

Bharat Heavy Electricals Ltd
Electronics Division
Mysore Road, Bangalore – 560026

Tender Document for Design, Engg, Manufacturing,
Testing and Supply in India for LIE/LIR for
ENNORE SEZ (2X660 MW) STPP &
RFQ REF: SAM0000199

Technical Bid Opening Date: 22nd Jan, 2018 (Monday), 13:30 Hrs

<u>Page No.</u>	<u>Content</u>
2-102	Technical Specification for LIE/LIR (PQC is mentioned in Pg 07-09).
103-143	Commercial Terms & Conditions Comprising of: i) Special Commercial Conditions of Contract ii) Instructions To Bidders and iii) General Commercial Conditions of Contract
144	E-Procurement Login Guidelines

Important Information:

Last Date and Time of Tender Submission in **EPS Portal**: 22/01/2018 upto 13:00:00 Hrs.

Date and Time of Tender Opening in **EPS Portal**: 22/01/2018, 13:30:00 Hrs.

Contact Person at BHEL EDN Bangalore:

1. For Commercial Clarifications:-

Ms. Sarita Mohapatra: Sr. Purchase Officer (CE-MM-PR)
Ph: 080-26998239, Mob: 07406555022
Email:sarita@bhel.in

2. For Technical Clarifications:-

Mr Lingutla Rajesh Kumar.: Sr. Engineer (CE-Engg/BPE)
Ph: 080-26999527, Mob: 09900050260
Email:lingutla.kumar@bhel.in

ભૂ વીજ કંપની  A4-10		REF. : CE / 416 /ENNORE/ LIE-LIR / OT		
		REV. NO. : 00		
		PAGE : 01 OF 02		
COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		PROJECT : ENNORE SEZ 2 X 660MW STPP		
		CUSTOMER : M/s TANGEDCO		
		SPECIFICATION FOR LOCAL INSTRUMENT ENCLOSURE (LIE) AND LOCAL INSTRUMENTS RACKS (LIR)		
REVISION : 00		APPROVED  ASHISH MANJHI		
		PREPARED  RAJESH LINGUTLA	ISSUED 416	DATE 08/01/2018



A4-10

REF. : CE / 416 /ENNORE/ LIE-LIR / OT

REV. NO. : 00

PAGE : 02 OF 02

CONTENTS

SECTION	DESCRIPTION	REFERENCE NO.	NO OF SHEETS
A	GENERAL INSTRUCTIONS TO BIDDERS	CE/416/LIE-LIR/GI	3
B	PRE-QUALIFICATION REQUIREMENTS	CE/416/LIE-LIR/PQR	3
C	TECHNICAL SPECIFICATION FOR LIE/LIR	CE/416/LIE-LIR /TS	93

COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

		बि एच ई एल  A4-10	SECTION – A	REF. : CE / 416 / LIE-LIR / GI REV. NO. : 00 PAGE : 01 OF 03			
		GENERAL INSTRUCTIONS TO BIDDERS					
COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.							
		REVISION : 00			APPROVED  ASISH MANJHI		
					PREPARED  RAJESH LINGUTLA	ISSUED 416	DATE 08/01/2018

SECTION- A

GENERAL INSTRUCTIONS TO BIDDERS:

- 1.0 All required documents against this Tender/Specification shall be submitted in English only.
- 2.0 Introduction: Bidders are required to offer Local Instrument Enclosure (LIE) & Local Instrument Rack (LIR) for a Thermal Power Plant Applications.
- 3.0 In order to accept the Technical offers / proposals from Bidders for the project mentioned in this Specification (refer Section C), certain Pre-qualification criteria are required to be met by Bidder.
- 4.0 Pre-qualification requirements are clearly mentioned in Section-B of this Specification. Bidder to read the same carefully and submit the details required for BHEL's acceptance.
- 5.0 Submit duly-filled Supplier Registration Form (SRF), which shall be downloaded by Bidder from our website "www.bhel.com. This is required for registration of new vendors at BHEL EDN against item Local Instrument Enclosure (LIE) & Local Instrument Rack (LIR). Those Vendors who are already approved by BHEL EDN against item Local instrument Enclosure (LIE) & Local instrument Rack (LIR) are not required to submit the Supplier Registration Form (SRF).
- 6.0 BHEL May visit vendor's work for verification of facilities offered and BHEL decision on suitability of manufacturing facility is final and binding.
- 7.0 In case Bidder does not include the details or meet the requirements of Pre-qualification requirements, their offer will be summarily rejected and Bidder's Technical offers will not be evaluated.

Evaluation methodology:

Evaluation methodology as below

BHEL shall initially open Bidder's PQR documents as per Section-B of this specification for review & acceptance.

If the Bidders who are meeting PQR requirements as per Section-B of this specification, Technical Offers of those bidders only will be considered for evaluation.

If the Bidders who are meeting technical requirements as per Section C of this specification, Those Bidders will be taken up with End user/Customer for approval.

If the Bidders who are approved by End user/Customer, Commercial bids of Those bidders will be considered for further evaluation by BHEL.

8.0 Bidders are required to submit offers as detailed below :

- aa. Documents pertaining to Pre-Qualification requirement (CI AA of Section B of this Specification) shall be in a Separate cover /Soft Folder with reference no. "CE/416/LIE-LIR/PQR / CI AA of Section B" marked on it.
- bb. Documents pertaining to Pre-Qualification requirement (CI BB of Section B of this Specification) shall be in a Separate cover/Soft Folder with reference no "CE/416/LIE-LIR/PQR / CI BB of Section B" marked on it.
- cc. Technical offers/proposals for the Project, whose requirements are mentioned in Sections C will be submitted in a separate cover/Soft Folder with RFQ Reference & Reference marked on it.

Note 1:-Whenever required during evaluation of PQR and Technical offers/bids, vendor is required to be present at BHEL Electronic Division, Bangalore, for discussions. Further in the event of order, during approval of the vendor documents by End users/Customers, if needed vendor shall accompany BHEL representative for discussions.

Note 2:- Changes in Technical Specifications will be discussed with the bidders who Qualified PQR for this tender.

		ભારત હેવી એલેક્ટ્રિકલ્સ લિમિટેડ  A4-10	SECTION – B	REF. : CE / 416 / LIE-LIR / PQR			
				REV. NO. : 00			
				PAGE : 01 OF 03			
COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		PRE-QUALIFICATIONS REQUIREMENTS					
				APPROVED			
							
				ASHISH MANJHI			
				PREPARED	ISSUED	DATE	
				 RAJESH LINGUTLA	416	08/01/2018	

SECTION- B

AA. Pre-Qualification Requirements (PQR) of Bidders for Local Instrument Enclosures and Local Instrument Rack (LIE-LIR), as a part of Offer:

- 1.0 Submit Reference List of Projects wherein LIE, LIR has been supplied.
 - 2.0 The bidder should have executed/ completed work of Design and supply of complete LIE LIR package at least 2 units in power plant/process Industries. Bidder should have executed Complete LIE/LIR Package to accommodate minimum of 150 Pressure transmitters / switches.
 - 3.0 Original Equipment Manufacturers based outside India, who are making offer for this tender shall have authorized representatives in India for support related to Documentation, Erection, Commissioning & any other co-ordination work.
 - 3.0 Bidders shall have experienced welders for welding of materials specified in the Technical specification. Welder's certificate shall be provided for verification.
 - 4.0 Bidders shall have a designated drawing office with AUTOCAD/other drafting software, Submission of drawings shall be in pdf format. Bidders to give compliance to the same.
 - 5.0 Bidders shall have designated machine shop including sheet metal fabrication upto 4mm thick and cutting up to 10 mm thick plates, should have Painting facility for both epoxy based tank process painting and powder coating facility or if outsourced details to be provided.
 - 6.0 Bidder shall have facility for performing hydro test on all individual lines (Hydro test pressure shall be 530Kg/Cm²).
 - 7.0 Vendor shall have requisite space for physical inspection, loading facility etc for offering minimum of about 100 LIE and 100 LIRs at the same time for inspection.
 - 8.0 BHEL shall submit vendor credentials to customer and await customer's decision for a maximum of one month from the date of PQ bid opening. If approval is not received within above period, BHEL shall treat the offer as "NOT Meeting PQ" criteria and offer shall be rejected.
-



BB. Along with the documents related to PQR above, following details shall also be included in the Offer:

- 1.0 Unpriced Purchase Order copies of LIE-LIR.
- 2.0 Documents and drawings of LIE-LIR supplied to power plant/Process Industries.
- 3.0 Details of Manufacturing, testing & inspection facility.
- 4.0 Bidder shall have facility for engineering activities, preparation of Documents Etc. Submit these details.
- 5.0 In Case of Foreign Vendors Name & registered address of the Indian branch office or Indian representative for support of E&C and after sales service with Organization chart.

Important Note: In case Bidder does not submit details mentioned in above Section (B) or meet the requirements of Pre-qualification requirements Section (B), Offers will be summarily rejected and Bidder's Technical offers/proposals will not be evaluated. Please read carefully the GENERAL INSTRUCTIONS in Section A of this specifications.

		बि एच डी एल A4-10	SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR		Ref : CE/416/ENNORE/LIE-LIR/PS Rev. : 00 Page : 01 of 02				
		PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO							
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		TECHNICAL SPECIFICATION FOR LOCAL INSTRUMENT ENCLOSURE / RACKS (LIE / LIR)							
		REVISIONS :		APPROVED BY ASHISH M <table><tr><td> PREPARED BY RAJESH L </td><td> ISSUED 416 </td><td> DATE 08/01/18 </td></tr></table>			PREPARED BY RAJESH L	ISSUED 416	DATE 08/01/18
PREPARED BY RAJESH L	ISSUED 416	DATE 08/01/18							



SECTION –C
TECHNICAL SPECIFICATION FOR LIE/LIR

CE/416/ENNORE/LIE-LIR/TS

Rev. No. : 00

Page : 02 of 02

CONTENTS

SL NO	DESCRIPTION	REFERENCE NO
01	SCOPE OF SUPPLY	CE/416/ENNORE/LIE-LIR/SOS REV. 00 ,SHEETS 03
02	TECHNICAL REQUIREMENTS	CE/416/LIE-LIR /TR REV. 00, SHEETS 09
03	INSTRUMENT SCHEDULE	CE/416/ENNORE/INS REV. 00 ,SHEETS 21
04	HOOKUP SCHEMES	CE/416/ENNORE/HUP REV. 00 ,SHEETS 45
05	VENDOR LIST FOR COMPONENTS	CE/416/ENNORE/LIE-LIR /VL REV. 00 ,SHEETS 03
06	DRAWINGS FOR LIE-LIR	CE/416/LIE/LIR/OGA1 SHEETS 04
07	TYPICAL QUALITY CHECK LIST	CE/416/LIE-LIR/QP REV.00, SHEETS 06

COPY RIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT
BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY .

			SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR		Ref : CE/416/ENNORE/LIE-LIR/SOS Rev. : 00 Page : 01 of 03				
		PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO							
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		SCOPE OF SUPPLY FOR LOCAL INSTRUMENT ENCLOSURE / RACKS (LIE / LIR)							
		REVISIONS :			APPROVED BY  ASHISH M <table border="1"> <tr> <td data-bbox="893 1885 1096 2060"> PREPARED BY  RAJESH L </td> <td data-bbox="1096 1885 1300 2060"> ISSUED 416 </td> <td data-bbox="1300 1885 1482 2060"> DATE 08/01/18 </td> </tr> </table>		PREPARED BY  RAJESH L	ISSUED 416	DATE 08/01/18
PREPARED BY  RAJESH L	ISSUED 416	DATE 08/01/18							



A4-11

CE/416/ENNORE/LIE-LIR/SOS

Rev. No. : 00

Page : 02 of 03

Scope of supply

The Scope of supply is as per Technical requirements attached with this specification. Vendor shall quote for each line item of the Table A, B The unit rate shall be valid until the completion of the contracts. For this purpose vendors shall maintain MS Excel file indicating total Bill of materials and calculation of Mandatory spares.

TABLE: A

SLNO	Page no of HUP Ref CE/416/ENNORE/HUP	Material Code	Description	Qty for U#1	Qty for U#2	unit
1		PR0830000020	LIE TYPEA	17	16	NO
2		PR0830000038	LIE TYPE B	29	18	NO
3		PR0830000046	LIE TYPE C	17	15	NO
4		PR0830000054	LIR TYPE A	19	17	NO
5		PR0830000062	LIR TYPE B	30	18	NO
6		PR0830000070	LIR TYPE C	6	6	NO
7	2	PR0830000089	HOOK UP SCHEME PT/PS 1/2" P22 9000CL	15	15	NO
8	4	PR0830000097	Hook up DPT/FT/LT 9000 Steam and Water	8	8	NO
9	6	PR0830000402	HOOK UP SCHEME PT/PS 1/2" P22 6000CL	11	11	NO
10	8	PR0830000356	HOOK UP SCHEME DPT/DPS 1/2" P22 6000CL	6	6	NO
11	10	PR0830000100	Hook up PT/PS 6000 Steam and Water	10	10	NO
12	12	PR0830000119	HOOK UP DPT/FT/LT STEAM AND WATER A106 6K	26	26	NO
13	14	PR0830000127	Hook up PT/PS 3000 water	160	82	NO
14	16	PR0830000135	Hook up DPT/DPS 3000 water	96	65	NO
15	18	PR0830000305	Hook up PT/PS 3000 Sea Water 1/2" SS 316L	58	27	NO
	20	PR0830000216	Hook up DPT/DPS Sea water SS316 L	7	7	NO
	22	PR0900001829	HOOK UP PT/PS 3000 DM WATER SS316 PIPES	4	0	NO
	24	PR0900001879	HOOK UP SCHEME DPT/ FT 3000 CLASS SS316	4	0	NO
	26	PR0830000143	Hook up PT/PS Clean Air service	57	53	NO
	28	PR0830000194	Hook up DPT/FT/DPS Flue gas	66	63	NO
	32	PR0830000151	HUP SCM PT/PS clean air A105 3/4" 3K 2VM	11	9	NO
	30	PR0830000003	Hook up for Air Purging	25	25	NO
	30	PR0830000259	Hook up for Continuous Purging	120	120	NO
	30	PR0830000267	Hook up for Intermittent Purging	25	25	NO
	34	PR0830000313	HOOK UP SCHEME PT/PS 1/2" P91 9000CL	1	1	NO
	36	PR0830000321	HOOK UP SCHEME DPT/DPS 1/2" P91 9000CL	1	1	NO
	38	PR0890000321	HOOK UP SCHEME PT/PS 1/2" Super Duplex Stainless Steel	1	1	NO
	40	PR0890000313	HOOK UP SCHEME DPT/DPS 1/2" Super Duplex Stainless Steel	1	1	NO
	42	PR0830000186	Hook up PT/PS Flue gas - F22	1	1	NO
	44	PR0830000208	Hook up DPT/FT/LT Flue gas -F22	1	1	NO
		PR0450000290	Temp. Transmitter Junction Box - Type A	16	16	NO
		PR0450000303	Temp. Transmitter Junction Box - Type B	8	8	NO
		PR0450000311	Temp. Transmitter Junction Box - Type C	21	21	NO
		PR0830000275	Mandatory Spares for LIE/LIR	1	0	ST

Note:

1. Colour Exterior –RAL7032/RAL7035
2. Interior: Brilliant white Glossy finish two coats/RAL7035 with fire resistant paint. Final colour will be decided during detailed engineering.
3. IP-65 Type test report (Should not be older than 5 years) for LIE and JB of LIR to be submitted for approval during document submission.
4. IBR Certification shall be provided for pipes and fittings, Valves, Tubes for Page Numbers 2 ,4,6,8,10,12,14,16,34,36 of Ref: CE/416/ENNORE/HUP – Hook Up scheme.

COPY RIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

TABLE B Mandatory Spare

SL. NO.	ITEM DESCRIPTION	Spare Qty (Nos)
1	VALVE (10%)	
1.1	FORGED GLOBE VALVE MATL.BODY:ASTM -A182 F22/ STEM MATL:ASTM-A182 F6A SIZE:1/2"NB-SW/CL 3000SPL	33
1.2	FORGED GLOBE VALVE MATL.BODY:ASTM -A182 F91/ STEM MATL:ASTM-A182 F6A SIZE:1/2"NB-SW/CL 3000SPL	2
1.3	FORGED GLOBE VALVE BODY:ASTM A105/STEM:ASTM A182 GR.F6A SIZE:1/2"NB-SW/CL:2500SPL	38
1.4	FORGED GLOBE VALVE BODY:ASTM A105/STEM:ASTM A182 F316 SIZE:1/2"NB-SW/CL:800	133
1.5	FORGED GLOBE VALVE BODY:ASTM A182 F316L/STEM:ASTM A182 F316L SIZE:1/2"NB-SW/CL:800	23
1.6	FORGED GLOBE VALVE BODY:ASTM A182 F316/STEM:ASTM A182 F316 SIZE:1/2"NB-SW/CL:800	3
1.7	FORGED GLOBE VALVE BODY& STEM:ASTM A182 F 53 SIZE:1/2"NB-SW/CL:800	2
1.8	FORGED GLOBE VALVE BODY:ASTM A105/STEM:ASTM A182 F316 SIZE:3/4"NB-SW/CL:800	3
2	VALVE MANIFOLD (10%)	
2.1.1	TWO VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316 PR.TESTING:9000 PSI	4
2.1.2	TWO VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2"NPTF/BODY:SS316 PR.TESTING:6000PSI	5
2.1.3	TWO VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2"NPTF/BODY:SS316 PR.TESTING:3000PSI	38
2.1.4	TWO VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2"NPTF/BODY:SS316L PR.TESTING:3000PSI	9
2.1.5	TWO VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2"NPTF/BODY:SUPER DUPLEX STAINLESS PR.TESTING:3000PSI	1
2.1.6	FIVE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316 PR.TESTING:9000 PSI	2
2.1.7	FIVE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316 PR.TESTING:6000 PSI	7
2.1.8	FIVE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316 PR.TESTING:3000 PSI	17
2.1.9	FIVE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316L PR.TESTING:3000 PSI	2
2.1.10	FIVE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SUPER DUPLEX STAINLESS PR.TESTING:3000 PSI	1
2.1.11	THREE VALVE MANIFOLD WITH VENT PLUG PORT SIZE:1/2" NPTF/MATL.SS316 PR.TESTING:3000 PSI	13
3	FITTINGS (10%)	
3.1.1	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A182 F22/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:9000LBS	7
3.1.2	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A182 F91/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:9000LBS	1
3.1.3	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A182 F22/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:6000LBS	5
3.1.4	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A105/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:6000LBS	13
3.1.5	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A105/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:3000LBS	57
3.1.6	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A182F316L/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:3000LBS	12
3.1.7	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A182F316/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:3000LBS	2
3.1.8	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A182 F53/ SIZE:2 X 1/2" NB-SW TO 1/2"NPTF / CL:3000LBS	1
3.1.9	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A105/ SIZE:2 X 3/4" NB-SW TO 1/2"NPTF / CL:3000LBS	40
3.1.10	FORGED UNEQUAL TEE / AS PER ANSI B16.11/MATL:ASTM A182 F22/ SIZE:2 X 3/4" NB-SW TO 1/2"NPTF / CL:3000LBS	1
3.1.11	NIPPLE SIZE:3/4"NB-SCH-80 MATL:ASTM A106 GR B CONN:ONE END PLAIN X OTHER END 1/2"NPTM, 200mm LONG	40
3.1.12	CAP SIZE:3/4"NPTF MATL:ASTM A105	40
3.1.13	NIPPLE SIZE:3/4"NB-MATL:ASTM A335 P22 SCH-80 CONN:ONE END PLAIN X OTHER END 1/2"NPTM, 200mm LONG	1
3.1.14	CAP SIZE:3/4"NPTF MATL:ASTM A182 F22	1
3.1.15	TUBE FITTING TYPE:DFDC MATL:SS316 SIZE:1/2"NPTM X TO SUIT 1/2"OD SS TUBE	480
3.1.16	TUBE FITTING TYPE:DFDC MATL:A790 S32750 SUPER DUPLEX STAINLESS SIZE:1/2"NPTM X TO SUIT 1/2"OD SS TUBE	3
3.1.17	TUBE FITTING TYPE:DFDC MATL:SS316L SIZE:1/2"NPTM X TO SUIT 1/2"OD SS TUBE	46
4	LED 5 WATT BULB	320
5	MCB 6 ,DP	104

IBR Certification shall be provided for above items slno: 1.1 to 1.4,3.1.1 to 3.1.5. Unit rate of each item for Mandatory spare to be provided in the offer.

COPY RIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

		 A4-10	SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR		Ref : CE/416/LIE-LIR/TR			
			PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO		Rev. : 00			
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		TECHNICAL REQUIREMENT FOR LOCAL INSTRUMENT ENCLOSURE / RACKS (LIE / LIR)						
		REVISIONS :			APPROVED BY  ASHISH M			
					<table border="1"> <tr> <td data-bbox="894 1822 1101 2039"> PREPARED BY  RAJESH L </td> <td data-bbox="1101 1822 1300 2039"> ISSUED 416 </td> <td data-bbox="1300 1822 1484 2039"> DATE 08/01/18 </td> </tr> </table>	PREPARED BY  RAJESH L	ISSUED 416	DATE 08/01/18
PREPARED BY  RAJESH L	ISSUED 416	DATE 08/01/18						

TECHNICAL REQUIREMENTS FOR TRANSMITTER ENCLOSURES AND TRANSMITTER RACKS:**I. TRANSMITTER ENCLOSURES:**

1. The Transmitter enclosures (Closed type) are provided for mounting Transmitters etc. and located in Boiler area. This shall be constructed of 3 mm thick CRCA material. These shall confirm to IP 65 protection class.
2. The Transmitter Enclosures shall be of following sizes (in millimeters).
Type A - 1450(W) x 1000(D) x 2200(H) (For 5 to 6 Transmitters)
Type B - 1100 (W) x 1000(D) x 2200(H) (Between 3 to 4 Transmitters)
Type C - 700(W) x 1000(D) x 2200(H) (For 1 to 2 Transmitters)
3. These shall be reinforced as required to ensure true surfaces and to provide adequate Support for instruments and other equipment mounted therein. Double interlocking doors shall be provided and shall be arranged for maximum possible access to the module interior. Center posts or any member which would reduce access shall not be provided.
4. The doors shall be the three-point locking type constructed of not less than 3 mm steel sheet. Doors shall have concealed quick removal type pinned hinges and locking handles. Enclosure door locks shall accept the same / common key all over the plant. Neoprene material Gaskets shall be used between all mating sections to achieve dust proof enclosure rating for the modules and waterproof and dust tight rating on the Terminal / Junction boxes. All enclosures shall have access doors on Front and Rear sides.
5. Internal wirings between the Transmitters and Terminal / Junction box shall run through flexible dust tight conduits.
6. Anti Vibration Pads of minimum 15 mm thickness shall be provided for supporting each enclosure.
7. Construction of same shall be typically as per enclosed drawing CE/416/LIE/LIR/OGA1.

8. Service Power and Lighting

Each enclosure shall be provided with one receptacle, one light fixture & LED lamps with wire guard and one lighting switch and suitable 2P MCBs, Six point 6/16A, 240V AC Universal type power sockets with switch. Lighting switches may be doors actuated, mounted door. Light switches and receptacles shall be installed inside the enclosure on the wall near the latch side of the enclosure door. Light fixtures shall be installed on the ceilings of the enclosures. Power supplies for miscellaneous devices shall be provided with fuses located within the Enclosure JB. Fuses shall be mounted in fuse blocks. Fuse ratings will be given on electrical schematic diagrams. Power supply shall be 240 V AC.

9. Equipment Installation

- a. Enclosures shall be provided to mount field instrument, equipment and accessories. Vendor shall prepare enclosures and piping drawings indicating the layout for each enclosure.

Special attention shall be given in the piping layout to avoid air traps in liquid filled piping, or water pockets in piping intended to be dry.

- b. Drawings shall indicate the arrangement of all Piping, Valves and Fittings within the enclosures.

10. Impulse Piping /Tubing

- a. Transmitter enclosures shall be complete with impulse tubing piping, valves from enclosure bulkhead connection to all instruments and necessary drain / blow down connections. The type, sizes, material and pressure class of pipes/tubes, fittings, valves etc. shall be suitable for the intended applications as per the Schemes / Tagging list of Instrument, provided by BHEL.
- b. Bulkhead (Thickness shall be not less than 6mm) connection shall be used when instrument piping/ tubing enters the enclosure through Bulkhead plate. Typically through Bulk heads, Impulse pipe entry shall be through Top side of the Enclosure for Steam and Liquid services and for Air / flue gas services, impulse pipe entry shall be from Bottom side.
- c. All Instrument Blow down lines, except those measuring vacuum shall be connected to a two-inch header, which is extended through one end of the enclosure and turned downward at other end.
- d. Instrument piping and tubing shall be hydrostatically tested at one and one-half times the Design pressure (As per Instrument schedule) for that instruments except for vacuum measurement the test pressure will be 8 Kg / Cm².

11. For Purging :

- a. Pneumatic tubing shall be installed for all pneumatic devices, such as Air filter Regulator, Purge rotameters, Isolation valves, distribution air-header etc. Pneumatic tubing shall be installed in a neat workmanlike manner in protected locations with suitable supports. All Pipes / Tubes, which enter or leave the enclosure, shall be terminated on bulkhead fittings in the bulkhead plate. Pneumatic tubing material shall be ½” OD SS316 tubing Flareless SS- Tube fittings shall be used for tubing connections.
- b. Instrument tubing schematic, connection and interconnections diagrams shall be furnished.

12. Wiring Within Enclosures and Grounding

Vendor shall furnish general arrangement and wiring diagrams for each transmitter Enclosures for approval.

13. Enclosure Electrical Junction Box

- a. IP 65 junction box for the termination of all internal wiring shall be provided for each transmitter enclosure.
- b. Junction boxes for enclosures shall be fabricated externally on one end of each enclosure assembly to accept field wiring through the top or bottom of the junction box. The

Junction box shall be 150 millimeters minimum depth. A hinged door shall give access to the interior of the junction box. Junction boxes shall be provided with LED Lamp lighting. Same key shall be used to lock both Junction box & enclosure.

II. OPEN TYPE TRANSMITTER RACKS:

1. Transmitter racks is provided for mounting transmitters and other accessories, in buildings and closed areas like the power house building / turbine hall.
2. The Transmitter Racks shall be of following sizes (in millimeters).

Type A- 1400(W) x 650(D) x 2200(H) (For 5 to 6 Transmitters)
Type B- 1100(W) x 650(D) x 2200(H) (Between 3 to 4 Transmitters)
Type C- 800(W) x 650(D) x 1600(H) (For 1 to 2 transmitters)

3. Racks shall be constructed on structural members of adequate strength and rigidity to ensure proper support to the mounted instruments and equipment. Racks shall be of welded construction. Each rack shall be provided with a canopy to protect the instrument from dripping water or falling objects.
4. All Valves & Manifolds shall be securely mounted and the structural design shall be such that no item shall interfere with maintenance and removal of instrument, equipment and their accessories.
5. Construction of same shall be typically as per enclosed drawing CE/416/LIE/LIR/OGA1.

6. Service Power and Lighting

- a. Each rack shall be provided with one receptacle, one light fixture with wire guard and one lighting switch, LED Lamp. Light fixtures shall be installed on the canopy of the rack.
- b. Power supplies for miscellaneous devices shall be provided with fuses located within the rack JB. Fuses shall be mounted in fuse blocks. Fuse ratings will be given on electrical schematic diagrams. Power supply shall be 240 V AC.

7. Equipment Installation

Vendor shall prepare rack fabrication and piping drawings indicating the layout of each Rack. Transmitter/Instruments shall be installed using custom fabricated supports which are attached to the vertical members provided for this purpose. Drawings shall indicate the arrangement of all equipment, piping, valves and fittings within the rack and shall be subject to approval.

8. Impulse Piping / Tubing

- a. Transmitter racks shall be complete with impulse tubing piping, valves from enclosure bulkhead connection to all instruments and necessary drain / blow down connections. The type, sizes, material and pressure class of pipes/tubes, fittings, valves etc. shall be suitable

- for the intended applications as per the Schemes / Tagging list of Instrument, provided by BHEL.
- b. Bulkhead (Thickness shall be not less than 6mm) connection shall be used when instrument piping/ tubing enters the enclosure through Bulkhead plate. Typically through Bulk heads, Impulse pipe entry shall be through top side of the Enclosure for Steam and Liquid services.
 - c. All Instrument Blow down lines, except those measuring vacuum shall be connected to a two-inch drain pipe header, which is extended through one end of the enclosure and turned downward for directing the blow down into drain.
 - d. Instrument piping and tubing shall be hydrostatically tested at one and one-half times the Design pressure (As per instrument schedule) for that instruments except for vacuum measurement the test pressure will be 8 Kg / Cm².

9. Wiring of the Racks

- a. A fully enclosed IP 65 type junction box shall be provided in each rack for housing the terminal blocks, power supply fuses and other electrical accessories, as required.
- b. All electrical connections between instrument and the Terminals in Junction box shall be made. In addition all utility wiring for lighting and service power shall be installed.
- c. Vendor shall furnish general arrangement and wiring diagrams for each transmitter rack for approval.
- d. Junction boxes for the racks shall be mounted on one end of each assembly to accept field wiring through the top or bottom of the junction box. The junction box shall be 150 millimeters minimum depth. A removable bolted door shall give access to the interior of the junction box. All junction boxes shall accept same key. JB shall be of 3 mm thick CRCA material with IP-65 protection class. Door shall be of self locking type with common key. Door gasket shall be of synthetic rubber.

III. General Requirement applicable to Transmitter Enclosures & Racks :

1. Surface preparation And Painting

- a. All sheet metal / exterior steel surfaces shall rust free and scale free and all other residue during fabrication operation such as Oil, grease and salts etc. shall be removed by one or more solvent cleaning methods. Epoxy primer surface shall be applied to all exterior and interior surfaces. Epoxy paint shall be applied to all surfaces and the paint thickness shall be 100 to 150 microns. The finish colours for exterior and interior surfaces shall conform to the shades mentioned in scope of supply.

1. Grounding

- a. Enclosures and Racks shall be provided with a continuous tinned copper ground bus of minimum 50 mm X 6 mm cross section, extended along the entire length. The ground bus shall have two (2) bolts drilling with GI bolts and nuts at each end.
-

2. Name plate / Label.

- a. Service details and Tag no. shall be engraved on a nameplate or label for each of the Transmitter. These Nameplates or Labels shall be of white non-hygroscopic (Polyamide sheet) material with engraved black lettering on white background. This shall be fixed on to the Impulse Pipe closer to the Transmitter inside the Enclosure / Rack.

3. Wiring Details

- a. Interconnecting wiring shall be provided between all electrical devices mounted in the panels and between the devices and terminal blocks if the devices are to be connected to equipment outside the panels by cabling. All interior wiring shall be installed neatly and carefully and shall be terminated at suitable terminal blocks in the Junction box. Sufficient clearance shall be provided for all control and instrumentation leads.
- b. Each wire shall be identified at both ends with wire designations as per approved wiring diagram. Interlocking type ferrules shall be used for identification.
- c. All wire termination shall be made with insulated sleeve and cage clamp type terminals.
- d. All signal wiring shall be done with 2 pair, 0.75 sq. mm annealed tinned copper, pair twisted overall & shielded (Individual & overall), voltage grade 650 V , FRLS PVC sheathed cable and 4 pair, 0.5 sq. mm for PS/DPS. For power supply application, 2.5 sq mm, 1100V cable shall be used.
- e. Wires shall be dressed and run in trays or troughs with clamp-on type covers. Wiring may be neatly bunched in-groups by non-metallic cleats or bands. Shield wires shall be terminated on separate terminal blocks.
- f. Internal wiring shall follow distinct color coding to segregate different voltage levels viz. 24V DC & 230V AC
- g. Junction Box of enclosures will be provided with removable, gasketed cable gland for cable entrance.

4. Fuse Blocks

- a. Fuse blocks shall be modular type with bakelite frame and reinforced retaining clips.

5. Terminal Blocks

- a. Terminal blocks shall be DIN rail mounted and shall have Cage clamp type connection which shall be maintained for all panels uniformly.
 - b. The rated cross section of the terminal blocks shall be suitable for connecting 0.5-mm²/2.5 mm². Conductor of suitable voltage grade as specified.
-

- c. Terminal blocks shall be mounted vertically with adequate spacing between rows for routing the cable troughs and to allow adequate free workspace for termination and removal of wires.
- d. Terminal blocks shall be provided with white marking strips/self adhesive marker cards.
- e. At least 25 percent spare unused terminals shall be provided on each terminal blocks for circuit modifications and for termination of all conductors in a multi conductor control cables.
- f. Terminal blocks for termination of electrical power supply shall be type WAGO / PHOENIX make of suitable size with marking strips.
- g. The last terminal in a rail-mounted assembly shall be closed with an end plate and end bracket.

IV. Documents to be Submitted by Vendor for Approval :

1. OGA for Transmitter Enclosure and Racks.
2. Layout of Components in each of Transmitter Enclosure and Rack.
3. Electrical diagrams for each Transmitter Enclosure and Rack.
4. Component datasheets
5. Quality plan including Welding Procedure specification and Welder Procedure qualification Record.
6. The quality plan shall include Visual inspection, GA BOM/Layout features verification, Dimensions, Paint shade, thickness measurement, Alignment of sections, component ratings, Wiring, IR, HV, review of TC for instruments / Devices, Accessibility of TBs / Devices, Illumination, Tubing and Degree of protection (Review of type test certificate)

V. Specific requirements

1. Where grouping is not provided for instruments, same shall be indicated during detailed engineering.
 2. **SS tubing between valve manifold and transmitter for each service shall be done as per Transmitter model Nos with mounting details will be provided by BHEL EDN. In Case If Transmitter model Nos with mounting details are not received before dispatch, Vendor has to supply tube and tube connectors and Erect the transmitters and valve manifold during commissioning time as per BHEL EDN Instruction.**
 3. 100% spare LED Lamps shall be provided with each LIE/LIR and JB's.
 4. 50% Spare MCB shall be provided.
 5. 50% spare Fuses shall be provided.
-

TECHNICAL REQUIREMENTS FOR TEMPERATURE TRANSMITTER JUNCTION BOX:

1. The Junction Box is provided for mounting Pipe Mounted Temperature Transmitters. This shall be constructed of 3.0 mm thick steel sheet material. These shall confirm to IP 55 protection class.
2. The Junction Box shall be of following sizes (in millimeters).

Type A – 800(W) x 500(D) x 900(H) (Shall have three rows of 2” pipe & 150 terminals)
Type B - 800(W) x 500(D) x 600(H) (Shall have two rows of 2” pipe & 60 terminals)
Type C - 800(W) x 500(D) x 400(H) (Shall have one rows of 2” pipe & 40 terminals)
3. These shall be reinforced as required to ensure true surfaces and to provide adequate support for instruments and other equipment mounted therein. Doors shall be provided and shall be arranged for maximum possible access to the module interior. Center posts or any member which would reduce access shall not be provided.
4. The doors shall be the three-point locking type constructed of not less than 3.0 mm steel sheet. Doors shall have concealed quick removal type pinned hinges and locking handles. Junction Box door locks shall accept the same / common key all over the plant. Gaskets shall be used between all mating sections to achieve dust proof enclosure rating. All Junction Box shall have access doors on Front side.
5. All the junction boxes shall be suitable for mounting on walls, columns, structures etc. The brackets, nuts, bolts, screws, gland and lugs required for erection are in supplier's scope.
6. Vendor shall furnish general arrangement diagrams for each type of transmitter Junction Box for approval.
7. Surface preparation And Painting
 - a. All sheet metal / exterior steel surfaces shall rust free and scale free and all other residue during fabrication operation such as Oil, grease and salts etc. shall be removed by one or more solvent cleaning methods. Epoxy primer surface shall be applied to all exterior and interior surfaces. Epoxy paint shall be applied to all surfaces and the paint thickness shall be 100 to150 microns. The finish colours for exterior and interior surfaces shall conform to the shades mentioned in scope of supply.

8. Terminal Blocks

- a. Terminal blocks shall be DIN rail mounted and shall have Cage clamp type connection which shall be maintained for all panels uniformly.
- b. The rated cross section of the terminal blocks shall be suitable for connecting 0.5-mm²/2.5 mm². Conductor of suitable voltage grade as specified.

- c. Terminal blocks shall be mounted vertically with adequate spacing between rows for routing the cable troughs and to allow adequate free workspace for termination and removal of wires.
- d. Terminal blocks shall be provided with white marking strips/self adhesive marker cards.
- e. Terminal blocks for termination of electrical power supply shall be type WAGO / PHOENIX make of suitable size with marking strips.
- f. The last terminal in a rail-mounted assembly shall be closed with an end plate and end bracket.

9. Documents to be Submitted by Vendor for Approval :

- a. OGA for Junction Box.
 - b. Layout of Transmitter in each Type of Junction Box.
 - c. Quality plan. This will be approved by BHEL / (END USER)
 - d. The quality plan shall include Visual inspection, GA BOM/Layout features verification, Dimensions, Paint shade, thickness measurement, IR, HV, Accessibility of TBs / Devices, Degree of protection (Review of type test certificate)
-

		बि एच ई पल  A4-10	SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR		Ref : CE/416/ENNORE/INS Rev. : 00 Page : 01 of 21							
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO INSTRUMENT SCHEDULE										
		REVISIONS :		APPROVED BY  ASHISH M <table><tr><td>PREPARED BY</td><td>ISSUED</td><td>DATE</td></tr><tr><td> RAJESH L</td><td>416</td><td>08/01/18</td></tr></table>			PREPARED BY	ISSUED	DATE	 RAJESH L	416	08/01/18
PREPARED BY	ISSUED	DATE										
 RAJESH L	416	08/01/18										

