Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
PROJECT ENGINEERING MANAGEMENT
NOTICE INVITING TENDER (NIT)

Enquiry No- 77/23/6187/SUM Date- 12-Dec-24

BHEL invites offers from reputed Suppliers as per following terms and conditions -

1. Tender Type	Open Tender (Domestic-Indian)	
2. Mode of Enquiry	E - PROCUREMENT	
3. Project	Framework Agreement (Rate Contract) of AUX PRDS	
4. Executing Agency	BHEL-PEM	
5. Package	AUX PRDS	
6. Whether Package is DIVISIBLE or NON - DIVISIBLE	DIVISIBLE	
7. Due Date & Time	**23 December 2024**	**12:00 PM**
8. Earnest Money Deposit (EMD)	Not Applicable	
9. Tender Cost	NIL	
10. Numbers of Part bid	**2-Part bid (Techno-Commercial and Price Bid)**	
11. Technical Scope	As per Tech. Spec No: PE-TS-20-145-H105B REV No. 0	
12. Pre-Bid clarifications	Suppliers to contact BHEL-PEM (over phone/ mail/ visit-BHEL-PEM) for any clarification (Technical or Commercial) at least 05 days before the due date of Tender opening & get it clarified well before the due date, so that offers by the Suppliers may be submitted within the due date & time.	
13. Prequalification Requirement	Financial PQR- YES	Technical PQR- YES
14. Delivery terms	For Supply Portion: FOR Despatch Station	
15. Delivery Schedule: -		
Engineering	Drawing/ documents submission & re-submission schedule shall be as per Technical Specification: PE-TS-RC1-142-H001 REV No. 0	
Main Supply ("**A"**)	• 320 days from the date of PO (for Unit-1, Unit-2 and common area) Additional 90 days for one or two additional unit i.e. 410 days in case of 3 and 4 units.	
Mandatory Spares	150 days from BHEL clearance date.	
Supervision of E&C	Bidder to depute its service engineer for respective site activity within 15 days from BHEL's intimation.	

Notes:

a. Supplier to start manufacturing/supply only after getting the applicable Primary engineering Drgs. /docs approved from BHEL/End Customer.

b. Drawings /documents submission/re-submission schedule shall be as per Technical specification (PE-TS-RC1-142-H001 REV No. 0) which shall be used for progress monitoring purpose and required course correction, if any.

c. The delivery date specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.

d. The delivery conditions specified are for contractual purposes. However, to meet project requirement, BHEL may ask for early deliveries without any compensation thereof.

2.0 Validity of contract placed on basis of Framework Agreement (Rate Contract) for individual projects (PO rates, terms and conditions):

Vendor has to make supply of goods/services as per the delivery time mentioned above. However, due to unavoidable circumstances if delay happens in providing inputs/ clearances (inputs, Engineering approvals, deputing inspector for inspection, issuance of MDCC and any hold imposed owing to site issues etc.) for which delivery time extension is admissible as per point no.3, in such situation it shall be obligatory at vendor part to execute the contract at PO rates, terms and conditions where inputs/ clearances has been accorded within validity of contract. Validity period for various activities shall be as defined below or as mentioned in the NIT.

2.1 Contract for main supply shall be valid for **365** ('C') days from the PO date. In case of more than 2 units, validity period will be increased by supply time considered for subsequent units. However, delay at vendor's end (if any) shall be added to the validity period and contract validity shall get extended by the delay period at vendor's end.

For example: Original Delivery period for main supply: A (in days)

Delay at vendor's end: B (in days beyond "A" days)

Contract validity: C+B (in days)

Notes:

a. B is the Vendor delay days beyond original contractual delivery period for main supply /extended delivery period owing to time taken by BHEL.

b. Main supply, applicable in the contract released/ cleared for manufacturing within contractual validity period, to be supplied by vendor/supplier at PO rates, terms and conditions.

c. Execution of the contract quantities released beyond contract validity period shall be decided on mutual consent basis at PO rates, terms and conditions.

3.0 Delivery Extension: Extension of contractual delivery time:

Delivery time mentioned in the NIT includes Engineering completion time (time for drawing/document submission/resubmission by the vendor and review/approval of the same by the BHEL/End customer), manufacturing, inspection, Packing and dispatch time. Due diligence is to be observed by the vendor to ensure timely completion of engineering and supply.

During the execution of the contract, time loss occurred owing to the reason attributable to BHEL besides force majeure shall be considered for delivery time extension to the vendor as given below: -

i. Any Delay in providing comments/ approval on Primary drawing/documents beyond the stipulated time as specified in NIT.
ii. Time Loss in approval of the drawing/document as a result of increase in the iteration not attributable to the vendor (i.e. resubmission owing to end customer comments) as certified by BHEL. Time extension equivalent to the resubmission time noted in the tech. spec and consequential increase in the approval time in lieu of increase in iteration shall be applicable. However, for incomplete re- submission time loss shall be in vendor account.
iii. Delay in providing engineering input/material by BHEL.
iv. Delay in deputing inspector for inspection and delay in release of MDCC in line with GCC
v. Any hold put by BHEL for whatever reasons during execution of contract (within contract validity period), time extension equivalent to hold period shall be admissible. However, in the event hold period continues for more than 30 days then, an additional fifteen days for the purposes of mobilization and demobilization of resources shall also be admissible.

Note: Extension in delivery period if any with or without imposition of LD shall be considered after detailed delay analysis based on provisions given above. However, no delay analysis will be applicable if supply is completed within delivery schedule as specified in Purchase order.

16. **Liquidated Damages (LD):**

a) Liquidated Damages (For Main Supply): Buyer reserves the right to recover from the Supplier, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent of the undelivered portion of main supply contract price excluding GST per week or part thereof, subject to a maximum of ten (10) percent of the undelivered portion of main supply contract price excluding GST, if the Supplier fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

b) Liquidated Damages (For Mandatory Spares): Buyer reserves the right to recover from the Supplier, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent of the undelivered portion of mandatory spares contract price excluding GST per week or part thereof, subject to a maximum of ten (10) percent of the undelivered portion of mandatory spares contract price excluding GST, if the Supplier fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

c) Liquidated Damages (For e learning Module): LD shall be applicable @ ½ percent of the total value of e learning module excluding GST per week or part thereof. However, total LD shall be limiting to 10% of the total value of e learning module.

d)) Liquidated Damages (on Service Portion): LD shall be applicable @ ½ percent, of the total service contract value excluding GST per week or part thereof. However, total LD (main supply and services) shall be limiting to 10% of cumulative total undelivered portion contract value (main supply +services) excluding GST.

17. **Guarantee Terms:** As per Clause No-12.0 except Clause no 12.2 (b) of General Commercial Terms & Condition of GCC Rev 07.		
18. Validity of offer shall be as per Clause no. 7 (Instruction to Suppliers) of GCC Rev 07.		
19. CIF Content	Not Applicable	
20. Integrity Pact Applicability	YES	
21. In line with Cl. No. 12 of (ITB) GCC Rev07, following Independent External Monitors (IEMs) have been appointed by BHEL. Shri Otem Dai, IAS (Retd.) (iem1@bhel.in) Shri Bishwamitra Pandey, IRAS (Retd.) (iem2@bhel.in) Shri Mukesh Mittal, IRS (Retd.) (iem3@bhel.in)		
22. Performance Security (PS)	PS Applicability	No Performance Security (PS) against the current enquiry for Framework Agreement (Rate Contract) for Tender package. However, Suppliers to note that Performance Security shall be submitted for orders placed by Project Groups of BHEL-PEM on the Framework Agreement (Rate Contract). Successful Supplier/s will have to submit Performance Security for each POs (irrespective of value) which will be placed under the Framework Agreement (Rate Contract) finalised through this tender considering FA (RC) as original contract as per the format given in GCC Rev 07. Relevant details of the PS to be submitted on the basis of Framework Agreement (Rate Contract) as following:
		Validity of PS: As per clause no. 11.0 of General Commercial Terms and Conditions of GCC Rev 07. **PS Submission:** PS should be in favour of BHEL-PEM. Supplier may opt any of the following for submission of Performance Security: -
		Initially 10% of the contract value (total Ex-works price). However, 5% of the contract value (as above) will be released after completion of Main Supply based on certification by Project Group/ Purchaser. OR 5% of the contract value (total Ex-works price). Additional 5% of the contract value will be retained from first bill & subsequent bill(s) of the same

		contract. The retention amount will be released after completion of Main Supply based on certification by Project Group/ Purchaser.
	Modes of Deposit	Performance security may be furnished in the following forms: a) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL. b) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL. c) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL). d) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL). e) Insurance Surety Bond. (Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith) Performance Security is to be furnished within 14 days from the date of PO and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the Supplier, including warranty obligations.
	Remarks for PS	a) The performance security will be forfeited and credited to BHEL's account in the event of a breach of contract by the supplier. b) Performance security should be refunded to the contractor without interest, after he duly performs and completes the contract in all respects but not later than 60 (sixty) days of completion of all such obligations including the warranty under the contract. The Performance Security shall not carry any interest.

23. Breach of contract, Remedies and Termination (Tenderer to note that this clause will supersede any clause regarding recovery amount from Tenderer due to Breach on contract mentioned anywhere in GCC Rev07 and its Corrigendum)	In case of Breach of Contract, BHEL shall recover 10% of the contract value from the Supplier using following instruments: (i) Encashment of security instruments like EMD, Performance Security with executing agency (PEM) against the said contract. (ii) Balance amount (if value of security instruments is less than 10% of the contract value) from other Financial remedies i.e. available bills of the Supplier, retention amount etc. with executing agency (PEM). (iii) Balance amount from security instruments like EMD, Performance Security and other Financial remedies i.e. available bills of the Supplier, retention amount etc. with other units of BHEL. (iv) If recovery is not possible then legal remedies shall be pursued. However, Supplier shall continue performance of the Order/ Contract, under all circumstances, to the extent not cancelled.

24. **Tender Evaluation – Price will be finalized through RA** The evaluation currency for this tender shall be INR. Evaluation will be done on overall L1 (Total Package Price including Freight excluding taxes) basis with necessary loading as applicable.

    In the course of evaluation, if more than one Supplier happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 Suppliers.

    In case more than one Supplier happens to occupy the L-1 status even after soliciting discounts, the L-1 Supplier shall be decided by a toss/ draw of lots, in the presence of the respective L-1 Supplier (s) or their representative(s). Ranking will be done accordingly. BHEL's decision in such situations shall be final & binding.

25. Terms & Conditions: - The Terms & Conditions shall be as per enclosed Special Conditions of the Contract (copy enclosed), GCC Rev 07 & Corrigendum 01 to GCC Rev-07 which is available on www.pem.bhel.com and other Terms and Conditions included in this Enquiry Letter.

26. **Payment Terms:**

    i) **For Main Supply**: As per clause No. 9.1 of General Commercial Terms and Conditions of GCC, Rev 07.
    ii) **For e learning module:** 100% payment against Supply after certification from BHEL-PEM/S&CE department.
    iii) **For Mandatory Spares**: As per clause No. 9.1 of General Commercial Terms and Conditions of GCC, Rev 07.
    iv) **For Supervision of E&C**: As per clause No. 9.5 of General Commercial Terms and Conditions of GCC, Rev 07.

27. **Reverse Auction:**
    BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com on "Supplier registration page") for this tender. RA shall be conducted among all the Techno-Commercially qualified Suppliers.
    Price Bids of all the Techno-Commercially qualified Suppliers shall be opened and same shall be considered as initial bids of Suppliers in RA. In case any Supplier(s) do(es) not participate in online

Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

28. Supplier to note that this is an Open Tender enquiry & Reverse Auction participation shall be subject to following condition:
    a. Qualifying Technical Pre-Qualification Requirement.
    b. Techno-Commercial acceptance of offer by BHEL-PEM.
    c. Registration in BHEL-PEM for the Tender package.

    The Suppliers who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at https://pem.bhel.com/Bhel_Supplier_section.aspx >online supplier registration (https://supplier.bhel.in/). All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

29. Clause no 9.6 (excluding Notes) of GCTC of GCC Rev. 07 shall be read as-
    "Suppliers shall submit billing documents for payment directly to BHEL. Payment will be released within days as mentioned below after submission of complete documents as per clause no 9.7.2 - 9.7.5:
    a. 90 days for non-MSME as per MSMED Act.
    b. 45 days for Suppliers qualified and registered as Micro and Small Enterprises MSEs as per MSMED Act.
    c. 60 days for Suppliers qualified as Medium Enterprises as per MSMED Act."

30. Suppliers are requested to refer clause no 26.0 (Make in India) of instructions to Supplier of GCC Rev 07. Further, following shall be taken into consideration for submitting bids by Suppliers:

    - For this procurement, Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders issued by the respective nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT. In the event of any nodal ministry prescribing higher or lower percentage of purchase preference and / or local content in respect of this procurement, same shall be applicable. Suppliers are requested to go through the above-mentioned orders and submit their in adherence to Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders.
    - Minimum Local Content prescribed for Tender package by Nodal Ministry is 70% and hence for this procurement, as per Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders issued by the nodal ministry, **this package is reserved for only Class-I supplier having Minimum local Content 60%**. Class-II and Non-Local suppliers are not eligible to quote for this enquiry.

31. Purchase preference to MSE Supplier: Yes.

32. Framework Agreement (Rate contract) shall be done with Two (02) Suppliers in the ratio of 70:30 at L1 Total F.O.R. Site Price (Ex-Works + Freight) for this package. For splitting order, L1 Rates (Ex-works + Freight) shall be counteroffered to remaining techno-commercially approved Suppliers.

33. GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order,2017 shall be applicable for order splitting and order finalization.

34. If none of the Supplier accepts counteroffered L1 Rates (Ex-works + Freight), then contract shall be awarded to L1 Supplier for 100% value.

35. **Schedule of Pre-Bid discussion-**
Date of Meeting: 17.12.2024, Time :15:00 hrs.

Place: Bharat Heavy Electricals Limited, Power Sector - Project Engineering Management, 3rd Floor, BHEL Sadan, Plot No.25, Sector-16A, Noida-201301, Uttar Pradesh, India

Interested bidders are requested to confirm their participation for Pre-Bid Discussion (PBD) meeting either by physical meeting at above mentioned place or through Video Conferencing (VC) on 17.12.2024. VC Link is given below:

Through: Microsoft Teams
Meeting ID: 476 821 741 480
Passcode: kd2hT9ju

36. **Last Date for seeking clarification: 16.12.2024**
Along with soft version also, addressing to following:

1. Kumar Suman Saurabh/ Mgr.-CMM
M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
3rd Foor, BHEL SADAN,
Plot No 25, Sector-16 A, Noida-201301
E-MAIL: sumansaurabh@bhel.in
Ph. No. 9718771765

2. Manish Kumar Sinha/ Sr. Mgr.-CMM
M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
3rd Floor, BHEL SADAN,
Plot No 25, Sector-16 A, Noida-201301
E-MAIL: manish.sinha@bhel.in
Ph. No. 0120-6748120

37. All corrigenda, addenda, amendments, time extensions, clarifications, etc. to the tender will be hosted on BHEL website (www.bhel.com), https://eprocurebhel.co.in/nicgep/app & BHEL-PEM website (https://pem.bhel.com/Home.aspx). Suppliers should regularly visit websites to keep themselves updated.

38. If Supplier mentions Not Applicable/ Not Required/ Not Quoted in BHEL price format, the same to be substantiated by the Supplier. If such item is required to be supplied for system completion in future, same will be supplied free of cost.

39. All other correspondence thereof shall be addressed to the undersigned by name & designation and sent at the following address:

Manish Kumar Sinha/ Sr. Mgr.-CMM **M/s Bharat Heavy Electricals Ltd.,** Project Engineering Management, BHEL SADAN, Plot No 25, Sector-16 A, Noida-201301 E-MAIL: manish.sinha@bhel.in Ph. No. 0120-6748120	**Kumar Suman Saurabh/ Mgr.-CMM** **M/s Bharat Heavy Electricals Ltd.,** Project Engineering Management, BHEL SADAN, Plot No 25, Sector-16 A, Noida-201301 E-MAIL: sumansaurabh@bhel.in Ph. No. 9718771765

40. GST shall be payable extra at actual as per the HSN code finalized for the items during detailed BBU.

41. GeM Seller ID shall be mandatory before placement of order/ award of contract to the successful Supplier.

42. Suppliers to quote freight charges in percentage of their quoted Total Ex-works Prices. Supplier to quote non-zero freight % for supply.

43. Over all (%) quantity variation: The variation on overall package value shall be limited to +/-30% of the contract value.

44. Suppliers shall Quote for the entire Scope. Partial scope is not acceptable.

45. Suppliers to ensure that Third party/ Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/ certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and e - mail Id etc. Offer of only those Suppliers shall be considered further, who meets the PQR criteria. Suppliers to furnish latest verification details for checking veracity of document(s) by BHEL. In case the same found not available, Purchaser has right to reject such document from evaluation. Format for the same is below: -

Sl. No.	Project Name	Customer Name, Contact Address, Phone No. & Email ID	Contract/ Order No.	Value of Contract/ Order	Brief of Work	Completion Date

46. Self-declarations/ auditor's/ accountant's certificates submitted by the manufacturer/ supplier may be verified randomly by the committee constituted as per MoP Order 28-07-2020. In case of false documents/ misrepresentation of the facts requisite action against such manufacturer/ supplier will be taken based on the recommendation of the Committee.

47. Suppliers to comply Govt. of India, Ministry of Power, Order no.-25-111612018-PG dated 02/07/2020 regarding mandatory testing of all the Imported items/ Equipment's/ Components.

48. This item/ Package falls under the list of items defined in Para 3 of Ministry guideline ref no. F.20/2/214-PPD(Pt.) dated 20-09-2016 (in respect of procurement of items related to public safety, health, critical security operations and equipment's, etc.) & hence no relaxation of PQR for start-up/ MSME Suppliers is envisaged for the items/ Package.

49. The Supplier declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Supplier(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Supplier is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

50. The offers of the Suppliers who are under suspension as also the offers of the Suppliers, who engage the services of the firms debarred across BHEL, shall be rejected. The list of firms debarred across BHEL is available on BHEL web site www.bhel.com.

1.0 Integrity commitment, performance of the contract and punitive action thereof:

1.1. Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Supplier(s) in a transparent and fair manner, and with equity.

1.2. Commitment by Supplier/ Supplier/ Contractor:

1.2.1. The Supplier/ supplier/ contractor commits to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.

1.2.2. The Supplier/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.

1.2.3. The Supplier/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any Supplier/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in malpractices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such Supplier/ supplier/ contractor as per extant guidelines of the company available on www. bhel.com and/or under applicable legal provisions".

51. A Supplier shall not have conflict of interest with other Suppliers. Such conflict of interest can lead to anticompetitive practices to the detriment of Procuring Entity's interests. The Supplier found to have a conflict of interest shall be disqualified. A Supplier may be considered to have a conflict of interest with one or more parties in this bidding process, if:

a) they have controlling partner (s) in common;' or

b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or

c) they have the same legal representative/ agent for purposes of this bid; or

d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Supplier; or

e) Supplier participates in more than one bid in this bidding process. Participation by a Supplier in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ assemblies from one bidding manufacturer in more than one bid, or

f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/ dealer. There can be only one bid from the following:

1. The principal manufacturer directly or through one Indian agent on his behalf; and
2. Indian/ foreign agent on behalf of only one principal,

Or

g) A Supplier or any of its affiliates participated as a consultant in the preparation of the design or Technical specifications of the contract that is the subject of the Bid, or
h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/ management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Suppliers must proactively declare such sister/ common business/ management units in same/ similar line of business.

52. All the above terms and conditions, post-bid agreements/ MoMs (during Techno- Commercial evaluation) shall automatically become a part of the Order/Contract after its finalization.

53. Suppliers to note that offers shall be submitted strictly in accordance with the requirements of tender documents. Suppliers shall upload their complete offer meeting the requirements of the tender documents on e-procurement portal https://eprocurebhel.co.in/nicgep/app.
Following documents need to be uploaded:
- Offer forwarding/ Covering letter with Un-price bid, Deviation Sheet (Cost of Withdrawal-Annexure III).
- Documents required for meeting Technical PQRs (Part of Tech. Spec. in Annexure - IV).
- Local content certificate (Annexure - VIII) in line with Make in India Order dated 19.07.2024 along with AGM as per clause no. 30 of NIT.
- Land Border certificate (Annexure - IX) compliance as per DOE circular dated 23.02.2023.
- Integrity pact (Annexure - VII).
- Price Bid (Annexure-I & Annexure-II) on e-procurement portal - https://eprocurebhel.co.in/nicgep/app

54. It shall be the responsibility of the Supplier to ensure that the tender is uploaded on or before the due date and time. Late offers are not accepted.

55. All other terms and conditions shall be as per Special Conditions of Framework Agreement (Rate Contract), and GCC Rev 07 & Corrigenda-01 to GCC Rev 07.
In the event of any contradiction in the terms and conditions mentioned, the order of preference shall be as mentioned in clause no. 36 of GCTC of GCC Rev 07.

Note: - In case you are not making an offer against this enquiry, you are requested to send a regret letter so as to reach us on or before the due date.

