

**Mandatory Pre-Qualification requirements for Vortex flow meter
W96415002910(dual sensor) & W96415002902(single sensor) as per TG60665**

Description: - The vortex flow meter is used to measure volume flow of De-mineralized water at outlet of stator winding in Turbo generators. The vortex flow meters shall be suitable for mounting in horizontal/vertical direction of flow with flanged connections.

Mandatory Pre-Qualification requirements

- 1.0 Vendor should have experience of supplying vortex flowmeter in thermal power plants. The vendor should be a regular manufacturer of Vortex flow meter with following technical requirements-

Sl No.	Parameter	Value
(i)	Application fluid	DM Water
(ii)	Flow rate	$\geq 50 \text{ m}^3/\text{hr.}$
(iii)	Working Pressure	1.5 bar (minimum)
(iv)	Measuring accuracy	$\pm 0.75\%$ or better
(v)	Electrical output	4-20 mA, 2 wire output HART protocol
(vi)	No. of sensor	Single/ Dual
(vii)	Turn Down Ratio	Not less than 10:1.

- 2.0 In support of Sl. No. 1 above, vendor shall furnish technical details in below mentioned format for at least five (5) nos. of vortex flow meter for the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies meeting requirements as per point no. 1 above.

Sl. No.	Purchase Order (PO) No. /Date	Qty. (Nos.)	Application Fluid	Flow Rate	Working Pressure	Measuring Accuracy	Electrical Output	Turn Down Ratio
			DM Water					

- 3.0 Vendor to furnish the test certificate for calibration and hydraulic test of vortex flow meter for any one of the P.O. submitted against clause 2. Vendor to also furnish the NABL accreditation details of calibration facility.
- 4.0 Vendor to submit experience certificate from the end user for successful operation of the vortex flowmeters in thermal power plants for at least two years. Original Experience Certificate or through e-mail from the customer. Certificate shall contain information like item details and its application or correlation with P.O. The Experience certificate should not be older than 10 years from the date of enquiry.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.



न्यूक्लियर पावर कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
NUCLEAR POWER CORPORATION OF INDIA LTD.
(A Government of India Enterprise)
गुणवत्ता आश्वासन निदेशालय
Directorate of Quality Assurance
नाभिकीय ऊर्जा भवन, अणुशक्तिनगर, मुंबई-400 094
Nabhikiya Urja Bhavan, Anushaktinagar, Mumbai-400094
Corporate Identification No. U40104MH1987GOI149458



अक्कला रामू Akkala Ramu

उत्कृष्ट वैज्ञानिक Outstanding Scientist

अधिकासी निदेशक (गुणवत्ता आश्वासन) Executive Director (QA)

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संख्या /No. NPCIL/ED (QA)/2025/M/ 95

तिथि: March 27, 2025

Sub: Updated List of approved brands of welding consumables (for Non-Nuclear Applications i.e., for jobs which are not designed and manufactured as per ASME Section III)

The lists of approved brands of welding consumables for use on NPCIL jobs (for Non- Nuclear Applications) as on 27.03.2025 are enclosed herewith:

- 1) List of approved Carbon steel & Low Alloy Steel Welding Electrodes (2 sheets)
- 2) List of approved Stainless Steel & other Ni Alloy electrodes (1 Sheets)
- 3) List of Approved Brands of Wire and Wire flux combination (1 Sheets)

The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev3) and ASME Section II Part C. Testing/ Qualification for each lot/batch wherever called for in specific cases shall be carried out before use on jobs.

Please note that the lists attached with this letter are for **Non-Nuclear** uses (i.e., for jobs which are not designed and manufactured as per ASME Section III). **A separate list is maintained for Nuclear Applications and same shall be referred for ASME Section III jobs.** It may be noted that **approved Brands for Nuclear Applications can be used for Non-Nuclear jobs also if specification requirements are met.**

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27/03/2025
(अक्कला रामू Akkala Ramu)
Executive Director (QA)

For information to all concerned through NPCIL QAD Webpage

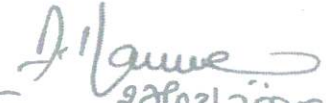
1). LIST OF APPROVED CARBON STEEL AND LOW ALLOY STEEL ELECTRODES AS ON 27.03.2025
FOR **NON- NUCLEAR USE**

