

Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION		PY 52 279	
		TECHNICAL SPECIFICATION		Rev. No. 00	
		PIPING ITEMS PACKAGE		Page 1 of 7	

COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.	1.0 INTENT OF SPECIFICATION
	1.1 Piping Package is the Package of Pipes, Valves, Strainers, BW Pipe fittings, Forged Pipe Fittings, Flanges, Gaskets, Bolting material etc., supplied in loose condition, procured from the vendors as per the provided approved vendor list. 1.2 The intent of this specification is to establish the minimum requirements of procurement, quality, inspection, marking, packaging for preservation, weather protection and transportation of the Piping Package. 1.3 The individual Pipes and piping components supplied as part of the piping package shall conform to the requirements of latest version of applicable ASME/IS dimensional standards and ASTM/IS material standards as specified in clause 4.0 and the Bill of Material document. 2.0 LEGEND / GLOSSARY OF TERMS Purchaser : BHEL Owner : BHEL's Customer Bidder : Eligible vendors from whom offers are received against the Enquiry Vendor : Successful Bidder of the Package on whom Order is placed 3.0 SCOPE OF SUPPLY / SERVICES 3.1 Procurement and Supply of Piping Package: ➤ Procurement and Supply of Piping Package (Pipes, Valves, Strainers, BW Pipe fittings, Forged Pipe Fittings, Flanges, Gaskets, Bolting material etc., in loose condition). ➤ Piping package items to be supplied and their Quantity shall be as per the Bill of Material document. ➤ Piping package items shall be sourced as per the Specifications/Standards indicated against each of the components in the Bill of Material document. ➤ The Piping package items shall be sourced only from the vendors as indicated in the approved vendor list for each category of components. ➤ Vendor's scope includes only material sourcing, inspection, testing, marking, packaging and transport of the piping package. ➤ Vendor can manufacture any of the items if they are one of the approved sources for that item as per the Approved vendor list. ➤ Inspection & Testing at Vendor's works. ➤ Spooling, Edge preparation, Welding, Surface preparation, Painting are NOT part of the Scope of Supply. 3.2 For IBR Piping Package, Vendor shall comply with all statutory as per Indian Boiler Regulations (IBR). Vendor shall furnish IBR Form-III A for Pipes and IBR Form-III C for Pipe Fittings, duly filled and certified. 3.3 Any additional item, material, services etc., which are not specifically mentioned in this document, but required to make the piping package complete in all respects, in accordance with the intent of this technical specification, contractual agreement, statutory requirements, relevant/ applicable codes/ standards, good engineering practices, shall be deemed to be covered under the scope of this specification.

Refer Doc	LAYOUTS & PIPING ENGINEERING PROJECT ENGINEERING & SYSTEMS DIVISION	PREPARED	CHECKED	APPROVED	DATE
		 G PARAMESH	 G UDAY	 SRIKANTH G	10.01.2020

Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION	PY 52 279
		TECHNICAL SPECIFICATION	Rev. No. 00
		PIPING ITEMS PACKAGE	Page 2 of 7

4.0 APPLICABLE STANDARDS

Bidder shall follow the related standards referred herein (but not limited to) and shall be of the latest edition prior to the date of purchaser's enquiry:

ANSI	American National Standards Institute.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
IBR	Indian Boiler Regulations
ASME B 36.10	Welded and Seamless Wrought Steel Pipe
ASME B 36.19	Stainless Steel Pipe
ASME B 16.1	Gray Iron Pipe Flanges and Flanged Fittings
ASME B 16.5	Pipe Flanges and Flanged Fittings
ASME B 16.9	Factory made Wrought Buttwelding Fittings
ASME B 16.11	Forged Fittings, Socket Welding and Threaded
ASTM A105	Std Spec for Carbon Steel Forgings for Piping Applications
ASTM A106	Std Spec for Seamless Carbon Steel Pipe for High Temperature Service
ASTM A123	Std Spec for Zinc (Hot-Dip Galvanised) Coatings on Iron and Steel Products
ASTM A182	Std Spec for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, Valves and Parts for High Temperature Service
ASTM A234	Std Spec for Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
ASTM A312	Std Spec for Seamless, Welded and Heavily Cold Worked Austenitic Stainless Steel Pipes
ASTM A335	Std Spec for Seamless Ferritic Alloy Steel Pipe for High Temperature Service
ASTM A403	Std Spec for Wrought Austenitic Stainless Steel Piping Fittings
ASTM A530	Std Spec for General Requirements for Specialised Carbon and Alloy Steel Pipe
ASTM A671	Std Spec for Electric Fusion Welded Steel Pipe for Atmospheric and Lower Temperatures
ASTM A672	Std Spec for Electric Fusion Welded Steel Pipe for High Pressure and Moderate Temperatures
IS 1239 P1	Indian Standard Spec for Steel Tubes, Tubulars and other Steel Fittings (Part 1 Steel Tubes)
IS 1239 P2	Indian Standard Spec for Steel Tubes, Tubulars and other Steel Fittings (Part 2 Steel Sockets Tubular and other Steel Pipe Fittings)
IS 3589	Indian Standard Spec for Steel Pipes for Water and Sewage
IS 2062	Indian Standard Spec for Hot Rolled Low, Medium and High Tensile Structural Steel

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Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION	PY 52 279
		TECHNICAL SPECIFICATION	Rev. No. 00
		PIPING ITEMS PACKAGE	Page 3 of 7

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5.0

SPECIAL INSTRUCTIONS TO BIDDER

5.1

This specification shall be read in conjunction with Project Job Specification (if applicable) for the Piping Package. In case of any discrepancy arising between this specification, applicable standards and the job specification & its enclosures, it shall be bidder’s sole responsibility to clearly bring out/ highlight the same distinctively in his pre-bid queries within 6 working days from the receipt of enquiry, so as to enable purchaser to furnish their decision/ clarification. If such issues/ requirements are not duly addressed by bidder during the pre-bid stage and if such issues/ requirements are observed later during order execution stage, it shall be binding on the bidder to comply with the final decision made by the purchaser subsequently, without any cost, delivery, or any other commercial implications.

5.2

Any other specific requirement which is mandated as per governing design/manufacturing code or statutory requirements, but not listed elsewhere in this specification or its enclosures shall be deemed to be included in the basic price quoted by the bidder.

5.3

Bidder shall provide replies / clarifications within 4 working days from the date of the queries / comments raised by Purchaser, during technical scrutiny of bidder’s offer and execution of the order. Any further delay will be seriously viewed by the purchaser and bidder’s offer may not be considered for evaluation.

5.4

Bidder to quote strictly as per BHEL’s price format. Any tampering/ modification/ change of the BHEL’s price format is not allowed and the bidder’s offer is liable for rejection.

6.0

DEVIATIONS TO SPECIFICATIONS

6.1

Bidder to note that all the applicable deviations / clarifications shall be listed separately in the format attached and submitted to BHEL as a part of technical bid. All such applicable deviations / clarifications shall have cross reference to the specifications / annexures with proper reasons for the deviations for purchaser’s consideration. Any such applicable deviations /clarification not listed under the above section, even if reflected in any other portion of the bidder’s proposal shall not be considered applicable.

6.2

Except for those deviations/ variations covered as a part of pre bid clarification and approved by purchaser, it will be the responsibility of the bidder to fully meet the intent and the requirements of the specification within the quoted price. No other deviation whatsoever from this specification, except for those have been specifically agreed by purchaser as a part of pre-bid clarification shall be considered.

6.3

In case the bidder considers requirement of any other accessories / auxiliaries essential for safe and satisfactory operation of the equipment, he shall recommend the same along with reasons in a separate section as a part of pre-bid query to enable purchaser take a suitable decision on the requirement of the same.

6.4

Information like Bill of materials (BOM) and typical specifications etc., enclosed by the bidder as a part of their bid, shall be retained for information only and shall not be referred by contractor as contractual agreement. No implication shall be admissible on the basis of these documents during any stage of contract execution.

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BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING & SYSTEMS DIVISION

PY 52 279

TECHNICAL SPECIFICATION

Rev. No. 00

PIPING ITEMS PACKAGE

Page 4 of 7

7.0 DOCUMENTATION

7.1 ALONG WITH THE OFFER
 Bidder shall submit the following documents / drawings along with the offer, with respect to every item of the Purchaser's specifications. Any offer not confirming to this requirement is liable for rejection.

- Copy of purchaser's specification (Technical specification, Job Specification, Bill of Material, Approved Vendor List and all Annexures) and Check list duly stamped & signed by the Bidder.
- Deviation list, if any, in the format attached with this specification (In case of no deviation, 'NIL' to be mentioned in the format, duly signed and to be submitted along with offer). Offer without deviation list will not be evaluated & shall be liable for rejection.

7.2 BEFORE DISPATCH

7.2.1 The following documents / drawings shall be submitted by vendor during final inspection & before dispatch of the Piping package:

- Material test certificates for all the Piping package items for review and acceptance by purchaser and / or owner as per approved QAP.
- Statutory approvals / certificates.

7.2.2 For IBR Piping Package, Vendor shall comply with all statutory as per Indian Boiler Regulations (IBR). Vendor shall furnish IBR Form-IIIA for Pipes and IBR Form-IIIC for Pipe Fittings, duly filled and certified.

7.3 AFTER DISPATCH
 Vendor shall furnish the details like LR numbers, Invoice details, Weight details etc for all the dispatches. **The data shall be furnished for every individual item of the piping package.** Same shall be furnished in a spread sheet progressively as per schedule of dispatches.

8.0 DISPATCH & SHIPPING

8.1 All items shall properly be packed for transportation by ship/ rail or trailer. Packing shall be as per the Specification and the relevant TDC document.

8.2 The packages may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage for adverse atmospheric conditions such as high humidity, salinity, heavy rains etc.

8.3 The following minimum packing procedures shall be followed:

- Prior to shipment, Vendor to ensure that all items are dry, clean and free from moisture, dirt and loose foreign material of all kinds.
- All the items shall be protected from rust, corrosion, and mechanical damage during transportation and shipment.
- All the machined surfaces (to be welded at site) shall be protected by coating with easily removable rust preventive. Rust preventive on machined surfaces to be welded shall not be harmful to welding and shall be easily removable with a petroleum solvent.
- All the items shall properly be packed to prevent damage during transit, loading, unloading and storage.
- Pipes / fittings ends shall be suitably protected against damage and ingress of foreign material including water, and the protectors shall be securely and tightly attached.

