

**BHARTIYA RAIL BIJLEE COMPANY LTD**  
**NABINAGAR THERMAL POWER PROJECT**  
**(4 X 250 MW)**


**TECHNICAL SPECIFICATION**  
**FOR**  
**pH TRANSMITTER**

**VOLUME II-B & III**

**SPECIFICATION No. PE-TS-300-145-I021**



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

	<h2 style="margin: 0;">PREAMBLE</h2>	SPEC NO.: PE-SS-999-100-Q001	
		VOLUME	
		SECTION	
		REV. NO.	DATE :
		SHEET	

1.0 The tender document contains three (3) volumes. The bidder shall meet the requirements of all the three volumes.

1.1 **Volume-I (CONDITIONS OF CONTRACT)**

This consists of four parts as below :-

- Volume-IA : This part contains instructions to bidders for making bids to BHEL.  
Volume-IB : This part contains general commercial conditions of the tender & includes provision that vendor is responsible for the quality of item supplied by their sub-vendors.  
Volume-IC : This part contains special conditions of contract.  
Volume-ID : This part contains commercial conditions for erection & commissioning site work, as applicable.

1.2 **Volume-II TECHNICAL SPECIFICATIONS**

Technical requirements are stipulated in Volume-II which comprises of :-

- Volume-IIA : General Technical Conditions  
Volume-IIB : Technical Specification including Drawings, if any.

1.2.1 **Volume-IIB**

This volume is sub-divided into following sections :-

- Section-A : This section outlines the scope of enquiry.  
Section-B : This section provides "Project Information".  
Section-C : This section indicates technical requirements specific to the contract, not covered in Section-D.  
Section-D : This section comprises of technical specifications of equipments complete with data sheet A, B and C.

**Data Sheet - A** specifies data and other requirements pertaining to the Equipment.

**Data Sheet - B** Specifies data to be filled by the bidder (Data Sheet-B is contained in Volume-III).

**Data Sheet - C** Indicates data/documents to be furnished after the award of contract as per agreed schedule by the vendor (as applicable).

1.2.2 **Volume-III TECHNICAL SCHEDULES**

This volume contains technical schedules and Data Sheets-B, which are to be duly filled by the bidder and the same shall be furnished with the technical bid as per instructions given in Document No. PE-SS-999-100-Q-002 in Volume-III.

2.0 The requirements mentioned in Section-C / Data Sheets-A of section-D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-D.

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TECHNICAL SPECIFICATION  
FOR  
**pH TRANSMITTER**

**VOLUME II-B**

**SPECIFICATION No: PE-TS-300-145-I021**



**BHARAT HEAVY ELECTRICALS LIMITED**  
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**NOIDA**

	<b>TECHNICAL SPECIFICATION FOR</b> <b>pH TRANSMITTER</b>  <b>BHARTIYA RAIL BIJLEE COMPANY LTD</b> <b>NABINAGAR THERMAL POWER PROJECT</b> <b>(4X250 MW)</b>	SPEC NO.: PE-TS-300-145-I021	
		VOLUME	<b>II -B</b>
		SECTION	<b>A</b>
		REV. NO.	00

## SECTION – A

### SCOPE OF ENQUIRY


## SCOPE OF ENQUIRY

### 1.0 SCOPE

- .1 This specification covers the Design, Manufacture, Inspection and testing at manufacturer's works, proper packing for transportation and delivery to site of the **pH Transmitters**, and accessories as mentioned in different sections of this specification for 4 X 250 MW NABINAGAR TPP.
- .2 The quality plan enclosed forms the minimum requirement but not limited to be adhered to by the bidder.
- .3 The enquiry shall be operated in compliance mode which means that bidder to comply with the requirement of specification, quality plan, delivery schedule, quantities, and as a token of acceptance of the same, following formats to be signed, stamped with company seal and submitted separately for each project :
  - a) Schedule of submission of drawings / documents, equipment manufacture inspection and dispatch
  - b) Schedule of price, unit prices, inspection schedule
  - c) Data Sheet, compliance certificate.
  - d) Quality Plan
- .4 No separate technical offer, datasheets to be submitted with the bid. Any such document shall not be taken cognizance of, and document (Compliance certificate) at 3 above shall be final and binding. Datasheets shall be furnished by the successful bidder (vendor), only after the award of contract & shall be subject to Purchaser's Approval