(Note: The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev:3) and ASME Section II Part C. Testing/ Qualification for each lot/batch wherever called for in specific cases shall be carried out before use on jobs. This list is for **Non-Nuclear** uses (i.e., for jobs which are not designed and manufactured as per ASME Section III). **A separate list is maintained for Nuclear Applications and same shall be referred for ASME Section III jobs. Approved Brands for Nuclear Applications can be used for Non-Nuclear jobs also if specification requirements are met.**)

SR. NO	MANUFACTURERS	BRAND NAME	AWS NO.	VALID UP TO
1.	ADOR WELDING LIMITED, SILVASSA	MOLYTEN	SFA 5.1 E7018-A1	July 2026
2.	ADOR WELDING LIMITED, SILVASSA	CROMOTEN	SFA 5.5 E8018-B2	July 2026
3.	ADOR WELDING LIMITED, SILVASSA	CROMOTEN C	SFA 5.5 E9018-B3	July 2026
4.	ADOR WELDING LIMITED, SILVASSA	TENALLOY Z PLUS	SFA 5.1 E7018-1	July 2027
5.	ADOR WELDING LIMITED, SILVASSA	SUPABASE X PLUS	SFA 5.1 E7018	February-2029
6.	ROYAL ARC ELECTRODES LTD, UMBERGAON	ROYAL THERM SPL.	SFA 5.1 E7018-1	March 2027
7.	ROYAL ARC ELECTRODES LTD, UMBERGAON	ROYAL CHROME 1	SFA 5.5 E8018-B2	July 2028
8.	ROYAL ARC ELECTRODES LTD, UMBERGAON	ROYAL CHROME 2	SFA 5.5 E9018-B3	July 2028
9.	ROYAL ARC ELECTRODES LTD, UMBERGAON	ROYAL THERM MOLY	SFA 5.1 E7018-A1	July 2028
10.	ROYAL ARC ELECTRODES LTD, UMBERGAON	Royal S	SFA 5.1 E6013	September 2028
11.	ROYAL ARC ELECTRODES LTD, UMBERGAON	Royal Therm	SFA 5.1 E7018	September 2028
12.	RAAJRATNA ELECTRODES PVT. LTD, AHMEDABAD	RATNA 7018	SFA 5.1 E7018	April 2029
13.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	EXOBEL	SFA 5.1 E6013	May 2026
14.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	MEDIO	SFA 5.1 E6013	May 2026
15.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	SUPRATHERME	SFA 5.1 E7018	May 2026
16.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	MOLYTHERME	SFA 5.1 E7018-A1	May 2026
17.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST LH-18	SFA 5.1 E7018	August 2026

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27/03/2025

18.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST LH-18-1	SFA 5.1 E7018-1	August 2026
19.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST CROMO 0500	SFA 5.1 E7018-A1	July 2026
20.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST CROMO 1500	SFA 5.5 E8018-B2	July 2026
21.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST CROMO 2251	SFA 5.5 E9018-B3	July 2026
22.	SUPERON SCHWEISSTECHNIK IND. LTD, MANESAR	SUPER 6013S	SFA 5.1 E6013	June 2026
23.	SUPERON SCHWEISSTECHNIK IND. LTD, MANESAR	SUPER 7018	SFA 5.1 E7018	June 2026
24.	SUPERON SCHWEISSTECHNIK IND. LTD, MANESAR	SUPER 7018S	SFA 5.1 E7018-1	June 2026


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 (अक्कला रामू Akkala Ramu)
 Executive Director (QA)

2). LIST OF APPROVED STAINLESS-STEEL & OTHER ALLOY ELECTRODES AS ON 27.03.2025 FOR
NON- NUCLEAR USE

(**Note:** The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev:3) and ASME Section II Part C. Testing/ Qualification for each lot/batch wherever called for in specific cases shall be carried out before use on jobs. This list is for **Non-Nuclear** uses (i.e., for jobs which are not designed and manufactured as per ASME Section III). **A separate list is maintained for Nuclear Applications and same shall be referred for ASME Section III jobs. Approved Brands for Nuclear Applications can be used for Non-Nuclear jobs also if specification requirements are met.**)