Form No:

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BHARAT HEAVY ELECTRICALS LIMITED

PROJECT ENGINEERING & SYSTEMS DIVISION

TECHNICAL SPECIFICATION

PIPING ITEMS PACKAGE

PY 52 279

Rev. No. 00

Page 5 of 7

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8.4

All the items shall be packed (in line with the requirements of clause nos 8.1 to 8.3), numbered and the same shall be linked to the LR numbers while furnishing the dispatch information as per clause no 7.3.

8.5

It shall be bidder’s sole responsibility to protect all the material during period of transportation against corrosion, incidental damage due to adverse atmospheric conditions, rough handling in transit including delays in transit. Bidder shall be responsible for any damage to material due to above reasons and shall take necessary corrective action without any price implication.

9.0

QUALITY REQUIREMENTS, INSPECTION & TESTING

9.1

Inspection shall be either by purchaser, owner or purchaser’s appointed third party agency as per the approved QAP.

9.2

Vendor is responsible for successful inspection of all the piping package items to ensure that the supplied package meets the requirements of this specification.

9.3

Unless otherwise specified, BHEL reserves the right to test and inspect all the items at the Vendor works.

9.4

Witness Inspection

Vendor shall offer all the items for pre-dispatch inspection and the following tests/ checks shall be carried out as a minimum:

➤ Physical and Dimensional Check.

➤ Review of all Material Test Certificates and test reports as indicated at 9.5 below.

➤ Bill of Material Check.

➤ Additional tests, if any – As per Job specification

9.5

Testing Procedure

Test procedure shall include but not be limited to the following list of tests. All the tests being conducted shall clearly be brought out in the Quality Assurance Plan (QAP) by Vendor.

9.5.1

Positive Material Identification (PMI)

100% PMI shall be carried out for all Stainless Steel and Alloy Steel Material in presence of Purchaser/TPIA at the time of dispatch. Purchaser/TPIA at their discretion may choose to sample the lot for PMI.

9.5.2

Dimensional and physical check.

Hydrostatic test is excluded for individual pipe spools at Vendor’s works. However, vendor to produce the Hydrostatic test reports conducted by OEM, wherever applicable.

Though Hydrostatic test is excluded for the individual pipe spools at vendor’s works, it is the sole responsibility of the vendor to ensure required quality of the materials and welds. If any defects (which are not attributable to field welds) were to be found at the time of field Hydrostatic Test of the Piping system, then the Vendor shall take necessary corrective action at site his own expenses. No claim for any additional price will be allowed.

Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED	PY 52 279
		PROJECT ENGINEERING & SYSTEMS DIVISION	Rev. No. 00
		TECHNICAL SPECIFICATION	Page 6 of 7
		PIPING ITEMS PACKAGE	

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10.0 QUALITY ASSURANCE PLAN (QAP)/ INSPECTION AND TEST PLAN (ITP)

- 10.1 It is a document generated by the supplier with complete listing of various inspection stages, tests, material certification requirements and parties involved with their respective roles in inspection; indicating the requirements of Hold (H), Witness (W) Inspection, and Review (R) of Quality control documents / records for an item. QAP and ITP are considered synonymous.
- 10.2 The bidder shall submit inspection & testing Quality Assurance Plan for all critical raw materials, shop manufacture items, sub-vendor supplied items, shop testing of items etc. Guidelines for preparing the QAP will be submitted as part of the Enquiry. Bidder to submit their QAP strictly according to these Guidelines, without which their offer is liable for rejection.
- 10.3 The shop QAP shall be approved by Purchaser / Owner and may indicate hold points. The vendor shall furnish minimum two weeks' time for all such shop inspection / testing - hold points.
- 10.4 All shop testing shall be conducted by vendor at their own cost and measuring and testing equipment shall be made available by them and all shall have valid calibration certificate.
- 10.5 All material test certificates and inspection test reports shall be submitted to Purchaser / owner for review / approval and final dispatch clearance note.
- 10.6 The following definitions are provided for reference of the bidders while preparing QAP.
- 10.6.1 **HOLD POINT:** A Hold Point is a stage designated in the ITP/QAP, which requires Witness Inspection by TPIA and / or PMC/ OWNER before supplier can proceed with further processing, except where prior written permission for further processing or waiver of Witness Inspection by PMC / OWNER is obtained.
- 10.6.2 **WITNESS POINT:** A Witness point is a stage designated in the ITP/QAP, which requires witness inspection by TPIA, PMC and / or Owner. EPCC/LSTK CONTRACTOR / Supplier shall perform the activity after proper notification has been given to TPIA / PMC and OWNER for witnessing the activity. The CONTRACTOR/ Supplier is not obliged to hold further processing, if TPIA / PMC and / or OWNER are not available to witness the activity or does not provide the comments before the date notified with proper notification period.
- 10.6.3 **REVIEW POINT:** A review point is a stage designated in the ITP/QAP which requires the concerned agencies i.e. Purchaser / TPIA / PMC / Owner, to verify the documents for their correctness and to confirm that the said documents meet the requirements laid down.
- 10.6.4 **THIRD PARTY INSPECTION AGENCY (TPIA):** Third Party Inspection Agency means an inspection agency appointed by the Purchaser / EPCC / LSTK Contractor for carrying out Inspection and witness of tests of items and material being procured by the Purchaser for the Project.
- 10.6.5 **INSPECTION CATEGORY:** Inspection category determines the scope of Inspection for the Supplier, TPIA, PMC / OWNER for various items and material depending upon their use, serviceability, safety criteria and complexity.

Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION	PY 52 279
		TECHNICAL SPECIFICATION	Rev. No. 00
		PIPING ITEMS PACKAGE	Page 7 of 7

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11.0 PRICE BID FORMAT

- 11.1 Bidders to quote strictly as per BHEL's price format. No other format is acceptable. Any tampering/ modification/ change of the BHEL's price format is not allowed and the bidder's offer is liable for rejection.
- 11.2 All the items included in the price bid format shall be quoted as per tender specification and pre-bid clarifications, if any. Responsibility of ensuring correctness & completeness of scope of supply as per specification requirement solely lies with bidder.
- 11.3 The Priced Bid shall be submitted in Original (without any copy) duly signed and stamped on each page in a separate sealed envelope super scribing "Price Bid-Do not Open".
- 11.4 Bidder shall confirm the submission of the unpriced bid as part of their technical offer.

12.0 VARIANT TABLE

Var No	Project	Package Description	Project's Job Specification	Material Code
01	ONGC Uran Cogen	Piping Package (Non IBR)	PEMC-7440	PY9752279015

IBR: IBR CERTIFICATION REQUIRED

NIBR: IBR CERTIFICATION NOT REQUIRED.

13.0 RECORD OF REVISIONS

Rev No	Date	Revision Detail	Revised by	Approved by
00	10.01.2020	FIRST ISSUE	 G PARAMESH	 SRIKANTH G

	Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION	PEMC-7440
			JOB SPECIFICATION	Rev. No. 00
			PIPING ITEMS PACKAGE	Page 1 of 3

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JOB SPECIFICATION FOR PIPING ITEMS PACKAGE

ONGC CO GEN URAN

Refer Doc		LAYOUTS & PIPING ENGINEERING	PREPARED	CHECKED	APPROVED	DATE
			 G PARAMESH	 G UDAY	 SRIKANTH G	10.01.2020

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PROJECT ENGINEERING & SYSTEMS DIVISION

JOB SPECIFICATION

PIPING ITEMS PACKAGE

PEMC-7440

Rev. No. 00

Page 2 of 3

<

Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION	PEMC-7440
		JOB SPECIFICATION	Rev. No. 00
		PIPING ITEMS PACKAGE	Page 3 of 3

5.0 LIST OF ENCLOSURES / ANNEXURES

Sl No	Doc Number	Description
1	PY52279	Technical Specification for Piping Items Package
2	Annexure-A	Piping Items Bill of Material
3	Annexure-B	List of Approved Sub-Vendors
4	Annexure-C	Price Bid Format
5	Annexure-D	Checklist Format
6	Annexure-E	Format for Deviation Schedule
7	Annexure-F	Format for Pre-bid Queries
8	Annexure-G	Format for Manufacturing Quality Assurance Plan

6.0 RECORD OF REVISIONS

Rev No	Date	Revision Detail	Revised by	Approved by
00	10.01.2020	FIRST ISSUE	 G PARAMESH	 SRIKANTH G

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**BILL OF MATERIAL
PIPING ITEMS PACKAGE****ANNEXURE-A TO PEMC-07440
PROJECT NAME: ONGC CO GEN URAN**