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
HFC01CP001	MILL A BOWL DP	DPT	COAL+ AIR	756	1019	250	350	mmWC	28	2	LIE-01	El 22.55 mtr, Feeder Floor, Near FDR-A	
HFE71CF001	MIXED AIR BEFORE MILL:A FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-01	El 22.55 mtr, Feeder Floor, Near FDR-A	
HFE71CF002	MIXED AIR BEFORE MILL:A FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-01	El 22.55 mtr, Feeder Floor, Near FDR-A	
HFE71CF003	MIXED AIR BEFORE MILL:A FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-01	El 22.55 mtr, Feeder Floor, Near FDR-A	
HFE71CP001	MIXED AIR BEFORE MILL:A PRESS	PT	HOT PY. AIR	701	756	250	350	mmWC	26	1	LIE-01	El 22.55 mtr, Feeder Floor, Near FDR-A	
HFW21CP001	SEAL AIR TO MILL-A UNDER BOWL DP	DPT	SEAL AIR	1015/701	1019	333	350	mmWC	28	2	LIE-01	El 22.55 mtr, Feeder Floor, Near FDR-A	
HFC02CP001	MILL B BOWL DP	DPT	COAL+ AIR	756	1019	250	350	mmWC	28	2	LIE-02	El 22.55 mtr, Feeder Floor, Near FDR-B	
HFE72CF001	MIXED AIR BEFORE MILL:B FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-02	El 22.55 mtr, Feeder Floor, Near FDR-B	
HFE72CF002	MIXED AIR BEFORE MILL:B FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-02	El 22.55 mtr, Feeder Floor, Near FDR-B	
HFE72CF003	MIXED AIR BEFORE MILL:B FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-02	El 22.55 mtr, Feeder Floor, Near FDR-B	
HFE72CP001	MIXED AIR BEFORE MILL:B PRESS	PT	HOT PY. AIR	701	756	250	350	mmWC	26	1	LIE-02	El 22.55 mtr, Feeder Floor, Near FDR-B	
HFW22CP001	SEAL AIR TO MILL-B UNDER BOWL DP	DPT	SEAL AIR	1015/701	1019	333	350	mmWC	28	2	LIE-02	El 22.55 mtr, Feeder Floor, Near FDR-B	
HFC03CP001	MILL C BOWL DP	DPT	COAL+ AIR	756	1019	250	350	mmWC	28	2	LIE-03	El 22.55 mtr, Feeder Floor, Near FDR-C	
HFE73CF001	MIXED AIR BEFORE MILL:C FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-03	El 22.55 mtr, Feeder Floor, Near FDR-C	
HFE73CF002	MIXED AIR BEFORE MILL:C FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-03	El 22.55 mtr, Feeder Floor, Near FDR-C	
HFE73CF003	MIXED AIR BEFORE MILL:C FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-03	El 22.55 mtr, Feeder Floor, Near FDR-C	
HFE73CP001	MIXED AIR BEFORE MILL:C PRESS	PT	HOT PY. AIR	701	756	250	350	mmWC	26	1	LIE-03	El 22.55 mtr, Feeder Floor, Near FDR-C	
HFW23CP001	SEAL AIR TO MILL-C UNDER BOWL DP	DPT	SEAL AIR	1015/701	1019	333	350	mmWC	28	2	LIE-03	El 22.55 mtr, Feeder Floor, Near FDR-C	
HFC04CP001	MILL D BOWL DP	DPT	COAL+ AIR	756	1019	250	350	mmWC	28	2	LIE-04	El 22.55 mtr, Feeder Floor, Near FDR-D	
HFE74CF001	MIXED AIR BEFORE MILL:D FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-04	El 22.55 mtr, Feeder Floor, Near FDR-D	
HFE74CF002	MIXED AIR BEFORE MILL:D FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-04	El 22.55 mtr, Feeder Floor, Near FDR-D	
HFE74CF003	MIXED AIR BEFORE MILL:D FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-04	El 22.55 mtr, Feeder Floor, Near FDR-D	
HFE74CP001	MIXED AIR BEFORE MILL:D PRESS	PT	HOT PY. AIR	701	756	250	350	mmWC	26	1	LIE-04	El 22.55 mtr, Feeder Floor, Near FDR-D	
HFW24CP001	SEAL AIR TO MILL-D UNDER BOWL DP	DPT	SEAL AIR	1015/701	1019	333	350	mmWC	28	2	LIE-04	El 22.55 mtr, Feeder Floor, Near FDR-D	
HFC05CP001	MILL E BOWL DP	DPT	COAL+ AIR	756	1019	250	350	mmWC	28	2	LIE-05	El 22.55 mtr, Feeder Floor, Near FDR-E	
HFE75CF001	MIXED AIR BEFORE MILL:E FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-05	El 22.55 mtr, Feeder Floor, Near FDR-E	
HFE75CF002	MIXED AIR BEFORE MILL:E FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-05	El 22.55 mtr, Feeder Floor, Near FDR-E	
HFE75CF003	MIXED AIR BEFORE MILL:E FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-05	El 22.55 mtr, Feeder Floor, Near FDR-E	
HFE75CP001	MIXED AIR BEFORE MILL:E PRESS	PT	HOT PY. AIR	701	756	250	350	mmWC	26	1	LIE-05	El 22.55 mtr, Feeder Floor, Near FDR-E	
HFW25CP001	SEAL AIR TO MILL-E UNDER BOWL DP	DPT	SEAL AIR	1015/701	1019	333	350	mmWC	28	2	LIE-05	El 22.55 mtr, Feeder Floor, Near FDR-E	
HFC06CP001	MILL F BOWL DP	DPT	COAL+ AIR	756	1019	250	350	mmWC	28	2	LIE-06	El 22.55 mtr, Feeder Floor, Near FDR-F	
HFE76CF001	MIXED AIR BEFORE MILL:F FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-06	El 22.55 mtr, Feeder Floor, Near FDR-F	
HFE76CF002	MIXED AIR BEFORE MILL:F FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-06	El 22.55 mtr, Feeder Floor, Near FDR-F	
HFE76CF003	MIXED AIR BEFORE MILL:F FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-06	El 22.55 mtr, Feeder Floor, Near FDR-F	
HFE76CP001	MIXED AIR BEFORE MILL:F PRESS	PT	HOT PY. AIR	701	756	250	350	mmWC	26	1	LIE-06	El 22.55 mtr, Feeder Floor, Near FDR-F	
HFW26CP001	SEAL AIR TO MILL-F UNDER BOWL DP	DPT	SEAL AIR	1015/701	1019	333	350	mmWC	28	2	LIE-06	El 22.55 mtr, Feeder Floor, Near FDR-F	
HFC07CP001	MILL G BOWL DP	DPT	COAL+ AIR	756	1019	250	350	mmWC	28	2	LIE-07	El 22.55 mtr, Feeder Floor, Near FDR-G	
HFE77CF001	MIXED AIR BEFORE MILL:G FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-07	El 22.55 mtr, Feeder Floor, Near FDR-G	
HFE77CF002	MIXED AIR BEFORE MILL:G FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-07	El 22.55 mtr, Feeder Floor, Near FDR-G	
HFE77CF003	MIXED AIR BEFORE MILL:G FLOW	FT	HOT PY. AIR	701	756	250	350	mmWC	28	2	LIE-07	El 22.55 mtr, Feeder Floor, Near FDR-G	
HFE77CP001	MIXED AIR BEFORE MILL:G PRESS	PT	HOT PY. AIR	701	756	250	350	mmWC	26	1	LIE-07	El 22.55 mtr, Feeder Floor, Near FDR-G	
HFW27CP001	SEAL AIR TO MILL-G UNDER BOWL DP	DPT	SEAL AIR	1015/701	1019	333	350	mmWC	28	2	LIE-07	El 22.55 mtr, Feeder Floor, Near FDR-G	
QFA10CP011	INST AIR HDR PRESS AT BLR TP	PT	INST AIR	6	10	40	50	Kg/Cm2	32		LIE-08	El 11.4 mtr, Near Col S7L	
QFA10CP012	INST AIR HDR PRESS AT BLR TP	PT	INST AIR	6	10	40	50	Kg/Cm2	32		LIE-08	El 11.4 mtr, Near Col S7L	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
QFB10CP011	SERVICE AIR PRESS AT BLR TP	PT	SERV AIR	7.5	10	40	50	Kg/Cm2	32		LIE-08	El 11.4 mtr, Near Col S7L	
QFB10CP012	SERVICE AIR PRESS AT BLR TP	PT	SERV AIR	7.5	10	40	50	Kg/Cm2	32		LIE-08	El 11.4 mtr, Near Col S7L	
HBK10CP001	FURNACE TO WINDBOX DIFF. PRESS. - L	PDT	SEC. AIR/ FLUE GAS	-5/ 102	-5/174	1162/333	1300/350	mmWC	28	2	LIE-09	El 78.9 mtr, Near Col S9L	
HBK10CP002	FURNACE TO WINDBOX DIFF. PRESS. - L	PDT	SEC. AIR/ FLUE GAS	-5/ 102	-5/174	1162/333	1300/350	mmWC	28	2	LIE-09	El 78.9 mtr, Near Col S9L	
HBK10CP003	FURNACE PRESS - L	PT	FLUE GAS	-5	-20	1162	1300	mmWC	26	1	LIE-09	El 78.9 mtr, Near Col S9L	
HBK10CP004	FURNACE PRESS - L	PT	FLUE GAS	-5	-20	1162	1300	mmWC	26	1	LIE-09	El 78.9 mtr, Near Col S9L	
HBK10CP005	FURNACE PRESS (WIDE RANGE) - L	PT	FLUE GAS	-5	-20	1162	1300	mmWC	26	1	LIE-09	El 78.9 mtr, Near Col S9L	
HBK10CP006	HOT PA HDR TO FURN DP	DPT	FG	887/-5	887/-20	325/1162	350/1300	mmWC	28	2	LIE-09	El 78.9 mtr, Near Col S9L	
HBK15CP001	FURNACE TO WINDBOX DIFF. PRESS. - R	PDT	SEC. AIR/ FLUE GAS	-5/ 102	-5/174	1162/333	1300/350	mmWC	28	2	LIE-10	El 78.9 mtr, Near Col S9R	
HBK15CP002	FURNACE PRESS - R	PT	FLUE GAS	-5	-20	1162	1300	mmWC	26	1	LIE-10	El 78.9 mtr, Near Col S9R	
HBK15CP003	FURNACE PRESS (WIDE RANGE) - R	PT	FLUE GAS	-5	-20	1162	1300	mmWC	26	1	LIE-10	El 78.9 mtr, Near Col S9R	
HBK15CP004	HOT PA HDR TO FURN DP	DPT	FG	887/-5	887/-20	325/1162	350/1300	mmWC	28	2	LIE-10	El 78.9 mtr, Near Col S9R	
HBK15CP005	HOT PA HDR TO FURN DP	DPT	FG	887/-5	887/-20	325/1162	350/1300	mmWC	28	2	LIE-10	El 78.9 mtr, Near Col S9R	
HFE30CP001	AH-A PY. AIR INLET PRESS	PT	PY. AIR	951	1019	35	50	mmWC	26		LIE-11	El 15.0 mtr, Near Col S12L	
HLA20CP001	AH-A SEC. AIR INLET PRESS	PT	SEC.AIR	260	281	30	100	mmWC	26		LIE-11	El 15.0 mtr, Near Col S12L	
HFE35CP001	AH-B PY. AIR INLET PRESS	PT	PY. AIR	951	1019	35	50	mmWC	26		LIE-12	El 15.0 mtr, Near Col S12R	
HLA25CP001	AH-B SEC. AIR INLET PRESS	PT	SEC.AIR	260	281	30	100	mmWC	26		LIE-12	El 15.0 mtr, Near Col S12R	
HBK10CP007	FG PRESS AT PSH FRONT O/L -L	PT	FLUE GAS	-6	-20	1058	1300	mmWC	26	1	LIE-13	El 78.9 mtr, Near Col S9L	
HBK10CQ001	O2 ANALYSER AT PLATEN SH FRONT	AT	FLUE GAS								LIE-13	El 78.9 mtr, Near Col S9L	wired to JB of LIE /LIR
HBK20CP001	FG PRESS AT PSH REAR O/L -L	PT	FLUE GAS	-8	-20	977	1100	mmWC	26	1	LIE-13	El 78.9 mtr, Near Col S9L	
HBK20CQ001	O2 ANALYSER AT PLATEN SH REAR	AT	FLUE GAS								LIE-13	El 78.9 mtr, Near Col S9L	wired to JB of LIE /LIR
HBK30CP001	FG PRESS AT FINISH RH O/L -L	PT	FLUE GAS	-15	-40	878	1100	mmWC	26	1	LIE-13	El 78.9 mtr, Near Col S9L	
HBK40CP001	FG PRESS AT FINISH SH O/L -L	PT	FLUE GAS	-24	-50	734	900	mmWC	26	1	LIE-13	El 78.9 mtr, Near Col S9L	
HBK15CP006	FG PRESS AT PSH FRONT O/L -R	PT	FLUE GAS	-6	-20	1058	1300	mmWC	26	1	LIE-14	El 78.9 mtr, Near Col S9R	
HBK15CQ001	O2 ANALYSER AT PLATEN SH FRONT	AT	FLUE GAS								LIE-14	El 78.9 mtr, Near Col S9R	wired to JB of LIE /LIR
HBK25CP001	FG PRESS AT PSH REAR O/L -R	PT	FLUE GAS	-8	-20	977	1100	mmWC	26	1	LIE-14	El 78.9 mtr, Near Col S9R	
HBK25CQ001	O2 ANALYSER AT PLATEN SH REAR	AT	FLUE GAS								LIE-14	El 78.9 mtr, Near Col S9R	wired to JB of LIE /LIR
HBK35CP001	FG PRESS AT FINISH RH O/L -R	PT	FLUE GAS	-15	-40	878	1100	mmWC	26	1	LIE-14	El 78.9 mtr, Near Col S9R	
HBK45CP001	FG PRESS AT FINISH SH O/L -R	PT	FLUE GAS	-24	-50	734	900	mmWC	26	1	LIE-14	El 78.9 mtr, Near Col S9R	
HHL10CF001	HOT SEC. AIR FLOW - LEFT	FT	SEC.AIR	140	194	333	350	mmWC	28		LIE-15	El 39.8 mtr, Near Col S10L	
HHL10CF002	HOT SEC. AIR FLOW - LEFT	FT	SEC.AIR	140	194	333	350	mmWC	28		LIE-15	El 39.8 mtr, Near Col S10L	
HHL10CF003	HOT SEC. AIR FLOW - LEFT	FT	SEC.AIR	140	194	333	350	mmWC	28		LIE-15	El 39.8 mtr, Near Col S10L	
HHL20CP001	WIND BOX PRESS - L	PT	SEC.AIR	102	191	333	350	mmWC	26		LIE-15	El 39.8 mtr, Near Col S10L	
HHL15CF001	HOT SEC. AIR FLOW - RIGHT	FT	SEC.AIR	140	194	333	350	mmWC	28		LIE-16	El 39.8 mtr, Near Col S10R	
HHL15CF002	HOT SEC. AIR FLOW - RIGHT	FT	SEC.AIR	140	194	333	350	mmWC	28		LIE-16	El 39.8 mtr, Near Col S10R	
HHL15CF003	HOT SEC. AIR FLOW - RIGHT	FT	SEC.AIR	140	194	333	350	mmWC	28		LIE-16	El 39.8 mtr, Near Col S10R	
HHL25CP001	WIND BOX PRESS - R	PT	SEC.AIR	102	191	333	350	mmWC	26		LIE-16	El 39.8 mtr, Near Col S10R	
HBK50CP001	FG PRESS AT ECO I/L-L	PT	FLUE GAS	-46	-75	461	600	mmWC	26	1	LIE-17	El 48.8 mtr, Near Col S11L	
HBK55CP001	FG PRESS AT ECO I/L-R	PT	FLUE GAS	-46	-75	461	600	mmWC	26	1	LIE-18	El 48.8 mtr, Near Col S11R	
HFE40CP001	AH-A PY. AIR OUTLET PRESS	PT	PY. AIR	911	911	326	350	mmWC	26		LIE-19	El 35.6 mtr, Near Col S11L	
HLA30CP001	AH-A SEC. AIR OUTLET PRESS	PT	SEC.AIR	194	194	333	350	mmWC	26		LIE-19	El 35.6 mtr, Near Col S11L	
HNA10CP001	FG PRESS AT ECO O/L-L	PT	FLUE GAS	-68	-110	362	400	mmWC	26	1	LIE-19	El 35.6 mtr, Near Col S11L	
HFE45CP001	AH-B PY. AIR OUTLET PRESS	PT	PY. AIR	911	911	326	350	mmWC	26		LIE-20	El 35.6 mtr, Near Col S11R	
HLA35CP001	AH-B SEC. AIR OUTLET PRESS	PT	SEC.AIR	194	194	333	350	mmWC	26		LIE-20	El 35.6 mtr, Near Col S11R	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENROR TYPE	MEDIUM	OPERATING PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LIR	Location	Group Remarks
HNA20CP001	FG PRESS AT ECO O/L-R	PT	FLUE GAS	-68	-110	362	400	mmWC	26	1	LIE-20	El 35.6 mtr, Near Col S11R	
HJN01CP001	ATOMISING AIR HDR PRESS	PT	ATOM. AIR	6	10	40	50	Kg/Cm2	14		LIE-21	El 35.6 mtr, Near Col S16L	
HAH71CP001	SH STG-I DSH-A OUTLET PRESS	PT	STEAM	266.4	282.4	473	477	Kg/Cm2	6		LIE-22	El 75.3 mtr, Near Col S5L	
HAH72CP001	SH STG-I DSH-B OUTLET PRESS	PT	STEAM	266.4	282.4	473	477	Kg/Cm2	6		LIE-22	El 75.3 mtr, Near Col S5L	
LAE70CP001	SH STG-I SPRAY WTR PRESS	PT	WATER	296	319.4	295	295	Kg/Cm2	10		LIE-22	El 75.3 mtr, Near Col S5L	
LAE71CF001	SH STG-I DSH-A SPRAY WTR FLOW	FT	WATER	268.14	319.4	295	295	Kg/Cm2	12		LIE-22	El 75.3 mtr, Near Col S5L	
LAE71CF002	SH STG-I DSH-A SPRAY WTR FLOW	FT	WATER	268.14	319.4	295	295	Kg/Cm2	12		LIE-22	El 75.3 mtr, Near Col S5L	
LAE71CF003	SH STG-I DSH-A SPRAY WTR FLOW	FT	WATER	268.14	319.4	295	295	Kg/Cm2	12		LIE-22	El 75.3 mtr, Near Col S5L	
HAH81CP001	SH STG-II DSH-A OUTLET PRESS	PT	STEAM	261.5	277.2	502	505	Kg/Cm2	2		LIE-23	El 75.3 mtr, Near Col S5L	
HAH82CP001	SH STG-II DSH-B OUTLET PRESS	PT	STEAM	261.5	277.2	502	505	Kg/Cm2	2		LIE-23	El 75.3 mtr, Near Col S5L	
LAE72CF001	SH STG-I DSH-B SPRAY WTR FLOW	FT	WATER	268.14	319.4	295	295	Kg/Cm2	12		LIE-23	El 75.3 mtr, Near Col S5L	
LAE72CF002	SH STG-I DSH-B SPRAY WTR FLOW	FT	WATER	268.14	319.4	295	295	Kg/Cm2	12		LIE-23	El 75.3 mtr, Near Col S5L	
LAE72CF003	SH STG-I DSH-B SPRAY WTR FLOW	FT	WATER	268.14	319.4	295	295	Kg/Cm2	12		LIE-23	El 75.3 mtr, Near Col S5L	
LAE80CP001	SH STG-II SPRAY WTR PRESS	PT	WATER	263.59	319.4	295	295	Kg/Cm2	10		LIE-24	El 75.3 mtr, Near Col S6L	
LAE81CF001	SH STG-II DSH-A SPRAY WTR FLOW	FT	WATER	263.59	319.4	295	295	Kg/Cm2	12		LIE-24	El 75.3 mtr, Near Col S6L	
LAE81CF002	SH STG-II DSH-A SPRAY WTR FLOW	FT	WATER	263.59	319.4	295	295	Kg/Cm2	12		LIE-24	El 75.3 mtr, Near Col S6L	
LAE81CF003	SH STG-II DSH-A SPRAY WTR FLOW	FT	WATER	263.59	319.4	295	295	Kg/Cm2	12		LIE-24	El 75.3 mtr, Near Col S6L	
HAD71CL001	WATER SEPARATOR 'A' LEVEL	LT	WATER	277	296.4	433	433	Kg/Cm2	8		LIE-25	El 56.7 mtr, Near Col S14L	
HAD71CL002	WATER SEPARATOR 'A' LEVEL	LT	WATER	277	296.4	433	433	Kg/Cm2	8		LIE-25	El 56.7 mtr, Near Col S14L	
HAD71CL003	WATER SEPARATOR 'A' LEVEL	LT	WATER	277	296.4	433	433	Kg/Cm2	8		LIE-25	El 56.7 mtr, Near Col S14L	
HAH01CP001	WATER SEPARATOR 'A' OUTLET PRESS	PT	STEAM	277	296.4	433	448	Kg/Cm2	6		LIE-25	El 56.7 mtr, Near Col S14L	
HAH01CP002	WATER SEPARATOR 'A' OUTLET PRESS	PT	STEAM	277	296.4	433	448	Kg/Cm2	6		LIE-25	El 56.7 mtr, Near Col S14L	
HAD72CL001	WATER SEPARATOR 'B' LEVEL	LT	WATER	277	296.4	433	433	Kg/Cm2	8		LIE-26	El 56.7 mtr, Near Col S14R	
HAD72CL002	WATER SEPARATOR 'B' LEVEL	LT	WATER	277	296.4	433	433	Kg/Cm2	8		LIE-26	El 56.7 mtr, Near Col S14R	
HAD72CL003	WATER SEPARATOR 'B' LEVEL	LT	WATER	277	296.4	433	433	Kg/Cm2	8		LIE-26	El 56.7 mtr, Near Col S14R	
HAH02CP001	SEPARATOR 'B' OUTLET PRESS	PT	STEAM	277	296.4	433	448	Kg/Cm2	6		LIE-26	El 56.7 mtr, Near Col S14R	
HAH02CP002	SEPARATOR 'B' OUTLET PRESS	PT	STEAM	277	296.4	433	448	Kg/Cm2	6		LIE-26	El 56.7 mtr, Near Col S14R	
HAG11CL001	SEPARATOR 'A' DOWNCOMER LEVEL	LT	WATER	279.2	298.1	328	328	Kg/Cm2	12		LIE-27	El 45.9 mtr, Near Col S13R	
HAG12CL001	SEPARATOR 'B' DOWNCOMER LEVEL	LT	WATER	279.2	298.1	328	328	Kg/Cm2	12		LIE-27	El 45.9 mtr, Near Col S13R	
HAG15CP001	WATER STRG DOWNCOMER PRESS	PT	WATER	279.2	298.1	328	328	Kg/Cm2	10		LIE-27	El 45.9 mtr, Near Col S13R	
QHX20CL011	EMG COOLING WTR TANK LVL	LT	DMCW	0.3	12	38	60	Kg/Cm2	16		LIE-27	El 45.9 mtr, Near Col S13R	
HAG15CP002	DP ACRS MIXING PIECE ,F-57	DPT	WATER	300.3	319.9	295	295	Kg/Cm2	12		LIE-28	El 12.0 mtr, Near Col S14L	
LBC01CP011	CRH STM PRESS AT RH I/L-LEFT	PT	STEAM	57.69	73.1	340	360	Kg/Cm2	14		LIE-29	El 50.1 mtr, Near Col S2L	
LBC02CP011	CRH STM PRESS AT RH I/L-RIGHT	PT	STEAM	57.69	73.1	340	360	Kg/Cm2	14		LIE-30	El 50.1 mtr, Near Col S2R	
LBA01CP011	MS PRESS AT SH O/L-LEFT	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIE-31	El 70.6 mtr, Near Col S9L	
LBB01CP011	HRH STM PRESS AT RH O/L - LEFT	PT	STEAM	53.04	67.6	593	601	Kg/Cm2	6		LIE-31	El 70.6 mtr, Near Col S9L	
LBA02CP011	MS PRESS AT SH O/L-RIGHT	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIE-32	El 70.6 mtr, Near Col S9R	
LBB02CP011	HRH STM PRESS. AT RH O/L - RIGHT	PT	STEAM	53.04	67.6	593	601	Kg/Cm2	6		LIE-32	El 70.6 mtr, Near Col S9R	
LCL30CF011	COND PUMP-A DISCH FLOW	FT	COND	1.1	7.03	110	177	Kg/Cm2	16		LIE-33	El 0.0 mtr, Near Col S3R	
LCL30CF012	COND PUMP-B DISCH FLOW	FT	COND	1.1	7.03	110	177	Kg/Cm2	16		LIE-33	El 0.0 mtr, Near Col S3R	
LCL30CF013	COND PUMP-A DISCH FLOW	FT	COND	1.1	7.03	110	177	Kg/Cm2	16		LIE-33	El 0.0 mtr, Near Col S3R	
LCL30CF014	COND PUMP-B DISCH FLOW	FT	COND	1.1	7.03	110	177	Kg/Cm2	16		LIE-33	El 0.0 mtr, Near Col S3R	
LCL30CP011	COND PUMP DISCH HDR PRESS	PT	COND	1.1	7.03	110	177	Kg/Cm2	14		LIE-33	El 0.0 mtr, Near Col S3R	
LAE82CF001	SH STG-II DSH-B SPRAY WTR FLOW	FT	WATER	263.59	319.4	295	295	Kg/Cm2	12		LIE-34	El 75.3 mtr, Near Col S6L	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENROR TYPE	MEDIUM	OPERATING PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LIR	Location	Group Remarks
LAE82CF002	SH STG-II DSH-B SPRAY WTR FLOW	FT	WATER	263.59	319.4	295	295	Kg/Cm2	12		LIE-34	El 75.3 mtr, Near Col S6L	
LAE82CF003	SH STG-II DSH-B SPRAY WTR FLOW	FT	WATER	263.59	319.4	295	295	Kg/Cm2	12		LIE-34	El 75.3 mtr, Near Col S6L	
HAG25CP001	DP ACROSS BWCP	DPT	WATER	300.3	319.9	295	328	Kg/Cm2	12		LIE-35	El 0.0 mtr, Near Col S14L	
HAG25CP002	DP ACROSS BWCP	DPT	WATER	300.3	319.9	295	328	Kg/Cm2	12		LIE-35	El 0.0 mtr, Near Col S14L	
HAG25CP003	DP ACROSS BWCP	DPT	WATER	300.3	319.9	295	328	Kg/Cm2	12		LIE-35	El 0.0 mtr, Near Col S14L	
QHX20CP011	ECW TANK FILL PUMP-A SUC PRES	PT	DMCW	6	12	38	60	Kg/Cm2	14		LIE-36	El 0.0 mtr, Near Col S7L	
QHX20CP012	ECW TANK FILL PUMP-B SUC PRES	PT	DMCW	6	12	38	60	Kg/Cm2	14		LIE-36	El 0.0 mtr, Near Col S7L	
QHX20CP013	ECW TANK FILL PUMP-A DISCH PRES	PT	DMCW	8	12	38	60	Kg/Cm2	14		LIE-36	El 0.0 mtr, Near Col S7L	
QHX20CP014	ECW TANK FILL PUMP-B DISCH PRES	PT	DMCW	8	12	38	60	Kg/Cm2	14		LIE-36	El 0.0 mtr, Near Col S7L	
QHX10CP011	SG ECW SUPPLY HDR PRESS AT BLR TP	PT	DMCW	6	12	38	60	Kg/Cm2	14		LIE-37	El 0.0 mtr, Near Col S1R	
QHX11CP011	SG ECW RTN HDR PRESS AT BLR TP	PT	DMCW	4.4	12	44	60	Kg/Cm2	14		LIE-37	El 0.0 mtr, Near Col S1R	
QHX16CP011	SG ECW PRESSURE AT SAMPLE COOLERS I/L	PT	DMCW	6	12	38	60	Kg/Cm2	14		LIE-38	El 0.0 mtr, Near Col S1R	
QHX16CP012	SG ECW PRESSURE AT SAMPLE COOLERS O/L	PT	DMCW	5	12	48	60	Kg/Cm2	14		LIE-38	El 0.0 mtr, Near Col S1R	
HAC10CF001	FEED WATER FLOW AT ECO I/L	FT	WATER	296.1	315.5	295	323	Kg/Cm2	12		LIE-39	El 8.5 mtr, Near Col S8R	
HAC10CF002	FEED WATER FLOW AT ECO I/L	FT	WATER	296.1	315.5	295	323	Kg/Cm2	12		LIE-39	El 8.5 mtr, Near Col S8R	
HAC10CF003	FEED WATER FLOW AT ECO I/L	FT	WATER	296.1	315.5	295	323	Kg/Cm2	12		LIE-39	El 8.5 mtr, Near Col S8R	
HAC10CP001	FEED WATER PRESS AT ECO I/L	PT	WATER	296.1	315.5	295	323	Kg/Cm2	10		LIE-39	El 8.5 mtr, Near Col S8R	
LCL20CL011	FLASH TANK DRAIN TANK LVL	LT	COND	1.1	7.03	110	177	Kg/Cm2	16		LIE-40	El 0.0 mtr, Near Col S4R	
LCL20CL012	FLASH TANK DRAIN TANK LVL	LT	COND	1.1	7.03	110	177	Kg/Cm2	16		LIE-40	El 0.0 mtr, Near Col S4R	
LCL20CL013	FLASH TANK DRAIN TANK LVL	LT	COND	1.1	7.03	110	177	Kg/Cm2	16		LIE-40	El 0.0 mtr, Near Col S4R	
LCL20CT012	FLASH TANK DRAIN TANK O/L TEMP	PRT-100	COND								LIE-40	El 0.0 mtr, Near Col S4R	wired to JB or LIE /LIR
LCL20CT013	FLASH TANK DRAIN TANK O/L TEMP	PRT-100	COND								LIE-40	El 0.0 mtr, Near Col S4R	wired to JB or LIE /LIR
HJM01CP001	ATOMINSING STEAM HDR PRESS	PT	ATM. STEAM	13	20	210	350	Kg/Cm2	14		LIE-41	El 22.3 mtr, Near Col S16R	
HJM01CP002	ATOMINSING STEAM HDR PRESS	PT	ATM. STEAM	13	20	210	350	Kg/Cm2	14		LIE-41	El 22.3 mtr, Near Col S16R	
HJM01CP003	ATOMINSING STEAM HDR PRESS	PT	ATM. STEAM	13	20	210	350	Kg/Cm2	14		LIE-41	El 22.3 mtr, Near Col S16R	
HHQ10CP001	DP ACRS SCANNER AIR FILTER	DPT	SCA. AIR	282	441	30	53	mmWC	28		LIE-42	El 31.8 mtr, Near Col S11L	
HHQ20CP001	SCANNER AIR FAN DISCH PRESS	PT	SCA. AIR	532	691	33	53	mmWC	26		LIE-42	El 31.8 mtr, Near Col S11L	
HHQ20CP002	SCANNER AIR TO FURNACE DP	DPT	SCA. AIR	532	691	33/1190	53/1330	mmWC	28		LIE-42	El 31.8 mtr, Near Col S11L	
LBG80CP011	AUX STM TO MILL INERT PRESS	PT	STEAM	16	20	290	350	Kg/Cm2	14		LIE-43	El 0.0 mtr, Near Mill-A	
SGA51CP011	FIRE WTR HDR PRESS FOR MILL A TO C	PT	WATER	7	12	38	50	Kg/Cm2	14		LIE-43	El 0.0 mtr, Near Mill-A	
LBG80CP012	AUX STM TO MILL INERT PRESS	PT	STEAM	16	20	290	350	Kg/Cm2	14		LIE-44	El 0.0 mtr, Near Mill-G	
SGA51CP012	FIRE WTR HDR PRESS FOR MILL D TO G	PT	WATER	7	12	38	50	Kg/Cm2	14		LIE-44	El 0.0 mtr, Near Mill-G	
LBG70CP001	AUX STM TO SCAPH PRESS	PT	STEAM	16	20	250	350	Kg/Cm2	14		LIE-45	El 0.0 mtr, Near Col S18	
SDA10CP011	APH WATER WASH LINE PRESS	PT	WATER	7	10	38	60	Kg/Cm2	14		LIE-45	El 0.0 mtr, Near Col S18	
SGA10CP011	APH WATER WASH LINE PRESS	PT	WATER	7	10	38	60	Kg/Cm2	14		LIE-45	El 0.0 mtr, Near Col S18	
HAJ21CP001	RH DSH-A O/L PRESS	PT	STEAM	55.9	71	523	528	Kg/Cm2	6		LIE-46	El 75.3 mtr, Near Col S6L	
HAJ22CP001	RH DSH-B O/L PRESS	PT	STEAM	55.9	71	523	528	Kg/Cm2	6		LIE-46	El 75.3 mtr, Near Col S6L	
LAE20CP001	RH SPRAY WTR PRESS	PT	WATER	118.71	210	193	200	Kg/Cm2	10		LIE-46	El 75.3 mtr, Near Col S6L	
LAE21CF001	RH DSH-A SPRAY WTR FLOW	FT	WATER	55.83	65.86	193	200	Kg/Cm2	16		LIE-46	El 75.3 mtr, Near Col S6L	
LAE21CF002	RH DSH-A SPRAY WTR FLOW	FT	WATER	55.83	65.86	193	200	Kg/Cm2	16		LIE-46	El 75.3 mtr, Near Col S6L	
LAE21CF003	RH DSH-A SPRAY WTR FLOW	FT	WATER	55.83	65.86	193	200	Kg/Cm2	16		LIE-46	El 75.3 mtr, Near Col S6L	
LAE21CT001	RH SPRAY WATER TEMP -A	PRT-100	WATER								LIE-46	El 75.3 mtr, Near Col S6L	wired to JB or LIE /LIR
LAE22CF001	RH DSH-B SPRAY WTR FLOW	FT	WATER	55.83	65.86	193	200	Kg/Cm2	16		LIE-47	El 75.3 mtr, Near Col S6L	
LAE22CF002	RH DSH-B SPRAY WTR FLOW	FT	WATER	55.83	65.86	193	200	Kg/Cm2	16		LIE-47	El 75.3 mtr, Near Col S6L	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
LAE22CF003	RH DSH-B SPRAY WTR FLOW	FT	WATER	55.83	65.86	193	200	Kg/Cm2	16		LIE-47	El 75.3 mtr, Near Col S6L	
LAE22CT001	RH SPRAY WATER TEMP -B	PRT-100	WATER								LIE-47	El 75.3 mtr, Near Col S6L	wired to JB or LIE / LIR
PAB10CP011	CW PUMP DISCH HDR PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIE-48	El 0.0 mtr, Near CW Pump House	
PAB10CP012	CW PUMP DISCH HDR PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIE-48	El 0.0 mtr, Near CW Pump House	
PAB10CP013	CW PUMP DISCH HDR PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIE-48	El 0.0 mtr, Near CW Pump House	
PCB10CP011	ACW PUMP DISCH HDR PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIE-48	El 0.0 mtr, Near CW Pump House	
PCB10CP012	ACW PUMP DISCH HDR PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIE-48	El 0.0 mtr, Near CW Pump House	
PCB10CP013	ACW PUMP DISCH HDR PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIE-48	El 0.0 mtr, Near CW Pump House	
GMA01CL011	DEBRIS DISCH PIT LEVEL	LT-Ult	SEA WTR								LIE-49	El 0.0 mtr, Near Debris Disch Pit	wired to JB or LIE / LIR
GMA01CL012	DEBRIS DISCH PIT LEVEL	LT-Ult	SEA WTR								LIE-49	El 0.0 mtr, Near Debris Disch Pit	wired to JB or LIE / LIR
GMA01CP011	DEBRIS DISCH PUMP DISCH HDR PRESS	PT	SEA WTR	3	5	36	60	Kg/Cm2	18		LIE-49	El 0.0 mtr, Near Debris Disch Pit	
GMA01CP012	DEBRIS DISCH PUMP DISCH HDR PRESS	PT	SEA WTR	3	5	36	60	Kg/Cm2	18		LIE-49	El 0.0 mtr, Near Debris Disch Pit	
90LCR30CP011	BLR FILL PUMPs DISCH HDR PRESS	PT	DM WTR	18	25	40	50	Kg/Cm2	14		LIE-50	El 0.0 mtr, Near HTWL M/U Pump house	
90LCR40CP011	HTWL M/U PUMPs DISCH HDR PRESS	PT	DM WTR	8	10	40	50	Kg/Cm2	14		LIE-50	El 0.0 mtr, Near HTWL M/U Pump house	
90LCR40CP012	HTWL M/U PUMPs DISCH HDR PRESS	PT	DM WTR	8	10	40	50	Kg/Cm2	14		LIE-50	El 0.0 mtr, Near HTWL M/U Pump house	
90LCR70CF011	DM WATER TO CST FLOW	FT	DM WTR	4.5	10	40	50	Kg/Cm2	16		LIE-51	El 0.0 mtr, Near DM M/U Pump house	
90LCR70CP011	DM M/U PUMPs DISCH HDR PRESS	PT	DM WTR	4.5	10	40	50	Kg/Cm2	22		LIE-51	El 0.0 mtr, Near DM M/U Pump house	
90LCR70CP012	DM M/U PUMPs DISCH HDR PRESS	PT	DM WTR	4.5	10	40	50	Kg/Cm2	22		LIE-51	El 0.0 mtr, Near DM M/U Pump house	
90GHD22CF011	AHP SEAL WTR PMP DISCH HDR FLOW	FT	FILTERED WTR	3.6	10	33	60	Kg/Cm2	16		LIE-52	El 0.0 mtr, Near AHP Seal Wtr Pumps	
90GHD22CP011	AHP SEAL WTR PMP DISCH HDR PRESS	PT	FILTERED WTR	3.6	10	33	50	Kg/Cm2	14		LIE-52	El 0.0 mtr, Near AHP Seal Wtr Pumps	
90GHD22CP012	AHP SEAL WTR PMP DISCH HDR PRESS	PT	FILTERED WTR	3.6	10	33	50	Kg/Cm2	14		LIE-52	El 0.0 mtr, Near AHP Seal Wtr Pumps	
90GHD25CF011	POTABLE WTR PMP DISCH HDR FLOW	FT	FILTERED WTR	6.2	10	33	60	Kg/Cm2	16		LIE-53	El 0.0 mtr, Outside Potable water PH	
90GHD25CP011	POTABLE WTR PMP DISCH HDR PRESS	PT	FILTERED WTR	6.2	10	33	50	Kg/Cm2	14		LIE-53	El 0.0 mtr, Outside Potable water PH	
90GHD25CP012	POTABLE WTR PMP DISCH HDR PRESS	PT	FILTERED WTR	6.2	10	33	50	Kg/Cm2	14		LIE-53	El 0.0 mtr, Outside Potable water PH	
90GHD28CF011	SERVICE WTR PMP DISCH HDR FLOW	FT	FILTERED WTR	5.2	10	33	60	Kg/Cm2	16		LIE-53	El 0.0 mtr, Outside Potable water PH	
90GHD28CP011	SERVICE WTR PMP DISCH HDR PRESS	PT	FILTERED WTR	5.6	10	33	50	Kg/Cm2	14		LIE-53	El 0.0 mtr, Outside Potable water PH	
90GHD28CP012	SERVICE WTR PMP DISCH HDR PRESS	PT	FILTERED WTR	5.6	10	33	50	Kg/Cm2	14		LIE-53	El 0.0 mtr, Outside Potable water PH	
90GHD31CF011	HVAC M/U PMP DISCH HDR FLOW	FT	FILTERED WTR	6.9	10	33	60	Kg/Cm2	16		LIE-54	El 0.0 mtr, Outside Potable water PH	
90GHD31CP011	HVAC M/U PMP DISCH HDR PRESS	PT	FILTERED WTR	6.9	10	33	50	Kg/Cm2	14		LIE-54	El 0.0 mtr, Outside Potable water PH	
90GHD31CP012	HVAC M/U PMP DISCH HDR PRESS	PT	FILTERED WTR	6.9	10	33	50	Kg/Cm2	14		LIE-54	El 0.0 mtr, Outside Potable water PH	
90GHD34CF011	APH/ESP WASH PMP DISCH HDR FLOW	FT	FILTERED WTR	8.4	12	33	60	Kg/Cm2	16		LIE-55	El 0.0 mtr, Outside APH/ESP WASH Pumps PH	
90GHD34CP011	APH/ESP WASH PMP DISCH HDR PRESS	PT	FILTERED WTR	8.4	12	33	50	Kg/Cm2	14		LIE-55	El 0.0 mtr, Outside APH/ESP WASH Pumps PH	
90GHD34CP012	APH/ESP WASH PMP DISCH HDR PRESS	PT	FILTERED WTR	8.4	12	33	50	Kg/Cm2	14		LIE-55	El 0.0 mtr, Outside APH/ESP WASH Pumps PH	
90GHD37CF011	CHP DFDS PMP DISCH HDR FLOW	FT	FILTERED WTR	6.4	10	33	60	Kg/Cm2	16		LIE-56	El 0.0 mtr, Outside CHP DFDS Pumps PH	
90GHD37CP011	CHP DFDS PMP DISCH HDR PRESS	PT	FILTERED WTR	6.4	10	33	50	Kg/Cm2	14		LIE-56	El 0.0 mtr, Outside CHP DFDS Pumps PH	
90GHD37CP012	CHP DFDS PMP DISCH HDR PRESS	PT	FILTERED WTR	6.4	10	33	50	Kg/Cm2	14		LIE-56	El 0.0 mtr, Outside CHP DFDS Pumps PH	
90GHD40CF011	ASH CONDTNR M/U PMP DISCH HDR FLOW	FT	FILTERED WTR	7.4	10	33	60	Kg/Cm2	16		LIE-57	El 0.0 mtr, Outside ASH CONDTNR M/U Pumps PH	
90GHD40CP011	ASH CONDTNR M/U PMP DISCH HDR PRESS	PT	FILTERED WTR	7.4	10	33	50	Kg/Cm2	14		LIE-57	El 0.0 mtr, Outside ASH CONDTNR M/U Pumps PH	
90GHD40CP012	ASH CONDTNR M/U PMP DISCH HDR PRESS	PT	FILTERED WTR	7.4	10	33	50	Kg/Cm2	14		LIE-57	El 0.0 mtr, Outside ASH CONDTNR M/U Pumps PH	
90GAC10CP011	SEA WTR INTAKE PMP DISCH HDR PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIE-58	El 0.0 mtr, Outside SWIPH	
90GAC10CP012	SEA WTR INTAKE PMP DISCH HDR PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIE-58	El 0.0 mtr, Outside SWIPH	
90GHA01CP012	SERV WTR BSTR PMP-A DISCH PRESS	PT	SERV WTR	4.5	10	33	60	Kg/Cm2	14		LIE-59	El 0.0 mtr, Near Serv Wtr Booster Pumps	
90GHA02CP012	SERV WTR BSTR PMP-B DISCH PRESS	PT	SERV WTR	4.5	10	33	60	Kg/Cm2	14		LIE-59	El 0.0 mtr, Near Serv Wtr Booster Pumps	
90GHA10CP011	SERV WTR BSTR PMP DISCH HDR PRESS	PT	SERV WTR	4.5	10	33	60	Kg/Cm2	14		LIE-59	El 0.0 mtr, Near Serv Wtr Booster Pumps	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATING PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LIR	Location	Group Remarks
90GHA10CP012	SERV WTR BSTR PMP DISCH HDR PRESS	PT	SERV WTR	4.5	10	33	60	Kg/Cm2	14		LIE-59	El 0.0 mtr, Near Serv Wtr Booster Pumps	
90GKB01CP012	POTABLE WTR BSTR PMP-A DISCH PRESS	PT	SERV WTR	5.5	10	33	50	Kg/Cm2	14		LIE-60	El 0.0 mtr, Near Serv Wtr Booster Pumps	
90GKB02CP012	POTABLE WTR BSTR PMP-B DISCH PRESS	PT	SERV WTR	5.5	10	33	60	Kg/Cm2	14		LIE-60	El 0.0 mtr, Near Serv Wtr Booster Pumps	
90GKB05CP011	POTABLE WTR BSTR PMP DISCH HDR PRESS	PT	SERV WTR	5.5	10	33	50	Kg/Cm2	14		LIE-60	El 0.0 mtr, Near Serv Wtr Booster Pumps	
90GKB05CP012	POTABLE WTR BSTR PMP DISCH HDR PRESS	PT	SERV WTR	5.5	10	33	50	Kg/Cm2	14		LIE-60	El 0.0 mtr, Near Serv Wtr Booster Pumps	
90PUB10CP011	CW BDP DISCH HDR PRESS.	PT	SEA WTR	1.9	5	36	60	Kg/Cm2	18		LIE-61	El 0.0 mtr, Outside CWPH	
90PUB10CP012	CW BDP DISCH HDR PRESS.	PT	SEA WTR	1.9	5	36	60	Kg/Cm2	18		LIE-61	El 0.0 mtr, Outside CWPH	
90PUB10CP013	CW BDP DISCH HDR PRESS.	PT	SEA WTR	1.9	5	36	60	Kg/Cm2	18		LIE-61	El 0.0 mtr, Outside CWPH	
90GHA00CP011	SERV WTR BSTR PMP SUC HDR PRESS	PT	SERV WTR	3	10	33	60	Kg/Cm2	14		LIE-62	El 0.0 mtr, Near Service Wtr Bstr Pumps	
90GHA00CP012	SERV WTR BSTR PMP SUC HDR PRESS	PT	SERV WTR	3	10	33	60	Kg/Cm2	14		LIE-62	El 0.0 mtr, Near Service Wtr Bstr Pumps	
90GHA01CP011	SERV WTR BSTR PMP-A SUC PRESS	PT	SERV WTR	3	10	33	60	Kg/Cm2	14		LIE-62	El 0.0 mtr, Near Service Wtr Bstr Pumps	
90GHA02CP011	SERV WTR BSTR PMP-B SUC PRESS	PT	SERV WTR	4.5	10	33	60	Kg/Cm2	14		LIE-62	El 0.0 mtr, Near Service Wtr Bstr Pumps	
90GHD10CP011	FLTR FEED PMP DISCH HDR PR	PT	SEA WTR	4.8	10	33	50	Kg/Cm2	18		LIE-63	El 0.0 mtr, Near Clarified water Pump House	
90GHD10CP012	FLTR FEED PMP DISCH HDR PR	PT	SEA WTR	4.8	10	33	50	Kg/Cm2	18		LIE-63	El 0.0 mtr, Near Clarified water Pump House	
MAA50CP051	1ST STAGE TURBINE PRESS.	PT	STEAM	170	270.3	565	573	Kg/Cm2	2		LIR-01	El 0.0 mtr, Near Row Ad, Col 10	
MAA50CP052	1ST STAGE TURBINE PRESS.	PT	STEAM	170	270.3	565	573	Kg/Cm2	2		LIR-01	El 0.0 mtr, Near Row Ad, Col 10	
MAA50CP053	1ST STAGE TURBINE PRESS.	PT	STEAM	170	270.3	565	573	Kg/Cm2	2		LIR-01	El 0.0 mtr, Near Row Ad, Col 10	
LCA01CF011	CEP-A DISCH FLOW	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-02	El 0.0 mtr, Near Row Ac, Col 6	
LCA01CF012	CEP-A DISCH FLOW	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-02	El 0.0 mtr, Near Row Ac, Col 6	
LCA02CF011	CEP-B DISCH FLOW	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-02	El 0.0 mtr, Near Row Ac, Col 6	
LCA02CF012	CEP-B DISCH FLOW	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-02	El 0.0 mtr, Near Row Ac, Col 6	
LCA03CF011	CEP-C DISCH FLOW	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-02	El 0.0 mtr, Near Row Ac, Col 6	
LCA03CF012	CEP-C DISCH FLOW	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-02	El 0.0 mtr, Near Row Ac, Col 6	
LCA20CF011	COND FLOW AFT GSC	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-03	El 0.0 mtr, Near Row Ad, Col 6	
LCA20CF012	COND FLOW AFT GSC	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-03	El 0.0 mtr, Near Row Ad, Col 6	
LCA20CF013	COND FLOW AFT GSC	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		LIR-03	El 0.0 mtr, Near Row Ad, Col 6	
LCA20CP011	COND DISCH HDR PRESS	PT	COND	30.37	42	46.6	60	Kg/Cm2	14		LIR-03	El 0.0 mtr, Near Row Ad, Col 6	
LCA20CP012	COND DISCH HDR PRESS	PT	COND	30.37	42	46.6	60	Kg/Cm2	14		LIR-03	El 0.0 mtr, Near Row Ad, Col 6	
LCA20CP013	COND DISCH HDR PRESS	PT	COND	30.37	42	46.6	60	Kg/Cm2	14		LIR-03	El 0.0 mtr, Near Row Ad, Col 6	
LCA20CT012	COND TEMP AT GSC O/L	PRT-100	COND								LIR-03	El 0.0 mtr, Near Row Ad, Col 6	wired to JB of LIE / LIR
LCA92CF011	COND FLOW TO DEA	FT	COND	20.2	42	153.7	160	Kg/Cm2	16		LIR-04	El 25.5 mtr, Near Row B, Col 7	
LCA92CF012	COND FLOW TO DEA	FT	COND	20.2	42	153.7	160	Kg/Cm2	16		LIR-04	El 25.5 mtr, Near Row B, Col 7	
LCA92CF013	COND FLOW TO DEA	FT	COND	20.2	42	153.7	160	Kg/Cm2	16		LIR-04	El 25.5 mtr, Near Row B, Col 7	
LCA92CP011	COND PRESS TO DEA	PT	COND	20.2	42	143.7	160	Kg/Cm2	14		LIR-04	El 25.5 mtr, Near Row B, Col 7	
LCA92CT011	COND TEMP TO DEA	PRT-100	COND	20.2	42	143.7	160	Kg/Cm2			LIR-04	El 25.5 mtr, Near Row B, Col 7	wired to JB of LIE / LIR
LCA92CT012	COND TEMP TO DEA	PRT-100	COND	20.2	42	143.7	160	Kg/Cm2			LIR-04	El 25.5 mtr, Near Row B, Col 7	wired to JB of LIE / LIR
LBQ10CP011	CRH STM TO DEA PRESS BEF CV	PT	STEAM	33.02	73.1	332.1	360	Kg/Cm2	14		LIR-05	El 25.5 mtr, Near Row B, Col 11	
LBS51CF011	EXT STM FLOW TO DEA	FT	STEAM	12.5	15	382.2	399	Kg/Cm2	16		LIR-05	El 25.5 mtr, Near Row B, Col 11	
LBS51CF012	EXT STM FLOW TO DEA	FT	STEAM	12.5	15	382.2	399	Kg/Cm2	16		LIR-05	El 25.5 mtr, Near Row B, Col 11	
LBS51CP011	EXT STM PRESS. TO DEA	PT	STEAM	12.5	15	382.2	399	Kg/Cm2	14		LIR-05	El 25.5 mtr, Near Row B, Col 11	
LAA01CL011	DEAERATOR LVL.	LT	COND	12.5	14	188.4	210	Kg/Cm2	16		LIR-06	El 25.5 mtr, Near Row C, Col 8	
LAA01CL012	DEAERATOR LVL.	LT	COND	12.5	14	188.4	210	Kg/Cm2	16		LIR-06	El 25.5 mtr, Near Row C, Col 8	
LAA01CP011	DEAERATOR PRESS	PT	STEAM	12.5	14	188.4	210	Kg/Cm2	14		LIR-06	El 25.5 mtr, Near Row C, Col 8	
LAA01CP012	DEAERATOR PRESS	PT	STEAM	12.5	14	188.4	210	Kg/Cm2	14		LIR-06	El 25.5 mtr, Near Row C, Col 8	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
LAA02CL011	DEAERATOR LVL	LT	COND	12.5	14	188.4	210	Kg/Cm2	16		LIR-06	El 25.5 mtr, Near Row C, Col 8	
LAB10CF011	TDBFP-A SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-07	El 0.0 mtr, Near Row C, Col 7	
LAB10CF012	TDBFP-A SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-07	El 0.0 mtr, Near Row C, Col 7	
LAB10CF013	TDBFP-A SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-07	El 0.0 mtr, Near Row C, Col 7	
LAB10CP011	TDBFP-A BP SUC PRESS	PT	FW	12.35	40	188.4	200	Kg/Cm2	14		LIR-07	El 0.0 mtr, Near Row C, Col 7	
LAB10CT012	TDBFP-A BP DISCH TEMP	PRT-100	FW	12.35	40	188.4	200	Kg/Cm2			LIR-07	El 0.0 mtr, Near Row C, Col 7	wired to JB of LIE/LIR
LAB20CF011	TDBFP-B SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-08	El 0.0 mtr, Near Row B, Col 10	
LAB20CF012	TDBFP-B SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-08	El 0.0 mtr, Near Row B, Col 10	
LAB20CF013	TDBFP-B SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-08	El 0.0 mtr, Near Row B, Col 10	
LAB20CP011	TDBFP-B BP SUC PRESS	PT	FW	12.35	40	188.4	200	Kg/Cm2	14		LIR-08	El 0.0 mtr, Near Row B, Col 10	
LAB20CT012	TDBFP-B BP DISCH TEMP	PRT-100	FW	12.35	40	188.4	200	Kg/Cm2			LIR-08	El 0.0 mtr, Near Row B, Col 10	wired to JB of LIE/LIR
LAB30CF011	MDBFP-C SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-09	El 0.0 mtr, Near Row Ad, Col 4	
LAB30CF012	MDBFP-C SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-09	El 0.0 mtr, Near Row Ad, Col 4	
LAB30CF013	MDBFP-C SUCTION FLOW	FT	FW	30.65	40	188.6	200	Kg/Cm2	16		LIR-09	El 0.0 mtr, Near Row Ad, Col 4	
LAB30CP011	MDBFP-C BP SUC PRESS	PT	FW	12.35	40	188.4	200	Kg/Cm2	14		LIR-09	El 0.0 mtr, Near Row Ad, Col 4	
LAB30CT012	MDBFP-C BP DISCH TEMP	PRT-100	FW	12.35	40	188.4	200	Kg/Cm2			LIR-09	El 0.0 mtr, Near Row Ad, Col 4	wired to JB of LIE/LIR
PGL30CP011	DMCW PRESS AT MDBFP MTR & HC WO CLR I/L	PT	DMCW	4.6	10	38	60	Kg/Cm2	14		LIR-09	El 0.0 mtr, Near Row Ad, Col 4	
LBF10CF011	HPBP-1 STM FLOW	FT	STEAM	247	270.3	565	573	Kg/Cm2	4		LIR-10	El 0.0 mtr, Near Row B, Col 10	
LBF10CF012	HPBP-1 STM FLOW	FT	STEAM	247	270.3	565	573	Kg/Cm2	4		LIR-10	El 0.0 mtr, Near Row B, Col 10	
LBF10CF013	HPBP-1 STM FLOW	FT	STEAM	247	270.3	565	573	Kg/Cm2	4		LIR-10	El 0.0 mtr, Near Row B, Col 10	
LBF20CF011	HPBP-2 STM FLOW	FT	STEAM	247	270.3	565	573	Kg/Cm2	4		LIR-10	El 0.0 mtr, Near Row B, Col 10	
LBF20CF012	HPBP-2 STM FLOW	FT	STEAM	247	270.3	565	573	Kg/Cm2	4		LIR-10	El 0.0 mtr, Near Row B, Col 10	
LBF20CF013	HPBP-2 STM FLOW	FT	STEAM	247	270.3	565	573	Kg/Cm2	4		LIR-10	El 0.0 mtr, Near Row B, Col 10	
LAF20CP011	APRDS SPRAY PRESS AFT CV	PT	COND	30.34	42	46.3	60	Kg/Cm2	14		LIR-11	El 17.0 mtr, Near Row B, Col 11	
LBG10CF011	MAIN STM FLOW TO APRDS	FT	STEAM	247	269.6	565	573	Kg/Cm2	4		LIR-11	El 17.0 mtr, Near Row B, Col 11	
LBG10CF012	MAIN STM FLOW TO APRDS	FT	STEAM	247	269.6	565	573	Kg/Cm2	4		LIR-11	El 17.0 mtr, Near Row B, Col 11	
LBG10CP011	MAIN STM PRESS TO APRDS	PT	STEAM	247	269.6	565	573	Kg/Cm2	2		LIR-11	El 17.0 mtr, Near Row B, Col 11	
LBQ61CP011	EXT STM PRESS AT HPH-6 I/L	PT	STEAM	26.15	30	479.7	495	Kg/Cm2	14		LIR-12	El 8.5 mtr, Near Row B, Col 10	
LCH10CF011	HPH-6 DRN FLOW TO DEA	FT	COND	25.34	30	199.8	210	Kg/Cm2	16		LIR-12	El 8.5 mtr, Near Row B, Col 10	
LCH10CF012	HPH-6 DRN FLOW TO DEA	FT	COND	25.34	30	199.8	210	Kg/Cm2	16		LIR-12	El 8.5 mtr, Near Row B, Col 10	
LCR80CF011	DM MU FLOW TO COND	FT	COND	8	10	40	50	Kg/Cm2	16		LIR-13	El 0.0 mtr, Near Row A, Col 7	
LCR80CF012	DM MU FLOW TO COND	FT	COND	8	10	40	50	Kg/Cm2	16		LIR-13	El 0.0 mtr, Near Row A, Col 7	
LAD11CL011	HPH-6 LEVEL	LT	COND	25.34	30	199.8	235	Kg/Cm2	16		LIR-14	El 0.0 mtr, Near Row B, Col 11	
LAD11CL012	HPH-6 LEVEL	LT	COND	25.34	30	199.8	235	Kg/Cm2	16		LIR-14	El 0.0 mtr, Near Row B, Col 11	
LAD12CL011	HPH-6 LEVEL	LT	COND	25.34	30	199.8	235	Kg/Cm2	16		LIR-14	El 0.0 mtr, Near Row B, Col 11	
LAD31CL011	HPH-7 LEVEL	LT	COND	55.82	73.1	228.6	290	Kg/Cm2	16		LIR-15	El 8.5 mtr, Near Row B, Col 8	
LAD31CL012	HPH-7 LEVEL	LT	COND	55.82	73.1	228.6	290	Kg/Cm2	16		LIR-15	El 8.5 mtr, Near Row B, Col 8	
LAD32CL011	HPH-7 LEVEL	LT	COND	55.82	73.1	228.6	290	Kg/Cm2	16		LIR-15	El 8.5 mtr, Near Row B, Col 8	
LAD51CL011	HPH-8 LEVEL	LT	COND	81.47	88	275	301	Kg/Cm2	16		LIR-15	El 8.5 mtr, Near Row B, Col 8	
LAD51CL012	HPH-8 LEVEL	LT	COND	81.47	88	275	301	Kg/Cm2	16		LIR-15	El 8.5 mtr, Near Row B, Col 8	
LAD52CL011	HPH-8 LEVEL	LT	COND	81.47	88	275	301	Kg/Cm2	16		LIR-15	El 8.5 mtr, Near Row B, Col 8	
LBS53CF011	EXT STM FLOW TO BFPT-A	FT	STEAM	11.86	15	381.7	399	Kg/Cm2	16		LIR-16	El 0.0 mtr, Near Row B, Col 9	
LBS53CF012	EXT STM FLOW TO BFPT-A	FT	STEAM	11.86	15	381.7	399	Kg/Cm2	16		LIR-16	El 0.0 mtr, Near Row B, Col 9	
LBS54CF011	EXT STM FLOW TO BFPT-B	FT	STEAM	11.86	15	381.7	399	Kg/Cm2	16		LIR-16	El 0.0 mtr, Near Row B, Col 9	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
LBS54CF012	EXT STM FLOW TO BFPT-B	FT	STEAM	11.86	15	381.7	399	Kg/Cm2	16		LIR-16	El 0.0 mtr, Near Row B, Col 9	
LBS21CP011	EXT STM PRESS AT LPH-2 I/L	PT	STEAM	1.018	3.5	99.58	120	Kg/Cm2	14		LIR-17	El 8.5 mtr, Near Row B, Col 6	
LBS31CP011	EXT STM PRESS AT LPH-3 I/L	PT	STEAM	2.2	3.5	168	200	Kg/Cm2	14		LIR-17	El 8.5 mtr, Near Row B, Col 6	
LBS41CP011	EXT STM PRESS AT LPH-4 I/L	PT	STEAM	6.12	7	276.9	305	Kg/Cm2	14		LIR-17	El 8.5 mtr, Near Row B, Col 6	
LCA33CP011	GLAND SEAL WATER HDR PR.	PT	COND	3	10	46.6	60	Kg/Cm2	14		LIR-18	El 0.0 mtr, Near Row B, Col 5	
LCA33CP012	GLAND SEAL WATER HDR PR.	PT	COND	3	10	46.6	60	Kg/Cm2	14		LIR-18	El 0.0 mtr, Near Row B, Col 5	
LCA33CP013	GLAND SEAL WATER HDR PR.	PT	COND	3	10	46.6	60	Kg/Cm2	14		LIR-18	El 0.0 mtr, Near Row B, Col 5	
LCA34CP011	COND TO CHEM DOSING PRESS	PT	COND	30.37	42	46.6	60	Kg/Cm2	14		LIR-18	El 0.0 mtr, Near Row B, Col 5	
LBA10CP011	MS HDR PRESS.	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIR-19	El 0.0 mtr, Near Row B, Col 11	
LBA10CP012	MS HDR PRESS.	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIR-19	El 0.0 mtr, Near Row B, Col 11	
LBA10CP013	MS HDR PRESS.	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIR-19	El 0.0 mtr, Near Row B, Col 11	
LBA10CP014	MS HDR PRESS.	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIR-19	El 0.0 mtr, Near Row B, Col 11	
LBA10CP015	MS HDR PRESS.	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIR-19	El 0.0 mtr, Near Row B, Col 11	
LBA10CP016	MS HDR PRESS.	PT	STEAM	247	270.3	565	573	Kg/Cm2	2		LIR-19	El 0.0 mtr, Near Row B, Col 11	
LBC10CP011	CRH STM HDR PRESS AFT NRV	PT	STEAM	57.69	73.1	340	360	Kg/Cm2	14		LIR-20	El 0.0 mtr, Near Row Ad, Col 11	
LAB62CP011	FW PRESS AFT HPH-6	PT	FW	307.11	325	223.2	230	Kg/Cm2	10		LIR-21	El 17 mtr, Near Row C, Col 9	
LAB63CP011	FW PRESS AFT HPH-7	PT	FW	307.11	325	269.6	280	Kg/Cm2	10		LIR-21	El 17 mtr, Near Row C, Col 9	
LBQ71CP011	EXT STM PRESS AT HPH-7 I/L	PT	STEAM	57.69	73.1	340.1	360	Kg/Cm2	14		LIR-21	El 17 mtr, Near Row C, Col 9	
LBQ81CP011	EXT STM PRESS AT HPH-8 I/L	PT	STEAM	84.2	88	393.3	399	Kg/Cm2	14		LIR-21	El 17 mtr, Near Row C, Col 9	
LAB50CP011	DIFF PRESS. ACROSS FCS	DPT	FW	307.11	470	194.1	200	Kg/Cm2	12		LIR-22	El 17 mtr, Near Row C, Col 8	
LAB50CP012	DIFF PRESS. ACROSS FCS	DPT	FW	307.11	470	194.1	200	Kg/Cm2	12		LIR-22	El 17 mtr, Near Row C, Col 8	
LAB50CP016	FW PRESS AFT FCS	PT	FW	307.11	325	194.1	200	Kg/Cm2	10		LIR-22	El 17 mtr, Near Row C, Col 8	
LCA60CP011	DRN CLR I/L PRESS.	PT	COND	20.2	42	46.6	60	Kg/Cm2	14		LIR-23	El 0.0 mtr, Near Row B, Col 7	
LCA62CP011	LPH-1 COND I/L PRESS	PT	COND	20.2	42	50.7	60	Kg/Cm2	14		LIR-23	El 0.0 mtr, Near Row B, Col 7	
LCA62CP012	LPH-1 COND O/L PRESS	PT	COND	20.2	42	70.1	80	Kg/Cm2	14		LIR-23	El 0.0 mtr, Near Row B, Col 7	
LCA72CP011	LPH-2 COND O/L PRESS	PT	COND	20.2	42	95	105	Kg/Cm2	14		LIR-23	El 0.0 mtr, Near Row B, Col 7	
LCA82CP011	LPH-3 COND O/L PRESS	PT	COND	20.2	42	117.9	130	Kg/Cm2	14		LIR-23	El 0.0 mtr, Near Row B, Col 7	
LBB10CP011	HRH STM HDR PRESS.	PT	STEAM	53.04	67.6	593	601	Kg/Cm2	6		LIR-24	El 17.0 mtr, Near Row B, Col 10	
LBG30CP011	AUX STM HDR PRESS	PT	STEAM	16	20	290	350	Kg/Cm2	14		LIR-25	El 17.0 mtr, Near Row B, Col 11	
LBG30CP012	AUX STM HDR PRESS	PT	STEAM	16	20	290	350	Kg/Cm2	14		LIR-25	El 17.0 mtr, Near Row B, Col 11	
LBG30CP013	AUX STM HDR PRESS	PT	STEAM	16	20	290	350	Kg/Cm2	14		LIR-25	El 17.0 mtr, Near Row B, Col 11	
LBG31CP011	AUX STM STN HDR PRESS	PT	STEAM	16	20	290	350	Kg/Cm2	14		LIR-25	El 17.0 mtr, Near Row B, Col 11	
LAB24CP011	BFP INT STG TO RH SPRAY PRESS.	PT	FW	185	210	193.7	200	Kg/Cm2	10		LIR-26	El 0.0 mtr, Near Row C, Col 6	
LAB80CF011	FW FLOW TO ECO	FT	FW	307.11	325	295	300	Kg/Cm2	12		LIR-27	El 17 mtr, Near Col C, Row 10	
LAB80CF012	FW FLOW TO ECO	FT	FW	307.11	325	295	300	Kg/Cm2	12		LIR-27	El 17 mtr, Near Col C, Row 10	
LAB80CF013	FW FLOW TO ECO	FT	FW	307.11	325	295	300	Kg/Cm2	12		LIR-27	El 17 mtr, Near Col C, Row 10	
LAB80CP011	FW PRESS TO ECO	PT	FW	307.11	325	295	300	Kg/Cm2	10		LIR-27	El 17 mtr, Near Col C, Row 10	
PGC00CP011	TG DMCW PUMP SUC HDR PRESS	PT	DMCW	2.6	7	45.3	60	Kg/Cm2	14		LIR-28	El 0.0 mtr, Near Row Ad, Col 11	
PGC00CP012	TG DMCW PUMP SUC HDR PRESS	PT	DMCW	2.6	7	45.3	60	Kg/Cm2	14		LIR-28	El 0.0 mtr, Near Row Ad, Col 11	
PGC00CP013	TG DMCW PUMP SUC HDR PRESS	PT	DMCW	2.6	7	45.3	60	Kg/Cm2	14		LIR-28	El 0.0 mtr, Near Row Ad, Col 11	
PGC01CP012	DP ACRS TGDMCWP-A CON STRNR	DPT	DMCW	2.6	7	45.3	60	Kg/Cm2	16		LIR-28	El 0.0 mtr, Near Row Ad, Col 11	
PGC02CP012	DP ACRS TGDMCWP-B CON STRNR	DPT	DMCW	2.6	7	45.3	60	Kg/Cm2	16		LIR-28	El 0.0 mtr, Near Row Ad, Col 11	
PGC03CP012	DP ACRS TGDMCWP-C CON STRNR	DPT	DMCW	2.6	7	45.3	60	Kg/Cm2	16		LIR-28	El 0.0 mtr, Near Row Ad, Col 11	
PGC01CP011	TG DMCW PUMP-A DISCH PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-29	El 0.0 mtr, Near Row Aa, Col 11	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
PGC01CP013	TG DMCW PUMP-A DISCH PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-29	El 0.0 mtr, Near Row Aa, Col 11	
PGC02CP011	TG DMCW PUMP-B DISCH PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-29	El 0.0 mtr, Near Row Aa, Col 11	
PGC02CP013	TG DMCW PUMP-B DISCH PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-29	El 0.0 mtr, Near Row Aa, Col 11	
PGC03CP011	TG DMCW PUMP-C DISCH PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-29	El 0.0 mtr, Near Row Aa, Col 11	
PGC03CP013	TG DMCW PUMP-C DISCH PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-29	El 0.0 mtr, Near Row Aa, Col 11	
PGC10CF011	TG DMCW PUMP DISCH FLOW	FT	DMCW	6.8	10	45.3	60	Kg/Cm2	16		LIR-30	El 0.0 mtr, Near Row A, Col 12	
PGC10CP011	TG DMCW PUMP DISCH HDR PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-30	El 0.0 mtr, Near Row A, Col 12	
PGC10CP012	TG DMCW PUMP DISCH HDR PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-30	El 0.0 mtr, Near Row A, Col 12	
PGC10CP013	TG DMCW PUMP DISCH HDR PRESS	PT	DMCW	6.8	10	45.3	60	Kg/Cm2	14		LIR-30	El 0.0 mtr, Near Row A, Col 12	
PGC20CF013	DMCW FLOW TO STN AUX	FT	DMCW	5.8	10	38	60	Kg/Cm2	16		LIR-30	El 0.0 mtr, Near Row A, Col 12	
PGC11CP011	DMCW DP ACROSS PHE-A(TG)	DPT	DMCW	6.8	10	45.3	60	Kg/Cm2	16		LIR-31	El 0.0 mtr, Near Row Ab, Col 12	
PGC12CP011	DMCW DP ACROSS PHE-B(TG)	DPT	DMCW	6.8	10	45.3	60	Kg/Cm2	16		LIR-31	El 0.0 mtr, Near Row Ab, Col 12	
PGC13CP011	DMCW DP ACROSS PHE-C(TG)	DPT	DMCW	6.8	10	45.3	60	Kg/Cm2	16		LIR-31	El 0.0 mtr, Near Row Ab, Col 12	
PGC20CF011	DMCW FLOW TO TG COOLERS	FT	DMCW	5.8	10	38	60	Kg/Cm2	16		LIR-31	El 0.0 mtr, Near Row Ab, Col 12	
PGC20CF012	DMCW FLOW TO BFP/CEP COOLERS	FT	DMCW	5.8	10	38	60	Kg/Cm2	16		LIR-31	El 0.0 mtr, Near Row Ab, Col 12	
PGC30CP011	SG DMCW SUC HDR PRESS	PT	DMCW	2.6	7	44.3	60	Kg/Cm2	14		LIR-32	El 0.0 mtr, Near Row B, Col 11	
PGC30CP012	SG DMCW SUC HDR PRESS	PT	DMCW	2.6	7	44.3	60	Kg/Cm2	14		LIR-32	El 0.0 mtr, Near Row B, Col 11	
PGC30CP013	SG DMCW SUC HDR PRESS	PT	DMCW	2.6	7	44.3	60	Kg/Cm2	14		LIR-32	El 0.0 mtr, Near Row B, Col 11	
PGC31CP012	DP ACRS SGDMCWP-A CON STRNR	DPT	DMCW	2.6	7	44.3	60	Kg/Cm2	16		LIR-32	El 0.0 mtr, Near Row B, Col 11	
PGC32CP012	DP ACRS SGDMCWP-B CON STRNR	DPT	DMCW	2.6	7	44.3	60	Kg/Cm2	16		LIR-32	El 0.0 mtr, Near Row B, Col 11	
PGC31CP011	SG DMCW PUMP-A DISCH PRESS	PT	DMCW	8.1	12	44.3	60	Kg/Cm2	14		LIR-33	El 0.0 mtr, Near Row B, Col 11	
PGC31CP013	SG DMCW PUMP-A DISCH PRESS	PT	DMCW	8.1	12	44.3	60	Kg/Cm2	14		LIR-33	El 0.0 mtr, Near Row B, Col 11	
PGC32CP011	SG DMCW PUMP-B DISCH PRESS	PT	DMCW	8.1	12	44.3	60	Kg/Cm2	14		LIR-33	El 0.0 mtr, Near Row B, Col 11	
PGC32CP013	SG DMCW PUMP-B DISCH PRESS	PT	DMCW	8.1	12	44.3	60	Kg/Cm2	14		LIR-33	El 0.0 mtr, Near Row B, Col 11	
PGC40CF011	SG DMCW FLOW	FT	DMCW	8.1	12	44.3	60	Kg/Cm2	16		LIR-34	El 0.0 mtr, Near Row B, Col 12	
PGC40CP011	SG DMCW PUMP DISCH HDR PRESS	PT	DMCW	8.1	12	44.3	60	Kg/Cm2	14		LIR-34	El 0.0 mtr, Near Row B, Col 12	
PGC40CP012	SG DMCW PUMP DISCH HDR PRESS	PT	DMCW	8.1	12	44.3	60	Kg/Cm2	14		LIR-34	El 0.0 mtr, Near Row B, Col 12	
PGC40CP013	SG DMCW PUMP DISCH HDR PRESS	PT	DMCW	8.1	12	44.3	60	Kg/Cm2	14		LIR-34	El 0.0 mtr, Near Row B, Col 12	
PGC41CP011	DP ACROSS PHE-A(SG)	DPT	DMCW	8.1	12	44.3	60	Kg/Cm2	16		LIR-34	El 0.0 mtr, Near Row B, Col 12	
PGC42CP011	DP ACROSS PHE-B(SG)	DPT	DMCW	8.1	12	44.3	60	Kg/Cm2	16		LIR-34	El 0.0 mtr, Near Row B, Col 12	
PCB31CP011	ACW DP ACRS PHE A FOR SG AUX	DPT	SEA WTR	3.5	7.5	36	60	Kg/Cm2	20		LIR-35	El 0.0 mtr, Near Row Ab, Col 12	
PCB32CP011	ACW DP ACRS PHE B FOR SG AUX	DPT	SEA WTR	3.5	7.5	36	60	Kg/Cm2	20		LIR-35	El 0.0 mtr, Near Row Ab, Col 12	
PCB33CP011	ACW DP ACRS PHE A FOR TG AUX	DPT	SEA WTR	3.5	7.5	36	60	Kg/Cm2	20		LIR-35	El 0.0 mtr, Near Row Ab, Col 12	
PCB34CP011	ACW DP ACRS PHE B FOR TG AUX	DPT	SEA WTR	3.5	7.5	36	60	Kg/Cm2	20		LIR-35	El 0.0 mtr, Near Row Ab, Col 12	
PCB35CP011	ACW DP ACRS PHE C FOR TG AUX	DPT	SEA WTR	3.5	7.5	36	60	Kg/Cm2	20		LIR-35	El 0.0 mtr, Near Row Ab, Col 12	
LBG20CF011	CRH STM FLOW TO APRDS	FT	STEAM	59.15	73.1	344.8	360	Kg/Cm2	16		LIR-36	El 17.0 mtr, Near Row B, Col 11	
LBG20CF012	CRH STM FLOW TO APRDS	FT	STEAM	59.15	73.1	344.8	360	Kg/Cm2	16		LIR-36	El 17.0 mtr, Near Row B, Col 11	
LBG20CP011	CRH STM PRESS TO APRDS	PT	STEAM	59.15	73.1	344.8	360	Kg/Cm2	14		LIR-36	El 17.0 mtr, Near Row B, Col 11	
LBG20CP012	CRH STM PRESS TO APRDS	PT	STEAM	59.15	73.1	344.8	360	Kg/Cm2	14		LIR-36	El 17.0 mtr, Near Row B, Col 11	
QEB10CP011	SERV AIR HDR PRESS	PT	SERV AIR	8.5	10	40	50	Kg/Cm2	32		LIR-37	El 17.0 mtr, Near Row B, Col 6	
QFB10CP011	INST AIR HDR PRESS AT ROW-B	PT	INST AIR	7.5	8	40	50	Kg/Cm2	32		LIR-38	El 17.0 mtr, Near Row B, Col 10	
PCB01CL011	ACWP-A SUMP LVL	LT-Ult	SEA WTR	4.1	7.5	36	60	Kg/Cm2			LIR-39	El 0.0 mtr, Inside CW Pump House	wired to JB or LIE /LIR
PCB01CL012	ACWP-A SUMP LVL	LT-Ult	SEA WTR	4.1	7.5	36	60	Kg/Cm2			LIR-39	El 0.0 mtr, Inside CW Pump House	wired to JB or LIE /LIR
PCB01CL013	ACWP-A SUMP LVL	LT-Ult	SEA WTR	4.1	7.5	36	60	Kg/Cm2			LIR-39	El 0.0 mtr, Inside CW Pump House	wired to JB or LIE /LIR

