

ADDENDA 01 TO TECH. SPEC NO BHEL/NPCIL/30599/INCOLOY 800 TUBES/CDE-19-3410

NPCIL'S REPLIES ON DEVIATIONS/CLARIFICATIONS FOR SUPPLY OF INCOLOY 800 TUBES FOR D2O HEAT EXCHANGER

SL. NO.	APPLICABLE CLAUSE NUMBER OF SPECIFICATION NO. BHEL/NPCIL/30599/INCOLOY 800 TUBES/CDE-19-3410 & DRG. NO. 1-16503-40835,836,837,838,839	DEVIATION/CLARIFICATION SOUGHT FROM NPCIL	NPCIL RESPONSE
1	Clause 4.9: vendor to follow.....after tube bending.	The acceptance criteria for Hardness shall be 95 HRB. maximum. However, we shall try our best in maintaining Hardness between 70 to 95 HRB.	The requirement of hardness value range (70-95) HRB has been reviewed at our i.e. NPCIL end and the same is acceptable subject to meeting all the technical requirements as per NPCIL specification. However tube manufacturer shall put maximum effort to achieve Hardness value in the range of 75-95 HRB
2	Clause 8.1 a: Manufacturingmelting.....and testing.	Our Process Start from Extrusion of Round Bar to Mother Hollows to Finish Product. Other Activity like Steel Melting, Ingot pouring are not part of our Process. However, we shall provide the Round Bar Test Certificate for your review.	Tender specification requirements shall be adhered
3	TR 10 of Drgs.	Two Nos of low density PU plugs shall be inserted on each tubes as per drg. These plugs can be removed by applying air pressure up to 5 to 8 bar.	Tender specification requirements shall be adhered

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4	Clause 5.1.5 & 5.1.6	We shall perform test on mock up sample only.	All this parameters shall be checked & established during bending qualification
5	Clause 6.1	None of the manufacturing activity shall be available for witness.	Tender specification requirements shall be adhered
6	Clause no.4.3: Unit of halogen and sulphur content-	Unit should be $\mu\text{g}/\text{dm}^2$ for surface contamination against specified ppm limit for the content in the consumables.	Tender specification requirements shall be adhered
7	Clause no.4.8: Surface finish on OD/ID of tube –	1.6 microns(CLA) should be changed to 1.6 microns Ra.	Acceptable
8	Clause 4.9: vendor to follow.....after tube bending.	Considering the thin wall thickness , we propose HR30T method.	The requirement of hardness value range (70-95) HRB has been reviewed at our i.e. NPCIL end and the same is acceptable subject to meeting all the technical requirements as per NPCIL specification. However tube manufacturer shall put maximum effort to achieve Hardness value in the range of 75-95 HRB

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29/12/2019

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9	Clause 4.11: IGC test	The specimen shall be sensitized by heating it up to 650 Deg C, soaking for 15 min and then water quenching. Rising time between 450 Deg C and 650 Deg C $\leq$ 1.5 Min.	Tender specification requirements shall be adhered
10	Clause no. 4.12: Stress Corrosion Cracking test-	The tube specimen shall be bent 180° to the shortest radius instead of specified 28mm.	Tender specification requirements shall be adhered
11	Clause 4.13.4 one flare test.....length	One flare test each tube shall be made on both ends of the tubes at time of cutting to length (test performed on straight legs over length cropping)	Acceptable
12	Clause no.4.15: Tube repaired shall be clearly identified and repaired to purchaser.	A Repair/ reconditioning procedure describing the repair/ reconditioning process and acceptance criteria will be submitted for approval. During production, repaired tubes shall be accepted/ rejected by vendor without purchaser's approval. vendor considers that the purchaser specification approval is obtained once the reconditioning procedure is approved. The list of repaired tubes shall be provided as a part of final documentation.	Tender specification requirements shall be adhered