Sl. No	IDENTIFICATION No.	Material Code	Material Description	Base Material	Qty (No.s)	Technical Specification	Unit Weight (Kg)	Total Weight (Kg)
1	BW FT-3	PY9752101127	ELBOW 90D LR CS (A234GRWPB) 10" STD BW	CS	40	PY52101	38.22	1528.80
2	BW FT-6	PY9752102190	ELBOW 90D LR SS (A403WP304) 8" S40S BW	SS	6	PY52102	21.62	129.72
3	BW FT-7	PY9752103022	CRDCR CS 1" X 0.5" XS X XS BW	CS	40	PY52103	0.16	6.40
4	BW FT-8	PY9752103030	CRDCR CS 1" X 0.75" XS X XS BW	CS	10	PY52103	0.16	1.60
5	BW FT-9	PY9752103057	CRDCR CS 1.5" X 1" XS X XS BW	CS	10	PY52103	0.35	3.50
6	BW FT-14	PY9752103146	CRDCR CS 8" X 4" STD X STD BW	CS	2	PY52103	6.50	13.00
7	BW FT-15	PY9752103154	CRDCR CS 8" X 6" STD X STD BW	CS	2	PY52103	6.50	13.00
8	BW FT-16	PY9752103162	CRDCR CS 10" X 6" STD X STD BW	CS	2	PY52103	10.70	21.40
9	BW FT-17	PY9752103170	CRDCR CS 10" X 8" STD X STD BW	CS	2	PY52103	10.70	21.40
10	BW FT-18	PY9752103189	CRDCR CS 12" X 8" STD X STD BW	CS	2	PY52103	15.00	30.00
11	BW FT-19	PY9752103227	CRDCR CS 16" X 12" STD X STD BW	CS	2	PY52103	33.00	66.00
12	BW FT-21	PY9752103324	CRDCR CS 2" X 1" XS X XS BW	CS	10	PY52103	0.57	5.70
13	BW FT-23	PY9752103545	CRDCR CS 4" X 2.5" STD X STD BW	CS	2	PY52103	1.60	3.20
14	BW FT-25	PY9752103707	CRDCR CS 4" X 1.5" STD X XS BW	CS	20	PY52103	1.60	32.00
15	BW FT-26	PY9752105025	CRDCR SS 1" X 0.5" SCH 40S X 40S BW	SS	10	PY52105	0.15	1.50
16	BW FT-27	PY9752105130	CRDCR SS 6" X 4" SCH 10S X 10S BW	SS	2	PY52105	1.95	3.90
17	BW FT-28	PY9752105335	CRDCR SS 8" X 6" SCH 40S X 40S BW	SS	4	PY52105	6.90	27.60
18	BW FT-29	PY9752105467	CRDCR SS 1" X 0.75" S40XS80S BW	SS	20	PY52105	0.13	2.60
19	BW FT-30	PY9752108067	TEE STRT CS 3" STD BW	CS	6	PY52108	3.82	22.92
20	BW FT-32	PY9752108083	TEE STRT CS 6" STD BW	CS	2	PY52108	13.49	26.98
21	BW FT-33	PY9752108091	TEE STRT CS 8" STD BW	CS	2	PY52108	24.69	49.38
22	BW FT-34	PY9752108105	TEE STRT CS 10" STD BW	CS	3	PY52108	41.89	125.67

23	BW FT-36	PY9752109179	TEE STRT SS 8" SCH 40S BW	SS	2	PY52109	21.00	42.00
24	BW FT-38	PY9752181031	CAP 6" SCH STD BW CS(SA 234 WPB)	CS	4	PY52181	3.60	14.40
25	BW FT-39	PY9752181120	CAP 2" SCH 40 BW CS(SA 234 WPB)	CS	2	PY52181	0.30	0.60
26	BW FT-40	PY9752101283	ELBOW 90D LR CS (A234GRWPBW) 18" XS BW	CS	4	PY52101	148.07	592.28
27	SW FT-1	PY9752093043	HALF COUPLING CS (A105) 1.5" CL3000 SW	CS	35	PY52093	0.57	19.95
28	SW-FT-2	PY9752093078	HALF COUPLING CS (A105) 0.75" CL6000 SW	CS	100	PY52093	0.29	29.00
29	SW-FT-3	PY9752093213	HALF CPLNG CS A105(GALV) 0.5" CL3000 SC	CS(G)	50	PY52093	0.14	7.00
30	SW-FT-4	PY9752093221	HALF CPLNG CSA105(GALV) 0.75" CL3000 SC	CS(G)	40	PY52093	0.20	8.00
31	SW-FT-5	PY9752093230	HALF CPLNG CS A105(GALV) 1" CL3000 SC	CS(G)	10	PY52093	0.34	3.40
32	SW-FT-6	PY9752094023	FULL COUPLING CS(A105) 0.75" CL3000 SW	CS	50	PY52094	0.17	8.50
33	SW-FT-7	PY9752094163	FULL CPLNG CS (GALV) 0.5" CL3000 SC	CS(G)	50	PY52094	0.11	5.50
34	SW-FT-8	PY9752094171	FULL CPLNG CS (GALV) 0.75" CL3000 SC	CS(G)	40	PY52094	0.17	6.80
35	SW-FT-9	PY9752110037	ELBOW 90D CS (A105) 1" CL3000 SW	CS	120	PY52110	0.49	58.80
36	SW-FT-10	PY9752110045	ELBOW 90D CS (A105) 1.5" CL3000 SW	CS	20	PY52110	1.05	21.00
37	SW-FT-11	PY9752110061	ELBOW 90D CS (A105) 0.5" CL6000 SW	CS	20	PY52110	0.43	8.60
38	SW-FT-12	PY9752110070	ELBOW 90D CS (A105) 0.75" CL6000 SW	CS	30	PY52110	0.67	20.10
39	SW-FT-13	PY9752110118	ELBOW 90D SS (A182F304) 0.5" CL3000 SW	SS	10	PY52110	0.23	2.30
40	SW-FT-14	PY9752110185	ELBOW 90D CS(A105-GALV) 1" CL3000 SC	CS(G)	20	PY52110	0.49	9.80
41	SW-FT-15	PY9752110207	ELBOW 90D CS(A105-GALV) 2" CL3000 SC	CS(G)	30	PY52110	1.73	51.90
42	SW-FT-16	PY9752110266	ELBOW 90D CS(A105-GALV) 3" CL3000 SC	CS(G)	10	PY52110	8.00	80.00
43	SW-FT-18	PY9752111114	TEE STRT SS (A182F304) 0.5" CL3000 SW	SS	4	PY52111	0.28	1.12
44	SW-FT-19	PY9752111130	TEE STRT SS (A182F304) 1" CL3000 SW	SS	10	PY52111	0.57	5.70
45	SW-FT-20	PY9752093124	HALF CPLNG SS(A182F304) 0.75" CL3000 SW	SS	6	PY52093	0.20	1.20
46	SW-FT-21	PY9752111181	TEE STRT CS (A105-GALV) 1" CL3000 SC	CS(G)	10	PY52111	0.57	5.70
47	SW-FT-22	PY9752111262	TEE STRT CS (A105-GALV) 3" CL3000 SC	CS(G)	10	PY52111	10.50	105.00
48	SW-FT-23	PY9752123147	RCPLNG CS(GALV) 1"X3/4" CL3000 SC	CS(G)	20	PY52123	0.54	10.80
49	SW-FT-24	PY9752123201	RCPLNG CS(GALV) 3" X 2" CL3000 SC	CS(G)	10	PY52123	5.08	50.80

50	SW-FT-25	PY9752205038	CAP CS (A105) 1" CL 3000 SW	CS	6	PY52205	0.21	1.26
51	SW-FT-26	PY9752205070	CAP CS(A105-GALV) 1" CL 3000 SC	CS(G)	2	PY52205	0.70	1.40
52	SW-FT-27	PY9752218431	NIPPLE 1"X100 S160 CS PEXNPT-M	CS	20	PY52218	0.42	8.40
53	SW-FT-28	PY9752218466	NIPPLE 0.75"X100 S160 CS PEXNPT-M	CS	20	PY52218	0.29	5.80
54	SW-FT-29	PY9752094180	FULL CPLNG CS (GALV) 1" CL3000 SC	CS(G)	60	PY52094	0.27	16.20
55	SW-FT-30	PY9752094201	FULL CPLNG CS (GALV) 2" CL3000 SC	CS(G)	40	PY52094	0.72	28.80
56	SW-FT-31	PY9752094260	FULL CPLNG CS (GALV) 3" CL3000 SC	CS(G)	20	PY52094	3.70	74.00
57	SW-FT-32	PY9752094279	FULL CPLNG CS (GALV) 4" CL3000 SC	CS(G)	10	PY52094	6.50	65.00
58	FLNG-1	PY9752052053	CS FIGURE 8 BLANK 2" #150 RF	CS	5	PY52052	0.68	3.40
59	FLNG-2	PY9752052061	CS FIGURE 8 BLANK 3" #150 RF	CS	4	PY52052	1.14	4.56
60	FLNG-3	PY9752052070	CS FIGURE 8 BLANK 4" #150 RF	CS	2	PY52052	2.77	5.54
61	FLNG-4	PY9752052088	CS FIGURE 8 BLANK 6" #150 RF	CS	4	PY52052	5.53	22.12
62	FLNG-5	PY9752052096	CS FIGURE 8 BLANK 8" #150 RF	CS	4	PY52052	8.50	34.00
63	FLNG-7	PY9752052550	SS FIGURE 8 BLANK 1" #300 RF	SS	4	PY52052	0.34	1.36
64	FLNG-8	PY9752084036	FLANGE CS 1" CL150 B16.5 SORF	CS	1	PY52084	0.90	0.90
65	FLNG-9	PY9752084052	FLANGE CS 2" CL150 B16.5 SORF	CS	6	PY52084	2.30	13.80
66	FLNG-10	PY9752084079	FLANGE CS 3" CL150 B16.5 SORF	CS	30	PY52084	3.70	111.00
67	FLNG-11	PY9752084087	FLANGE CS 4" CL150 B16.5 SORF	CS	20	PY52084	5.90	118.00
68	FLNG-12	PY9752084125	FLANGE CS 10" CL150 B16.5 SORF	CS	7	PY52084	19.50	136.50
69	FLNG-13	PY9752084133	FLANGE CS 12" CL150 B16.5 SORF	CS	2	PY52084	29.00	58.00
70	FLNG-14	PY9752085040	FLANGE CS 1.5" XS CL150 B16.5 WNRF	CS	6	PY52085	1.78	10.68
71	FLNG-15	PY9752085067	FLANGE CS 2.5" STD CL150 B16.5 WNRF	CS	2	PY52085	4.25	8.50
72	FLNG-16	PY9752085105	FLANGE CS 6" STD CL150 B16.5 WNRF	CS	4	PY52085	10.90	43.60
73	FLNG-21	PY9752086209	FLANGE CS 0.75" S160 CL300 B16.5 WNRF	CS	320	PY52086	1.34	428.80
74	FLNG-23	PY9752088040	FLANGE SS 1.5" S40S CL300 B16.5 WNRF	SS	4	PY52088	2.97	11.88
75	FLNG-24	PY9752088082	FLANGE SS 4" S10S CL300 B16.5 WNRF	SS	4	PY52088	11.00	44.00
76	FLNG-25	PY9752088104	FLANGE SS 6" S10S CL300 B16.5 WNRF	SS	6	PY52088	18.73	112.38
77	FLNG-26	PY9752088155	FLANGE SS 0.5" S80S CL300 B16.5 WNRF	SS	4	PY52088	0.79	3.16
78	FLNG-29	PY9752090028	BLIND FLANGE CS 0.75" CL300 B16.5 RF	CS	345	PY52090	1.40	483.00
79	FLNG-31	PY9752091059	BLIND FLANGE SS 2" CL150 B16.5 RF	SS	2	PY52091	2.30	4.60
80	FLNG-32	PY9752092012	BLIND FLANGE SS 0.5" CL300 B16.5 RF	SS	2	PY52092	1.40	2.80