Supplier Name:

Annexure - I (Price Schedule for APRDS Package Rate Contract)

Sl. No.	DESCRIPTION	UOM	Qty	Unit Price INR	% Allocation (% of Grand Total Price - E.1)	Total Price (INR)	% Allocation (% of Grand Total Price - E.1)	FREIGHT CHARGES (EXCLUDING GST) @ % OF TOTAL EX-WORKS (INR)	FREIGHT CHARGES WITHOUT GST (INR)	Applicable GST Rate % (on "Total Ex-Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)
A)	**MAIN SUPPLY**											
1.1	Combined Type-High Capacity Pressure Reducing & Desuperheating Valve (On MS line) (ASV-22) (Type I)	Nos.	4	#VALUE!	3.287518%	#VALUE!	13.150072%	%to be quoted	#VALUE!	%to be quoted	#VALUE!	#VALUE!
1.2	Combined Type-High Capacity Pressure Reducing & Desuperheating Valve (On MS line) (ASV-22) (Type II)	Nos.	11	#VALUE!	3.278442%	#VALUE!	36.062862%		#VALUE!		#VALUE!	#VALUE!
1.3	Combined Type-High Capacity Pressure Reducing & Desuperheating Valve (On MS line) (ASV-22) (Type III)	Nos.	1	#VALUE!	3.607194%	#VALUE!	3.607194%		#VALUE!		#VALUE!	#VALUE!
1.4	Combined Type-High Capacity Pressure Reducing & Desuperheating Valve (On MS line) (ASV-22) (Type IV)	Nos.	1	#VALUE!	2.187644%	#VALUE!	2.187644%		#VALUE!		#VALUE!	#VALUE!
1.5	Low Capacity PRV (on CRH Line) (ASV-26) (Type I)	Nos.	4	#VALUE!	0.302899%	#VALUE!	1.211596%		#VALUE!		#VALUE!	#VALUE!
1.6	Low Capacity PRV (on CRH Line) (ASV-26) (Type II)	Nos.	4	#VALUE!	0.293823%	#VALUE!	1.175292%		#VALUE!		#VALUE!	#VALUE!
1.7	Low Capacity PRV (on CRH Line) (ASV-26) (Type III)	Nos.	8	#VALUE!	0.266287%	#VALUE!	2.130296%		#VALUE!		#VALUE!	#VALUE!
1.8	Low Capacity PRV (on CRH Line) (ASV-26) (Type IV)	Nos.	1	#VALUE!	0.246040%	#VALUE!	0.246040%		#VALUE!		#VALUE!	#VALUE!
1.9	Spray Control Valve for HC-PRDS (CDV-262) (Type I)	Nos.	4	#VALUE!	0.173449%	#VALUE!	0.693796%		#VALUE!		#VALUE!	#VALUE!
1.1	Spray Control Valve for HC-PRDS (CDV-262) (Type II)	Nos.	12	#VALUE!	0.164373%	#VALUE!	1.972476%		#VALUE!		#VALUE!	#VALUE!
1.11	Spray Control Valve for HC-PRDS (CDV-265) (Type I)	Nos.	4	#VALUE!	0.173449%	#VALUE!	0.693796%		#VALUE!		#VALUE!	#VALUE!
1.12	Spray Control Valve for HC-PRDS (CDV-265) (Type II)	Nos.	9	#VALUE!	0.164373%	#VALUE!	1.479357%		#VALUE!		#VALUE!	#VALUE!
1.13	Spray Block Valve (CDV-84)	Nos.	12	#VALUE!	0.138759%	#VALUE!	1.665108%		#VALUE!		#VALUE!	#VALUE!
									#VALUE!		#VALUE!	#VALUE!
1.14	E LEARNING MODULE	Nos.	2	#VALUE!	0.211778%	#VALUE!	0.423556%		#VALUE!		#VALUE!	#VALUE!
B)	**COMMISSIONING SPARES**											
Sl. No.	**DESCRIPTION**											
1	Gaskets for ASV 22	Set	16	#VALUE!	0.01091%	#VALUE!	0.174560%	%to be quoted	#VALUE!	%to be quoted	#VALUE!	#VALUE!
2	Gland Packing for ASV 22	Set	16	#VALUE!	0.00964%	#VALUE!	0.154304%		#VALUE!		#VALUE!	#VALUE!
3	Gaskets for ASV 26	Set	16	#VALUE!	0.00781%	#VALUE!	0.124992%		#VALUE!		#VALUE!	#VALUE!
4	Gland Packing for ASV 26	Set	16	#VALUE!	0.00626%	#VALUE!	0.100208%		#VALUE!		#VALUE!	#VALUE!
5	Gaskets for CDV 262	Set	16	#VALUE!	0.00781%	#VALUE!	0.124992%		#VALUE!		#VALUE!	#VALUE!
6	Gland Packing for CDV 262	Set	16	#VALUE!	0.00626%	#VALUE!	0.100208%		#VALUE!		#VALUE!	#VALUE!
7	Gaskets for CDV 265	Set	13	#VALUE!	0.00781%	#VALUE!	0.101556%		#VALUE!		#VALUE!	#VALUE!
8	Gland Packing for CDV 265	Set	13	#VALUE!	0.00626%	#VALUE!	0.081419%		#VALUE!		#VALUE!	#VALUE!
9	Gaskets for CDV 84	Set	12	#VALUE!	0.00781%	#VALUE!	0.093744%		#VALUE!		#VALUE!	#VALUE!
10	Gland Packing for CDV 84	Set	12	#VALUE!	0.00626%	#VALUE!	0.075156%		#VALUE!		#VALUE!	#VALUE!
C)	**Services at Site**											
CHARGES OF SITE ACTIVITIES (INSTALLATION CHECK & COMMISSIONING ETC.) as per technical specification/NIT)												
1	Travel Charges per visit	Per Visit	16	#VALUE!	0.030230%	#VALUE!	0.483680%	0	0	%to be quoted	#VALUE!	#VALUE!
2	Charges per mandays	Per Day	32	#VALUE!	0.017378%	#VALUE!	0.556096%	0	0		#VALUE!	#VALUE!
D)	**Mandatory Spares**											
1	Mandatory Spares as per Mandatory Spares List (Annexure - II)	Lot	1	#VALUE!	31.130000%	#VALUE!	31.130000%	%to be quoted	#VALUE!	%to be quoted	#VALUE!	#VALUE!
E)	**Grand Total Price in INR (To be filled by the Supplier)**						X			0		
E.1	**TOTAL PRICE (A+B+C+D) (in INR)**						100.000000%					

NOTES :

i)	Prices of all accessories, special tools & tackles and other accessories etc. not listed above shall be included in the price of APRDS & shall be supplied along with the APRDS.
ii)	Value is to be filled only in cell highlighted "in yellow colour" and for unit price in other price columns, same shall be derived by BHEL as per the percentage (%) allocation specified. Spares & services Prices shall also be derived by BHEL as per the percentage (%) allocation specified.
iii)	Percentage (%) Freight as quoted for Main Supply items, same shall also be considered for Mandatory Spares & Commissioning Spares.
iv)	Unit Price derived as above, shall be binding for any quantity variation, which is at the discretion of the Buyer.
v)	Please refer Technical Specification no. PE-TS-RC1-142-H001 for the details.
vi)	One Set means complete replacement for One Valve.
vii)	Wherever the quantity is coming in fraction, same shall be round off to the next higher whole number.
viii)	Any item indicated as "Not Applicable" by the Supplier but actually found Applicable during the detailed engineering, same shall be supplied by the Supplier without any cost implication to BHEL.
IX)	In case Spares indicated in the list is Not Applicable to the particular design offered by the Supplier, the Supplier should offer Spares, equivalent/ applicable to the offered design with quantities in line with the approach followed in the Mandatory Spares list.

Annexure - II (Price Schedule for Mandatory Spares for APRDS Package Rate Contract)

Sl. No.	Description	Type I											Type II										Type III									
		UOM	Tentative Qty	Unit Price (in INR)	% Allocation (% of Grand Total Price - E.1)	Total Price (in INR)	% Allocation (% of Grand Total Price - E.1)	Freight Charges (excluding GST) @ ___% of Total Ex-Works (INR)	FREIGHT CHARGES WITHOUT GST (INR)	Applicable GST Rate % (on "Total Ex-Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)	Tentative Qty	Unit Price (in INR)	% Allocation (% of Grand Total Price - E.1)	Total Price (in INR)	% Allocation (% of Grand Total Price - E.1)	Freight Charges (excluding GST) @ ___% of Total Ex-Works (INR)	FREIGHT CHARGES WITHOUT GST (INR)	Applicable GST Rate % (on "Total Ex-Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)	Tentative Qty	Unit Price (in INR)	% Allocation (% of Grand Total Price - E.1)	Total price (INR)	% Allocation (% of Grand Total Price - E.1)	Freight Charges (excluding GST) @ ___% of Total Ex-Works (INR)	FREIGHT CHARGES WITHOUT GST (INR)	Applicable GST Rate % (on "Total Ex-Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)
1	**For High Capacity PRDS (ASV-22)**																															
i)	Steam pressure reducing cum desuperheating valve (Complete)	Nos.	4	#VALUE!	3.287518%	#VALUE!	13.150072%		#VALUE!	%to be quoted	#VALUE!	#VALUE!	-	-	-	-	-	%to be quoted	-	%to be quoted	-	-	1	#VALUE!	3.607194%	#VALUE!	3.607194%	%to be quoted	#VALUE!	%to be quoted	#VALUE!	#VALUE!
ii)	Steam pressure reducing cum desuperheating valve - without actuator, positioner, accessories etc.	Nos.	-	-	-	-	-		-		-	-	-	-	-	-	-		-		-	-	1	#VALUE!	2.885755%	#VALUE!	2.885755%		#VALUE!		#VALUE!	#VALUE!
iii)	Stem / Spindle	Nos.	4	#VALUE!	0.057443%	#VALUE!	0.229772%		#VALUE!		#VALUE!	#VALUE!	6	#VALUE!	0.057443%	#VALUE!	0.344658%		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.057443%	#VALUE!	0.057443%		#VALUE!		#VALUE!	#VALUE!
iv)	Disc	Nos.	4	#VALUE!	0.074554%	#VALUE!	0.298216%		#VALUE!		#VALUE!	#VALUE!	6	#VALUE!	0.074554%	#VALUE!	0.447324%		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.074554%	#VALUE!	0.074554%		#VALUE!		#VALUE!	#VALUE!
v)	Body seat rings	Sets	8	#VALUE!	0.058662%	#VALUE!	0.469296%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.058662%	#VALUE!	0.117324%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.058662%	#VALUE!	0.117324%		#VALUE!		#VALUE!	#VALUE!
vi)	Metal Seat	Sets	-	-	-	-	-		-		-	-	-	-	-	-	-		-		-	-	1	#VALUE!	0.058662%	#VALUE!	0.058662%		#VALUE!		#VALUE!	#VALUE!
vii)	Gland packings	Sets	8	#VALUE!	0.009645%	#VALUE!	0.077160%		#VALUE!		#VALUE!	#VALUE!	20	#VALUE!	0.009645%	#VALUE!	0.192900%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.009645%	#VALUE!	0.019290%		#VALUE!		#VALUE!	#VALUE!
viii)	Pressure Seal Ring	Sets	8	#VALUE!	0.026940%	#VALUE!	0.215520%		#VALUE!		#VALUE!	#VALUE!	10	#VALUE!	0.026940%	#VALUE!	0.269400%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.026940%	#VALUE!	0.053880%		#VALUE!		#VALUE!	#VALUE!
ix)	Gaskets	Sets	8	#VALUE!	0.010910%	#VALUE!	0.087280%		#VALUE!		#VALUE!	#VALUE!	6	#VALUE!	0.010910%	#VALUE!	0.065460%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.010910%	#VALUE!	0.021820%		#VALUE!		#VALUE!	#VALUE!
x)	Desuperheater liners	Sets	-	-	-	-	-		-		-	-	1	#VALUE!	0.262275%	#VALUE!	0.262275%		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.262275%	#VALUE!	0.262275%		#VALUE!		#VALUE!	#VALUE!
xi)	Cage	Nos.	-	-	-	-	-		-		-	-	2	#VALUE!	0.491767%	#VALUE!	0.983534%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		0.000000		0.000000	0.000000
xii)	Valve actuator assembly	Nos.	2	#VALUE!	0.328752%	#VALUE!	0.657504%		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.328752%	#VALUE!	0.328752%		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.328752%	#VALUE!	0.328752%		#VALUE!		#VALUE!	#VALUE!
xiii)	Actuator Bush	Sets	-	-	-	-	-	%to be quoted	-		-	-	4	#VALUE!	0.009835%	#VALUE!	0.039340%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xiv)	Actuator Bush Bearing	Sets	-	-	-	-	-		-		-	-	10	#VALUE!	0.009835%	#VALUE!	0.098350%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xv)	Valve actuator to Bush house gear box	Nos.	-	-	-	-	-		-		-	-	1	#VALUE!	0.163922%	#VALUE!	0.163922%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xvi)	Actuator Diaphragm/Piston	Nos.	-	-	-	-	-		-		-	-	1	#VALUE!	0.009835%	#VALUE!	0.009835%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xvii)	Soft Goods kit Valve	Sets	-	-	-	-	-		-		-	-	-	-	-	-	-		-		-	-	1	#VALUE!	0.010536%	#VALUE!	0.010536%		#VALUE!		#VALUE!	#VALUE!
xviii)	Actuator Soft Goods kit	Sets	-	-	-	-	-		-		-	-	-	-	-	-	-		-		-	-	1	#VALUE!	0.006575%	#VALUE!	0.006575%		#VALUE!		#VALUE!	#VALUE!
xix)	Positioner units /smart positioners (complete unit) & accessories (link assembly)	Sets	4	#VALUE!	0.029767%	#VALUE!	0.119068%		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.020691%	#VALUE!	0.020691%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.020691%	#VALUE!	0.041382%		#VALUE!		#VALUE!	#VALUE!
xx)	Diaphragms, O' rings, seals etc.	Sets	10	#VALUE!	0.010536%	#VALUE!	0.105360%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-	-	-	-	-	-		0.000000		0.000000	0.000000
xxi)	Solenoid valves	Nos.	2	#VALUE!	0.002710%	#VALUE!	0.005420%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-	2	#VALUE!	0.002710%	#VALUE!	0.005420%		#VALUE!		#VALUE!	#VALUE!
xxii)	Air Lock Relays	Nos.	2	#VALUE!	0.007879%	#VALUE!	0.015758%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-	2	#VALUE!	0.007879%	#VALUE!	0.015758%		#VALUE!		#VALUE!	#VALUE!
xxiii)	Air Filter Regulator	Nos.	4	#VALUE!	0.002937%	#VALUE!	0.011748%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-	2	#VALUE!	0.002937%	#VALUE!	0.005874%		#VALUE!		#VALUE!	#VALUE!
xxiv)	Gaskets for Power cylinder	Sets	-	-	-	-	-		-		-	-	2	#VALUE!	0.001210%	#VALUE!	0.002420%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xxiv)	Seal Kit for Positioner	Sets	-	-	-	-	-		-		-	-	2	#VALUE!	0.002069%	#VALUE!	0.004138%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
	SUB Total					#VALUE!	15.442174%		#VALUE!		#VALUE!	#VALUE!				#VALUE!	3.350323%		#VALUE!		#VALUE!	#VALUE!				#VALUE!	7.572494%		#VALUE!		#VALUE!	#VALUE!
2	**Low Capacity PRDS System (i.e. for ASV-26)**	**UOM**	**Type I**										**Type II**										**Type III**									
i)	LC Steam pressure reducing valve (Complete)	Nos.	4	#VALUE!	0.302899%	#VALUE!	1.211596%		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.293823%	#VALUE!	0.293823%	% to be quoted	#VALUE!	%to be quoted	#VALUE!	#VALUE!	-	-	-	-	-	%to be quoted	-	%to be quoted	-	-
ii)	LC Steam pressure reducing valve - without actuator, positioner, accessories etc.	Nos.	-	-	-	-	-		-		-	-	1	#VALUE!	0.176294%	#VALUE!	0.176294%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
iii)	Stem / Spindle	Nos.	4	#VALUE!	0.014771%	#VALUE!	0.059084%		#VALUE!		#VALUE!	#VALUE!	3	#VALUE!	0.014771%	#VALUE!	0.044313%		#VALUE!		#VALUE!	#VALUE!	4	#VALUE!	0.014771%	#VALUE!	0.059084%		#VALUE!		#VALUE!	#VALUE!
iv)	Disc	Nos.	8	#VALUE!	0.024631%	#VALUE!	0.197048%		#VALUE!		#VALUE!	#VALUE!	3	#VALUE!	0.024631%	#VALUE!	0.073893%		#VALUE!		#VALUE!	#VALUE!	4	#VALUE!	0.024631%	#VALUE!	0.098524%		#VALUE!		#VALUE!	#VALUE!

Annexure - II (Price Schedule for Mandatory Spares for APRDS Package Rate Contract)

Sl. No.	Description	Type I											Type II										Type III									
		UOM	Tentative Qty	Unit Price (In INR)	% Allocation (% of Grand Total Price - E.1)	Total Price (in INR)	% Allocation (% of Grand Total Price - E.1)	Freight Charges (excluding GST) @ ___% of Total Ex-Works (INR)	FREIGHT CHARGES WITHOUT GST (INR)	Applicable GST Rate % (on "Total Ex-Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)	Tentative Qty	Unit Price (In INR)	% Allocation (% of Grand Total Price - E.1)	Total Price (in INR)	% Allocation (% of Grand Total Price - E.1)	Freight Charges (excluding GST) @ ___% of Total Ex-Works (INR)	FREIGHT CHARGES WITHOUT GST (INR)	Applicable GST Rate % (on "Total Ex-Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)	Tentative Qty	Unit Price (In INR)	% Allocation (% of Grand Total Price - E.1)	Total price (INR)	% Allocation (% of Grand Total Price - E.1)	Freight Charges (excluding GST) @ ___% of Total Ex-Works (INR)	FREIGHT CHARGES WITHOUT GST (INR)	Applicable GST Rate % (on "Total Ex-Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)
v)	Body seat rings	Sets	4	#VALUE!	0.019700%	#VALUE!	0.078800%		#VALUE!		#VALUE!	#VALUE!	4	#VALUE!	0.019700%	#VALUE!	0.078800%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
vi)	Metal Seat	Sets	-	#DIV/0!	-	-	-		#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.019700%	#VALUE!	0.019700%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
vii)	Gland packings	Sets	8	#VALUE!	0.006262%	#VALUE!	0.050096%		#VALUE!		#VALUE!	#VALUE!	22	#VALUE!	0.006262%	#VALUE!	0.137764%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
viii)	Pressure Seal Ring	Sets	8	#VALUE!	0.009544%	#VALUE!	0.076352%		#VALUE!		#VALUE!	#VALUE!	11	#VALUE!	0.009544%	#VALUE!	0.104984%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
ix)	Gaskets	Sets	4	#VALUE!	0.007812%	#VALUE!	0.031248%		#VALUE!		#VALUE!	#VALUE!	7	#VALUE!	0.007812%	#VALUE!	0.054684%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
x)	Cage	Nos.	-	-	-	#VALUE!	0.000000%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.044073%	#VALUE!	0.088146%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xi)	Valve actuator assembly	Nos.	2	#VALUE!	0.018174%	#VALUE!	0.036348%		#VALUE!		#VALUE!	#VALUE!	3	#VALUE!	0.018174%	#VALUE!	0.054522%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xii)	Actuator Bush	Sets	-	-	-	-	-	%to be quoted	-	%to be quoted	-	-	1	#VALUE!	0.000881%	#VALUE!	0.000881%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xiii)	Actuator Bush Bearing	Sets	-	-	-	-	-		-		-	-	10	#VALUE!	0.000881%	#VALUE!	0.008810%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xiv)	Valve actuator to Bush house gear box	Nos.	-	-	-	-	-		-		-	-	1	#VALUE!	0.146911%	#VALUE!	0.146911%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xv)	Actuator Diaphragm/Piston	Nos.	-	-	-	-	-		-		-	-	1	#VALUE!	0.000881%	#VALUE!	0.000881%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xvi)	Soft Goods kit Valve	Sets	-	-	-	-	-		-		-	-	1	#VALUE!	0.010536%	#VALUE!	0.010536%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xvii)	Actuator Soft Goods kit	Sets	-	-	-	-	-		-		-	-	1	#VALUE!	0.001817%	#VALUE!	0.001817%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xviii)	Positioner units /smart positioners (complete unit) & accessories (link assembly)	Sets	4	#VALUE!	0.029767%	#VALUE!	0.119068%		#VALUE!		#VALUE!	#VALUE!	3	#VALUE!	0.020691%	#VALUE!	0.062073%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xix)	Diaphragms, O' rings, seals etc.	Sets	10	#VALUE!	0.010536%	#VALUE!	0.105360%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-	-	-	-	-	-		-		-	-
xx)	Solenoid valves	Nos.	2	#VALUE!	0.002710%	#VALUE!	0.005420%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.002710%	#VALUE!	0.005420%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xxi)	Air Lock Relays	Nos.	2	#VALUE!	0.007879%	#VALUE!	0.015758%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.007879%	#VALUE!	0.015758%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xxii)	Air Filter Regulator	Nos.	4	#VALUE!	0.002937%	#VALUE!	0.011748%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.002937%	#VALUE!	0.005874%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
xxiii)	Seal Kit for Positioner	Sets	-	-	-	-	-		-		-	-	2	#VALUE!	0.002069%	#VALUE!	0.004138%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		-		-	-
	SUB Total					#VALUE!	1.997926%		#VALUE!		#VALUE!	#VALUE!				#VALUE!	1.390022%		#VALUE!		#VALUE!	#VALUE!				#VALUE!	0.157608%		#VALUE!		#VALUE!	#VALUE!
3	**For Spray Water Line Control Valves (i.e. for CDV-262,CDV-265)**	**UOM**	**Type I**										**Type II**										**Type III**									
i)	Valve trim (including cage, plug, stem, seat rings, guide bushings, gland packing, stem packing, gaskets etc.)	Sets	2	#VALUE!	0.069885%	#VALUE!	0.139770%		#VALUE!	%to be quoted	#VALUE!	#VALUE!	2	#VALUE!	0.069885%	#VALUE!	0.139770%	% to be quoted	#VALUE!	%to be quoted	#VALUE!	#VALUE!				-	-	%to be quoted	-	%to be quoted	-	-
ii)	Gland packings	Sets	10	#VALUE!	0.006262%	#VALUE!	0.062620%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		0.000000		0.000000	-				-	-		-		-	-
iii)	Gaskets	Sets	10	#VALUE!	0.007812%	#VALUE!	0.078120%		#VALUE!		#VALUE!	#VALUE!	-	-	-	-	-		0.000000		0.000000	-				-	-		-		-	-
iv)	Stem / Spindle	Nos.	-	-	-	-	-		-		-	-	5	#VALUE!	0.008672%	#VALUE!	0.043360%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
v)	Disc	Nos.	-	-	-	-	-		-		-	-	4	#VALUE!	0.013876%	#VALUE!	0.055504%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
vi)	Body seat rings	Sets	-	-	-	-	-		-		-	-	1	#VALUE!	0.012491%	#VALUE!	0.012491%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
vii)	Metal Seat	Sets	-	-	-	-	-		-		-	-	1	#VALUE!	0.012491%	#VALUE!	0.012491%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
viii)	Valve actuator assembly	Nos.	2	#VALUE!	0.009862%	#VALUE!	0.019724%	%to be quoted	#VALUE!		#VALUE!	#VALUE!	1	#VALUE!	0.009862%	#VALUE!	0.009862%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
ix)	Soft Goods kit Valve	Sets	-	-	-	-	-		-		-	-	1	#VALUE!	0.010536%	#VALUE!	0.010536%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
x)	Actuator Soft Goods kit	Sets	-	-	-	-	-		-		-	-	1	#VALUE!	0.000986%	#VALUE!	0.000986%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
xi)	Positioner units /smart positioners (complete unit) & accessories (link assembly)	Sets	4	#VALUE!	0.029767%	#VALUE!	0.119068%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.020691%	#VALUE!	0.041382%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
xii)	Diaphragms, O' rings, seals etc.	Sets	10	#VALUE!	0.010536%	#VALUE!	0.105360%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.010536%	#VALUE!	0.021072%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
xiii)	Solenoid valves	Nos.	2	#VALUE!	0.002710%	#VALUE!	0.005420%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.002710%	#VALUE!	0.005420%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
xiv)	Air Lock Relays	Nos.	2	#VALUE!	0.007879%	#VALUE!	0.015758%		#VALUE!		#VALUE!	#VALUE!	2	#VALUE!	0.007879%	#VALUE!	0.015758%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
xv)	Air Filter Regulator	Nos.	4	#VALUE!	0.002937%	#VALUE!	0.011748%		#VALUE!		#VALUE!	#VALUE!	3	#VALUE!	0.002937%	#VALUE!	0.008811%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
xvi)	Seal Kit for Positioner	Sets	-	-	-	-	-		-		-	-	2	#VALUE!	0.002069%	#VALUE!	0.004138%		#VALUE!		#VALUE!	#VALUE!				-	-		-		-	-
	SUB Total					#VALUE!	0.557588%		#VALUE!		#VALUE!	#VALUE!				#VALUE!	0.381581%		#VALUE!		#VALUE!	#VALUE!										
4	**For Spray Water Line Block Valves (i.e. for CDV-84)**	**UOM**	**Type I**										**Type II**										**Type III**									
i)	Valve trim (including cage, plug, stem, seat rings, guide bushings, gland packing, stem packing, gaskets etc.)	Sets	2	#VALUE!	0.055504%	#VALUE!	0.111008%		#VALUE!	%to be quoted	#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-	%to be quoted	-	%to be quoted	-	-
ii)	Stem / Spindle	Nos.	5	#VALUE!	0.006938%	#VALUE!	0.034690%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
iii)	Disc	Nos.	4	#VALUE!	0.011101%	#VALUE!	0.044404%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
iv)	Body seat rings	Sets	1	#VALUE!	0.009713%	#VALUE!	0.009713%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
v)	Metal Seat	Sets	1	#VALUE!	0.009713%	#VALUE!	0.009713%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
vi)	Valve actuator assembly	Nos.	1	#VALUE!	0.008326%	#VALUE!	0.008326%	%to be quoted	#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
vii)	Soft Goods kit Valve	Sets	1	#VALUE!	0.010536%	#VALUE!	0.010536%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
viii)	Actuator Soft Goods kit	Sets	1	#VALUE!	0.000833%	#VALUE!	0.000833%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
ix)	Diaphragms, O' rings, seals etc.	Sets	2	#VALUE!	0.010536%	#VALUE!	0.021072%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
x)	Solenoid valves	Nos.	2	#VALUE!	0.002710%	#VALUE!	0.005420%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
xi)	Air Lock Relays	Nos.	2	#VALUE!	0.007879%	#VALUE!	0.015758%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
xii)	Air Filter Regulator	Nos.	3	#VALUE!	0.002937%	#VALUE!	0.008811%		#VALUE!		#VALUE!	#VALUE!				-	-	-	-	-	-	-					-	-		-		-	-
	SUB Total					#VALUE!	0.280284%		#VALUE!		#VALUE!	#VALUE!																					
	Total Price for Mandatory Spares (INR)																															
							31.1300%																									