### 2.0 GENERAL TECHNICAL INSTRUCTIONS

- 1 It is not the intent here to specify all the details of design and manufacture. However, the equipment shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to the customer / consultant, who will interpret the meaning of drawing and specification and shall be entitled to reject any component or material which in his judgment is not in full accordance herewith.
- 2 The omission of specific reference to any component / accessory necessary for the proper performance of the equipment's shall not relieve the supplier of the responsibility of providing such facilities to complete the supply within the quoted prices.
- 3 BHEL's / CUSTOMER's representatives shall be given access to the shop in which the equipments are being manufactured or tested and all test records shall be made available to them.
- 4 The Equipment covered under this specification shall not be dispatched unless the same have been finally inspected, accepted and Material Dispatch Clearance Certificate (MDCC) is issued by BHEL/ CUSTOMER.

	<b>TECHNICAL SPECIFICATION FOR</b> <b>pH TRANSMITTER</b>  <b>BHARTIYA RAIL BIJLEE COMPANY LTD</b> <b>NABINAGAR THERMAL POWER PROJECT</b> <b>(4X250 MW)</b>	SPEC NO.: PE-TS-300-145-I021	
		VOLUME	<b>II -B</b>
		SECTION	<b>B</b>
		REV. NO.	00


## SECTION – B

## PROJECT INFORMATION

# 4 X 250 MW NABINAGAR TPP

## PROJECT INFORMATION

Project Synopsis	
1.00.00	<p><b>BACKGROUND</b></p> <p><b>Details of proposed Stage / Units</b></p> <p>Project name : Nabinagar Thermal Power Project</p> <p>No. of Units x capacity : 4 x 250 MW</p> <p>Project setting up by : Bhartiya Rail Bijlee Company Ltd. (A Joint Venture Company between NTPC Ltd. &amp; Indian Railways)</p>
2.00.00	<p><b>LOCATION AND APPROACH</b></p> <p>Project Location : (i.) Place : Nabinagar</p> <p style="padding-left: 150px;">: (ii) District : Aurangabad</p> <p style="padding-left: 150px;">: (iii.) State : Bihar</p> <p>Latitude and Longitude of project location : North : 24 deg. 42' 30" (N)</p> <p style="padding-left: 150px;">East : 84 deg. 05' 36" (E)</p> <p>Nearest Railway station : Dehri-On-Sone</p> <p>Distance of project location from the Railway station : 30 KM (Approx.)</p> <p>Nearest Major Town : Aurangabad</p> <p>Distance of the town from the Project site : 50 KM</p> <p>Nearest Commercial Airport : Gaya</p> <p>Distance of airport from the project site : 100KM</p> <p>Nearest Highway : National Highway - 2</p> <p>Distance from nearest highway point to the site : 25KM</p> <p>Vicinity plan : Vicinity plan of the project enclosed</p> <p>Any other information: : Further to the informations given in this sub-section , Bidders are advised to visit the project site and collect data on local site conditions</p>

	<b>TECHNICAL SPECIFICATION FOR</b> <b>pH TRANSMITTER</b>  <b>BHARTIYA RAIL BIJLEE COMPANY LTD</b> <b>NABINAGAR THERMAL POWER PROJECT</b> <b>(4X250 MW)</b>	SPEC NO.: PE-TS-300-145-I021	
		VOLUME	<b>II -B</b>
		SECTION	<b>C</b>
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## SECTION – C

# SPECIFIC TECHNICAL REQUIREMENTS

CLAUSE NO.