81	FLNG-34	PY9752119042	FLANGE CS 1.5" XS CL600 B16.5 WNRF	CS	2	PY52119	3.46	6.92
82	FLNG-35	PY9752178073	FLNG CS A105(GALV) 3" C150 THD B16.5 RF	CS(G)	1	PY52178	3.70	3.70
83	FLNG-36	PY9752211011	FLANGE CS 2" CL300 B16.5 SORF	CS	6	PY52211	3.20	19.20
84	FLNG-37	PY9752211046	FLANGE CS 6" CL300 B16.5 SORF	CS	2	PY52211	17.70	35.40



**LIST OF APPROVED SUB-VENDORS
PRE-FABRICATED PIPING PACKAGE**

**ANNEXURE-B TO PEMC-07440
PROJECT NAME: ONGC CO GEN URAN**

Seamless pipes:

Item Code :		Item Description : PIPE/TUBE-C S (SEAMLESS) TO ASTM STDS		
1	A359	AVON TUBETECH PVT LTD		MSL
2	A387	ANAND SEAMLESS TUBES PVT. LTD	INDIA	MSL
3	A751	ARCELORMITTAL TUBULAR PRODUCTS ROMAN SA	ROMANIA	MSL
4	B015	BHEL (TRICHY)	INDIA	MSL
5	B740	BAOSTEEL GROUP CORPORATION	CHINA	MSL
6	C719	CHANGSHU SEAMLESS STEEL TUBE CO. LTD	CHINA	MSL
7	H086	HEAVY METALS & TUBES LIMITED(MEHSANA)	INDIA	MSL
8	H663	HENGYANG STEEL TUBE GROUP INTL. TDNG INC	CHINA	MSL
9	I036	ISMT LTD-AHMEDNDR	INDIA	MSL
10	I181	ISMT LTD-BARAMATI	INDIA	MSL
11	J110B	JINDAL SAW LTD (NASHIK WORKS)	INDIA	MSL
12	J152	JR SEAMLESS PVT.LTD	INDIA	MSL
13	J557A	JFE STEEL CORPORATION	JAPAN	MSL
14	K503	KASCO	SOUTH KOREA	MSL
15	L127	LAL BABA SEAMLESS TUBES PVT. LTD	INDIA	MSL
16	M187	MAHARASHTRA SEAMLESS LTD.	INDIA	MSL
17	M202	MAHALAXMI SEAMLESS LIMITED	INDIA	MSL
18	P300	Patels Airflow Ltd.	INDIA	MSL
19	P675	PRODUCTOS TUBULARES S.A.U.	SPAIN	MSL
20	P704	PANGANG GROUP CHENGDU STEEL & VANADIUM C	CHINA	MSL
21	R196	RATNADEEP METAL TUBES LTD.	INDIA	MSL
22	S136	SN TUBES PRIVATE LIMITED		MSL
23	S347	SAINEST TUBES PVT LTD	INDIA	MSL
24	S563	SUMITOMO METAL IND.LTD	JAPAN	MSL
25	T566	TUBOS REUNIDOS SA	SPAIN	MSL
26	V507	VALLOUREC AND MANNESMANN TUBES	FRANCE	MSL
27	V591	VALCOVNY TRUB CHOMUTOV	CZECH REPUBLIC	MSL
28	W614	WYMAN GORDON FORGINGS	U.S.A.	MSL

S. NO.	SUPPLIER CODE	SUPPLIER NAME	COUNTRY	SOURCE
29	Y555	YANGZHOU CHENGDE STEEL PIPE CO LTD	CHINA	MSL
30	Y556	YANGZHOU LONTRIN STEEL TUBE CO.,LTD.	CHINA	MSL
31	Z599	ZHEJIANG GROSS SEAMLESS STEEL TUBE COLTD	CHINA	MSL

2	CS PIPE
M/s	MAHALAXMI SEAMLESS
M/s	MAHARASHTRA SEAMLESS LTD.
M/s	BHEL , TRICHY
M/s	INDIAN SEAMLESS METAL TUBES LTD.
M/s	SAW PIPE LIMITED
M/s	KALYANI SEAMLESS METAL TUBES LTD.
M/s	THE TATA IRON & STEEL CO. LTD.
M/s	WELSPUN GUJARAT STAHL ROHREN LTD.
M/s	SURYA ROSHNI LTD.
M/s	MAN INDUSTRIES (I) LTD.
M/s	JINDAL PIPES, NEW DELHI, INDIA
M/s	NSC, JAPAN

	ONSHORE ENGINEERING SERVICES DELHI	SUGGESTED VENDOR LIST	Volume	II
			Rev No.	7.5
		Doc no: OES/TD/INT/001	Discipline	PIPING
			Page : 50 of 132	

M/s	MITSUBISHI, JAPAN
M/s	MGI, FRANCE

Stainless steel pipes:

S. NO.	SUPPLIER CODE	SUPPLIER NAME	COUNTRY	SOURCE
Item Code : 60AK		Item Description : PIPE/TUBE-SS(S.LESS & WELDED)TO ASTM STD		
1	A262	ARVIND PIPES & FITTINGS IND PVT LTD	INDIA	MSL
2	A275	APEX TUBES PVT LTD	INDIA	MSL
3	B194	BHANDARI FOILS AND TUBES LTD.		MSL
4	C227	CHANDAN STEEL LTD	INDIA	MSL
5	C738	CHANGSHU WALSHIN SPECIALTY STEEL CO.,LTD		MSL
6	G624	GIEMINOX TECTUBI RACCORDI SRL	ITALY	MSL
7	H086	HEAVY METALS & TUBES LIMITED(MEHSANA)	INDIA	MSL
8	H651	HAILONG (ZHANGJIAGANG) INDUSTRY CO., LTD	CHINA	MSL
9	I583	INOX TECH. SPA	ITALY	MSL
10	I597	IBF S P A	ITALY	MSL
11	J110B	JINDAL SAW LTD (NASHIK WORKS)	INDIA	MSL
12	J628	JIANGSU WUJIN STAINLESS STEEL PIPE GROUP		MSL
13	K186	KRYSTAL STEEL MFG.PVT.LTD.	INDIA	MSL
14	M202	MAHALAXMI SEAMLESS LIMITED	INDIA	MSL
15	M287	MAXIM TUBES COMPANY PVT LTD	INDIA	MSL
16	M307	MBM TUBES PVT LTD	INDIA	MSL
17	P260	PRAKASH STEELAGE LTD	INDIA	MSL
18	P675	PRODUCTOS TUBULARES S.A.U.	SPAIN	MSL
19	R066	RATNAMANI METALS AND TUBES LTD	INDIA	MSL
20	R127	REMI EDELSTAHL TUBULARS LTD (FORM RMIL)	INDIA	MSL
21	R196	RATNADEEP METAL TUBES LTD.	INDIA	MSL
22	S098	SCODA TUBES LTD	INDIA	MSL
23	S129	STEAMLINE INDUSTRIES Ltd		MSL
24	S202	SHUBHLAXMI METALS AND TUBES PVT. LTD		MSL
25	S357	HELLIOS TUBEALLOYS PVT. LTD	INDIA	MSL
26	S406	SURAJ LIMITED	INDIA	MSL
27	S445	SANDVIK ASIA PVT. LIMITED (AHMEDABAD)	INDIA	MSL
28	S563	SUMITOMO METAL IND.LTD	JAPAN	MSL
29	S594	SANDVIK AB	SWEDEN	MSL
30	S732	SCHOELLER-BLECKMANN EDELSTAHLROHR	AUSTRIA	MSL
31	S823	SOSTA GMBH	GERMANY	MSL
32	S842	SALZGITTER MANNESMANN ST DEUTSCHLANDGMBH	FRANCE	MSL
33	S857	SANDVIK MATERIALS TECHNOLOGY (CHINA),CO,	CHINA	MSL
34	T551	TUBACEX TUBOS INOXIDABLES SAU	SPAIN	MSL
35	W510	WILH SCHULZ GmbH	GERMANY	MSL
36	Z515	ZHEJIANG JIULI HI-TECH METALS CO., LTD.	CHINA	MSL
37	Z598	ZHEJIANG STELLAR PIPE IND. CO LTD.	CHINA	MSL

3	S.S. PIPE	
	M/s	RAJENDRA MECHANICAL INDUSTRIES (P) LTD.
	M/s	CHOKSI TUBE CO. LIMITED
	M/s	NUCLEAR FUEL COMPLEX
	M/s	RATNA MANI METAL TUBE
	M/s	DECORA TUBES (P) LTD.
	M/s	HEAVY METALS & TUBES LTD.
	M/s	SAW PIPES LTD.
	M/s	KALINDI, DELHI, INDIA
	M/s	NFC, HYDERABAD, INDIA
	M/s	PRODUCTOS TUBULARS SA, SPAIN
	M/s	Shubhlaxmi Metals and Tubes Pvt Ltd – Seamless Size ¼" NB to 8" NB

IS pipes:

Item Code :		Item Description : PIPE-CARBON STEEL TO INDIAN STANDARDS		
1	A235	ADVANCE STEEL TUBE LTD.	INDIA	MSL
2	A332	ASIAN MILLS PVT LTD	INDIA	MSL
3	A341	A.S.T. PIPES PVT. LTD.(AST GROUP)	INDIA	MSL
4	A366	ASRANI TUBES LIMITED	INDIA	MSL
5	A397	ASIAN TUBES LTD.	INDIA	MSL
6	D145	DADU PIPES (P) LTD	INDIA	MSL
7	E139	ESSAR STEEL LIMITED (ER. HAZIRA PIPE MIL	INDIA	MSL
8	G145	GOODLUCK STEEL TUBES LTD	INDIA	MSL
9	I147	INDUS TUBE LIMITED	INDIA	MSL
10	J110A	JINDAL SAW LTD (KOSI WORKS)	INDIA	MSL
11	J111	JINDAL INDUSTRIES LTD	INDIA	MSL
12	J115	JINDAL (INDIA) LIMITED	INDIA	MSL
13	L061	LALIT PIPES AND PIPES LTD.	INDIA	MSL