Notes:

i) One Set means complete replacement for One Valve.

ii) Wherever the quantity is coming in fraction, same shall be round off to the next higher whole number.

iii) Any item indicated as "Not Applicable" by the Supplier but actually found Applicable during the detailed engineering, same shall be supplied by the Supplier without any cost implication to BHEL.

iv) In case spares indicated in the list are Not Applicable to the particular design offered by the Supplier, the Supplier should offer Spares, equivalent/ applicable to the offered design with quantities in line with the approach followed in the Mandatory Spares list.

COST OF WITHDRAWAL									
PROJECT:-						Framework Agreement (Rate Contract)			
PACKAGE :-						AUX PRDS			
TENDER ENQUIRY :-									
NAME OF THE BIDDER									
Sl. No.	Volume/Section	Page No.	Clause No.	Technical Specification/Tender Document No	Complete Description of Deviation	Cost of withdrawal of deviation to be entered by the bidder in	Reference of price Schedule of which Cost of Withdrawal of Deviation is applicable	Nature of cost of withdrawal of deviation (Positive/Negative)	Reasons for quoting deviation
1	TECHNICAL DEVIATION								
1.01									
1.02									
1.03									
1.04									
1.05									
2	COMMERCIAL DEVIATION								
2.01									
2.02									
2.03									
2.04									
2.05									

NOTES:

1. Cost of Withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
2. All the bidders have to list out all their technical & commercial deviations (if any) in details in the above format.
3. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
4. Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawl of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable. In absence of same, such deviation(s) shall not be considered and offer shall be considered in total compliance to NIT.
5. Bidder shall furnish price copy of above format along with price bid.
6. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
7. Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.
8. For deviations w.r.t. Credit Period, Liquidated damages, Firm prices if a bidder chooses not to give any cost of withdrawl of deviation loading as per Annexure-VII of GCC, Rev-07 will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy of this format submitted with Priced bid, the cost of withdrawl of deviation shall be taken as NIL.
9. Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be accepted.
10. All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.
11. Cost of withdrawl is to be given seperately for each deviation. In no event bidder should club cost of withdrawl of more than one deviation else cost of withdrawl of such deviations which have been clubbed together shall be considered as NIL.
12. In case nature of cost of withdrawl (positive/negative) is not specified it shall be assumed as positive.
13. In case of descrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.

TECHNICAL SPECIFICATION
FOR
RATE CONTRACT OF

AUXILIARY STEAM PRESSURE REDUCING AND DESUPERHEATING STATION

SPECIFICATION No. **PE-TS-RC1-142-H001**
REV NO. 0

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

INDEX

PROJECT INFORMATION

Same shall be informed by BHEL during project specific order

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SCOPE OF THIS PACKAGE COVERS THE FOLLOWING:

SL.NO	PARAMETERS	REQUIREMENT
1	Supply Including Design, Engineering, Manufacturing of	
a)	Main Supply	YES
b)	Commissioning Spares	YES
2	Painting	YES
3	Inspection & Testing	YES
4	Packing	YES
5	Transportation & Delivery To Site	YES
6	Erection & Commissioning	NO
7	Supervision of Erection & Commissioning	YES
8	Performance Guarantee (PG) Test	NO
9	Mandatory Spares	YES
10	O & M Service	NO
11	O & M Spares	NO

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24
	GENERAL TECHNICAL REQUIREMENT	
1.0	This specification is intended for finalization of rate contract between BHEL-PEM and bidder. Standard technical detail as indicated in the specification shall be agreed upon between BHEL-PEM and Bidder. Project specific technical detail, process parameters, tests requirement, shall be made available to the bidder along with project enquiry.	
2.0	The bids shall be evaluated as per NIT. Ordering shall be done separately for each project.	
3.0	The bidder to quote for items as per price format attached. The quantity as mentioned in the BOQ is only for evaluation purpose. However actual ordered quantity may vary from project to project throughout the period of rate contract.	
4.0	It is not the intent to specify herein all the details of design and manufacturing. The equipment shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgement is not in full accordance herewith.	
5.0	Bidder shall also ensure that the offered equipment shall comply with all applicable statutory and regulatory requirements.	
6.0	In the event of any conflict between the requirements of two clauses of this specification, documents or requirements of different codes and standards are specified, the same may be brought to the notice of BHEL by bidder in the form of pre- bid clarifications . In absence of any such pre-bid clarifications by the bidder, the more stringent requirement as per the interpretation of the BHEL/owner shall prevail without any commercial implication.	
7.0	Drawing/document submission shall be through web based Document Management System(DMS) of BHEL. Bidder would be provided access to the DMS for drawing/document submission. Bidder to ensure internet connectivity of min speed of 2Mbps at their end. In case DMS system is not available, documents may be submitted through other means (e.g. email etc.) after written confirmation from BHEL.	
8.0	Drawings/ documents submitted by vendor at any stage shall be complete in all respects. Any incomplete drawing submitted shall be treated as non- submission with delays attributable to vendor. For any clarification/ discussion required to complete the drawings, the bidder shall depute his personnel to BHEL / Customer's Office as per the requirement for across the table submission/ finalizations of drawings.	
9.0	Latest codes and standards shall be complied with, as on Date of NIT.	
10.0	Wherever in specification, more than one options are marked, bidder to note that any one option may be selected by BHEL for a specific project and the same shall be supplied by bidder, without any commercial implication with respect to rate contract.	
11.0	Valve actuators and stems shall be adequate to handle the unbalanced forces occurring under the specified flow conditions or 120% of the maximum differential pressure specified. Min allowance of 0.15 Kg/sq.cm. per linear millimetre of seating surface for stem force shall be provided in the selection of the actuator.	
12.0	Compliance Drawings	
12.1	Hook Diagram for the control valve shall be as per drawings attached in Compliance drawings.	
12.2	Details of Scope & Upstream/ Downstream length requirement and Warm up arrangement for High capacity PRDS shall be as per drawing attached in Compliance drawings section.	

GENERAL TECHNICAL REQUIREMENT	
13.0	Trim and body material has been specified in the respective data sheet. However, any substitute material if recommended by the manufacturer shall be either equivalent or superior to those specified and can be provided if found technically acceptable without any commercial and delivery impact, subject to BHEL/ Customer approval.
14.0	In case bidder is not able to offer the required characteristics due to design considerations, modified Trim (Mod.EQ percentage or Mod. linear) can be offered subject to BHEL acceptance.
15.0	E- Learning Module shall be supplied by bidder (applicable only for NTPC projects), as per details provided in Compliance Drawings Section & BOQ section.
16.0	Bidder shall submit project specific Quality Plan in the event of placement of order for specific project based on the Quality Plan enclosed herein. Same shall be subject to BHEL / CUSTOMER approval & customer hold points for inspection / testing shall be marked and followed in the QP at the contract stage without cost implication to BHEL.
17.0	In case, the bidder is sourcing the item/any component from outside India, the third party inspection shall be arranged by bidder at their cost and shall be deemed to be considered by the bidder in their offer without any delivery impact.
18.0	Any change in valve size, percentage opening etc., if desired by BHEL / customer during approval of the documents after award of contract, within the gamut of tender specification, same shall be carried out by bidder without any commercial and delivery impact.
19.0	Sub vendor list is attached & same is subject to customer approval. Any additional sub - vendors proposed by bidder during contract stage shall be subject to BHEL/ Customer approval in the event of order without any commercial and delivery impact.
20.0	Mandatory Spares :
20.1	Wherever the quantities have been indicated for each type, size, thickness, material, radius, range etc., these shall cover all the items supplied and installed and the breakup for these shall be furnished in the bid. In case spares indicated in the list are not applicable to the particular design offered by the bidder, the bidder should offer spares, eqivalent/ applicable to offered design with quantities in line with the approach followed in the mandatory spare list.
20.2	Any item which is quoted as “not applicable” in the spare list and is found to be “applicable” at a later date shall be supplied by the Bidder without any commercial implications to BHEL.
20.3	Each spare shall be clearly marked and labelled on the outside of the packing with its description. When more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.
21.0	Name plates shall be manufactured from stainless steel or aluminium with a matte or satin finish, and engraved with black lettering of a minimum 6 mm height or as per equipment standard whichever is higher
22.0	Document approval by BHEL / Customer shall not absolve the supplier of their contractual obligations of completing the work as per specification requirement without any commercial and delivery impact.
22.0	Equipment must be safe, reliable and easy to maintain at all operating conditions

GENERAL TECHNICAL REQUIREMENT		
23.0	The control valves shall be designed as per the latest version of the following codes/Standards :-	
23.1	Control Valve Sizing	ISA 75.01
23.2	Control Valve capacity Test	ISA 75.02
23.3	Pressure / Temperature Rating	ANSI-B16.34
23.4	Seat Leakage	FCI 70.2/ ANSI B 16.104
23.5	Noise	IEC 60534-4
23.6	End Connection: Butt Weld	ANSI B16.25
23.7	End Connection: Socket Weld	ANSI B16.11
23.8	End Connection: Flanged End	ANSI B16.5
23.9	End To End Tolerance	ANSI B16.10
23.10	Enclosure Rating	IS/ IEC-60529/NEMA
21.0	Design conditions for Control valve, Actuator and accessories except for Smart positioner. Refer Smart Positioner specification for design conditions.	Continuous operation under an ambient temperature : 0-60°C, Relative Humidity : 0-95%.
22.0	Valve Selection Criteria :	
22.1	Valve Opening at maximum flow conditions	not greater than 80% of total Valve stem travel
22.2	Valve Opening at minimum flow conditions	not less than 10% of total Valve stem travel
22.3	Stem travel from minimum flow to maximum flow	not less than 50% of total Valve stem travel
22.4	Flow capability	120% of maximum flow
23.0	Trim requirement for flashing service	Not applicable
24.0	Bonnet joints type	Flanged and Bolted
25.0	Type of Bonnet when fluid temperature is greater than 280 deg. C	Extended Bonnets
26.0	Plug Type	Plug shall be of one-piece construction cast, forged or machined from solid bar stock, BALANCED type.
27.0	Plug connection with stem	Plug shall be screwed and pinned to valve stems.
28.0	Control Valve Guide type	High lift cage guided plugs
29.0	Trim type	Quick-change
30.0	Noise abatement method	The noise abatement shall be achieved by valve body and low noise trim design and not by use of silencers.
		In case the noise level is more than 85dBA, even with low noise trim design, diffusers shall be provided (as part of package).

TECHNICAL DATA SHEET - A (ASV-22)

			Type I	Type II	Type III	Type IV
TAG NO	**ASV-22**	**QTY**	**As per Supply BOQ**	**As per Supply BOQ**	**As per Supply BOQ**	**As per Supply BOQ**
SL.NO	**DESCRIPTION**	**UOM**	**DETAILS**	**DETAILS**	**DETAILS**	**DETAILS**
1.0	**DESIGN CODES & STANDARDS**					
1.1	CODE / STANDARD		REFER GENERAL TECHNICAL REQUIREMENT	REFER GENERAL TECHNICAL REQUIREMENT	REFER GENERAL TECHNICAL REQUIREMENT	REFER GENERAL TECHNICAL REQUIREMENT
2.0	**DESIGN /SYSTEM PARAMETERS**					
2.1	SERVICE		COMBINED TYPE MAIN STEAM TO AUX. STEAM PRDS (HC PRDS)	COMBINED TYPE MAIN STEAM TO AUX. STEAM PRDS (HC PRDS)	COMBINED TYPE MAIN STEAM TO AUX. STEAM PRDS (HC PRDS)	COMBINED TYPE MAIN STEAM TO AUX. STEAM PRDS (HC PRDS)
2.2	LOCATION		OUTDOOR	OUTDOOR	OUTDOOR	OUTDOOR
2.3	DUTY		MODULATING	MODULATING	MODULATING	MODULATING
2.4	PIPE SIZE					
a	INLET (OD X THK)	MM	219.1 X 46	219.1 X 46	219.1 X 43	219.1 X 45
b	OUTLET (OD X THK)	MM	457 X 9.53	457 X 9.53 / 508 X 9.53	457 X 9.53 / 508 X 9.53	457 X 9.53
2.5	PIPE MATERIAL					
a	INLET		SA 335 P92	SA 335 P92	SA 335 P92	SA 335 P91
b	OUTLET		SA 335 P22	SA 335 P22	SA 335 P22	SA 335 P22
2.6	FLASHING SERVICE		NO	NO	NO	NO
2.7	ANTI CAVITATION TRIM		NO	NO	NO	NO
2.8	LEAKAGE CLASS		V	V	V	V
2.9	NOISE LEVEL (AT 1M DISTANCE)	dBA	< 85	< 85	< 85	< 85
2.10	VALVE OUTLET VELOCITY	M/SEC	< 150 M/SEC(STEAM)	< 150 M/SEC(STEAM)	< 150 M/SEC(STEAM)	< 150 M/SEC(STEAM)
2.11	SERVICE CONDITIONS		**REFER SIZING DETAILS - A-1**	**REFER SIZING DETAILS - A-1**	**REFER SIZING DETAILS - A-1**	**REFER SIZING DETAILS - A-2**
2.12	MAX SHUT OFF PRESSURE	KG/CM2 (g)	294	294	294	295.8
2.13	MAX BODY DESIGN PRESSURE	KG/CM2 (g)	294	294	294	295.8
2.14	MAX DESIGN TEMP	DEG C	608	608	608	601
2.15	IBR FORM-IIIC		REQUIRED	REQUIRED	REQUIRED	REQUIRED
2.16	PROCESS CONDITION		HIGH DP	HIGH DP	HIGH DP	HIGH DP
3.0	**CONSTRUCTION FEATURES**					
3.1	VALVE BODY TYPE		ANGLE	ANGLE	ANGLE	ANGLE
3.2	GUIDE		CAGE	CAGE	CAGE	CAGE
3.3	NO. OF PORTS		ONE	ONE	ONE	ONE

TECHNICAL DATA SHEET - A (ASV-22)

			Type I	Type II	Type III	Type IV
TAG NO	ASV-22	QTY	As per Supply BOQ	As per Supply BOQ	As per Supply BOQ	As per Supply BOQ
SL.NO	DESCRIPTION	UOM	DETAILS	DETAILS	DETAILS	DETAILS
3.4	TRIM FORM		LINEAR	LINEAR	LINEAR	EQ %
3.5	PACKING	NOS	DOUBLE	DOUBLE	DOUBLE	SINGLE
3.6	PACKING TYPE		STANDARD	STANDARD	STANDARD	STANDARD
3.7	END CONNECTION		BWE	BWE	BWE	BWE
3.8	BONNET TYPE		EXTENDED	EXTENDED	EXTENDED	EXTENDED
3.9	MATERIAL OF CONSTRUCTION					
a	VALVE BODY		SA 182 F92	SA 182 F92	SA 182 F92	SA 182 F91
b	CAGE		SA 182 F92 STELLITED	SA 182 F92 STELLITED	SA 182 F92 STELLITED	INCONEL 718
c	GUIDE/ GUIDE BUSH		SA 182 F92	SA 182 F92	INCONEL 718	SA 182 F91
d	PACKING		GRAFOIL	GRAFOIL	GRAFOIL	GRAFOIL
e	PLUG		SA 182 F92 STELLITED	SA 182 F92 STELLITED	INCONEL 718	SA 182 F91 STELLITED
f	SEAT		SA 182 F92 STELLITED	SA 182 F92 STELLITED	SA 182 F92 STELLITED	SA 182 F91 STELLITED
3.10	ACTUATOR TYPE (PISTON TYPE)		PNEUMATIC WITH SMART POSITIONER (PROFIBUS)	PNEUMATIC WITH SMART POSITIONER (HART)	PNEUMATIC WITH SMART POSITIONER (HART)	PNEUMATIC WITH SMART POSITIONER (HART)
a	TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN		LESS THAN 10 SEC	LESS THAN 10 SEC	LESS THAN 10 SEC	LESS THAN 10 SEC
b	VALVE POSN. ON: ELECTRICAL SIGNAL FAILURE		TO CLOSE	TO CLOSE	TO CLOSE	TO CLOSE
c	VALVE POSN. ON: SUPPLY AIR FAILURE		STAYPUT	STAYPUT	STAYPUT	STAYPUT
3.11	SMART POSITIONER					
a	POSITION TRANSMITTER		PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER
b	E/P CONVERTER		PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER
3.12	POSITION LIMIT SWITCH		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.13	AIR FILTER REGULATOR		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.14	AIR LOCK RELAY		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.15	SOLENOID VALVE		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.16	JUNCTION BOX		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.17	HAND WHEEL POSITION		SIDE MOUNTED	SIDE MOUNTED	SIDE MOUNTED	SIDE MOUNTED
3.18	LOCAL POSITIONER INDICATOR		REQUIRED	REQUIRED	REQUIRED	REQUIRED

TECHNICAL DATA SHEET - A (ASV-22)

			Type I	Type II	Type III	Type IV
TAG NO	ASV-22	QTY	As per Supply BOQ	As per Supply BOQ	As per Supply BOQ	As per Supply BOQ
SL.NO	DESCRIPTION	UOM	DETAILS	DETAILS	DETAILS	DETAILS
4.0	PERFORMANCE PARAMETERS					
4.1	LINEARITY		+/- 1%	+/- 1%	+/- 1%	+/- 1%
4.2	HYSTERISIS		+/- 1%	+/- 1%	+/- 1%	+/- 1%
4.3	SENSITIVITY		+/- 0.5%	+/- 0.5%	+/- 0.5%	+/- 0.5%
4.4	OVERALL ACCURACY		+/- 2%	+/- 2%	+/- 2%	+/- 2%
5.0	INSPECTION/TESTING		AS PER APPROVED QAP	AS PER APPROVED QAP	AS PER APPROVED QAP	AS PER APPROVED QAP

Note:

1. **Stem material for ASV-22 (all type) shall be INCONEL 718.**
2. **Bidder may offer superior Trim Material for the valve subject to BHEL/Customer approval.**
3. **ASV 22 shall be of multi-stage & multi-path design having sufficient number of discrete pressure drop turns/ stages to ensure elimination of vibration, noise, erosive action, cavitation throughout the control range of valve.**
4. **For Type-IV valve, only disc stack type valve is required. For other valves, bidder may offer their proven design.**

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SIZING DETAILS A-1

SIZING DATA FOR COMBINED AUXILIARY STEAM PRDS (ASV-22) (TYPE I TO III), SPRAY CONTROL VALVE (CDV-262/CDV-265) (Type I & II) & BLOCK VALVE (CDV-84)