TECHNICAL REQUIREMENTS 07/01/2016

5.00.00

**ANALYSER INSTRUMENTS:**


**Common Requirements**

- |     |                         |  |
|-----|-------------------------|--|
| 1   | Output signals Analog   | 4-20 mA DC   |
|     | Binary                  | 2 NO + 2 NC for high alarm   |
| 2.  | Zero & span Adjustment  | Available  |
| 3.  | Ambient temp.           | 50°C   |
| 4.  | Indication              | Digital  |
| 5.  | Enclosure Type/Material | Weather & Dust proof (IP 55) Die cast Aluminium/SS   |
| 6.  | Type of Electronics     | Microprocessor based   |
| 7.  | Digital transmission    | Signal RS 232 Link & to suit connections protocol to DDCMIS  |
| 8.  | Calibration             | 9 Auto & Manual (from Remote)  |
| 9.  | Error Diagnostic        | To be provided   |
| 10. | Others                  | If analyser provides superimposed HART signal on 4-20 mA DC output, It shall also be connected to PC based station ( In Employer's Scope). |

5.02.00

PH Analyser

- |                                       |   |            |
|---------------------------------------|---|------------|
| 1. TYPE                               | CELL - FLOW THROUGH   | 07/01/2016 |
| 2. ACCURACY                           | < $\pm$ 1% OF SPAN  |            |
| 3. RANGE                              | 0 - 14 PH, PROGRAMMABLE                                       |            |
| 4. NO. OF STREAMS                     | SINGLE  |            |
| 5. STABILITY                          | < 0.001 PH / WEEK   |            |
| 6. TEMP. COEFFICIENT /<br>TEMP. ERROR | 0.001 PH / DEG. C   |            |
| 7. TYPE OF ELECTRONICS                | 10<br>MICROPROCESSOR BASED WITH SELF-<br>DIAGNOSTIC FACILITY. |            |
| 8. INDICATION                         | DIGITAL   |            |
| 9. ENCLOSURE                          | WEATHER DUST PROOF (IP55) DIE CAST<br>ALUMINUM.               |            |

	<b>TECHNICAL SPECIFICATION FOR</b> <b>pH TRANSMITTER</b>  BHARTIYA RAIL BIJLEE COMPANY LTD NABINAGAR THERMAL POWER PROJECT (4X250 MW)	SPEC NO.: PE-TS-300-145-I021	
		VOLUME	<b>II -B</b>
		SECTION	<b>D</b>
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## SECTION – D

- **DATA SHEETS – A & B**
- **DATA SHEETS – C**
- **QUALITY PLAN**
- **BILL OF QUANTITY**
- **SPARES**
- **SUBMISSION OF DRAWING**



**TECHNICAL SPECIFICATION FOR**  
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## SECTION – D

# EQUIPMENT SPECIFICATION



**TECHNICAL SPECIFICATION FOR**  
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## SECTION – D

## DATA SHEETS – A & B

Tag No. : **PGB15 CQ105**Data Sheet No. **PES-145-05-DS1-0****DATA SHEET – A & B**