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
PCB01CP011	ACW PUMP-A DISCH PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIR-39	El 0.0 mtr, Inside CW Pump House	
PCB01CP012	ACW PUMP-A DISCH PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIR-39	El 0.0 mtr, Inside CW Pump House	
PCB01CP013	ACW PUMP-A DISCH PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIR-39	El 0.0 mtr, Inside CW Pump House	
PCB02CL011	ACWP-B SUMP LVL	LT-Ult	SEA WTR	4.1	7.5	36	60	Kg/Cm2			LIR-39	El 0.0 mtr, Inside CW Pump House	wired to JB or LIE / LIP
PCB02CL012	ACWP-B SUMP LVL	LT-Ult	SEA WTR	4.1	7.5	36	60	Kg/Cm2			LIR-39	El 0.0 mtr, Inside CW Pump House	wired to JB or LIE / LIP
PCB02CL013	ACWP-B SUMP LVL	LT-Ult	SEA WTR	4.1	7.5	36	60	Kg/Cm2			LIR-39	El 0.0 mtr, Inside CW Pump House	wired to JB or LIE / LIP
PCB02CP011	ACW PUMP-B DISCH PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIR-39	El 0.0 mtr, Inside CW Pump House	
PCB02CP012	ACW PUMP-B DISCH PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIR-39	El 0.0 mtr, Inside CW Pump House	
PCB02CP013	ACW PUMP-B DISCH PRESS	PT	SEA WTR	4.1	7.5	36	60	Kg/Cm2	18		LIR-39	El 0.0 mtr, Inside CW Pump House	
PAB01CL011	CWP-A SUMP LVL	LT-Ult	SEA WTR								LIR-40	El 0.0 mtr, Near CWP-A/B, Inside CWPH	wired to JB or LIE / LIP
PAB01CL012	CWP-A SUMP LVL	LT-Ult	SEA WTR								LIR-40	El 0.0 mtr, Near CWP-A/B, Inside CWPH	wired to JB or LIE / LIP
PAB01CL013	CWP-A SUMP LVL	LT-Ult	SEA WTR	2.5	5	36	60	Kg/Cm2			LIR-40	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
PAB01CP011	CW PUMP-A DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-40	El 0.0 mtr, Near CWP-A/B, Inside CWPH	
PAB01CP012	CW PUMP-A DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-40	El 0.0 mtr, Near CWP-A/B, Inside CWPH	
PAB01CP013	CW PUMP-A DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-40	El 0.0 mtr, Inside CWPH	
PAB02CL011	CWP-B SUMP LVL	LT-Ult	SEA WTR								LIR-40	El 0.0 mtr, Near CWP-A/B, Inside CWPH	wired to JB or LIE / LIP
PAB02CL012	CWP-B SUMP LVL	LT-Ult	SEA WTR								LIR-40	El 0.0 mtr, Near CWP-A/B, Inside CWPH	wired to JB or LIE / LIP
PAB02CL013	CWP-B SUMP LVL	LT-Ult	SEA WTR	2.5	5	36	60	Kg/Cm2			LIR-40	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
PAB02CP011	CW PUMP-B DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-40	El 0.0 mtr, Near CWP-A/B, Inside CWPH	
PAB02CP012	CW PUMP-B DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-40	El 0.0 mtr, Inside CWPH	
PAB02CP013	CW PUMP-B DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-40	El 0.0 mtr, Inside CWPH	
PAB03CL011	CWP-C SUMP LVL	LT-Ult	SEA WTR	2.5	5	36	60	Kg/Cm2			LIR-41	El 0.0 mtr, Near CWP-A/B, Inside CWPH	wired to JB or LIE / LIP
PAB03CL012	CWP-C SUMP LVL	LT-Ult	SEA WTR	2.5	5	36	60	Kg/Cm2			LIR-41	El 0.0 mtr, Near CWP-A/B, Inside CWPH	wired to JB or LIE / LIP
PAB03CL013	CWP-C SUMP LVL	LT-Ult	SEA WTR	2.5	5	36	60	Kg/Cm2			LIR-41	El 0.0 mtr, Near CWP-A/B, Inside CWPH	wired to JB or LIE / LIP
PAB03CP011	CW PUMP-C DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-41	El 0.0 mtr, Inside CWPH	
PAB03CP012	CW PUMP-C DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-41	El 0.0 mtr, Near CWP-A/B, Inside CWPH	
PAB03CP013	CW PUMP-C DISCH PRESS	PT	SEA WTR	2.5	5	36	60	Kg/Cm2	18		LIR-41	El 0.0 mtr, Inside CWPH	
90PUB01CL011	CW BDP-A SUMP LVL	LT-Ult	SEA WTR	2	5	36	60	Kg/Cm2			LIR-42	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB01CL012	CW BDP-A SUMP LVL	LT-Ult	SEA WTR	2	5	36	60	Kg/Cm2			LIR-42	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB01CL013	CW BDP-A SUMP LVL	LT-Ult	SEA WTR	2	5	36	60	Kg/Cm2			LIR-42	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB01CP011	CW BDP-A DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-42	El 0.0 mtr, Inside CWPH	
90PUB01CP012	CW BDP-A DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-42	El 0.0 mtr, Inside CWPH	
90PUB01CP013	CW BDP-A DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-42	El 0.0 mtr, Inside CWPH	
90PUB02CL011	CW BDP-B SUMP LVL	LT-Ult	SEA WTR	2	5	36	60	Kg/Cm2			LIR-42	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB02CL012	CW BDP-B SUMP LVL	LT-Ult	SEA WTR	2	5	36	60	Kg/Cm2			LIR-42	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB02CL013	CW BDP-B SUMP LVL	LT-Ult	SEA WTR	2	5	36	60	Kg/Cm2			LIR-42	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB02CP011	CW BDP-B DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-42	El 0.0 mtr, Inside CWPH	
90PUB02CP012	CW BDP-B DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-42	El 0.0 mtr, Inside CWPH	
90PUB02CP013	CW BDP-B DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-42	El 0.0 mtr, Inside CWPH	
90PUB03CL011	CW BDP-C SUMP LVL	LT-Ult	SEA WTR	1.9	5	36	60	Kg/Cm2			LIR-43	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB03CL012	CW BDP-C SUMP LVL	LT-Ult	SEA WTR	1.9	5	36	60	Kg/Cm2			LIR-43	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB03CL013	CW BDP-C SUMP LVL	LT-Ult	SEA WTR	1.9	5	36	60	Kg/Cm2			LIR-43	El 0.0 mtr, Inside CWPH	wired to JB or LIE / LIP
90PUB03CP011	CW BDP-C DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-43	El 0.0 mtr, Inside CWPH	
90PUB03CP012	CW BDP-C DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-43	El 0.0 mtr, Inside CWPH	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
90PUB03CP013	CW BDP-C DISCH PRESS	PT	SEA WTR	2	5	36	60	Kg/Cm2	18		LIR-43	El 0.0 mtr, Inside CWPH	
90GKB00CP011	POTABLE WTR BSTR PMP SUC HDR PRESS	PT	SERV WTR	2.5	10	33	50	Kg/Cm2	14		LIR-44	El 0 mtr, Near Row B, Col 17	
90GKB00CP012	POTABLE WTR BSTR PMP SUC HDR PRESS	PT	SERV WTR	2.5	10	33	50	Kg/Cm2	14		LIR-44	El 0 mtr, Near Row B, Col 17	
90GKB01CP011	POTABLE WTR BSTR PMP-A SUC PRESS	PT	SERV WTR	2.5	10	33	50	Kg/Cm2	14		LIR-44	El 0 mtr, Near Row B, Col 17	
90GKB02CP011	POTABLE WTR BSTR PMP-B SUC PRESS	PT	SERV WTR	2.5	10	33	60	Kg/Cm2	14		LIR-44	El 0 mtr, Near Row B, Col 17	
90GAC01CP011	SWIP-A DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-45	El 0.0 mtr, Inside SWIPH	
90GAC01CP012	SWIP-A DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-45	El 0.0 mtr, Inside SWIPH	
90GAC02CP011	SWIP-B DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-45	El 0.0 mtr, Inside SWIPH	
90GAC02CP012	SWIP-B DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-45	El 0.0 mtr, Inside SWIPH	
90GAD01CL011	SEA WTR IN TAKE PMP-A SUMP LVL	LT-Ult	SEA WTR	4	7.5	33	50	Kg/Cm2			LIR-45	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GAD01CL012	SEA WTR IN TAKE PMP-A SUMP LVL	LT-Ult	SEA WTR	4	7.5	33	50	Kg/Cm2			LIR-45	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GAD02CL011	SEA WTR IN TAKE PMP-B SUMP LVL	LT-Ult	SEA WTR	4	7.5	33	50	Kg/Cm2			LIR-45	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GAD02CL012	SEA WTR IN TAKE PMP-B SUMP LVL	LT-Ult	SEA WTR	4	7.5	33	50	Kg/Cm2			LIR-45	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GAC03CP011	SWIP-C DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-46	El 0.0 mtr, Inside SWIPH	
90GAC03CP012	SWIP-C DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-46	El 0.0 mtr, Inside SWIPH	
90GAC04CP011	SWIP-D DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-46	El 0.0 mtr, Inside SWIPH	
90GAC04CP012	SWIP-D DISCH PRESS	PT	SEA WTR	4	7.5	33	50	Kg/Cm2	18		LIR-46	El 0.0 mtr, Inside SWIPH	
90GAD03CL011	SEA WTR IN TAKE PMP-C SUMP LVL	LT-Ult	SEA WTR								LIR-46	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GAD03CL012	SEA WTR IN TAKE PMP-C SUMP LVL	LT-Ult	SEA WTR								LIR-46	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GAD04CL011	SEA WTR IN TAKE PMP-D SUMP LVL	LT-Ult	SEA WTR								LIR-46	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GAD04CL012	SEA WTR IN TAKE PMP-D SUMP LVL	LT-Ult	SEA WTR								LIR-46	El 0.0 mtr, Inside SWIPH	wired to JB or LIE /LIP
90GHD01CP011	FLTR FEED PMP-A SUC PR	PT	SEA WTR	0.4	2	33	50	Kg/Cm2	18		LIR-47	El 0.0 mtr, Near Clarfied water Pumps, Inside CWPH	
90GHD01CP012	FLTR FEED PMP-A DISCH PR	PT	SEA WTR	4.8	10	33	50	Kg/Cm2	18		LIR-47	El 0.0 mtr, Near Clarfied water Pumps, Inside CWPH	
90GHD02CP011	FLTR FEED PMP-B SUC PR	PT	SEA WTR	0.4	2	33	50	Kg/Cm2	18		LIR-47	El 0.0 mtr, Near Clarfied water Pumps, Inside CWPH	
90GHD02CP012	FLTR FEED PMP-B DISCH PR	PT	SEA WTR	4.8	10	33	50	Kg/Cm2	18		LIR-47	El 0.0 mtr, Near Clarfied water Pumps, Inside CWPH	
90GHD03CP011	FLTR FEED PMP-C SUC PR	PT	SEA WTR	0.4	2	33	50	Kg/Cm2	18		LIR-47	El 0.0 mtr, Near Clarfied water Pumps, Inside CWPH	
90GHD03CP012	FLTR FEED PMP-C DISCH PR	PT	SEA WTR	4.8	10	33	50	Kg/Cm2	18		LIR-47	El 0.0 mtr, Near Clarfied water Pumps, Inside CWPH	
90LCR23CP011	HTWL M/U PUMP-A DISCH PRESS	PT	DM WTR	8	10	40	50	Kg/Cm2	14		LIR-48	El 0.0 mtr, Near HTWL M/U Pumps	
90LCR24CP011	HTWL M/U PUMP -B DISCH PRESS	PT	DM WTR	8	10	40	50	Kg/Cm2	14		LIR-48	El 0.0 mtr, Near HTWL M/U Pumps	
90LCR25CP011	HTWL M/U PUMP -C DISCH PRESS	PT	DM WTR	8	10	40	50	Kg/Cm2	14		LIR-48	El 0.0 mtr, Near HTWL M/U Pumps	
90LCR26CP011	HTWL M/U PUMP -D DISCH PRESS	PT	DM WTR	8	10	40	50	Kg/Cm2	14		LIR-48	El 0.0 mtr, Near HTWL M/U Pumps	
90GHD20CP011	AHP SEAL WTR PMP-A SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-49	El 0.0 mtr, Near AHP Seal Wtr Pumps	
90GHD20CP012	AHP SEAL WTR PMP-A DISCH PRESS	PT	FILTERED WTR	3.6	10	33	50	Kg/Cm2	14		LIR-49	El 0.0 mtr, Near AHP Seal Wtr Pumps	
90GHD21CP011	AHP SEAL WTR PMP-B SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-49	El 0.0 mtr, Near AHP Seal Wtr Pumps	
90GHD21CP012	AHP SEAL WTR PMP-B DISCH PRESS	PT	FILTERED WTR	3.6	10	33	50	Kg/Cm2	14		LIR-49	El 0.0 mtr, Near AHP Seal Wtr Pumps	
90GHD23CP011	POTABLE WTR PMP-A SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-50	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD23CP012	POTABLE WTR PMP-A DISCH PRESS	PT	FILTERED WTR	6.2	10	33	50	Kg/Cm2	14		LIR-50	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD24CP011	POTABLE WTR PMP-B SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-50	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD24CP012	POTABLE WTR PMP-B DISCH PRESS	PT	FILTERED WTR	6.2	10	33	50	Kg/Cm2	14		LIR-50	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD26CP011	SERVICE WTR PMP-A SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-51	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD26CP012	SERVICE WTR PMP-A DISCH PRESS	PT	FILTERED WTR	5.6	10	33	50	Kg/Cm2	14		LIR-51	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD27CP011	SERVICE WTR PMP-B SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-51	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD27CP012	SERVICE WTR PMP-B DISCH PRESS	PT	FILTERED WTR	5.6	10	33	50	Kg/Cm2	14		LIR-51	El 0.0 mtr, Near Potable Wtr Pumps	
90GHD29CP011	HVAC M/U PMP-A SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-52	El 0.0 mtr, Near HVAC M/U Pumps	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
90GHD29CP012	HVAC M/U PMP-A DISCH PRESS	PT	FILTERED WTR	6.9	10	33	50	Kg/Cm2	14		LIR-52	El 0.0 mtr, Near HVAC M/U Pumps	
90GHD30CP011	HVAC M/U PMP-B SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-52	El 0.0 mtr, Near HVAC M/U Pumps	
90GHD30CP012	HVAC M/U PMP-B DISCH PRESS	PT	FILTERED WTR	6.9	10	33	50	Kg/Cm2	14		LIR-52	El 0.0 mtr, Near HVAC M/U Pumps	
90GHD32CP011	APH/ESP WASH PMP-A SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-53	El 0.0 mtr, Near APH/ESP WASH Pumps	
90GHD32CP012	APH/ESP WASH PMP-A DISCH PRESS	PT	FILTERED WTR	8.4	12	33	50	Kg/Cm2	14		LIR-53	El 0.0 mtr, Near APH/ESP WASH Pumps	
90GHD33CP011	APH/ESP WASH PMP-B SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-53	El 0.0 mtr, Near APH/ESP WASH Pumps	
90GHD33CP012	APH/ESP WASH PMP-B DISCH PRESS	PT	FILTERED WTR	8.4	12	33	50	Kg/Cm2	14		LIR-53	El 0.0 mtr, Near APH/ESP WASH Pumps	
90GHD35CP011	CHP DFDS PMP-A SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-54	El 0.0 mtr, Near CHP DFDS Pumps	
90GHD35CP012	CHP DFDS PMP-A DISCH PRESS	PT	FILTERED WTR	6.4	10	33	50	Kg/Cm2	14		LIR-54	El 0.0 mtr, Near CHP DFDS Pumps	
90GHD36CP011	CHP DFDS PMP-B SUC PRESS	PT	FILTERED WTR	0.4	1	33	50	Kg/Cm2	14		LIR-54	El 0.0 mtr, Near CHP DFDS Pumps	
90GHD36CP012	CHP DFDS PMP-B DISCH PRESS	PT	FILTERED WTR	6.4	10	33	50	Kg/Cm2	14		LIR-54	El 0.0 mtr, Near CHP DFDS Pumps	
90GHD38CP011	ASH CONDTNR M/U PMP-A SUC PRESS	PT	FILTERED WTR	0.4	10	33	50	Kg/Cm2	14		LIR-55	El 0.0 mtr, Near ASH CONDTNR M/U Pumps	
90GHD38CP012	ASH CONDTNR M/U PMP-A DISCH PRESS	PT	FILTERED WTR	7.4	10	33	50	Kg/Cm2	14		LIR-55	El 0.0 mtr, Near ASH CONDTNR M/U Pumps	
90GHD39CP011	ASH CONDTNR M/U PMP-B SUC PRESS	PT	FILTERED WTR	0.4	10	33	50	Kg/Cm2	14		LIR-55	El 0.0 mtr, Near ASH CONDTNR M/U Pumps	
90GHD39CP012	ASH CONDTNR M/U PMP-B DISCH PRESS	PT	FILTERED WTR	7.4	10	33	50	Kg/Cm2	14		LIR-55	El 0.0 mtr, Near ASH CONDTNR M/U Pumps	
10HCB01CF001	SB STEAM SUPPLY FLOW	FT	STEAM	30	35	370	430	Kg/Cm2	16		STAND ALONE		
10HCB01CP001	SB STEAM PRESSURE UPSTREAM PRV	PT	STEAM	261.5	277.2	502	505	Kg/Cm2	2		STAND ALONE		
10HCB01CP002	SB STEAM PRESSURE	PT	STEAM	30	35	370	430	Kg/Cm2	14		STAND ALONE		
10HCB01CP003	SB STEAM PRESSURE	PT	STEAM	30	35	370	430	Kg/Cm2	14		STAND ALONE		
10HCB02CF001	SB RETRACT STEAM FLOW - RIGHT	FT	STEAM	30	35	370	430	Kg/Cm2	16		STAND ALONE		
10HCB03CP001	AH SB STEAM SUPPLY PRESSURE	PT	STEAM	30	35	370	430	Kg/Cm2	14		STAND ALONE		
10HCB04CF001	WALL BLOWER STEAM FLOW - FRONT & RIGHT	FT	STEAM	30	35	370	430	Kg/Cm2	16		STAND ALONE		
10HCB05CF001	SB RETRACT STEAM FLOW - LEFT	FT	STEAM	30	35	370	430	Kg/Cm2	16		STAND ALONE		
10HCB06CF001	WALL BLOWER STEAM FLOW - REAR & LEFT	FT	STEAM	30	35	370	430	Kg/Cm2	16		STAND ALONE		
90HJP95CP001	SUMP PUMP DISCHARGE PRESSURE	PT	WATER	4.00	10.00	55	90	Kg/Cm2	14		STAND ALONE		
90LCP03CL011	CS TANK-1 LEVEL	LT	DM WTR	2	3.5	40	50	Kg/Cm2	24		STAND ALONE	El 0.0 mtr, Near CST	
90LCP03CL012	CS TANK-1 LEVEL	LT	DM WTR	2	3.5	40	50	Kg/Cm2	24		STAND ALONE	El 0.0 mtr, Near CST	
90LCP04CL011	CS TANK-2 LEVEL	LT	DM WTR	2	3.5	40	50	Kg/Cm2	24		STAND ALONE	El 0.0 mtr, Near CST	
90LCP04CL012	CS TANK-2 LEVEL	LT	DM WTR	2	3.5	40	50	Kg/Cm2	24		STAND ALONE	El 0.0 mtr, Near CST	
90LCR61CP101	DM M/U PUMP-A DISCH PRESS	PS	DM WTR	4.5	10	40	50	Kg/Cm2	22		STAND ALONE	El 0.0 mtr, Near DM M/ U Pumps	
90LCR62CP101	DM M/U PUMP-B DISCH PRESS	PS	DM WTR	4.5	10	40	50	Kg/Cm2	22		STAND ALONE	El 0.0 mtr, Near DM M/ U Pumps	
90PAR10CP011	CW M/U WTR PRESS BEF FOREBAY	PT	SEA WTR	0.5	5	36	60	Kg/Cm2	18		STAND ALONE		
90QFA10 CP001	INSTRUMENT AIR PRESSURE AT TERMINAL POINT	PT	INS AIR	6	7	40	50	Kg/cm2	32		ALONE		
90QFB10 CP001	SERVICE AIR PRESSURE AT TERMINAL POINT	PT	SER AIR	6	10	40	50	Kg/cm2	32		ALONE		
90QHB10CP001	FURNACE PRESSURE	PT	FLUE GAS	178	237	1289	1300	mmWC	26		ALONE		
90QHB10CP002	FURNACE PRESSURE	PT	FLUE GAS	178	237	1289	1300	mmWC	26		ALONE		
90QHC10CP001	SB MAIN LINE PRESSURE	PT	STEAM	19	25	212	355	Kg/cm2	14		ALONE		
90QHH50CP001	ATOMISING AIR HEADER PRESSURE	PT	AIR	6	6	at		Kg/cm2	14		ALONE		
90QHH50CP002	ATOMISING AIR HEADER PRESSURE	PT	AIR	6	6	at		Kg/cm2	14		ALONE		
90QHL30CF001	AIR FLOW	FT	SEC AIR	389	517	30	53	mmWC	28		ALONE		
90QHL30CF002	AIR FLOW	FT	SEC AIR	389	517	30	53	mmWC	28		ALONE		
90QHL30CP001	FD FAN OUTLET PRESSURE	PT	SEC AIR	419	561	30	53	mmWC	26		ALONE		
90QHL40CP001	DP ACROSS WINDBOX & FURNACE	PDT	FLUE GAS	389/178	517/237	30/1289	53/1300	mmWC	28		ALONE		
90QHN10CP001	BOILER BANK OUTLET PRESSURE	PT	FLUE GAS	65	84	360	370	mmWC	26		ALONE		