SL.NO.	PARAMETERS	CASE-1	CASE-2	CASE-3	CASE-4	CASE-5	CASE-6	CASE-7	CASE-8	CASE-9	CASE-10	CASE-11	CASE-12	CASE-13	CASE-14	CASE-15	MECH. DESIGN
1.0	**INLET OF COMBINED AUX. PRDS (ASV-22)**																
1.1	PRESSURE (kgf/cm^2 (a))	30	85	80	115	270	120	30	105	125	270	270	270	65	270	30	295
1.2	TEMP. (^{O}C)	265	374	365	490	600	552	270	405	510	600	600	600	325	600	265	608
2.0	**OUTLET OF COMBINED AUX. PRDS (ASV-22)**																
2.1	PRESSURE (kgf/cm^2 (a))	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	21
2.2	TEMP. (^{O}C)	242.51	309.38	302.43	310	310	310	248.31	290	290	290	290	310	265.56	310	242.51	350
2.3	FLOW (T/Hr)	51.95	72.55	89.35	95.05	170.55	103.15	45.15	169.55	206.35	146.7	235	335.9	163.05	200	71.95	
3.0	**INLET OF SPRAY BLOCK VALVE (CDV-84)**																51
3.1	PRESSURE (kgf/cm^2 (a))	20	20	20	20	28	20	20	20	20	30.6	30.6	28	20	28	20	90
3.2	TEMP. (^{O}C)	47	47	47	47	47	47	45	45	45	45	45	47	47	47	47	
4.0	**INLET OF SPRAY CONTROL VALVE (CDV-262/265)**																
4.1	PRESSURE (kgf/cm^2 (a))	Pressure at inlet of Spray Control Valves (CDV-262/265) shall be decided by bidder.															51
4.2	TEMP. (^{O}C)	47	47	47	47	47	47	45	45	45	45	45	47	47	47	47	90

NOTE:

1. Case-15 is the capability check point for PRV ASV-22. Case-12 is the capability check point for Spray Water control valves.
2. Passing capability of Low capacity steam pressure reducing valve (i.e.ASV-26 -Type-III) at upstream parameters (61.06 kgf/cm^2(a),361.5 ^{O}C) & downstream parameters (16 kgf/cm^2(a)) at 95% valve lift shall corresponds to passing capability of High capacity steam pressure reducing valve (i.e.ASV-22) at upstream parameters (270 kgf/cm2(a), 600^{O}C) & downstream parameters (16 kgf/cm^2(a), 290^{O}C) min. flow at 15% approx. valve lift.
3. Flow (T/Hr) at inlet of COMBINED AUX. PRDS (ASV-22) and inlet of SPRAY CONTROL VALVE (CDV-262/265) & BLOCK VALVE (CDV-84) (as applicable) to be furnished by bidder during contract stage.
4. In case BHEL considers the system without block valve, spray water parameters at block valve inlet may be considered as spray water parameters at spray control valve inlet.
5. Bidder to furnish VWO flow rates (t/hr) for ASV-22 as per following table:

	Conditions	VWO flow (in T/hr) at 100% lift
CASE-1	Upstream pressure = 295 kgf/cm2(a) Upstream temperature = 608 deg.C Downstream pressure = 21 kgf/cm2 (a)	**Not to exceed 650 TPH**

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SIZING DETAILS A-2

SIZING DATA FOR COMBINED AUXILIARY STEAM PRDS (ASV-22) Type IV

SL.NO.	PARAMETERS	CASE-1	CASE-2	CASE-3	CASE-4	CASE-5	CASE-6	MECH. DESIGN
1.0	**INLET OF COMBINED AUX. PRDS (ASV-22)**							
1.1	PRESSURE (kgf/cm^2 (a))	70	95	110	145	270	120	295.1
1.2	TEMP. (^{O}C)	320	475	445	550	593	465	601
2.0	**OUTLET OF COMBINED AUX. PRDS (ASV-22)**							
2.1	PRESSURE (kgf/cm^2 (a))	16	16	16	16	16	16	21
2.2	TEMP. (^{O}C)	251	290	290	290	290	290	350
2.3	FLOW (T/Hr)	64.9	84.1	85.5	90.5	164.6	85	

NOTE:	
1	Case-1 is the capability check point for PRV ASV-22.
2	Passing capability of Low capacity steam pressure reducing valve (i.e.ASV-26-Type-IV) at upstream parameters (58.5 kgf/cm^2(a), 349.7 ^{0}C) & downstream parameters (16 kgf/cm^2(a)) at 95% valve lift shall corresponds to passing capability of High capacity steam pressure reducing valve (i.e.ASV-22) at upstream parameters (270kgf/cm^2(a), 593 ^{0}C) & downstream parameters (16 kgf/cm^2(a), 290 ^{0}C) min. flow at 15% approx. valve lift.
3	Flow (T/Hr) at inlet of COMBINED AUX. PRDS (ASV-22) (as applicable) to be furnished by bidder during contract stage.
4	Bidder to furnish VWO flow rates (t/hr) for ASV-22 as per following table:

		Conditions	VWO flow (in T/hr) at 100% lift
	CASE-1	Upstream pressure = 295.1 kgf/cm2(a) Upstream temperature = 601 deg.C Downstream pressure = 21 kgf/cm2 (a)	**Not to exceed 650 TPH**

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT		PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24			
TECHNICAL DATA SHEET - A (ASV-26)						
			Type I	**Type II**	**Type III**	**Type IV**
TAG NO	**ASV-26**	**QTY**	**As per Supply BOQ**	**As per Supply BOQ**	**As per Supply BOQ**	**As per Supply BOQ**
SL.NO	**DESCRIPTION**	**UOM**	**DETAILS**	**DETAILS**	**DETAILS**	**DETAILS**
1.0	**DESIGN CODES & STANDARDS**					
1.1	CODE / STANDARD		REFER GENERAL TECHNICAL REQUIREMENT	REFER GENERAL TECHNICAL REQUIREMENT	REFER GENERAL TECHNICAL REQUIREMENT	REFER GENERAL TECHNICAL REQUIREMENT
2.0	**DESIGN /SYSTEM PARAMETERS**					
2.1	SERVICE		COLD REHEAT STEAM TO AUXILIARY STEAM PR. REDUCING VALVE (LC PRV)	COLD REHEAT STEAM TO AUXILIARY STEAM PR. REDUCING VALVE (LC PRV)	COLD REHEAT STEAM TO AUXILIARY STEAM PR. REDUCING VALVE (LC PRV)	COLD REHEAT STEAM TO AUXILIARY STEAM PR. REDUCING VALVE (LC PRV)
2.2	LOCATION		OUTDOOR	OUTDOOR	OUTDOOR	OUTDOOR
2.3	DUTY		MODULATING	MODULATING	MODULATING	MODULATING
2.4	PIPE SIZE					
a	INLET (OD X THK)	MM	114.3 X 8.56	114.3 X 8.56	114.3 X 6.02	114.3 X 6.02
b	OUTLET (OD X THK)	MM	219.1 X 12.7	219.1 X 12.7	219.1 X 12.7	219.1 X 12.7
2.5	PIPE MATERIAL					
a	INLET		SA 106 Gr C	SA 106 Gr C	SA 106 Gr C	SA 106 Gr C
b	OUTLET		SA 106 Gr C	SA 106 Gr C	SA 106 Gr C	SA 106 Gr C
2.6	FLASHING SERVICE		NO	NO	NO	NO
2.7	ANTI CAVITATION TRIM		NO	NO	NO	NO
2.8	LEAKAGE CLASS		V	V	V	V
2.09	NOISE LEVEL (AT 1M DISTANCE)	dBA	< 85	< 85	< 85	< 85
2.10	VALVE OUTLET VELOCITY	M/SEC	< 150 M/SEC(STEAM)	< 150 M/SEC(STEAM)	< 150 M/SEC(STEAM)	< 150 M/SEC(STEAM)
2.11	SERVICE CONDITIONS		**REFER SIZING DETAILS - B-1**	**REFER SIZING DETAILS - B-1**	**REFER SIZING DETAILS - B-2**	**REFER SIZING DETAILS - B-3**
2.12	MAX SHUT OFF PRESSURE	KG/CM2 (g)	78	78	78	74.1
2.13	MAX BODY DESIGN PRESSURE	KG/CM2 (g)	78	78	78	74.1
2.14	MAX DESIGN TEMP	DEG C	395	395	395	375
2.15	IBR FORM-IIIC		REQUIRED	REQUIRED	REQUIRED	REQUIRED
2.16	PROCESS CONDITION		HIGH DP	HIGH DP	HIGH DP	HIGH DP
3.0	**CONSTRUCTION FEATURES**					
3.1	VALVE BODY TYPE		GLOBE	GLOBE	GLOBE	GLOBE
3.2	GUIDE		CAGE	CAGE	CAGE	CAGE
3.3	NO. OF PORTS		ONE	ONE	ONE	ONE
3.4	TRIM FORM		EQ %	EQ %	EQ %	EQ %
3.5	PACKING	NOS	DOUBLE	DOUBLE	DOUBLE	SINGLE
3.6	PACKING TYPE		STANDARD	STANDARD	STANDARD	STANDARD
3.7	END CONNECTION		BWE	BWE	BWE	BWE

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT		PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24			
TECHNICAL DATA SHEET - A (ASV-26)						
			Type I	**Type II**	**Type III**	**Type IV**
TAG NO	**ASV-26**	**QTY**	**As per Supply BOQ**	**As per Supply BOQ**	**As per Supply BOQ**	**As per Supply BOQ**
3.8	BONNET TYPE		EXTENDED	EXTENDED	EXTENDED	EXTENDED
3.9	MATERIAL OF CONSTRUCTION					
a	VALVE BODY		A217WC9	A217WC9	A217WC9	A217WC9
b	CAGE		SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED
c	GUIDE BUSH		SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED
d	PACKING		GRAFOIL	GRAFOIL	GRAFOIL	GRAFOIL
e	PLUG		SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED
f	SEAT		SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED	SS 316 STELLITED
3.10	ACTUATOR TYPE		PNEUMATIC WITH SMART POSITIONER (PROFIBUS)	PNEUMATIC WITH SMART POSITIONER (HART)	PNEUMATIC WITH SMART POSITIONER (HART)	PNEUMATIC WITH SMART POSITIONER (HART)
a	TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN		LESS THAN 10 SEC	LESS THAN 10 SEC	LESS THAN 10 SEC	LESS THAN 10 SEC
b	VALVE POSN. ON: ELECTRICAL SIGNAL FAILURE		TO OPEN	TO OPEN	TO OPEN	TO OPEN
c	VALVE POSN. ON: SUPPLY AIR FAILURE		STAYPUT	STAYPUT	STAYPUT	STAYPUT
3.11	SMART POSITIONER					
a	POSITION TRANSMITTER		PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER
b	E/P CONVERTER		PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER	PART OF SMART POSITIONER
3.12	POSITION LIMIT SWITCH		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.13	AIR FILTER REGULATOR		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.14	AIR LOCK RELAY		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.15	SOLENOID VALVE		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.16	JUNCTION BOX		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.17	HAND WHEEL (SIDE MOUNTED)		REQUIRED	REQUIRED	REQUIRED	REQUIRED
3.18	LOCAL POSITIONER INDICATOR		REQUIRED	REQUIRED	REQUIRED	REQUIRED
4.0	**PERFORMANCE PARAMETERS**					
4.1	LINEARITY		+/- 1%	+/- 1%	+/- 1%	+/- 1%
4.2	HYSTERISIS		+/- 1%	+/- 1%	+/- 1%	+/- 1%
4.3	SENSITIVITY		+/- 0.5%	+/- 0.5%	+/- 0.5%	+/- 0.5%
4.4	OVERALL ACCURACY		+/- 2%	+/- 2%	+/- 2%	+/- 2%
5.0	**INSPECTION/TESTING**		AS PER APPROVED QAP	AS PER APPROVED QAP	AS PER APPROVED QAP	AS PER APPROVED QAP

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SIZING DETAILS B1

SIZING DATA FOR AUXILIARY STEAM PRDS (LC PRV) - (ASV-26) Type I & II

SL.NO.	PARAMETERS	CASE-1	CASE-2	MECH. DESIGN
1.0	**INLET OF PRV (ASV-26)**			
1.1	PRESSURE (kgf/cm^2 (a))	26.47	63.10	79.00
1.2	TEMP. (^OC)	335.80	366.60	395.00
1.3	FLOW (T/Hr)	5.05	0.55	
2.0	**OUTLET OF PRV (ASV-26)**			
2.1	PRESSURE (kgf/cm^2 (a))	16.00	16.00	21.00
2.2	TEMP. (^OC)	325.26	323.17	350.00
2.3	FLOW (T/Hr)	5.05	0.55	

LC PRV VALVE SHALL BE SIZED FOR AUXILIARY STEAM REQUIREMENT OF 35 TPH FOR STEAM PARAMETERS OF Case-2.

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SIZING DETAILS B2

SIZING DATA FOR AUXILIARY STEAM PRDS (LC PRV) (ASV-26) Type III

SL.NO.	PARAMETERS	CASE-1	CASE-2	MECH. DESIGN
1.0	**INLET OF PRV (ASV-26)**			
1.1	PRESSURE (kgf/cm^2 (a))	25.45	61.06	79.00
1.2	TEMP. (^OC)	317.20	361.50	395.00
1.3	FLOW (T/Hr)	10.05	5.55	
2.0	**OUTLET OF PRV (ASV-26)**			
2.1	PRESSURE (kgf/cm^2 (a))	16.00	16.00	21.00
2.2	TEMP. (^OC)	306.79	318.68	350.00
2.3	FLOW (T/Hr)	10.05	5.55	

LC PRV VALVE SHALL BE SIZED FOR AUXILIARY STEAM REQUIREMENT OF 15 TPH FOR STEAM PARAMETERS OF CASE-2

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SIZING DETAILS B3

SIZING DATA FOR AUXILIARY STEAM PRDS (LC PRV) (ASV-26) Type IV

SL.NO.	PARAMETERS	CASE-1	CASE-2	MECH. DESIGN
1.0	**INLET OF PRV (ASV-26)**			
1.1	PRESSURE (kgf/cm^2 (a))	24.40	58.50	75.10
1.2	TEMP. (^OC)	292.30	349.70	375.00
1.3	FLOW (T/Hr)	10.6	28.6	
2.0	**OUTLET OF PRV (ASV-26)**			
2.1	PRESSURE (kgf/cm^2 (a))	16.00	16.00	21.00
2.2	TEMP. (^OC)	281.50	306.60	350.00
2.3	FLOW (T/Hr)	10.6	28.6	

LC PRV VALVE SHALL BE SIZED FOR AUXILIARY STEAM REQUIREMENT OF 30 TPH FOR STEAM PARAMETERS OF CASE-2

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

TECHNICAL DATA SHEET - A (CDV-262 AND CDV-265)				
			Type I	Type II
TAG NO	CDV-262 AND CDV-265	QTY	As per Supply BOQ	As per Supply BOQ
SL.NO	DESCRIPTION	UOM	DETAILS	DETAILS
1.0	**DESIGN CODES & STANDARDS**			
1.1	CODE / STANDARD		REFER GENERAL TECHNICAL REQUIREMENT	REFER GENERAL TECHNICAL REQUIREMENT
2.0	**DESIGN /SYSTEM PARAMETERS**			
2.1	SERVICE		SPRAY TO COMBINED PRDS CONTROL VALVE	SPRAY TO COMBINED PRDS CONTROL VALVE
2.2	LOCATION		OUTDOOR	OUTDOOR
2.3	DUTY		MODULATING	MODULATING
2.4	PIPE SIZE			
a	INLET (OD X THK)	MM	88.9 x 5.49	88.9 x 5.49
b	OUTLET (OD X THK)	MM	88.9 x 5.49	88.9 x 5.49
2.5	PIPE MATERIAL			
a	INLET		SA 106 Gr B	SA 106 Gr B
b	OUTLET		SA 106 Gr B	SA 106 Gr B
2.6	FLASHING SERVICE		NO	NO
2.7	ANTI CAVITATION TRIM		NO	NO
2.8	LEAKAGE CLASS		V	V
2.09	NOISE LEVEL (AT 1M DISTANCE)	dBA	< 85	< 85
2.10	VALVE OUTLET VELOCITY	M/SEC	< 8 M/SEC(WATER)	< 8 M/SEC(WATER)
2.11	SERVICE CONDITIONS		**REFER SIZING DETAILS A-1**	**REFER SIZING DETAILS A-1**
2.12	MAX SHUT OFF PRESSURE	KG/CM2 (g)	50	50
2.13	MAX BODY DESIGN PRESSURE	KG/CM2 (g)	50	50
2.14	MAX DESIGN TEMP	DEG C	90	90
2.15	IBR FORM-IIIC		NOT REQUIRED	NOT REQUIRED
2.16	PROCESS CONDITION		HIGH DP	HIGH DP
3.0	**CONSTRUCTION FEATURES**			
3.1	VALVE BODY TYPE		GLOBE	GLOBE
3.2	GUIDE		CAGE	CAGE
3.3	NO. OF PORTS		ONE	ONE
3.4	TRIM FORM		EQ %	EQ %
3.5	PACKING	NOS	SINGLE	SINGLE
3.6	PACKING TYPE		STANDARD	STANDARD
3.7	END CONNECTION		SWE	SWE
3.8	BONNET TYPE		STANDARD	STANDARD
3.9	MATERIAL OF CONSTRUCTION			
a	VALVE BODY		A216WCB	A216WCB
b	CAGE		SS 316 STELLITED	SS 316 STELLITED
c	GUIDE BUSH		SS 316 STELLITED	SS 316 STELLITED
d	PACKING		GRAFOIL	GRAFOIL
e	PLUG		SS 316 STELLITED	SS 316 STELLITED
f	SEAT		SS 316 STELLITED	SS 316 STELLITED
3.10	ACTUATOR TYPE		PNEUMATIC WITH SMART POSITIONER (PROFIBUS)	PNEUMATIC WITH SMART POSITIONER (HART)
a	TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN		LESS THAN 10 SEC	LESS THAN 10 SEC
b	VALVE POSN. ON: ELECTRICAL SIGNAL FAILURE		TO CLOSE	TO CLOSE
c	VALVE POSN. ON: SUPPLY AIR FAILURE		STAYPUT	STAYPUT
3.11	SMART POSITIONER		REQUIRED	REQUIRED
a	POSITION TRANSMITTER		PART OF SMART POSITIONER	PART OF SMART POSITIONER
b	E/P CONVERTER		PART OF SMART POSITIONER	PART OF SMART POSITIONER
3.12	POSITION LIMIT SWITCH		REQUIRED	REQUIRED
3.13	AIR FILTER REGULATOR		REQUIRED	REQUIRED
3.14	AIR LOCK RELAY		REQUIRED	REQUIRED
3.15	SOLENOID VALVE		REQUIRED	REQUIRED
3.16	JUNCTION BOX		REQUIRED	REQUIRED
3.17	HAND WHEEL (SIDE MOUNTED)		REQUIRED	REQUIRED
3.18	LOCAL POSITIONER INDICATOR		REQUIRED	REQUIRED
4.0	**PERFORMANCE PARAMETERS**			
4.1	LINEARITY		+/- 1%	+/- 1%
4.2	HYSTERISIS		+/- 1%	+/- 1%
4.3	SENSITIVITY		+/- 0.5%	+/- 0.5%
4.4	OVERALL ACCURACY		+/- 2%	+/- 2%
5.0	**INSPECTION/TESTING**		AS PER APPROVED QAP	AS PER APPROVED QAP

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

TECHNICAL DATA SHEET - A BLOCK VALVE (CDV-84)			
			TYPE I
TAG NO	CDV-84	QTY	As per Supply BOQ
SL.NO	DESCRIPTION	UOM	DETAILS
1.0	DESIGN CODES & STANDARDS		
1.1	CODE / STANDARD		REFER GENERAL TECHNICAL REQUIREMENT
2.0	DESIGN /SYSTEM PARAMETERS		
2.1	SERVICE		SPRAY TO COMBINED PRDS CONTROL VALVE
2.2	LOCATION		OUTDOOR
2.3	DUTY		ON/OFF
2.4	PIPE SIZE		
a	INLET (OD X THK)	MM	88.9 x 5.49
b	OUTLET (OD X THK)	MM	88.9 x 5.49
2.5	PIPE MATERIAL		
a	INLET		SA 106 Gr B
b	OUTLET		SA 106 Gr B
2.6	FLASHING SERVICE		NO
2.7	ANTI CAVITATION TRIM		NO
2.8	LEAKAGE CLASS		V
2.09	NOISE LEVEL (AT 1M DISTANCE)	dBA	< 85
2.10	VALVE OUTLET VELOCITY	M/SEC	< 8 M/SEC(WATER)
2.11	SERVICE CONDITIONS		REFER SIZING DETAILS A-1
2.12	MAX SHUT OFF PRESSURE	KG/CM2 (g)	50
2.13	MAX BODY DESIGN PRESSURE	KG/CM2 (g)	50
2.14	MAX DESIGN TEMP	DEG C	90
2.15	IBR FORM-IIIC		NOT REQUIRED
2.16	PROCESS CONDITION		HIGH DP
3.0	CONSTRUCTION FEATURES		
3.1	VALVE BODY TYPE		GLOBE
3.2	GUIDE		CAGE
3.3	NO. OF PORTS		ONE
3.4	TRIM FORM		ON-OFF(QUICK OPEN)
3.5	PACKING	NOS	SINGLE
3.6	PACKING TYPE		STANDARD
3.7	END CONNECTION		SWE
3.8	BONNET TYPE		STANDARD
3.9	MATERIAL OF CONSTRUCTION		
a	VALVE BODY		A216WCB
b	CAGE		SS 316 STELLITED
c	GUIDE BUSH		SS 316 STELLITED
d	PACKING		GRAFOIL
e	PLUG		SS 316 STELLITED
f	SEAT		SS 316 STELLITED
3.10	ACTUATOR TYPE		PNEUMATIC
a	TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN		LESS THAN 10 SEC
b	VALVE POSN. ON: ELECTRICAL SIGNAL FAILURE		TO CLOSE
c	VALVE POSN. ON: SUPPLY AIR FAILURE		STAYPUT
3.11	SMART POSITIONER		NOT REQUIRED
a	POSITION TRANSMITTER		NOT REQUIRED
b	E/P CONVERTER		NOT REQUIRED
3.12	POSITION LIMIT SWITCH		REQUIRED
3.13	AIR FILTER REGULATOR		REQUIRED

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

TECHNICAL DATA SHEET - A BLOCK VALVE (CDV-84)			
			TYPE I
TAG NO	CDV-84	QTY	As per Supply BOQ
SL.NO	DESCRIPTION	UOM	DETAILS
3.14	AIR LOCK RELAY		REQUIRED
3.15	SOLENOID VALVE		REQUIRED
3.16	JUNCTION BOX		REQUIRED
3.17	HAND WHEEL (SIDE MOUNTED)		REQUIRED
3.18	LOCAL POSITIONER INDICATOR		REQUIRED
4.0	**PERFORMANCE PARAMETERS**		
4.1	LINEARITY		+/- 1%
4.2	HYSTERISIS		+/- 1%
4.3	SENSITIVITY		+/- 0.5%
4.4	OVERALL ACCURACY		+/- 2%
5.0	**INSPECTION/TESTING**		AS PER APPROVED QAP