DATA SHEET – A (TO BE FILLED UP BY PURCHASER)		DATA SHEET – A (TO BE FILLED UP BY BIDDER)
MANUFACTURER	⇒	BIDDER TO SPECIFY
MODEL NO.	⇒	BIDDER TO SPECIFY
SERVICE	⇒	<b>ECW TO PHES pH LEVEL</b>
QUANTITY	⇒	01 PER UNIT (ONE AGAINST EACH TAG NO.)
TYPE	⇒	CELL FLOW THROUGH
RANGE	⇒	0-14 pH PROGRAMMABLE
ACCURACY / REPEATABILITY	⇒	+/- 0.02 pH
STABILITY	⇒	+/- 0.01 pH
TYPE & NUMBER OF CONTACTS	⇒	2 NO + 2 NC INBUILT, 3A, 240 V AC
MONITOR ENCLOSURE	⇒	IP 65, (NEMA 4X)
AMBIENT TEMPERATURE	⇒	-20 TO 50 DEG C.
OUTPUT SIGNAL	⇒	2 X 4~20 mA DC
<b>ADDITIONAL FEATURES</b>		
TYPE OF ELECTRONICS	⇒	MICRO PROCESSOR BASED
CALIBRATION	⇒	AUTO & MANUAL (FROM REMOTE)
DIGITAL SIGNAL TRANSMISSION	⇒	RS 232 LINK & to suit connections protocol to DDCMIS
TEMPERATURE COMPENSATION	⇒	AUTOMATIC/ MANUAL UPTO 0 TO 100 DEG C WITH Pt 100/ Pt 1000 sensor
LOCAL INDICATION	⇒	4 DIGIT LCD
DATA INPUT	⇒	SEALED TOUCH KEY PAD
SELF DIAGNOSTICS	⇒	PROVIDED
SAMPLE FLOW RATE	⇒	10 LPH (160 ml/min)
POWER SUPPLY	⇒	SELF ADAPTING 100...240 VAC, 50/60 Hz
RESPONSE TIME (90% of full scale)	⇒	<= 10 ms
CALIBRATION FREQUENCY	⇒	ONCE IN A MONTH
Mounting		LOCAL, online measurement
Process pressure (Design)		10 Kg/cm2, 50 Deg. Cel.
OTHERS	⇒	<ol style="list-style-type: none"> <li>For each sensor except mandatory spare, vendor shall supply 5meter of 3/4" NB SCH 40 seamless steel pipe confirming to ASTM A213 TP316 along with one no. 25NB to 20 NB reducer. Vendor shall provide necessary accessories, Tee assembly for mounting of sensor.</li> </ol>



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07/01/2016  
SPECIFICATION NO.: PE-TS-300-145-I021

VOLUME II B

SECTION D

REV. NO. 00

Tag No. : PGB15 CQ105

Data Sheet No. PES-145-05-DS1-0

**DATA SHEET – A & B**

DATA SHEET – A  
(TO BE FILLED UP BY PURCHASER)

DATA SHEET – A  
(TO BE FILLED UP BY  
BIDDER)

2. 25NB SW SS316 isolation valve and drain valve shall be supplied. System should be Plate Mounted. Vendor shall provide all necessary clamp and fasteners.
3. Analysers / monitors shall be furnished with all required accessories for proper functioning.
4. Process Design pressure, temperature are 10Kg/cm<sup>2</sup> , 50 deg cel .Vendor shall supply necessary items/ needle valves to reduce pressure and to meet pressure and flow rating suitable for PH analyzer.
5. Vendor shall submit Calibration & Conformance certificates as per approved documents after award of contract
7. Analyzer shall be from ABB UK, Hach Switzerland –Ploymetron brand , Emersion Process management -Navi Mumbai, Yokogawa-Japan.

OTHERS

⇒



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## SECTION – D

## DATA SHEETS – C

Tag No. : **PGB15 CQ105**

Data Sheet No. PES-145-05-DS2-0

**DATA SHEET – C**  
(TO BE FILLED UP BY BIDDER AFTER THE AWARD OF CONTRACT)

MANUFACTURER	⇒		
MODEL NO.	⇒		
SERVICE	⇒		
QUANTITY	⇒		
TYPE	⇒		
RANGE	⇒		
ACCURACY / REPEATABILITY	⇒		
STABILITY	⇒		
TYPE & NUMBER OF CONTACTS	⇒		
MONITOR ENCLOSURE	⇒		
AMBIENT TEMPERATURE	⇒		
OUTPUT SIGNAL	⇒		
<b>ADDITIONAL FEATURES</b>			
TYPE OF ELECTRONICS	⇒		
CALIBRATION	⇒		
DIGITAL SIGNAL TRANSMISSION	⇒		
TEMPERATURE COMPENSATION	⇒		
LOCAL INDICATION	⇒		
DATA INPUT	⇒		
SELF DIAGNOSTICS	⇒		
<b>SAMPLE FLOW RATE</b>	⇒		
POWER SUPPLY	⇒		
<b>RESPONSE TIME (90% of full scale)</b>	⇒		
<b>CALIBRATION FREQUENCY</b>	⇒		
<b>OTHERS</b>	⇒		