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
90QHX10 CP001	COOLING WATER SYSTEM INLET PRESSURE	PT	WATER	6	10	40	50	Kg/cm2	14		ALONE		
90QLA01 CL001	FEED WATER STORAGE TANK LEVEL	LT	FEED WATER	1.23	7	105	135	Kg/cm2	16		ALONE		
90QLA01 CL002	FEED WATER STORAGE TANK LEVEL	LT	FEED WATER	1.23	7	105	135	Kg/cm2	16		ALONE		
90QLA01 CP001	FEED STORAGE TANK PR.	PT	FEED WATER	1.23	7	105	135	Kg/cm2	14		ALONE		
90QLA20 CF001	BFP DISCHARGE FLOW - COMMON	FT	FEED WATER	36	45	105	140	Kg/cm2	16		ALONE		
90QLA20 CP001	BFP DISCHARGE PRESSURE	PT	FEED WATER	36	45	105	140	Kg/cm2	14		ALONE		
90QLA20 CP002	BFP DISCHARGE PRESSURE BEFORE FCV.	PT	FEED WATER	36	45	105	140	Kg/cm2	14		ALONE		
90QLA20 CP003	BFP DISCHARGE PRESSURE AFT. FCV.	PT	FEED WATER	36	45	105	140	Kg/cm2	14		ALONE		
90QLA30 CP001	DM WATER PUMP DISCHARGE PRESSURE	PT	DM WATER	19	20	40	50	Kg/cm2	14		ALONE		
90QLB10CL001	DRUM LEVEL	LT	WATER/STEAM	22	25	220	253	Kg/cm2	16		ALONE		
90QLB10CL002	DRUM LEVEL	LT	WATER/STEAM	22	25	220	253	Kg/cm2	16		ALONE		
90QLB10CP001	DRUM PRESSURE	PT	WATER/STEAM	22	25	220	253	Kg/cm2	14		ALONE		
90QLB30 CF001	MAIN STEAM FLOW	FT	STEAM	20	22	220	290	Kg/cm2	16		ALONE		
90QLB30 CP001	MAIN STEAM PRESSURE	PT	STEAM	20	22	220	290	Kg/cm2	14		ALONE		
90QLB30 CP002	STEAM TO DEAERATOR PRESSURE	PT	STEAM	1.23	22	220	290	Kg/cm2	14		ALONE		
HFE10CP001	PA FAN-A SUCTION PRESS	PT	PY. AIR	-18	-42	27	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near PA Fan-A, Col L4L	
HFE10CP002	DP ACRS PA FAN-A PLANE P1 & P3	DPT	PY. AIR	--	1291	27	50	mmWC	28		STAND ALONE		
HFE15CP001	PA FAN-B SUCTION PRESS	PT	PY. AIR	-18	-42	27	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near PA Fan-A, Col L4R	
HFE15CP002	DP ACRS PA FAN-B PLANE P1 & P3	DPT	PY. AIR	--	1291	27	50	mmWC	28		STAND ALONE		
HFE20CP001	PA FAN-A OUTLET PRESS	PT	PY. AIR	966	1291	35	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near PA Fan-A, Col L4L	
HFE25CP001	PA FAN-B OUTLET PRESS	PT	PY. AIR	966	1291	35	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near PA Fan-A, Col L4R	
HFE30CP002	PA DPACRS APH-A	DPT	PY. AIR	951	1019	326	350	mmWC	28		STAND ALONE		
HFE35CP002	PA DPACRS APH-B	DPT	PY. AIR	951	1019	326	350	mmWC	28		STAND ALONE		
HFE50CP001	COLD PY. AIR HEADER PRESS	PT	COLD PY. AIR	951	1019	35	50	mmWC	26		STAND ALONE	El 6.85 mtr, Near Col S17	
HFE50CP002	COLD PY. AIR HEADER PRESS	PT	COLD PY. AIR	951	1019	35	50	mmWC	26		STAND ALONE		
HFE70CP001	HOT PY. AIR HEADER PRESS	PT	HOT PY. AIR	887	911	326	350	mmWC	26		STAND ALONE	El 35.6 mtr, Near Col S12L	
HFW01CP001	DP ACRS DYNAVANE FILTER	DPT	SEAL AIR	800	1019	33	50	mmWC	28		STAND ALONE	El 0.0 mtr, Near Seal Air Fan, Col S16L	
HFW20CP001	SEAL AIR FAN DISCH PRESS	PT	SEAL AIR	1015	1330	33	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near Seal Air Fan, Col S16L	
HFW20CP002	SEAL AIR FAN DISCH TO CPA DP	DPT	SEAL AIR	1015/800	1330	33	50	mmWC	28		STAND ALONE	El 0.0 mtr, Near Seal Air Fan, Col S16L	
HLA10CP001	FD FAN-A OUTLET PRESS	PT	SEC.AIR	282	417	30	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near FD Fan-A, Col L1L	
HLA15CP001	FD FAN-B OUTLET PRESS	PT	SEC.AIR	282	417	30	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near FD Fan-B, Col L1R	
HLA20CP002	SA DP ACRS APH-A	DPT	SEC.AIR	260	281	333	350	mmWC	28		STAND ALONE		
HLA25CP002	SA DP ACRS APH-B	DPT	SEC.AIR	260	281	333	350	mmWC	28		STAND ALONE		
HLB10CP001	FD FAN-A SUC PRESS	PT	SEC AIR	-18	-29	27	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near FD Fan-A, Col L1L	
HLB10CP002	DP ACRS FD FAN-A PLANE P1 & P3	DPT	SEC AIR	--	417	27	50	mmWC	28		STAND ALONE	El 0.0 mtr, Near FD Fan-A, Col L1L	
HLB15CP001	FD FAN-B SUC PRESS	PT	SEC AIR	-18	-29	27	50	mmWC	26		STAND ALONE	El 0.0 mtr, Near FD Fan-B, Col L1R	
HLB15CP002	DP ACRS FD FAN-B PLANE P1 & P3	DPT	SEC AIR	--	417	27	50	mmWC	28		STAND ALONE	El 0.0 mtr, Near FD Fan-B, Col L1R	
HNA10CP002	FG DP ACRS AH-A	DPT	FLUE GAS	-68	-331	362	400	mmWC	28	2	STAND ALONE		
HNA20CP002	FG DP ACRS AH-B	DPT	FLUE GAS	-68	-331	362	400	mmWC	28	2	STAND ALONE		
HNA30CP001	FG PRESS AT AH-A O/L	PT	FLUE GAS	-211	-331	127	150	mmWC	26	1	STAND ALONE	El 0.0 mtr, Near Col M3L	
HNA35CP001	FG PRESS AT AH-B O/L	PT	FLUE GAS	-211	-331	127	150	mmWC	26	1	STAND ALONE	El 0.0 mtr, Near Col M3R	
HNA60CP001	FG PRESS AT ID FAN-A I/L	PT	FLUE GAS	-336	-540	127	150	mmWC	26	1	STAND ALONE	El 0.0 mtr, Near ID FAN-A	
HNA60CP002	DP ACRS IDF-A PLAN P1 & P3	DPT	FLUE GAS		140	127	150	mmWC	28	2	STAND ALONE		
HNA65CP001	FG PRESS AT ID FAN-B I/L	PT	FLUE GAS	-336	-540	127	150	mmWC	26	1	STAND ALONE	El 0.0 mtr, Near ID FAN-B	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
HNA65CP002	DP ACRS IDF-B PLAN P1 & P3	DPT	FLUE GAS		140	127	150	mmWC	28	2	STAND ALONE		
HNA70CP001	FG PRESS AT ID FAN-A O/L	PT	FLUE GAS	87	140	127	150	mmWC	26	1	STAND ALONE	El 0.0 mtr, Near ID FAN-A	
HNA75CP001	FG PRESS AT ID FAN-B O/L	PT	FLUE GAS	87	140	127	150	mmWC	26	1	STAND ALONE	El 0.0 mtr, Near ID FAN-B	
LCA41CF011	EXCESS RETN TO CST FLOW	FT	COND	30.37	42	46.6	60	Kg/Cm2	16		STAND ALONE		
PAB11CP011	CW PRESS AT COND I/L-L	PT	SEA WTR	2.2	5	36	60	Kg/Cm2	18		STAND ALONE	El 0.0 mtr, Near Row A, Col 8	
PAB11CP012	DP ACROSS COND-L	DPT	SEA WTR	2.2	5	36	60	Kg/Cm2	20		STAND ALONE	El 0.0 mtr, Near Row A, Col 8	
PAB11CP013	CW PRESS AT COND O/L-L	PT	SEA WTR	1.9	5	45	60	Kg/Cm2	18		STAND ALONE	El 0.0 mtr, Near Row Ae, Col 8	
PAB21CP011	CW PRESS AT COND I/L-R	PT	SEA WTR	2.2	5	36	60	Kg/Cm2	18		STAND ALONE	El 0.0 mtr, Near Row A, Col 9	
PAB21CP012	DP ACROSS COND-R	DPT	SEA WTR	2.2	5	36	60	Kg/Cm2	20		STAND ALONE	El 0.0 mtr, Near Row A, Col 9	
PAB21CP013	CW PRESS AT COND O/L-R	PT	SEA WTR	1.9	5	45	60	Kg/Cm2	18		STAND ALONE	El 0.0 mtr, Near Row Ae, Col 9	
PGB01CL011	DMCW O/H TANK LVL	LT	DMCW	0.25	10	38	60	Kg/Cm2	16		STAND ALONE	El 25.5 mtr, Near Row B, Col 12	
PGB01CL012	DMCW O/H TANK LVL	LT	DMCW	0.25	10	38	60	Kg/Cm2	16		STAND ALONE	El 25.5 mtr, Near Row B, Col 12	
QFB10CP111	INST AIR PRESS TO TURB DRN VLVS	PS	INST AIR	7.5	8	40	50	Kg/Cm2	32		STAND ALONE		
QFB10CP112	INST AIR HDR PRESS	PS	INST AIR	7.5	8	40	50	Kg/Cm2	32		STAND ALONE	El 0.0 mtr, Near Row B, Col 10	
QFB10CP113	INST AIR HDR PRESS	PS	INST AIR	7.5	8	40	50	Kg/Cm2	32		STAND ALONE	El 0.0 mtr, Near Row B, Col 10	
HFE40CT201	AH-A PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HFE40CT202	AH-A PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HFE40CT203	AH-A PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HFE40CT204	AH-A PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HLA30CT201	AH-A SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HLA30CT202	AH-A SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HLA30CT203	AH-A SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HLA30CT204	AH-A SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-01	El 27.0 mtr, Near Col S12L	
HFE45CT201	AH-B PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HFE45CT202	AH-B PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HFE45CT203	AH-B PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HFE45CT204	AH-B PY. AIR OUTLET TEMP	TT	PY. AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HLA35CT201	AH-B SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HLA35CT202	AH-B SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HLA35CT203	AH-B SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HLA35CT204	AH-B SEC. AIR OUTLET TEMP	TT	SEC.AIR								TTR-02	El 27.0 mtr, Near Col S12R	
HNA10CT201	FG TEMP AT ECO O/L-L	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
HNA10CT202	FG TEMP AT ECO O/L-L	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
HNA10CT203	FG TEMP AT ECO O/L-L	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
HNA10CT204	FG TEMP AT ECO O/L-L	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
HNA20CT201	FG TEMP AT ECO O/L-R	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
HNA20CT202	FG TEMP AT ECO O/L-R	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
HNA20CT203	FG TEMP AT ECO O/L-R	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
HNA20CT204	FG TEMP AT ECO O/L-R	TT	FLUE GAS								TTR-03	El 27.0 mtr, Near Col S12L	
LCL20CT201	FLASH TANK DRAIN TANK TEMP	TT	COND								TTR-04	El 0 mtr, Near Col S4R	
HAC20CT201	ECO O/L-L LINK TEMP	TT	WATER								TTR-05	El 50.4 mtr, Near Col S11L	
HAC20CT203	ECO. O/L MIXING LINE TEMP	TT	WATER								TTR-05	El 50.4 mtr, Near Col S11L	
HBK50CT201	FG TEMP AT ECO I/L-L	TT	FLUE GAS								TTR-05	El 50.4 mtr, Near Col S11L	
HAC20CT202	ECO O/L-R LINK TEMP	TT	WATER								TTR-06	El 50.4 mtr, Near Col S11R	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
HBK55CT201	FG TEMP AT ECO I/L-R	TT	FLUE GAS								TTR-06	El 50.4 mtr, Near Col S11R	
HFE70CT201	HOT PY. AIR HEADER TEMP	TT	HOT PY. AIR								TTR-07	El 35.6 mtr, Near Col S12L	
HAG15CT201	DOWN COMER TO RECIR LN TEMP	TT	WATER								TTR-08	El 8.5 mtr, Near Col S14R	
HAG15CT204	DOWN COMER TO FT LN TEMP	TT	WATER								TTR-08	El 8.5 mtr, Near Col S14R	
HAG15CT205	DOWN COMER TO FT LN TEMP	TT	WATER								TTR-08	El 8.5 mtr, Near Col S14R	
HAG15CT206	WATER STORAGE DOWNCOMER TEMP	TT	WATER								TTR-08	El 8.5 mtr, Near Col S14R	
HAG27CT201	BCP MOTOR CW RTN EMP	TT	WATER								TTR-08	El 8.5 mtr, Near Col S14R	
HAG31CT201	BCP DISCH LINE DRAIN TEMP	TT	METAL								TTR-08	El 8.5 mtr, Near Col S14R	
HAG51CT201	WARM UP SUPPLY LINE DRAIN TEMP	TT	METAL								TTR-08	El 8.5 mtr, Near Col S14R	
HJF64CT201	HFO RETURN HDR TEMP	TT	HFO								TTR-09	El 28.8 mtr, Near Col S24L	
HJM01CT201	ATOMINSING STEAM HDR TEMP	TT	ATM. STEAM								TTR-09	El 28.8 mtr, Near Col S24L	
HAH26CT201	LINK TO SH PLATEN HDR-LEFT	TT	STEAM								TTR-10	El 78.9 mtr, Near Col S9L	
HBK10CT202	FG TEMP AT PSH FRONT O/L -L	TT	FLUE GAS								TTR-10	El 78.9 mtr, Near Col S9L	
HBK20CT201	FG TEMP AT PSH REAR O/L -L	TT	FLUE GAS								TTR-10	El 78.9 mtr, Near Col S9L	
HBK30CT201	FG TEMP AT FINISH RH O/L -L	TT	FLUE GAS								TTR-10	El 78.9 mtr, Near Col S9L	
HBK40CT201	FG TEMP AT FINISH SH O/L -L	TT	FLUE GAS								TTR-10	El 78.9 mtr, Near Col S9L	
HAH26CT202	LINK TO SH PLATEN HDR- RIGHT	TT	STEAM								TTR-11	El 78.9 mtr, Near Col S9R	
HBK15CT202	FG TEMP AT PSH FRONT O/L -R	TT	FLUE GAS								TTR-11	El 78.9 mtr, Near Col S9R	
HBK25CT201	FG TEMP AT PSH REAR O/L -R	TT	FLUE GAS								TTR-11	El 78.9 mtr, Near Col S9R	
HBK35CT201	FG TEMP AT FINISH RH O/L -R	TT	FLUE GAS								TTR-11	El 78.9 mtr, Near Col S9R	
HBK45CT201	FG TEMP AT FINISH SH O/L -R	TT	FLUE GAS								TTR-11	El 78.9 mtr, Near Col S9R	
LBG31CT201	AUX STM STN HDR TEMP	TT	STEAM								TTR-12	El 25.5 mtr, Near Row C, Col 11	
LCM20CT201	EXT TO LPH-4 LINE DRN PIPE METAL TEMP	TT	METAL								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LCM30CT201	EXT TO HPH-8 LN DRN PIPE METAL TEMP	TT	METAL								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LCM30CT201	FLASH TANK-A SHELL TEMP	TT	COND								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LCM30CT202	EXT TO HPH-6 LN DRN PIPE MTL TEMP	TT	METAL								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LCM30CT204	HRH/LPBP LINE DRN TO FT PIPE METAL TEMP	TT	METAL								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LCM30CT205	IP SV WU LN DRN TO FT PIPE METAL TMP	TT	METAL								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LCM30CT206	IP SV WU LN DRN TO FT PIPE METAL TMP	TT	METAL								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LCM30CT207	CRH LINE DRN TO FT PIPE METAL TEMP	TT	METAL								TTR-13	El 0.0 mtr, Near Row Ac, Col 10	
LAB50CT201	FW TEMP AFT FCS	TT	FW								TTR-14	El 17 mtr, Near Row B, Col 8	
LAB61CT201	FW TEMP AT HPH-6 I/L	TT	FW								TTR-14	El 8.5 mtr, Near Row B, Col 10	
LAB61CT202	FW TEMP AT HPH-6 I/L	TT	FW								TTR-14	El 8.5 mtr, Near Row B, Col 10	
LBQ61CT201	EXT STM TEMP AT HPH-6 I/L	TT	STEAM								TTR-14	El 8.5 mtr, Near Row B, Col 10	
LBQ61CT202	EXT STM TEMP AT HPH-6 I/L	TT	STEAM								TTR-14	El 8.5 mtr, Near Row B, Col 10	
LCH10CT201	HPH-6 NORM DRN TEMP	TT	COND								TTR-14	El 8.5 mtr, Near Row Ad, Col 13	
LCH15CT201	HPH-6 ALT DRN TEMP	TT	COND								TTR-14	El 8.5 mtr, Near Row Ad, Col 13	
LAB62CT201	FW TEMP AFT HPH-6	TT	FW								TTR-15	El 17 mtr, Near Row B, Col 8	
LAB62CT202	FW TEMP AFT HPH-6	TT	FW								TTR-15	El 17 mtr, Near Row B, Col 8	
LAB63CT201	FW TEMP AFT HPH-7	TT	FW								TTR-15	El 17 mtr, Near Row B, Col 8	
LAB63CT202	FW TEMP AFT HPH-7	TT	FW								TTR-15	El 17 mtr, Near Row B, Col 8	
LAB64CT201	FW TEMP AFT HPH-8	TT	FW								TTR-15	El 17 mtr, Near Row B, Col 8	
LAB64CT202	FW TEMP AFT HPH-8	TT	FW								TTR-15	El 17 mtr, Near Row B, Col 8	
LCA82CT201	LPH-3 COND O/L TEMP	TT	COND								TTR-16	El 8.5 mtr, Near Row Ad, Col 6	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENROR TYPE	MEDIUM	OPERATING PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LIR	Location	Group Remarks
LCA82CT202	LPH-3 COND O/L TEMP	TT	COND								TTR-16	El 8.5 mtr, Near Row Ad, Col 6	
HFE30CT001	AH-A PY. AIR INLET TEMP	Cr-AI	PY. AIR								TTR-17	El 6.85 mtr, Near Col S33L	
HFE35CT001	AH-B PY. AIR INLET TEMP	Cr-AI	PY. AIR								TTR-18	El 6.85 mtr, Near Col S33R	
PGB10CT201	TDBFP-A BP NDE MECH SEAL CLR SW I/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT202	TDBFP-A BP NDE MECH SEAL CLR SW O/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT203	TDBFP-A BP DE MECH SEAL CLR SW I/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT204	TDBFP-A BP DE MECH SEAL CLR SW O/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT207	TDBFP-A DE MECH SEAL CLR SW I/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT208	TDBFP-A DE MECH SEAL CLR SW O/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT209	TDBFP-A NDE MECH SEAL CLR SW I/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT210	TDBFP-A NDE MECH SEAL CLR SW O/L TEMP	TT									TTR-19	El 0.0 mtr, Near Row B, Col 6	
PGB10CT205	TDBFP-A BP NDE MECH SEAL CLR CW O/L TEMP	TT									TTR-20	El 0.0 mtr, Near Row B, Col 6	
PGB10CT206	TDBFP-A BP DE MECH SEAL CLR CW O/L TEMP	TT									TTR-20	El 0.0 mtr, Near Row B, Col 6	
PGB10CT211	TDBFP-A DE MECH SEAL CLR CW O/L TEMP	TT									TTR-20	El 0.0 mtr, Near Row B, Col 6	
PGB10CT212	TDBFP-A NDE MECH SEAL CLR CW O/L TEMP	TT									TTR-20	El 0.0 mtr, Near Row B, Col 6	
PGB20CT201	TDBFP-B BP NDE MECH SEAL CLR SW I/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT202	TDBFP-B BP NDE MECH SEAL CLR SW O/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT203	TDBFP-B BP DE MECH SEAL CLR SW I/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT204	TDBFP-B BP DE MECH SEAL CLR SW O/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT207	TDBFP-B DE MECH SEAL CLR SW I/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT208	TDBFP-B DE MECH SEAL CLR SW O/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT209	TDBFP-B NDE MECH SEAL CLR SW I/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT210	TDBFP-B NDE MECH SEAL CLR SW O/L TEMP	TT									TTR-21	El 0.0 mtr, Near Row B, Col 11	
PGB20CT205	TDBFP-B BP NDE MECH SEAL CLR CW O/L TEMP	TT									TTR-22	El 0.0 mtr, Near Row B, Col 11	
PGB20CT206	TDBFP-B BP DE MECH SEAL CLR CW O/L TEMP	TT									TTR-22	El 0.0 mtr, Near Row B, Col 11	
PGB20CT211	TDBFP-B DE MECH SEAL CLR CW O/L TEMP	TT									TTR-22	El 0.0 mtr, Near Row B, Col 11	
PGB20CT212	TDBFP-B NDE MECH SEAL CLR CW O/L TEMP	TT									TTR-22	El 0.0 mtr, Near Row B, Col 11	
PGB30CT201	MDBFP BP NDE MECH SEAL CLR SW I/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT202	MDBFP BP NDE MECH SEAL CLR SW O/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT203	MDBFP BP DE MECH SEAL CLR SW I/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT204	MDBFP BP DE MECH SEAL CLR SW O/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT207	MDBFP DE MECH SEAL CLR SW I/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT208	MDBFP DE MECH SEAL CLR SW O/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT209	MDBFP NDE MECH SEAL CLR SW I/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT210	MDBFP NDE MECH SEAL CLR SW O/L TEMP	TT									TTR-23	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT205	MDBFP BP NDE MECH SEAL CLR CW O/L TEMP	TT									TTR-24	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT206	MDBFP BP DE MECH SEAL CLR CW O/L TEMP	TT									TTR-24	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT211	MDBFP NDE MECH SEAL CLR CW O/L TEMP	TT									TTR-24	El 0.0 mtr, Near Row Ac, Col 5	
PGB30CT212	MDBFP DE MECH SEAL CLR CW O/L TEMP	TT									TTR-24	El 0.0 mtr, Near Row Ac, Col 5	
LAC30CT205	MDBFP BP JOUR BRG-NDE & TH BRG DRAIN OIL TEMP	TT									TTR-25	El 0.0 mtr, Near Row Ac, Col 5	
LAC30CT206	MDBFP BP JOUR BRG-DE DRAIN OIL TEMP	TT									TTR-25	El 0.0 mtr, Near Row Ac, Col 5	
LAC30CT215	MDBFP JOUR BRG-DE DRAIN OIL TEMP	TT									TTR-25	El 0.0 mtr, Near Row Ac, Col 5	
LAC30CT216	MDBFP JOUR BRG-NDE & TH BRG DRAIN OIL TEMP	TT									TTR-25	El 0.0 mtr, Near Row Ac, Col 5	
LAC31CT217	MDBFP LUB OIL TEMP U/S OF CLR	TT									TTR-25	El 0.0 mtr, Near Row Ac, Col 5	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
LAC32CT225	MDBFP MTR BRG BP END DRAIN OIL TEMP	TT									TTR-25	El 0.0 mtr, Near Row Ac, Col 5	
LAC32CT226	MDBFP MTR BRG HC END DRAIN OIL TEMP	TT									TTR-25	El 0.0 mtr, Near Row Ac, Col 5	
LAC10CT205	TDBFP-A BP JOUR BRG-NDE & TH BRG DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
LAC10CT206	TDBFP-A BP JOUR BRG-DE DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
LAC10CT215	TDBFP-A JOUR BRG-DE DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
LAC10CT216	TDBFP-A JOUR BRG-NDE & TH BRG DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
LAC20CT205	TDBFP-B BP JOUR BRG-NDE & TH BRG DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
LAC20CT206	TDBFP-B BP JOUR BRG-DE DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
LAC20CT215	TDBFP-B JOUR BRG-DE DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
LAC20CT216	TDBFP-B JOUR BRG-NDE & TH BRG DRAIN OIL TEMP	TT									TTR-26	El 0.0 mtr, Near Row B, Col 8	
HLA10CT201	FD FAN-A OUTLET TEMP	TT	SEC.AIR								TTR-27	El 0.0 mtr, Near FD FAN-A	
HLV10CT101	FD FAN-A LUB OIL TANK TEMP	TT									TTR-27	El 0.0 mtr, Near FD FAN-A	
HLV10CT102	FD FAN-A LUB OIL TEMP AFT CLR	TT									TTR-27	El 0.0 mtr, Near FD FAN-A	
HLV10CT103	FD FAN-A LUB OIL TANK TEMP	TT									TTR-27	El 0.0 mtr, Near FD FAN-A	
HLA15CT201	FD FAN-B OUTLET TEMP	TT	SEC.AIR								TTR-28	El 0.0 mtr, Near FD FAN-B	
HLV20CT101	FD FAN-B LUB OIL TANK TEMP	TT									TTR-28	El 0.0 mtr, Near FD FAN-B	
HLV20CT102	FD FAN-B LUB OIL TEMP AFT CLR	TT									TTR-28	El 0.0 mtr, Near FD FAN-B	
HLV20CT103	FD FAN-B LUB OIL TANK TEMP	TT									TTR-28	El 0.0 mtr, Near FD FAN-B	
HNA60CT201	FG TEMP AT ID FAN-A I/L	TT	FLUE GAS								TTR-29	El 0.0 mtr, Near ID FAN-A	
HNA70CT201	FG TEMP AT ID FAN-A O/L	TT	FLUE GAS								TTR-29	El 0.0 mtr, Near ID FAN-A	
HNV10CT101	ID FAN-A LUB OIL TANK TEMP	TT									TTR-29	El 0.0 mtr, Near ID FAN-A	
HNV10CT102	ID FAN-A LUB OIL TEMP AFT CLR	TT									TTR-29	El 0.0 mtr, Near ID FAN-A	
HNV10CT103	ID FAN-A LUB OIL TANK TEMP	TT									TTR-29	El 0.0 mtr, Near ID FAN-A	
HNV10CT104	ID FAN-A HYDRAULIC ROOM TEMP	TT									TTR-29	El 0.0 mtr, Near ID FAN-A	
HNV10CT105	ID FAN-A BEARING ROOM TEMP	TT									TTR-29	El 0.0 mtr, Near ID FAN-A	
HNA65CT201	FG TEMP AT ID FAN-B I/L	TT	FLUE GAS								TTR-30	El 0.0 mtr, Near ID FAN-B	
HNA75CT201	FG TEMP AT ID FAN-B O/L	TT	FLUE GAS								TTR-30	El 0.0 mtr, Near ID FAN-B	
HNV20CT101	ID FAN-B LUB OIL TANK TEMP	TT									TTR-30	El 0.0 mtr, Near ID FAN-B	
HNV20CT102	ID FAN-B LUB OIL TEMP AFT CLR	TT									TTR-30	El 0.0 mtr, Near ID FAN-B	
HNV20CT103	ID FAN-B LUB OIL TANK TEMP	TT									TTR-30	El 0.0 mtr, Near ID FAN-B	
HNV20CT104	ID FAN-B HYDRAULIC ROOM TEMP	TT									TTR-30	El 0.0 mtr, Near ID FAN-B	
HNV20CT105	ID FAN-B BEARING ROOM TEMP	TT									TTR-30	El 0.0 mtr, Near ID FAN-B	
HFV10CT101	PA FAN-A LUB OIL TANK TEMP	TT									TTR-31	El 0.0 mtr, Near PA FAN-A	
HFV10CT102	PA FAN-A LUB OIL TEMP AFT CLR	TT									TTR-31	El 0.0 mtr, Near PA FAN-A	
HFV10CT103	PA FAN-A LUB OIL TANK TEMP	TT									TTR-31	El 0.0 mtr, Near PA FAN-A	
HFV20CT101	PA FAN-B LUB OIL TANK TEMP	TT									TTR-32	El 0.0 mtr, Near PA FAN-B	
HFV20CT102	PA FAN-B LUB OIL TEMP AFT CLR	TT									TTR-32	El 0.0 mtr, Near PA FAN-B	
HFV20CT103	PA FAN-B LUB OIL TANK TEMP	TT									TTR-32	El 0.0 mtr, Near PA FAN-B	
HAD03CT201	FURNACE LOWER FRONT HDR DRAIN	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	
HAD10CT217	FURNACE INTERM. LEFT SIDE HDR DRAIN	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	
HAD20CT218	FURNACE INTERM. FRONT HDR DRAIN	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	
HAD30CT217	FURNACE INTERM. RIGHT SIDE HDR DRAIN	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	
HAD40CT218	FURNACE INTERM. REAR HDR DRAIN	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	
HAH10CT201	FURNACE ROOF INLET HDR DRAIN TEMP	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
HAH40CT201	SH BKPASS FRNT LWR HDR DRAIN TEMP	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	
HAH40CT202	SH BKPASS REAR LWR HDR DRAIN TEMP	TT	METAL								TTR-33	El 15.0 mtr, Near Col S10R	
PAB11CT201	CW TEMP AT COND I/L-L	TT	SEA WTR								TTR-34	El 0.0 mtr, Near Row A, Col 8	
PAB11CT202	CW TEMP AT COND I/L-L	TT	SEA WTR								TTR-34	El 0.0 mtr, Near Row A, Col 8	
PAB11CT203	CW TEMP AT COND I/L-L	TT	SEA WTR								TTR-34	El 0.0 mtr, Near Row A, Col 8	
PAB21CT201	CW TEMP AT COND I/L-R	TT	SEA WTR								TTR-34	El 0.0 mtr, Near Row A, Col 8	
PAB21CT202	CW TEMP AT COND I/L-R	TT	SEA WTR								TTR-34	El 0.0 mtr, Near Row A, Col 8	
PAB21CT203	CW TEMP AT COND I/L-R	TT	SEA WTR								TTR-34	El 0.0 mtr, Near Row A, Col 8	
PAB11CT204	CW TEMP AT COND O/L-L	TT	SEA WTR								TTR-35	El 0.0 mtr, Near Row Aa, Col 8	
PAB11CT205	CW TEMP AT COND O/L-L	TT	SEA WTR								TTR-35	El 0.0 mtr, Near Row Aa, Col 8	
PAB11CT206	CW TEMP AT COND O/L-L	TT	SEA WTR								TTR-35	El 0.0 mtr, Near Row Aa, Col 8	
PAB21CT204	CW TEMP AT COND O/L-R	TT	SEA WTR								TTR-35	El 0.0 mtr, Near Row Aa, Col 8	
PAB21CT205	CW TEMP AT COND O/L-R	TT	SEA WTR								TTR-35	El 0.0 mtr, Near Row Aa, Col 8	
PAB21CT206	CW TEMP AT COND O/L-R	TT	SEA WTR								TTR-35	El 0.0 mtr, Near Row Aa, Col 8	
PCB31CT201	ACW TEMP BEF PHE-A FOR SG AUX	TT	SEA WTR								TTR-36	El 0.0 mtr, Near Row B, Col 12	
PCB31CT202	ACW TEMP AFT PHE-A FOR SG AUX	TT	SEA WTR								TTR-36	El 0.0 mtr, Near Row B, Col 12	
PCB32CT201	ACW TEMP BEF PHE-B FOR SG AUX	TT	SEA WTR								TTR-36	El 0.0 mtr, Near Row B, Col 12	
PCB32CT202	ACW TEMP AFT PHE-B FOR SG AUX	TT	SEA WTR								TTR-36	El 0.0 mtr, Near Row B, Col 12	
PCB33CT201	ACW TEMP BEF PHE-A FOR TG AUX	TT	SEA WTR								TTR-37	El 0.0 mtr, Near Row Ab, Col 12	
PCB33CT202	ACW TEMP AFT PHE-A FOR TG AUX	TT	SEA WTR								TTR-37	El 0.0 mtr, Near Row Ab, Col 12	
PCB34CT201	ACW TEMP BEF PHE-B FOR TG AUX	TT	SEA WTR								TTR-37	El 0.0 mtr, Near Row Ab, Col 12	
PCB34CT202	ACW TEMP AFT PHE-B FOR TG AUX	TT	SEA WTR								TTR-37	El 0.0 mtr, Near Row Ab, Col 12	
PCB35CT201	ACW TEMP BEF PHE-C FOR TG AUX	TT	SEA WTR								TTR-37	El 0.0 mtr, Near Row Ab, Col 12	
PCB35CT202	ACW TEMP AFT PHE-C FOR TG AUX	TT	SEA WTR								TTR-37	El 0.0 mtr, Near Row Ab, Col 12	
PCB51CT201	ACW TEMP BEF VAC PUMP-1 HE	TT	SEA WTR								TTR-38	El 0.0 mtr, Near Row A, Col 6	
PCB51CT202	ACW TEMP AFT VAC PUMP-1 HE	TT	SEA WTR								TTR-38	El 0.0 mtr, Near Row A, Col 6	
PCB52CT201	ACW TEMP BEF VAC PUMP-2 HE	TT	SEA WTR								TTR-38	El 0.0 mtr, Near Row A, Col 6	
PCB52CT202	ACW TEMP AFT VAC PUMP-2 HE	TT	SEA WTR								TTR-38	El 0.0 mtr, Near Row A, Col 6	
PGC00CT201	TG DMCW PUMP SUC HDR TEMP	TT	DMCW								TTR-39	El 0.0 mtr, Near Row Ab, Col 12	
PGC11CT201	DMCW TEMP AT PHE-A I/L(TG)	TT	DMCW								TTR-39	El 0.0 mtr, Near Row Ab, Col 12	
PGC11CT202	DMCW TEMP AT PHE-A O/L(TG)	TT	DMCW								TTR-39	El 0.0 mtr, Near Row Ab, Col 12	
PGC12CT201	DMCW TEMP AT PHE-B I/L(TG)	TT	DMCW								TTR-39	El 0.0 mtr, Near Row Ab, Col 12	
PGC12CT202	DMCW TEMP AT PHE-B O/L(TG)	TT	DMCW								TTR-39	El 0.0 mtr, Near Row Ab, Col 12	
PGC13CT201	DMCW TEMP AT PHE-C I/L(TG)	TT	DMCW								TTR-39	El 0.0 mtr, Near Row Ab, Col 12	
PGC13CT202	DMCW TEMP AT PHE-C O/L(TG)	TT	DMCW								TTR-39	El 0.0 mtr, Near Row Ab, Col 12	
PGC30CT201	SG DMCW SUC HDR TEMP	TT	DMCW								TTR-40	El 0.0 mtr, Near Row B, Col 11	
PGC41CT201	DMCW TEMP AT PHE-A(SG) I/L	TT	DMCW								TTR-40	El 0.0 mtr, Near Row B, Col 11	
PGC41CT202	DMCW TEMP AT PHE-A(SG) O/L	TT	DMCW								TTR-40	El 0.0 mtr, Near Row B, Col 11	
PGC42CT201	DMCW TEMP AT PHE-B(SG) I/L	TT	DMCW								TTR-40	El 0.0 mtr, Near Row B, Col 11	
PGC42CT202	DMCW TEMP AT PHE-B(SG) O/L	TT	DMCW								TTR-40	El 0.0 mtr, Near Row B, Col 11	
LAB10CT201	TDBFP-A BP SUC TEMP	TT	FW								TTR-41	El 0.0 mtr, Near Row C, Col 8	
LAB10CT223	TDBFP-A DISCH TEMP	TT									TTR-41	El 0.0 mtr, Near Row C, Col 8	
LAB20CT201	TDBFP-B BP SUC TEMP	TT	FW								TTR-41	El 0.0 mtr, Near Row C, Col 8	
LAB20CT223	TDBFP-B DISCH TEMP	TT									TTR-41	El 0.0 mtr, Near Row C, Col 8	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
LBG70CT201	AUX STM TO SCAPH TEMP	TT	STEAM								TTR-42	El 6.85 mtr, Near Col S17	
LBG73CT201	SCAPH-A DRAIN TO FT TEMP	TT	STEAM								TTR-42	El 6.85 mtr, Near Col S17	
LBG74CT201	SCAPH-B DRAIN TO FT TEMP	TT	STEAM								TTR-42	El 6.85 mtr, Near Col S17	
LBG77CT201	SCAPH DRN TO FLASH TANK TEMP	TT	STEAM								TTR-42	El 6.85 mtr, Near Col S17	
LBG80CT201	AUX STM TO MILL INERT TEMP	TT	STEAM								TTR-43	El 0.0 mtr, Near MILL-G	
LBG80CT202	AUX STM TO MILL INERT TEMP	TT	STEAM								TTR-44	El 0.0 mtr, Near MILL-A	
LCH30CT201	HPH-7 NORM DRN TEMP	TT	COND								TTR-45	El 17.0 mtr, Near Row B, Col 8	
LCH35CT201	HPH-7 ALT DRN TEMP	TT	COND								TTR-45	El 17.0 mtr, Near Row B, Col 8	
LCH50CT201	HPH-8 NORM DRN TEMP	TT	COND								TTR-45	El 17.0 mtr, Near Row B, Col 8	
LCH55CT201	HPH-8 ALT DRN TEMP	TT	COND								TTR-45	El 17.0 mtr, Near Row B, Col 8	
LCA62CT201	LPH-2 COND I/L TEMP	TT	COND								TTR-46	El 8.5 mtr, Near Row B, Col 6	
LCA72CT201	LPH-2 COND O/L TEMP	TT	COND								TTR-46	El 8.5 mtr, Near Row B, Col 6	
LCA72CT202	LPH-2 COND O/L TEMP	TT	COND								TTR-46	El 8.5 mtr, Near Row B, Col 6	
LCJ20CT201	LPH-2 NORM DRN TEMP	TT	COND								TTR-46	El 8.5 mtr, Near Row B, Col 6	
LCJ21CT201	LPH-2 ALT DRN TEMP	TT	COND								TTR-46	El 8.5 mtr, Near Row B, Col 6	
LCJ30CT201	LPH-3 NORM DRN TEMP	TT	COND								TTR-46	El 8.5 mtr, Near Row B, Col 6	
LCJ31CT201	LPH-3 ALT DRN TEMP	TT	COND								TTR-46	El 8.5 mtr, Near Row B, Col 6	
LCA00CT201	CEP SUC HDR TEMP	TT	COND								TTR-47	El 0.0 mtr, Near Row Ac, Col 6	
LCA00CT202	CEP SUC HDR TEMP	TT	COND								TTR-47	El 0.0 mtr, Near Row Ac, Col 6	
LCB01CT204	CEP-A THRUST BRG OIL TEMP	TT									TTR-47	El 0.0 mtr, Near Row Ac, Col 6	
LCB02CT204	CEP-B THRUST BRG OIL TEMP	TT									TTR-47	El 0.0 mtr, Near Row Ac, Col 6	
LCB03CT204	CEP-C THRUST BRG OIL TEMP	TT									TTR-47	El 0.0 mtr, Near Row Ac, Col 6	
LCM10CT203	MS LINE DRN TO UFT PIPE METAL TEMP	TT	METAL								TTR-48	El 0.0 mtr, Near Row A, Col 10	
LCM10CT204	HP STOP VLV WU LN DRN TO UFT PIPE METAL TEMP	TT	METAL								TTR-48	El 0.0 mtr, Near Row A, Col 10	
LCM10CT205	HP STOP VLV WU LN DRN TO UFT PIPE METAL TEMP	TT	METAL								TTR-48	El 0.0 mtr, Near Row A, Col 10	
LCM10CT206	UNIT FLASH TANK TEMP	TT	STEAM								TTR-48	El 0.0 mtr, Near Row A, Col 10	
LBS21CT201	EXT STM TEMP AT LPH-2 I/L	TT	STEAM								TTR-49	El 8.5 mtr, Near Row B, Col 6	
LBS21CT202	EXT STM TEMP AT LPH-2 I/L	TT	STEAM								TTR-49	El 8.5 mtr, Near Row B, Col 6	
LBS31CT201	EXT STM TEMP AT LPH-3 I/L	TT	STEAM								TTR-49	El 8.5 mtr, Near Row B, Col 6	
LBS31CT202	EXT STM TEMP AT LPH-3 I/L	TT	STEAM								TTR-49	El 8.5 mtr, Near Row B, Col 6	
LBS41CT201	EXT STM TEMP AT LPH-4 I/L	TT	STEAM								TTR-50	El 8.5 mtr, Near Row Ad, Col 6	
LBS41CT202	EXT STM TEMP AT LPH-4 I/L	TT	STEAM								TTR-50	El 8.5 mtr, Near Row Ad, Col 6	
LCJ40CT201	LPH-4 NORM DRN TEMP	TT	COND								TTR-50	El 8.5 mtr, Near Row Ad, Col 6	
LCJ41CT201	LPH-4 ALT DRN TEMP	TT	COND								TTR-50	El 8.5 mtr, Near Row Ad, Col 6	
LAF10CT201	APRDS SPRAY TEMP	TT	COND								TTR-51	El 25.5 mtr, Near Row C, Col 11	
LCA20CT201	COND TEMP AT GSC I/L	TT	COND								TTR-52	El 0 mtr, Near Row B, Col 5	
LCA60CT201	DRN CLR I/L TEMP.	TT	COND								TTR-52	El 0 mtr, Near Row B, Col 5	
LCA60CT202	DRN CLR I/L TEMP.	TT	COND								TTR-52	El 0 mtr, Near Row B, Col 5	
LCJ50CT201	DRN COOLER DRAIN TEMP	TT	COND								TTR-52	El 0 mtr, Near Row B, Col 5	
LAB30CT201	MDBFP-C BP SUC TEMP	TT	FW								TTR-53	El 0 mtr, Near Row Ac, Col 5	
LAB30CT223	MDBFP-C DISCH TEMP	TT									TTR-53	El 0 mtr, Near Row Ac, Col 5	
LAE30CT201	HPBP SPRAY TEMP	TT	WATER								TTR-54	El 8.5 mtr, Near Row B, Col 10	
LBC10CT201	CRH STM HDR TEMP AFT NRV	TT									TTR-54	El 8.5 mtr, Near Row B, Col 10	
LBF10CT201	MS TEMP BEF HPBP-1	TT									TTR-54	El 8.5 mtr, Near Row B, Col 10	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

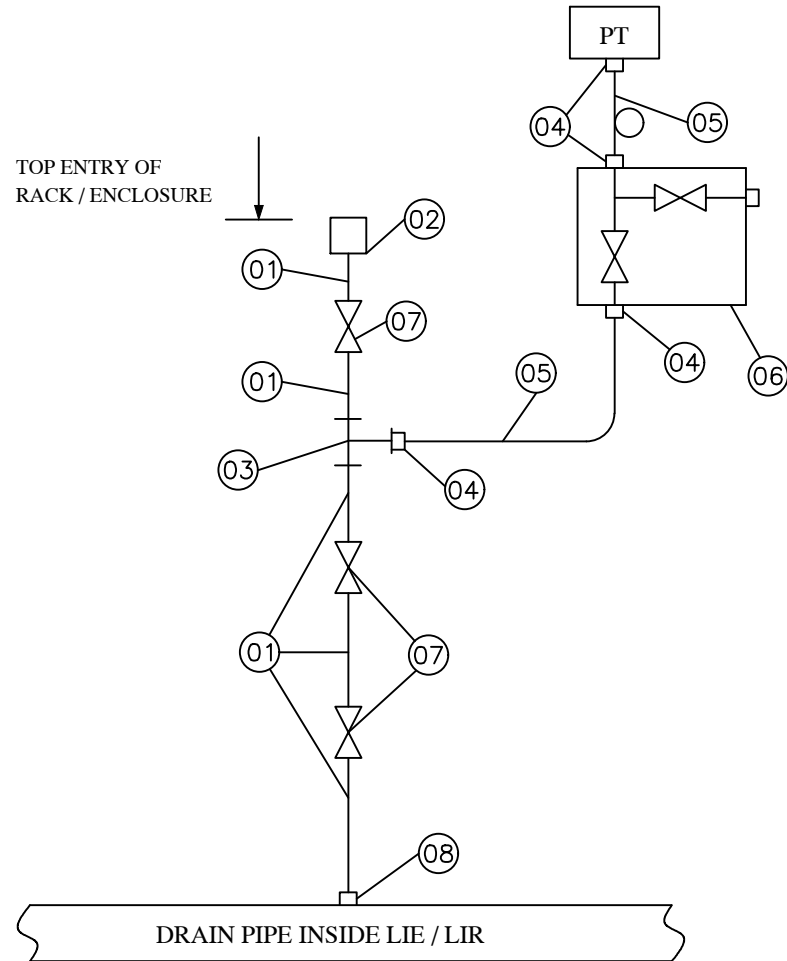
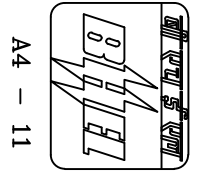
KKS TAG NO	DESCRIPTION	SENR TYPE	MEDIUM	OPERATI NG PRESS	DESIGN PRESS	OP TEMP	DESN TEMP	UNIT PRESS	SCHEM NO	PURG	JB/LIE/LI R	Location	Group Remarks
LBF20CT201	MS TEMP BEF HPBP-2	TT	STEAM								TTR-54	El 8.5 mtr, Near Row B, Col 10	
LAA01CT201	DEAERATOR FST TEMP	TT	COND								TTR-55	El 25.5 mtr, Near Row C, Col 9	
LAB24CT201	BFP INT STG TO RH SPRAY TEMP	TT	FW								TTR-56	El 0 mtr, Near Row C, Col 6	
PAB30CT201	CW RTN HDR TEMP AT CT I/L	TT	SEA WTR								TTR-57	El 0.0 mtr, Near Cooling Tower	
QHX10CT201	SG ECW SUPPLY HDR TEMP AT BLR TP	TT	DMCW								TTR-58	El 0.0 mtr, Near Col S1R	
QHX11CT201	SG ECW RTN HDR TEMP AT BLR TP	TT	DMCW								TTR-58	El 0.0 mtr, Near Col S1R	
QHX16CT201	SG ECW TEMP AT SAMPLE COOLERS I/L	TT	DMCW								TTR-59	El 0.0 mtr, Near Col S1L	
QHX16CT202	SG ECW TEMP AT SAMPLE COOLERS O/L	TT	DMCW								TTR-59	El 0.0 mtr, Near Col S1L	
HFE50CT201	COLD PY. AIR HEADER TEMP	TT	COLD PY. AIR								TTR-60	El 6.85 mtr, Near Col S17	
LAB91CT201	FEEDWATER LINE DRAIN TEMP	TT	METAL								TTR-61	El 15.0 mtr, Near Col S10R	
LBQ71CT201	EXT STM TEMP AT HPH-7 I/L	TT	STEAM								TTR-62	El 17 mtr, Near Row B, Col 8	
LBQ71CT202	EXT STM TEMP AT HPH-7 I/L	TT	STEAM								TTR-62	El 17 mtr, Near Row B, Col 8	
LBQ81CT201	EXT STM TEMP AT HPH-8 I/L	TT	STEAM								TTR-62	El 17 mtr, Near Row B, Col 8	
LBQ81CT202	EXT STM TEMP AT HPH-8 I/L	TT	STEAM								TTR-62	El 17 mtr, Near Row B, Col 8	
HAC10CT204	ECO. DRAIN TEMP	TT	METAL								TTR-63	El 15.0 mtr, Near Col S10R	
90PUB10CT201	CW BDP DISCH HDR TEMP.	TT	SEA WTR								TTR-64	El 0.0 mtr, Near CWPH	

NOTE: 1)FOR SHCEME NO 14 AND 16 -WHERE EVER DESIGN PRESSURE >=40KG/CM2 TWO DRAIN VALVES SHALL BE PROVIDED PER LINE.