SR. NO	MANUFACTURER	BRAND NAME	AWS No.	VALID UP TO
1.	ADOR WELDING LIMITED, SILVASSA	BETANOX-DL	SFA 5.4 E309L-16	July 2026
2.	ADOR WELDING LIMITED, SILVASSA	SUPERINOX-2C	SFA 5.4 E316L-16	July 2026
3.	ADOR WELDING LIMITED, SILVASSA	SUPERINOX-1C	SFA 5.4 E308L-16	July 2026
4.	ADOR FONTECH LIMITED, BENGALURU	LH511	SFA 5.11 ENiCu-7	December 2025
5.	ADOR FONTECH LIMITED, BENGALURU	LH-521	SFA 5.11 ENiCrFe-3	December 2025
6.	D&H SECHERON ELECTRODES PVT. LTD, INDORE.	RUTOX-D	SFA 5.4 E316L-16	May 2026
7.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	RUTOX-B	SFA 5.4 E308L-16	May 2026
8.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	Cronitherme- 25/12	SFA 5.4 E309-16	May 2026
9.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	D&H-1212 (NS)	SFA 5.11 ENiCrFe-3	May 2026
10.	D&H SECHERON ELECTRODES PVT. LTD, INDORE	D&H-1250	SFA 5.11 ENiCu-7	May 2026
11.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST 308L	SFA 5.4 E308L-16	August 2026
12.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST 316L	SFA 5.4 E316L-16	August 2026
13.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST 309L	SFA 5.4 E309L-16	August 2026
14.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	WELDFAST 309 MoL	SFA 5.4 E309LMO-16	August 2026


27.03.2025
(अक्कला रामू Akkala Ramu)

Executive Director (QA)




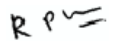


3) LIST OF APPROVED BRANDS OF WIRE AND WIRE FLUX COMBINATION AS ON 27.03.2025 FOR
NON- NUCLEAR USE

(Note: The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev:3) and ASME Section II Part C. Testing/ Qualification for each lot/batch wherever called for in specific cases shall be carried out before use on jobs. This list is for **Non-Nuclear** uses (i.e., for jobs which are not designed and manufactured as per ASME Section III). **A separate list is maintained for Nuclear Applications and same shall be referred for ASME Section III jobs. Approved Brands for Nuclear Applications can be used for Non-Nuclear jobs also if specification requirements are met.**)

SR NO	MANUFACTURERS	BRAND NAME	AWS NO.	VALID UPTO
1.	ADOR WELDING LIMITED, SILVASSA	TIGINOX-308L	SFA 5.9 ER308L	July 2026
2.	ADOR WELDING LIMITED, SILVASSA	TIGINOX-309L	SFA 5.9 ER309L	July 2026
3.	ADOR WELDING LIMITED, SILVASSA	AUTOMIG 70S-6	SFA 5.18 ER70S-6	April 2029
4.	ADOR WELDING LIMITED, SILVASSA	AUTOMELT B71 +AUTOMELT EH14	SFA 5.17 F7A2- EH14	February 2029
5.	ADOR WELDING LIMITED, SILVASSA	TIGFIL 90S-B3	SFA 5.28 ER90S- B3	January 2026
6.	ADOR WELDING LIMITED, SILVASSA	TIGFIL 70S-2	SFA 5.18 ER70S-2	July 2027
7.	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 308L	SFA 5.9 ER308L	November 2026
8.	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 316L	SFA 5.9 ER316L	November 2026
9.	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 309L	SFA 5.9 ER309L	November 2026
10.	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 347	SFA 5.9 ER347	November 2026
11.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	MIGFAST-1	SFA 5.18 ER70S-6	August 2026
12.	WELDFAST ELECTRODES PVT. LTD, NAGPUR	TIGFAST-3	SFA 5.18 ER70S-2	August 2026


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 (अक्कला रामू Akkala Ramu)
 Executive Director (QA)