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24
TECHNICAL DATA SHEET FOR CONTROL VALVE ACCESSORIES		
SL.NO	**CONTROL VALVE ACCESSORIES**	**DETAILS**
1.0	**AIR FILTER REGULATOR/AIR SET**	
1.1	MATERIAL	SINTERED BRONZE
1.2	FILTER SIZE	5 MICRON
1.3	AIR SUPPLY PRESSURE (KG/CM2)	5.0 - 7.0
1.4	OUTPUT GAUGE	REQUIRED
1.5	AUTO DRAIN FEATURE	REQUIRED
2.0	**AIR LOCK**	
2.1	SET PRESSURE (KG/CM2)	3.0 - 5.0
2.2	AIR SUPPLY PRESSURE (KG/CM2)	5.0 - 7.0
2.3	RESET TYPE	AUTO
2.4	VENT PLUG	REQUIRED
3.0	**LIMIT SWITCH**	
3.1	LIMIT SWITCH POSITION	OPEN AND CLOSE
3.2	CONTACT TYPE	2 NO + 2 NC (SPDT/DPDT)
3.3	ENCLOSURE CLASS	IP-65
3.4	CONTACT RATING	0.5A, 220 V DC / 5A,240 V AC
4.0	**SOLENOID VALVE**	
4.1	SOV BODY MATERIAL	BRASS/ SS 316 BAR STOCK
4.2	OPERATION	INTERLOCK
4.3	VOLTAGE	24 V DC
4.4	TYPE	3 WAY (UNIVERSAL OPERATION TYPE)
4.5	COIL INSULATION CLASS	H
4.6	ENCLOSURE CLASS	IP-65
5.0	**JUNCTION BOX**	
5.1	MATERIAL	4 MM THICK FRP/ 3 MM SHEET STEEL/ 3 MM DIE CAST AL/ 1.5 MM SS 304
5.2	NO OF WAYS	36
5.3	ENCLOSURE CLASS	IP-65
5.4	CABLE GLAND TYPE	DOUBLE COMPRESSION TYPE
5.5	CABLE GLAND MATERIAL	Ni-PLATED
5.6	CABLE GLAND QUANTITY (PER CV)	FOUR
5.7	TERMINAL BLOCK TYPE	CAGE CLAMP
6.0	**TUBING (ADDITIONAL TO INTEGRAL TUBING OF CONTROL VALVE ASSEMBLY)**	REFER NOTE - 9 OF HOOK UP DIAGRAM FOR SMART POSITIONER (SHEET NO. 27 TO 30 OF 56). REFER NOTE 6 OF HOOK UP DIAGRAM FOR ON -OFF TYPE ACTUATOR (SHEET NO. 31 OF 56).
7.0	**FITTINGS**	REFER NOTE - 9 OF HOOK UP DIAGRAM FOR SMART POSITIONER (SHEET NO. 27 TO 30 OF 56). REFER NOTE 6 OF HOOK UP DIAGRAM FOR ON -OFF TYPE ACTUATOR (SHEET NO. 31 OF 56).
8.0	**EXPANDER / REDUCER**	REFER NOTE - 11 & 12 OF HOOK UP DIAGRAM FOR SMART POSITIONER (SHEET NO. 27 TO 30 OF 56). REFER NOTE 7 & 8 OF HOOK UP DIAGRAM FOR ON -OFF TYPE ACTUATOR (SHEET NO. 31 OF 56).
9.0	**VALVE DIAGNOSTIC AND CONFIGURATION SOFTWARE**	REQUIRED

BHEL	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SPECIFICATIONS FOR MICROPROCESSOR BASED SMART POSITIONER (HART)

SL.NO	AREA	DESCRIPTION	DETAILS
1	Electrical	a) Input Demand Signal	4-20 mA DC, 2 wired loop for HART compatible
		b) Power Supply	Loop Powered from the output card of Control System.
		c) HART Protocol	Compatibility for Remote Calibration & Diagnostics (Super-imposed HART signal on input Signal 4-20 mA.)
		d. Valve position sensing	4-20 mA output signal for HART compatible
2	Environment	a) Operating temp.	(-)30 To 80 Deg. C
		b) Humidity	0-95 %
		c) Protection class	IP-65 Minimum with Die-cast Aluminium/ SS 316 enclosure
3	Software for Configuration and Diagnostics	Software	Windows based Software shall meet the requirements for Configuration, Diagnostics, Calibration and Testing of the actuator.
		Diagnostic/Test features	Advanced diagnostic features like Stroke counter or Travel counter, Leakage in actuators, Valve Signature analysis, Air Supply Failure, Step Response test, Valve friction /Jamming detection etc to be provided. Bidder shall provide the necessary software to achieve the functionalities of "Remote Configuration and Diagnostics".
4	Test reports/ Certificates		Factory Valve Signature Tests Reports (Pr Vs Valve travel and Travel Vs I/P signal)
			Test certificates as per approved QAP
5	Configuration/ Calibration.		Remote & Local Calibration with Auto & Manual feature shall be provided.
6	Operating Range	Full range	
7	Modes	Valve Action	Direct / Reverse
		Flow Characterization	Possible to fit Valve Characteristic Curves based on Control valve data sheet
8	Fail Safe/Fail Freeze		Fail Safe/Fail Freeze feature is to be provided as per valve positioning on signal failure as per control valve data sheet
9	Pneumatic	Air capacity	Sufficient to handle the valves & actuators selected/ Boosters to be supplied, if required.
		Air pressure	To suit the air supply pressure (maximum 7 kg/sqcm) /quality available.
		Process connection	As per Hook Diagram
10	Performance	Characteristic deviation	<=0.5 % of span.
		Ambient temp effect	<=0.01 %/ deg C or better.
11	EMC & CE Compliance	Required to International Standard like EN/IEC.	EN50081-2 & EN50082 or equivalent.
12	Accessories	In-built Operator Panel	Display with push buttons for configuration and display on the positioner itself (Password protected/Hardware lock).
		Hand Held Hart Calibrator	Positioner shall be compatible with Universal HART Calibrator to be provided
		Press Gauge Block	Two/Three based on Single/Double acting actuator
		Electrical Cable Entry	1/2"NPT, side or bottom entry to avoid water ingress
		Mounting	On actuator body

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001
		Rev. No. 00
		Date : NOV'24

SPECIFICATIONS FOR MICROPROCESSOR BASED SMART POSITIONER(PROFIBUS BASED)

SL.NO	AREA	DESCRIPTION	DETAILS
1	Electrical	a) Input Demand Signal	Demand signal shall be received through Profibus network
		b) Power Supply	Shall be powered through Profibus network.
		c) Remote Calibration & Diagnostic	Compatibility for Remote Calibration & Diagnostics through Profibus network
		d). Valve position sensing	Valve position sensing through Profibus network
2	Environment	a) Operating temp.	(-)30 To 80 Deg. C
		b) Humidity	0-95 %
		c) Protection class	IP-65 Minimum
3	Software for Configuration and Diagnostics	Software	Software shall meet the requirements for Configuration, Diagnostics, Calibration and Testing of the actuator.
		Diagnostic/Test features	Advanced diagnostic features like Stroke counter or Travel counter, Leakage in actuators, Valve Signature analysis, Air Supply Failure, Step Response test, Valve friction /Jamming detection etc to be provided.
4	Test reports/ Certificates		Factory Valve Signature Tests Reports (Pr Vs Valve travel and Travel Vs I/P signal)
			Test certificates as per approved QAP
5	Configuration/ Calibration.		Remote & Local Calibration with Auto & Manual feature shall be provided.
6	Operating Range	Full range	
7	Modes	Valve Action	Direct / Reverse
		Flow Characterization	Possible to fit Valve Characteristic Curves based on Control valve data sheet
8	Fail Safe/Fail Freeze		Fail Safe/Fail Freeze feature is to be provided as per valve positioning on signal failure as per control valve data sheet
9	Pneumatic	Air capacity	Sufficient to handle the valves & actuators selected/ Boosters to be supplied, if required.
		Air pressure	To suit the air supply pressure (maximum 7 kg/sqcm) /quality available.
		Process connection	As per Hook Diagram
10	Performance	Characteristic deviation	<=0.5 % of span.
		Ambient temp effect	<=0.01 %/ deg C or better.
11	EMC & CE Compliance	Required to International Standard like EN/IEC.	EN50081-2 & EN50082 or equivalent.
12	Accessories	In-built Operator Panel	Display with push buttons for configuration and display on the positioner itself (Password protected/Hardware lock).
		Hand Held Hart Calibrator	Profibus compatible calibrator to be provided
		Pressure Gauge Block	Two/Three based on Single/Double acting actuator
		Electrical Cable Entry	1/2"NPT, side or bottom entry to avoid water ingress
		Mounting	On actuator body

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

TECHNICAL DATA SHEET - B (SUPPLIER DATA TO BE FURNISHED AFTER AWARD OF CONTRACT)

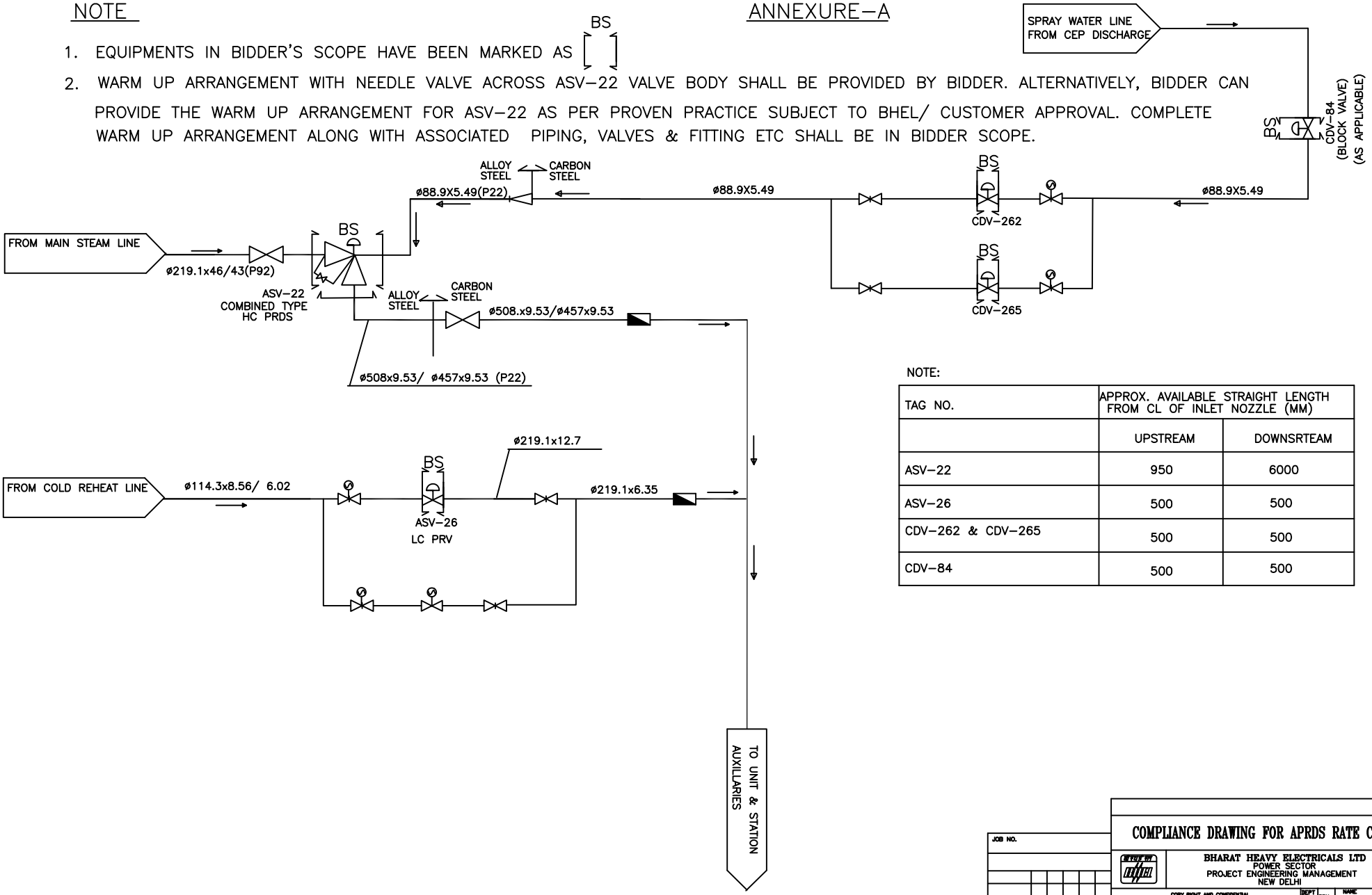
SL.NO	DESCRIPTION	DETAILS
1.0	TAG NUMBER	
2.0	SERVICE	
3.0	CODE/STANDARD	
4.0	MODEL OF CONTROL VALVE	
5.0	SIZE OF CONTROL VALVE	
6.0	PORT SIZE OF CONTROL VALVE	
7.0	DESIGN CV OF CONTROL VALVE	
8.0	ANSI RATING	
9.0	CAGE TYPE	
10.0	FLOW(BELOW SEAT/ABOVE SEAT)	
11.0	ACTUATOR MODEL NUMBER	
12.0	ACTUATOR SIZE	
13.0	CLOSE AT : OPEN AT (KG/CM2 (g))	
14.0	EXPANDER / REDUCER BETWEEN CV AND PROCESS PIPE	
15.0	EXPANDER / REDUCER BETWEEN CV AND CARTRIDGE (IF CARTRIDGE IS APPLICABLE)	
16.0	SERVICE CONDITIONS AS PER CV DATASHEET	FLOW (T/HR) | INLET PR KG/CM2(A) | OUTLET PR. KG/CM2(A) | TEMP DEG. C | CALCULATED CV | % VALVE LIFT | VALVE O/L VELOCITY
17.0	LINEARITY	
18.0	HYSTERISIS	
19.0	SENSITIVITY	
20.0	OVERALL ACCURACY	
21.0	TOTAL WEIGHT(VALVE + ACTUATOR + ACCESSORIES) Kg	

COMPLIANCE DRAWINGS

NOTE

1. EQUIPMENTS IN BIDDER'S SCOPE HAVE BEEN MARKED AS [ ]BS
2. WARM UP ARRANGEMENT WITH NEEDLE VALVE ACROSS ASV–22 VALVE BODY SHALL BE PROVIDED BY BIDDER. ALTERNATIVELY, BIDDER CAN PROVIDE THE WARM UP ARRANGEMENT FOR ASV–22 AS PER PROVEN PRACTICE SUBJECT TO BHEL/ CUSTOMER APPROVAL. COMPLETE WARM UP ARRANGEMENT ALONG WITH ASSOCIATED PIPING, VALVES & FITTING ETC SHALL BE IN BIDDER SCOPE.

ANNEXURE–A



NOTE:

TAG NO.	APPROX. AVAILABLE STRAIGHT LENGTH FROM CL OF INLET NOZZLE (MM)	
	UPSTREAM	DOWNSRTEAM
ASV–22	950	6000
ASV–26	500	500
CDV–262 & CDV–265	500	500
CDV–84	500	500

JOB NO.

COMPLIANCE DRAWING FOR APRDS RATE CONTRACT

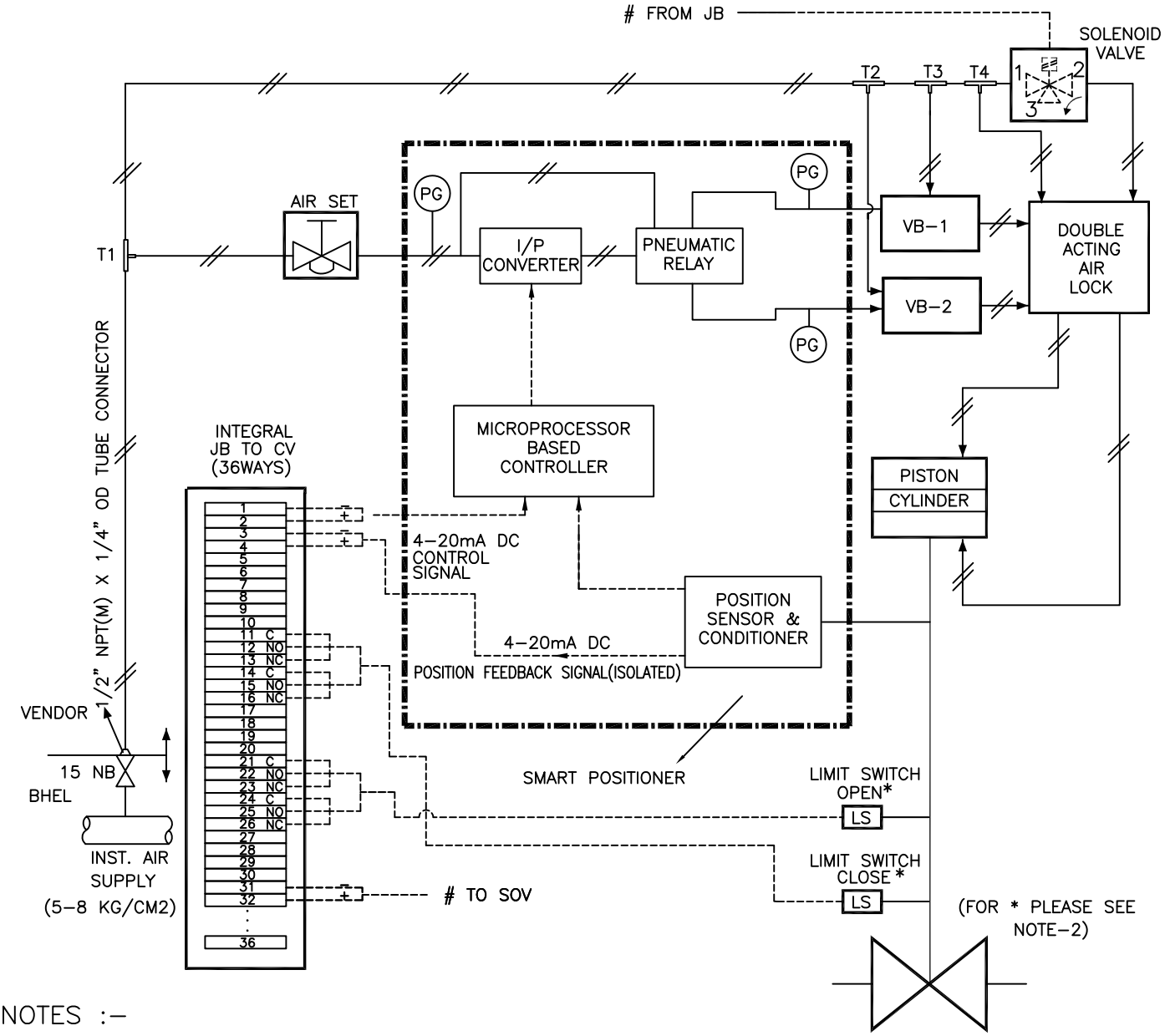
BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE		NAME	SIGN	DATE
H	DRN			30.08.24
	DESN	VG		30.08.24
	CHD	RKV		30.08.24
	APPD	RKV		30.08.24

TITLE: TECHNICAL SPEC. for AUXILIARY PRDS

C&M	DEPT.	SCALE	DRAWING NO.
	SIGN	NTS	PE–DG–XXX–142–H102
	DATE		SHEET 01 OF 01 REV. 00

STANDARD CONTROL VALVE HOOK-UP DIAGRAM
(DOUBLE ACTING PISTON ACTUATOR WITH SMART POSITIONER)
(AS APPLICABLE)



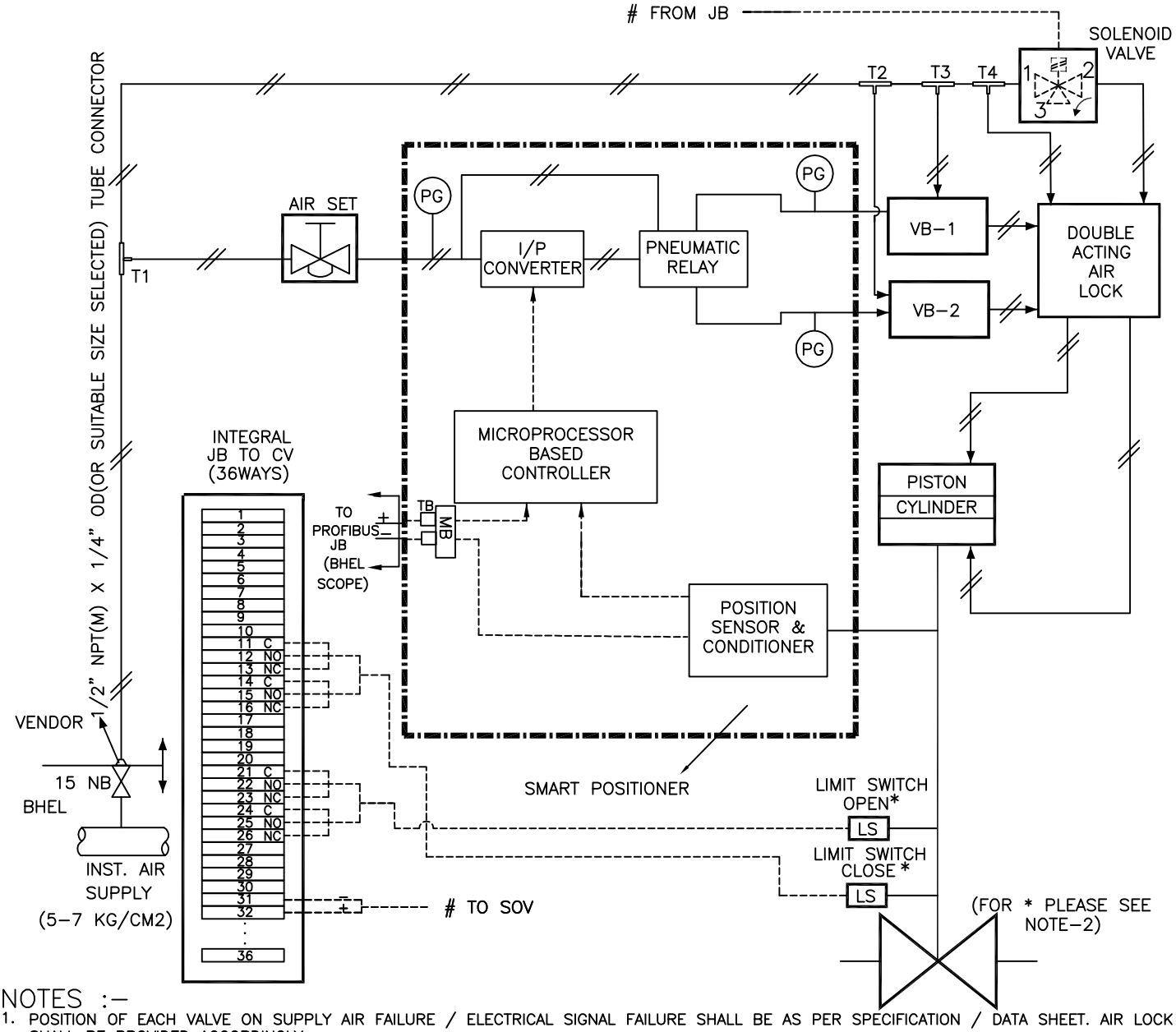
NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / ELECTRICAL SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET. AIR LOCK SHALL BE PROVIDED ACCORDINGLY.
2. SOLENOID VALVE & LIMIT SWITCHES WILL BE PROVIDED ONLY FOR CONTROL VALVES IF INDICATED IN RESPECTIVE DATA SHEETS.
3. SOLENOID VALVES PORTS CONDITION:
   PORT 1 AND 2 SHALL BE CONNECTED UNDER DE–ENERGISED CONDITION.
   PORT 2 AND 3 SHALL BE CONNECTED UNDER ENERGISED CONDITION.
4. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY & OUTPUT(S).
5. MOUNTING ACCESSORIES AS REQUIRED.
6. POSITION FEEDBACK SIGNAL SHALL BE 2 WIRE 4–20mA ISOLATED SIGNAL.
7. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET
8. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
9. TUBING & FITTINGS TO BE PROVIDED AS FOLLOWS:
   (a) TUBING: MATERIAL– SS316/ PVC COATED CU; SIZE– I/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; LENGTH: 12 M PER CV.
   (b) FITTINGS: MATERIAL– SS; DOUBLE COMPRESSION TYPE, TUBE CONNECTOR– 1/2" NPT(M) X 1/4" OR SITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSSEMBLY; FITTINGS FOR CONNECTION TO AIR FILTER REGULATOR, AIR LOCK RELAY, IA HEADER ISOLATION VALVE & EQUAL TEES
10. VOLUME BOOSTER (ALONG WITH TEE–T2 AND RELATED TUBING & CONNECTORS) SHALL BE PROVIDED IF REQUIRED. AIR CONNECTION TO VOLUME BOOSTER FROM TEE–T2 & TEE–T3 SHALL BE PROVIDED.
11. EXPANDER / REDUCER BETWEEN VALVE BODY & PIPE SHALL BE SUPPLLIED BY BHEL.
12. EXPANDER/ REDUCER BETWEEN VALVE BODY & DIFFUSER/ CARTRIDGE/ SILENCER (IF APPLICABLE) SHALL BE SUPPLLIED BY BIDDER.