		ભારત હેવી ઇલેક્ટ્રીકલ્સ લિમિટેડ  A4-10	SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR		Ref : CE/416/ENNORE/HUP		
					Rev. : 00		
					Page : 01 of 45		
		PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO					
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		HOOK UP SCHEMES					
		REVISIONS :			APPROVED BY  ASHISH M		
					PREPARED BY  RAJESH L	ISSUED 416	DATE 08/01/18

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTES:

1. " TRANSMITTER BELOW SOURCE "
2. FOR BILL OF MATERIAL REFER PAGE 03 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 02 OF 45



A4 – 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 03 OF 45

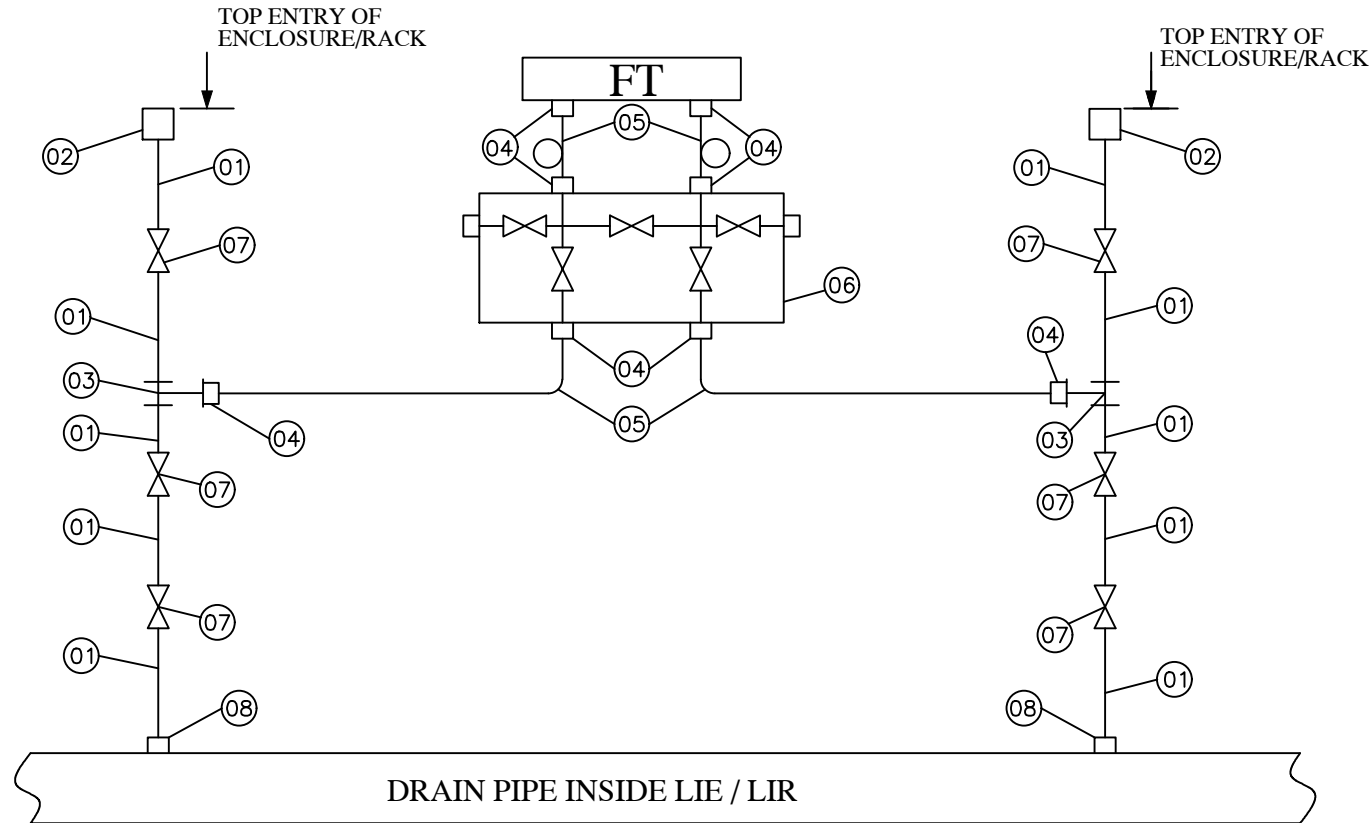
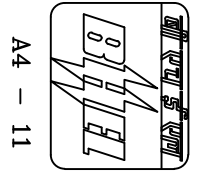
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A335 P22 SIZE: 1/2" NB-SCH XXS	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 1/2" NB-SW / CL: 9000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 9000 LBS	01
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 9000PSI	01
07	FORGED GLOBE VALVE BODY: ASTM A182 F22 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / 3000 SPL	03
08	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 1/2" NB-SW / CL: 9000 LBS	01

COPY RIGHT AND CONFIDENTIAL

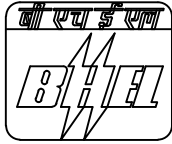
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 05 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 04 OF 45



A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 05 OF 45

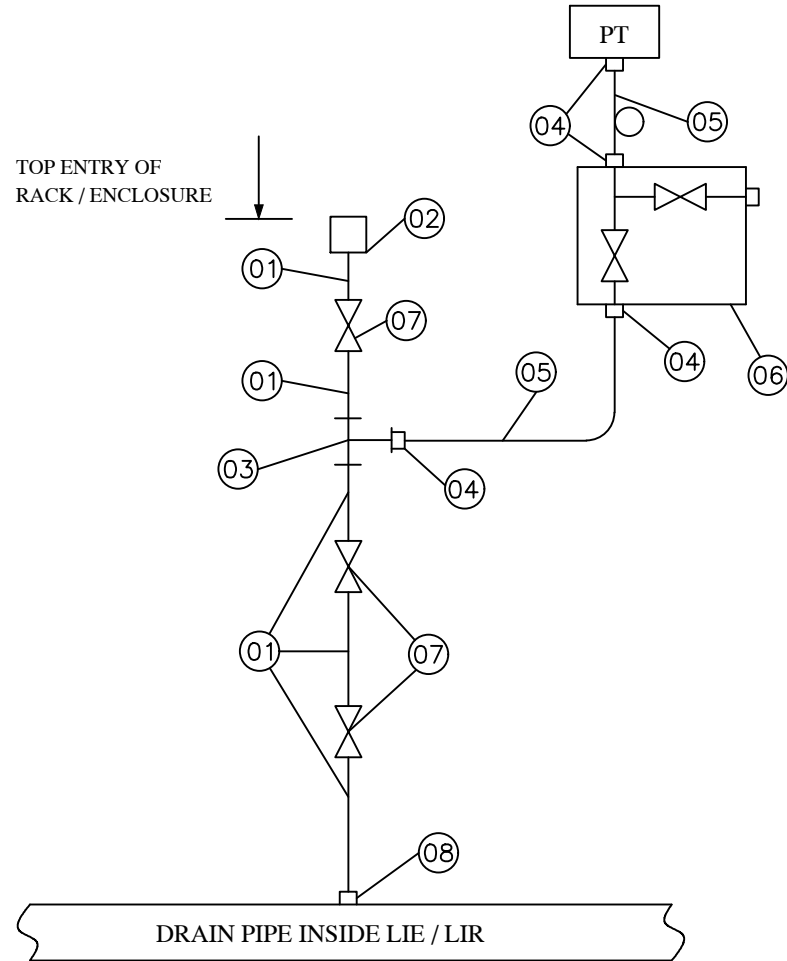
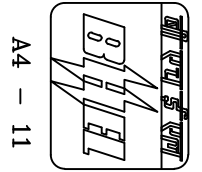
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A335 P22 SIZE: 1/2" NB-SCH XXS	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 1/2" NB-SW / CL: 9000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 9000 LBS	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1 mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING : 9000PSI	01
07	FORGED GLOBE VALVE MATL BODY: ASTM A182 F22 / STEM MATL: A182 Gr.F6a SIZE : 1/2" NB-SW / 3000 SPL	06
08	HALF COUPLING / AS PER ANSI B16.11 MATL : ASTM A182 F22 SIZE: 1/2" NB-SW / CL 9000 LBS	02

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTES:

1. " TRANSMITTER BELOW SOURCE "
2. FOR BILL OF MATERIAL REFER PAGE 07 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 06 OF 45



A4 – 11

CE/456/ENNORE/HUP

REV. NO. 00

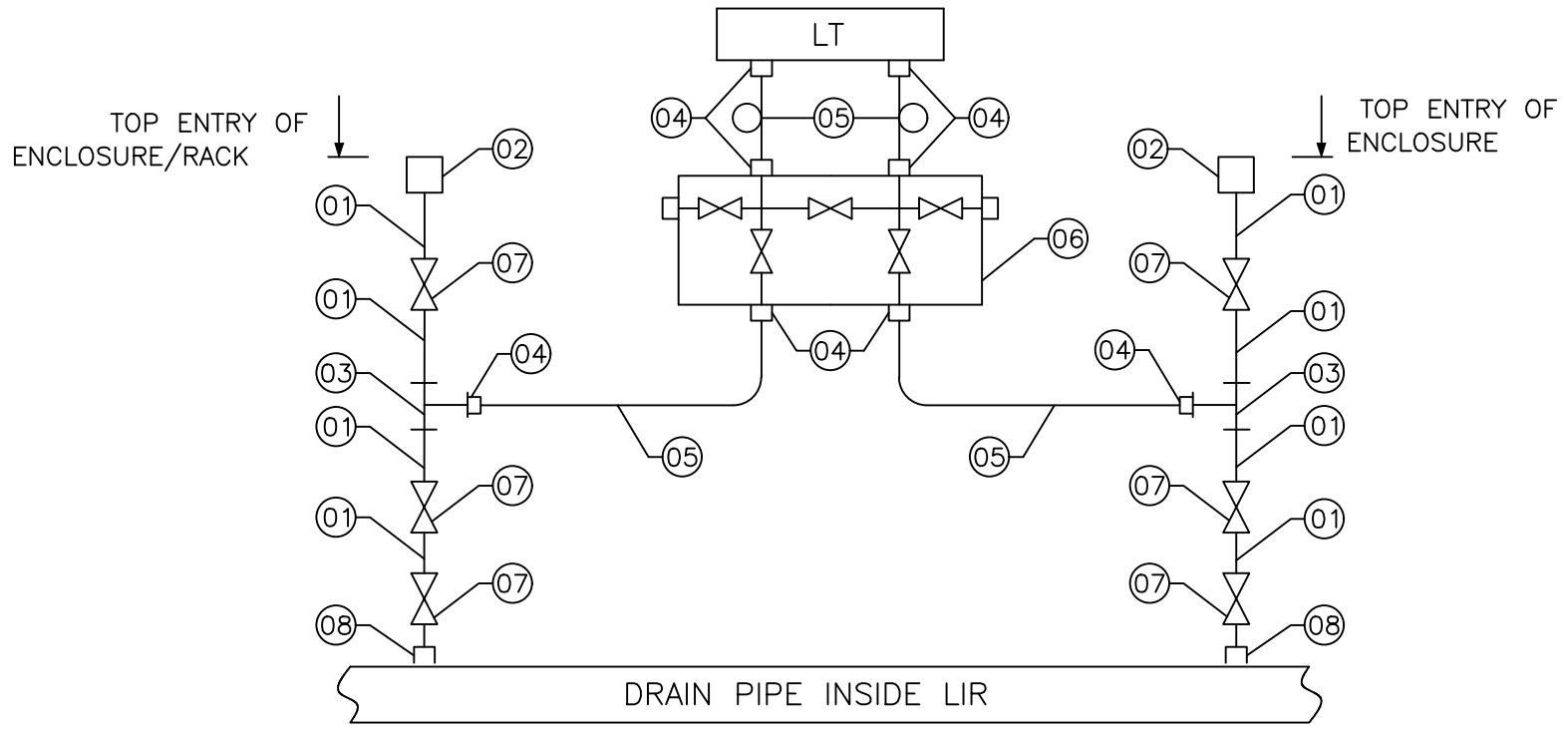
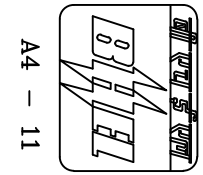
PAGE : 07 OF 45

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A335 P22 SIZE: 1/2" NB-SCH 160	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 1/2" NB-SW / CL: 6000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 6000 LBS	01
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 6000PSI	01
07	FORGED GLOBE VALVE BODY: ASTM A182 F22 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / 3000 SPL	03
08	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 1/2" NB-SW / CL: 6000 LBS	01

REVISION NO	DATE	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.		



NOTES:

- 01. "TRANSMITTER BELOW SOURCE"
- 02. FOR BILL OF MATERIAL REFER PAGE 09 OF 45.
- 03. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
- 04. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.



A4 – 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 09 OF 45

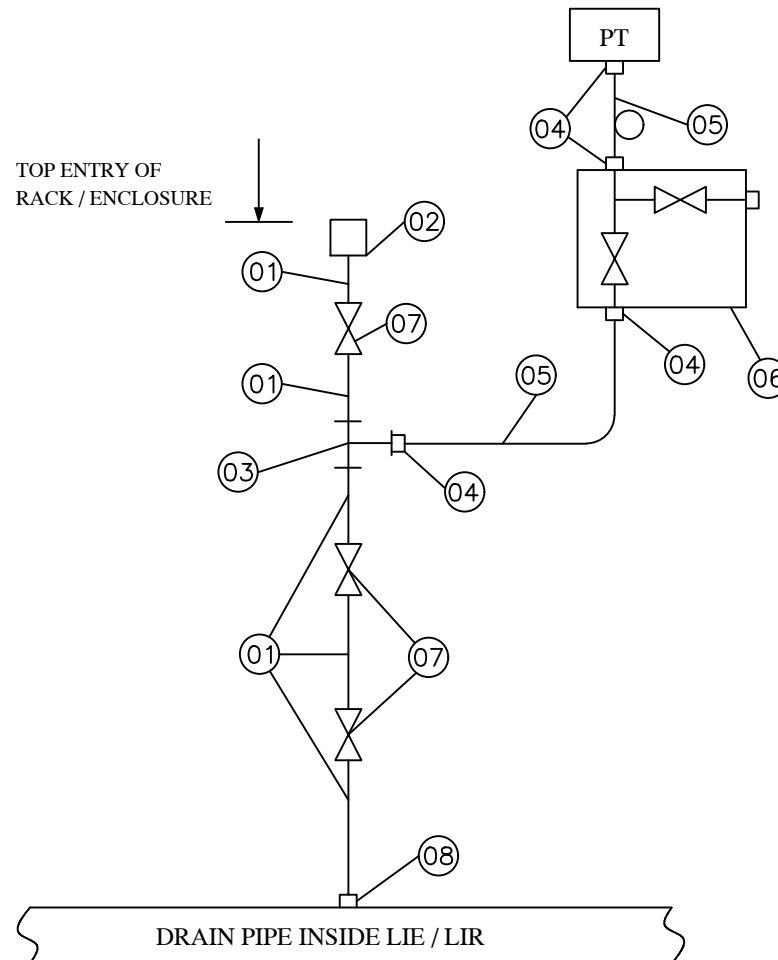
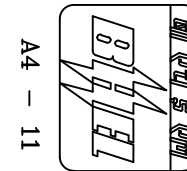
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A335 P22 SIZE: 1/2" NB-SCH 160	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 1/2" NB-SW / CL: 6000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 6000 LBS	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 6000PSI	01
07	FORGED GLOBE VALVE BODY: ASTM A182 F22 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / 3000 SPL	06
08	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 1/2" NB-SW / CL: 6000 LBS	02

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 11 OF 45.
3. DRAIN PIPE / 2" NB-SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON
FOR SERVICES WITH MEDIUM AS STEAM.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 10 OF 45



A4 – 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 11 OF 45

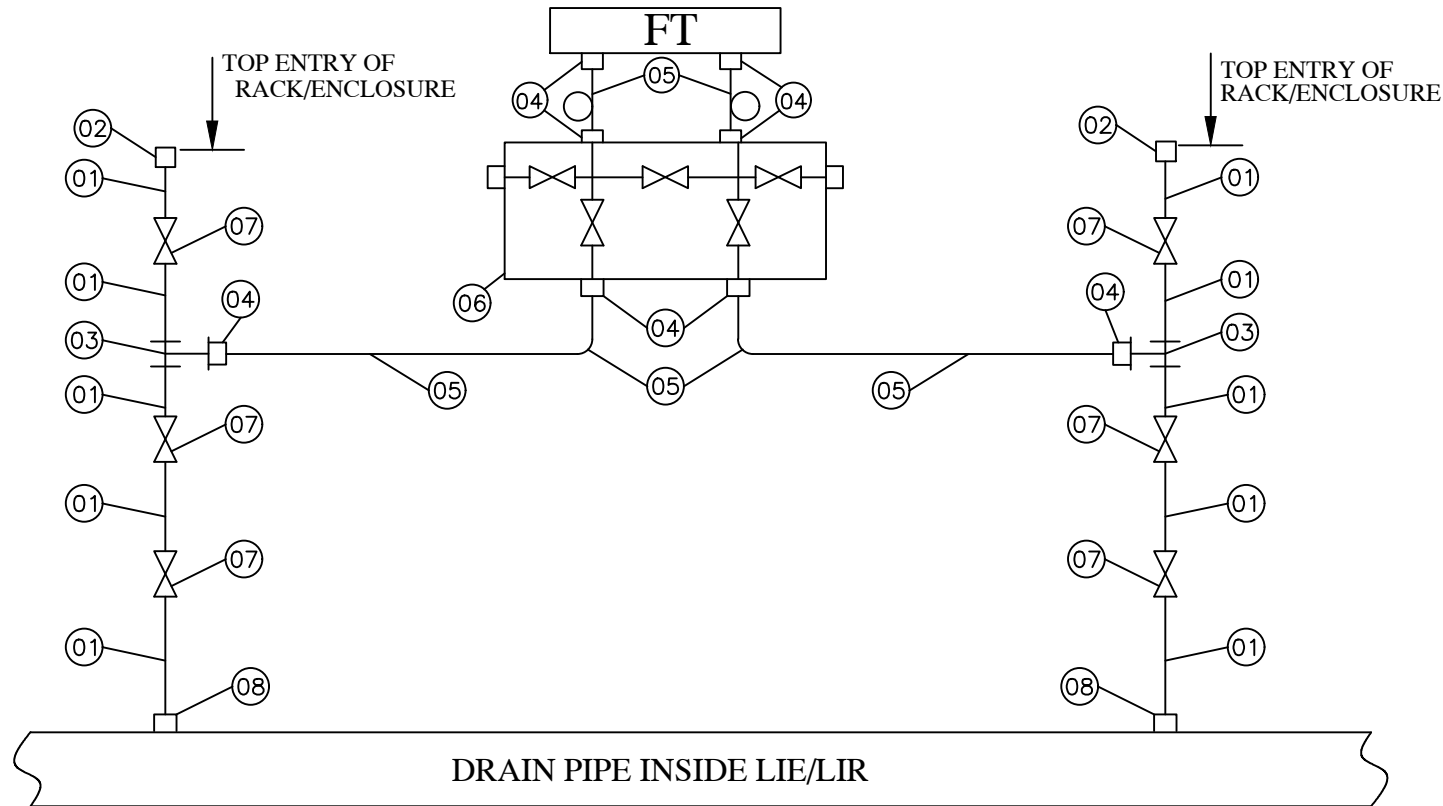
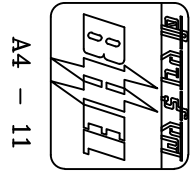
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 160	A/R
02	BULKHEAD UNION/COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL: 6000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF	01
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1 mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SS316 SIZE: 1/2" NPTF/ PR. TESTING: 6000 PSI	01
07	FORGED GLOBE VALVE BODY: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL: 2500SPL	03
08	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL: 6000 LBS	01

COPY RIGHT AND CONFIDENTIAL

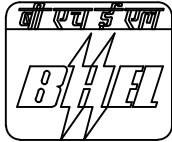
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 13 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 12 OF 45



A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

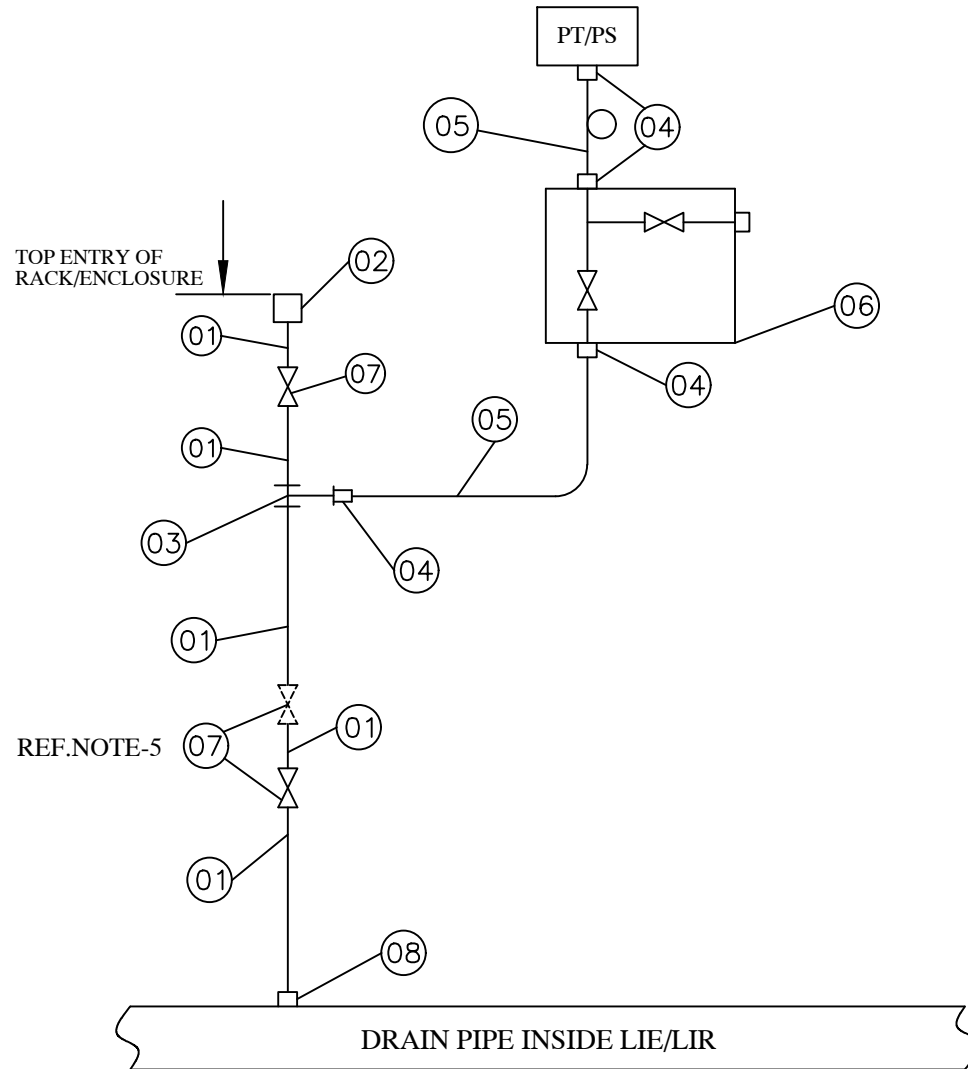
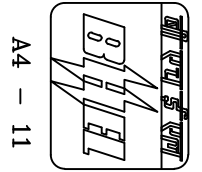
PAGE : 13 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 160	A/R
02	BULK HEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW/ CL: 6000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 2 x 1/2" NB-SW X 1/2 " NPTF / CL: 6000 LBS	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1 mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 6000 PSI	01
07	FORGED GLOBE VALVE MATL: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL: 2500SPL	06
08	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL: 6000 LBS	02

COPY RIGHT AND CONFIDENTIAL

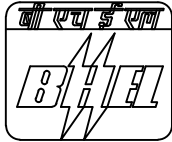
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 15 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.
5. ITEM 07 QUANTITY SHALL BE 2 Nos. FOR TAGS. WITH DESIGN PRESSURE $\geq 40\text{kg/Cm}^2$
IN INSTRUMENT SCHEDULE REF:CE/416/ENNORE/INS. FOR BALANCE TAGS. QUANTITY SHALL BE 01 No.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 14 OF 45



A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

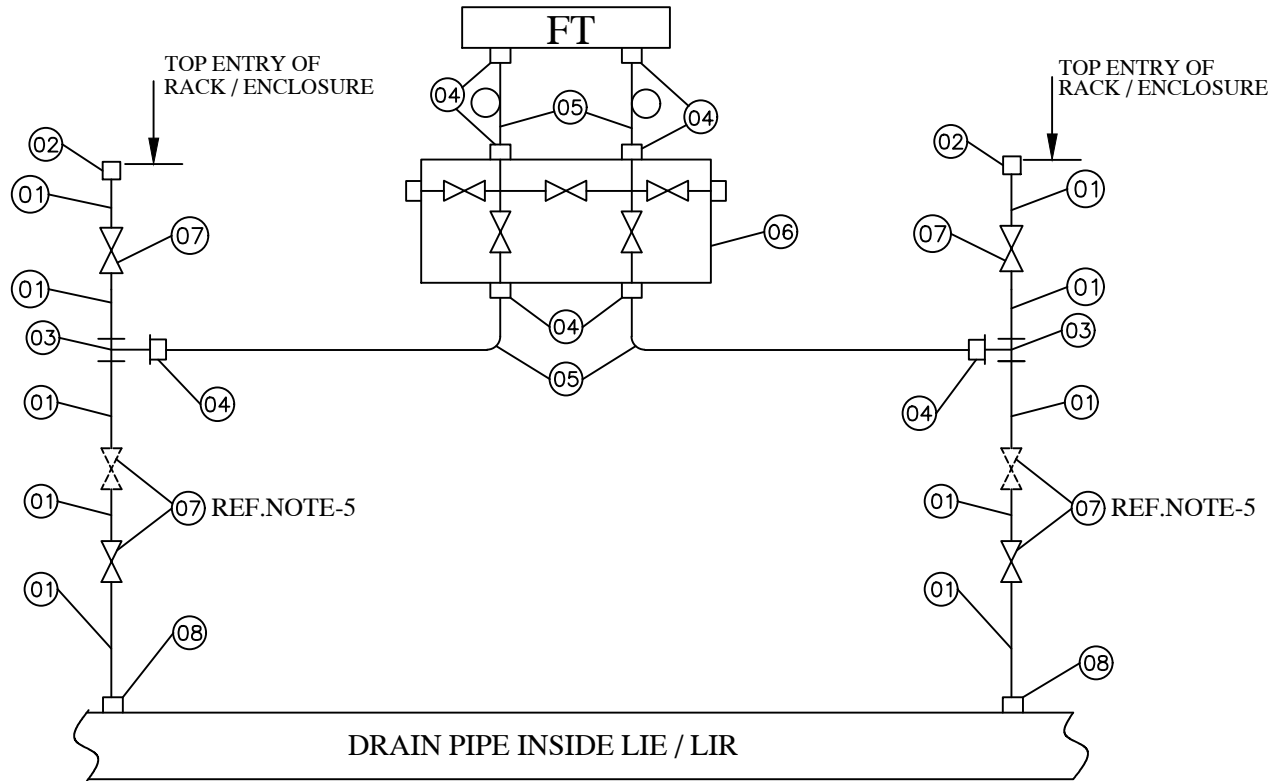
PAGE : 15 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A106 Gr. C SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL: 3000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 3000 LBS	01
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: ASTM A213 TP316 SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07**	FORGED GLOBE VALVE BODY: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL: 800	A/R
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL: 3000 LBS	01

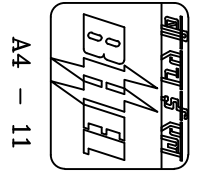
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 17 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.
5. ITEM 07 QUANTITY SHALL BE 4 Nos. FOR TAGS. WITH DESIGN PRESSURE $\geq 40\text{kg/Cm}^2$
IN THE INSTRUMENT SCHEDULE REF :CE/416/ENNORE/INS. FOR BALANCE TAGS. QUANTITY SHALL BE 02 No.



CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 16 OF 45



A4 - 11

CE/416/ENNORE/HUP

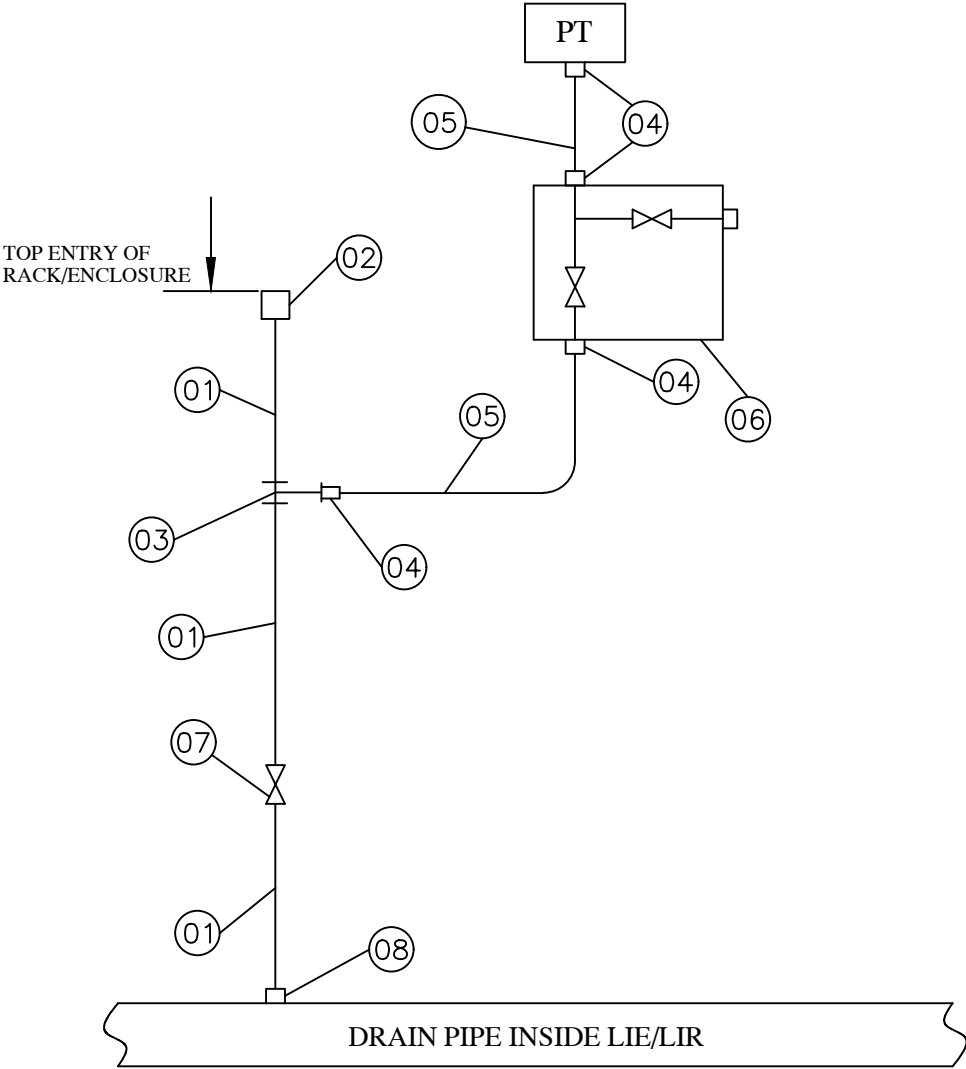
REV. NO. 00

PAGE : 17 OF 45

COPY RIGHT AND CONFIDENTIAL

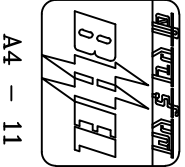
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

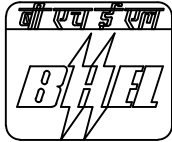
ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A106 Gr.C SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL: 3000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 2 x 1/2" NB-SW X 1/2 " NPTF / CL: 3000 LBS	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1 mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 / PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07**	FORGED GLOBE VALVE MATL: ASTM A105 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / CL: 800	A/R
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A105 SIZE: 1/2" NB-SW / CL: 3000 LBS	02



NOTE:

- 1. " TRANSMITTER BELOW SOURCE"
- 2. FOR BILL OF MATERIAL REFER PAGE 19 OF 45.
- 3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C





A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

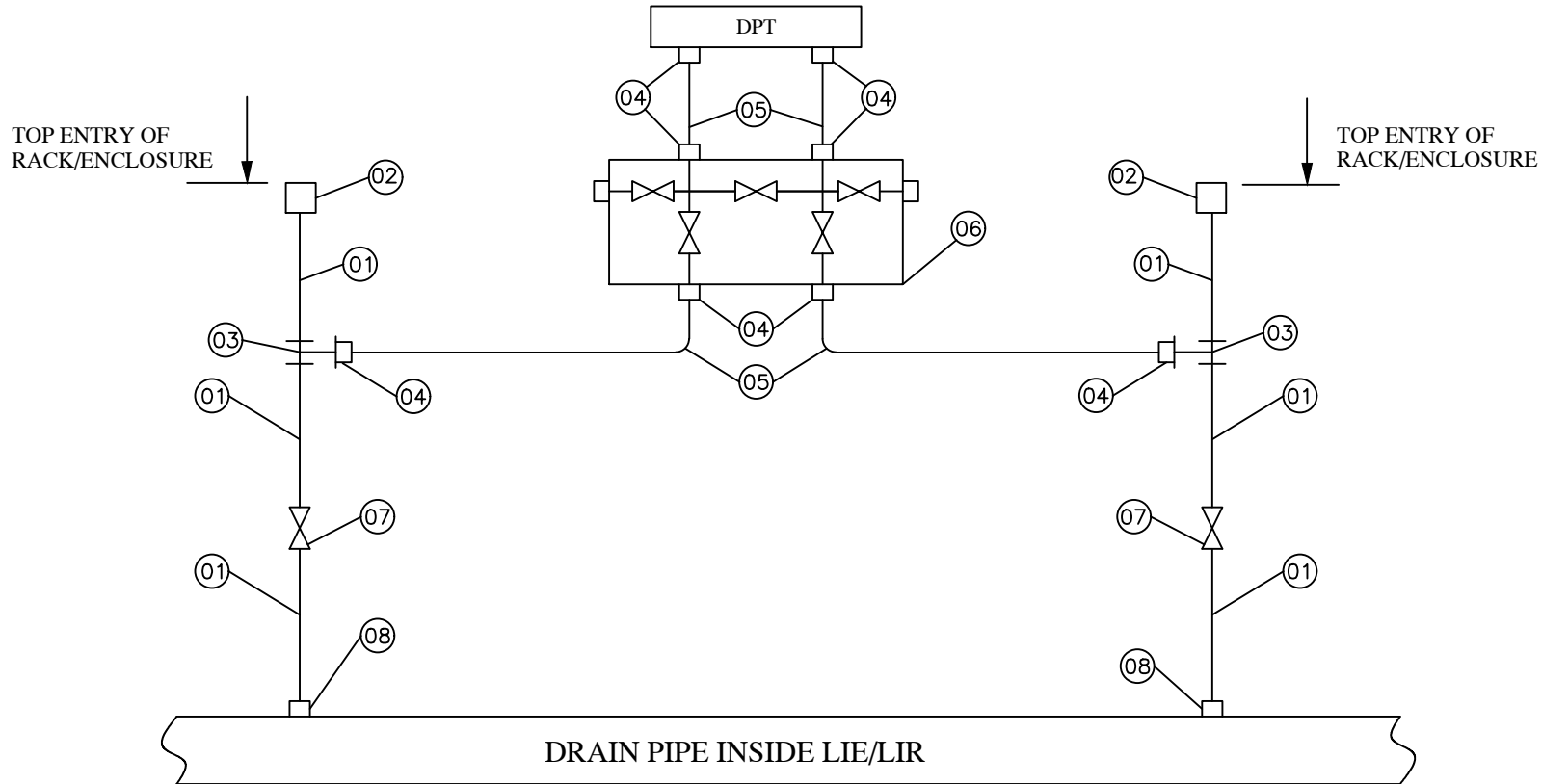
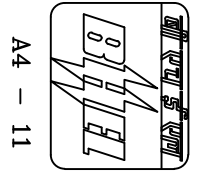
PAGE : 19 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A312 TP316L SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F316L SIZE: 1/2" NB-SW / CL: 3000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F316L SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 3000 LBS	01
04	MALE CONNECTOR MATL:SS316L SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: ASTM A213 TP316L SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SS316L PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07	FORGED GLOBE VALVE BODY: MATL: ASTM A182 F316L / STEM MATL: F316L SIZE: 1/2" NB-SW / CL: 800	01
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A182 F316L SIZE: 1/2" NB-SW / CL: 3000 LBS	01

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 21 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 20 OF 45



A4 – 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 21 OF 45

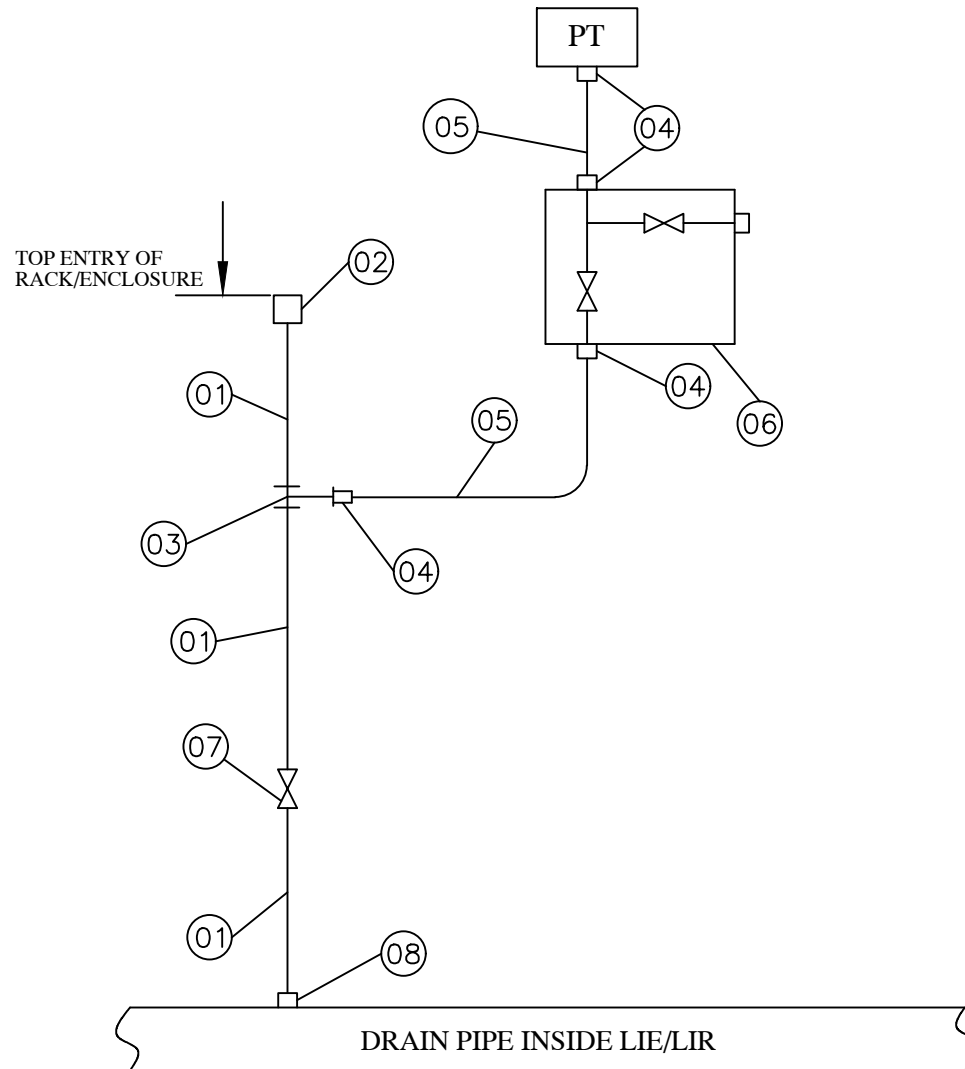
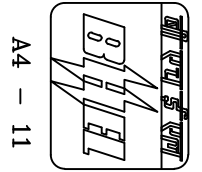
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY / INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A312 TP316L SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F316L SIZE: 1/2" NB-SW / CL: 3000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F316L SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 3000 LBS	02
04	MALE CONNECTOR MATL: SS316L SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: ASTM A213 TP316L SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG MATL: SS316L PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07	FORGED GLOBE VALVE BODY MATL: ASTM A182 F316L / STEM MATL: ASTM A182 F316L SIZE: 1/2" NB-SW / CL: 800	02
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A182 F316L SIZE: 1/2" NB-SW / CL: 3000 LBS	02