NUCLEAR POWER CORPORATION OF INDIA LIMITED

P.O. NO. : CMM/ETM/00-40-11-0005/PO/48907B Dated : 27.03.2023		QUALITY ASSURANCE PLAN				QAP NO.: KAIGA-5&6/QAP/64000/00025	
		ITEM: FLOW METER (Vortex Type)				REV. NO. 00 DATE: 28.07.2025	
		Safety class: NINS		QS Grade: QS-4		Page 1 of 7	
PROJECT: KAIGA 5 & 6		NAME OF PACKAGE: TURBINE ISLAND PACKAGE PO NO. (NPCIL): CMM/ETM/00-40-11-0005/PO/48907				NPCIL QS reference no. 2240334(BHEL)	
NAME OF PACKAGE CONTRACTOR/MAIN CONTRACTOR AND ADDRESS		CONCERNED BHEL UNIT AND ADDRESS		NAME OF VENDOR/SUB VENDOR AND ADDRESS			
BHARAT HEAVY ELECTRICALS LIMITED, NEW DELHI.		HEAVY ELECTRICAL EQUIPMENT PLANT, BHEL RANIPUR, HARIDWAR-249403, UTTARAKHAND.					
DATA SHEET/VSS NO./DRG NO.	ITEM	BRIEF DESCRIPTION	DESIGN CODE/ SPEC. NO.	FOR VENDOR/SUB VENDOR			AFFIX STAMP OF VENDOR/SUB VENDOR
As per BHEL Spec. TG60665	Flowmeter	Vortex type Flowmeter	TG60665		PREPARED BY	CHECKED/REVIEWED BY	APPROVED BY
FOR PACKAGE/MAIN CONTRACTOR 1) All the requirements of PO, Specification, Drawing, Datasheet, are incorporated in this QAP. 2) Stage wise inspection documents shall be concluded/completed with signature of inspection agency including NPCIL QS before taking up and presenting the next stage of inspection.			AFFIX STAMP & SIGNATURE OF PACKAGE/MAIN CONTRACTOR	SIGNATURE	---		
				NAME			
				DATE			
				FOR NPCIL			
	CHECKED BY	REVIEWED BY	APPROVED BY		CHECKED BY	REVIEWED BY	APPROVED BY
SIGNATURE				SIGNATURE			
NAME	SACHIN JAIN Dy. Manager-Q.A.	ARVIND SWAMI Sr. DGM-Q.A.	SHRI P. K. BANSAL AGM-QA, QC-Block 1, CML & MRL	NAME	R.Padmanabhan	Subhajit Das ACE (TG&BOP-C&I)	N. K. Paul AD (TI & NP)
DATE	28.07.2025	28.07.2025	28.07.2025	DATE	30-07-2025	31-07-2025	31.07.2025


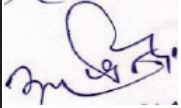

QAP REVISION CONTROL SHEET

SL. NO	Description of Revision	No of Pages	Revision no with date
1.	QP OF FLOW METER (VORTEX TYPE)	06	Rev no. 00 Dated 30.06.2025
2.	QP OF FLOW METER (VORTEX TYPE)	06	Rev no. 00 Dated 08.07.2025
3.	NPCIL comments incorporated	07	Rev no. 00 Dated 28.07.2025


R P = Subhjit Dm.

MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN					PROJECT: KAIGA 5&6 NAME OF THE PACKAGE: TURBINE ISLAND PACKAGE MAIN CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD, HARIDWAR									
 BHEL	VENDOR'S NAME As per NPCIL approved vendor list	ITEM	FLOW METER (Vortex Type)		QP NO.	KAIGA-5&6/QAP/64000/00025											
				REV.	00	Date: 28.07.2025											
		Drg. No. & Rev.	-														
		Spec. & Rev.	TG60665		Page 3 of 7												
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY				REMARKS	NAME & SIGNATURE WITH DATE			
									P	W	R	H		1	2	3	4
1	2	3	4	5	6	7	8	9	10				11	12			