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13	Clause no. 4.18 Marking and identification	Tube shall be marked either directly on each tube by electro etching or by means of a tag attached to the tube .	Tagging not acceptable. Also refer reply at point 30.
14	Clause 4.20 Testing for material mix up	We will use thermoelectric contact method.	Tender specification requirements shall be adhered
15	Clause 6.1.4 d Measure the ovality.....section	We suggest to delete the requirement of non-circularity.	Tender specification requirements shall be adhered
16	6.1.4 g Non-circularity.....drg.	We suggest to delete the requirement of non-circularity (no requirement on purchase drg.)	Tender specification requirements shall be adhered
17	Clause 5.1.1 After U-bending.....side of the bends	Solution annealing will be performed by Joules effect method (bent part + 150 mm on each straight length) with tube bore protection by an inert gas. Outside solution annealed surface will show a thin, adherent oxide layer.	Only qualified method shall be used and final specification requirement shall be complied.
18	Clause 5.1.3 After hydro.....the bend	Deletion of the requirement for LPE. Nevertheless, we agree keeping LPE on 100% of the shortest radius and 2 % of the balance.	Tender specification requirements shall be adhered
19	Clause 5.1.4 In addition totube end.	We propose to replace this requirement by flaring test described in 4.10 with an expansion of 30 % instead of 20 %. Nevertheless, we agree keeping LPE on 100% of the shortest radius and 2 % of the balance.	Tender specification requirements shall be adhered
20	Clause 5.1.7 ball pass test	We will use a nylon ball	Teflon ball shall be used.

Agreed
16/11/19

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21	Clause 7.1 After cleaning.....halogen free.	In order to facilitate the removal of plugs, we suggest to use felt plug to be blowed.	Tender specification requirements shall be adhered
22	Clause 7.1 Each tube.....both end.	This requirement is not consistent with a long storage in tropical condition. We propose our standard practice for SG tube i.e. - The boxes are internally covered with an overall plastic sealed wrap for sea transportation. - Prior to sealing the inside plastic lining, desiccant bags are introduced in to the box and secured in adequate locations in condition that prevent any direct contact of the desiccant bags with the tube surfaces.	Tender specification requirements shall be adhered
23	Clause 7.2 The supplierduring the shipment.	We suggest to change the sentence to: the supplier shall be responsible for shipment and safe delivery of tubes to the destination, specified in the pertinent tender document/PO. Only CIF incoterms shall be selected.	Tender specification requirements shall be adhered
24	Clause 8.2 Reports c) Non-destructive.....defect accepted.	All NDE data are not anymore available under the form of recording strips. These data are digital and can be read at any time. They are not provided along with the final documentations as they need a	Tender specification requirements shall be adhered

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19/09/2019

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		specific proprietary software to be read. Instead of providing recording strip for UT , we propose to provide the list of tubes with indication greater than 50% of the reference defect as it is done for SG product.	
25	Tube drawings: 1-16503-40835,836,837,838839 Note 6- Each bent tube shall be checked for passage by ball test using a ball size (9.2+0/-0.1) as per NPCIL approved ball pass test approval.	We will use a nylon ball	Teflon ball shall be used.
26	Tube drawings: 1-16503-40835,836,837,838839 Note 10 Vendor to insert.....with supply	In order to facilitate the removal of plugs, we suggest to use felt plug to be blowed.	Tender specification requirements shall be adhered
27	Clause 5.16 -in U bend.....the bend. Tube drawings: 1-16503-40835,836,837,838,839 Tube dimension. The required wall thickness is 1.15 - 0/+0.115 mm	This wall thickness is not achievable. we propose a wall thickness of 1.15 mm -0/+0.20mm	Tolerance on thickness shall be -0 +15%
28	Clause 4.0 Material, process, workmanship & requirements	Material Modified to DMV 800 L modified with: 0.30% ≤Si ≤0.70% 0.40% ≤Mn ≤ 1.0% P ≤0.015% C ≤0.015%	Tender specification requirements shall be adhered