COPY RIGHT AND CONFIDENTIAL

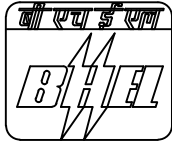
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 23 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 22 OF 45



A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 23 OF 45

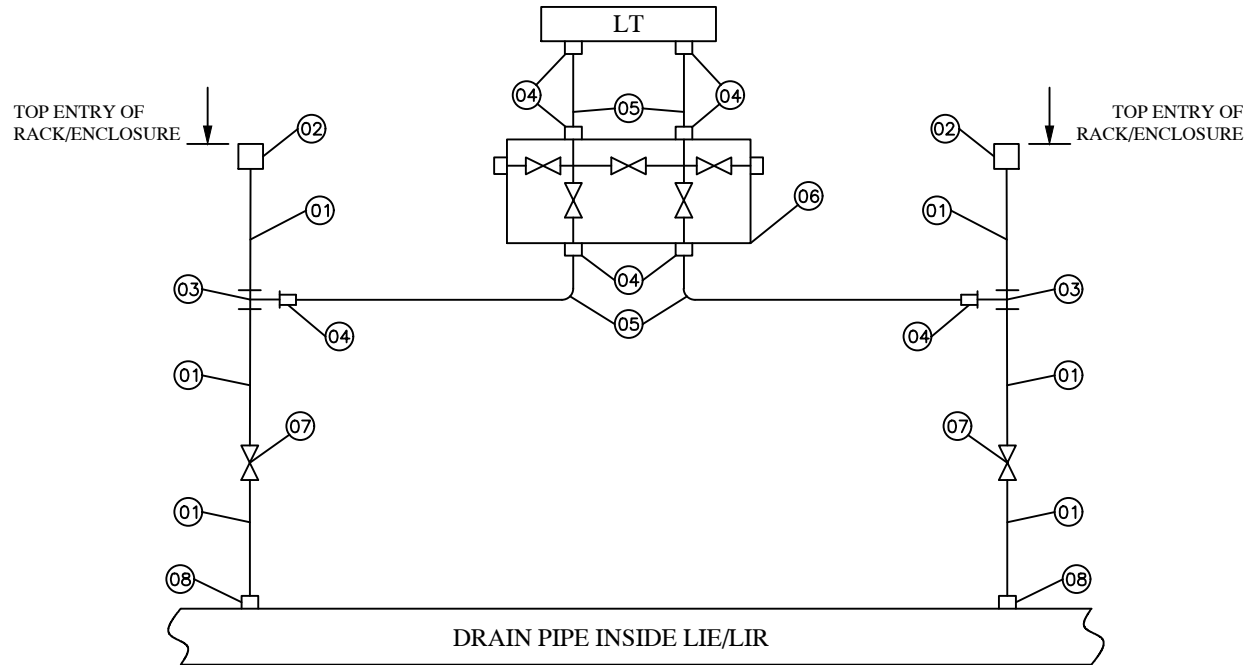
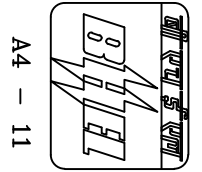
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A312 TP316 SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F316 SIZE: 1/2" NB-SW / CL: 3000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F316 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 3000 LBS	01
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: ASTM A213 TP316 SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07	FORGED GLOBE VALVE BODY MATL: ASTM A182 F316 / STEM MATL:A182 F316 SIZE: 1/2" NB-SW / CL: 800	01
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A182 F316 SIZE: 1/2" NB-SW / CL: 3000 LBS	01

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



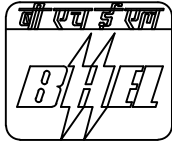
NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 25 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C

PAGE : 24 OF 45

REV. NO. 00

CE/416/ENNORE/HUP



A4 - 11

CE/416/ENNORE/HUP

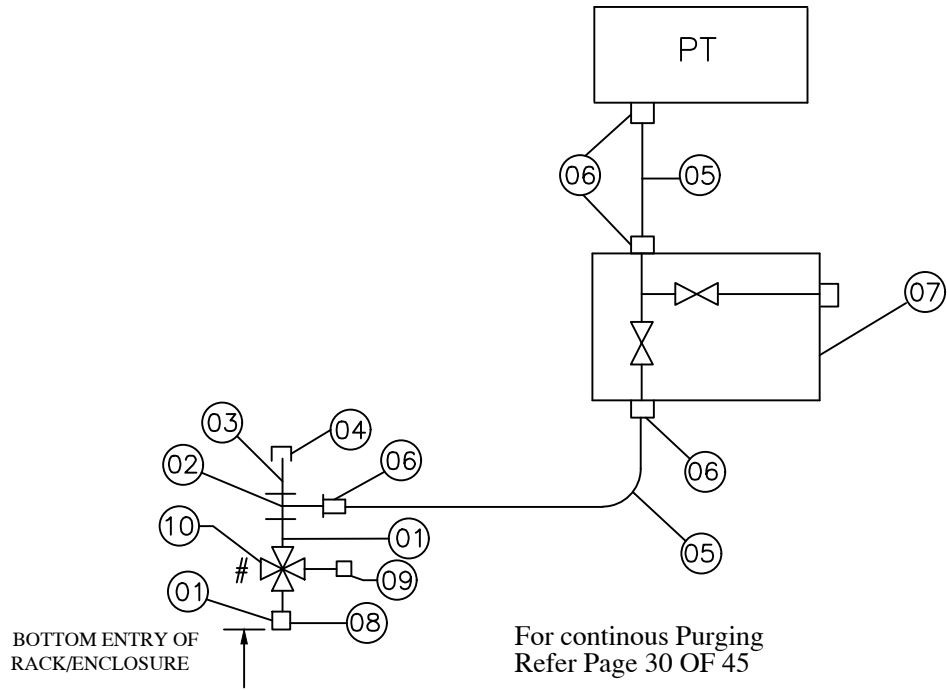
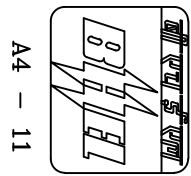
REV. NO. 00

PAGE : 25 OF 45

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A312 TP316 SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F316 SIZE: 1/2" NB-SW / CL: 3000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F316 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 3000 LBS	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: ASTM A213 TP316 SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG MATL: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07	FORGED GLOBE VALVE BODY MATL: ASTM A182 F316 / STEM MATL: A182 F316 SIZE: 1/2" NB-SW / CL: 800	02
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A182 F316 SIZE: 1/2" NB-SW / CL: 3000 LBS	02

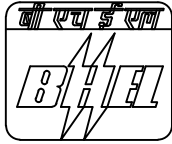
		COPY RIGHT AND CONFIDENTIAL									
		The information on this document is the property of Bharat Heavy Electricals Limited.									
		It must not be used directly or indirectly in anyway detrimental to the interest to the Company.									
 BOTTOM ENTRY OF RACK/ENCLOSURE For continous Purging Refer Page 30 OF 45											
											
CE/416/ENNORE/HUP REV. NO. 00 PAGE : 26 OF 45											

NOTE:

- 1. " TRANSMITTER ABOVE SOURCE"
- 2. FOR BILL OF MATERIAL, REFER PAGE 27 OF 45.
- #3. FOR INTERMITTENT PURGING REFER PAGE NO 30 OF 45

NOTE:

- 1. " TRANSMITTER ABOVE SOURCE"
- 2. FOR BILL OF MATERIAL, REFER PAGE 27 OF 45.
- #3. FOR INTERMITTENT PURGING REFER PAGE NO 30 OF 45



A4 - 11

CE/416/ENNORE/HUP

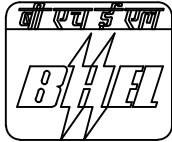
REV. NO. 00

PAGE : 27 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL : ASTM A106 Gr. C SIZE: 3/4" NB-SCH 80	A/R
02	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 2 x 3/4" NB-SW X 1/2" NPTF / CL 3000 LBS	01
03	NIPPLE MATL: ASTM A106 Gr. C SIZE: 3/4 " NB - SCH 80	01
04	CAP MATL: ASTM A105 SIZE: 3/4" NPTF	01
05	SEAMLESS TUBE MATL: ASTM A213 TP 316 SIZE: 1/2" OD x 1.1mm THK	A/R
06	MALE CONNECTOR MATL: SS316 SIZE : 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	04
07	TWO VALVE MANIFOLD WITH VENT PLUG BODY : SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 1500PSI	01
08	BULK HEAD COUPLING / AS PER B16.11 MATL: ASTM A105 SIZE: 3/4" NB-SW / CL 3000	01
09	QUICK DISCONNECTING FITTING MATL: SS 304 SIZE:1/2" NPTM	01
10	FOUR WAY VALVE MATL: ASTM A105 SIZE: (2 x 3/4" NB-SW) x (1 x 1/2" NPTF) / RATING CLASS 800	01

		COPY RIGHT AND CONFIDENTIAL			
		The information on this document is the property of Bharat Heavy Electricals Limited.			
		It must not be used directly or indirectly in anyway detrimental to the interest to the Company.			



A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

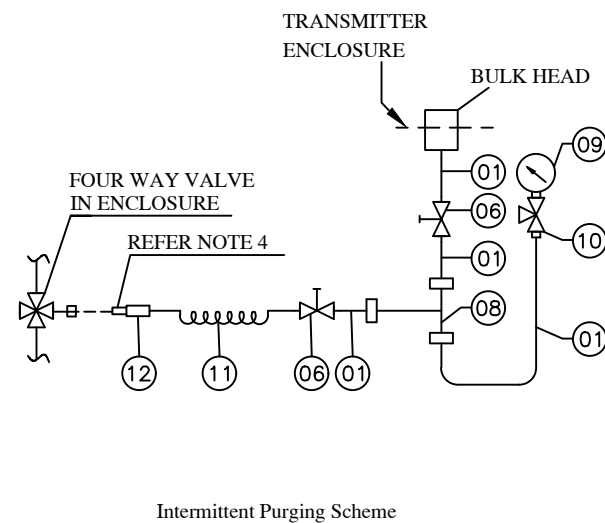
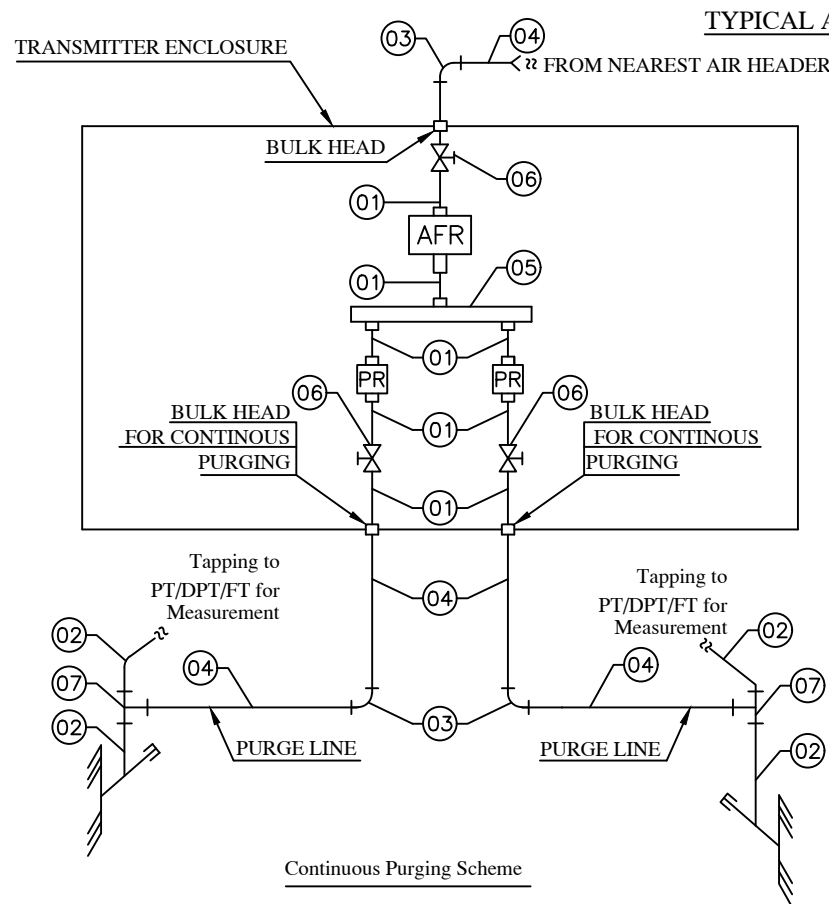
PAGE : 29 OF 45

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A106 Gr. C SIZE: 3/4" NB-SCH 80	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 3/4" NB-SW/ CL: 3000	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 2 x 3/4" NB-SW x 1/2" NPTF / CL: 3000	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 1.1mm THK	A/R
06	THREE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 / PORT: 1/2" NPTF PORT SIZE: 1/2" NPTF PR.TESTING: 1500 PSI	01
07	NIPPLE / MATL: A106 Gr. C SIZE: 3/4" NB-SCH 80	02
08	CAP / MATL: ASTM A105 SIZE: 3/4" NPTF	02
09	QUICK DISCONNECTING FITTING MATL.: SS 304 SIZE.:1/2" NPTM	02
10	FOUR WAY VALVE MATL.: ASTM A105 / RATING CLASS 800 SIZE: (2 x 3/4" NB-SW) x (1 x 1/2" NPTF)	02

REVISION NO	DATE	COPY RIGHT AND CONFIDENTIAL		
		The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.		



NOTES:

01. ABBREVIATIONS

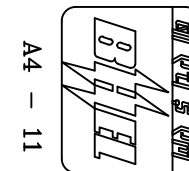
PT	-	PRESSURE TRANSMITTERS
DPT / FT	-	DIFF. PRESSURE/FLOW TRANSMITTERS
AFR	-	AIR FILTER REGULATOR
PR	-	PURGE ROTAMETER

02. ABOVE SCHEME IS TYPICAL. PURGE ROTAMETERS WILL BE ONE NO. FOR EACH OF PURGE LINE AS SHOWN.

03. AIR FILTER REGULATORS SHALL BE SET BETWEEN 0.4 TO 0.6 KG/CM2 APPROX.

04. THIS QUICK DISCONNECT FITTING IS CONNECTED TO FOUR WAY VALVE WHEREVER INTERMITTENT PURGING IS CALLED IN SCHEMES.

05. FOR BILL OF MATERIAL REFER PAGE 31 OF 45

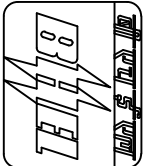


PAGE : 30 OF 45

REV. NO. 00

CE/416/ENNORE/HUP

		 A4 - 11	CE/416/ENNORE/HUP																																								
			REV. NO. 00																																								
			PAGE : 31 OF 45																																								
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.		<table border="1"> <thead> <tr> <th>ITEM NO.</th> <th>ITEM DESCRIPTION</th> <th>QNTY/INST. (Nos.)</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>SEAMLESS TUBE MATL.: SS 316 SIZE: 1/2" OD TUBE X 1.1 mm THICK</td> <td>A/R</td> </tr> <tr> <td>02</td> <td>SEAMLESS PIPE MATL.: ASTM A 106 Gr. C SIZE: 3/4" NB SCH 80</td> <td>A/R</td> </tr> <tr> <td>03</td> <td>GALVANISED ELBOW MATL.: A 105 SIZE: 1/2" NPTF</td> <td>03</td> </tr> <tr> <td>04</td> <td>GI PIPE MATL.: IS 1239 HEAVY GRADE SIZE: 1/2" NB</td> <td>A/R</td> </tr> <tr> <td>05</td> <td>AIR HEADER MATL.: A 106 GR. C SIZE: 1" NB PIPE</td> <td>01</td> </tr> <tr> <td>06</td> <td>BALL VALVE MATL.: A 105 SIZE: TO SUIT 1/2" OD SS TUBE</td> <td>05</td> </tr> <tr> <td>07</td> <td>UNEQUAL TEE MATL.: A 105 SIZE: 2 X 3/4" NB-SW X 1/2" NPTF</td> <td>02</td> </tr> <tr> <td>08</td> <td>EQUAL TEE BODY: SS316 PORT SIZE: TO SUIT 1/2" OD SS TUBE</td> <td>01</td> </tr> <tr> <td>09</td> <td>PR. GAUGE CONNECTION: 1/2" NPTM SIZE: 4" DIAL SIZE / RANGE : 0 - 10 Kg / Cm2</td> <td>01</td> </tr> <tr> <td>10</td> <td>3 WAY GUAGE COCK MATL.: A105 SIZE: 1/2" NPTF x TO SUIT 1/2" SS TUBE</td> <td>01</td> </tr> <tr> <td>11</td> <td>NYLON HOSE WITH SS BRAIDING TO SUIT 1/2" END CONNECTION PR TESTING 10 kg/cm2</td> <td>01</td> </tr> <tr> <td>12</td> <td>QUICK DISCONNECTING FITTING MATL.: SS304 SIZE: MALE END CONN. TO SUIT 1/2" OD CONNECTION</td> <td>01</td> </tr> </tbody> </table>			ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)	01	SEAMLESS TUBE MATL.: SS 316 SIZE: 1/2" OD TUBE X 1.1 mm THICK	A/R	02	SEAMLESS PIPE MATL.: ASTM A 106 Gr. C SIZE: 3/4" NB SCH 80	A/R	03	GALVANISED ELBOW MATL.: A 105 SIZE: 1/2" NPTF	03	04	GI PIPE MATL.: IS 1239 HEAVY GRADE SIZE: 1/2" NB	A/R	05	AIR HEADER MATL.: A 106 GR. C SIZE: 1" NB PIPE	01	06	BALL VALVE MATL.: A 105 SIZE: TO SUIT 1/2" OD SS TUBE	05	07	UNEQUAL TEE MATL.: A 105 SIZE: 2 X 3/4" NB-SW X 1/2" NPTF	02	08	EQUAL TEE BODY: SS316 PORT SIZE: TO SUIT 1/2" OD SS TUBE	01	09	PR. GAUGE CONNECTION: 1/2" NPTM SIZE: 4" DIAL SIZE / RANGE : 0 - 10 Kg / Cm2	01	10	3 WAY GUAGE COCK MATL.: A105 SIZE: 1/2" NPTF x TO SUIT 1/2" SS TUBE	01	11	NYLON HOSE WITH SS BRAIDING TO SUIT 1/2" END CONNECTION PR TESTING 10 kg/cm2	01	12	QUICK DISCONNECTING FITTING MATL.: SS304 SIZE: MALE END CONN. TO SUIT 1/2" OD CONNECTION	01
		ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)																																							
		01	SEAMLESS TUBE MATL.: SS 316 SIZE: 1/2" OD TUBE X 1.1 mm THICK	A/R																																							
		02	SEAMLESS PIPE MATL.: ASTM A 106 Gr. C SIZE: 3/4" NB SCH 80	A/R																																							
		03	GALVANISED ELBOW MATL.: A 105 SIZE: 1/2" NPTF	03																																							
		04	GI PIPE MATL.: IS 1239 HEAVY GRADE SIZE: 1/2" NB	A/R																																							
		05	AIR HEADER MATL.: A 106 GR. C SIZE: 1" NB PIPE	01																																							
		06	BALL VALVE MATL.: A 105 SIZE: TO SUIT 1/2" OD SS TUBE	05																																							
		07	UNEQUAL TEE MATL.: A 105 SIZE: 2 X 3/4" NB-SW X 1/2" NPTF	02																																							
		08	EQUAL TEE BODY: SS316 PORT SIZE: TO SUIT 1/2" OD SS TUBE	01																																							
		09	PR. GAUGE CONNECTION: 1/2" NPTM SIZE: 4" DIAL SIZE / RANGE : 0 - 10 Kg / Cm2	01																																							
		10	3 WAY GUAGE COCK MATL.: A105 SIZE: 1/2" NPTF x TO SUIT 1/2" SS TUBE	01																																							
		11	NYLON HOSE WITH SS BRAIDING TO SUIT 1/2" END CONNECTION PR TESTING 10 kg/cm2	01																																							
12	QUICK DISCONNECTING FITTING MATL.: SS304 SIZE: MALE END CONN. TO SUIT 1/2" OD CONNECTION	01																																									
REVISION NO																																											
DATE																																											

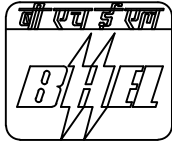
		COPY RIGHT AND CONFIDENTIAL			
		The information on this document is the property of Bharat Heavy Electricals Limited.			
		It must not be used directly or indirectly in anyway detrimental to the interest to the Company.			
				 A4 – 11	
				CE/416/ENNORE/HUP	
				REV. NO. 00	
				PAGE : 32 OF 45	

NOTE:

1. " TRANSMITTER BELOW SOURCE"

2. FOR BILL OF MATERIAL REFER PAGE 33 OF 45.

3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C



A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 33 OF 45

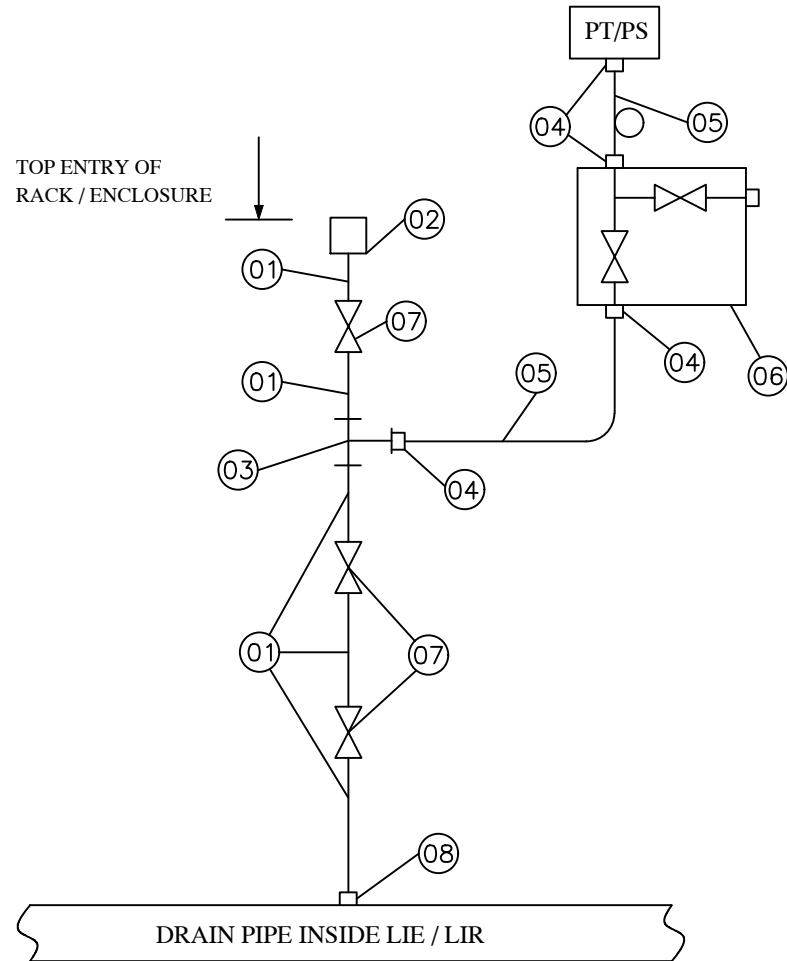
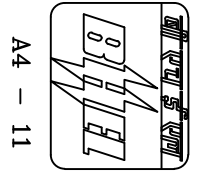
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A106 Gr.C SIZE: 3/4" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 3/4" NB-SW / CL: 3000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A105 SIZE: 2 x 3/4" NB-SW X 1/2" NPTF / CL: 3000 LBS	01
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: ASTM A213 TP316 SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07	FORGED GLOBE VALVE BODY: MATL: ASTM A105 / STEM MATL: A182 F316 SIZE: 3/4" NB-SW / CL: 800	01
08	NIPPLE MATL: ASTM A106 Gr.C SIZE: 3/4" NB-SCH 80	01
09	CAP MATL: ASTM A105 SIZE: 3/4" NPTF / CL: 3000 LBS	01

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTES:

1. " TRANSMITTER BELOW SOURCE "
2. FOR BILL OF MATERIAL REFER PAGE 35 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 34 OF 45



A4 – 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 35 OF 45

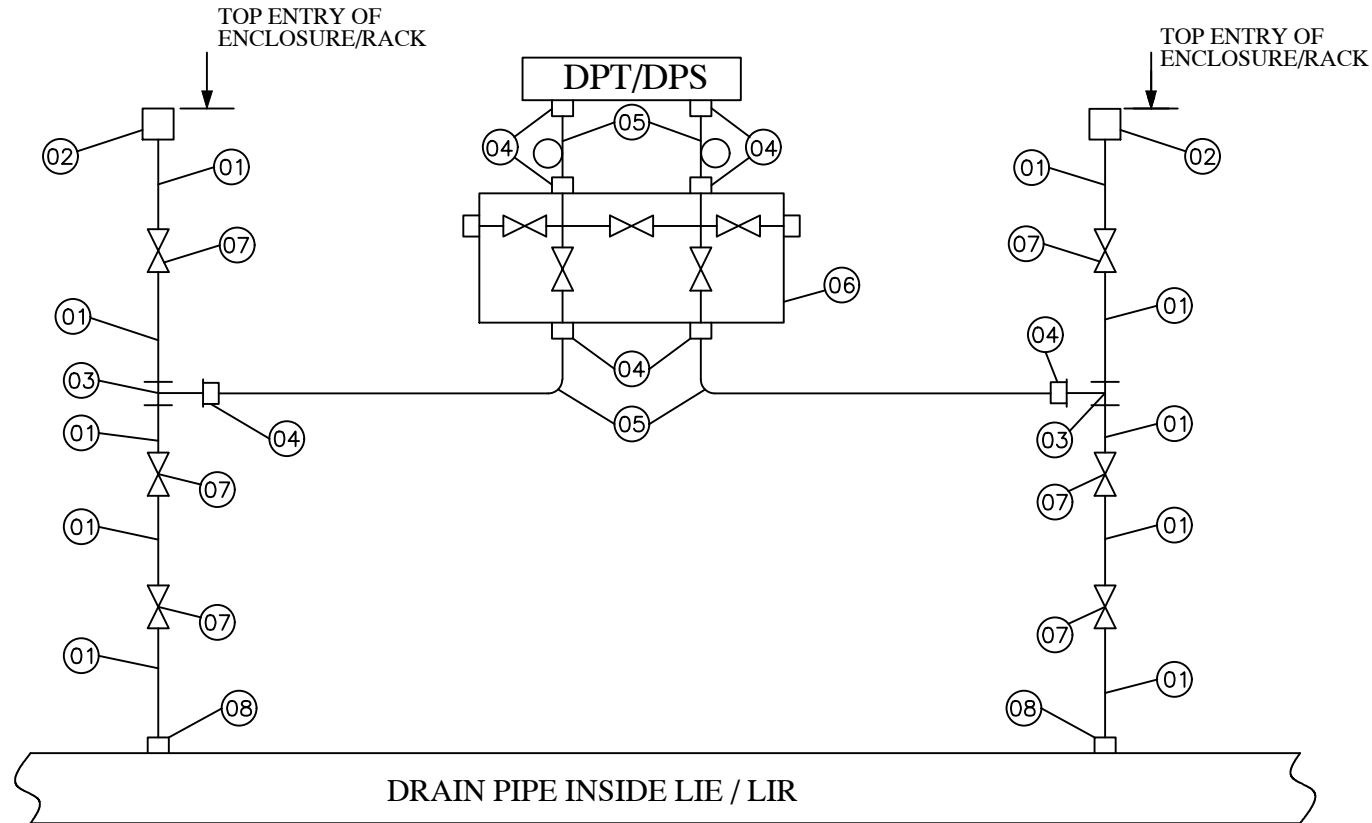
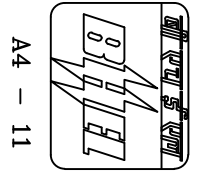
COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A335 P91 SIZE: 1/2" NB-SCH XXS	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F91 SIZE: 1/2" NB-SW / CL: 9000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F91 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 9000 LBS	01
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 9000PSI	01
07	FORGED GLOBE VALVE BODY: ASTM A182 F91 / STEM MATL: A182 Gr.F6a SIZE: 1/2" NB-SW / 3000 SPL	03
08	HALF COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F91 SIZE: 1/2" NB-SW / CL: 9000 LBS	01

COPY RIGHT AND CONFIDENTIAL

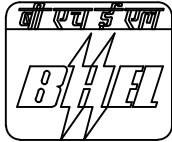
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 37 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C
4. ITEM NO. 05 SHALL BE FORMED INTO A SYPHON FOR SERVICES WITH MEDIUM AS STEAM.

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 36 OF 45



A4 - 11

CE/416/ENNORE/HUP

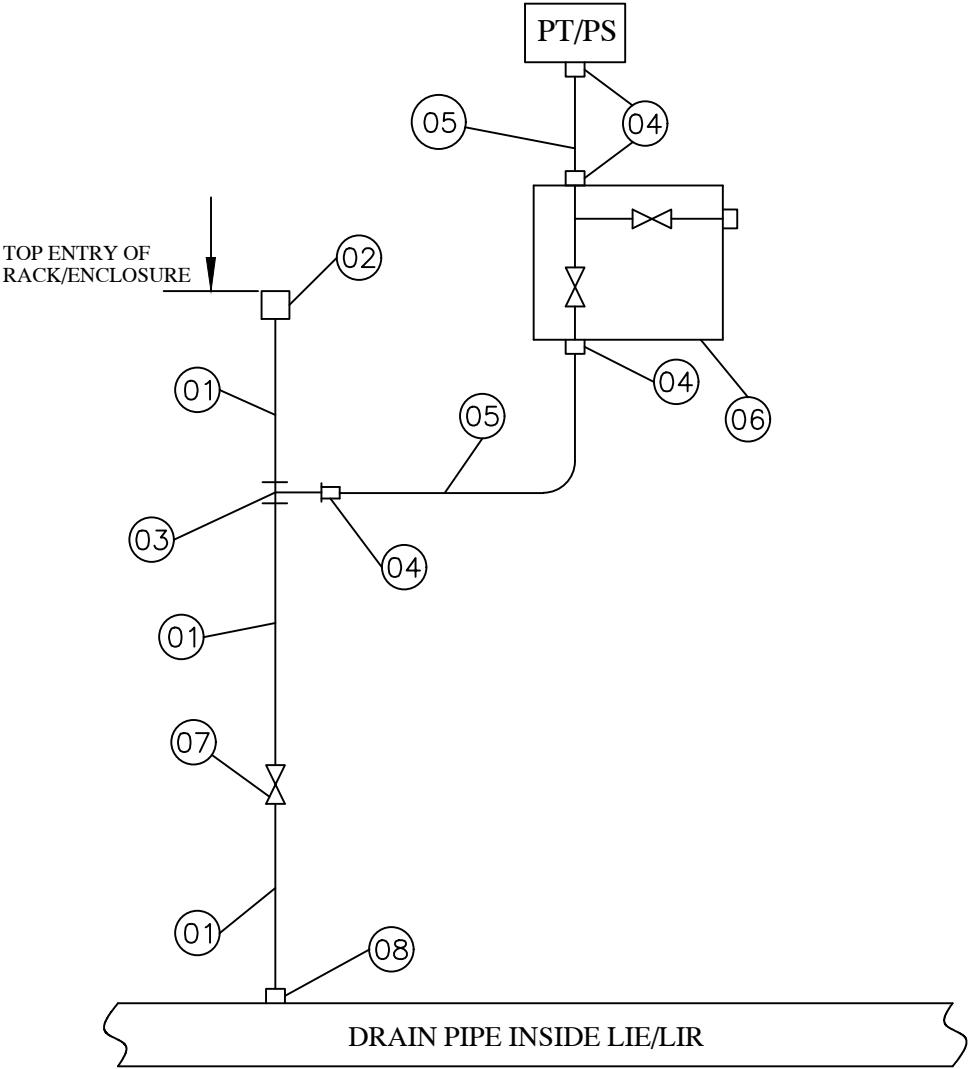
REV. NO. 00

PAGE : 37 OF 45

COPY RIGHT AND CONFIDENTIAL

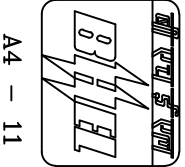
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

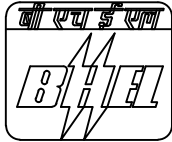
ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A335 P91 SIZE: 1/2" NB-SCH XXS	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F91 SIZE: 1/2" NB-SW / CL: 9000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F91 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 9000 LBS	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 2.1 mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 PORT SIZE: 1/2" NPTF / PR. TESTING : 9000PSI	01
07	FORGED GLOBE VALVE MATL BODY: ASTM A182 F91 / STEM MATL: A182 Gr.F6a SIZE : 1/2" NB-SW / 3000 SPL	06
08	HALF COUPLING / AS PER ANSI B16.11 MATL : ASTM A182 F91 SIZE: 1/2" NB-SW / CL 9000 LBS	02



NOTE:

- 1. " TRANSMITTER BELOW SOURCE"
- 2. FOR BILL OF MATERIAL REFER PAGE 39 OF 45.
- 3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C





A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

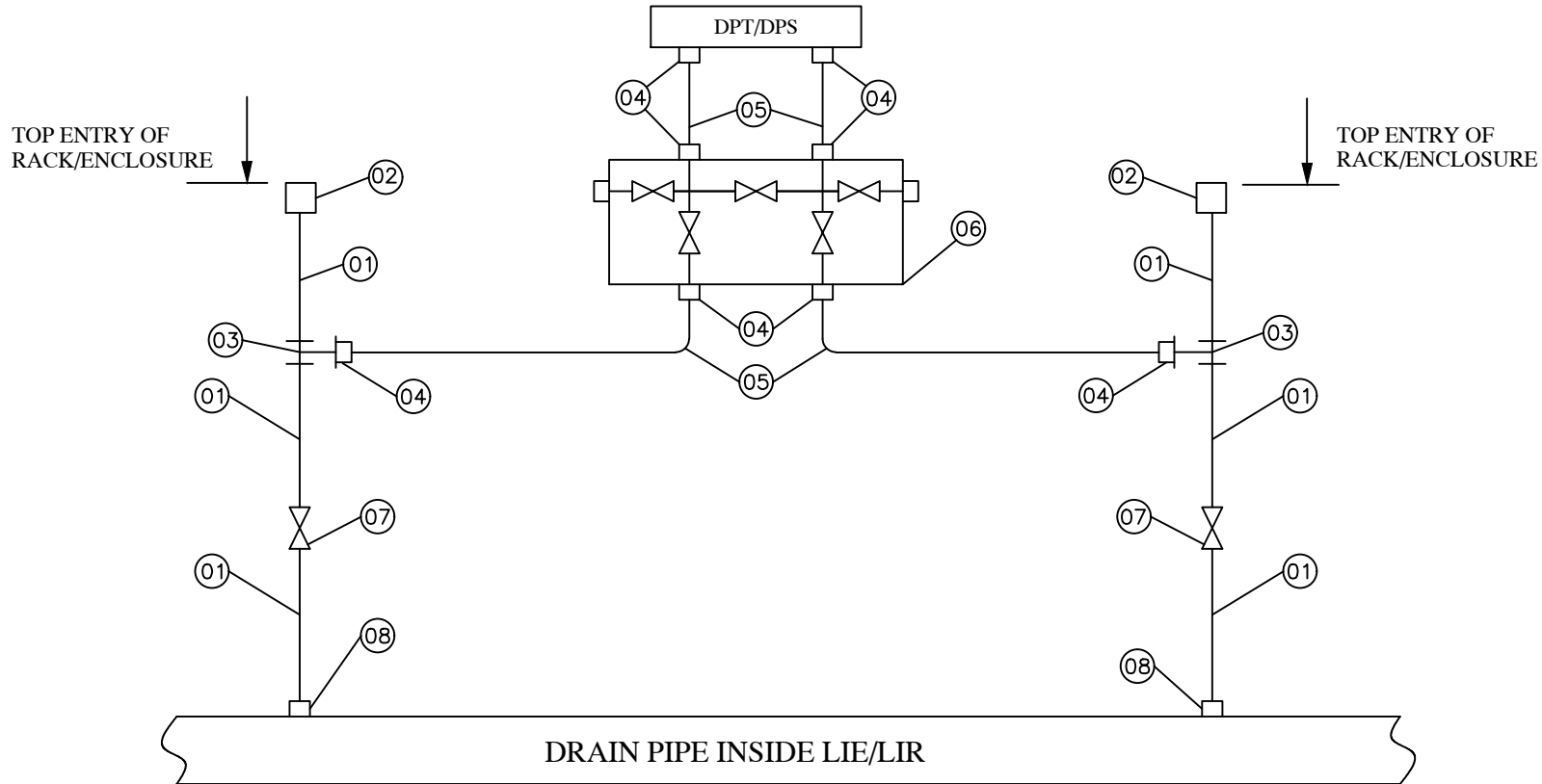
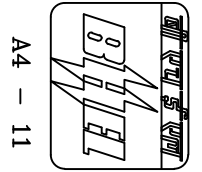
PAGE : 39 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A790 S32750 SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F53 SIZE: 1/2" NB-SW / CL: 3000 LBS	01
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F53 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 3000 LBS	01
04	MALE CONNECTOR MATL:SS316L SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	04
05	SEAMLESS TUBE MATL: ASTM A790 S32750 SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	TWO VALVE MANIFOLD WITH VENT PLUG MATL: SUPER DUPELX STAINLESS STEEL PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07	FORGED GLOBE VALVE BODY: MATL: ASTM A182 F53 / STEM MATL: ASTM A182 F53 SIZE: 1/2" NB-SW / CL: 800	01
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A182 F53 SIZE: 1/2" NB-SW / CL: 3000 LBS	01

COPY RIGHT AND CONFIDENTIAL

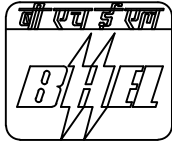
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.



NOTE:

1. " TRANSMITTER BELOW SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 41 OF 45.
3. DRAIN PIPE / 2" NB SCH 80 - A106 Gr. C

CE/416/ENNORE/HUP
REV. NO. 00
PAGE : 40 OF 45



A4 - 11

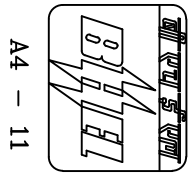
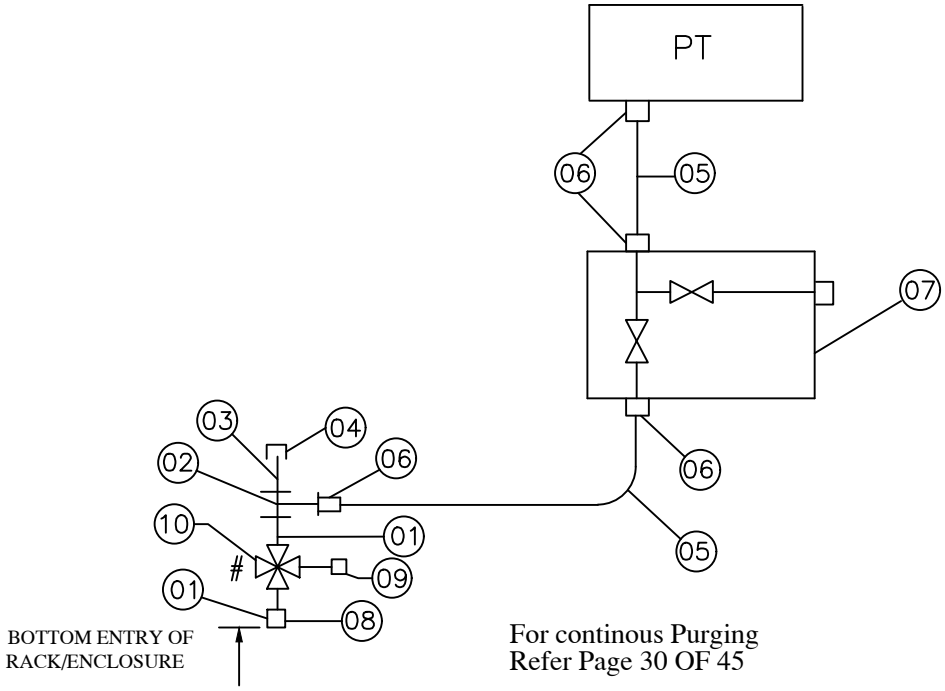
CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 41 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY / INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A790 S32750 SIZE: 1/2" NB-SCH 80	A/R
02	BULKHEAD UNION / COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F53 SIZE: 1/2" NB-SW / CL: 3000 LBS	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F53 SIZE: 2 x 1/2" NB-SW X 1/2" NPTF / CL: 3000 LBS	02
04	MALE CONNECTOR MATL: SS316L SIZE: 1/2" NPTM X TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: ASTM A790 S32750 SIZE: 1/2" OD X 2.1 mm THK.	A/R
06	FIVE VALVE MANIFOLD WITH VENT PLUG MATL: SUPER DUPLEX STAINLESS STEEL PORT SIZE: 1/2" NPTF / PR. TESTING: 3000 PSI	01
07	FORGED GLOBE VALVE BODY MATL: ASTM A182 F53 / STEM MATL: ASTM A182 F53 SIZE: 1/2" NB-SW / CL: 800	02
08	HALF COUPLING / AS PER ANSI B 16.11 MATL: ASTM A182 F53 SIZE: 1/2" NB-SW / CL: 3000 LBS	02

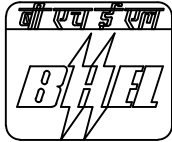


NOTE:

1. " TRANSMITTER ABOVE SOURCE"

2. FOR BILL OF MATERIAL, REFER PAGE 43 OF 45.

#3. FOR INTERMITTENT PURGING REFER PAGE NO 30 OF 45



A4 - 11

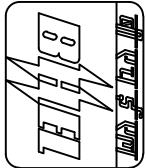
CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 43 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO.	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL : ASTM A335 P22 SIZE: 3/4" NB-SCH 80	A/R
02	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 2 x 3/4" NB-SW X 1/2" NPTF / CL 3000 LBS	01
03	NIPPLE MATL: ASTM A182 F22 SIZE: 3/4 " NB - SCH 80	01
04	CAP MATL: ASTM A182 F22 SIZE: 3/4" NPTF	01
05	SEAMLESS TUBE MATL: ASTM A213 TP 316 SIZE: 1/2" OD x 1.1mm THK	A/R
06	MALE CONNECTOR MATL: SS316 SIZE : 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	04
07	TWO VALVE MANIFOLD WITH VENT PLUG BODY : SS316 PORT SIZE: 1/2" NPTF / PR. TESTING: 3000PSI	01
08	BULK HEAD COUPLING / AS PER B16.11 MATL: ASTM A182 F22 SIZE: 3/4" NB-SW / CL 3000	01
09	QUICK DISCONNECTING FITTING MATL: SS 304 SIZE:1/2" NPTM	01
10	FOUR WAY VALVE MATL: ASTM A182 F22 SIZE: (2 x 3/4" NB-SW) x (1 x 1/2" NPTF) / RATING CLASS 800	01

		COPY RIGHT AND CONFIDENTIAL			
		The information on this document is the property of Bharat Heavy Electricals Limited.			
		It must not be used directly or indirectly in anyway detrimental to the interest to the Company.			
FOR CONTINUOUS PURGING REFER PAGE 30 OF 45 BOTTOM ENTRY OF RACK/ENCLOSURE BOTTOM ENTRY OF RACK/ENCLOSURE FOR CONTINUOUS PURGING REFER PAGE 30 OF 45				 A4 - 11	
NOTE: 1. " TRANSMITTER ABOVE SOURCE" 2. FOR BILL OF MATERIAL REFER PAGE 45 OF 45. #3. FOR INTERMITTENT PURGING REFER PAGE NO 30 OF 45.				CE/416/ENNORE/HUP REV. NO. 00 PAGE : 44 OF 45	

NOTE:

1. " TRANSMITTER ABOVE SOURCE"
2. FOR BILL OF MATERIAL REFER PAGE 45 OF 45.
- #3. FOR INTERMITTENT PURGING REFER PAGE NO 30 OF 45.



A4 - 11

CE/416/ENNORE/HUP

REV. NO. 00

PAGE : 45 OF 45

COPY RIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the Company.