	ONSHORE ENGINEERING SERVICES DELHI	SUGGESTED VENDOR LIST	Volume	II
			Rev No.	7.5
		Doc no: OES/TD/INT/001	Discipline	PIPING
			Page : 49 of 132	

1	CS PIPE (WELDED) (1239 & 3589)
M/s	KHANDELWAL TUBES
M/s	SWASTIK PIPES LTD.
M/s	LLOYDS METALS & ENGINEERS LTD.
M/s	JINDAL PIPES LIMITED
M/s	MUKAT PIPES LIMITED
M/s	RATNAMANI METALS & TUBES LTD.
M/s	STEEL AUTHORITY OF INDIA
M/s	SAW PIPES LIMITED
M/s	INDUS TUBE LIMITED
M/s	SURYA ROSHNI LTD.
M/s	THE TATA IRON & STEEL CO. LTD.
M/s	WELSPUN GUJARAT STAHL ROHREN LTD.
M/s	WEST COAST SAW PIPES LTD.
M/s	ADVANCE STEEL TUBE, LTD.,
M/s	BMW INDUSTRIES LTD.
M/s	LALIT PROFILES & STEEL INDUSTRIES LTD.
M/s	MAN INDUSTRIES (I) LTD.
M/s	MUKAT TANKS & VESSELS LTD.
M/s	NORTH EASTERN TUBES LTD.
M/s	PSL HOLDING LTD. CHENNAI
M/s	SRI SARBATI STEEL TUBES LTD.
M/s	SURENDRA ENGG. CO. PVT. LTD. (RAJPURA)
M/s	SURENDRA ENGG. CO. LTD. (MUMBAI)
M/s	T.I. ENGINEERING (DIV. OF TUBE INVEST. INDIA)

BW Fittings:

Item Code :		Item Description : FITTINGS FROM SEAMLESS PIPE-CARBON STEEL		
1	A687	AWAJI MATERIA (THAILAND) CO. LTD.	THAILAND	MSL
2	A732	ALLIED INTERNATIONAL S.R.L.	ITALY	MSL
3	A755	APCO PIPE FITTINGS CO LTD	CHINA	MSL
4	C209	CSA FITTINGS	INDIA	MSL
5	D111	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	MSL
6	E188	EFTEN ENGINEERING PVT. LTD.	INDIA	MSL
7	E588	ERNE FITTINGS GMBH	AUSTRIA	MSL
8	E630	EZEFLOW INC.	CANADA	MSL
9	G125	GUJRAT INFRAPIPES PVT. LIMITED	INDIA	MSL
10	I597	IBF S P A	ITALY	MSL
11	I604	ITM S.R.L.		MSL
12	J614	JIANGYIN TIANNING METAL PIPE FITTING CO	CHINA	MSL
13	J615	JIANGYIN LONGSHAN PIPE SOLUTIONS CO. LTD	CHINA	MSL

14	M057	M.S. FITTINGS MFG. CO PVT LTD	INDIA	MSL
15	M507	MUNRO & MILLER FITTINGS LTD	U.K.	MSL
16	P315	P.K.TUBES & FITTINGS PVT.LTD.	INDIA	MSL
17	P340	PATTECH FITWELL TUBE COMPONENTS	INDIA	MSL
18	P694	PIANA S.P.A	ITALY	MSL
19	R607	RACCORTUBI SPA	ITALY	MSL
20	S102	SAWAN ENGINEERS PVT LTD	INDIA	MSL
21	S265	SIDHARTH & GAUTAM ENGINEERS		MSL
22	S810	SUNGKWANG BEND CO. LTD	SOUTH KOREA	MSL
23	T019	TEEKAY TUBES PVT LTD	INDIA	MSL
24	T050	TUBE BEND (CALCUTTA) PVT LTD	INDIA	MSL
25	T221	TOPAZ PIPING INDUSTRIES	INDIA	MSL
26	T746	TK CORPORATION	SOUTH KOREA	MSL
27	U144	U I PIPE FITTINGS PVT LTD	INDIA	MSL
28	V594	VIRGILIO CENA & FIGLI S.p.A.	ITALY	MSL
29	V608A	VALVITALIA SPA-TECNOFORGE DIVISION	ITALY	MSL
30	W510	WILH SCHULZ GmbH	GERMANY	MSL
31	W615	WEIFANG HUODA PIPE FITTINGS MANUFACTURE	CHINA	MSL
32	Y634	YINGKOU LIAOHE PIPE FITTINGS CO. LTD	CHINA	MSL

6	CS AND SS PIPE FITTING	
	M/s	EBY INDUSTRIES
	M/s	ECHJAY INDUSTRIES PVT. LIMITED
	M/s	TEEKAY TUBES (P) LIMITED
	M/s	STEWARTS AND LLOYDS,
	M/s	NITIN PROFILES (P) LIMITED
	M/s	M.S. FITTINGS MFG. CO. PVT. LTD.
	M/s	SIDHARTH & GAUTAM ENGINEERS
	M/s	EBY FASTENERS
	M/s	COMMERCIAL SUPPLYING AGENCY
	M/s	LEADERS VALVES LTD.
	M/s	M.S. FITTINGS MFG. CO. PVT. LTD.
	M/s	SHIVANANDA PIPE FITTINGS,CHENNAI (ONLY SEAMLESS)
	M/s	COMMERCIAL SUPPLYING AGENCIES, MUMBAI
	M/s	PRECISION FORGING
	M/s	FORGED INDUSTRIAL CORP
	M/s	TUBE PRODUCTS, BARODA
	M/s	PIPE FIT ENGINEERS ,VADODARA (FOR CS,NON-NACED BUT WELDED FITTINGS, BW ELBOWS REDUCERS/TEE/CAP (SEAMLESS/WELDED)
	M/s	TUBE PRODUCTS INCORPORATE
	M/s	SAWAN ENGINEERS
	M/s	GUJARAT INFRA PIPES, MUMBAI,
	M/s	ALLIED INTERNATIONAL S.R.L
	M/s	EBY FASTENERS (SOCKET WELDED FITTINGS FOR SIZES LESS THAN 2")
	M/s	T K CORPORATION, KOREA

Item Code :		Item Description : FITTINGS FROM SEAMLESS PIPE- S.S.		
1	A732	ALLIED INTERNATIONAL S.R.L.	ITALY	MSL
2	C209	CSA FITTINGS	INDIA	MSL
3	D111	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	MSL
4	E588	ERNE FITTINGS GMBH	AUSTRIA	MSL
5	E630	EZEFLOW INC.	CANADA	MSL
6	G125	GUJRAT INFRAPIPES PVT. LIMITED	INDIA	MSL
7	I597	IBF S P A	ITALY	MSL
8	J614	JIANGYIN TIANNING METAL PIPE FITTING CO	CHINA	MSL
9	M057	M.S. FITTINGS MFG. CO PVT LTD	INDIA	MSL
10	M507	MUNRO & MILLER FITTINGS LTD	U.K.	MSL
11	P315	P.K.TUBES & FITTINGS PVT.LTD.	INDIA	MSL
12	P694	PIANA S.P.A	ITALY	MSL
13	R607	RACCORTUBI SPA	ITALY	MSL
14	S102	SAWAN ENGINEERS PVT LTD	INDIA	MSL
15	S265	SIDHARTH & GAUTAM ENGINEERS		MSL
16	S810	SUNGKWANG BEND CO. LTD	SOUTH KOREA	MSL
17	T019	TEEKAY TUBES PVT LTD	INDIA	MSL
18	T221	TOPAZ PIPING INDUSTRIES	INDIA	MSL
19	T746	TK CORPORATION	SOUTH KOREA	MSL
20	T755	TOPPER (SHANGHAI) PIPING MATERIALS CO LT	CHINA	MSL
21	V594	VIRILIO CENA & FIGLI S.p.A.	ITALY	MSL
22	V608A	VALVITALIA SPA-TECNOFORGE DIVISION	ITALY	MSL
23	W510	WILH SCHULZ GmbH	GERMANY	MSL
24	Y634	YINGKOU LIAOHE PIPE FITTINGS CO. LTD	CHINA	MSL

25	BW FITTING	
	M/s	S&L
	M/s	BHARAT FORGE
	M/s	TRUE FORGE
	M/s	COMMERCIAL SUPPLY
	M/s	SIVANAND
	M/s	EBY INDUSTRIES, MUMBAI
	M/s	TEEKAY TUBES
	M/s	M.S. FITTINGS
	M/s	ALLIANCE FORGE INDUSTRIES

Forged fittings:

Item Code :		Item Description : FITTING BLOCK FORGED-CARBON STEEL		
1	C209	CSA FITTINGS	INDIA	MSL
2	C724	CHERO PIPING SPA	ITALY	MSL
3	E060	EBY FASTENERS	INDIA	MSL
4	F130	FLASH FORGE PVT LTD	INDIA	MSL
5	F624	FITTINOX SRL	ITALY	MSL
6	H172	HILTON METAL FORGING LIMITED	INDIA	MSL
7	I604	ITM S.R.L.		MSL
8	K645	KEONSAE HIGH PRESSURE CO.LTD.	SOUTH KOREA	MSL
9	L004	LEADER VALVES LTD	INDIA	MSL
10	M057	M.S. FITTINGS MFG. CO PVT LTD	INDIA	MSL
11	M507	MUNRO & MILLER FITTINGS LTD	U.K.	MSL
12	M731	M.E.G.A SPA	ITALY	MSL
13	P315	P.K.TUBES & FITTINGS PVT.LTD.	INDIA	MSL
14	P708	PROMAT BD LTD MIDDLE EAST	UNITED KINGDOM	MSL
15	T050	TUBE BEND (CALCUTTA) PVT LTD	INDIA	MSL
16	T746	TK CORPORATION	SOUTH KOREA	MSL
17	U144	U I PIPE FITTINGS PVT LTD	INDIA	MSL
18	W510	WILH SCHULZ GmbH	GERMANY	MSL

