

MAIN SUPPLIER'S NAME: BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL (A GOVERNMENT OF INDIA UNDERTAKING)											
NAME OF SUB-VENDOR: N/A											
NPCIL PO NO.: CMM/FTP/10-32-1-1152/e-PO/30447, DTD: 24.01.19											
QA REF. NOs.: MAIN VENDOR: 2190191 SUB VENDOR: N/A											
CUSTOMER: NUCLEAR POWER CORPORATION OF INDIA LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)											
PROJECT: 2x700MW GORAKHPUR HARYANA ANU VIDYUT PARIYOJANA (UNIT 1&2)											
EQUIPMENT: MODERATOR HEAT EXCHANGER											
DOCUMENT NO.: BHEL / NPCIL / 30447 / SS PIPE/ CDE-20-3469											
TITLE: TECHNICAL PURCHASE SPECIFICATION FOR SS PIPE (350 NB) TO SA 312 TP 316L											
न्यूक्लियर पावर कॉर्पोरेशन ऑफ इंडिया लिमिटेड Nuclear Power Corporation of India Limited ☒ अनुमोदित / APPROVED ☐ डिप्पणी के अनुसार अनुमोदित / APPROVED AS NOTED ☐ संविरचित को आगे बढ़ाएं / रोके / PROCEED WITH/HOLD FABRICATION ☐ अंतिम ट्रांसपेरेंसी एवं प्रतियाँ भेजें / SEND FINAL TRANSPARENCIES & PRINTS ☐ संशोधन करें एवं अनुमोदन के लिए पुनः प्रस्तुत करें / REVISE & RESUBMIT FOR APPROVAL <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 33%;">जॉचकर्ता / CHECKED BY</td> <td style="width: 33%;">समीक्षाकर्ता / REVIEWED BY</td> <td style="width: 33%;">अनुमोदन कर्ता / APPROVED BY</td> </tr> <tr> <td style="text-align: center;"> 13.3.2020 </td> <td style="text-align: center;"> 13/3/2020 </td> <td style="text-align: center;"> 13/3/2020 </td> </tr> </table> किए जानेवाले कार्य का अनुमोदन आपूर्तिकर्ता संविदाकर्ता को विनिर्देशनों के अनुसार आपूर्ति करने के उत्तरदायित्व से मुक्त नहीं करता है। This approval of the work to be done does not relieve the supplier of the responsibility of supply according to specifications.						जॉचकर्ता / CHECKED BY	समीक्षाकर्ता / REVIEWED BY	अनुमोदन कर्ता / APPROVED BY	 13.3.2020	 13/3/2020	 13/3/2020
जॉचकर्ता / CHECKED BY	समीक्षाकर्ता / REVIEWED BY	अनुमोदन कर्ता / APPROVED BY									
 13.3.2020	 13/3/2020	 13/3/2020									
01	12.03.2020	2+3 = 5	 12.03.2020 CD-SR-ADDN	 12/03/2020 (M. S. D.)	 12/03/2020 (LALIT ASNANI)						
00	04.03.2020	2+3 = 5									
REV NO.	DATE	PAGES	PREPARED BY	CHECKED BY	APPROVED BY						

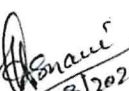
Rel email through - 13.03.2020.

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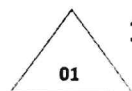
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	CONDENSER & HEAT EXCHANGER ENGG. DIVISION BHEL BHOPAL	Document No.
		BHEL / NPCIL / 30447 / SS PIPE/ CDE-20-3469
TECHNICAL PURCHASE SPECIFICATION FOR SS PIPE (350 NB) TO SA 312 TP 316L		

REVISION CONTROL SHEET

BHEL					
REV. No Date	PAGES	Description of Revision	Prepared By	Checked By	Approved By
00, 04.03.2020	2+3=5	Original submission.	-SD-	-SD-	-SD-
01, 12.03.2020	2+3=5	Document revised(as marked) for: a. Limitation of Cobalt & Carbon percentage is added. b. Pipes shall be hydrotest only. c. Requirement of UT is added.	 12.03.2020 (C.D.K. AUDHY)	 12/03/2020 (M. Waleed R.)	 12/03/2020 (LALIT ASNANI)

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1. Material specification:

- a) Material specification shall be pipes as per SA 312 TP 316L with chemical restriction of carbon and cobalt $\leq 0.03\%$.
- b) General requirements as per SA 999.
- c) Deleted.

2. Quantity/ Size: As per enquiry / Purchase Order.

3. Tolerance: As per SA 312 TP 316L.

4. Manufacture: All pipes shall be seamless and Cold Drawn.

5. Marking: Pipe shall be properly marked as per specification and must be correlated with the test certificates provided.



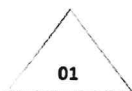
6. Testing: Each pipe shall be hydro tested as per SA-999.



7. Each pipe shall be UT tested as per NB 2552.

8. Heat treatment: All pipes shall be in solution-annealed condition as per material specification.

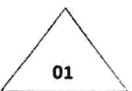
9. Test certificate required:



a) Test certificate shall be in accordance with material specification. Material supplied to this specification shall conform to applicable requirements of specification SA 999 of ASME Sec.II-part A (Edition 2017).

b) Mechanical properties & chemical composition shall be as per material specification (with chemical restriction of carbon and cobalt $\leq 0.03\%$).

c) Flattening test as per clause no. 11.3 of SA 312 TP 316L.



d) IGC test as per A 262 Practice-E.

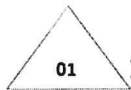
e) UT tested as per NB 2552.

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10. Additional requirements:

- a) Test certificates shall be provided.
- b) Finished pipe shall be reasonably straight with smooth ends. Surface defects like any sign of cracks, lappings, pitting etc. are not acceptable. Repair by welding is not permitted.

11. Vendor List: Material meeting the technical specification requirements shall be procured from BHEL Approved Vendors only.



12. Testing Matrix: - Vendor to carry all the test in NPCIL approved lab in-line with testing matrix attached as Annexure-A, in presence of NPCIL QS.

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ANNEXURE-A

TESTING MATRIX									
PRODUCT	MOC	SUPPLY CONDITION	CHEMICAL (HEAT & PRODUCT)	TENSILE	IGC	IMPACT	FLATTENING TEST	HYDRO TEST	UT
PIPE	SA 312 TP 316L	AS PER CL 6.1.2 OF SA-312 Co-0.03 % max. C-0.03 % max.	AS PER TABLE-1 OF SA-312	AS PER TABLE 4 OF SA-312	AS PER ASTM A 262 PRACTICE E	NA	AS PER CLAUSE 11.3 OF SA-312	AS PER 22.2 of SA-999	NB 2552

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