ITEM NO	ITEM DESCRIPTION	QNTY/INST. (Nos.)
01	SEAMLESS PIPE MATL: ASTM A335 P22 Gr. C SIZE: 3/4" NB-SCH 80	A/R
02	BULKHEAD COUPLING / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 3/4" NB-SW/ CL: 3000	02
03	FORGED UNEQUAL TEE / AS PER ANSI B16.11 MATL: ASTM A182 F22 SIZE: 2 x 3/4" NB-SW x 1/2" NPTF / CL: 3000	02
04	MALE CONNECTOR MATL: SS316 SIZE: 1/2" NPTM x TO SUIT 1/2" OD SS TUBE	08
05	SEAMLESS TUBE MATL: A213 TP316 SIZE: 1/2" OD x 1.1mm THK	A/R
06	THREE VALVE MANIFOLD WITH VENT PLUG BODY: SS316 / PORT: 1/2" NPTF PORT SIZE: 1/2" NPTF PR. TESTING: 3000 PSI	01
07	NIPPLE / MATL: A335 P22 Gr. C SIZE: 3/4" NB-SCH 80	02
08	CAP / MATL: ASTM A182 F22 SIZE: 3/4" NPTF	02
09	QUICK DISCONNECTING FITTING MATL.: SS 304 SIZE.: 1/2" NPTM	02
10	FOUR WAY VALVE MATL.: ASTM A105 / RATING CLASS 800 SIZE: (2 x 3/4" NB-SW) x (1 x 1/2" NPTF)	02

		बि एच डी एल BHEL A4-10	SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR	Ref : CE/416/ENNORE/LIE-LIR/VL Rev. : 00 Page : 01 of 03			
		PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO COMPONENT VENDOR LIST					
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.							
		REVISIONS :	APPROVED BY ASHISH M <table><tr><td> PREPARED BY RAJESH L </td><td> ISSUED 416 </td><td> DATE 08/01/18 </td></tr></table>		PREPARED BY RAJESH L	ISSUED 416	DATE 08/01/18
PREPARED BY RAJESH L	ISSUED 416	DATE 08/01/18					

SECTION –C
TECHNICAL SPECIFICATION FOR LIE/LIR

CE/416/ENNORE/LIE-LIR/VL

Rev. No. : 00

Page : 02 of 03

VENDOR LIST

SI No	Item Description	Approved Vendors
1	Socket Weld Fittings	PRECISION ENGG INDUSTRIES GOREGAON(W), MUMBAI
		V.K.INDUSTRIES BANGALORE
		EXCEL HYDRO-PNEUMATICS PVT LTD MUMBAI
		METPRESS ENGINEERING WORKS KOLKATA
		BALDOTA VALVE AND MUMBAI
		PANAM ENGINEERS LTD. SAHAR ROAD,ANDHERI(EAST),MUMBAI
		AURA INC. PHASE - 2, NEW DELHI
		HP VALVES & FITTINGS (INDIA) PVT. L MOGAPPAIR WEST, CHENNAI
		PRIME ENGINEERS
		ARYA CRAFTS & ENGINEERING PVT. LTD.
2	Compression Fitting	PRECISION ENGG INDUSTRIES GOREGAON(W), MUMBAI
		EXCEL HYDRO-PNEUMATICS PVT LTD MUMBAI
		METPRESS ENGINEERING WORKS KOLKATA
		PANAM ENGINEERS LTD. SAHAR ROAD,ANDHERI(EAST),MUMBAI
		AURA INC. PHASE - 2, NEW DELHI
		HP VALVES & FITTINGS (INDIA) PVT. L MOGAPPAIR WEST, CHENNAI
		ARYA CRAFTS & ENGINEERING PVT. LTD.
		SWAGELOCK
		PARKER HANNIFIN INDIA PVT. LTD.
3	Instrument Valves	AURA INC, NEW DELHI
		BALDOTA VALVE AND FITTING CO PVT LT, MUMBAI
		BHARAT HEAVY ELECTRICALS LTD, TRICHY
		EXCEL HYDRO-PNEUMATICS PVT LTD, MUMBAI
		SHALIMAR VALVES,MUMBAI
		HP VALVES AND FITTINGS, CHENNAI
		INSTRUMENTATION LIMITED, PALGHAT
		METPRESS ENGINEERING WORKS, KOLKATA
		PRECISION ENGG INDUSTRIES, MUMBAI
4	Valve Manifolds	PRECISION ENGG INDUSTRIES GOREGAON(W), MUMBAI
		EXCEL HYDRO-PNEUMATICS PVT LTD MUMBAI
		METPRESS ENGINEERING WORKS KOLKATA
		BALDOTA VALVE AND MUMBAI
		ASTEC VALVE & FITTINGS PVT. LTD. MUMBAI
		AURA INC,NEW DELHI (UNDER APPROVAL)
		HP VALVES & FITTINGS (INDIA) PVT. L CHENNAI
		MICRO PRECISION PRODUCTS PVT LTD FARIDABAD
		PRIME ENGINEERS
		Parker HANNIFIN INDIA PVT. LTD. (D407131-Super techical dealer for Parker)
		ARYA CRAFTS & ENGINEERING PVT. LTD.

COPY RIGHT AND CONFIDENTIAL
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT
MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE
COMPANY.

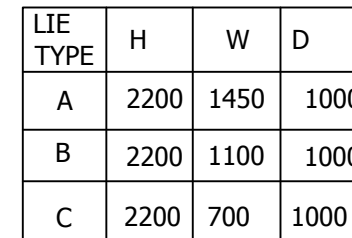
VENDOR LIST

SI No	Item Description	Approved Vendors
5	Air Filter Regulator	SHAVO NORGEN, INDIA PLACKA INSTRUMENTS PVT LTD, CHENNAI
6	Impulse Pipes / Seamless Tube	BHARAT HEAVY ELECTRICALS LTD, TRICHY HEAVY MEATL TUBES, AHMADABAD JINDHAL SAW LTD CHENNAI (Only for CS and AS Pipes) MAHALAXMI SEAMLESS ,MAHARASTRA RATNAMANI METALS & TUBES LTD, AHMADABAD(only for SS Pipes & Tubes) SUMITOMO CORPORATION ,JAPAN CHOKSI TUBES COMPANY INDIA LTD MANNESMANN AG, GERMANY TPS TECHNITUBE ROHREN WERKE GMBH, GERMANY SHUBHALAKSHMI METALS & TUBES LTD, MUMBAI (only for SS Pipes & Tubes) MAXIM TUBES COMPANY PVT LTD, AHMEDABAD(only for SS Pipes & Tubes)
		DELTON CABLES, FARIDABAD. PARAMOUNT CABLES, KHUSKHERA CORDS CABLE, RAJASTHAN POLYCAB WIRES, DAMAN THERMO CABLES, BANGALORE KEI INDUSTRIES, CHENNAI ADVANCE CABLE TECHNOLOGIES PVT LTD ELKAY TELELINKS COMMUNICATION PVT LTD MANSFIELD CABLES COMPANY GUPTA POWER INFRASTRUCTURE LTD GEMSCAB INDUSTRIES LTD, BHIWADI KEC INTERNATIONAL LTD, BANGALORE SPECIAL CABLES PVT LTD, NEW DELHI SUYOG ELECTRICALS LTD UDEY PYROCABLES PVT LTD, PUNE

COPY RIGHT AND CONFIDENTIAL
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT
MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE
COMPANY.

		 A4-10	SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR		Ref : CE/416/LIE/LIR/OGA1 Rev. : 00 Page : 01 of 04				
		PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO							
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		SCHEMATIC DRAWINGS FOR LOCAL INSTRUMENT ENCLOSURE / RACKS (LIE / LIR)							
		REVISIONS :		APPROVED BY  ASHISH M					
				PREPARED BY  RAJESH L	<table border="1"> <tr> <td data-bbox="1101 1619 1300 1801">ISSUED</td> <td data-bbox="1300 1619 1479 1801">DATE</td> </tr> <tr> <td data-bbox="1101 1801 1300 1955">416</td> <td data-bbox="1300 1801 1479 1955">08/01/18</td> </tr> </table>	ISSUED	DATE	416	08/01/18
ISSUED	DATE								
416	08/01/18								

INVENTORY No.



REV.	DATE	ALTERED	REV.	DATE	ALTERED		NAME	SIGN	DATE		
		CHECKED			CHECKED					DEPT.	CODE
		APPROVED			APPROVED					BPE	41
						DRAWN	HKS		15.04.2015	 	
						CHECKED	RKL		15.04.2015		
						APPROVED	AM		15.04.2015		

TITLE:		OGA-FOR-LIE		No. OF SHEETS	04
				SHEET No.	02
WBS. No.		DRG. No.	CE/416/LIE/LIR/OGA1		REV
					00

Copyright and Confidential

The information on this document is the property of Bharat Heavy Electricals Ltd. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REF. DRG. No. FLREF

SIGN. & DATE

INVENTORY No.

DRG. No. CE/416/LIE/LIR/OGA1

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

2

3

4

5

6

7

8

A

B

C

D

E

F

G

TOP VIEW

FRONT VIEW

SIDE VIEW

NOTES:

1. JB TO BE LOCATED ON ONE SIDE OF THE LIR.

2. LIR's ARE WITH 2 LEGS.

3. SUPPORTING LEG SHALL BE MADE OF CHANNEL

4. BULK HEAD PLATE SHALL BE PROVIDED AT THE TOP

5. GASKET SHALL BE PROVIDED BETWEEN BULK HEAD PLATE & RACK

6. EARTH BUS BAR 25x6mm COPPER SHALL BE USED

7. 1 No CFL 11W,230V AC WITH FIXTURE SHALL BE PROVIDED

8. POWER SOCKET SHALL BE PROVIDED IN J.B. OF RACK

9. CANOPY ASSEMBLY WITH 3 MM THICK CRCA SHEET

10. TERMINALS SHALL BE PROVIDED IN SIDE THE JB AS PER GROUPING PROVIDED

LIR TYPE	H	W	D
A	2200	1400	650
B	2200	1100	650
C	1600	800	650

REV.

DATE

ALTERED -

CHECKED -

APPROVED -

REV.

DATE

ALTERED -

CHECKED -

APPROVED -

NAME

SIGN

DATE

DEPT. BPE

CODE 416

DRAWN

HKS

15.04.2015

CHECKED

RKL

15.04.2015

APPROVED

AM

15.04.2015

PROD / PROJ : -

CUSTOMER: -

BHARAT HEAVY ELECTRICALS LIMITED.

ELECTRONICS DIVISION, BANGALORE

TITLE:

OGA-FOR-LIR

WBS. No.

-

DRG. No.

CE/416/LIE/LIR/OGA1

No. OF SHEETS

04

SHEET No.

04

REV

00

FORM No. A3-03

A3 SIZE

		ભૂ પવ્વડ પુત્ર  A4-10	SECTION –C TECHNICAL SPECIFICATION FOR LIE/LIR		CE/416/ LIE-LIR/QP Rev. : 00 Page : 01 of 06	
		PROJECT : ENNORE SEZ 2 X 660MW STPP CUSTOMER : M/S TANGEDCO				
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		TYPICAL QUALITY CHECK LIST				
		REVISIONS :		APPROVED BY  ASHISH MANJHI		
				PREPARED BY  RAJESH LINGUTLA	ISSUED 416	DATE 08/01/18

		MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN								
				ITEM : LOCAL INSTRUMENT ENCLOSURE & LOCAL INSTRUMENT RACK		QP Ref NO.: CE/416/LIE-LIR/QP REV. : 00 DT. :08.01.2018 PAGE : 02 OF 06						
S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	E	
1	2	3	4	5	6	7	8	9	D*	**10		11
(A)	MATERIAL											
1	CRCA SHEET	A) MATERIAL	MAJOR	CHEMICAL COMPOSITION	SAMPLE	IS-513 APP.DRG	IS-513	M.T.C./Q.A.REP.		V	V	V
		B) THICKNESS	MAJOR	MEASUREMENT	100%	APP.DRG	APP.DRG	M.T.C./Q.A.REP.		P	V	V
		C) HARDNESS	MAJOR	STRENGTH	SAMPLE	IS-513	IS-513	M.T.C./Q.A.REP.		V	V	V
		D) SURFACE FINISH	MAJOR	VISUAL	100%	IS-513	IS-513	M.T.C./Q.A.REP.		P	V	V
2	MS C- CHANNELS / MS ANGLE	A) DIMENSION	MAJOR	VISUAL	100%	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		P	V	V
		B) SURFACE DEFECTS	MAJOR	VISUAL	100%	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		V	V	V
		C) STRAIGHTNESS	MAJOR	MESUERMENT	100%	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		V	V	V
3	GASKET	A) DIMENSION	MAJOR	MEASUREMENT	SAMPLE	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C./Q.A.REP.		P	V	V
		B) HARDNESS/SHORE HARDNESS	MAJOR	MEASUREMENT	SAMPLE	APP.DRG/ F.S.	APP.DRG/ F.S.	M.T.C.		V	V	V
4	TERMINALS	A) TYPE, SIZE & MAKE	MAJOR	VISUAL	100%	APP.DRG	APP.DRG	M.T.C./Q.A.REP.		P	V	V
		LEGEND : * RECORDS, IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. ** M : MANUFACTURER/ SUBCONTRACTOR C: CONTRACTOR/ NOMINATED INSPECTION AGENCY E : END USER INDICATE 'P' PERFORM, 'W' WITNESS AND 'V' VERIFICATION AS APPROPRIATE "CHP" END USER SHALL IDENTIFIED IN COLUMN 'E'					FOR END USER :		DOC. NO.			
MANUFACTURER /SUBCONTRACTOR												
CONTRACTOR												
SIGNATURE							REVIEWED BY		NAME & SIGN OF APPROVING AUTHORITY WITH SEAL			

		MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN									
				ITEM : LOCAL INSTRUMENT ENCLOSURE & LOCAL INSTRUMENT RACK		QP Ref NO.: CE/416/LIE-LIR/QP REV. : 00 DT. : 08.01.2018 PAGE : 03 OF 06							
S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RECORD		M	C	E	REMARKS
1	2	3	4	5	6	7	8	9	D*	**10			11
5	PVC WIRE/ CABLE	A) TYPE, SIZE, MAKE	MAJOR	MEASUREMENT	SAMPLE	IS 694/APPD. APP.DRG	IS 694/APPD. APP.DRG	M.T.C./Q.A.REP.		P	V	V	* TYPE / MODEL /RANGE OF COMPONENTS AS PER BOM OF LIE/ LIR .
6	PAINT	A) SHADE B) FINISH	MAJOR MAJOR	VISUAL VISUAL	SAMPLE SAMPLE	APP. DRG APP. DRG	APP. DRG APP. DRG	M.T.C./Q.A.REP. M.T.C./Q.A.REP.		P P	V V	V V	
7	FLEXIBLE CONDUIT / M.S. CABLE TRAY	A) TYPE, SIZE & MAKE	MAJOR	VISUAL	SAMPLE	APP.DRG	APP.DRG	M.T.C./Q.A.REP.		P	V	V	
(B) <u>COMPONENTS *</u>													
1	VALVES, MANIFOLDS	MECHANICAL	MAJOR	A)CHEM. TEST	SAMPLE	SUPPLIER CAT./ APP.DRG	SUPPLIER CAT./ APP.DRG	M.T.C./Q.A.REP.		V	V	V	
				B)FUNCTIONAL	100%	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				C) DIMENSION	100%/SAM.	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				D)HYDROSTA- TIC	10%	-DO-	-DO-	M.T.C./Q.A.REP.		V	V	V	
2	FITTINGS	MECHANICAL	MAJOR	A)CHEM. TEST	SAMPLE	-DO-	-DO-	M.T.C./Q.A.REP.		V	V	V	
				B) DIMENSION	100%/SAM.	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				C)HYDROSTA- TIC	10%	-DO-	-DO-	M.T.C./Q.A.REP.		V	V	V	
3.a	PIPES	MECHANICAL	MAJOR	A)CHEM. & PHY. TEST	SAMPLE	-DO-	-DO-	M.T.C./Q.A.REP. M.T.C./Q.A.REP.		V P	V V	V V	
				B) DIMENSION	100%/ SAM.	-DO-	-DO-	M.T.C./Q.A.REP.		P	V	V	
				LEGEND : * RECORDS, INDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. ** M : MANUFACTURER/ SUBCONTRACTOR C: CONTRACTOR/ NOMINATED INSPECTION AGENCY E : END USER INDICATE 'P' PERFORM, 'W' WITNESS AND 'V' VERIFICATION AS APPROPRIATE "CHP" END USER SHALL IDENTIFIED IN COLUMN 'E'				FOR END USER :	DOC. NO.				
MANUFACTURER /SUBCONTRACTOR		CONTRACTOR											
SIGNATURE								REVIEWED BY	NAME & SIGN OFAPPROVING AUTHORITY WITH SEAL				

MANUFACTURING QUALITY PLAN													
S. NO.		COMPONENTS & OPERATIONS		CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RECORD	REMARKS		
1	2	3	4	5	6	7	8	9	D*	M	C	E	
3.b	TUBES	MECHANICAL	MAJOR	A)CHEM. & PHY. TEST B) DIMENSION C) HYDROSTATIC	SAMPLE	SUPPLIER CAT./ APP.DRG	SUPPLIER CAT./ APP.DRG	M.T.C./Q.A.REP. M.T.C./Q.A.REP. M.T.C./Q.A.REP.		V	V	V	
(C)	INPROCESS												
1	FABRICATED/CUBICLE AND COMPONENTS	A) DIMENSION B) LIFTING FACILITY C) CABLE ENTRY D) STRAIGHTNESS / WAVINESS E) GASKET ARGMNT. F) DEBURRING G) WELDING H) REMOVAL OF WELDING SLAGS	CRITICAL CRITICAL CRITICAL CRITICAL CRITICAL CRITICAL CRITICAL CRITICAL	MEASUREMENT VISUAL VISUAL VISUAL	100% 100% 100% 100%	APP.DRG APP.DRG APP.DRG	APP.DRG APP.DRG APP. APP.DRG	Q.A. REPORT Q.A. REPORT Q.A. REPORT	P P P P	V V V V	V V V V		
		LEGEND : * RECORDS, IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. ** M : MANUFACTURER/ SUBCONTRACTOR C: CONTRACTOR/ NOMINATED INSPECTION AGENCY E : END USER INDICATE 'P' PERFORM, 'W' WITNESS AND 'V' VERIFICATION AS APPROPRIATE "CHP" END USER SHALL IDENTIFIED IN COLUMN 'E'							FOR END USER :	DOC. NO.			
MANUFACTURER /SUBCONTRACTOR		CONTRACTOR							REVIEWED BY	NAME & SIGN OFAPPROVING AUTHORITY WITH SEAL			
SIGNATURE													

MANUFACTURING QUALITY PLAN														
S. NO.		COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS	
1		2	3	4	5	6	7	8	9	D*	M	C	E	11
2	PRETREATMENT (7 TANK PROCESS)	A) DEGREASING B) DERUSTING C) PHOSPHATISING D) PASSIVATION	CRITICAL CRITICAL CRITICAL CRITICAL	VISUAL VISUAL MEASUREMENT VISUAL	100% 100% 100% 100%	IS- 6005/F.S. IS- 6005/F.S. IS- 6005/F.S. IS- 6005/F.S.	IS- 6005/F.S. IS- 6005/F.S. IS- 6005/F.S. IS- 6005/F.S.	Q.A. REPORT Q.A. REPORT Q.A. REPORT Q.A. REPORT		P P P P	V V V V	V V V V		
3	SURFACE PREPARATION & PAINTING	A) PRIMER(2 COATS) B) SURFACER C) FINAL PAINTING D) THICKNESS	CRITICAL CRITICAL CRITICAL CRITICAL	VISUAL VISUAL VISUAL MEASUREMENT	100% 100% 100% SAMPLE	APP.DRG APP.DRG APP.DRG APP.DRG	APP.DRG APP.DRG APP.DRG APP.DRG	Q.A.REPORT Q.A.REPORT Q.A.REPORT Q.A.REPORT		P P P P	V V V V	V V V V		
4	ELECTRICAL & MECH.	A) CHECK ARRANGE / LAYOUT OF COMP. & MOUNTING B) WIRE CLAMPING & FERULING C) INTERCONNECTION B/W COMPONENT D) LUG SIZE & CRIMPING E) COMPONENT IDENTIFICATION F) WIRE SIZE G) NAME PLATES H) PIPING	CRITICAL CRITICAL CRITICAL CRITICAL CRITICAL MAJOR CRITICAL MAJOR	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL	100% 100% 100% 100% 100% SAMPLE 100% 100%	APP.DRG APP.DRG APP.DRG APPD. APP.DRG APPD. APP.DRG IS-694 / APP.DRG APP.DRG APP.DRG	APP.DRG APP.DRG APP.DRG F.S./APP.DRG APP.DRG IS-694 / APP.DRG APP.DRG APP.DRG	Q.A.REPORT Q.A.REPORT Q.A.REPORT Q.A.REPORT Q.A.REPORT M.T.C./QA REP. Q.A.REPORT Q.A.REPORT		P P P P P P P	V V V V V V V	V V V V V V V		
		LEGEND : * RECORDS, IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. ** M : MANUFACTURER/ SUBCONTRACTOR C: CONTRACTOR/ NOMINATED INSPECTION AGENCY E : END USER INDICATE 'P' PERFORM, 'W' WITNESS AND 'V' VERIFICATION AS APPROPRIATE "CHP" END USER SHALL IDENTIFIED IN COLUMN 'E'						FOR END USER :		DOC. NO.				
MANUFACTURER /SUBCONTRACTOR		CONTRACTOR						REVIEWED BY		NAME & SIGN OF APPROVING AUTHORITY WITH SEAL				
SIGNATURE														

		MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN									
				ITEM : LOCAL INSTRUMENT ENCLOSURE & LOCAL INSTRUMENT RACK		QP Ref NO.: CE/416/LIE-LIR/QP REV. : 00 DT. : 08.01.2018 PAGE : 06 OF 06							
S. NO.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6	7	8	9	D*	M	C	E	
11													
D) FINAL INSPECTION													
1	A) VERIFICATION OF COMPONENTS /RATING/ ARRANGEMENTS/ LOCATION FOR EASY ACCESSABILITY AND MAINTENANCE .		CRITICAL	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	PERFORMED BY VENDOR 100 % BHEL WITNESS ON 10%
	B) COMPLETENESS OF WIRING ,TUBING/ PIPING		CRITICAL	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	C) TERMINAL ARRANGEMENTS,SPARE TER-MINALS , EARTH BUS TIN PLATED COPPER)		CRITICAL	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	D) PAINT SHADE,THICKNESS & ADHESION		CRITICAL	MEASUREMENT	SAMPLE	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	E) DOOR ALIGNMENT		MAJOR	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	F) GENERAL APPEARANCE (STRAIGHTNESS, FREE FROM SCRATCHES, BENDS, DENTS AND SHEET THICKNESS)		MAJOR	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
	G) HYDROSTATIC TEST FOR ASSEMBLY. (1.5 TIMES RATED PRESSURE) (PNEUMATIC TEST FOR PURGING LINES (NO LEAKAGED WITH SOAP SOLUTION)		CRITICAL	MECHANICAL	100%	APP.DRG	APP.DRG/ NO LEAK/ PRESSURE DROP	Q.A. REPORT		P	W	W	
2	OVERALL FINISH		MAJOR	VISUAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
3	CONTINUITY TEST		MAJOR	FUNCTIONAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
4	IR TEST		MAJOR	MEASUREMENT	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
5	HV TEST		MAJOR	MEASUREMENT	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
6	FUNCTIONAL TEST		MAJOR	FUNCTIONAL	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	W	W	
7	IP TEST TYPE TEST		MAJOR	VERIFICATION	100%/SAM.	APP.DRG	APP.DRG	Q.A. REPORT		P	V	V	
M. T.C. = MANUFACTURER'S / MATERIAL TEST CERTIFICATE F.S. = FACTORY STANDARD							Q.A.REP.= QUALITY ASSURANCE REPORT APP. APP.DRG = APPROVED DRAWING SAM. = SAMPLE						
NOTE : CUSTOMER / INSPECTION AGENCY / END USER MAY DO INSPECTION ON SAMPLE BASIS													
MANUFACTURER /SUBCONTRACTOR SIGNATURE		LEGEND : * RECORDS, IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. ** M : MANUFACTURER/ SUBCONTRACTOR C: CONTRACTOR/ NOMINATED INSPECTION AGENCY E : END USER INDICATE 'P' PERFORM, 'W' WITNESS AND 'V' VERIFICATION AS APPROPRIATE "CHP" END USER SHALL IDENTIFIED IN COLUMN 'E'											
		REVIEWED BY		NAME & SIGN OF APPROVING AUTHORITY WITH SEAL									



भारत भारी इलेक्ट्रिकल्स लिमिटेड
भारत भारी इलेक्ट्रिकल्स लिमिटेड

**Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division**

PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 003- Rev 00

SPECIAL COMMERCIAL CONDITIONS OF CONTRACT

Reference is brought to BHEL's Instructions to Bidders (Document Ref: CE: PR: 001- Rev 01) and General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 01) which are also sent along with the RFQ. These two documents along with Special Conditions of Contract annexed to this RFQ will form an integral part of the contract as and when the RFQ culminates into a Purchase Order / Contract.

RFQ No: SAM0000199 RFQ Date: 10.01.2018 Due Date: 22.01.2018 Project: ENNORE SEZ (2X660 MW) STPP.
Item Description: LIE/LIR

TYPE OF BID: ~~SINGLE PART BID / TWO PART BID~~ / THREE PART BID

Purchase Executives:-Ms. Sarita Mohapatra or Mr. Umapathi K.
E-mail IDs:- sarita@bheledn.co.in & umapathi@bheledn.co.in

E-tendering: ~~Applicable/ Not Applicable.~~

Reverse Auction: ~~Not Applicable~~ / Will be intimated during commercial clarifications to technically acceptable vendors.
In case BHEL does not resort to Reverse Auction, the price bids and price impacts (if any) shall be opened as per BHEL's standard practice.

Splitting of tendered quantity to MSE vendors: The tendered quantity ~~will~~ /will not be split to MSE vendors subject to submission of relevant documents by vendors. Refer clause H of Instructions to Bidders for conditions applicable and for information on documents to be submitted.

Destination: Items are to be directly despatched to BHEL's Site Office or Stores/Customer's Stores located in ENNORE, CHENNAI, TAMIL NADU.

Road Permit, if applicable, will be issued by BHEL along with Despatch Clearance.

Project Benefits:

~~Imported scope of supply:~~

- ~~DEEC / EPCG/DFIA contract: Eligible for "NIL" Basic Customs Duty.~~
- ~~Physical Export project: Eligible for exemption of Customs Duty and GST.~~
- ~~Project Imports: Eligible for Concessional Basic Customs Duty.~~
- ~~Basic Customs duty and Cess on Basic Customs duty are reimbursable by customer.~~

Terms of Delivery:

Indicate station of despatch: _____

Indicate place of manufacturing (wherever applicable): _____

- **Indigenous scope of supply:** Ex-works (including Packing & Forwarding charges but excluding Taxes & Duties): _____

- **~~Imported scope of supply:~~** F.C.A. (for air consignments) / F.O.B. (for sea consignments)

(Including Packing, Forwarding, Handling, Ancillary charges like processing of Sight Draft/ Letter of Credit, negotiation of bank Documents, Export declaration, Country of Origin etc.): _____

Kindly indicate the ~~approximate weight of the total consignment for the imported portion~~ of the subject item. This is required for calculating freight charges to the Project Site. _____ Kgs.

Also indicate the following:

- Works address _____
- Office address _____
- In the event of your company being the lowest bidder, PO to be placed on works or office address. _____

S NO.	TERMS	BHEL ACCEPTABLE TERM	BIDDER'S CONFIRMATION	DEVIATION IF ANY
01	Validity	The offer will be valid for a period of 120 days from the date of technical bid opening.	AGREE	
02	Goods and Services Tax	Please indicate current rate of GST, HSN Number of the quoted goods and GSTIN Number of the billing location. However, reimbursement of GST shall be at actuals against proof of Tax Invoice only. (Within contractual delivery).	APPLICABLE / NOT APPLICABLE Present rate of GST% HSN Number GSTIN Number	
03	Octroi	If applicable, indicate current rate of Octroi.	AGREE Present Octroi rate%	
04	Freight Charges (for indigenous scope of supply) Kindly quote freight charges in % of the total basic material cost for the complete project.	Freight charges shall be to vendor's account. Quote lump sum reasonable Freight charges separately in priced offer, clearly indicating the applicable taxes. Vendor's offer will be evaluated on "Total cost basis" including freight charges. Vendor shall book the consignment through their approved Road carriers on "Freight pre-paid" and door delivery consignee copy attached basis. Freight charges to be claimed from BHEL along with POD (Proof of Delivery) on original L/R.	AGREED And quoted as lumpsum amount in price bid. Applicable Tax _____% (extra in freight charges)	Freight _____% of Total Basic Material Cost for complete project.
05	Tax on E&C and Training Charges	Please indicate current rate of GST applicable, SAC (Service Accounting Code No.) and GSTIN Number of place of supply of service. However, reimbursement of GST shall be at actuals against proof of Tax Invoice only. (Within contractual delivery).	APPLICABLE / NOT APPLICABLE Present rate of GST% SAC Number GSTIN Number	
06	Parting of license for imported raw materials	In case of Mega project, Ultra Mega project and Physical Export project where Custom Duty and Excise Duty are NIL and vendor is importing any raw materials / components for the enquired item, same are eligible for Zero Customs duty. As per EXIM policy, BHEL will part the import licence with the vendors to obtain import licence by themselves and custom clear the raw materials/ components by availing zero customs duty. Hence, please furnish list of raw materials / components to be imported by you with Quantity and CIF value (for which BHEL has to share import licence). The benefit due to the above shall be passed on to BHEL and confirmed in the quotation. If there are no imported raw materials/components, same shall be confirmed in the offer.	AGREE CIF value Yes, benefit passed-on to BHEL in the price quotation. We confirm that there are no imported components.	
07	Delivery Period	Within 08 weeks from the date of issue of approved documents or manufacturing clearance by BHEL, whichever is later.	AGREE weeks	
08	Guarantee/ Warranty	24 months from the date of delivery of goods or 18 months from the date of commissioning of goods, whichever is earlier.	AGREE	

09	Inspection agency	Materials will be inspected by : • BHEL • Customer/Consultant/BHEL nominated Third Party Inspection Agency (TPIA)	AGREE	
10	Terms of Payment at the time of material supply	Refer Clause "F" of Instructions to Bidder for BHEL standard Payment terms and loading factors applicable for non-compliance against payment terms: Indigenous Scope: a) Supply with E&C b) Supply with Supervision of E&C c) Supply only Imported Scope: d) Supply with E&C e) Supply with Supervision of E&C f) Supply only Note: Kindly indicate if High Sea Sales will be operated. If yes, confirm submission of relevant documents as per Annexure V.	AGREE YES / NO CONFIRMED	
11	Performance Bank Guarantee (PBG)	PBG will be applicable for a period of 24 months + claim period of 6 months for a value equal to 10% of the basic value of the purchase order. Refer Clause "G" of Instructions to Bidders.	AGREE	
12	Terms of Payment not related to material supply	For Training: 100% will be paid in 45 days from the date of completion of Training or 15 days from the date of submission of complete set of documentation, whichever is later. Separate invoice shall be submitted for Training charges along with documentary evidence. For Engineering & Documentation Charges: 100% will be paid in 45 days from the date of approval of final documents or 15 days from the date of submission of invoice, whichever is later. Separate invoice to be submitted for Engineering & documentation charges.	AGREE	
13	Mode of despatch	Indigenous Scope: By Road on Door Delivery Consignee Copy attached basis through your approved transporter (unless otherwise indicated in Despatch Instructions), only on receipt of Despatch Clearance from BHEL. Imported Scope: By Air/Sea through BHEL approved Consolidator/Freight Forwarder, only on receipt of Despatch Clearance from BHEL.	AGREE	
14	Despatch Documents	Complete set of despatch documents (original + 1 photocopy set) as per Purchase Order shall be forwarded to BHEL directly. Depending upon the project/customer demands, despatch documents may include one or more documents from the following: Original GST Invoice, Original Lorry Receipt (L/R), Signed Packing List, Air Way Bill (AWB), Country of origin certificate, Warranty Certificate, Insurance Intimation letter, NIL Short Shipment Certificate, Original Performance Bank Guarantee (directly from issuing bank to BHEL), POD (Proof of Delivery) on original L/R, Disclaimer Certificate (as per BHEL format attached as Annexure XI) along with ER-1 form & attested excise invoice (as per project demands like Nuclear Power plant) etc. The precise list of despatch documents needed for a particular project will be specified in the Purchase Order. One set of Invoice, Packing List and L/R or AWB shall be e-mailed/faxed immediately to BHEL-EDN after despatch.	AGREE	

15	O & M Manuals	As built Drawings, O & M Manuals and other approved documents shall be furnished in required no. of sets as per Specification/Purchase Order. Note: Supply of above documents (O&M) in required no. of sets along with material shall be indicated in packing list. If not mentioned BHEL may insist for submission in required sets once again.	AGREE	
16	Evaluation criteria for tendered item	Items will not be split on item wise lowest offer. Items to be evaluated and procured as a package.	AGREE	
17	Integrity Commitment	Integrity commitment will be applicable in the tender process and execution of contracts as mentioned in clause "I" of Instructions to Bidders.	AGREE	

With this, it is inferred that vendor has understood and accepts all terms & conditions as indicated in Instructions to Bidders (Document Ref: CE: PR: 001- Rev 01) & General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 01).

VENDOR'S SIGNATURE WITH SEAL

NOTE: 1) The above filled-in and signed-sealed document shall be furnished as part of Part-I Bid without fail. If no deviations are brought, it will be treated as if all terms and conditions of this enquiry are accepted by vendor without any deviation.

2) For EPS tenders, bidder should also necessarily fill the corresponding columns of "SPECIAL COMMERCIAL CONDITIONS OF CONTRACT" in EPS portal and the confirmation provided by bidder against these commercial terms in EPS portal will only be considered by BHEL.



भारत भारी इलेक्ट्रिकल्स लिमिटेड
भारत भारी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE:PR:001- Rev 01

INSTRUCTIONS TO BIDDERS (Common for all RFQs)

Bidder is requested to read the instructions carefully and submit their quotation taking into consideration of all the points:

A. GENERAL INSTRUCTIONS:

1. Any Purchase Order resulting from this enquiry shall be governed by the Instructions to Bidders (document reference: CE: PR: 001 – Rev 01), General Conditions of Contract (document reference: CE: PR: 002 - Rev 01) and Special Conditions of Contract, if any, of the enquiry.
2. Any deviations from or additions to the “General Conditions of Contract” or “Special Conditions of Contract” require BHEL’s express written consent. The general terms of business or sale of the bidder shall not apply to this tender.
3. Bidders (also includes the term suppliers / contractors wherever used in this document) are instructed to quote their most competitive price and best delivery, etc. in the offer. Prices should be indicated in both figures & words **(Please also refer clause 12 under section B)**
4. Regret letter (either through post or by mail or by EPS) indicating reasons for not quoting must be submitted without fail, in case of non-participation in this tender. If a bidder fails to respond against 3 consecutive tenders for the same item, he shall be liable for removal as a registered vendor of BHEL.
5. Procurement directly from the manufacturers shall be preferred. However, if the OEM/ Principal insist on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from the manufacturer/ supplier and his agent, bid received from the agent shall be ignored.
6. Consultant / firm (and any of its affiliates) shall not be eligible to participate in the tender/s for the related goods for the same project if they were engaged for consultancy services for the same project.
7. If an Indian representative/associate/liaison office quotes on behalf of a foreign based bidder, such representative shall furnish compulsorily the following documents:
 - a. Authorization letter to quote and negotiate on behalf of such foreign-based bidder.
 - b. Undertaking from such foreign based bidder that such contract will be honored and executed according to agreed scope of supply and commercial terms and conditions.
 - c. Undertaking shall be furnished by the Indian representative stating that the co-ordination and smooth execution of the contract and settlement of shortages/damages/replacement/repair of imported scope till system is commissioned and handed over to customer will be the sole responsibility of the Indian representative/associates/agent/liaison office.
 - d. Refer **Annexure I** on “Guidelines for Indian Agents”.
8. In case of imported scope of supply, customs clearance & customs duty payment will be to BHEL account after the consignment is received at Indian Airport /Seaport. Bidders must provide all original documents

required for completing the customs clearance along with the shipment. Warehousing charges due to incomplete or missing documentation will be recovered from the supplier's bill. All offers for imported scope of supply by air, must be made from any of the gateway ports (within the country) indicated (**Refer Annexure II**).

9. The offers of the bidders who are on the banned list and also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of the banned firms is available on BHEL website: **www.bhel.com**
10. Business dealings with bidders will be suspended if they are found to have indulged in any malpractices/misconduct which are contrary to business ethics like bribery, corruption, fraud, pilferage, cartel formation, submission of fake/false/forged documents, certificates, information to BHEL or if they tamper with tendering procedure affecting the ordering process or fail to execute a contract, or rejection of 3 consecutive supplies or if their firms / works are under strike/lockout for a long period. Bidder may refer "Guidelines for Suspension of Business Dealings with Suppliers/ Contractors" available on www.bhel.com for more details.

B. GUIDELINES FOR PREPARATION OF OFFER:

1. Quotation shall be submitted in Single Part Bid, Two Part Bid or Three Part Bid, as called for in the tender:
 - **SINGLE PART BID:** Technical and Commercial Bid with prices along with price summary & filled in BHEL Standard Commercial terms and conditions in a single sealed envelope.
 - **TWO PART BID:** Unpriced offer i.e. "Techno-commercial Bid" with filled in BHEL Standard Commercial terms and conditions in a sealed envelope **along with the copy of the "Price Bid" without the prices** should be enclosed in one cover and the cover must be super scribed "**Techno-commercial offer**) and Priced offer i.e. "Price Bid" containing price summary in a separate sealed envelope and must be super scribed "**Price Bid**". Both these envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.
 - **THREE PART BID:** Pre-qualification Bid (Part-I), Techno Commercial Bid with filled in BHEL Standard Commercial terms and conditions (Part-II), and Price Bid (Part-III). All three envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.

If any of the offers (Part I, Part II or Part III) are not submitted before the due date and time of submission (or) if any part of the offer is incomplete, the entire offer of the bidder is liable for rejection.

2. Supplier shall ensure to superscribe each envelope with RFQ number, RFQ Date, RFQ Due date and time, Item Description and Project clearly & boldly. Also mention on the envelope whether it is "Techno Commercial Bid" or "Price Bid" or "Pre-Qualification Bid". Please ensure complete address, department name and purchase executive name is mentioned on the envelope (before dropping in the tender box or handing over) so that the tender is available in time for bid opening.
3. BHEL standard Commercial Terms and Conditions (duly filled, signed & stamped) must accompany Technical-Commercial offer without fail and should be submitted in original only. Xerox copy will not be accepted.
The above indicated submission of Offers in "sealed envelope/hard copy" as mentioned in points B.1-B.3 is applicable for tenders that are not floated through EPS.
4. Validity: Unless otherwise specified in SCC (special commercial conditions of contract), the original offer will be valid for a period of 120 days from the date of technical bid opening.

5. Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if all terms and conditions of this enquiry are accepted by the supplier without deviation.
6. Deviation to this specification/item description, if any, shall be brought out clearly indicating "DEVIATION TO BHEL SPECIFICATION" without fail, as a part of Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if the entire specification of this enquiry is accepted without deviation.
7. Suppliers shall submit one set of original catalogue, datasheets, bill of materials, dimensional drawings, mounting details and/or any other relevant documents called in purchase specification as part of Technical Bid.
8. "Price Bid" shall be complete in all respects containing price break-up of all components along with all applicable taxes and duties, freight charges (if applicable) etc. Once submitted no modification / addition / deletion will be allowed in the "Price Bid." Bidders are advised to thoroughly check the unit price, total price to avoid any discrepancy.
9. In addition, bidder shall also quote for erection & commissioning charges/erection supervision & commissioning charges (E&C/service charges) if & as applicable, documentation charges, testing Charges (type & routine), training charges etc. as applicable along with corresponding tax. The price summary must indicate all the elements clearly.
10. Vendors should indicate "lumpsum" charges (including To & Fro Fare, Boarding, Lodging, Local Conveyance etc.) for carrying out Erection and Commissioning (or) Erection Supervision and Commissioning, as applicable and further handing over to customer. The quotation shall clearly indicate scope of work, likely duration of commissioning, pre-commissioning checklist and service tax (if any).
11. Wherever bidders require PAC (Project Authority Certificate)/applicable certificates for import of raw materials, components required for DECC,EPCG Power Projects, Export Projects or other similar projects wherein supplies are eligible for customs duty benefits, lists and quantities of such items and their values (CIF) has to be mentioned in the offer. Prices must be quoted taking into account of such benefits.
12. All quotations shall be free from corrections/overwriting. Corrections if any should be authenticated with signature and seal. Any typographical error, totaling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure III** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid" and BHEL decision will be final.
13. Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder. This clause is not mandatory for offers uploaded through E-Procurement System(EPS).

C. GUIDELINES FOR OFFER SUBMISSION:

1. Offers / Quotations must be dropped in tender box before 13.00 Hrs. on or before due date mentioned in RFQ. The offers are to be dropped in the proper slot of the Tender Box kept in our reception area with caption "CE, SC&PV, DEFENCE." Tenders are opened on 3 days in a week (Monday/Wednesday/Friday). Tender must be deposited in the slot corresponding to the day (Monday - Box no.4/Wednesday - Box no. 6 /Friday - Box no.8) while depositing the offer (Dropping of offers in tender box is not applicable for EPS tenders).
2. E-Mail/ Internet/EDI offers received in time shall be considered only when such offers are complete in all respects. In case of offers received through E-mail, please send the offer to the email ID specified in the SCC document of the tender (This clause will not be applicable for EPS tenders).
3. In cases where tender documents are bulky, or due to some reasons tender documents are required to be submitted by hand or through posts/couriers, the offers are to be handed over either of the two officers whose names are mentioned in the SCC document of tender RFQ. (This clause will not be applicable for EPS tenders).

4. Tenders will be opened on due date, time and venue as indicated in the RFQ in the presence of bidders at the venue indicated in the RFQ. For EPS tenders, e-mail notifications will be automatically generated and forwarded to registered e-mail ID/s of bidders during opening of tenders.
5. Vendor will be solely responsible:
 - a. For submission of offers before due date and time. Offers submitted after due date and time will be treated as "Late offers" and will be rejected.
 - b. For submission of offers in the correct compartment of the tender box based on the day of due date (Monday/Wednesday/Friday). Please check before dropping your offer in the correct tender box.
 - c. For depositing offers in proper sealed condition in the tender box. If the bidder drops the tender in the wrong tender box (or) if the tender document is handed over to the wrong person, BHEL will not be responsible for any such delays.
 - d. For offers received through email etc., suppliers are fully responsible for lack of secrecy on information and ensuring timely receipt of such offers in the tender box before due date & time (This clause will not be applicable for EPS tenders).

The above indicated submission of Offers as mentioned in points 5.a-5.d is applicable for tenders that are not floated through EPS.

- e. In case of e-tender, all required documents should be uploaded before due date and time. Availability of power, internet connections, system/software requirements etc. will be the sole responsibility of the vendor. Wherever assistance is needed for submission of e-tenders, help-line numbers as available in the web-site of service provider of BHEL may be contacted.

Purchase Executive/ BHEL shall not be responsible for any of the activities relating to submission of offer.

D. PROCESSING OF OFFERS RECEIVED:

1. Any discount/ revised offer submitted by the supplier on its own shall be accepted provided it is received on or before the due date and time of offer submission (i.e. Part-I bid). The discount shall be applied on pro-rata basis to all items unless specified otherwise by the bidder.
2. Changes in offers or Revised offers given after Part-I bid opening shall not be considered as a part of the original offer unless such changes/revisions are requested by BHEL.
3. In case there is no change in the technical scope and/ or specifications and/ or commercial terms & conditions, the supplier will not be allowed to change any of their bids after Technical bids are opened (after the due date and time of tender opening).
4. In case of changes in scope and/ or technical specifications and/ or commercial terms & conditions by BHEL and it accounts for price implications from vendors, all techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid. Impact price will be applicable only for changes in technical specification / commercial conditions by BHEL. The impact price must be submitted on or before the cut-off date specified by BHEL and the original price bid and the price impact bid will be opened together at the time of price bid opening.
5. BHEL EDN reserves the right to adopt Reverse Auction or standard Price Bid Opening procedure for price evaluation, at its discretion. This shall be decided after completion of techno-commercial evaluation of tender. **(Refer BHEL website www.bhel.com for Guidelines of Reverse Auction).** In case BHEL does not resort to Reverse Auction, the price bids and price impacts (if any) already submitted and available with BHEL shall be opened as per BHEL's standard practice.
6. Un-opened bids (including price bids) will be returned to the respective bidders after release of Purchase order. Regarding Offers for EPS tenders that get rejected on PQC/ techno-commercial grounds, the bids for

the subsequent parts will not be opened i.e., both technical bid and price bid (Parts-II & III) will not be opened in case of rejection on PQC ground and price bid (Part-II/Part-III, as applicable) will not be opened in case of rejection on techno-commercial ground.