**TECHNICAL SPECIFICATION FOR**  
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**NABINAGAR THERMAL POWER PROJECT**  
**(4X250 MW)**


SPEC NO.: PE-TS-300-145-I021

VOLUME **II -B**SECTION **D**

REV. NO. 00

## SECTION – D

# QUALITY PLAN

		MANUFACTURER'S NAME AND ADDRESS -		<b>MANUFACTURING QUALITY PLAN</b>				PROJECT : 4X250 MW NABINAGAR 13/04/2015							
				ITEM : PH TRANSMITTER (CELL FLOW THROUGH) SUB-SYSTEM:		QP NO.: PE-QP-300-145-I021 REV.NO. :00 DATE:03/05/2012 PAGE: 1.... OF....1		PACKAGE : TG PACKAGE CONTRACT NO. : 300 MAIN-SUPPLIER: BHEL PEM							
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS	
					M	C/N				D*	M	C	N		
1.	2.	3.	4.	5.	6.		7.	8.	9.		10.			11.	
1.	ELECTRONIC COMPONENTS (TRANSMITER)	CORRECTNESS OF MOUNTING , ASSEMBLY , SOLDERING , ETC MODEL / TYPE	MAJOR	VISUAL	100%	-	BHEL APPROVED DATASHEET / DRG.	BHEL APPROVED DATASHEET / DRG.	-	X	P	V	-		
2.	FINISHED INSTRUMENTS	FUNCTIONAL TEST ACCURACY TEST BURN IN TEST DAMP HEAT TEST TEMP CYCLE TEST DRY HEAT TEST VIBRATION TEST	MAJOR	ROUTINE TEST  TYPE TEST	100%	10%	BHEL APPROVED DATASHEET / DRG.	BHEL APPROVED DATASHEET / DRG.	TEST REPORT  TYPE TEST REPORT	✓  ✓	P P P P P	V V V V V	- - - - -		
3.	TERMINAL ENCLOSURE	DEGREE OF PROTECTION	MAJOR	TYPE TEST	1 NO.	-	BHEL APPROVED DATASHEET / DRG.	BHEL APPROVED DATASHEET / DRG.	TYPE TEST REPORT	✓	P	V	-		
			<b>LEGEND:</b> * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION AS APPROPRIATE, CHP: NTPC SHALL IDENTIFIED IN COLUM "N" AS 'W'							DOC. NO.: PE-QP-300-145-I021 REV00					
MANUFACTURER/ SUB-SUPPLIER			MAIN-SUPPLIER				FOR NTPC USE		REVIEWED BY		APPROVED BY		APPROVAL SEAL		
SIGNATURE															



**TECHNICAL SPECIFICATION FOR**  
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**BHARTIYA RAIL BIJLEE COMPANY LTD**  
**NABINAGAR THERMAL POWER PROJECT**  
**(4X250 MW)**

SPEC NO.: PE-TS-300-145-I021

VOLUME **II -B**SECTION **D**

REV. NO. 00

## SECTION – D

# BILL OF QUANTITY

## BILL OF QUANTITY

<b>[A] pH Transmitters with accessories-</b>				
<b>S. No.</b>	<b>TAG NO.</b>	<b>SERVICE</b>	<b>Quantity Per Unit</b>	<b>Total Quantity (FOR FOUR UNIT)</b>
1.	PGB15 CQ105	ECW TO PHES pH LEVEL (pHT)	01	04

<b>PARTICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE</b>				
<b>NAME</b>	<b>DESIGNATION</b>	<b>SIGNATURE</b>	<b>DATE</b>	<b>COMPANY SEAL</b>