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		Cu ≤ 0.075% Ti/C ≥ 12 Ti/(C+N) ≥ 8 N+P ≤ 0.04%	
29	Clause 8.1 a: Manufacturingmelting.....and testing.	We request you to remove this hold point inspection of raw material manufacturing and hallow making. We are getting raw material supplied from same past suppliers and hallow will be produced at our mill. This is inline with earlier supplied project of NPCIL.	Tender specification requirements shall be adhered
30	Drg TR 5 Each tube.....electro etching.....material of construction.	Marking will be done as per specification. We specify that we will use Vibro-etch and we can mark by Vibro-pen only the tube number as per previous orders, already accepted by NPCIL for past supplies.	May be accepted subject to no reduction in thickness and no signal during ID ECT at BHEL. BHEL Note: Acceptable subject to demonstration of no reduction in thickness and no signal during ID ECT after marking at vendors work before dispatch. Further, in case of failure at BHEL work on this ground, Tubes have to be replaced free of cost by vendor.
31	Clause 7.1 & Drg TR 10	Felt plug can be removed by purging dry air/ N2 through the inner dia of the tube. the use of removal tool is not needed and not practical for these small OD tubes. same procedure has been applied by us in all past supplies to NPCIL.	Tender specification requirements shall be adhered
32	Clause 4.14.2.4 outer dia.....ultrasonic probe	we confirm checking of outer dia on whole length of the tubes however proposes checking by laser on two axis. we underline same method has been used on all past supplies for NPCIL.	Present specification requirement shall be complied however the compliance requirement shall be demonstrated by laser checking.

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33	Clause 4.19 Value of F & S to be proposed by the bidder	We proposes F&S < 50 µg/dm ²	Acceptable
34	clause 5.1.10 Operations listed in clause 4.18 to 4.20 & 7.0 to be done after bending	PMI will be executed according to criteria specified in the specification, Our finishing line is designed in a way that NDT is done immediately after PMI, so only conform tubes proceed in further operations. This doesn't have any implications on PMI result. Our mill is setup in a fix way and handling this particular order with changing all the layout of our machines is not possible/ necessary.	May be accepted subject to meeting all other requirement as per specification
35	Clause 8.2 d HT chart to be supplied	we confirm that all heat treatment chart related to annealing of straight tube will be supplied. referring to HT of U-bend tube, we proposes to supply one sample chart per each heat exchanger in line with past supplies with NPCIL.	Tender specification requirements shall be adhered
36	Clause 4.9: vendor to followafter tube bending.	We propose Hardness in the range of 70HRB-95 HRB. It is not possible to achieve hardness above 85HRB on solution annealed tube. hardness 85-95 is theoretically achievable only on cold hardened tubes which are not in the scope of this specification. Also kindly refer clause 4.2 of this specification which ask to keep at a min. cold work induced by straightening after heat	The requirement of hardness value range (70-95) HRB has been reviewed at our i.e. NPCIL end and the same is acceptable subject to meeting all the technical requirements as per NPCIL specification. However tube manufacturer shall put maximum effort to achieve Hardness value in the range of 75-95 HRB

6/2/19
9/11/19

ADDENDA 01 TO TECH. SPEC NO BHSL/NPCIL/30599/INCOLOY 800 TUBES/CDE-19-3410
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37	Clause 8.2 c Graph of UT and ECT to be supplied	treatment: this is in contradiction with the specified hardness range. we propose to supply only graphs of calibration tubes. Other records will be kept at our mill and available for review on request. Same procedure has been applied by us on all supplies for NPCIL.	UT/ECT record in hard form or soft copy with readability to be provided.
38	Annexure-I Flaring test.....tube.	Flaring test to be performed on one tube lot. Kindly refer to clause 4.13.4 which states that the extent of flare test is one per lot we ask for confirmation that this is the applicable frequency of testing and not the one defined in annexure -I (which would require flaring test on 100% of the tubes.) We propose to perform LPE on 5% of the flaring test specimen.	Tender specification requirement to be followed. Sample plan shall be as per Annexure-I
39	5.15 In U bend.....5% max.	In line with past supplies ovality 6% max is proposed.	vendor to note that, in bend radius less than 75 mm, the ovality shall be less than 6 %. whereas for balance bend radius, the ovality shall be less than 5%.

Signature
Date 10/10/19