6	CS AND SS PIPE FITTING			
	M/s	EBY INDUSTRIES		
	M/s	ECHJAY INDUSTRIES PVT. LIMITED		
	M/s	TEEKAY TUBES (P) LIMITED		
	M/s	STEWARTS AND LLOYDS,		
	M/s	NITIN PROFILES (P) LIMITED		
	M/s	M.S. FITTINGS MFG. CO. PVT. LTD.		
	M/s	SIDHARTH & GAUTAM ENGINEERS		
	M/s	EBY FASTENERS		
	M/s	COMMERCIAL SUPPLYING AGENCY		
	M/s	LEADERS VALVES LTD.		
	M/s	M.S. FITTINGS MFG. CO. PVT. LTD.		
	M/s	SHIVANANDA PIPE FITTINGS,CHENNAI (ONLY SEAMLESS)		
	M/s	COMMERCIAL SUPPLYING AGENCIES, MUMBAI		

Item Code :		Item Description : FITTING BLOCK FORGED-STAINLESS STEEL		
1	C209	CSA FITTINGS	INDIA	MSL
2	C724	CHERO PIPING SPA	ITALY	MSL
3	E060	EBY FASTENERS	INDIA	MSL
4	F130	FLASH FORGE PVT LTD	INDIA	MSL
5	F624	FITTINOX SRL	ITALY	MSL
6	H172	HILTON METAL FORGING LIMITED	INDIA	MSL
7	I604	ITM S.R.L.		MSL
8	K645	KEONSAE HIGH PRESSURE CO.LTD.	SOUTH KOREA	MSL
9	L004	LEADER VALVES LTD	INDIA	MSL
10	M057	M.S. FITTINGS MFG. CO PVT LTD	INDIA	MSL

11	M507	MUNRO & MILLER FITTINGS LTD	U.K.	MSL
12	M731	M.E.G.A SPA	ITALY	MSL
13	T746	TK CORPORATION	SOUTH KOREA	MSL
14	W510	WILH SCHULZ GmbH	GERMANY	MSL

24	SW PIPE FITTING			
	M/s	ECHJAY INDUSTRIES PVT. LTD., MUMBAI		
	M/s	EBY, MUMBAI		
	M/s	TRUE FORGE		
	M/s	S&L		
	M/s	COMMERCIAL SUPPLY		
	M/s	M.S. FITTINGS		
	M/s	UNION TOOL		

Flanges:

S. NO.	SUPPLIER CODE	SUPPLIER NAME	COUNTRY	SOURCE
Item Code : 55AA		Item Description : FLANGE- CARBON STEEL		
1	A066	ANANDMAYEE FORGINGS PVT LTD	INDIA	MSL
2	A074	ABASI ENGINEERING WORKS	INDIA	MSL
3	B020	BHARAT FORGE LTD.	INDIA	MSL
4	B745	BRUCK GMBH ENSHEIM	Germany	MSL
5	C044	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA	MSL
6	C142	CD ENGINEERING CO.	INDIA	MSL
7	C159	CD INDUSTRIES	INDIA	MSL
8	E016	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA	MSL
9	F180	FIVEBROS FORGINGS PVT.LTD.	INDIA	MSL
10	G182	GOOD LUCK ENGINEERING CO.	INDIA	MSL
11	H172	HILTON METAL FORGING LIMITED	INDIA	MSL
12	I604	ITM S.R.L.		MSL
13	J067	JAV FORGINGS (P) LTD	INDIA	MSL
14	K108	KUNJ FORGINGS PVT LTD	INDIA	MSL
15	K180	KISAAN STEEL (P) LTD	INDIA	MSL
16	K189	KISAAN DIETECH PVT LTD	INDIA	MSL
17	K638	KOREA FLANGE	SOUTH KOREA	MSL
18	L089	LAL METAL FORGE LTD	INDIA	MSL
19	M011	METAL FORGINGS PVT LTD	INDIA	MSL
20	M057	M.S. FITTINGS MFG. CO PVT LTD	INDIA	MSL
21	M308	MAASS FLANGE INDIA PVT. LTD	INDIA	MSL
22	M680	MELESI OFFICINE AMBROGIO MELESI & C.SRL	ITALY	MSL
23	N593	NICOLA GALPERTI & FIGLIO S.P.A.	ITALY	MSL
24	O595	OFFICINE SANTAFEDE SRL		MSL
25	P215	PRADEEP METAL LIMITED	INDIA	MSL
26	P242	PARAMOUNT FORGE	INDIA	MSL
27	P315	P.K.TUBES & FITTINGS PVT.LTD.	INDIA	MSL
28	P708	PROMAT BD LTD MIDDLE EAST	UNITED KINGDOM	MSL

29	R186	R.N.GUPTA & CO. LTD	INDIA	MSL
30	R205	R D FORGE	INDIA	MSL
31	S064	SHAH INDUSTRIAL & COMML CORPORATION	INDIA	MSL
32	S394	SANGHVI FORGINGS & ENGINEERING LTD	INDIA	MSL
33	U116	UTSAH ENGINEERING PVT LTD(A CD ENGG COMP	INDIA	MSL
34	U537	ULMA FORJA S.COOP.	SPAIN	MSL
35	V608A	VALVITALIA SPA-TECNOFORGE DIVISION	ITALY	MSL
36	V633	VILMAR SA		MSL

7	CS AND SS FORGED FLANGE		
	M/s	ADITYA FORGE LTD.	
	M/s	ANANDMAYEE FORGING (P) LTD.	
	M/s	PUNJAB STEEL WORKS	
	M/s	ECHJAY FORGINGS PVT. LTD.	
	M/s	GOLDEN IRON AND STEEL WORKS	
	M/s	CHOUDHURY HAMMER WORKS PVT. LTD.	
	M/s	FORGE AND FORGE PVT. LTD.	
	M/s	INDUSTRIAL FORGE & ENGG. CO. LTD.	
	M/s	JAV FORGING PVT. LTD.	
	M/s	SIDHARTH & GAUTAM ENGINEERS PVT. LTD.	
	M/s	KUNJ FORGINGS	
	M/s	METAL FORGINGS PVT. LTD.	
	M/s	UMA SHANKAR KHANDELWAL & CO.	
	M/s	STEEL & INDUSTRIAL & FORGINGS LTD.	
	M/s	AMFORGE INDUSTRIES LTD.	
	M/s	BRIDGE & ROOF CO. (I) LTD.	
	M/s	BRITECH ENGINEERING WORKS	
	M/s	CD ENGINEERING CO.	
	M/s	CD INDUSTRIES, GHAZIABAD	
	M/s	MOD FABRICATORS	
	M/s	PRADEEP METAL LTD.	
	M/s	RP ENGINEERING PVT. LTD.	
	M/s	Echjay Industries, Mumbai /Rajkot,	
	M/s	Paramount Forge, Mumbai,	
	M/s	Tube Products Incorporate, Vadodara,	
	M/s	Sawan Engineers	

	ONSHORE ENGINEERING SERVICES DELHI	SUGGESTED VENDOR LIST	Volume	II
			Rev No.	7.5
		Doc no: OES/TD/INT/001	Discipline	PIPING
			Page : 52 of 132	

	M/s	Lal Metal Forge Ltd. - For Sizes up to 8" - Class up to #2500 - For Size 10" - Class up to #600 - For Size 10" to 60" - Class up to #300
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20	FLANGES	
	M/s	ECHJAY INDUSTRIES, MUMBAI
	M/s	PUNJAB STEEL, NEW DELHI
	M/s	GOLDEN IRON & STEEL, NEW DELHI
	M/s	FERROUS ALLOY FORGINGS, FARIDABAD
	M/s	STEWARTS & LLOYDS, KOLKATA
	M/s	METAL FORGING PVT. LIMITED, NEW DELHI
	M/s	BHARAT FORGE, PUNE.

21	FLANGES (DUPLEX SS)	
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23	FLANGES (SS NACE & NON NACE)	
	M/s	ECHJAY INDUSTRIES, MUMBAI
	M/s	CHAUDHRY HAMMERS WORKS, GHAZIABAD
	M/s	OFFICINE AMBROCIO MELESI & C.SRI, ITALY
	M/s	TUBE PRODUCTS INCORPORATE, VADODARA, INDIA
	M/s	OFFICINE NICOLA GALPERTI FIGLIO S.P.A, ITALY

24	SHRIMP FITTING	
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Item Code :		Item Description : FLANGE-STAINLESS STEEL		
1	A066	ANANDMAYEE FORGINGS PVT LTD	INDIA	MSL
2	B020	BHARAT FORGE LTD.	INDIA	MSL
3	B745	BRUCK GMBH ENSHEIM	Germany	MSL
4	C044	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA	MSL
5	C142	CD ENGINEERING CO.	INDIA	MSL
6	C159	CD INDUSTRIES	INDIA	MSL
7	C227	CHANDAN STEEL LTD	INDIA	MSL
8	E016	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA	MSL
9	F180	FIVEBROS FORGINGS PVT.LTD.	INDIA	MSL
10	G182	GOOD LUCK ENGINEERING CO.	INDIA	MSL
11	H172	HILTON METAL FORGING LIMITED	INDIA	MSL
12	J067	JAV FORGINGS (P) LTD	INDIA	MSL
13	K108	KUNJ FORGINGS PVT LTD	INDIA	MSL
14	K638	KOREA FLANGE	SOUTH KOREA	MSL
15	L089	LAL METAL FORGE LTD	INDIA	MSL
16	M011	METAL FORGINGS PVT LTD	INDIA	MSL
17	M308	MAASS FLANGE INDIA PVT. LTD	INDIA	MSL
18	M680	MELESI OFFICINE AMBROGIO MELESI & C.SRL	ITALY	MSL
19	M726	MAASS FLANGE CORPORATION	U.S.A.	MSL
20	N593	NICOLA GALPERTI & FIGLIO S.P.A.	ITALY	MSL
21	O595	OFFICINE SANTAFEDE SRL		MSL
22	P215	PRADEEP METAL LIMITED	INDIA	MSL
23	P242	PARAMOUNT FORGE	INDIA	MSL

S. NO.	SUPPLIER CODE	SUPPLIER NAME	COUNTRY	SOURCE
24	P315	P.K.TUBES & FITTINGS PVT.LTD.	INDIA	MSL
25	R205	R D FORGE	INDIA	MSL
26	S394	SANGHVI FORGINGS & ENGINEERING LTD	INDIA	MSL
27	U116	UTSAH ENGINEERING PVT LTD(A CD ENGG COMP	INDIA	MSL
28	U537	ULMA FORJA S.COOP.	SPAIN	MSL
29	V189	VIRAJ PROFILES LIMITED	INDIA	MSL
30	V608A	VALITALIA SPA-TECNOFORGE DIVISION	ITALY	MSL
31	V633	VILMAR SA		MSL