**TECHNICAL SPECIFICATION FOR**  
**pH TRANSMITTER**  
**BHARTIYA RAIL BIJLEE COMPANY LTD**  
**NABINAGAR THERMAL POWER PROJECT**  
**(4X250 MW)**

SPEC NO.: PE-TS-300-145-I021

VOLUME **II -B**SECTION **D**

REV. NO. 00

## SECTION – D

## SPARES



**TECHNICAL SPECIFICATION FOR**  
**pH TRANSMITTER**  
**BHARTIYA RAIL BIJLEE COMPANY LTD**  
**NABINAGAR THERMAL POWER PROJECT**  
**(4X250 MW)**

SPEC NO.: PE-TS-300-145-1021 <sup>07/01/2016</sup>

VOLUME **II B**

SECTION

REV. NO. 00

**LIST OF MANDATORY SPARES**

**[A] pH Transmitters**

S. No.	SERVICE	Total Quantity for 4 units	
			No.
1.	ECW TO PHES pH LEVEL (pHT)	01	No.

**PARTICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE**

NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

	<b>TECHNICAL SPECIFICATION FOR</b> <b>pH TRANSMITTER</b>  BHARTIYA RAIL BIJLEE COMPANY LTD NABINAGAR THERMAL POWER PROJECT (4X250 MW)	SPEC NO.: PE-TS-300-145-I021	
		VOLUME <b>II -B</b>	
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		SHEET	

## SECTION – D

### SCHEDULE OF SUBMISSION OF DRAWINGS/DOCUMENTS

	<b>TECHNICAL SPECIFICATION FOR</b> <b>pH TRANSMITTER</b>	SPEC NO.: PE-TS-300-145-I021	
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**SCHEDULE OF SUBMISSION OF DRAWINGS / DOCUMENTS, EQUIPMENT  
MANUFACTURE INSPECTION AND DESPATCH**

1. <b><u>ZERO DATE</u></b>	<b><u>DATE of LOI / FOI / TOI</u></b>
2. Submission of Data Sheets / Drawings/documents/ catalogues sizing calculations for approval.	1 Weeks from the Zero date.
3. Technical finalization, freezing of inputs of manufacture by way of vetting of documents and technical discussions and resubmissions of documents (if required)	4 Weeks from the Zero date.
4. Inspection of Equipment as per Approved (Category-I) drawings / documents.	12 Weeks from the Zero date.
5. Release of MDCC by BHEL	13 Weeks from the Zero date.
6. Dispatch (Packaging & Dispatch)	14 Weeks from the Zero date.
7. Final documents submission as per Contract	14 Weeks from the Zero date.

**NOTE:** Delays due to non-fulfillment of the requirements of approved Quality Plan and approved Data sheets; Drawings, Catalogues and Sizing Calculations observed during inspection shall be to the Vendor's account.

Delays due to INCOMPLETE (Partly) submission of Data sheets, Drawings, Catalogues and Sizing Calculations also shall be considered as **“DOCUMENTS NOT SUBMITTED”**

**(Signature and Stamp of the Bidder)**

**BHARTIYA RAIL BIJLEE COMPANY LTD**  
**NABINAGAR THERMAL POWER PROJECT**  
**(4 X 250 MW)**

**TECHNICAL SPECIFICATION**  
**FOR**  
**pH TRANSMITTER**

**VOLUME - III**

**SPECIFICATION No. PE-TS-300-145-I 021**



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

	<b>TECHNICAL SPECIFICATION FOR</b> <b>pH TRANSMITTER</b>  <b>BHARTIYA RAIL BIJLEE COMPANY LTD</b> <b>NABINAGAR THERMAL POWER PROJECT</b> <b>(4X250 MW)</b>	SPEC NO.: PE-TS-300-145-I021	
		VOLUME III	
		SECTION	
		REV. NO.	00

## CONTENTS

### VOL-III

S. No	DESCRIPTION#	No. of sheets
1	COMPLIANCE CERTIFICATE	1
2	SCHEDULE OF PRICES	1
3	INSPECTION SCHEDULE	1
4	SCHEDULE OF PRICE FOR MANDATORY SPARES	1