BHEL

TITLE:– CONTROL VALVE HOOK–UP DIAGRAM

STANDARD CONTROL VALVE HOOK-UP DIAGRAM (DOUBLE ACTING PISTON ACTUATOR WITH SMART POSITIONER - PROFIBUS BASED) (AS APPLICABLE)



NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / ELECTRICAL SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET. AIR LOCK SHALL BE PROVIDED ACCORDINGLY.
2. SOLENOID VALVE & LIMIT SWITCHES WILL BE PROVIDED ONLY FOR CONTROL VALVES IF INDICATED IN RESPECTIVE DATA SHEETS.
3. SOLENOID VALVES PORTS CONDITION:
   PORT 1 AND 2 SHALL BE CONNECTED UNDER DE–ENERGISED CONDITION.
   PORT 2 AND 3 SHALL BE CONNECTED UNDER ENERGISED CONDITION.
4. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY AT INLET & OUTLET OF SMART POSITIONER.
5. MOUNTING ACCESSORIES AS REQUIRED.
6. PROFIBUS BASED SMART POSITIONER SHALL BE PROVIDED.
7. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET
8. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
9. TUBING AND FITTINGS TO BE PROVIDED AS FOLLOWS:–
   (a) TUBING: MATERIAL– SS316/ PVC COATED CU; SIZE– 1/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; LENGTH– 12 METER PER CV.
   (b) FITTINGS: MATERIAL– SS,DOUBLE COMPRESSION TYPE; TUBE CONNECTOR– 1/2" NPT(M) X 1/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; FITTINGS FOR CONNECTION TO AIR FILTER REGULATOR,AIR LOCK RELAY,IA HEADER ISOLATION VALVE AND EQUAL TEES.
10. VOLUME BOOSTER/DUMP VALVE AND ITS RELATED TUBING & CONNECTORS SHALL BE PROVIDED, IF REQUIRED TO ACHIEVE THE DESIRED TRAVEL TIME (<10Sec). AIR CONNECTION TO VOLUME BOOSTER/DUMP VALVE SHALL ALSO BE PROVIDED.
11. EXPANDER/REDUCER BETWEEN VALVE BODY AND PIPE SHALL BE SUPPLIED BY BHEL.
12. EXPANDER/REDUCER BETWEEN VALVE BODY AND DIFFUSER/CARTRIDGE/SILENCER(IF APPLICABLE) SHALL BE SUPPLIED BY BIDDER.

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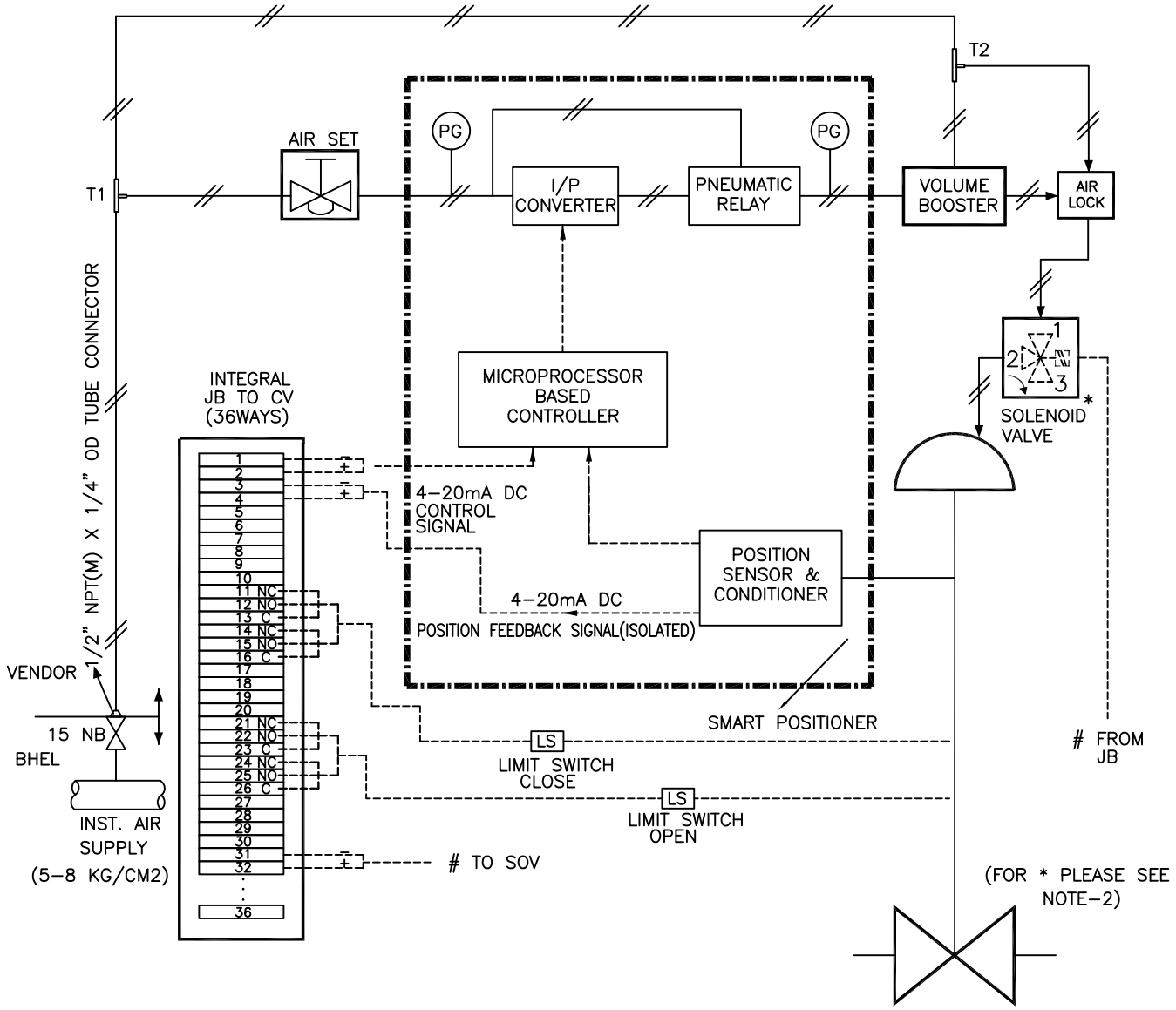
TITLE:–

CONTROL VALVE HOOK–UP DIAGRAM

STANDARD CONTROL VALVE HOOK-UP DIAGRAM
(WITH SMART POSITIONER)
(AS APPLICABLE)



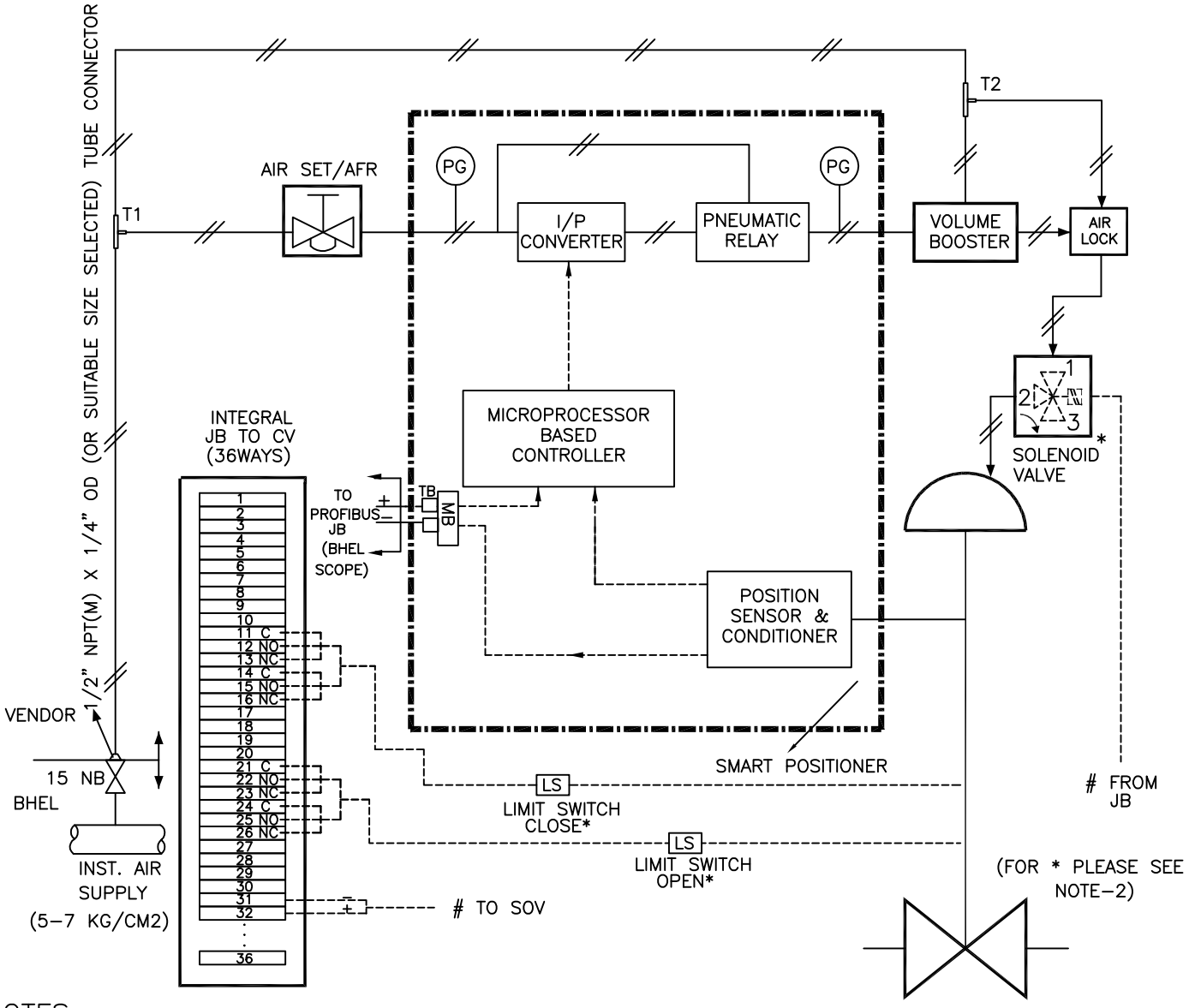
NOTES :-

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / ELECTRICAL SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET.
2. SOLENOID VALVE WILL BE PROVIDED ONLY FOR CONTROL VALVES IF INDICATED IN RESPECTIVE DATA SHEETS.
3. SOLENOID VALVES PORTS CONDITION:
   PORT 1 AND 2 SHALL BE CONNECTED UNDER DE-ENERGISED CONDITION.
   PORT 2 AND 3 SHALL BE CONNECTED UNDER ENERGISED CONDITION.
4. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY & OUTPUT(S).
5. MOUNTING ACCESSORIES AS REQUIRED.
6. POSITION FEEDBACK SIGNAL SHALL BE 2 WIRE 4-20mA ISOLATED SIGNAL.
7. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET
8. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
9. TUBING & FITTINGS TO BE PROVIDED AS FOLLOWS:
   (a) TUBING: MATERIAL- SS316/ PVC COATED CU; SIZE- 1/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; LENGTH: 12 M PER CV.
   (b) FITTINGS: MATERIAL- SS; DOUBLE COMPRESSION TYPE, TUBE CONNECTOR- 1/2" NPT(M) X 1/4" OR SITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSSEMBLY; FITTINGS FOR CONNECTION TO AIR FILTER REGULATOR, AIR LOCK RELAY, IA HEADER ISOLATION VALVE & EQUAL TEES.
10. VOLUME BOOSTER (ALONG WITH TEE-T2 AND RELATED TUBING & CONNECTORS) SHALL BE PROVIDED IF REQUIRED. AIR CONNECTION TO VOLUME BOOSTER FROM TEE-T2 SHALL BE PROVIDED.
11. EXPANDER / REDUCER BETWEEN VALVE BODY & PIPE SHALL BE SUPPLLIED BY BHEL.
12. EXPANDER/ REDUCER BETWEEN VALVE BODY & DIFFUSER/ CARTRIDGE/ SILENCER (IF APPLICABLE) SHALL BE SUPPLLIED BY BIDDER.

BHEL

TITLE:- CONTROL VALVE HOOK-UP DIAGRAM

CONTROL VALVE HOOK-UP DIAGRAM
(WITH SMART POSITIONER-PROFIBUS BASED)
(AS APPLICABLE)



NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / ELECTRICAL SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET.
2. SOLENOID VALVE & LIMIT SWITCHES WILL BE PROVIDED ONLY FOR CONTROL VALVES IF INDICATED IN RESPECTIVE DATA SHEETS.
3. SOLENOID VALVES PORTS CONDITION:
   PORT 1 AND 2 SHALL BE CONNECTED UNDER DE–ENERGISED CONDITION.
   PORT 2 AND 3 SHALL BE CONNECTED UNDER ENERGISED CONDITION.
4. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY AT INLET AND OUTLET OF SMART POSITIONERS.
5. MOUNTING ACCESSORIES AS REQUIRED.
6. PROFIBUS BASED SMART POSITIONER SHALL BE PROVIDED.
7. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET.
8. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
9. TUBING AND FITTINGS TO BE PROVIDED AS FOLLOWS:–
   (a) TUBING: MATERIAL– SS316/ PVC COATED CU ; SIZE– 1/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; LENGTH– 12 METER PER CV.
   (b) FITTINGS: MATERIAL– SS,DOUBLE COMPRESSION TYPE; TUBE CONNECTOR– 1/2" NPT(M) X 1/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; FITTINGS FOR CONNECTION TO AIR FILTER REGULATOR,AIR LOCK RELAY,IA HEADER ISOLATION VALVE AND EQUAL TEES.
10. VOLUME BOOSTER/DUMP VALVE AND ITS RELATED TUBING & CONNECTORS SHALL BE PROVIDED, IF REQUIRED TO ACHIEVE THE DESIRED TRAVEL TIME (<10Sec). AIR CONNECTION TO VOLUME BOOSTER/DUMP VALVE SHALL ALSO BE PROVIDED.
11. EXPANDER/REDUCER BETWEEN VALVE BODY AND PIPE SHALL BE SUPPLIED BY BHEL.
12. EXPANDER/REDUCER BETWEEN VALVE BODY AND DIFFUSER/CARTRIDGE/SILENCER(IF APPLICABLE) SHALL BE SUPPLIED BY BIDDER.

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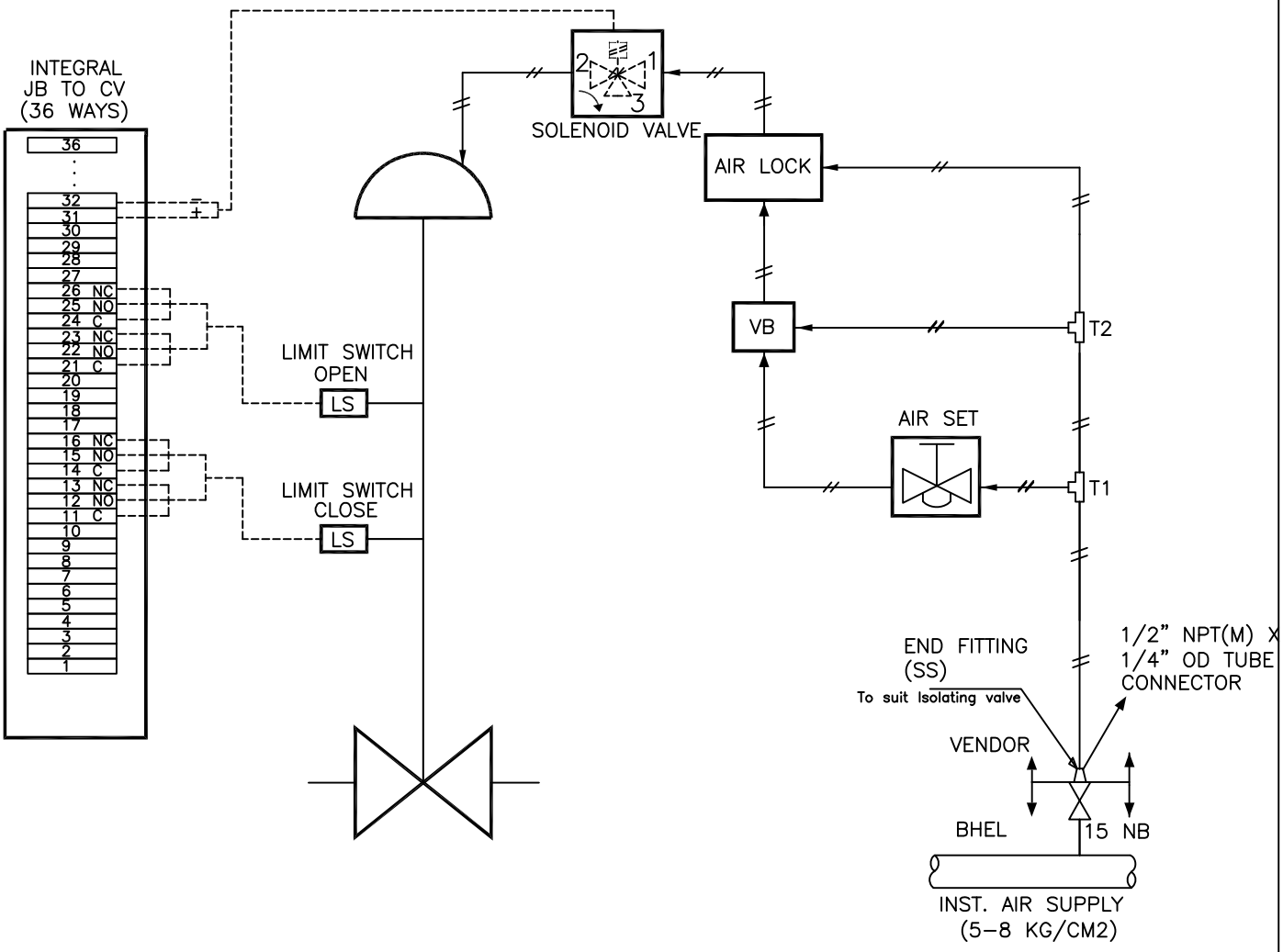
TITLE:–

CONTROL VALVE HOOK–UP DIAGRAM

CONTROL VALVE HOOK-UP DIAGRAM
(FOR ON / OFF TYPE)
(AS APPLICABLE)



NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / ELECTRIC SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET.
2. SOLENOID VALVES PORTS CONDITION:
   PORT 1 AND 2 SHALL BE CONNECTED UNDER DE–ENERGISED CONDITION.
   PORT 2 AND 3 SHALL BE CONNECTED UNDER ENERGISED CONDITION.
3. MOUNTING ACCESSORIES AS REQUIRED.
4. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION,THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET.
5. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
6. TUBING & FITTINGS TO BE PROVIDED AS FOLLOWS:
   (a) TUBING: MATERIAL– SS316/ PVC COATED CU; SIZE– I/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; LENGTH: 12 M PER CV.
   (b) FITTINGS: MATERIAL– SS; DOUBLE COMPRESSION TYPE, TUBE CONNECTOR– 1/2" NPT(M) X 1/4" OR SITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSSEMBLY; FITTINGS FOR CONNECTION TO AIR FILTER REGULATOR, AIR LOCK RELAY, IA HEADER ISOLATION VALVE & EQUAL TEES.
7. EXPANDER / REDUCER BETWEEN VALVE BODY & PIPE SHALL BE SUPPLLIED BY BHEL.
8. EXPANDER/ REDUCER BETWEEN VALVE BODY & DIFFUSER/ CARTRIDGE/ SILENCER (IF APPLICABLE) SHALL BE SUPPLLIED BY BIDDER.