Stud nuts:

Item Code : D2CA		Item Description : FASTENERS		
1	A058	AEP COMPANY	INDIA	MSL
2	B728	BEA SRL	ITALY	MSL
3	D125A	DEEPAK FASTENERS LIMITED(DORAHA UNIT)	INDIA	MSL
4	F017	FASTENERS & ALLIED PRODUCTS PVT LTD.	INDIA	MSL
5	F027	FIX FIT FASTENERS MFG. PVT.LTD.	INDIA	MSL
6	H042	HARDWIN FASTENERS PVT LTD.	INDIA	MSL
7	I139	INDUSTRIAL ENGINEERING CORP.	INDIA	MSL
8	K133	KUNDAN INDUSTRIES LTD.	INDIA	MSL
9	K639	KOREA PARTS & FASTENERS (KPF)	SOUTH KOREA	MSL
10	L105	LAKSHMI PRECISION SCREWS LTD	INDIA	MSL
11	M105	MULTI FASTENERS PVT LTD	INDIA	MSL
12	M273	MEGA ENGINEERING PVT. LTD.		MSL
13	N110	NITIN FASTNERS PVT LTD	INDIA	MSL
14	O551	OME METALLURGICA ERBESE S.R.L.	ITALY	MSL
15	P008	PRECISION ENGG. INDUSTRIES	INDIA	MSL
16	P200	PRECISION AUTO ENGINEERS	INDIA	MSL
17	P258	PRESIDENT ENGINEERING WORKS	INDIA	MSL
18	P282	PIONEER NUTS & BOLTS PVT LTD	INDIA	MSL
19	P326	PANKAJ INTERNATIONAL	INDIA	MSL
20	S336	SYNDICATE ENGINEERING INDUSTRIES	INDIA	MSL
21	T710	TRIPLE FAST MIDDLE EAST LTD	DUBAI (UAE)	MSL
22	U109	UDEHRA FASTNERS LTD	INDIA	MSL
23	U177	UDEHRA MECHANICAL WORKS	INDIA	MSL

Gaskets:

GASKETS				
Item Code :	02AD	Item Description :	GASKET SPIRAL WOUND	
1	C055	CHAMPION JOINTINGS PVT LTD.	INDIA	MSL
2	D161	DAVE ENGINEERS PVT.LTD	INDIA	MSL
3	G132	GOODRICH GASKET PVT LTD	INDIA	MSL
4	I001	IGP ENGINEERS PVT. LIMITED	INDIA	MSL
5	M012	MADRAS INDUSTRIAL PRODUCTS	INDIA	MSL
6	N175	NEOSEAL ENGINEERING PRIVATE LIMITED	INDIA	MSL
7	S471	STARFLEX SEALING INDIA PVT LTD	INDIA	MSL
8	T210	TEEKAY FLOWFLEX PVT. LTD.	INDIA	MSL
9	U054	UNI KLINGER LTD	INDIA	MSL

EXTENDED WARRANTY			
29	GASKETS		
	M/s	MADRAS INDUSTRIAL PRODUCT, INDIA	
	M/s	IGP, INDIA	



PRICE BID FORMAT
PIPING ITEMS PACKAGE

ANNEXURE-C TO PEMC-7440
PROJECT NAME: ONGC CO GEN URAN

BHEL's Enquiry No & Date : Bidder to Specify
Bidder's Name : Bidder to Specify
Bidder's Offer No & Date : Bidder to Specify
Bidder's Ref No & Date : Bidder to Specify

SI No	Item Description	Lump sum Price (Rs.)
1	Piping Items Package as per BHEL Specification PY52279 and Annexure-A of PEMC-7440.	

NOTES:

- Bidders to quote Lump sum Price for the Total Package.**
- Price bids shall be evaluated on Overall L1 basis on the Total Lump sum Price quoted by the bidders.**
- All items of the Package are required to be quoted. Partial offers will not be considered for evaluation. No deviation is allowed.**
- Bidders to quote strictly as per the above price format. No other format is acceptable. Any tampering/ modification/ change of the above price format is not allowed and the bidder's offer is liable for rejection.
- The Total Lump price quoted shall be INCLUSIVE of Freight, Packing & Forwarding and Testing Charges.
- The Total Lump price quoted shall be EXCLUSIVE of GST, Third party inspection (TPI) & Insurance Charges.
- All the items of the Package shall be quoted as per tender specification and pre-bid clarifications, if any. Responsibility of ensuring correctness & completeness of scope of supply as per specification requirement solely lies with bidder.
- Bidder shall confirm submission of the unpriced bid as part of their technical offer by typing "QUOTED" in the above format.

**CHECKLIST FORMAT
PIPING ITEMS PACKAGE****ANNEXURE-D TO PEMC-7440
PROJECT NAME: ONGC CO GEN URAN**

BHEL's Enquiry No & Date : Bidder to Specify
Bidder's Name : Bidder to Specify
Bidder's Offer No & Date : Bidder to Specify
Bidder's Ref No & Date : Bidder to Specify

SI No	Description	Yes / No
1	Bidder to confirm that ALL THE DOCUMENTS SPECIFIED in Clause No 7.0 of purchaser's Job Specification (Doc.No. PEMC-XXXXX) are submitted along with the technical offer.	
	Unpriced Price Bid Format	YES
	Deviation Schedule	YES
	Stamped & Signed copy of PEMC-7440 and PY52279	YES
	Stamped & Signed copy of Bill of Material	YES
	Stamped & Signed copy of List of Approved Sub-Vendors	YES
	Stamped & Signed copy of Format for Manufacturing Quality Assurance Plan	YES

Bidder's Authorised Signature:

Date:

Bidder's Name:

Bidder's Seal:



**DEVIATION SCHEDULE
PIPING ITEMS PACKAGE**

**ANNEXURE-E TO PEMC-7440
PROJECT NAME: ONGC CO GEN URAN**

BHEL's Enquiry No & Date : Bidder to Specify
Bidder's Name : Bidder to Specify
Bidder's Offer No & Date : Bidder to Specify
Bidder's Ref No & Date : Bidder to Specify

SI No	Reference			BHEL Specification's Requirement	Deviation sought by Bidder
	Doc No	Page No	Clause No		

A. INSTRUCTIONS TO BIDDERS

1. All of bidder's deviations to the BHEL specification shall be intimated to BHEL in a consolidated manner in this document only. Deviations listed elsewhere will be summarily rejected and shall be ignored.
2. BHEL will clarify in writing to the bidder regarding the acceptance / non acceptance of the deviations sought by bidder.
3. In case no deviations are raised by bidder, it will be assumed that the bidder has accepted and confirmed to all the requirements of BHEL's specification in totality without any deviation.
4. No deviations other than those that have been specifically mentioned in this document and have been accepted by BHEL during the post-bid stage, will be accepted or allowed during the offer execution stage.
5. Additional sheets, if necessary for bidder's deviations, may be enclosed.

B. BIDDER'S DECLARATION.

1. We confirm that all our deviations to BHEL's specifications and its annexures are listed in this document only.
2. We confirm that except for those deviations, covered in this document, it will be our responsibility to fully meet the intent and the requirements of the specifications and all its annexures within the quoted price, without any deviation.

Bidder's Authorised Signature:

Date:

Bidder's Name:

Bidder's Seal:



PRE-BID QUERY FORMAT
PIPING ITEMS PACKAGE

ANNEXURE-F TO PEMC-7440
PROJECT NAME: ONGC CO GEN URAN

BHEL's Enquiry No & Date : Bidder to Specify
Bidder's Name : Bidder to Specify
Bidder's Offer No & Date : Bidder to Specify
Bidder's Ref No & Date : Bidder to Specify

SI No	Reference			BHEL Specification's Requirement	Bidder's Query / Observation	BHEL's Clarification
	Doc No	Page No	Clause No			
(To be filled by the Bidder)						(To be filled by BHEL)

A. INSTRUCTIONS TO BIDDERS

1. All of bidder's queries / clarifications / observations to the BHEL specification shall be intimated to BHEL in a consolidated manner in this document only.
2. BHEL will clarify in writing to the bidder all such queries / clarifications / observations raised by the bidder.
3. Decision of BHEL on all such queries / clarifications / observations raised by bidder will be final and binding on bidder.
4. In case no pre-bid query is raised by bidder, it will be assumed that the bidder has accepted and confirmed to all the requirements of BHEL's specification in totally without any deviation.
5. None of the bidder's queries / clarifications / observations (except those that have been specifically mentioned in this document and have been accepted by BHEL during the pre-bid stage) will be accepted or allowed during post bid stage / offer execution stage.
6. Additional sheets, if necessary for bidder's queries / clarifications / observations, may be enclosed.

B. BIDDER'S DECLARATION.

1. We confirm that all our queries / clarifications / observations to the BHEL's Specifications and its annexures are listed in this document only.
2. We confirm that except for those queries / clarifications / observations covered in this document, it will be our responsibility to fully meet the intent and the requirements of the specifications and all its annexures within the quoted price, without any deviation.