1.0	RAW MATERIAL												Refer Note 5 of GR.				
1.1	Flange, body, sensor, bluff body and all water contact parts (SS316)	Chemical composition	Major	Review	1 sample /lot	TG60665	TG60665	MTC	3	-	2	-					
2.0	FINAL INSPECTION																
2.1	Visual & Dimensional check	--	Major	Measurement	100%	TG60665	TG60665	IR	3	1, 2	-	-					
2.2	Insulation Resistance Test	--	Major	Electrical	100%	TG60665	TG60665	COC	3	-	1,2	-					
2.3	Hydraulic test	--	Major	Physical	100%	TG60665	TG60665	IR	3	1,2	-	-					
2.4	Calibration test (5 point)	--	Major	Physical	100%	TG60665	TG60665	IR	3	1,2	-	-					
2.5	Electrical output check	--	Major	Electrical	100%	TG60665	TG60665	IR	3	1, 2	-	-					
2.6	Compliance to technical specification	--	Major	Review	100%	TG60665	TG60665	COC	3	-	2	-					
2.7	Degree of protection	--	Major	Review	100%	TG60665	TG60665	COC	3	-	1,2	-					
2.8	Dry Heat and Damp heat test	--	Major	Review	100%	TG60665	TG60665	COC	3	-	1,2	-					
2.9	EMI / RFI test	--	Major	Review	100%	TG60665	TG60665	COC	3	-	1,2	-					
2.10	Marking	--	Major	Review	100%	TG60665	TG60665	-	3	-	2	-					
2.11	Packing	--	Major	Review	100%	TG60665	TG60665	-	3	-	2	-					

MANUFACTURER /SUB VENDOR	LEGEND: A) AGENCY 1) NPCIL, 2) PACKAGE/MAIN CONTRACTOR, 3) MANUFACTURER/SUB CONTRACTOR/SUB VENDOR 4) NOMINATED INSPECTION AGENCY /APPROVED LAB B) ACTIVITY: H: HOLD POINT," P" PERFORMED BY, "W" WITNESSED BY AND "R" REVIEW BY AS APPROPRIATE. MTC: Material test certificates, IR: Inspection report, COC: Certificate of conformance.	SEAL & SIGNATURE OF MAIN /PACKAGE CONTRACTOR	 SACHIN JAIN Dy. Manager-Q.A. BHEL Haridwar	 ARVIND SWAMI Sr. DGM-Q.A. BHEL Haridwar	 Shri P. K. BANSAL AGM-QA, QC-Block 1, CML & MRL, BHEL Haridwar
SEAL SIGNATURE WITH DATE					

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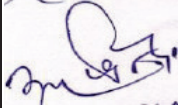

MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN						PROJECT: KAIGA 5&6								
 BHEL	VENDOR'S NAME As per NPCIL approved vendor list		ITEM		FLOW METER		QP NO.	KAIGA-5&6/QAP/64000/00025		NAME OF THE PACKAGE: TURBINE ISLAND PACKAGE MAIN CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD, HARIDWAR							
			(Vortex Type)		REV.	00	Date: 28.07.2025										
			Drg. No. & Rev.		-												
		Spec. & Rev.		TG60665			Page 4 of 7										
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY				REMARKS	NAME & SIGNATURE WITH DATE			
									P	W	R	H		1	2	3	4
1	2	3	4	5	6	7	8	9	10				11	12			

NOTE : DOCUMENTS REFERRED IN QAP WILL BE SHOWN TO NPCIL DURING INSPECTION AT MANUFACTURER'S WORKS.

REFERENCE DOCUMENTS

DOCUMENT NO	TITLE
TG60665	VORTEX TYPE FLOW METER

- Testing and Inspection:**
1. Hydraulic test: test pressure: 24 Kg/cm²; duration 3 minutes, no leakage
 2. Wet calibration process to be followed with application fluid (water). In case calibration is done with some other fluid medium co-related calibration test certificates with application fluid i.e. water shall be furnished by the vendor.
 3. Dimension checks of instrument as per BHEL approved vendor's drawing check of electrical output (4-20 mA) at different mass flow rate up to max limit.