BHEL

TITLE:–

CONTROL VALVE HOOK–UP DIAGRAM

CLAUSE NO.	GENERAL TECHNICAL REQUIREMENTS

E Learning Package (Applicable for NTPC Projects):

E-Learning Package shall be supplied for Aux. PRDS system, as detailed below:

8.03.05.03

These packages shall be installed on the Learning Management Server (LMS) of Power Management Institute (PMI), NTPC located at Noida. The Engineer- In-Charge (EIC) for the e-learning modules shall be from PMI.

1. The objective of the e-Learning package consisting of courses for erection, commissioning, operation and maintenance of equipment / system as specified above is to facilitate the employees to have first hand information / requirement with respect to above activities for the supplied equipment / system .

2. The bidder shall submit e-learning courses each for erection, commissioning, operation and maintenance of each of the equipment / system supplied as above.

a. The erection course(s) should include instructions on pre-checks, prerequisites, erection strategy, erection procedure etc.

b. The commissioning course(s) should include instructions on pre-commissioning, commissioning, initial operation etc.

c. The operation course(s) should include instructions on the permissive, interlocks, physical check-ups, start-up, shutdown and protections etc.

d. The maintenance course(s) should include instructions on predictive, preventive, breakdown and overhauling.

Depth of coverage of above courses shall be as specified for **"Instruction Manuals"** in above clauses. A literature on caution / safety while handling equipment / system for the above modules shall follow the description of the said equipment /system.

3. The e-Learning packages on equipment / system shall be installed by the vendor and shall be successfully test run in the presence of EIC or

CLAUSE NO.	GENERAL TECHNICAL REQUIREMENTS
	representative before acceptance by NTPC. The vendor will also give the master copy in form of Flash Drive/CD/DVD. The respective module for erection & commissioning shall be delivered and successfully test run at least three months before the scheduled start of the corresponding activity at site. The respective module for operation & maintenance shall be delivered and successfully test run at least three months before scheduled first synchronization of first unit. **4. e-Learning course broad requirements:** **a.** The courses shall be web based and mobile based Application type. It shall run on all possible versions of web browser like Internet Explorer, Google Chrome, Firefox etc. on Laptop/Desktop and shall be Smartphone/Tablet/Mobile responsive. The Mobile responsive courses shall run on Android, Windows Mobile, Blackberry, iOS etc. **b.** The courses shall support liquid/fluid page layout so that the entire screen gets adjusted to PC, Laptop, Smartphone/Mobile, Tablet and any other display devices. **c.** Course content text shall be in English language and be associated with a voiceover in English language with Indian accent. **d.** Courses shall be SCORM (Sharable Content Object Reference Model) compliant, version 1.2 which is compatible with LMS at PMI. **e.** Each course shall have every physical and functional detail of the equipment / system supplied. **f.** Each of the e-Learning course shall be based on multiple web pages and mobile pages with multiple modules. **g.** There shall be option for self-assessment test after every course. In case the user doesn't opt for self-assessment test the user shall be able to go to the next course. There shall be no restriction in no. of times for repeating the assessments. All correct answers along with the answers marked by the users shall be displayed at the end of test/quiz. **h.** If Java and Flash, as applicable are not available in the system to run the package, then there shall be a prompt message for updation of the same. **i.** Each course shall have a self-running interactive content with navigation buttons containing forward, backward, pause, bookmark and menu options in the course window. **j.** The course shall contain chapter titled 'Introduction/overview' that explains the purpose of the course. **k.** The course content shall contain descriptive text shall be factual, specific, terse, clearly worded, and simply illustrative, so that the user can understand it.

CLAUSE NO.	GENERAL TECHNICAL REQUIREMENTS
	l. The system shall provide the user with the ability to select the information with a Cursor. **m.** The course menu should contain table of content linked to concerned pages. The user shall be given the capability to access all of the functions available on the system through a menu system. This shall consist of active buttons, which shall control a hierarchy of pull down/pop-up menus. Menu shall appear quickly and exist only while a selection is being made. The user shall be given the capability to position the cursor or pointer on the menu item and use pointer device such as mouse to activate the function. **n.** Every course shall contain the 3D design/drawing/exploded view/360^0 turn around view of the equipment/system, textual description of the equipment/system and its functionality with video (as applicable), animation and audio. **o.** The users shall be able to control audio sound level associated with the courses. **p.** Drawings / text in the courses shall be scalable (Zoom In/ Out). **q.** The user shall have the capability to record a **bookmark** to mark displayed information for later recall, whenever he accesses the same course next time. Notes: 1. e-learning Package of an equipment / system shall include e-learning courses for each of erection, commissioning, operation and maintenance of that equipment / system. 2. e-learning courses on erection, commissioning, operation and maintenance of an equipment / system shall include e-learning lessons/chapters/modules (as required) for erection, commissioning, operation and maintenance respectively of that equipment / system. 3. The vendor shall get the approval of one sample course from EIC before proceeding for further courses.

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001
		Rev. No. 00
		Date : NOV'24

QUALITY PLAN

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 1 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
					M	B/C				D	M	B	C	
	2	3	4	5	6		7	8	9		**			
1.0	RAW MATERIAL													
1.1	Body & Bonnet castings/forgings ,plug,valve stem, seat ring/cage	Physical, Chemical properties	MA	Physical, Chemical tests	100%	100%	Approved drg/ datasheet	Approved drg/data sheet	Test Certificate	√	P/ W	V	V	
		Heat Treatment	MA	Review of H.T. Certificate	100%	100%	Approved drg/ datasheet	Approved drg/data sheet	Test Certificate	√	P/ W	V	V	1. Applicable for body /bonnet only 2. IBR certificate(if applicable) to be verified.
		Internal quality of castings/forgings	MA	RT for castings & UT for forgings	100%	100%	ASME B 16.34	ASME B 16.34	Test Report/ Film	√	P/ W	V	V	Applicable for body and bonnet for rating ANSI 600 and above.
		Surface Quality	MA	1.Visual	100%	100%	ANSI/ MSS-SP-55	ANSI/ MSS-SP-55	Inspection Report	√	P/ W	V	V	Applicable for body/bonnet only.
		Pressure Test for shell	MA	Hyd. Test	100%	100%	ISA-S-75.19	ISA-S-75.19	Inspection Report	√	P/ W	V	V	For Body and Bonnet after machining.

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:			Checked by:					Reviewed by:			
Reviewed by:			Reviewed by:					Approved by:			
Approved by:											

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 2 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
	2	3	4	5	6		7	8	9	D	**			
					M	B/C					M	B	C	
1.2	Diaphragm	Surface Quality	MA	Visual	100%	100%	Mfr. standard	COC./Test Certificate	COC/Test Certificate	√	P/ V	V	V	
		Hardness	MA	Measurement	100%	100%	Mfr. standard	COC/Test Certificate	COC/ Test Certificate	√	P/ V	V	V	
		Endurance/ Life cycle	MA	Cyclic Test 10,000 cycles	One/ type	One/ Type/ project	Mfr. standard	No damage	COC/Test Certificate	√	P/ V	V	V	
1.3	Spring	Composition	MA	Chemical-Analysis	One Sample/ Heat	One Sample/ Heat	Mfr. Standard	COC/Test Certificate	COC/Test Certificate	√	P/ V	V	V	
		Mech. Properties	MA	Mech. Test	One Sample/ Heat	One Sample/ Heat	Mfr. Standard	COC/Test Certificate	COC/Test Certificate	√	P/ V	V	V	
		Performance	MA	1.Stiffness Ratio	100%	100%	Mfr. standard	COC/Test Certificate	COC/Test Certificate	√	P/ V	V	V	
				2.Scragging	100%	100%	Mfr. standard	COC/Test Certificate	COC/Test Certificate	√	P/ V	V	V	
				3.Cyclic Test (Endurance)	One/ type	One/ type	Mfr. standard	COC/Test Certificate	COC/Test Certificate	√	P/ V	V	V	

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	MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
		CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
		PROJECT: --		PO NO.: --	DATE: --
		ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 3 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
	2	3	4	5	6		7	8	9	D	**			
					M	B/C					M	B	C	
				4. Dimension (Measurement)	One sample/ Lot	One sample /Lot/ project	Mfr. Standard	COC/Test Certificate	COC/Test Certificate	√	P/ V	V	V	
2.0	**IN PROCESS INSPECTION**													
2.1	After machining, i, Body ii Bonnet iii Plug iv Valve Stem v seat ring vi cage	Surface flaws	MA	Visual & MT/PT	100% (on accessible surfaces)	100%	ASME B 16.34	ASME B 16.34	Inspection Report	√	P/ W	V	V	Butt weld ends shall be included.
		Dimensional checks	MA	Measurement	100%	100%	Appd Drg.	Appd Drg.	Inspection Report	√	P/ W	V	V	
		Hard Facing (wherever applicable)	MA	Hardness Measurement	One sample/ Lot	One sample /Lot/ project	Appd Datasheet	Appd Datasheet	Inspection Report	√	P/ W	V	V	

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MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 4 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
	2	3	4	5	6		7	8	9	D	**			
					M	B/C					M	B	C	
FINAL TESTING/INSPECTION														
3.0	**TESTS ON COMPLETED VALVE**													
3.1	Actuator Chamber	Leakage	MA	Pneumatic Test	100%	100%	Mfr. standard	No Leakage	Test Certificate	√	P/ W	W	V/ W	
3.2	Body	Leakage (Body Mount Leakage)	MA	Hydro Test	100%	100%	ISA-S-75.19/	No Leakage	Test Certificate	√	P/ W	W	V/ W	
3.3	Seat Leakage	Seat Leakage	MA	Pneumatic / WaterTest	100%	100%	FCI-70.2	Approved Datasheet	Test Certificate	√	P/ W	W	V/ W	
4.0	**OPERATION TEST ON COMPLETED VALVE ASSEMBLY**	Valve Travel	MA	Measurement	100%	100%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W	V/ W	
		Opening / Closing Time	MA	Measurement	100%	100%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W	V/ W	
		Linearity / Cam characteristic	MA	Measurement	100%	100%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W	V/ W	
		Repeatability	MA	Measurement	100%	100%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W	V/ W	
		Hysterisis	MA	Measurement	100%	100%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W	V/ W	
		Sensitivity	MA	Measurement	100%	100%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W	V/ W	

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Reviewed by:			Reviewed by:					Approved by:			
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	MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
		CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
		PROJECT: --		PO NO.: --	DATE: --
		ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 5 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
	2	3	4	5	6		7	8	9	D	**			
					M	B/C					M	B	C	
		Accuracy(Overall)	MA	Measurement	100%	100%	Approved datasheet	Approved Datasheet	Inspection Report					
		Control Valve characteristics / CV Test	MA	Measurement (Press. vs. discharge and discharge vs opening 0-100% in steps of 10%)	One per type	One per type per project	Mfr. Procedure	Approved Datasheet	Test Certificate	√	P/ W	W	W	
		Operation of limit switch & solenoids and other accessories	MA	Function	100%	100%	Mfr. Procedure	Approved Datasheet	Inspection Report	√	P/ W	W	V/ W	On assembled Valve.
		Overall dimensions	MI	Visual and dimensional	100%	100%	Approved drg	Approved drg	Inspection Report	√	P/ W	W	V/ W	
		Pre-defined valve position in case of air / signal failure	MI	Visual and dimensional	100%	100%	Approved data sheet	Approved data sheet	Inspection Report	√	P/ W	W	V/ W	
		Stamping (for direction of flow), Tag No.	MA	Visual	100%	100%	Approved drg /datasheet	Approved drg /datasheet	Test Certificate	√	P/ W	W	V/ W	

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Reviewed by:			Reviewed by:					Approved by:			
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MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 6 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
	2	3	4	5	6		7	8	9	D	**			
					M	B/C					M	B	C	
5.0	**AUXILIARY ITEMS (Performance test of auxiliary items shall be performed on the completely assembled valve) –** Refer NOTE-3													
5.1	Air Filter Regulator	Performance Test	MA	Measurement	Each type	Each type	Mfr. Standard	No leakage	--	√	P/ V	V	V	
		Overall leakage	MA	Visual(soap solution)	100 %	10%	Mfr. Standard	No leakage	--	√	P/ V	V	V	
5.2	Air lock relay	Performance Test	MA	Leakage test	100%	10%	Mfr. Standard	No leakage	--	√	P/ V	V	V	
5.3	Smart Positioner	Physical Verification Make/Model	MA	Visual	100%	10%	Approved drg/ datasheet	Approved drg/ datasheet	--	√	P/ V	V	V	
		Degree of Protection	MA	IP/NEMA test	Each type	Each type	Relevant Standard	Relevant Standard	--	√	P/ V	V	V	
		Calibration	MA	Measurement	Each type	Each type	Mfr. Standard	Mfr. Standard	--	√	P/ V	V	V	
5.7	**Electrical items** (i) Limit Switches	Routine Test	MA	HV, IR, Continuity function	100%	10%	Approved Data sheet	Approved Data sheet	--	√	P/ V	V	V	
		Degree of protection	MA	IP/NEMA Tests	One sample/ type	One sample/ Lot	Approved Data sheet	Approved Data sheet	--	√	P/ V	V	V	

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
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MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 7 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	**			REMARKS
					M	B/C				D	M	B	C	
	2	3	4	5	6		7	8	9					
	(ii) Solenoids	Routine Test	MA	HV, IR, Continuity function	100%	10%	Approved Data sheet	Approved Data sheet	--	√	P/ V	V	V	
		Degree of protection	MA	IP/NEMA Tests	One sample/ type	One sample /Lot	Approved Data sheet	Approved Data sheet	--	√	P/ V	V	V	
	(iii)Position Transmitter (if provided externally)	Routine Test	MA	HV, IR, Continuity function	100%	10%	Approved Data sheet	Approved Data sheet	--	√	P/ V	V	V	
		Degree of protection	MA	IP/NEMA Tests	One sample/ type	One sample /Lot	Approved Data sheet	Approved Data sheet	--	√	P/ V	V	V	
6.0	**PAINTING**	Paint Thickness	MA	Measurement DFT check	100%	10%	Approved drg/data sheet	Approved drg/data sheet	Inspection Report	√	P/ W	V	V	
7.0	**PACKING**	Soundness of Packing against transit damage	MA	Visual	100%	100%	Approved drg/data sheet	Approved drg/data sheet	Inspection Report	√	P/ W	V	V	

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
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Approved by:											

	MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
		CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
		PROJECT: --		PO NO.: --	DATE: --
		ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 8 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
	2	3	4	5	6		7	8	9	*	**			
					M	B/C				D	M	B	C	

NOTES:

1. Cv test shall be conducted at FCRI/ laboratory approved by Govt. Of India/BHEL approved Laboratory.
2. Copies of all TC's (Test Certificates) for materials duly correlated with Heat Nos., TC's for electrical items and mechanical tests (Leak/Operation), C.O.C's (Certificates of Conformance) shall be submitted to BHEL for verification and acceptance.
3. Valve manufacturer to arrange for COC (Certificates of Conformance) for the tests w.r.t. control valve accessories mentioned at Sl. No. 5 of the QAP.

LEGENDS:

*RECORDS, INDENTIFIED WITH "TICK"(√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION,

** **M**:SUPPLIER / MANUFACTURER/ SUB-SUPPLIER/SUB-CONTRACTOR, , **B**: BHEL/ BHEL NOMINATED THIRD PARTY INSPECTION AGENCY, **C**: CUSTOMER, **P**:PERFORM,**W**:WITNESS, **V**:VERIFICATION,AS APPROPRIATE **MA**:MAJOR,**MI**:MINOR,**CR**:CRITICAL,**RT-**RADIOGRAPHIC TEST,**UT-**ULTRASONIC TEST,**PT-**DYE PENETRANT TEST,**MT-**MAGNETIC PARTICLE TEST

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
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	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

SUB VENDOR LIST

SL.NO	ITEM DESCRIPTION	SUB VENDORS
1	SMART POSITIONER	ABB
		SIEMENS
		EMERSON
		YOKOGAWA
2	AIR FILTER REGULATOR / AIR LOCK RELAY	SHAVO NORGEN, MUMBAI
		EMERSON (ASCO) CHENNAI
		PLAKA, CHENNAI
3	SOLENOID VALVE	ROTEX, VARODARA
		AVCON.MUMBAI
		ASCO, CHENNAI
4	JUNCTION BOX	K.S INDUSTRIES PVT LTD
		SUCHITRA INDUSTRIES
		SHRENIK & COMPANY
		FLEXPRO ELECTRICALS PVT LTD
		BALIGA
		PYROTECH
		RITTAL

Note: Above sub vendor list is subject to customer approval during project specific ordering.

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

PAINTING REQUIREMENT

S. No.	Condition	Surface Preparation	Primer Coat	No. of Coats	DFT (in Microns)	Intermediate Coat (in Microns)	No. of Coats	DFT (in Microns)	Final Coat	No. of Coats	DFT (in Microns)	Total DFT	Remarks
1	F92, F91, WC9, WCB valves (above 60 deg C)	Sa 2.5	Heat Resistant Aluminium Paint IS 13183, Grade I/II	1	20	NA	NA	NA	Heat Resistant Aluminium Paint IS 13183, Grade I/II	2	20	60	1) Powder Coating for non-metallic part shall be of Two coats system of Zinc Rich Epoxy base with total DFT of Min 80 microns 2). Stainless Steel, Non- Ferrous and Galvanised item/portion shall not be painted. 3) For valves upto 60 Deg C, different options (2a & 2b) are given. Any of these options may be selected for specific project based on the customer requirement and the same shall be supplied by bidder, without any commercial implication to BHEL.
2.a	Carbon Steel Actuators and F92, F91, WC9, WCB valves (upto 60 deg C #)	Sa 2.5	Epoxy Based Zinc Primer (92% Zinc in dry film (min), % VS = 35 (min))	1	30	Epoxy based MIO pigmented intermediate coat	1	75	Epoxy based Finish paint to IS14209 / Aliphatic acrylic Polyurethane paint to IS 13213	2	30	165	
2.b			Inorganic ethyl self curing zinc silicate primer (coating) as per IS - 14946 performance standard. Min. Metallic Zinc in the dry film by weight must be 75%. % VS = 60 (min))	1	80	High build epoxy MIO coating cured with polyamide hardener. Minimum Natural Lamellar Micaceous Iron Oxide content in the dry film must be 50% by weight. % VS = 60 (min)	1	120	One coat of High Build Gloss Aliphatic Acrylic Polyurethane at 50 micron/coat dry film thickness. % VS = 62 (min)	1	60	260	

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

PACKING REQUIREMENT - Minimum requirement of packing specified herewith, any superior packing can also be acceptable	
Sl.no	**DESCRIPTION**
1	**Type of Packing:**
1.1	Item shall be fully covered with multi layered cross laminated colourless polyethylene sheet of at least 100 GSM and shall be packed inside wooden box or crate or fixed on wooden pallet depending upon the size.
1.2	Item shall be firmly fixed to the bottom of the packing box/crate/pallet with the help of supports/blocks to arrest the movement from all sides.
1.3	The electronic items like positioner and other delicate items like pressure gauges etc. shall be disassembled and packed separately in polyethylene air bubble film or black foam prior to placing in wooden boxes. Instructions with sketch for mounting the Smart Positioner & Pressure Gauge etc. shall be sent along with the packing list for erection at site.
1.4	Loose items/accessories like nipples, expander/reducer, root valves etc. shall be separately packed with polyethylene sheet of at least 100 GSM inside the packing box/crate.
1.5	Threaded connection of Smart Positioner & Pressure Gauge shall be shipped with the end caps fitted to avoid any damage. Corrosion inhibitors are to be applied on all unpainted carbon steel surfaces.
1.6	Marking for Fragile & Condensing environment shall be done on the packing box.
2	**Quality of wood:**
2.1	**Quality of wood:** Wood used for packing box shall be Pinewood, Rubber wood, Mango wood, Fir wood, Silver Oak wood or other as per availability with moisture content not exceeding 30%.
3	**Cushioning material and moisture absorber:**
3.1	Suitable cushioning shall be provided by rubberized coir / expanded soft polyethylene foam.
3.2	Adequate quantity of packed desiccant shall be suitably placed inside the packing box.
4	**Packing slip & holder:**
4.1	Packing slip kept in polyethylene bag shall be placed inside the wooden box at appropriate place.
4.2	One copy of packing slip wrapped in polyethylene bag covered in galvanized iron tin sheet/ aluminium packing slip holder shall be fixed on the external surface the packing box.