Bidder's Authorised Signature:

Date:

Bidder's Name:

Bidder's Seal:



FORMAT FOR MAUFACTURING QUALITY ASSURANCE PLAN
PIPING ITEMS PACKAGE

ANNEXURE-G TO PEMC-7440
PROJECT NAME: ONGC CO GEN URAN

	MANUFACTURING QUALITY PLAN				WO. NO.: 031/19-20	
	INSPECTION CATEGORY-B				QP. No.: GIPL/ITP/031/19-20	
	CUSTOMER: BHEL, HYDERABAD				Date: 12.06.2019	
	PROJECT: ONGC ORAN GTC		P.O. DATE: 17.05.2019		Rev.: 0.00	Date: 12.06.2019
M/S GUJARAT INFRAPIPES PVT. LTD.	PRODUCT: PIPE FITTINGS		BHEL SPEC: APPLICABLE BHEL SPEC.		REV:00	Page 1 of 1
53/A, MANGLEJ, NARESWAR ROAD, VADODARA						

SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT & ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY				REMARKS
									P	W	R		
1.0	RAW MATERIALS												
1.1	RAW MATERIALS PIPES	MECHANICAL & CHEMICAL PROPERTIES	MAJOR	MECH. , CHEM. ANALYSIS	Oneper lot/batch /heat	BHEL spec. ASME SPEC.	MILL TC/CHECK TEST REPORTS	✓	2	-	1	4	
2.0	INPROCESS INSPECTION												
2.1	FORMING	FORMING	MAJOR	-	100%	FORMING REPORTS	FORMING REPORTS	-	2	-	-		
2.2	HEAT TREATMENT	HEAT TREATMENT BATCH	MAJOR	TIME & TEMP. RECORDER	100%	ASME SPEC. BHEL SPEC.	HEAT TREATMENT REGISTER/CHART	✓	2	-	1	4	HT. CHART - (LOG SHEET)
2.3	CHEMICAL REQUIREMENT	CHEMICAL	MAJOR	ASME SPEC.	ONE TEST SAMPLE PER RM. HEAT	ASME SPEC.	LAB TEST REPORTS.	✓	2	-	1	2	
2.4	TENSILE REQUIREMENTS	MECHANICAL	MAJOR	UTS, YS & ELONGATION	ONE TEST SAMPLE PER RM. HEAT	ASME SPEC.	LAB TEST REPORTS.	✓	2	-	1	2	
2.5	NON DISTRUCTIVE TESTING	NDT	MAJOR	LPE ON BEVEL ENDS	100%	AS PER ASME SPEC./BHEL SPEC.	REPORTS	✓	2	-	1	4	
2.6	MARKING	ETCHING PUNCHING CONTROL NO.	MAJOR	SIZE , SCH , GARDE, RATTING TYPE , MONOGRAM , HEAT NO. ETC.	100%	AS PER PO & SPEC.	AS PER PO & SPEC.	-	2	-	1		
3.0	FINAL INSPECTION & TESTING												
3.1	FINAL INSPECTION	DIAMENTION INCLUDING THK., VISUAL	MAJOR	DIEMENTIONS	100%	ASME B16.9 & B 16.25	JOB CARD	-	2	1	4	1	10% WITNESS
3.2	PMI TEST	CONFORMANCE OF MATERIAL	MAJOR	PMI	100%	ASME SPEC.	QC TEST REPORTS	✓	2	4		1	
3.2	Review of MTC & Issue of IRN	TEST CERTIFICATE	MAJOR	AS PER PO./ ASME	100%	AS PER PO & SPEC.	Supplier test records & certificate	✓	2	-	1	4	hold
4.0	SURFACE PREPARATION & PAINTING												
4.1	COLOUR CODING	COLOUR CODE/MARKING	MAJOR	IDENTITY	100%	AS PER PO & SPEC.	QC RECORD	-	2	-	-		
5.0	PRESERVATION & PACKING												
	PACKING & PRESERVATION AS PER BHEL SPEC.												

NOTE: 1) All Testing Carried out at in-house Testing Facility.

2) Product test coupon are randomly selected by GIPL.

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL/BHEL NOMINATED INSPECTION AGENCY & CUSTOMER APPOINTED TPIA 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W, R & V COLUMNS. * FOR ITEMS MARKED (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.

★ 3- ONGC / ONGC TPIA.

PREPARED BY

APPROVED BY



VENDOR'S SIGNATURE & STAMP

BHEL QA SIGNATURE & STAMP

VCS QUALITY SERVICES PVT. LTD.

☒ A Approved

☐ B Approved With Comments

☐ C Comment APPROVED BY

☐ D Rejected

☐ E Informative

Review consent: Approved by the customer.

COMPANY shall not release the QNTVA 1.1

any liability shall be obligated under the QNTVA 1.1

Sign. & Date:

Name: CUSTOMER'S SIGNATURE & STAMP

20/06/2019
H. S. T. V.

VENDOR'S NAME &			MANUFACTURING QUALITY PLAN					QP No. MF / QC / 2023					
			Customer : BHEL, HYDERABAD Project :- ONGC URAN Product – FLANGE (ITEM NO. 00010)		BHEL PO NO. T718A00543 PO Date. 25.01.2019 BHEL Spec : PY 52088 REV-00, AA0851401 REV-04 Matl: ASTM A182 GR. F304 (Ed. 2018)			Rev No. R1 Date 21.02.2019 PAGE 1 OF 3 <i>Inspection Cat : B</i>					
SL No.	Process	Characteristics	Class	Type of check	Quantum of Check	Reference Document	Acceptance Norms	Format of record	* D	Agency P W V			Remarks
1.0	RAW MATERIAL INSPECTION												
1.1	Ingots & Blooms	Steel making Process	Major	Verification Of Steel mill's certificate	100% of TCs reviewed	As per BHEL spec.	As per BHEL spec.	Steel Mill's TC	√	2	–	1	Electric furnace, AOD. ✓
1.2		Check analysis	Major	Spectro analysis of Samples drawn	1 Sample per heat Received	As per BHEL spec.	As per BHEL spec.	MF Internal Report	–	2	–	1	
2.0	Forging	Forging step to be followed	Major	Dimensions as per process plan	–	Forging supplier	Internal	Logbook	–	2	–	1	Reduction ratio to be specified in the TC ✓
3.0	Heat treatment of forgings (Solution Annealed)	HT time temp cycles	Critical	Verification of HT time temp. charts	All cycles	As per BHEL spec.	As per BHEL spec.	HT Time Temp. charts ✓	√	2	–	1	
4.0	Test piece marking	Location of test specimen	Major	Test piece identification	All TPM done	As per BHEL spec.	As per BHEL spec.	TPM Report	–	2	1	–	T.P. location & orientation as per material specification. ✓

Legend: P Perform W Witness V Verification Indicate 1 for BHEL nominated Inspection agency-1 BHEL/BHEL nominated TPIA & 2 for vendor/sub vendor as appropriate against each component/characteristic under P W & V columns * for items marked √ (tick) in column D, test certificates shall be submitted to BHEL for records.

 VCS QUALITY SERVICES PVT. LTD.

- ☐ A. Approved
☒ B. Approved With Comments
☐ C. Commented/Revise and re-submit
☐ D. Rejected
☐ F. Information

Review, consent, Approval: _____
 COMPANY shall not relieve the CONTRACTOR from any liability shall or obligation under the CONTRACT

Sign. & Date:

Name:

[Signature]
 04/02/2019
 H. S. Kumar

Reviewed by  BHEL QA signature	Approved by Customer's signature & Stamp
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VENDOR'S NAME &			MANUFACTURING QUALITY PLAN					QP No. MF / QC / 2023					
			Customer : BHEL, HYDERABAD Project :- ONGC URAN Product - FLANGE (ITEM NO. 00010)		BHEL PO NO. T718A00543 PO Date. 25.01.2019 BHEL Spec : PY 52088 REV-00, AA0851401 REV-04 Matl: ASTM A182 GR. F304 (Ed. 2018)			Rev No. R1 Date 21.02.2019 PAGE 2 OF 3					
SL No.	Process	Characteristics	Class	Type of check	Quantum of Check	Reference Document	Acceptance Norms	Format of record	*	Agency			Remarks
									D	P	W	V	
5.0	Mechanical testing	Tensile & yield Strength, %Elong & %RA, IGC Practice-E - 250X	Major	Testing of specimen prepared	1 sample per heat per HT batch	As per BHEL spec.	As per BHEL spec.	Physical test reports	√	2	-	1	
6.0	Product Analysis	Chemical composition	Critical	Chemical analysis	1 sample per heat per HT batch	As per BHEL spec.	As per BHEL spec.	Spectro Report	√	2	-	1	
7.0	Dimensional inspection Surface finish weld edge preparation	Dimensions	Major	Dimensional checking	100% forgings	As per BHEL Drawing	As per BHEL Drawing	Dimensional report	√	2	1,3 (10%) Material to be witnessed by BHEL TPIA	1	
8.0	PMI	Material identification	Critical	PMI Testing	100%	As per Matl. Spec.	As per Matl. Spec.	PMI Report	√	2	1,3	-	Random Witness by "1",3

9.0 MTC, Stage 1 test report, 2

10.0 Release TPC

Legend: P Perform W Witness V Verification Indicate 1 for BHEL nominated Inspection agency-1 BHEL/BHEL nominated TPIA & 2 for vendor/sub vendor as appropriate against each component/characteristic under P W & V columns * for items marked √ (tick) in column D, test certificates shall be submitted to BHEL for records.

3- ONGC / ONGC Appointed TPI

Reviewed by	Approved by
 BHEL QA signature	Customer's signature & Stamp



VENDOR'S NAME & ADDRESS METAL FORGINGS PVT. LTD., NEW DELHI			MANUFACTURING QUALITY PLAN					QP No. MF / QC / 2023					
			Customer : BHEL, HYDERABAD Project :- ONGC URAN Product – FLANGE (ITEM NO. 00010)		BHEL PO NO. T718A00543 PO Date. 25.01.2019 BHEL Spec : PY 52088 REV-00, AA0851401 REV-04 Matl: ASTM A182 GR. F304 (Ed. 2018)			Rev No. R1 Date 21.02.2019 PAGE 3 OF 3					
			SL No.	Process	Characteristics	Class	Type of check	Quantum of Check	Reference Document	Acceptance Norms	Format of Record	* D	Agency P W V
9.0	Identification of forging	Stamping of identification marks on the forgings	Major	Verification Of the actual stamping	100% forgings	As per BHEL spec.	As per BHEL spec.	--	--	2	3	1	
10.0	Completeness of documents, test certificates, HT Charts,etc.		Major	Verification	Each forgings	As per PO / BHEL Spec.	As per PO / BHEL Spec.	Endorsement of all documents by TPIA	√	2	3	1	
11.0	Preservation & Packing		Major	Visual	100% forgings	As per PO / BHEL Spec.	As per PO / BHEL Spec.	--	--	2	--	--	

Note :- Third party inspection agency BHEL/BHEL nominated TPIA shall endorse all test reports, HT charts, Raw Material test certificates.

Legend: P Perform W Witness V Verification Indicate 1 for BHEL nominated Inspection agency-1 BHEL/BHEL nominated TPIA & 2 for vendor/sub vendor as appropriate against each component/characteristic under P W & V columns * for items marked √ (tick) in column D, test certificates shall be submitted to BHEL for records.

Reviewed by  BHEL QA signature	Approved by Customer's signature & Stamp
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3-hold