MANUFACTURER /SUB VENDOR	LEGEND: A) AGENCY 1) NPCIL, 2) PACKAGE/MAIN CONTRACTOR, 3) MANUFACTURER/SUB CONTRACTOR/SUB VENDOR 4) NOMINATED INSPECTION AGENCY /APPROVED LAB B) ACTIVITY: H: HOLD POINT," P" PERFORMED BY, "W" WITNESSED BY AND "R" REVIEW BY AS APPROPRIATE. MTC: Material test certificates, IR: Inspection report, COC: Certificate of conformance.				
SEAL SIGNATURE WITH DATE		SEAL & SIGNATURE OF MAIN /PACKAGE CONTRACTOR	 SACHIN JAIN Dy. Manager-Q.A. BHEL Haridwar	 ARVIND SWAMI Sr. DGM-Q.A. BHEL Haridwar	 Shri P. K. BANSAL AGM-QA, QC-Block 1, CML & MRL, BHEL Haridwar

R P

Subhjit Dm.

General Requirements for Quality Assurance Plans of Turbine Island Package for Kaiga-5&6

Legends used in Quality Assurance Plan:

W: Witness, not hold, BHEL to give advance notice to customer to associate during checks/tests but work shall proceed.

R: Review of records (by customer as indicated under column 'C').

H / CHP: Customer Hold Point

MTC: Material Test Certificate

Obs. Sheet: Observation Sheet

LS: Log Sheet

COC: Certificate of Compliance

Abbreviations:

CRITICAL: - The characteristic of a component, process or operation failure of which will surely cause operating failure or intermittent troubles which is difficult to rectify at site or render the unit unfit for use or cause safety hazards.

MAJOR : - The characteristic of a component, process or operation whose failure may cause operation failure which cannot be readily corrected at site or cause substandard performance, increased erection and maintenance cost, reduce life or seriously affect aesthetics.

MINOR : - The characteristic of a component, process or operation whose failure neither materially reduce the usability of the product in operation nor does it affect the aesthetic aspects

1. H / CHP - Customer Hold Point: NPCIL QS witness/clearance is mandatory before proceeding with further activities. This activity shall be kept under hold till inspection clearance or written waiver is obtained from the agency responsible for this stage (NPCIL QS/their authorized representative).
2. W-Witness point: Witness points are critical steps in manufacturing and examination/inspection/testing where the supplier is obliged to notify NPCIL QS sufficiently in advance (at least 7 days) the start of the operation / test so that the same may be witnessed. The above notice periods are for BHEL shop Manufactured items only. For Sub-Contracted Items notice period for "W" shall be 15 days. The supplier may proceed with the work past a witness point in consultation with NPCIL, QS or their authorised representative.
3. All test reports, test certificates & Quality control records shall be reviewed & accepted by BHEL before submitting the same for the review of NPCIL QS.