7. After receipt of Purchase Order, supplier should submit required documents viz., specified drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report, O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.
8. Any deviation to the terms and conditions not mentioned in the quotation by supplier in response to this enquiry will not be considered, if put forth subsequently or after issue of Purchase Order, unless clarification is sought for by BHEL EDN and agreed upon in the Purchase Order.
9. Evaluation shall be on the basis of delivered cost (i.e. "Total Cost to BHEL").
 "Total Cost to BHEL" shall include total basic cost, packing & forwarding charges, taxes and duties (if & as applicable), freight charges, taxes on Services, customs clearance charges for imported items, any other cost indicated by bidder for execution of the contract and loading factors (for non-compliance to BHEL Standard Commercial Terms & Conditions). Benefits arising out of Nil Import Duty on DEEC, EPCG, DFIA Projects, Physical Exports or such 100% exemptions (statutory benefits), project imports, customer reimbursements of statutory duties (like Basic Customs Duty and cess on customs duty), Input tax credits as applicable will also be taken into account for arriving at the Total cost to BHEL (wherever applicable and as indicated in SCC document of tender).
10. No deviation will be permitted from the duration of Guarantee/Warranty and/or Comprehensive Annual Maintenance Contract period specified in SCC.
11. For evaluation of offers in foreign currency, the exchange rate (TT selling rate of SBI) shall be taken as under:

Single part bids:	Date of tender opening
Two/three part bids:	Date of Part-I bid opening
Reverse Auction:	Date of Part-I bid opening

In case of Performance Bank Guarantee (PBG) also, exchange rate will be considered as mentioned above for converting foreign currency to Indian currency and vice versa.

If the relevant day happens to be a bank holiday, then the exchange rate as on the previous working day of the bank (SBI) shall be taken.
12. Ranking (L-1, L-2 etc.) shall be done only for the techno-commercially acceptable offers.

E. INFORMATION ON PAYMENT TERMS:

1. All payments will be through Electronic Fund transfer (EFT). Vendor has to furnish necessary details as per BHEL standard format (**Refer Annexure IV**) for receiving all payments through NEFT. (Applicable for Indian vendors only)
2. In case of High Sea Sales transaction, customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors. All warehousing charges due to delay in submission of complete and or correct HSS documents to BHEL will be to supplier's account only. Such recovery will be made out of any of the available bills (**Refer Annexure V**).
3. Statutory deductions, if any, will be made and the deduction certificate shall be issued. In case vendor does not provide PAN details, the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act (Applicable for Indian vendors only).
 Foreign vendors shall submit relevant details of their bankers like Swift Code, Banker's Name & Address etc.
4. Incomplete documentation will not be accepted. Delayed submission of invoice / documents may result in corresponding delay in payment. In this connection, request to also refer clause: K about invoicing &

payment formalities under GST regime. Applicable documents shall be submitted to the purchaser at the time of execution of supplies/services for availing GST input credits.

F. STANDARD PAYMENT TERMS OF BHEL-EDN

Against Purchase Orders for indigenous procurement-(a), (b) & (c):

(a) SUPPLY WITH ERECTION & COMMISSIONING:

85% of basic value + 100% of taxes and freight charges will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 15% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with E & C charges (if any) against proof of completion of E&C.

(b) SUPPLY WITH ERECTION SUPERVISION & COMMISSIONING:

90% of the basic value + 100% of taxes and freight charges will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 10% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with erection supervision & commissioning charges (if any) against proof of completion of commissioning.

(c) SUPPLY ONLY:

100% of PO value with taxes and freight will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.

Against Purchase orders for import procurement-(d), (e) & (f):

(d) SUPPLY WITH ERECTION & COMMISSIONING:

85% of the basic value will be paid on the 45th day, against usance draft of 45 days, from the date of AWB/BOL on submission of complete set of documents.

Retention money equivalent to balance 15% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with E&C charges (if any) against proof of completion of E&C.

(e) SUPPLY WITH ERECTION SUPERVISION & COMMISSIONING:

90% of the basic value will be paid on the 45th day, against usance draft of 45 days, from the date of AWB/BOL on submission of complete set of documents.

Retention money equivalent to balance 10% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with erection supervision & commissioning charges (if any) against proof of completion of commissioning.

(f) SUPPLY ONLY:

100% of PO value will be paid against usance draft of 45 days from the date of AWB/BOL on submission of complete set of documents.

Against Purchase orders for High-sea sales procurement-(g), (h) & (i):

g) SUPPLY WITH ERECTION & COMMISSIONING:

85% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 15% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with E & C charges (if any) against proof of completion of E&C.

h) SUPPLY WITH ERECTION SUPERVISION & COMMISSIONING:

90% of the basic value + 100% of taxes, duties and freight charges will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 10% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with erection supervision & commissioning charges (if any) against proof of completion of commissioning.

i) SUPPLY ONLY:

100% of PO value with taxes, duties and freight will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

j) Comprehensive Annual Maintenance Contract:

Evaluation methodology: Unless and otherwise specified in SCC, CAMC will be applicable for a period of 04 years from the date of expiry of warranty period (or) from the date of completion of commissioning of equipment, whichever is later and the total AMC value should not be less than 20% of the main supply value. In case the quoted total AMC value is less than 20% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price and apportioning towards AMC charges.

Payment terms: 100% AMC charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of AMC on yearly basis.

k) Terms of Payment for Training: 100% payment will be made in 45 days from the date of completion of Training or 15 days from the date of submission of complete set of invoice along with documentary evidence, whichever is later.

LOADING FACTORS FOR PAYMENT TERMS:

- 1) In all cases where credit period is <45 days and ≥30 days with the above offered standard payment terms, loading applicable will be 5% of basic value.
(This loading factor is applicable only for purchase orders against indigenous supply or High-sea sales procurement).
- 2) For offers received with usance draft of less than 45 days, loading of 5% will be applicable.
(This loading factor is applicable only for purchase orders for imported supply).
- 3) For offers received with Letter of Credit payment term in place of usance draft payment term, loading applicable will be 5% of basic value.
Additional loading of 5% will be applicable for payment terms as Letter of Credit with usance of less than 45 days.
(This loading factor is applicable only for purchase orders for imported supply).
- 4) All payment terms with credit period of less than 30 days for indigenous supply/HSS and any other variation of payment terms are liable for rejection.

- 5) Standard payment terms indicated in Clauses: F (a), (b), (c), (d), (e), (f), (g), (h), (i),(j)&(k) will not attract any loading.

Note 1: Basic value of Purchase Order mentioned above will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable).

Wherever the Purchase Order is split into import portion and indigenous portion of supply, the retention money will be 10% (where scope includes E&C) or 05% (where scope includes Erection supervision & Commissioning) of both purchase order values put together.

Note 2:*If the E&C could not be completed till the end of the Warranty period due to reasons not attributable to the supplier, BHEL will release the retention money to the supplier against Bank Guarantee for equivalent value valid for an initial period of one year.*

Note 3: In case of multiple packages/units in a power plant, payment of retention money/E&C charges will be processed on pro-rata basis.

G. Performance bank guarantee (PBG):

Performance bank guarantee (PBG) will be applicable as called in the tender documents.

Unless otherwise specified in the SCC, the PBG against performance of the contract shall be valid for a period of 24 months from the date of dispatch of goods + claim period of 06 months, for a value equal to 10 % of the basic value of the purchase order which will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable).

1. The BG issued in Indian Rupees by Banks in India is to be executed on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
2. No deviation for the duration and value of PBG will be permitted.
3. PBG shall be from any of the BHEL consortium of bankers (**refer Annexure VI**).
4. PBGs from nationalized banks are also acceptable.
5. PBG should be sent directly by the bank to the dealing executive mentioned in the purchase order located at the address mentioned in the purchase order.
6. PBG should be in the format indicated (**refer annexure VII**). No deviation to this format will be allowed. However in case BHEL changes the PBG format, bidder shall honor the same.
7. In Case of Bank Guarantees submitted by Foreign Vendors-

a. From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India) can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the BHEL Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.

b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)

b.1 Please note that Bank Guarantee issued by any of the Consortium Banks only will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter-

Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It shall be noted that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor.

b.2 In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at sl.no. b.1 is required to be followed.

b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time).

8. Expired BGs / PBGs will be returned only after expiry of the claim period or on completion of the contractual obligation with respect to Purchase Order.

H. PROVISIONS APPLICABLE FOR MSE VENDORS (MICRO AND SMALL ENTERPRISES)

Benefits/facilities as applicable for Micro and Small Enterprises (MSEs) shall be available to MSEs registered with Government designated authorities as per the Purchase & Price Preference Policy of the Government subject to them becoming eligible otherwise.

Vendors who qualify as MSE vendors are requested to submit applicable certificates (as specified by the Ministry of Micro, Small and Medium Enterprises) at the time of vendor registration. Vendors have to submit any of the following documents along with the tender documents in the Part I / Technical bid to avail the applicable benefits:

- a. Attested copy of valid NSIC certificate or
- b. Attested copy of Entrepreneur's Memorandum part II (EM II) certificate having deemed validity (two years from the date of issue of acknowledgement in EM II) or
- c. EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure VIII where deemed validity of EM II certificate for two years has expired) applicable for the relevant financial year (latest audited) or
- d. Udyog Aadhaar Memorandum and Acknowledgement along with attested copy of a CA certificate.

Documents has to be notarized/attested by a Gazetted officer and must be valid as on the date of part I / technical bid opening for the vendors to be eligible for the benefits applicable for MSE vendors. Please note that no benefit shall be applicable if any deficiency in the above required documents are not submitted before price bid opening of the tender.

Bidders to however note the documents that shall be furnished in order to establish credentials as MSE vendor should be as per the extant statutory requirements specified by the Ministry of Micro, Small and Medium Enterprises.

Note: If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded in the EPS portal.

PURCHASE PREFERENCE FOR MSE VENDORS:

- e. MSE vendors quoting within a price band of L1 + 15% shall be allowed to supply up to 20% of the requirement against this tender provided
 1. The MSE vendor matches the L1 price.
 2. L1 price is from a non MSE vendor.
 3. L1 price will be offered to the vendor nearest to L1 in terms of price ranking (L2 - nearest to L1). In case of non-acceptance by the MSE vendor (L2), next ranking MSE vendor will be offered who is within the L1 + 15% band (if L3 is also within 15% band).

4. 20% of the 20% (i.e. 4% of the total enquired quantity) will be earmarked for SC/ST owned MSE firms provided conditions as mentioned in (1) and (2) are fulfilled.
5. In case no vendor under SC / ST category firms are meeting the conditions mentioned in (1) and (2) or have not participated in the tender, in such cases the 4% quantity will be distributed among the other eligible MSE vendors who have participated in the tender.
6. Serial no. 1 to 5 will not be applicable wherever it is not possible to split the tendered quantity/items on account of customer contract requirement, or the items tendered are systems. Such information that tendered quantity will not be split will be indicated in the SCC.

I. INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS:

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 bidder / suppliers in a transparent and fair manner, and with equity.

2. Commitment by Bidder(s)/ Contractor(s):

- a. The Bidder(s)/ Contractor(s) commit(s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision or benefit which he is not legally entitled to.
- b. The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding or any actions to restrict competition.
- c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant Acts. 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 BHEL as part of business relationship.
- d. 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 and shall adhere to the relevant guidelines issued from time to time by Government of India/ BHEL.

If the Bidder(s) / Contractor(s), before award or during execution of the Contract commit(s) a transgression of the above or in any other manner such as to put his reliability or credibility in question, BHEL is entitled to disqualify the Bidder(s) / Contractor (s) from the tender process or terminate the contract and/ or take suitable action as deemed fit.

J.Integrity Pact (IP):

- a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner.
A panel of independent External Monitors (IEMs) have been appointed to oversee implementation of IP in BHEL.

The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno-commercial bid. Only those Bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

- b) Please refer Section-8 of the IP for Role and Responsibilities of IEMs (Annexure-IX). In case of any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned in the tender.

Note: No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department.”

K. Information regarding invoicing under GST regime:

Vendor should intimate BHEL immediately on the same date of invoicing without any delay.

- I. Vendor shall necessarily submit tax invoices in the format as specified under GST Laws, with details as below:

(a) Name, address and GST registration number (GSTIN) of the supplier

(b) Invoice number, Date of issue.

(c) HSN Code (Harmonized System of Nomenclature) / SAC (Services Accounting Code).

(d) Description, quantity, unit, total value of goods or services, rate of tax, amount of tax (CGST, SGST, IGST, UTGST), place of supply (consignor address), address of buyer and/or consignee (as applicable) with GSTIN etc.

- II. Payment of GST as applicable, will be made to vendor only if it is matching with the data uploaded by Vendor in GST portal.

- III. Vendor to give a declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL (if asked by BHEL).



भारत भारी इलेक्ट्रिकल्स लिमिटेड
भारत भारी इलेक्ट्रिकल्स लिमिटेड

**Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division**

PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 002- Rev 01

GENERAL COMMERCIAL CONDITIONS FOR CONTRACT

These 'General Commercial Conditions for Contract for Purchase' herein after referred to as GCC apply to all enquiries, tenders, requests for quotations, orders, contracts and agreements concerning the supply of goods and the rendering of related services (hereinafter referred to as "deliveries") to Bharat Heavy Electricals Limited and any of its units, regions or divisions (hereinafter referred to as "BHEL" or the Purchaser) or its projects/ customers.

Any deviations from or additions to these GCC require BHEL's express written consent. The general terms of business or sale of the vendor shall not apply to BHEL. Acceptance, receipt of shipments or services or effecting payment shall not mean that the general terms of business or sale of the vendor have been accepted.

Orders, agreements and amendments thereto shall be binding if made or confirmed by BHEL in writing. Only the Purchasing department of BHEL is authorized to issue the Purchase Order or any amendment thereof.

Definitions: Throughout these conditions and in the specifications, the following terms shall have the meanings assigned to them, unless the subject matter or the context requires otherwise.

- a) 'The Purchaser' means Bharat Heavy Electricals Limited, Electronics division, Mysore road, Bangalore 560 026, a Unit of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the Companies Act having its registered office at BHEL House, Siri Fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.
- b) 'The vendor' means the person, firm, company or organization on whom the Purchase Order is placed and shall be deemed to include the vendor's successors, representative heirs, executors and administrator as the case may be. It may also be referred to as Seller, Contractor or Supplier.
- c) 'Contract' shall mean and include the Purchase Order incorporating various agreements, viz. tender/ RFQ, offer, letter of intent/acceptance/ award, the General Conditions of Contract and Special Conditions of Contract for Purchase, Specifications, Inspection/ Quality Plan, Schedule of Prices and Quantities, Drawings, if any enclosed or to be provided by BHEL or his authorized nominee and the samples or patterns if any to be provided under the provisions of the contract.
- d) 'Parties to the Contract' shall mean the 'The Vendor' and the Purchaser as named in the main body of the Purchase Order.

Interpretation:

In the contract, except where the context requires otherwise:

- a) words indicating one gender include all genders;
- b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and
- d) "Written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

Applicable Conditions:

1. **Price Basis:** All prices shall be firm until the purchase order is executed / completed in all respects. No price variations / escalation shall be permitted unless otherwise such variations / escalations are provided for and agreed by BHEL in writing in the purchase order.

2. **Ordering and confirmation of Order:** Vendor shall send the order acceptance on their company letter head within 02 weeks from the date of receipt of Purchase Order or such other period as specified/ agreed by BHEL. BHEL reserves the right to revoke the order placed if the order confirmation differs from the original order placed. The acceptance of goods/services/supplies by BHEL as well as payments made in this regard shall not imply acceptance of any deviations.
The purchase order will be deemed to have been accepted if no communication to the contrary is received within one week (or the time limit as specified/agreed by BHEL) from the date of receipt of the purchase order.

3. **Documentation:** After receipt of Purchase Order, vendor should submit necessary documents (if & as applicable) like drawings specified, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report, O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/ Customer.
At any stage within the contract period, the vendor shall notify of any error, fault or other defect found in BHEL's documents / specifications or any other items for reference. If and to the extent that (taking account of cost and time) any vendor exercising due care would have discovered the error, fault or other defect when examining the documents/specifications before submitting the tender, the time for completion shall not be extended. However if errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the vendor's documents, they shall be corrected at his cost, notwithstanding any consent or approval.

4. **Penalty:**
 - a. **For delay in documentation:** In the event of delay in submission of complete set of specified documents ((like drawings, bill of materials, datasheets, catalogues, quality plan etc. as called in tender specifications including soft copies wherever applicable) in required sets beyond three(03) weeks (or as agreed/indicated in the SCC/Purchase Order) from the date of receipt of Purchase Order (by email), penalty at 0.5% (half percent) per week or part thereof, limited to a maximum of 5% (five percent) of the basic material value of the Purchase Order will be applicable.
Penalty for delayed documentation if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted.

 - b. **For delay in delivery:** In the event of delay in agreed contractual delivery as per Purchase Order, penalty @ 0.5 % (half percent) per week or part thereof but limited to a max of 10% (ten percent) value of undelivered portion (basic material cost) will be applicable. Delivery will commence from the date of issue of manufacturing clearance or approved document by BHEL, whichever is later. The date for which Inspection call is issued by vendor along with test certificates / test reports / Certificate of Conformance / calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery for penalty calculation. In the absence of furnishing such document indicated above as proof of completion of manufacturing along with inspection call, actual date of inspection will be considered as date of deemed delivery and BHEL will not be responsible for delay in actual date of inspection.

Penalty for delayed delivery if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted.

5. **Contract variations (Increase or decrease in the scope of supply):** BHEL may vary the contracted scope as per requirements at site. If vendor is of the opinion that the variation has an effect on the agreed price or delivery period, BHEL shall be informed of this immediately in writing along with technical details. Where unit rates are available in the Contract, the same shall be applied to such additional work. Vendor shall not

perform additional work before BHEL has issued written instructions/ amendment to the Purchase Order to that effect. The work which the vendor should have or could have anticipated in terms of delivering the service(s) and functionality (i.e.) as described in this agreement, or which is considered to be the result of an attributable error on the vendor's part, shall not be considered additional work.

6. Inspection: Prior written notice of atleast 10 days shall be given along with internal test certificates/COC and applicable test certificates. Materials will be inspected by BHEL-EDN-QS/CQS or BHEL nominated Third Party Inspection Agency (TPIA) or BHEL authorized Inspection Agency or Customer / Consultant or jointly by BHEL & Customer / consultant. All tests have to be conducted as applicable in line with approved Quality plan or QA Checklist or Purchase specification and original reports shall be furnished to BHEL-EDN, Bangalore for verification/acceptance for issue of dispatch clearance.
All costs related to inspections & re-inspections shall be borne by vendor. Whether the Contract provides for tests on the premises of the vendor or any of his Sub-contractor/s, vendor shall be responsible to provide such assistance, labour, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently. Cost of any type test or such other special tests shall be borne by BHEL only if specifically agreed to in the purchase order.
7. Transit Insurance: Transit insurance coverage between vendor's works and project site shall be to the account of BHEL, unless specifically agreed otherwise. However, vendor shall send intimation directly to insurance agency (as mentioned in dispatch instructions issued by BHEL) through fax/courier/e-mail, immediately on dispatch of goods for covering insurance. A copy of such intimation sent by vendor to insurance agency shall be given to BHEL along with dispatch documents. Dispatch documents will be treated as incomplete without such intimation copy. BHEL shall not be responsible for sending intimations to insurance agency on behalf of the vendor.
8. Mode of dispatch:
Indigenous Scope: By road on Door Delivery Consignee Copy attached basis through your approved transporter (unless otherwise indicated in Dispatch Instructions), only on receipt of Despatch Clearance from BHEL.
Imported Scope: By Air/Sea through BHEL approved Freight Forwarder/supplier approved Consolidator respectively as per agreed contractual terms, only on receipt of Dispatch Clearance from BHEL.
9. High Sea Sales (HSS): Customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors.
Any delay in submission of complete/correct HSS documents to BHEL may incur demurrage charges. All demurrage charges on account of incomplete /incorrect HSS documents submission by vendor will be to vendor's account and all such charges will be recovered from any of the available vendor bills with BHEL.
10. Packaging and dispatch: The Seller shall package the goods safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by Sea/ Air / Rail/ Road to its destination suitably protected against loss, damage, corrosion in transit and the effect of tropical salt laden atmosphere. The packages shall be provided with fixtures/ hooks and sling marks as may be required for easy and safe handling. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols / instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.
The packing, shipping, storage and processing of the goods must comply with the prevailing legislation and regulations concerning safety, the environment and working conditions. Any Imported/Physical Exports items packed with raw/ solid wood packing material should be treated as per ISPM – 15 (fumigation) and accompanied by Phytosanitary/ Fumigation certificate. If safety information sheets (MSDS – Material Safety Data Sheet) exist for an item or the packaging, vendor must provide this information without fail along with the consignment.
Each package must be marked with Consignee name, Purchase order number, Package number, Gross weight and net weight, dimensions (LxBxH) and Seller's name. Packing list of goods inside each package with PO item number and quantity must also be fixed securely outside the box to indicate the contents of each box. Total number of packages in the consignment must also be indicated in the packing list.
Separate packing & identification of items should be as follows.
 1. Main Scope - All items must be tagged with part no. & item description.

2. Commissioning spares - All items must be tagged with part no. & item description.
3. Mandatory spares - All items must be tagged with part no. & item description. All boxes/containers of spare items are to be distinctly marked in Red colour with boldly written "S" mark on each face of the containers /secure boxes as indication of items to be handed over directly to customer.
11. Assignment of Rights & Obligations; Subcontracting: Vendor is not permitted to subcontract the delivery or any part thereof to third party or to assign the rights and obligations resulting from this agreement in whole or in part to third parties without prior written permission from BHEL. Any permission or approval given by the BHEL shall, however, not absolve the vendor of the responsibility of his obligations under the Contract.
12. Progress report: Vendor shall render such report as to the progress of work and in such form as may be called for by the concerned purchase officer from time to time. The submission and acceptance of such reports shall not prejudice the rights of BHEL in any manner.
13. Non-disclosure and Information Obligations: Vendor shall provide with all necessary information pertaining to the goods as it could be of importance to BHEL. Vendor shall not reveal any specified confidential information that may be divulged by BHEL to Vendor's employees not involved with the tender/ contract & its execution and delivery or to third parties, unless BHEL has agreed to this in writing beforehand. Vendor shall not be entitled to use the BHEL name in advertisements and other commercial publications without prior written permission from BHEL.
14. Cancellation /Termination of contract: BHEL shall have the right to completely or partially terminate the agreement by means of written notice to that effect. Termination of the Contract, for whatever reason, shall be without prejudice to the rights of the parties accrued under the Contract up to the time of termination.
BHEL shall have the right to cancel/foreclose the Order/ Contract, wholly or in part, in case it is constrained to do so on account of any decline, diminution, curtailment or stoppage of the business.
15. Risk Purchase Clause: In case of failure of supplier, BHEL at its discretion may make purchase of the materials / services not supplied / rendered in time at the RISK & COST of the supplier. Under such situation, the supplier who fails to supply the goods in time shall be wholly liable to make good to BHEL any loss due to risk purchase.
In case of items demanding services at site like erection and commissioning, vendor should send his servicemen/representatives within 7 days from the service call. In case a vendor fails to attend to the service call, BHEL at its discretion may also make arrangements to attend such service by other parties at the **RISK & COST** of the supplier. Under such situation the supplier who fails to attend the service shall be wholly liable to make good to BHEL any loss due to risk purchase/service including additional handling charges due to the change.
16. Shortages: In the event of shortage on receipt of goods and/or on opening of packages at site, all such shortages, caused by supplier's act or omission, shall be made good within a reasonable time that BHEL may allow from such intimation and at free of cost.
Transit Damages: In the event of receipt of goods in damaged condition or having found them so upon opening of packages at site, supplier shall make good of all such damages within a reasonable time from such intimation by BHEL. In case BHEL raises an insurance claim, the cost of material limited to insurance settled amount less handling charges will be reimbursed to supplier.
17. Remedial work: Notwithstanding any previous test or certification, BHEL may instruct the vendor to remove and replace materials/goods or remove and re-execute works/services which are not in accordance with the purchase order. Similarly BHEL may ask the vendor to supply materials or to execute any services which are urgently required for any safety reasons, whether arising out of or because of an accident, unforeseeable event or otherwise. In such an event, Vendor shall provide such services within a reasonable time as specified by BHEL.
18. Indemnity Clause: Vendor shall comply with all applicable safety regulations and take care for the safety of all persons involved. Vendor is fully responsible for the safety of its personnel or that of his subcontractor's

men / property, during execution of the Purchase Order and related services. All statutory payments including PF, ESI or other related charges have to be borne by the vendor. Vendor is fully responsible for ensuring that all legal compliances are followed in course of such employment.

19. Product Information, Drawings and Documents: All specified drawings, technical documents or other technical information received by Vendor from BHEL or vice versa shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the Disclosing party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are binding only to the extent that they are by reference expressly included in the contract.

Vendor, as per agreed date/s but not later than the date of delivery, provide free of charge information and drawings which are necessary to permit and enable BHEL to erect, commission, operate and maintain the product. Such information and drawings shall be supplied in as many numbers of copies as may be agreed upon.

All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the Contract shall continue to be the property of the disclosing party.

20. Intellectual Property Rights, Licenses: If any Patent, design, Trade mark or any other intellectual property rights apply to the delivery (goods/related service) or accompanying documentation shall be the exclusive property of the Vendor and BHEL shall be entitled to the legal use thereof free of charge by means of a non-exclusive, worldwide, perpetual license. All intellectual property rights that arise during the execution of the Purchase Order/ contract for delivery by vendor and/or by its employees or third parties involved by the vendor for performance of the agreement shall belong to BHEL. Vendor shall perform everything necessary to obtain or establish the above mentioned rights. The Vendor guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. The Vendor shall do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by third parties. The Vendor shall indemnify BHEL against any (alleged) claims by third parties in this regard and shall reimburse BHEL for any damages suffered as a result thereof.

21. Force Majeure: Notwithstanding anything contained in the purchase order or any other document relevant thereto, neither party shall be liable for any failure or delay in performance to the extent said failures or delays are caused by the "Act of God" and occurring without its fault or negligence, provided that, force majeure will apply only if the failure to perform could not be avoided by the exercise of due care and vendor doing everything reasonably possible to resume its performance.

A party affected by an event of force majeure which may include fire, tempest, floods, earthquake, riot, war, damage by aircraft etc., shall give the other party written notice, with full details as soon as possible and in any event not later than seven (7) calendar days of the occurrence of the cause relied upon. If force majeure applies, dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

Notwithstanding above provisions, in an event of Force Majeure, BHEL reserves for itself the right to cancel the order/ contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of deliveries and other schedules.

22. Guarantee / Warranty:

Wherever required, and so provided in the specifications/ Purchaser Order, the Seller shall guarantee that the stores supplied shall comply with the specifications laid down, for materials, workmanship and performance.

Unless otherwise specified in SCC, guarantee / warranty period for main supply items shall be applicable for a period of 24 months from the date of delivery of goods or 18 months from the date of commissioning of goods, whichever is earlier.

The guarantee / warranty period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery. Unless otherwise specifically provided in the Purchase Order, Vendor's liability shall be co terminus with the expiration of the applicable guarantee / warranty period.

23. Limitation of Liability: Vendor's liability towards this contract is limited to a maximum of 100% of the contract value and consequential damages are excluded. However the limits of liability will have no effect in cases of criminal negligence or wilful misconduct.
The total liability of Vendor for all claims arising out of or relating to the performance or breach of the Contract or use of any Products or Services or any order shall not exceed the total Contract price.
24. Liability during guarantee / warranty: Vendor shall arrange replacement / repair of all the defective materials / services under its obligation under the guarantee / warranty period. The rejected goods shall be taken away by vendor and replaced / repaired. In the event of the vendor's failure to comply, BHEL may take appropriate action including disposal of rejections and replenishment by any other sources at the cost and risk of the vendor.
25. Liability after guarantee / warranty period: At the end of the guarantee / warranty, the Vendor's liability ceases except for latent defects. For the purpose of this clause, latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the guarantee / warranty Period, but later. The Contractor's liability for latent defects warranty for the equipment including spares shall be limited to a period of six months from the end of the guarantee / warranty period of the respective equipment including spares or first time commissioning whichever is later but not later than three (03) years from the date of shipment.
26. Compliance with Laws: Vendor shall, in performing the contract, comply with all applicable laws. The vendor shall make all remittances, give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the laws in relation to the execution and completion of the contract and for remedying of any defects; and the Contractor shall indemnify and hold BHEL harmless against and from the consequences of any failure to do so.
27. Settlement of Disputes: Except as otherwise specifically provided in the Purchase Order, decision of BHEL shall be binding on the vendor with respect to all questions relating to the interpretation or meaning of the terms and conditions and instructions herein before mentioned and as to the completion of supplies/work/services, other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the contract, instructions, orders or these conditions or otherwise concerning the supply or the execution or failure to execute the order, whether arising during the schedule of supply/work or after the completion or abandonment thereof. Any disputes or differences among the parties shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration. Vendor shall continue to perform the contract, pending settlement of dispute(s).
28. Arbitration Clause: In case amicable settlement is not reached in the event of any dispute or difference arising out of the execution of the Contract or the respective rights and liabilities of the parties or in relation to interpretation of any provision in any manner touching upon the Contract, such dispute or difference shall (except as to any matters, the decision of which is specifically provided for therein) be referred by either party to the sole arbitration of an Arbitrator appointed by the Executive Director/ General Manager of the purchasing unit/ region/ division of BHEL. Vendor shall have no objection even if the Arbitrator so appointed is an employee of BHEL or has ever dealt/ had to deal with any matter relating to this Contract.
Subject as aforesaid the provisions of the Arbitration and Conciliation Act, 1996 of India or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings under this clause. It is a term of contract that the party initiating arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute. The venue for the arbitration shall be Bangalore, India. The award of the arbitrator shall be a speaking award and shall be final, conclusive and binding on all parties to this contract.
The cost of arbitration shall be borne equally by the parties. Notwithstanding the existence of any dispute or difference or any reference for the arbitration, the vendor shall proceed with and continue without hindrance the performance of the work under the contract with due diligence and expedition in a professional manner.

29. Applicable Laws and Jurisdiction of Courts:Prevailing Indian laws both substantive and procedural, including modifications thereto, shall govern the Contract.Subject to the conditions as aforesaid, the competent courts in Bangalore alone shall have jurisdiction to consider over any matters touching upon this contract.
30. General Terms: That any non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents.

That the headings used in this agreement are for convenience of reference only.

That all notices etc., to be given under the Purchase order shall be in writing, type script or printed and if sent by registered post or by courier service to the address given in this document shall be deemed to have been served on the date when in the ordinary course, they would have been delivered to the addressee.

- d) The name, and address, of the Manufacturer of the proposed equipment should reflect the location of the OEM's design plant. The OEM's design plant should submit the engineering of all equipment systems proposed and must not be based in Hong Kong or elsewhere in Asia. Only OEMs of proven experience and proven track record, registered prior to completion of the contract, can be considered. As part of their bid, the contractor's proposed availability of the other equipment systems must be supported by a written statement of the equipment manufacturer's policies. The name, Appointed Engineer, of the OEM must be stated in the bid. In this regard, the OEM must be asked to supply the OEM's equipment. It will be the responsibility of the OEM to make provision for the availability of the equipment and materials of the equipment listed in the Vendor's schedule of material (see item 10).

The responsibility for providing material for the equipment systems must be supported separately by the OEM design provided. A bank guarantee for the equipment must be provided for the OEM design provided.

VENDOR SIGNATURE WITH SEAL

ANNEXURE - II
LIST OF INTERNATIONAL GATEWAY AIRPORTS

For air based consignment, terms of delivery will be on FCA basis from following listed airports only. Vendors are requested to verify this list for use before submission of offer.

SCHEDULE NO	COUNTRY	CURRENCY CODE	AIRPORT
D01	UK	GBP	LONDON (HEATHROW)
D02	UK	GBP	NEW CASTLE
D03	UK	GBP	OXFORD. CHETLAM
D04	UK	GBP	BRISTOL. WELLINGBOROUGH
D05	UK	GBP	BIRMINGHAM
D06	UK	GBP	EAST MIDLANDS
D07	UK	GBP	MANCHESTER
D08	UK	GBP	LEEDS
D09	UK	GBP	GLASGOW
D10	FRANCE	EURO	PARIS (ROISSY) & LYON
D11	SWEDEN	EURO	STOCKHOLM
D12	SWEDEN	EURO	GOTHENBERG & MALMO
D13	ITALY	EURO	ROMA, MILAN
D14	ITALY	EURO	TURIN, BOLOGNA, FLORENCE
D15	NETHERLANDS	EURO	AMSTERDAM, ROTTERDAM
D16	AUSTRIA	EURO	VIENNA, LINZ, GRAZ
D17	BELGIUM	EURO	ANTWERP, BRUSSELS
D18	DENMARK	DKK	COPENHAGEN
D19	JAPAN	JPY	TOKYO, OSAKA
D20	SINGAPORE	SGD	SINGAPORE
D21	CANADA	CAD	TORONTO
D22	CANADA	CAD	MONTREAL
D23	USA	USD	NEW YORK, BOSTON
D24	USA	USD	CHICAGO
D25	USA	USD	SAN FRANCISCO, LOS ANGELES
D26	USA	USD	ALANTA, HOUSTON
D27	GERMANY	EURO	MUNICH, KOLN, DUSSELDORF, HANNOVER, HAMBURG, STUTTGART, DAMSTADT, MANIHIEM, NURUMBERG
D28	GERMANY	EURO	FRANKFURT
D29	GERMANY	EURO	BERLIN
D30	SWITZERLAND	SFR	BASLE, ZURICH, GENEVA
D31	SPAIN	EURO	BARCELONA
D32	AUSTRALIA	AUD	SYDNEY
D33	AUSTRALIA	AUD	MELBOURNE
D34	AUSTRALIA	AUD	PERTH
D35	CZECH	EURO	PRAGUE
D36	HONG KONG	HKD	HONG KONG
D37	NEW ZELAND	NZD	AUCKLAND
D38	RUSSIA	USD	MOSCOW
D39	SOUTH KOREA	USD	KIMPO INTERNATIONAL, INCHEON
D40	FINLAND	EURO	HELSINKI
D41	ROMANIA	EURO	BUCHAREST
D42	NORWAY	EURO	OSLO
D43	IRELAND	EURO	DUBLIN
D44	ISRAEL	USD	TEL AVIV
D45	UAE	USD	DUBAI
D46	OMAN	USD	MUSCAT
D47	EGYPT	USD	CAIRO
D48	TAIWAN	USD	TAIPEI
D49	UKRAINE	USD	KIEV
D50	CHINA	USD	SHANGHAI, SHENZHEN
D51	PHILIPINES	USD	MANILA
D52	MALAYSIA	USD	KUALALUMPUR, PE NANG
D53	CYPRUS	USD	LARNACA
D54	SOUTH AFRICA	USD	JOHANNESBERG, DURBAN
D55	SLOVAKIA	EURO	BARTISLOVA
D56	SAUDI ARABIA	SAR	RIYADH
D57	TURKEY	EURO	ISTANBUL
D58	THAILAND	USD	BANGKOK
D59	BRAZIL	USD	SAO PAULO, RIO DE JANEIRO

ANNEXURE – III
DISCREPANCY IN WORDS & FIGURES – QUOTED IN PRICE BID

Following guidelines will be followed in case of discrepancy in words & figures-quoted in price bid:

(a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.

(b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

(d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

ANNEXURE - IV
Electronic Funds Transfer (EFT) OR
Paylink Direct Credit Form

Please Fill up the form in **CAPITAL LETTERS** only.

TYPE OF REQUEST(Tick one): _____ CREATE _____ CHANGE

BHEL Vendor / Supplier Code:

Company Name :

Permanent Account Number(PAN):

Address

City:

PINCODE

STATE

Contact Person(s)

Telephone No:

Fax No:

e-mail id:

1 Bank Name:

2 Bank Address:

3 Bank Telephone No:

4 Bank Account No:

5 Account Type: Savings/Cash Credit

6 9 Digit Code Number of Bank and branch
appearing on MICR cheque issued by Bank

7 Bank IFSC Code(applicable for NEFT)

8 Bank IFSC code(applicable for RTGS)

(Indian Financial System Code)

- A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.
- B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transferring Bank responsible.
- C This authority remains in full force until BHEL, EDN, Bangalore receives written notification requesting a change or cancellation.
- D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.

Date:

Authorised Signatory:

Designation:

Telephone No. with STD Code

Company Seal

Bank Certificate

We certify that _____ has an Account No _____ with us and we confirm that the bank details given above are correct as per our records.

Date:

(.....)

Place:

Signature

Please return completed form **along with a blank cancelled cheque or photocopy** thereof to:

Bharath Heavy Electricals Ltd,

Attn:

Electronics Division, Mysore Road,

BANGALORE - 560 026

In case of any Query, please call concerned purchase executive.

ANNEXURE - V
PRESENT PROCEDURE FOR SALE IN TRANSIT (HIGH SEA SALES)

In case of High Sea Sales, vendor should submit following documents:

1. ORIGINAL HIGH SEA SALES AGREEMENT

- Sale agreement (on Rs. 200/- non-judicial stamp paper & notarised with 2 witnesses with identity) has to be signed between BHEL and the Party importing material. The date of the sale documents should be in between the date of House Air Way Bill / Bill of Lading and before landing of the goods in Indian origin.
- The date of the stamp paper should be prior to the Air Way Bill / Bill of Lading date.
- Following shall be included in the High Sea Sales Agreement:
“THE BUYER ALSO UNDERTAKE DISCHARGES, THE OBLIGATION AND FULFILLMENT OF CONDITIONS, IF ANY, ATTACHED TO THE IMPORTATION, ASSESSMENT AND CLEARANCE OF THE GOODS IN TERMS CUSTOMS TARIFF ACT 1975, THE CUSTOMS ACT 1962 & RULES & REGULATIONS MADE THERE UNDER AND OTHER RELEVANT ACTS, ORDERS, NOTIFICATIONS”.

2. ORIGINAL INVOICES: INDIGENOUS RUPEE INVOICE & FOREIGN CURRENCY INVOICE

- Prices should be C.I.F., designated airport/seaport basis.
- I.E.C., C.S.T., K.S.T. Nos. to be mentioned.
- Description of item (Nomenclature), Unit & Quantity in both the Foreign Currency & the Indigenous Invoice in Rupee shall be exactly as per Purchase Order Description of item, Quantity and Unit. The Indigenous Invoice value shall be exactly as per Purchase Order value.
- Seller should give Foreign Currency Invoice from the original consignor. The Foreign Currency Invoice value should be at least 2% (two per cent) less than the Indigenous Rupee Invoice value in equivalent foreign currency.

4. ORIGINAL HOUSE AIR WAY BILL/ BILL OF LADING

- The sale agents should duly endorse House Air Way Bill (HAWB) for air shipments or original Bill of Lading (O.B.L.) for sea shipments and Foreign Currency Invoice in favour of BHEL-EDN.

5. ORIGINAL CARGO ARRIVAL NOTICE FROM FORWARDER.

6. ORIGINAL DELIVERY ORDER ISSUED IN NAME OF BHEL-EDN.

7. ORIGINAL PACKING LIST.

8. A LETTER TO THE COMMISSIONER OF CUSTOMS FOR EFFECTING ABOVE SALE.

9. A LETTER TO THE DEPUTY ASSESSOR (OCTROI) FOR EFFECTING ABOVE SALE IN FAVOUR OF BHEL.

REMARKS: In case vendor needs any clarifications on the above, the same may be sought in writing.

Annexure-VI
BHEL MEMBER BANKS (LIST OF CONSORTIUM BANKS)

BANK GUARANTEE (BG) SHALL BE ISSUED FROM THE FOLLOWING BANKS ONLY:

	Nationalised Banks		Nationalised Banks
1	Allahabad Bank	19	Vijaya Bank
2	Andhra Bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign Banks
5	Corporation Bank	21	CITI Bank N.A
6	Central Bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Ltd. (HSBC)
8	Indian Overseas Bank	24	Standard Chartered Bank
9	Oriental Bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private Banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC Bank
15	State Bank of Travancore	29	Kotak Mahindra Bank Ltd
16	UCO Bank	30	ICICI Bank
17	Union Bank of India	31	IndusInd Bank
18	United Bank of India	32	Yes Bank

Note:

- All BGs must be issued from BHEL consortium banks listed above.
- This list is subject to changes. Hence vendors are requested to check this list every time before issuing BGs.
- Bank Guarantees issued by Co-Operative Banks/Financial Institutions cannot to be accepted under any circumstance.

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at _____ (name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at _____² hereinafter referred to as the 'Vendor / Contractor / Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No _____ dated _____³ valued at Rs _____⁴ (Rupees -----) / FC _____ (in words _____) for _____⁵ (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to _____ % (_____ . Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, _____, (hereinafter referred to as the Bank), having registered/Head office at _____ and inter alia a branch at _____ being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -- -----⁶ (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the _____ bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till

all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We, _____ BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including _____⁷ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the _____⁸ we shall be discharged from all liabilities under this guarantee thereafter.

We, _____ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed _____⁶
- b) This Guarantee shall be valid up to _____⁷
- c) Unless the Bank is served a written claim or demand on or before _____⁸ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated _____.

Place of Issue _____.

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE

⁸ DATE OF EXPIRY OF CLAIM PERIOD

Annexure – VIII
(Applicable only for MSE suppliers)
Certificate by Chartered Accountant on Letter Head

This is to certify that M/s
.....(hereinafter referred to as 'Company')
having its registered office at is registered under MSMED Act 2006,
(Entrepreneur Memorandum No (Part-11 dtd
Category: (Micro/Small) (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as
per the latest audited financial year..... as per MSMED Act 2006 is as follows:

- 1. For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original
cost excluding land and building and the items specified by the Ministry of Small
Scale Industries vide its notification No.S.O.1722 (E) dated October 5, 2006:
Rs.....Lacs.
- 2. For Service Enterprises:** Investment in equipment (original cost excluding land and
building and furniture, fittings and other items not directly related to the service
rendered or as may be notified under the MSMED Act, 2006:
Rs.Lacs.

The above investment of Rs.Lacs in within permissible limit of
Rs.....Lacs for.....Micro / Small (Strike off which is not
applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (**Strike off which is not applicable**) and the date of graduation of such enterprise from its original category is
..... (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of
such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013
published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name:

Membership Number:

Seal of Chartered Accountant

Annexure-IX

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

_____. 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 Independent External Monitor(s), 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. He commits himself to observe the following principles during his 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 IPC/ PC 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 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.

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 Bidders(s)/ Contractor(s) from the tender process or take action as per the separate “Guidelines for Suspension 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 prior to the award 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 has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 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.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors

- 6.1 The Bidder(s)/ Contractor(s) undertake(s) to demand from his sub-contractors a commitment consistent with this Integrity Pact. This commitment shall be taken only from those sub-contractors whose contract value is more than 20% of Bidder's/ Contractor's contract value with the Principal.
- 6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- 6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders/ Contractors /Sub-contractors

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 Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- 8.2 The Monitor is 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 Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality.
- 8.4 The Principal will provide to the Monitor 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 Monitor the option to participate in such meetings.
- 8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or

take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

- 8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- 8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC 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 Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.10 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

- 9.1 This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.
- 9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.
- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement 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 agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal
(Office Seal)

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

Place-----

Date-----

Witness: _____

(Name & Address) _____

Witness: _____

(Name & Address) _____

Registration of Suppliers

unregistered Supplier: Supplier visits EPS at <https://bheleps.buyjunction.in>

- a. Supplier visits EPS at <https://bheleps.buyjunction.in>
- b. Clicks "REGISTER" for registration
- c. Fills up the Registration Page form
- d. MJ will ensure Authentication of Registration ¹
- e. Supplier logs in with the ID and password
- f. Supplier Maps the signing Certificate
- g. MJ will ensure the authentication the signing certificate ¹.
- h. Supplier Logs in to the system again and views the RFQ
- i. Supplier Attaches himself to the RFQ by clicking the Interested button
- j. Supplier fills the bid template and makes necessary attachments
- k. Supplier submits his bid by clicking CONFIRM.

NB:-

¹ -- BHEL Administrator or user will have no role for approving Registration and Open Tenders and DSC for Any supplier who has registered himself from the front END which is in case of OT.

- **For registered Supplier:**

- Supplier visits EPS home page
 - Supplier signs in with his/her user id and password
 - Selects the RFQ Code and views it.
 - Attaches himself to the RFQ by clicking the Interested button
 - Supplier fills the bid template and makes necessary attachments
 - Supplier submits his bid by clicking CONFIRM.
-