons, approval of all such items must be obtained from BUYER'S purchasing department at least two weeks prior to shipment. At the time of shipment, two copies of the packing list and/or shortage list with ref to BOM with the promised shipping dates if applicable must be airmailed to the purchasing department.

5.0 QUALITY PLAN:

Quality Plan: HYQA/STDQP/TC/1213/18 to be followed.

6.0 GUARANTEE:

- 6.1 Vendor shall furnish a full guarantee for the performance of the total system. Unless noted otherwise in the applicable variant no. in variant table, this guarantee shall be applicable for a period of 2 years from the date of commissioning, whichever is earlier.
- 6.2 Review/approval of vendor's documents shall not relieve the vendor from their responsibilities for compliance with the applicable codes, standards & good engineering practices.

7.0 PACKING:

- 7.1 All dispatchable parts, assemblies, shipping packets etc., shall be individually, permanently and legibly marked/tagged for material identification number as per the BOM, so as to store & identify the items conveniently at site. There shall be separate packages for C.S, A..S & S.S materials.

All the items shall be packed in pallet mounted weather proof wooden boxes with steel reinforcement suitable for handling loads and for dispatching to site. Adequate lifting provision shall be provided. The inner side of the box shall be lined with tarpaulin.

Moisture absorbent (pre-packed silica gel) shall be placed in the box.
If more than one shipping container is required, supplier shall provide suitable container marking for recognition of parts of one unit.

These boxes are expected to be put in open condition at site for 6 to 12 months before taken for erection. Necessary preservation treatment to be done for all parts including machined & threaded surfaces.

It is the responsibility of the supplier to ensure adequate packing is done so that all the items arrive at the destination in an undamaged condition.

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Prod. Std. No. : TC 56409

Rev. No.00

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VARIANT TABLE

Var. No.	Project	Material Code	Supply	Remarks
01.	660MW BFP Drive Turbine (NK 63/71-3) integral Piping. (TDBFP)	TC9756409010	As per enquiry	Scope of supply: As per Ann-I Inspection: By BHEL/ Customer/Third Party.

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Ann-I					
Drawings and Bill Of Material list for TDBFP					
Material Code: TC9756409010					
SI No	PGM A	Name of the PGMA	Drg No.	Requirement of IBR	BOM Doc. No
A					
1	31362	Rupture disc(Manufacturing)	2-313-00-00129, Rev-03	Not Applicable	4-313-62-99991 Rev-00
			3-313-00-00208-Rev-00	Not Applicable	
			4-313-00-00242 Rev-00	Not Applicable	
			4-313-00-62087 Rev-00	Not Applicable	
			4-313-00-62045 Rev-00	Not Applicable	
2	31382	Oil Damping Wells(Manufacturing)	2-313-26-00539 Rev-01	Not Applicable	4-313-82-99991 Rev-00
			3-313-26-01434 Rev-00	Not Applicable	
3	31326	Lube Oil Inter Connecting piping (Loose supply)	--	Not Applicable	4-313-26-10561 Rev-00
4	31330	Jacking Oil Piping (Loose supply)	--	Not Applicable	4-313-30-10561 Rev-00
5	31335	Cooling Water piping for Lube oil Coolers (Loose supply)	--	Not Applicable	4-313-35-10561 Rev-00
6	31351	Gland Steam Piping & Excess Dump Piping (Loose supply)	--	Applicable	4-313-51-10561-1 Rev-00
				Not Applicable	4-313-51-10561-2 Rev-00
7	31352	Gland Steam Piping to GSC (Loose supply)	--	Not Applicable	4-313-52-10561 Rev-00
	31352	Additional Material requirement for Gland Steam Piping to GSC (Loose supply)	--	Not Applicable	4-313-52-10631 Rev-00
8	31372	Turbine Drains Piping (Loose supply)	--	Applicable	4-313-72-10561 Rev-00
9	31331	Governing oil Piping(Interconnecting) (Loose supply)	--	Not Applicable	4-313-31-10561-1 Rev-00
10		Square Flange (Manufacturing)	3-307-93-00332 Rev-03	Not Applicable	4-313-31-10561-2 Rev-00
B		Supports			
1	31384	Supports Sketches (Loose supply)	--	Not Applicable	4-313-84-10601 Rev-00
C		List of specifications			4-313-99-10561 Rev-00

Ref. Doc