Arvind K. Swami

BHEL, HEEP/QA

राजेश द्विवेदी

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4. Castings shall be procured from NPCIL / BHEL approved Foundries. Pouring for casting (Body & Disc) shall be done along with test bar. First pouring of casting i.e. first piece in case of identical items for same vendor, will be witnessed by the supplier i.e. BHEL / NPCIL approved TPIA & sub vendor (as applicable). SS casting and forging shall be received in pickled & passivated condition. 7 days in advance intimation shall be given to all agencies.
5. Raw-material on the basis of co-related original or co-related computer generated material test certificate (MTC), originated from OEM (sealed and signed by OEM) from NPCIL / BHEL approved material manufacturer is acceptable. In absence of co-related material test certificate, all items will be PMI tested for establishing no. of heat /lot. And subsequent tests as per material standard to be conducted on sample basis. Sampling will be decided on the basis of PMI. The samples for chemical and mechanical tests shall be drawn and witnessed by BHEL / NPCIL Approved TPI / NPCIL, as mutually agreed. Chemical and mechanical tests shall be conducted in NPCIL approved / NABL accredited laboratory only. BHEL QS shall submit all, MTCs and test reports after their review & acceptance to NPCIL, QS for final review and clearance. This review / verification & clearance by NPCIL QS is CHP. Stamping of raw material and stamp transfer shall be done by BHEL QS / NPCIL QS.
6. Wherever Customer Hold Point (CHP) is indicated, the supplier is to notify NPCIL QS or its authorised representative at least 7 days in advance. The above notice periods are for BHEL shop Manufactured items only. For Sub-Contracted Items notice period for "CHP" shall be 15 days.
7. Sample selection, for random witnessing of the inspection, examination, testing shall be done by NPCIL QS. Sampling plan, unless otherwise indicated, should generally be in accordance with IS 2500, Part-I, AQL:1%, Normal Level-II. (Refer - QAD/MISC/PROC/ SAMPLING /001 Rev.: 0).
8. All the procedures mentioned in the QAP like NDE procedures, hydro test, WPS etc. shall be checked, reviewed and approved by BHEL before submitting to NPCIL for approval. All NDE procedures shall have approval of Level III qualified personnel and prepared by Level- II person of BHEL or Sub-vendor.
9. The heat treatment furnaces shall have temperature recorder and valid calibration report. Calibration shall be done as per national standard /international standard/ as per NPCIL specification, if specified. All the calibration report will be checked by the NPCIL QS.
10. Calibrated instruments/gauges/thermocouples etc. shall be used during inspection and testing.
11. All NDT shall be carried out by Level-I/Level-II/Level-III & evaluated by Level -II/Level-III qualified person from SNT-TC-1A / ISO 9712 / IS 13805.
12. Chemicals used for LPT and MPT shall be from NPCIL approved brands only. BHEL will review TC's and reports before submitting to NPCIL.
13. Welding consumables shall be from NPCIL approved brand list. BHEL need to submit certified material test report (CMTR) certificate as per ASME BPVC II C for welding consumables to be used for jobs of NINS. All batches of electrodes shall be tested as per referencing document.
14. Supplier can prepare their own NDE procedures meeting requirement of NPCIL specification and submit for approval. Alternatively, NPCIL procedure can be adopted by the supplier. The supplier shall submit the same and technique sheet along with modification, if any, for approval.
15. Inspection stages in the QAP are considering suppliers are from India based on past experience. In case of foreign suppliers, the QAP remains same, but the stage inspection extent (witness and hold points) may change, based on the type and strength of supplier to be finalized after mutual discussion. Change in inspection extent will depend upon the participation of BHEL during manufacturing of items in foreign countries. It is expected that the participation of BHEL will be same or more as indicated in the QAP.

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16. Spares shall undergo same testing/inspection requirements as per original items.
17. All items shall be stamped by vendor's name/monogram apart from item description, size, serial no., class, material code, rating, grade, etc. and meeting MSS-SP-25 and NPCIL specification.
18. Certified material test report (indicating material, size, item description, lot no., heat no., NDE report nos., check test certificate, vendors final certificate nos., etc.) shall be submitted.
19. The contractor / manufacturer shall prepare "History Docket" for the items supplied, compiling various inspection / test reports and also other relevant documents as per the tender specification/NPCIL procedure, and submit to NPCIL QS prior to issue of complete/ final Shipping Release (SR) (on completion of entire PO/SPO). As the final SR will be a part of History Docket, issuance of final SR & review of History Docket by NPCIL, QA shall be done simultaneously.
20. Bevel end/ SW ends shall be suitably protected from any damage.
21. In case of material/item acceptable to NPCIL on the basis of certificate of compliance(COC), the same to be provided by OEM and shall be certified by BHEL.
22. Reference documents as mentioned in Quality Assurance Plan shall be shown to Customer at the time of inspection for BHEL shop manufactured items.
23. Brazier and Brazing Procedure Qualification shall be NPCIL approved. Brazier and Brazing Procedure Qualification shall be done in the presence of NPCIL QA representative. Only approved Brazier by NPCIL shall perform NPCIL jobs.
24. During manufacturing, only latest revision of drawings/specifications/procedures/code shall be used.
25. Whenever witnessing (W) by NPCIL is specified in QAP, BHEL's representative shall also witness the test.
26. Inspection call should be raised such that there is optimisation of visits and inspection activities.

Note on GR:

Wherever, BHEL/NPCIL is mentioned, BHEL shall mandatorily carry out inspection activities and submit the reports to NPCIL QS for review and clearance.

However, BHEL can go ahead for further manufacturing activities based on their own review and acceptance.

NPCIL reserves the right to carry out inspection activities as per QAP.

BHEL will inform the manufacturing/inspection stages well in advance to NPCIL QS.

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