BILL OF QUANTITY

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

AUXILIARY STEAM PRESSURE REDUCING AND DESUPERHEATING STATION ALONGWITH ACCESSORIES

A)	BOQ - MAIN SUPPLY			Total Quantity			
SR. NO.	TAG NO	DESCRIPTION	QTY/ UNIT	Type I	Type II	Type III	Type IV
1	ASV-22	Combined Type-High Capacity Pressure Reducing & Desuperheating Valve (On MS line) (ASV-22)	1	4	11	1	1
2	ASV-26	Low Capacity PRV (on CRH Line) (ASV-26)	1	4	4	8	1
3	CDV-262	Spray Control Valve for HC-PRDS (CDV-262)	1	4	12	-	-
4	CDV-265	Spray Control Valve for HC-PRDS (CDV-265)	1	4	9	-	-
5	CDV-84	Spray Block Valve (CDV-84)	1	12	-	-	-

B)	BOQ - E LEARNING MODULE	Total Quantity
1	E LEARNING MODULE	2

C)	COMMISSIONING SPARES			
Sr. No.	TAG NO	DESCRIPTION	Total Quantity	
1	ASV 22	Gaskets	16 Sets	1 set per valve
2	ASV 22	Gland Packing	16 Sets	1 set per valve
3	ASV 26	Gaskets	16 Sets	1 set per valve
4	ASV 26	Gland Packing	16 Sets	1 set per valve
5	CDV 262	Gaskets	16 Sets	1 set per valve
6	CDV 262	Gland Packing	16 Sets	1 set per valve
7	CDV 265	Gaskets	13 Sets	1 set per valve
8	CDV 265	Gland Packing	13 Sets	1 set per valve
9	CDV 84	Gaskets	12 Sets	1 set per valve
10	CDV 84	Gland Packing	12 Sets	1 set per valve

LIST OF MANDATORY SPARES

Sr. No.	Description	Tentative Quantity		
		Type I	Type II	Type III
1	**High Capacity PRDS (i.e., ASV-22)**			
i)	Steam pressure reducing cum desuperheating valve (Complete)	4 Nos.	-	1 No.
ii)	Steam pressure reducing cum desuperheating valve - without actuator, positioner, accessories etc.	-	-	1 No.
iii)	Stem/ Spindle	4 Nos.	6 Nos.	1 No.
iv)	Disc	4 Nos.	6 Nos.	1 No.
v)	Body seat rings	8 Sets of each type & size	2 Sets of each type & size	2 Sets of each type & size
vi)	Metal Seat	-	-	1 set
vii)	Gland packings	8 Sets of each type& size	20 Sets of each type& size	2 Sets of each type & size
viii)	Pressure Seal Ring	8 Sets of each type & size	10 Sets of each type & size	2 Sets of each type & size
ix)	Gaskets	8 Sets of each type & size	6 Sets of each type & size	2 Sets of each type & size
x)	Desuperheater liners	-	1 Set	1 Set
xi)	Cage	-	2 Nos.	-
xii)	Valve actuator assembly	2 Nos.	1 No.	1 No.
xiii)	Actuator Bush	-	4 sets for each type and size	-
xiv)	Actuator Bush Bearing	-	10 sets of each type and size	-
xv)	Valve actuator to Bush house gear box	-	1 No. of each type and size	-
xvi)	Actuator Diaphragm/Piston	-	1 No. of each size, type and model	-
xvii)	Soft Goods kit Valve	-	-	1 set
xviii)	Actuator Soft Goods kit	-	-	1 set
xix)	Positioner units /smart positioners (complete unit) & accessories (link assembly)	4 sets	1 Set	2 Sets
xx)	Diaphragms, O' rings, seals etc.	10 Sets of each type & size	-	
xxi)	Solenoid valves	2 Nos. of each type	-	2 Nos. of each type
xxii)	Air Lock Relays	2 Nos. of each type, model & rating	-	2 Nos. of each type
xxiii)	Air Filter Regulator	4 Nos. of each type	-	2 Nos. of each type
xxiv)	Gaskets for Power cylinder	-	2 sets for each type of power cylinder	-
xxiv)	Seal Kit for Positioner	-	2 sets for each type of positoner	-
2	**Low Capacity PRDS System (i.e. for ASV-26)**			
i)	LC Steam pressure reducing valve (Complete)	4 Nos.	1 No.	
ii)	LC Steam pressure reducing valve - without actuator, positioner, accessories etc.	-	1 No.	-
iii)	Stem/ Spindle	4 Nos.	3 Nos.	4 No.
iv)	Disc	8 Nos.	3 Nos.	4 No.
v)	Body seat rings	4 Sets. for each type & size	4 Sets. for each type & size	-
vi)	Metal Seat	-	1 set	-
vii)	Gland packings	8 Sets of each type & size	22 Sets of each type & size	-
viii)	Pressure Seal Ring	8 Sets of each type & Size	11 Sets of each type & Size	-

LIST OF MANDATORY SPARES

Sr. No.	Description	Tentative Quantity		
		Type I	Type II	Type III
ix)	Gaskets	4 sets of each type & size	7 sets of each type & size	-
x)	Cage	-	2 Nos.	-
xi)	Valve actuator assembly	2 Nos.	3 Nos.	-
xii)	Actuator Bush	-	1 set for each type, size and rating of valves	-
xiii)	Actuator Bush Bearing	-	10 Sets for each type and size	-
xiv)	Valve actuator to Bush house gear box	-	1 No. of each type and size	-
xv)	Actuator Diaphragm/Piston	-	1 No. of each size, type and model	-
xvi)	Soft Goods kit Valve	-	1 set	-
xvii)	Actuator Soft Goods kit	-	1 set	-
xviii)	Positioner units /smart positioners (complete unit) & accessories (link assembly)	4 sets of each type & size	3 Sets of each type & Size	-
xix)	Diaphragms, O' rings, seals etc.	10 Sets of each type & size	-	-
xx)	Solenoid valves	2 Nos. of each type	2 Nos. of each type	-
xxi)	Air Lock Relays	2 Nos. of each type, model & rating	2 Nos. of each type	-
xxii)	Air Filter Regulator	4 Nos. of each type	2 Nos. of each type	-
xxiii)	Seal Kit for Positioner	-	2 sets for each type of positoner	-
3	**For Spray Water Line Control Valves (i.e. for CDV-262,CDV-265)**			
i)	Valve trim (including cage, plug, stem, seat rings, guide bushings, gland packing, stem packing, gaskets etc.)	2 Sets of each type of Valve	2 Sets of each type of Valve	-
ii)	Gland packings	10 Sets of each type & size	-	-
iii)	Gaskets	10 Sets of each type & size	-	-
iv)	Stem/ Spindle	-	5 Nos.	-
v)	Disc	-	4 Nos.	-
vi)	Body seat rings	-	1 set	-
vii)	Metal Seat	-	1 set	-
viii)	Valve actuator assembly	2 Nos.	1 No.	-
ix)	Soft Goods kit Valve	-	1 set	-
x)	Actuator Soft Goods kit	-	1 set	-
xi)	Positioner units /smart positioners (complete unit) & accessories (link assembly)	4 Sets of each type & size	2 Sets of each type & size	-
xii)	Diaphragms, O' rings, seals etc.	10 Sets of each type & size	2 Sets of each type & size	-
xiii)	Solenoid valves	2 Nos. of each type	2 Nos. of each type	-
xiv)	Air Lock Relays	2 Nos. of each type, model & rating	2 Nos. of each type	-
xv)	Air Filter Regulator	4 Nos. of each type	3 Nos. of each type	-
xxiii)	Seal Kit for Positioner	-	2 sets for each type of positoner	-
4	**For Spray Water Line Block Valves (i.e. for CDV-84)**			

LIST OF MANDATORY SPARES				
Sr. No.	Description	Tentative Quantity		
		Type I	Type II	Type III
i)	Valve trim (including cage, plug, stem, seat rings, guide bushings, gland packing, stem packing, gaskets etc.)	2 Sets of each type of Valve	-	-
ii)	Stem/ Spindle	5 Nos.	-	-
iii)	Disc	4 Nos.	-	-
iv)	Body seat rings	1 set		
v)	Metal Seat	1 Set	-	-
vi)	Valve actuator assembly	1 No.	-	-
vii)	Soft Goods kit Valve	1 Set	-	-
viii)	Actuator Soft Goods kit	1 Set	-	-
ix)	Diaphragms, O' rings, seals etc.	2 Sets of each type & size		
x)	Solenoid valves	2 Nos. of each type	-	-
xi)	Air Lock Relays	2 Nos. of each type	-	-
xii)	Air Filter Regulator	3 Nos. of each type	-	-

Notes:	
1	One set means complete replacement for one valve.
2	Wherever the quantity is coming in fraction, same shall be round off to next higher whole number.
3	Any item indicated as "Not Applicable" by bidder but actually found applicable during detailed engineering, same shall be supplied by bidder without any cost implication to BHEL.

BHEL	**TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT**	**PE-TS-RC1-142-H001** **Rev. No. 00** **Date : NOV'24**

BOQ - SERVICES

Site visit for valve installation check to ensure proper valve functionality check after the erection of the valve during the commisioning (cold condition) and during the hot charging of the valve considering 2 nos. of site visit for 2 days each.

Sr. No.	Description	
1	Travel Charges per visit	16 visits
2	Charges per mandays	32 days

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001 Rev. No. 00 Date : NOV'24

DOCUMENTATION REQUIREMENT

DRAWINGS & DOCUMENTS TO BE SUBMITTED BY ALL THE BIDDERS ALONG WITH THE BID	
Sl. No.	**DOCUMENT TITLE**
1	PQR CREDENTIALS
2	COMPLIANCE SHEET

DRAWINGS & DOCUMENTS TO BE SUBMITTED BY SUCCESSFUL BIDDER AFTER AWARD OF CONTRACT ALONG WITH SUBMISSION SCHEDULE		
Sl. No.	**DOCUMENT TITLE**	**FIRST SUBMISSION SCHEDULE**
Primary Documents		
1	DATASHEET	With 15 days from PO
2	GA DRAWING WITH EDGE PREPARATION DETAILS	With 15 days from PO
3	QUALITY PLAN DULY SIGNED & STAMPED	With 15 days from PO
Secondary Documents		
1	CV CALCULATION	With 15 days from PO
2	CV TEST REPORTS	Test Report to be submitted prior to dispatch of main supply items.
3	E LEARNING MODULE (IF APPLICABLE)	To be submitted prior to final inspection of last item of Main supplies.
4	O&M MANUAL	Within 30 days from MDCC
BHEL/Customer comments/approval and Vendor Resubmisison schedule		
BHEL Comment/Approval on first revision		Within 10 days of Vendor submission
BHEL /Customer Comment/Approval on subsequent revision		Within 18 days of Vendor submission/Resubmission
Vendor Resubmission		Within 7 days of BHEL/ Customer Comments.

DRAWINGS & DOCUMENTS TO BE SUBMITTED AS FINAL/AS-BUILT DOCUMENT		
Sl. No.	**DOCUMENT TITLE**	**SUBMISSION SCHEDULE**
1	APPROVED DOCUMENTS	Along with dispatch
2	CV TEST REPORT	
3	ALL TEST CERTIFICATES	

COMPLIANCE CERTIFICATE	
1	It is hereby confirmed that the technical specification (sheet 1 to 56) has been read and understood. We confirm compliance to the tender specification including any prebid clarification and amendments issued prior to techno-commercial bid opening without any deviation.
2	It is hereby declared that any technical submittals which was not specifically asked by BHEL in NIT shall not to be considered as part of bid and shall not be evaluated by BHEL.

Signature of authorised Representative

Name and Designation :

Name & Address of the Bidder

Date

	TECHNICAL SPECIFICATION AUX PRDS RATE CONTRACT	PE-TS-RC1-142-H001
		Rev. No. 00
		Date : NOV'24

PRE QUALIFICATION REQUIREMENT (TECHNICAL)

FORM NO. PEM 6100-0

	PRE - QUALIFYING REQUIREMENTS (TECHNICAL)	DOCUMENT NO: PE-QR-RC1-142-H101
		REVISION NO: 03 DATE: NOV'24
		SHEET: 1 of 1

ENQUIRY NO:

PROJECT: RATE CONTRACT FOR APRDS PACKAGE

PACKAGE: AUXILIARY PRDS (Auxiliary Steam Pressure Reducing & Desuperheating Station)

1. The bidder should have designed, manufactured, tested, inspected & supplied the Steam Conditioning Valve and associated spray control valve (for applications like Auxiliary PRDS, Turbine bypass, etc.), for a Thermal Power plant, which have been successfully in use for at least 1 year in thermal power plant as per below and is in business on continuous basis:

   The Steam Conditioning Valve of minimum inlet steam capacity of 100 Tonnes/Hour and minimum pressure class rating of 2500 or above, supplied for a Thermal Power plant of unit rating 500 MW or above shall only be considered.

1.1 In case bidder is not OEM, the offer shall be evaluated as per below (1.1 (a) & (b))

a) Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:

(i) If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.

(ii) If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.

(iii) If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.

(iv) If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.
Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

b) Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

2. The Bidder shall furnish following support documents for assessment of Bidder w.r.t. PQR.

A. Bidder's Experience list of Steam Conditioning Valve for last 5 years for assessment of bidder for supplying the Auxiliary PRDS on regular basis for establishing business continuity in enclosed format- Annexure-1.
Bidder shall furnish the PO copy or any supporting documents of at least one executed Contracts as indicated in the experience list for establishing business continuity.

B. Bidder shall furnish any one from below in support of successful performance of Steam Conditioning Valve (as per point 1 above).

i. Satisfactory Performance feedback certificates from End Customer (Owner) (in English) for at least one successfully executed contract which has been successfully in use for atleast One year indicating salient features like year of commissioning, duty parameters (Flow, Size), project name etc., date of issue of certificate and name/ designation of the certificate issuer).

OR

ii. The bidder has been awarded One repeat contract from End Customer (Owner) / Purchaser (in English) for power plant. Repeat contract shall be considered when the second contract is given by the same purchaser after lapse of minimum 1 year from execution of first contract. Supporting documents for execution of the Contract like dispatch details, MDCC, Inspection report etc. along with the PO Copy to be furnished, if bidder intends to submit the documents for Repeat Contracts.

Note: - Purchase order copy or supporting drgs./technical data sheets/ commissioning certificate etc. are to be submitted along with the bid, for which the bidder intends to furnish the performance feedbacks / repeat contracts, for reference purpose only. Purchase order for spare items shall not be considered as repeat order qualifying criteria.

3. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.

4. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder /collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

5. After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

	Annexure V PRE - QUALIFYING REQUIREMENTS
PROJECT:	RATE CONTRACT
PACKAGE:	AUX PRDS

CRITERIA FOR EVALUATION - FINANCIAL :

	Amount (in Rs.)
Average annual financial turnover value during any three out of last six Financial Years as on tender due date should not be less than	4,40,00,000.00

Rs.Four Crore Forty Lakh only

Notes:-

a) The bidder has to submit financial accounts (audited, if applicable comprising of Audit report, Balance Sheet, Profit & Loss A/c Statement and Notes/Schedules pertaining to Turnover/Sales/Revenue), for any three out of last six Financial Years (or from the date of incorporation, whichever is less) as on tender due date to review the above criteria. In case the incorporation of vendor is less than 3 years, average annual financial turnover shall be calculated based on available information as below:-

i) If the accounts are available for <= 1 Financial Year, the Average Annual Turnover shall be calculated based on available information divided by 1 (One).

ii) If the accounts are available for >1 but < = 2 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 2 (Two).

iii) If the accounts are available for >2 but <= 3 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 3 (Three).

b) Foreign bidder is to submit a latest report from reputed third party business rating agency like Dun & Bradstreet, Credit reform etc. in addition to the documents mentioned at point (a) above for review of above criteria.

c) Other Income shall not be considered for arriving at Annual Turnover/Sales.For evaluation purpose,turnover figure excluding taxes shall be considered.

d) For evaluation of foreign bidder, exchange rate (TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid in case of two part bid) shall be considered.

e)Bidder who is 50% or above subsidiary of any other company including those registered outside India and does not meet any of the above Financial Criteria, such bidder may be qualified based on credentials of its holding company provided such holding company meets the above PQR criteria. In such case, the Bidder would be required to furnish a Letter of Support from its Holding Company, pledging unconditional and irrevocable financial support for the execution of the Contract by the Bidder in case of award.

f)In cases where audited results for the last financial year as on the date of Techno Commercial bid opening are not available, a Certificate would be required from CEO/CFO stating that the financial results of the Company are under audit as on the date of Techno-commercial bid opening and are not available.

BHEL / PEM / CMM
SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMNT (RATE CONTRACT)

SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMENT (RATE CONTRACT) FOR AUX PRDS

1. BHEL/PEM intends to enter into Framework Agreement (Rate Contract) for AUX PRDS package. Framework Agreement (Rate Contract) validity for ordering shall be two years from the purchase order for Rate Contract.

2. BHEL-PEM will place purchase order for Framework Agreement (Rate Contract) only on suppliers who are registered with BHEL-PEM. Bidders who are not registered with BHEL-PEM needs to apply & get registered for subject package with PEM before Reverse Auction & hence they need to apply online for registration on PEM web portal & have to enclose acknowledgement with the bid documents else their bid may not be considered for evaluation.

The bidders who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at www.pem.bhel.com -->vendor section-->online supplier registration. All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

3. Framework Agreement (Rate contract) is proposed to be done with 2 suppliers in ratio of 70:30 value wise at L1 FOR site price (Ex-works + freight) for this package. However, order for a project shall not be split.

4. Quantity variation shall be applicable as +/- 30 % of the contract value. Bidders shall be informed that the quantities indicated in the tender are tentative quantities. No minimum quantity is guaranteed by BHEL.

5. This tender is issued by BHEL PEM for Framework Agreement (Rate Contract) of AUX PRDS required at various BHEL project sites. All bidders will be informed the following: –

a) As and when requirement arises, the concerned Project Groups of BHEL-PEM will place order directly on the supplier against the Framework Agreement (Rate Contract).

b) The drawings/ documents submission & approval, submission of Performance Security/ Performance Bank Guarantee, submission of invoices, processing and release of payment after supply of material shall be dealt as per Framework Agreement (Rate Contract) contract terms and shall be directly done with Project Groups which has placed purchase order noted at sl. no. (a) above.

6. Details of consignee and project site information for dispatch of material shall be intimated at the time of placement of PO for specific project after finalization of RC.

7. The items will be required against respective projects. Exact quantities and Project information shall be intimated while placing order for a specific project based on the Rate Contract.

8. The prices shall be FIRM during the period of two years with a provision for further extension after review on mutual consent.

9. Inspection of materials shall be carried out by BHEL/ CQA and or by Customer or by an Authorized Agency at manufacture's works before dispatch, if required. Dispatch of material to be done, only after receipt of BHEL/ Customer MDCC. It is responsibility of vendor to obtain Material Dispatch Clearance Certificate (MDCC) from BHEL or Customer as required before dispatch of material.

   Vendor shall give inspection call on BHEL-CQS web site to applicable inspection agency with a copy of inspection call to BHEL-PEM for arranging Customer participation (if applicable) in inspection / Joint inspection on the proposed date with an advance notice of 15 working days. Inspection charges shall be paid by BHEL-PEM.

BHEL / PEM / CMM
SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMNT (RATE CONTRACT)

Items have to be manufactured as per specification and supplied strictly in accordance with the approved BHEL/ Customer's Drawings & Quality Plan. The items/ test certificate of items, which for any reason are not acceptable to BHEL/ Customer, shall be required to be retested. No extra charge shall be payable on those account by BHEL.

10. Other terms and conditions shall be as per Standard Technical specification No. PE-TS-RC1-142-H001 REV No. 0, GCC Rev 07, Corrigenda 01 to GCC Rev 07 and Enquiry letter.

11. This Enquiry is subject to Conditions/ limits if any imposed in PMD/ Vendor registration.

12. Tentative quantity is given in Enquiry.

13. Bidders to submit offer for RC of said items ONLINE via BHEL-GePNIC Portal only. Bidders to upload tender documents complete in all respects duly signed & stamped on each and every page by the authorized signatory of the bidder as a token of acceptance of all the terms and conditions of tender.

14. The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendor/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL web site http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud as soon as it comes to their notice.

Annexure VII

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____

_____
_____ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process , terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above , the Bidder(s)/ Cotractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee , whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

Section 5 - Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)

6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.

6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.

6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.

8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.

8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a Bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some Bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.

8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.

8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.

8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Prinicpal should be looked into by the CVO of the Principal.

8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.

8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.

8.13 The word `Monitor' would include both singular and plural.

Section 9 - Pact Duration

9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties till the final completion of contract for successful Bidder, and for all other Bidders 6 months after the Contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.

10.2 Changes and supplements as well as termination notices need to be made in writing.

10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.

10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.

10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract. The fees/expenses on dispute resolution through mediation shall be shared by both the parties. Further, the mediation proceedings shall be confidential in nature and the parties shall keep confidential all matters relating to the mediation proceedings including any settlement agreement arrived at between the parties as outcome of mediation. Any views expressed, suggestions, admissions or proposals etc. made by either party in the course of mediation shall not be relied upon or introduced as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of mediation proceedings. Neither of the parties shall present IEMs as witness in any Alternative Dispute Resolution or judicial proceedings in respect of the dispute that was subject of mediation.

KUMAR SUMAN SAURABH

Digitally signed by KUMAR SUMAN SAURABH
DN: c=IN, postalCode=201301, st=UTTAR PRADESH, street=GAUTAM BUDDHA NAGAR, l=GAUTAM BUDDHA NAGAR, o=BHARAT HEAVY ELECTRICALS LTD., ou=BHEL, PS-PEM, serialNumber=5ee389b2a515dd679b11a248e8891c15d93a538dcc190daf100048fdb5a2ec42, pseudonym=621a436d2a8c4662a051ae795645eb5, 2.5.4.20=1a762e39a18dd603c55b055d223fb86301c306189abd0e3846a5e6642d243477, email=SUMANSAURABH@BHEL.IN, cn=KUMAR SUMAN SAURABH
Date: 2024.08.27 14:26:55 +05'30'

For & On behalf of the Principal
(Office Seal)

Place ______________

Date ______________

For & On behalf of the Bidder/ Contractor
(Office Seal)

Witness:___________________
(Name & Address) ___________
____

Witness:____________________
(Name & Address) ____________
____

Annexure VIII

Make In India certification

Letter head of Company/Cost Auditor/Statutory Auditor

Ref. Date…….

To,
Bharat Heavy Electricals Limited
PEM, PPEI Building, Plot No 25,
Sector -16A, Noida (U.P)-201301

Subject: - Certification regarding Local Content

Reference: Enquiry No.

Name of Package: FRAMEWORK AGREEMENT (RATE CONTRACT) OF AUX PRDS

Dear Sir,
We hereby certify that items offered by M/s_____ _____
For "FRAMEWORK AGREEMENT (RATE CONTRACT) OF FLOW ELEMENT-AUX PRDS" meets the requirement in line with NIT and Public Procurement (Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018 & 29.05.2019, 04.06.20 & 16.09.20, 19.07.2024 and subsequent orders if any.

Local Content:_____ %

We further confirm that details of location at which the local value addition will be done at our works located at
…….....
..... (complete address of the works)

Yours truly
……. (authorized signatory of company)
…… (firm name)

Land Border Certificate

Annexure IX

Dated:

Tender Title:

This has reference to order no. F.No.7/10/2021-PPD, Ministry of Finance, Department of Expenditure, Public Procurement Division. We, M/s _____**,** confirm the following:

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this M/s _____ *is not from such a country.*

I hereby certify that this M/s _____ *fulfills all requirements in this regard and is eligible to be considered.*

Signature with Company seal

Tentative List of projects for FrameWork Agreement (rate Contract) of AUX PRDS

1. 2X800 MW Lara STPP Stage II (NTPC)
2. 2X800 MW Singrauli STPP (NTPC)
3. 3X800 MW Talabira TPP (NLC)
4. 2X800 MW MEL Mahan USCTPP (Phase II) (Adani)
5. 2X800 MW APL Raigarh USCTPP - Phase II (Adani)
6. 2X800 MW APL Raipur USCTPP - Phase II (Adani)
7. 2X800 MW MTE Mirzapur USCTPP (Adani)
8. 1X800 MW Yamuna Nagar TPP (HPGCL)
9. 1X660 MW Panki TPS (UPRVUNL)