**COMPLIANCE CERTIFICATE**  
**For**  
**pH TRANSMITTERS (CELL FLOW THROUGH TYPE)**  
**(To be Signed & Stamped by the Bidder)**  
**Project: 4 X 250 MW NABINAGAR TPP**  
**Specification No. : PE-TS-300-145-I 021**

**We shall comply with the following: -**

1. All the requirements as stated in Technical Specification / Specific Technical requirement / Data sheets / Drawings, BHEL quality plan etc as enclosed in the tender, shall be fully complied **without any deviation**.
2. BHEL Quality Plan/Check list (enclosed with the specification) duly signed and stamped is submitted herewith **without any deviation**.
3. Data sheet-C, BOQ, drawing etc shall be subjected to BHEL/Customer review and approval. These documents shall be submitted to BHEL within 15 days after receipt of LOI.

Signature with date	
Name	
Company seal	

## SCHEDULE OF PRICES

-A-

**pH Transmitter ASSEMBLIES COMPLETE WITH 5m SS Pipe, Valves, Tee , etc.**

<b>[A] pH Transmitters</b>						
<b>S. No.</b>	<b>TAG NO.</b>	<b>SERVICE</b>	<b>Qty/Unit</b>	<b>Unit Price. (Rs.) (Ex-works)</b>	<b>Total price (Rs.) (FOR ONE UNIT) (Ex-works)</b>	<b>Total price (Rs.) (FOR FOUR UNIT) (Ex-works)</b>
1.	PGB15 CQ105	ECW TO PHES pH LEVEL	1 Nos.			
2.	Impulse Pipe		5meter			
3.	Accessories ( Valves, Tee etc.)		1 Lot			
4.	<b>Total price (FOR FOUR UNIT) (Ex-works) (Rs.)</b>					

**B-**

**pH Transmitter ASSEMBLIES without accessories**

<b>[B] MANDATORY SPARES</b>					
<b>S. No.</b>	<b>TAG NO.</b>	<b>SERVICE</b>	<b>Total Qty For 4 Unit</b>	<b>Unit Price. (Rs.) (Ex-works)</b>	<b>Total price (Rs.) (Ex-works)</b>
1.	PGB15 CQ105	ECW TO PHES pH LEVEL	1 No.		

<b>PARTICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE</b>				
<b>NAME</b>	<b>DESIGNATION</b>	<b>SIGNATURE</b>	<b>DATE</b>	<b>COMPANY SEAL</b>

**SCHEDULE OF PRICES**  
**UNIT PRICE FOR Isolation valve , Impulse pipe, and Tee etc.**

S. No.	Item	Description	Unit Rate (Rs) (Ex. Works)
1.	impulse pipe (per meter)	3/4" NB, SCH 40 - ASTM A213 TP316	
2.	Reducer	25NB to 20 NB - SS316	
3.	Tee assembly	SS316	
4.	isolation valve	25NB, SW SS316	
5.	pH cell		

**CHARGES FOR SUPERVISION OF ERECTION AND COMMISSIONING-**

S. No.	Item	Description	Per day( in Rs)
1.	Charges for supervision of erection and commissioning/ per day	Charges for supervision of erection and commissioning/per day	

<b>PARTICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE</b>				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL



**TECHNICAL SPECIFICATION FOR**  
**pH TRANSMITTER**  
**BHARTIYA RAIL BIJLEE COMPANY LTD**  
**NABINAGAR THERMAL POWER PROJECT**  
**(4X250 MW)**

SPEC NO.: PE-TS-300-145-1021<sup>07/01/2016</sup>

VOLUME III

SECTION

REV. NO. 00

## INSPECTION SCHEDULE

(PLACE & ADDRESS OF TESTING/ INSPECTION AND ITS SCHEDULE DATE & DURATION IN NUMBER OF DAYS ITEM/COMPONENTWISE TO BE LISTED)

### PARTICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE

NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL