

Ref. Enquiry No.: PE/PG/KKN/E-6522/2020, Dated 04.09.2020

DUE DATE
15 SEP 2020
BY 02:00 PM

Dear Sir/ Ma'am

Subject: Open tender Enquiry for "HDPE PIPING AND FITTINGS" for 2x 1000 MWe Kudankulam Nuclear Power Plant - 3 & 4 as per Technical Specification No. PE-TS-456-100-M042, REV 00.

BHEL invites your offers for Design, Manufacture, Inspection and testing at Manufacturer's works, proper packing and delivery to site and supervision of E & C of **HDPE Piping and Fittings** as specified/ defined as per tender technical specifications ref. PE-TS-456-100-M042 Rev 00, amendment & agreements till placement of order **for 2x 1000 MWe Kudankulam NPP - 3 & 4**

Your offer shall be submitted in two parts strictly as per Clause-2.0 of the "Instructions to Bidders" of GCC Rev. 07, in sealed cover for the below mentioned equipment/system.

Item Description – HDPE PIPING AND FITTINGS			
Sl. No.	Project	TECHNICAL SPECIFICATIONS	Delivery completion schedule
1	2x 1000 MWe Kudankulam NPP - 3 & 4	PE-TS-456-100-M042 Rev 00	As per clause no. 15 below

Your best quotation/offer for the above requirement, in line with tender terms and conditions, should be submitted **online via e-procurement system**. It shall be the responsibility of the bidder to ensure that the tender is submitted **on or before the due date by 02:00 PM**. Part-I (techno-commercial) bids shall be opened at **03:00 PM** on the due date.

Note: 1. Detailed tender documents have been uploaded on following websites: -

<https://bhel.abcpocure.com>, www.bhel.com, www.bhelpem.com and www.eprocure.gov.in

Bidders are requested to upload their best offer on <https://bhel.abcpocure.com> only.

2. In case bidders are not interested to quote, please send us the regret by e-mail or letter.

ENQUIRY TERMS AND CONDITIONS:

1. Offers should be submitted/uploaded separately in two parts **online through e-procurement system** as follows:

Part-I: TECHNO-COMMERCIAL BID

Part-II: PRICE BID

For detailed instructions, please refer GCC Rev 07- Instructions to Bidders.

2. Bidders shall submit their offers meeting the requirements of the following tender documents indicated in BHEL PEM GCC Rev- 07 and other Terms and Conditions included in this Enquiry Letter. Weblink of GCC Rev 07 shall be as below, **bidders may download the GCC Rev 07 from the given weblink and go through the same before quoting: -**

<https://www.bhelpem.com/Documents/GCC/GCCRev07.pdf>

3. Bidders to note that following form the part of tender documents:

- General Conditions of Contract (GCC) Rev 07 comprising of: Instructions to Bidders and General Commercial Terms & Conditions
- Technical Specification
- Technical PQR
- Special Conditions of Contract (SCC Rev 00)
- Enquiry terms & conditions (NIT)
- Annexures I –V

4. Any hidden conditions/deviations mentioned elsewhere in offer and standard pre-printed terms & conditions of the tenderers shall not be considered valid.

Rahul Bhatnagar/Dy. Mgr/PGIII
PS-Project Engineering Management,
Power Project Engineering Institute,
Plot no. 25, Sector – 16A, Noida (UP) 201301, INDIA
(OFF) +91-120-4368727, (MOB.) +91 9654499303

Regd. Office
BHEL House Siri Fort
New Delhi-110049

Ref. Enquiry No.: PE/PG/KKN/E-6522/2020, Dated 04.09.2020

5. Tenders shall be submitted strictly in accordance with the requirements of the above-mentioned tender documents. Deviations (Technical as well as Commercial), if any, shall be listed out separately in Annexure-II of GCC Rev-07 along with reasons for taking such deviations in the bidding format in E-Procurement portal. Any deviations (Technical as well as Commercial) not mentioned in the Annexure-II shall not be considered. Bidders to note all the points mentioned in "Notes" of Annexure-II of GCC Rev.07.
6. If any bidder has mentioned the term "Not Applicable" / "not required" / "not quoted" in BHEL price format, the same to be substantiated by the bidder. If such item is required to be supplied for system completion in future, same will be supplied free of cost by the successful bidder.
7. Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any/all tender(s) in part or full without assigning any reason whatsoever.
8. Tenderers must enclose the Quality Plan in the prescribed format, for approval. Equipment will be dispatched only after Purchaser's/Owner's inspection of the hold points specified in the approved Quality Plan and issue of Material Dispatch Clearance Certificate (MDCC).
9. Offers should be submitted separately in two parts **online through e-procurement system only**, however, all correspondence thereof, shall be addressed to the following persons and sent at the following address:

Mr. Shamik Gupta/Dy. Engineer, PG-III E-mail: shamikgupta@bhel.in Ph. +91-120-4368949; Mob: 9716336332 M/s. Bharat Heavy Electricals Ltd., Project Engineering Management, PPEI Building, Plot No 25, Sector-16A, Noida-201301, U.P., INDIA	Mr. Rahul Bhatnagar/Dy. Mgr. PG-III E-Mail: rahulbhatnagar@bhel.in Ph. No. +91-120-4368727; Mob: 9654499303 M/s. Bharat Heavy Electricals Ltd., Project Engineering Management, PPEI Building, Plot No 25, Sector-16A, Noida-201301, U.P., INDIA
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10. Evaluation will be done on L1 (Total cost to BHEL excluding GST) basis. Incomplete offer or part offer of NIT BOM/BOQ shall be summarily rejected.
11. **Bidders to note that MODE OF EVALUATION FOR FINALISATION OF PRICES shall be price bid opening (through e procurement).**
12. **Govt. of India's Public Procurement Policy – Preference to Make in India Clause:** - "For this procurement, the local content to categorize a supplier as a Class I local supplier/ Class II local Supplier/ Non Local supplier and purchase preference to Class I local supplier, is as defined in Public Procurement (Preference to Make in India), (PPP-MII) Order 2017 dated 04.06.2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT".
 - The local supplier at the time of tender, bidding, solicitation, shall be required to provide self-certification that as per the offered item, they meet the requirements of Class I local supplier/ Class II local Supplier/ Non Local supplier as per the provisions of PPP-MII Order of Govt of India and relevant circulars issued by nodal ministry w.r.t. above mentioned orders and shall give details of location(s) at which the local value addition is made as per enclosed **annexure –IV to NIT / revised formats** which may be asked later.
 - Subject package is **divisible** in nature.
13. Bidder to note that this is a conditional Open Tender enquiry and the price bid (Part-II) opening shall be subject to following condition: -
 - A) Meeting of Technical PQR
 - B) Techno-commercial qualification/recommendation of bidder by the BHEL-PEM.
 - C) Approval of vendor from end Customer (NPCIL). Same shall be taken up by BHEL-PEM with customer. Bidders who are not approved from NPCIL (end customer) shall furnish the credentials along with their bid.

Ref. Enquiry No.: PE/PG/KKN/E-6522/2020, Dated 04.09.2020

14. Compliance of model clauses as provided in Annexure-III of Ministry of Finance Order (Public Procurement No. 1), F.no.6/18/2019-PPD issued on 23.07.2020 (Restrictions under Rule 144 (xi) of the GFR,2017) shall be applicable for subject tender. Model Certificates provided in same Annexure-III shall also be complied. Further, relevant clause of order no. 25-11/6/2018-PG dated 02.07.20 issued by MoP shall also be complied.

15. **Delivery Completion schedule:**

For Main Supply: - Four (04) months from drgs. /docs. approval in CAT-I issued by BHEL. Successful bidder to make 1st submission of drawing/docs within two (02) weeks' time from the date of PO. Vendor to re-submit Drawing/documents within 7 days, after incorporating BHEL comments. In case there are delays in drawing/docs submission and resubmission, that much delay would be reduced from delivery period. BHEL shall furnish comments / approval on each submission within 18 days from receipt. Delay in BHEL's comments/approval beyond 18 days shall also be considered for delay analysis.

Note: Drg. /doc. to be submitted by vendor after placement of PO shall be as per clause no. cl. No. 16.0 of Technical specification. Same is reproduced below:-

16.0 Drawings and Documents to be submitted by Vendors after placement of LOI/PO:

16.1 Category-A:

- i. GA / fabrication drawings of pipes and fittings (tees, reducers, bends, flanges, end caps, stub ends) showing all welding, connection details, clearances for Erection, matching, dimensions, tolerances, marking details etc. Bill of material shall show number, size, length, weight, specification, and standard of all the connecting pieces etc.
- ii. Duly signed and stamped Quality Plan of HDPE pipes and HDPE fittings.
- iii. Duly signed and stamped Quality Plan of CS Slip-on flange

Approval of above documents shall be required for manufacturing clearance and the same shall be considered for delay analysis by BHEL.

16.2 Category-B

- i. Design calculations of HDPE fittings as per ISO 4427 and Carbon Steel Slip-on flanges as per relevant codes.
- ii. Procedure for manufacturing and inspection of HDPE pipes & fittings.
- iii. In case Bidder employs Third party supervision, Bidder to submit third party's credentials to establish past experience of supervision or erection activity of HDPE pipe & fittings at site.
- iv. Documents mentioning procedure and pre-requisites for field hydrostatic test.
- v. Videography (2-5 mins of length) of activities involved in manufacturing, testing, and loading/unloading processes of HDPE pipes and fittings. The recorded videos are to be submitted to BHEL/NPCIL as and when required.

Note: Vendor shall prepare & submit 06 (Six) sets of all Drawings/Documents along with soft form.

For Supervision of E & C - Vendor to depute its service engineer for respective site activity within 15 days from BHEL's intimation (for deputing service engineer) for such site activity.

16. CIF is not available for this package.
17. Bidders to ensure that Third party/Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and E-mail Id etc. In case the same is found not available, BHEL has the right to reject such document from evaluation.
18. GeMAR id is GEM/GARPTS/20082020/6UV3IR8DZUFN.

Ref. Enquiry No.: PE/PG/KKN/E-6522/2020, Dated 04.09.2020

19. For bidders (who are not registered with BHEL-PEM) -Online Registration Portal is operational in BHEL. Registration in BHEL-PEM is not mandatory for this tender. However, Non-registered Vendors, who wish to apply for registration with BHEL-PEM, can apply through Online Registration Portal available at www.bhelpem.com → vendor section → Online Supplier Registration. All credentials and/or documents duly signed and stamped related to registration may be uploaded on the website and submit the application for registration.
20. All corrigenda, addenda, amendments, time extensions, clarifications etc. to the tender will be hosted on BHEL websites only (www.bhelpem.com, www.bhel.com & <https://bhel.abcpocure.com>) under subject tender reference. Bidders are requested to visit our websites from time to time to keep themselves updated. Bidders may go through the Sellers' manual & Help documents provided on E-Procurement Portal website & obtain required Digital Signature Certificate for participating in the subject Tender. For Bidders' convenience, the Helpdesk Nos. of E-Procurement Portal are also listed below:

Name	Contact Nos.	e-mail ID	Role	Location
Mukunthan	+91 6353215001	Trichy.bhel@eptl.in	Support Executive	Trichy
Tej Singh	+91 6353215002	Bhopal.bhel@eptl.in	Support Executive	Bhopal
Sanjeev Kumar	+91 6353215003	Jhansi.bhel@eptl.in	Support Executive	Jhansi
Gaurav Panwar	+91 6353215004	Haridwar.bhel@eptl.in	Support Executive	Haridwar
Mallikarjun	+91 6353215005	Bengaluru.bhel@eptl.in	Support Executive	Bangalore
Avinash Govu	+91 6353215007	Hyderabad.bhel@eptl.in	Support Executive	Hyderabad
Swapnil Hamilton	+91 7940270549	swapnil.h@eptl.in	Support Executive	HO- Ahmedabad
Hardik Oza	+91 7940270560	Hardik.oza@eptl.in	Support Executive	HO- Ahmedabad
Ankur Bhatt	+91 7940270590	ankur.bhatt@eptl.in	Support Executive	HO- Ahmedabad
Prashant Rajyaguru	+91 7940270545	prashant@eptl.in	AM-Implementation & Support	HO- Ahmedabad
Dharam Rathod	+91 7940270596	dharam@eptl.in	Mgr – Implementation & Support	HO- Ahmedabad
Pradip Parmar	+91 7940270532	pradip@eptl.in	SM – Implementation & Support	HO- Ahmedabad
Devang Patel	+91 7940270576	devang@eptl.in	SM – Implementation & Support	HO- Ahmedabad

21. If any bidder uploads price bid in the unpriced section (techno-commercial attachment page) of the tender in e-procurement, in that case bidder(s) shall only be responsible for such mistake and any consequences thereof. Hence all bidders are requested to be more careful at the time of uploading the Unpriced and Price Bid for Part-I and Part-II respectively to avoid mismatch.
22. Bidders to note that "This item /package/system falls under the list of items defined in para 3 of ministry of finance guideline date 20.09.16 (procurement of items related to public safety, health, critical security operations and Equipments etc.) & hence criteria of prior experience /turnover shall be same for all bidders including start-up /MSME".
23. Documents specified in customer contract specification at cl. No. 14.12 onwards to 15.10 (**annexure V**) shall be provided by successful bidder after PO placement. These documents are in addition to final documents that are required to submit by bidder after dispatch as per provision of GCC/SCC
24. Bidders to note that as per priced bid (bidding form) uploaded on procurement portal, there are five annexures viz. Annexure IIA (**data sheet A** - straight pipes, annexure IIB (**data sheet A** - fittings), annexure II C (**data sheet A** - flange assembly), annexure II D (**data sheet B** - flange assembly) and annexure II E (supervision of E & C). There are also two grand totals (I & II) options ((i) consisting of automatic sum of evaluation prices (Ex works + Freight) of annexure II A, II B, II C & II E and (ii) automatic sum of evaluation prices (Ex works + Freight) of annexures II A, II B, IIC, IID & II E). Bidders to note that either of the option as mentioned above will considered for evaluation and accordingly for ordering. However, which option is to be considered by BHEL shall be informed to bidders before price bid (P-2) opening.

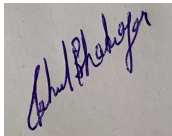
Ref. Enquiry No.: PE/PG/KKN/E-6522/2020, Dated 04.09.2020

25. All other terms and conditions of SCC (Rev 00) of project, NIT & GCC (Rev 07) shall be applicable for the subject package.
26. Due to COVID-19 pandemic condition prevailing in the country, BHEL/PEM may go for Remote Inspection of Offered items, if required. Vendors are requested to be equipped with the facilities/gadgets as indicated in the guidelines attached (**Annexure –I**) to take up the inspection REMOTELY.
27. Detailed offers are to be uploaded including the following along with the Price schedule as per BHEL format enclosed with NIT: -
- Acceptance of BHEL-PEM GCC Rev-07
 - Acceptance of Special Conditions of Contract (SCC Rev 00) for the project.
 - Technical & Commercial Deviations, if any along with Cost of withdrawal in bidding form
 - Along with your offer, please submit a copy of this letter duly signed & stamped on each page as token of acceptance of terms & instructions conveyed.
 - Un-Priced price format duly filled in 'Quoted' or 'Q' in each column/row in bidding form
 - Filled Format of Certification reg. Local content (annexure –IV)

All the above Tender Documents shall automatically become a part of the Order/Contract after its finalisation.

Thanking You

Yours faithfully,
For and on behalf of BHEL-PEM



Rahul Bhatnagar
(Dy. Mgr./PG-III/BHEL-PEM)

Enclosures:

1. Technical Specification No. PE-TS-456-100-M042, Rev00
2. Technical PQR
3. SCC Rev 00
4. Annexure –I Guidelines for remote inspection
5. BOQ - Annexure –IIA to II E
6. Instructions to Packing List (annexure –III)
7. Format of Certification reg. Local content (annexure –IV)
8. Annexure V (Additional documents)

Guidelines for Remote Inspection of PEM BOIs

- 1) **OBJECTIVE:**
To lay down the procedure for carrying out Remote Inspection of Bought-out Items (BOIs) for PEM suppliers wherever applicable.
- 2) **SCOPE:** It will cover suppliers for packages of PEM BOIs for various project requirements. Invitation is sent to the suppliers for remote inspection on applications like MS Teams, Webex, etc. by BHEL.
- 3) **MINIMUM REQUIREMENTS AT SUPPLIER'S WORKS:**
 1. Uninterrupted internet services
 2. Good internet bandwidth (Min 100 Mbps)
 3. Good resolution camera (2 nos) – one preferably CCTV (static at one place) and one hand hold (moving)
 4. Smart phone with minimum 8MPi camera front and back both with optical zoom facility suitable for using web applications like Webex, MicroSoft (MS) Teams, etc.
 5. Computer and Scanner with good resolution
 6. Digital signatures of supplier's Quality Engineer
 7. Availability of web applications like Webex, MicroSoft (MS) Teams, as required.
 8. All Test certificates, internal test reports, calibration reports, etc. for the items offered for inspection.
 9. Availability of the above to be submitted to BHEL two days in advance before inspection.
 10. Dedicated team from supplier side for facilitating inspection requirements.
 11. For ensuring proper visibility, the suggested Portable lighting sources (torch/ electric LED bulb of minimum 15 W) with no glare is to be ensured at offered job, location for remote inspection/testing. This is to be verified before start of the inspection.
 12. The GPS location co-ordinates or any method to locate inspection location shall be captured indicating the location of the Vendor-Premises of remote inspection/testing.
- 4) **PROCEDURE:**
 1. Supplier will raise the inspection call in BHEL - CQIR portal.
 2. Supplier shall ensure availability of minimum requirements at supplier's works as mentioned above at point 3.
 3. Before starting the inspection, the supplier shall submit the documents (TCs, internal test reports and calibration certificates as per approved QAP) two days before the date of inspection for review by BHEL and supplier shall coordinate with BHEL and if found satisfactory, inspection shall be considered for remote.
 4. Prior to commencement of remote inspection, a pre inspection meeting shall be organized by BHEL inspector with supplier to ascertain the readiness for remote inspection.
- 5) During inspection, supplier shall share the location on Google maps for verifying the address of the manufacturer. Location may be captured by BHEL as screenshot.
 1. Inspection shall be on the basis of approved Quality Plans and associated reference documents mentioned.
 2. For witnessing inspection, supplier shall bring the mobile video camera near to the surface of the equipment or as per requirement of the inspector for clarity in viewing the test/ equipment which shall be the responsibility of supplier. Supplier shall ensure that proper lighting is available during live video streaming.
 3. Before start of the inspection, inspector shall ensure that all instruments shall have valid calibration report. Supplier shall ensure use of digital instruments preferably for inspection to the extent possible.
 4. Details of supplier's dedicated team handling the remote inspection shall also be incorporated in the CQIR.
 5. All details of inspection/ testing referred documents shall be mentioned in the CQIR. Recording of remote inspection shall be maintained by the BHEL inspector and this recording (unedited) shall be maintained at BHEL system for a minimum period of 3 years or till the warranty period whichever is later.

6. PEM (Engineering) shall accord final technical clearance, in case of any deviation in inspected item noticed during inspection.
 7. Inspection shall be conducted by PEM-Q&BE assigned inspector along with PEM-Engg (if required). CQIR shall be prepared and maintained by PEM-Q&BE.
 8. PG will issue MDCC on the basis of acceptance of inspected items along with accepted packing photographs as per contract provisions.
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- 6) **UNDERTAKING BY VENDOR:** Material inspected through remote inspections is meeting all technical requirements of BHEL. In case of any discrepancy from the above procedure/ material inspected, if found later, vendor will replace the materials without any cost implication to BHEL.
 - 7) Vendor shall provide the signed and stamped of the above guidelines to BHEL as a token of acceptance.

ANNEXURE -II A to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

A.	PIPE STRAIGHT LENGTHS									
[1] Sl. No.	[2] System / Service description	[3] Standard	[4] HDPE Pipe Rating*	[5] Operating Pressure (MPa)	[6] Operating Temp (deg. C)	[7] Hydraulic Test Condition Pressure (MPa)	[8] Hydraulic Test Condition Temp (deg. C)	[9] HDPE Pipe size (OD mmX THK mm)	[10] Length (M)	
1.00	30PCB & 40PCB - (R37.KK34.3.PCB.TW.OK.WD001 & R37.KK34.4.PCB.TW.OK.WD001)									
1.01	30PCB24	ISO 4427 PE-100 SDR11	PN16	0.05	38	1	19	900x81.7	132	
1.02	30PCB34			0.05	38			560x50.8	114	
1.03	30PCB40			0.35	31			630x57.2	132	
1.04	00PCB41			0.05	38			900x81.7	210	
1.05	30PCB60			0.35	31			500x45.4	156	
1.06	30PCB61			0.35	31			500x45.4	138	
1.07	30PCB51BR001			0.4	31			355x32.2	228	
1.08	30PCB52BR001			0.4	31			355x32.2	150	
1.09	30PCB51BR002			0.05	38			355x32.2	30	
1.10	30PCB52BR002			0.05	38			355x32.2	48	
1.11	40PCB24			0.05	38			900x81.7	132	
1.12	40PCB34			0.05	38			560x50.8	114	
1.13	40PCB40			0.35	31			630x57.2	324	
1.14	40PCB60			0.35	31			500x45.4	156	
1.15	40PCB61			0.35	31			500x45.4	138	
2.00	30PUK/30PUJ & 40PUK/40PUJ (R28.KK34.30UQA.PUK.TW.OK.WD001, R28.KK34.40UQA.PUK.TW.OK.WD001)									
2.01	30PUK01	ISO 4427 PE-100 SDR11	PN16	0.44	31	0.66	10	400x36.3	54	
2.02	30PUK02							250x22.7	12	
								180x16.4	12	
								400x36.3	42	
2.03	30PUJ01							250x22.7	66	
								250x22.7	54	
								400x36.3	54	
2.04	30PUJ02							250x22.7	12	
								180x16.4	12	
								400x36.3	42	
2.05	40PUK01							250x22.7	12	
								180x16.4	12	
		400x36.3	42							
2.06	40PUK02	250x22.7	12							
		180x16.4	12							
		250x22.7	66							
2.07	40PUJ01							250x22.7	66	
2.08	40PUJ02							250x22.7	54	
3.00	30PUA & 40PUA (R28.KK34.30UQA.PUA.TW.OK.WD001 & R28.KK34.40UQA.PUA.TW.OK.WD001)									
3.01	30PUA10	ISO 4427 PE-100 SDR13.6	PN12.5	0.35	31	0.52	10	400x29.7	48	
3.02	40PUA10						10	400x29.7	48	
4.00	30PUN & 40PUN (R28.KK34.30UQA.PUN.TW.OK.WD001 & R28.KK34.40UQA.PUN.TW.OK.WD001)									
4.01	30PUN	ISO 4427 PE-100 SDR13.6	PN12.5	0.4	31	0.52	10	400x29.7	126	
4.02	40PUN							400x29.7	300	
5.00	30PUQ & 40PUQ - (R37.KK34.31UQZ.PUQ.TW.OK.WD001, R37.KK34.32UQZ.PUQ.TW.OK.WD001, R37.KK34.41UQZ.PUQ.TW.OK.WD001, R37.KK34.42UQZ.PUQ.TW.OK.WD001)									
5.01	30PUQ10BR005	ISO 4427 PE-100 SDR11	PN16	0.3	38	0.6	19	180x16.4	30	
5.02	30PUQ10BR006							180x16.4	24	
5.03	30PUQ20BR005							180x16.4	24	
5.04	30PUQ20BR006							180x16.4	18	
5.05	30PUQ30BR005							180x16.4	24	
5.06	30PUQ30BR006							180x16.4	30	
5.07	30PUQ40BR005							180x16.4	24	
5.08	30PUQ40BR006							180x16.4	30	
5.09	30PUQ10BR005							d160	12	
5.10	30PUQ10BR006							d63	6	
								d32	6	
								d20	6	
								d160	0	
5.11	30PUQ20BR005							d63	0	
								d32	0	
								d20	0	
								d160	0	
5.12	30PUQ20BR006							d63	0	
								d32	0	
								d20	0	
		d160	0							

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings

ANNEXURE -II A to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

PIPE STRAIGHT LENGTHS															
[1] Sl. No.	[2] System / Service description	[3] Standard	[4] HDPE Pipe Rating*	[5] Operating Pressure (MPa)	[6] Operating Temp (deg. C)	[7] Hydraulic Test Condition Pressure (MPa)	[8] Hydraulic Test Condition Temp (deg. C)	[9] HDPE Pipe size (OD mmX THK mm)	[10] Length (M)						
5.13	30PUQ30BR005							d160 d63 d32 d20	0 0 0 0						
5.14	30PUQ30BR006							d160 d63 d32 d20	0 0 0 0						
5.15	30PUQ40BR005							ISO 4427 PE-100 SDR11	PN16	0.3	38	0.6	19	d160 d63 d32 d20	0 0 0 0
5.16	30PUQ40BR006													d160 d63 d32 d20	0 0 0 0
5.17	40PUQ10BR005	ISO 4427 PE-100 SDR11	PN16	0.3	38	0.6	19	180x16.4	30						
5.18	40PUQ10BR006							180x16.4	24						
5.19	40PUQ20BR005							180x16.4	24						
5.20	40PUQ20BR006							180x16.4	24						
5.21	40PUQ30BR005							180x16.4	24						
5.22	40PUQ30BR006							180x16.4	24						
5.23	40PUQ40BR005							180x16.4	24						
5.24	40PUQ40BR006							180x16.4	30						
5.25	40PUQ10BR005							d160 d63 d32 d20	12 6 6 6						
5.26	40PUQ10BR006							d160 d63 d32 d20	0 0 0 0						
5.27	40PUQ20BR005							d160 d63 d32 d20	0 0 0 0						
5.28	40PUQ20BR006							d160 d63 d32 d20	0 0 0 0						
5.29	40PUQ30BR005							d160 d63 d32 d20	0 0 0 0						
5.30	40PUQ30BR006							d160 d63 d32 d20	0 0 0 0						
5.31	40PUQ40BR005							d160 d63 d32 d20	0 0 0 0						
5.32	40PUQ40BR006							d160 d63 d32 d20	0 0 0 0						
5.33	30PUQ10BR003							90x8.2	30						
5.34	30PUQ10BR004							90x8.2	30						
5.35	30PUQ20BR003							90x8.2	18						
5.36	30PUQ20BR004							90x8.2	18						
5.37	30PUQ30BR003							90x8.2	24						
5.38	30PUQ30BR004							90x8.2	24						
5.39	30PUQ40BR003							90x8.2	18						
5.40	30PUQ40BR004							90x8.2	12						
5.41	40PUQ10BR003							90x8.2	30						
5.42	40PUQ10BR004							90x8.2	30						
5.43	40PUQ20BR003							90x8.2	18						
5.44	40PUQ20BR004							90x8.2	18						
5.45	40PUQ30BR003							90x8.2	24						
5.46	40PUQ30BR004							90x8.2	24						
5.47	40PUQ40BR003							90x8.2	18						
5.48	40PUQ40BR004							90x8.2	12						
6.00	GML (R28.KK34.30UQA.GML.WK.OK.WD001 & R28.KK34.40UQA.GML.WK.OK.WD001)														
6.01	3GML30	ISO 4427 PE-63		0.3	38	0.45	20	63x5.8 d32 d20	30 0 0						

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings

ANNEXURE -II A to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

A. PIPE STRAIGHT LENGTHS									
[1] Sl. No.	[2] System / Service description	[3] Standard	[4] HDPE Pipe Rating*	[5] Operating Pressure (MPa)	[6] Operating Temp (deg. C)	[7] Hydraulic Test Condition Pressure (MPa)	[8] Hydraulic Test Condition Temp (deg. C)	[9] HDPE Pipe size (OD mmX THK mm)	[10] Length (M)
6.02	4GML30	PE 63 SDR11						63x5.8 d32 d20	30 0 0
7.0	Supervision of E & C								
7.1	LUMP SUM CHARGES PER VISIT FOR ENGINEER (EXCEPT DAILY CHARGES)	Refer note 10							10 Visit
7.2	LUMP SUM DAILY CHARGES FOR ENGINEER	Refer note 10							30 mandays (3 man days per visit)

General Notes:

1. For connection type:
 - a. Slip on flange at HDPE side of connection will be of ASME B16.5 and ASME B16.47 and would be mounted in the stub end of connecting HDPE pipe. Steel Slip on flange is in the supply scope of the bidder.
 - b. For flange connection of HDPE with steel pipe, the supply scope of steel/titanium flange along with fasteners and gaskets is in BHEL/NPCILL scope.
 - c. See Fig.1 in Cl.4 of technical specification in this regard.
2. All HDPE flange assembly consists of HDPE stub end and slip-on flange (CS) ASME B16.5/16.47.
3. [*] Given PN rating is for straight spool of HDPE pipe only. Vendor to take care of derating factors and calculate PN rating accordingly for all fittings (bends, tees, reducers, end caps etc). Fittings shall have same or better PN rating as compared to straight pipes.
4. Wherever pipe & fittings thickness is not mentioned, vendor to determine thickness depending upon given operating parameters / conditions / SDR or PN rating as per ISO 4427.
5. Vendor to match the end connections and ID for each pipe fittings including couplings and flanges with the dimensions mentioned in col[8]/[9] of Part-3.
6. PUK & PUJ systems
 - i. Tees of d400/d180, d250/d180, d180/d180 with branch side (180mm) to be connected to steel/titanium pipe with pipe size 159X4mm.
7. For GML System:
 - i. Straight length pipe is of PE-63 grade and 90deg Bends is of PE-100 grade.
 - ii. Stub end and slip on flange is of size DN90
8. For PUQ systems:
 - i. Sl. no. 5.01 to 5.08; 5.17 to 5.24:
 - a. HDPE flange assembly consisting of HDPE stub-end and slip-on flange (steel) is to be connected to either side of 150NB flanged Butterfly valve with end connection details as per ASME B16.5 and drilling as per ASME B16.5.
 - b. HDPE flange assembly to be connected to either side of 150NB SCNRV valve with end connection details as per ASME B16.5.
 - c. The bend lengths in this system with ODxthk 180X16.4mm to be maintained at '420mm'.
9. Bidder to quote for all items, in totality, mentioned in all Datasheet-A (Three Parts) and Datasheet-B.
10. For supervision, bidder to quote separately for 'per visit charges' (travel, accommodation, food etc.) and 'per Man-day charges' considering 10 visits and 30 man-days (3 man-days per visit). Based on BHEL requirement, if additional site visit(s) and/or manday(s) are required, bidder to comply and additional charges shall be calculated / paid on pro-rata basis.

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings
ANNEXURE -II B to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

B. HDPE FITTINGS

[1] Sl. No.	[2] System / Service description	[3] Standard of connecting HDPE pipe	[4] Operating Pressure (MPa)	[5] Operating Temp (deg. C)	[6] Hydraulic Test Condition Pressure (MPa)	[7] Hydraulic Test Condition Temp (deg. C)	[8] HDPE connecting Pipe Size (OD mmX THK mm)	[9] 90deg Bend (Nos.)	[10] 60deg Bend (Nos.)	[11] 45deg Bend (Nos.)	[12] 30deg Bend (Nos.)	[13] Other Bends (Nos.)	[14] Tee (Nos.)	[15] Reducer (Nos.)	[16] End Cap (Nos.)	[17] Remarks				
1.00	30PCB & 40PCB - (R37.KK34.3.PCB.TW.OK.WD001 & R37.KK34.4.PCB.TW.OK.WD001)																			
1.01	30PCB24	ISO 4427 PE-100 SDR11	0.05	38	1	19	900x81.7	4	0	2	0	-	0	-	0	-	0	-	0	
1.02	30PCB34		0.05	38			560x50.8	4	0	2	0	-	0	-	0	-	0	-	0	
1.03	30PCB40		0.35	31			630x57.2	1	0	0	0	48deg Bend 15deg Bend	2 2	-	0	-	0	-	0	
1.04	00PCB41		0.05	38			900x81.7	1	0	2	0	48deg Bend	2	-	0	-	0	-	0	
1.05	30PCB60		0.35	31			500x45.4	2	0	0	0	-	0	-	0	-	0	-	0	
1.06	30PCB61		0.35	31			500x45.4	2	0	0	0	-	0	-	0	-	0	-	0	
1.07	30PCB51BR001		0.4	31			355x32.2	3	0	0	0	-	0	-	0	-	0	-	0	
1.08	30PCB52BR001		0.4	31			355x32.2	3	0	0	0	-	0	-	0	-	0	-	0	
1.09	30PCB51BR002		0.05	38			355x32.2	0	0	0	2	-	0	-	0	-	0	-	0	
1.10	30PCB52BR002		0.05	38			355x32.2	2	0	0	0	-	0	-	0	-	0	-	0	
1.11	40PCB24		0.05	38			900x81.7	4	0	2	0	-	0	-	0	-	0	-	0	
1.12	40PCB34		0.05	38			560x50.8	4	0	2	0	-	0	-	0	-	0	-	0	
1.13	40PCB40		0.35	31			630x57.2	2	0	2	0	-	0	-	0	-	0	-	0	
1.14	40PCB60		0.35	31			500x45.4	2	0	0	0	-	0	-	0	-	0	-	0	
1.15	40PCB61		0.35	31			500x45.4	2	0	0	0	-	0	-	0	-	0	-	0	
2.00	30PUK/30PUJ & 40PUK/40PUJ (R28.KK34.30UQA.PUK.TW.OK.WD001, R28.KK34.40UQA.PUK.TW.OK.WD001)																			
2.01	30PUK01	ISO 4427 PE-100 SDR11	0.44	31	0.66	10	400x36.3 250x22.7 180x16.4	2 0 0	0 0 0	0 0 0	1 0 0	-	0	d400/d180 d250/d180 d180/d180	1 1 1	d400/d250 d250/d180	1 1	d180	1	Refer note no. 6 of Annexure - II A
2.02	30PUK02						400x36.3 250x22.7 180x16.4	2 0 0	0 0 0	1 0 0	0 0 0	-	0	d400/d180 d250/d180 d180/d180	1 1 1	d400/d250 d250/d180	1 1	d180	1	Refer note no. 6 of Annexure - II A
2.03	30PUJ01						250x22.7	6	0	2	0	-	0	-	0	d250/d180	1	-	0	
2.04	30PUJ02						250x22.7	6	0	2	2	-	0	-	0	d250/d180	1	-	0	
2.05	40PUK01						400x36.3 250x22.7 180x16.4	2 0 0	0 0 0	0 0 0	1 0 0	-	0	d400/d180 d250/d180 d180/d180	1 1 1	d400/d250 d250/d180	1 1	d180	1	Refer note no. 6 of Annexure - II A
2.06	40PUK02						400x36.3 250x22.7 180x16.4	2 0 0	0 0 0	1 0 0	0 0 0	-	0	d400/d180 d250/d180 d180/d180	1 1 1	d400/d250 d250/d180	1 1	d180	1	Refer note no. 6 of Annexure - II A
2.07	40PUJ01						250x22.7	6	0	2	0	-	0	-	0	d250/d180	1	-	0	
2.08	40PUJ02						250x22.7	6	0	2	2	-	0	-	0	d250/d180	1	-	0	
3.00	30PUA & 40PUA (R28.KK34.30UQA.PUA.TW.OK.WD001 & R28.KK34.40UQA.PUA.TW.OK.WD001)																			
3.01	30PUA10	ISO 4427 PE-100	0.35	31	0.52	10	400x29.7	3	0	2	3	17deg Bend	1	-	0	-	0	-	0	
3.02	40PUA10						400x29.7	3	0	2	3	17deg Bend	1	-	0	-	0	-	0	
4.00	30PUN & 40PUN (R28.KK34.30UQA.PUN.TW.OK.WD001 & R28.KK34.40UQA.PUN.TW.OK.WD001)																			
4.01	30PUN	ISO 4427 PE-100	0.4	31	0.52	10	400x29.7	3	0	2	0	-	0	-	0	-	0	-	0	
4.02	40PUN						400x29.7	3	0	2	0	-	0	-	0	-	0	-	0	
5.00	30PUQ & 40PUQ - (R37.KK34.31UQZ.PUQ.TW.OK.WD001, R37.KK34.32UQZ.PUQ.TW.OK.WD001, R37.KK34.41UQZ.PUQ.TW.OK.WD001, R37.KK34.42UQZ.PUQ.TW.OK.WD001)																			
5.01	30PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	180x16.4	6	0	0	0	-	0	-	0	d180/d160	1	-	0	Refer note 8.i.c of Annexure - II A
5.02	30PUQ10BR006						180x16.4	6	0	0	0	-	0	-	0	d180/d160	1	-	0	
5.03	30PUQ20BR005						180x16.4	5	0	0	0	-	0	-	0	d180/d160	1	-	0	
5.04	30PUQ20BR006						180x16.4	6	0	0	0	-	0	-	0	d180/d160	1	-	0	
5.05	30PUQ30BR005						180x16.4	6	0	0	0	-	0	-	0	d180/d160	1	-	0	
5.06	30PUQ30BR006						180x16.4	7	0	0	0	-	0	-	0	d180/d160	1	-	0	
5.07	30PUQ40BR005						180x16.4	7	0	0	0	-	0	-	0	d180/d160	1	-	0	
5.08	30PUQ40BR006						180x16.4	5	0	2	0	-	0	-	0	d180/d160	1	-	0	

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings
ANNEXURE -II B to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

B. HDPE FITTINGS

[1] Sl. No.	[2] System / Service description	[3] Standard of connecting HDPE pipe	[4] Operating Pressure (MPa)	[5] Operating Temp (deg. C)	[6] Hydraulic Test Condition Pressure (MPa)	[7] Hydraulic Test Condition Temp (deg. C)	[8] HDPE connecting Pipe Size (OD mmX THK mm)	[9] 90deg Bend (Nos.)	[10] 60deg Bend (Nos.)	[11] 45deg Bend (Nos.)	[12] 30deg Bend (Nos.)	[13] Other Bends (Nos.)		[14] Tee (Nos.)		[15] Reducer (Nos.)		[16] End Cap (Nos.)		[17] Remarks
5.09	30PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1		
5.10	30PUQ10BR006						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.11	30PUQ20BR005						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.12	30PUQ20BR006						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.13	30PUQ30BR005						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.14	30PUQ30BR006						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.15	30PUQ40BR005						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.16	30PUQ40BR006						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.17	40PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	180x16.4	6	0	0	0	- 0	- 0	d180/d160	1	- 0				
5.18	40PUQ10BR006						180x16.4	6	0	0	0	0	- 0	- 0	d180/d160	1	- 0			
5.19	40PUQ20BR005						180x16.4	5	0	0	0	0	- 0	- 0	d180/d160	1	- 0			
5.20	40PUQ20BR006						180x16.4	6	0	0	0	0	- 0	- 0	d180/d160	1	- 0			
5.21	40PUQ30BR005						180x16.4	6	0	0	0	0	- 0	- 0	d180/d160	1	- 0			
5.22	40PUQ30BR006						180x16.4	7	0	0	0	0	- 0	- 0	d180/d160	1	- 0			
5.23	40PUQ40BR005						180x16.4	7	0	0	0	0	- 0	- 0	d180/d160	1	- 0			
5.24	40PUQ40BR006						180x16.4	5	0	2	0	0	- 0	- 0	d180/d160	1	- 0			
5.25	40PUQ10BR005						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.26	40PUQ10BR006						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			
5.27	40PUQ20BR005						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63	1	d63/d32 d32/d20	1 1	d160	1			

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings
ANNEXURE -II B to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

[illegible]

[1] Sl. No.	[2] System / Service description	[3] Standard of connecting HDPE pipe	[4] Operating Pressure (MPa)	[5] Operating Temp (deg. C)	[6] Hydraulic Test Condition Pressure (MPa)	[7] Hydraulic Test Condition Temp (deg. C)	[8] HDPE connecting Pipe Size (OD mmX THK mm)	[9] 90deg Bend (Nos.)	[10] 60deg Bend (Nos.)	[11] 45deg Bend (Nos.)	[12] 30deg Bend (Nos.)	[13] Other Bends (Nos.)		[14] Tee (Nos.)		[15] Reducer (Nos.)		[16] End Cap (Nos.)		[17] Remarks	
5.28	40PUQ20BR006	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63 1	d63/d32 d32/d20 1 1	d160 1	1					
5.29	40PUQ30BR005						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63 1	d63/d32 d32/d20 1 1	d160 1	1						
5.30	40PUQ30BR006						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63 1	d63/d32 d32/d20 1 1	d160 1	1						
5.31	40PUQ40BR005						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63 1	d63/d32 d32/d20 1 1	d160 1	1						
5.32	40PUQ40BR006						d160 d63 d32 d20	0 1 0 0	0 0 0 0	0 0 0 0	- 0	d160/d63 1	d63/d32 d32/d20 1 1	d160 1	1						
5.33	30PUQ10BR003						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.34	30PUQ10BR004						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.35	30PUQ20BR003						90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0	
5.36	30PUQ20BR004						90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0	
5.37	30PUQ30BR003						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.38	30PUQ30BR004						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.39	30PUQ40BR003						90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0	
5.40	30PUQ40BR004						90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0	
5.41	40PUQ10BR003						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.42	40PUQ10BR004						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.43	40PUQ20BR003						90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0	
5.44	40PUQ20BR004						90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0	
5.45	40PUQ30BR003						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.46	40PUQ30BR004						90x8.2	5	0	0	-	0	-	0	-	0	-	0	-	0	
5.47	40PUQ40BR003						90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0	
5.48	40PUQ40BR004	90x8.2	4	0	0	-	0	-	0	-	0	-	0	-	0						
6.00	GML (R28.KK34.30UQA.GML.WK.OK.WD001 & R28.KK34.40UQA.GML.WK.OK.WD001)																				
6.01	3GML30	ISO 4427 PE-100 SDR11	0.3	39	0.45	20	63x5.8 d32 d20	5 2 0	0 0 0	0 0 0	0 0 0	- 0	d63/d63 d63/d32	1 2	d63/d90 d32/d20	6 2	- 0				
6.02	4GML30						63x5.8 d32 d20	5 2 0	0 0 0	0 0 0	- 0	d63/d63 d63/d32	1 2	d63/d90 d32/d20	6 2	- 0					

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings
ANNEXURE -II C to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

C. TRANSITION

[1] Sl. No.	[2] System description	[3] Standard of connecting HDPE pipe	[4] Operating Pressure (MPa)	[5] Operating Temp (deg. C)	[6] Hydraulic Test Condition Pressure (MPa)	[7] Hydraulic Test Condition Temp (deg. C)	[8] HDPE connecting Pipe Size	[9] Size of Metal connecting pipe	[10] Quantity (Nos.)	[11] Remarks (Refer notes of Annexure - IIA)
1.00	30PCB & 40PCB - (R37.KK34.3.PCB.TW.OK.WD001 & R37.KK34.4.PCB.TW.OK.WD001)									
1.01	30PCB24	ISO 4427 PE-100 SDR11	0.05	38	1	19	900x81.7	-	-	-
1.02	30PCB34		0.05	38			560x50.8	-	-	
1.03	30PCB40		0.35	31			630x57.2	-	-	
1.04	40PCB41		0.05	38			900x81.7	-	-	
1.05	30PCB60		0.35	31			500x45.4	-	-	
1.06	30PCB61		0.35	31			500x45.4	-	-	
1.07	30PCB51BR001		0.4	31			355x32.2	-	-	
1.08	30PCB52BR001		0.4	31			355x32.2	-	-	
1.09	30PCB51BR002		0.05	38			355x32.2	-	-	
1.10	30PCB52BR002		0.05	38			355x32.2	-	-	
1.11	40PCB24		0.05	38			900x81.7	-	-	
1.12	40PCB34		0.05	38			560x50.8	-	-	
1.13	40PCB40		0.35	31			630x57.2	-	-	
1.14	40PCB60		0.35	31			500x45.4	-	-	
1.15	40PCB61		0.35	31			500x45.4	-	-	
2.00	30PUK/30PUJ & 40PUK/40PUJ (R28.KK34.30UQA.PUK.TW.OK.WD001, R28.KK34.40UQA.PUK.TW.OK.WD001)									
2.01	30PUK01	ISO 4427 PE-100 SDR11	0.44	31	0.66	10	400x36.3	325x8	1	Flange assembly. Refer note no.6
							250x22.7	-	-	
							180x16.4	159x4	3	
2.02	30PUK02						400x36.3	325x8	1	Flange assembly
							250x22.7	-	-	
							180x16.4	159x4	3	
2.03	30PUJ01						250x22.7	219x8	1	Flange assembly Refer note no.6
2.04	30PUJ02						250x22.7	219x8	1	
2.05	40PUK01						400x36.3	325x8	1	
							250x22.7	-	-	
2.06	40PUK02						180x16.4	159x4	3	Flange assembly Refer note no.6
							400x36.3	325x8	1	
							250x22.7	-	-	
2.07	40PUJ01						180x16.4	159x4	3	Flange assembly
2.08	40PUJ02						250x22.7	219x8	1	
							250x22.7	219x8	1	
3.00	30PUA & 40PUA (R28.KK34.30UQA.PUA.TW.OK.WD001 & R28.KK34.40UQA.PUA.TW.OK.WD001)									
3.01	30PUA10	ISO 4427 PE-100	0.35	31	0.52	10	400x29.7	325x8	1	Flange assembly 325X8: Carbon steel
3.02	40PUA10						400x29.7	325x8	1	
4.00	30PUN & 40PUN (R28.KK34.30UQA.PUN.TW.OK.WD001 & R28.KK34.40UQA.PUN.TW.OK.WD001)									
4.01	30PUN	ISO 4427 PE-100	0.4	31	0.52	10	400x29.7	325x8	2	Flange assembly 325X8: Carbon steel
4.02	40PUN						400x29.7	325x8	2	
5.00	30PUQ & 40PUQ - (R37.KK34.31UQZ.PUQ.TW.OK.WD001, R37.KK34.32UQZ.PUQ.TW.OK.WD001, R37.KK34.41UQZ.PUQ.TW.OK.WD001, R37.KK34.42UQZ.PUQ.TW.OK.WD001)									
5.01	30PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	180x16.4	BFV SCNRV	2	Refer note no. 8.i.a Refer note no. 8.i.b
5.02	30PUQ10BR006						180x16.4	BFV SCNRV	2	
5.03	30PUQ20BR005						180x16.4	BFV SCNRV	2	Refer note no. 8.i.a Refer note no. 8.i.b
5.04	30PUQ20BR006						180x16.4	BFV SCNRV	2	
5.05	30PUQ30BR005						180x16.4	BFV SCNRV	2	Refer note no. 8.i.a Refer note no. 8.i.b
5.06	30PUQ30BR006						180x16.4	BFV SCNRV	2	
5.07	30PUQ40BR005						180x16.4	BFV SCNRV	2	Refer note no. 8.i.a Refer note no. 8.i.b
5.08	30PUQ40BR006						180x16.4	BFV SCNRV	2	
5.09	30PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	d160	-	-	-
							d63	-	-	
							d32	-	-	
							d20	-	-	
5.10	30PUQ10BR006						d160	-	-	-
							d63	-	-	
							d32	-	-	
							d20	-	-	
5.11	30PUQ20BR005						d160	-	-	-
							d63	-	-	
							d32	-	-	
							d20	-	-	
5.12	30PUQ20BR006						d160	-	-	-
							d63	-	-	
							d32	-	-	
							d20	-	-	
5.13	30PUQ30BR005						d160	-	-	-
							d63	-	-	
							d32	-	-	
							d20	-	-	
5.14	30PUQ30BR006						d160	-	-	-
							d63	-	-	
							d32	-	-	
							d20	-	-	
5.15	30PUQ40BR005						d160	-	-	-
							d63	-	-	
							d32	-	-	
							d20	-	-	

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings
ANNEXURE -II C to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET A)

C. TRANSITION

[1] Sl. No.	[2] System description	[3] Standard of connecting HDPE pipe	[4] Operating Pressure (MPa)	[5] Operating Temp (deg. C)	[6] Hydraulic Test Condition Pressure (MPa)	[7] Hydraulic Test Condition Temp (deg. C)	[8] HDPE connecting Pipe Size	[9] Size of Metal connecting pipe	[10] Quantity (Nos.)	[11] Remarks (Refer notes of Annexure - IIA)
5.16	30PUQ40BR006						d160 d63 d32 d20	- - - -	- - - -	-
5.17	40PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.18	40PUQ10BR006						180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.19	40PUQ20BR005						180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.20	40PUQ20BR006						180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.21	40PUQ30BR005						180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.22	40PUQ30BR006						180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.23	40PUQ40BR005						180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.24	40PUQ40BR006						180x16.4	BFV SCNRV	2 2	Refer note no. 8.i.a Refer note no. 8.i.b
5.25	40PUQ10BR005						d160 d63 d32 d20	- - - -	- - - -	-
5.26	40PUQ10BR006						d160 d63 d32 d20	- - - -	- - - -	-
5.27	40PUQ20BR005						d160 d63 d32 d20	- - - -	- - - -	-
5.28	40PUQ20BR006						d160 d63 d32 d20	- - - -	- - - -	-
5.29	40PUQ30BR005						d160 d63 d32 d20	- - - -	- - - -	-
5.30	40PUQ30BR006						d160 d63 d32 d20	- - - -	- - - -	-
5.31	40PUQ40BR005						d160 d63 d32 d20	- - - -	- - - -	-
5.32	40PUQ40BR006						d160 d63 d32 d20	- - - -	- - - -	-
5.33	30PUQ10BR003						90x8.2	-	-	-
5.34	30PUQ10BR004						90x8.2	-	-	
5.35	30PUQ20BR003						90x8.2	-	-	
5.36	30PUQ20BR004						90x8.2	-	-	
5.37	30PUQ30BR003	90x8.2	-	-						
5.38	30PUQ30BR004	90x8.2	-	-						
5.39	30PUQ40BR003	90x8.2	-	-						
5.40	30PUQ40BR004	90x8.2	-	-						
5.41	40PUQ10BR003	90x8.2	-	-						
5.42	40PUQ10BR004	90x8.2	-	-						
5.43	40PUQ20BR003	90x8.2	-	-						
5.44	40PUQ20BR004	90x8.2	-	-						
5.45	40PUQ30BR003	90x8.2	-	-						
5.46	40PUQ30BR004	90x8.2	-	-						
5.47	40PUQ40BR003	90x8.2	-	-						
5.48	40PUQ40BR004	90x8.2	-	-						
6.00	GML (R28.KK34.30UQA.GML.WK.OK.WD001 & R28.KK34.40UQA.GML.WK.OK.WD001)									
6.01	3GML30	ISO 4427 PE-100 SDR11	0.3	39	0.45	20	DN90	Valve flange B16.5 #150	10	Flange assembly
6.02	4GML30						DN90	Valve flange B16.5 #150	10	

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings

ANNEXURE -II D to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET B)

D. TRANSITION

[1] Sl. No.	[2] System description	[3] Standard of connecting HDPE pipe	[4] Operating Pressure (MPa)	[5] Operating Temp (deg. C)	[6] Hydraulic Test Condition Pressure (MPa)	[7] Hydraulic Test Condition Temp (deg. C)	[8] HDPE connecting Pipe Size	[9] Size of Metal connecting pipe	[10] Quantity (Nos.)	[11] Remarks	
1.00	30PCB & 40PCB - (R37.KK34.3.PCB.TW.OK.WD001 & R37.KK34.4.PCB.TW.OK.WD001)										
1.01	30PCB24	ISO 4427 PE-100 SDR11	0.05	38	1	19	900x81.7	820x12	1	Flange assembly	
1.02	30PCB34		0.05	38			560x50.8	530x12	1		
1.03	30PCB40		0.35	31			630x57.2	530x12	1		
1.04	00PCB41		0.05	38			900x81.7	-	-		
1.05	30PCB60		0.35	31			500x45.4	426x12	2		
1.06	30PCB61		0.35	31			500x45.4	426x12	2		
1.07	30PCB51BR001		0.4	31			355x32.2	325x8	2		
1.08	30PCB52BR001		0.4	31			355x32.2	325x8	2		
1.09	30PCB51BR002		0.05	38			355x32.2	325x8	1		
1.10	30PCB52BR002		0.05	38			355x32.2	325x8	1		
1.11	40PCB24		0.05	38			900x81.7	820x12	1		
1.12	40PCB34		0.05	38			560x50.8	530x12	1		
1.13	40PCB40		0.35	31			630x57.2	530x12	1		
1.14	40PCB60		0.35	31			500x45.4	426x12	2		
1.15	40PCB61		0.35	31			500x45.4	426x12	2		
2.00	30PUK/30PUJ & 40PUK/40PUJ (R28.KK34.30UQA.PUK.TW.OK.WD001, R28.KK34.40UQA.PUK.TW.OK.WD001)										
2.01	30PUK01	ISO 4427 PE-100 SDR11	0.44	31	0.66	10	400x36.3 250x22.7 180x16.4	- - -	- - -	-	
2.02	30PUK02						400x36.3 250x22.7 180x16.4	- - -	- - -		
2.03	30PUJ01						250x22.7	-	-		-
2.04	30PUJ02						250x22.7	-	-		
2.05	40PUK01						400x36.3 250x22.7 180x16.4	- - -	- - -		
2.06	40PUK02						400x36.3 250x22.7 180x16.4	- - -	- - -		-
2.07	40PUJ01						250x22.7	-	-		
2.08	40PUJ02						250x22.7	-	-		
3.00	30PUA & 40PUA (R28.KK34.30UQA.PUA.TW.OK.WD001 & R28.KK34.40UQA.PUA.TW.OK.WD001)										
3.01	30PUA10	ISO 4427 PE-100	0.35	31	0.52	10	400x29.7	-	-	-	
3.02	40PUA10						400x29.7	-	-		
4.00	30PUN & 40PUN (R28.KK34.30UQA.PUN.TW.OK.WD001 & R28.KK34.40UQA.PUN.TW.OK.WD001)										
4.01	30PUN	ISO 4427 PE-100	0.4	31	0.52	10	400x29.7	-	-	-	
4.02	40PUN						400x29.7	-	-		
5.00	30PUQ & 40PUQ - (R37.KK34.31UQZ.PUQ.TW.OK.WD001, R37.KK34.32UQZ.PUQ.TW.OK.WD001, R37.KK34.41UQZ.PUQ.TW.OK.WD001,										
5.01	30PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	180x16.4	-	-	-	
5.02	30PUQ10BR006						180x16.4	-	-	-	
5.03	30PUQ20BR005						180x16.4	-	-	-	
5.04	30PUQ20BR006						180x16.4	-	-	-	
5.05	30PUQ30BR005						180x16.4	-	-	-	
5.06	30PUQ30BR006						180x16.4	-	-	-	
5.07	30PUQ40BR005						180x16.4	-	-	-	
5.08	30PUQ40BR006						180x16.4	-	-	-	
5.09	30PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	d160 d63 d32 d20	- - - -	- - - -	-	
5.10	30PUQ10BR006						d160 d63 d32 d20	- - - -	- - - -		
5.11	30PUQ20BR005						d160 d63 d32 d20	- - - -	- - - -		
5.12	30PUQ20BR006						d160 d63 d32 d20	- - - -	- - - -		
5.13	30PUQ30BR005						d160 d63 d32 d20	- - - -	- - - -		
5.14	30PUQ30BR006						d160 d63 d32 d20	- - - -	- - - -		
5.15	30PUQ40BR005						d160 d63 d32 d20	- - - -	- - - -		
5.16	30PUQ40BR006						d160 d63 d32 d20	- - - -	- - - -		

PROJECT- 2X1000 MWe KKNPP
PACAKGE: HDPE Pipe and Fittings

ANNEXURE -II D to NIT NO. PE/PG/KKN/E-6522/20, Dated 04.09.20- BOQ (DATASHEET B)

D. TRANSITION

[1] Sl. No.	[2] System description	[3] Standard of connecting HDPE pipe	[4] Operating Pressure (MPa)	[5] Operating Temp (deg. C)	[6] Hydraulic Test Condition Pressure (MPa)	[7] Hydraulic Test Condition Temp (deg. C)	[8] HDPE connecting Pipe Size	[9] Size of Metal connecting pipe	[10] Quantity (Nos.)	[11] Remarks
5.17	40PUQ10BR005	ISO 4427 PE-100 SDR11	0.3	38	0.6	19	180x16.4	- -	- -	- -
5.18	40PUQ10BR006						180x16.4	- -	- -	- -
5.19	40PUQ20BR005						180x16.4	- -	- -	- -
5.20	40PUQ20BR006						180x16.4	- -	- -	- -
5.21	40PUQ30BR005						180x16.4	- -	- -	- -
5.22	40PUQ30BR006						180x16.4	- -	- -	- -
5.23	40PUQ40BR005						180x16.4	- -	- -	- -
5.24	40PUQ40BR006						180x16.4	- -	- -	- -
5.25	40PUQ10BR005						d160 d63 d32 d20	- - - -	- - - -	- -
5.26	40PUQ10BR006						d160 d63 d32 d20	- - - -	- - - -	- -
5.27	40PUQ20BR005						d160 d63 d32 d20	- - - -	- - - -	- -
5.28	40PUQ20BR006						d160 d63 d32 d20	- - - -	- - - -	- -
5.29	40PUQ30BR005						d160 d63 d32 d20	- - - -	- - - -	- -
5.30	40PUQ30BR006						d160 d63 d32 d20	- - - -	- - - -	- -
5.31	40PUQ40BR005						d160 d63 d32 d20	- - - -	- - - -	- -
5.32	40PUQ40BR006						d160 d63 d32 d20	- - - -	- - - -	- -
5.33	30PUQ10BR003						90x8.2	DN 80 Sh.40	1	Flange assembly
5.34	30PUQ10BR004						90x8.2	DN 80 Sh.40	1	
5.35	30PUQ20BR003						90x8.2	DN 80 Sh.40	1	
5.36	30PUQ20BR004						90x8.2	DN 80 Sh.40	1	
5.37	30PUQ30BR003	90x8.2	DN 80 Sh.40	1						
5.38	30PUQ30BR004	90x8.2	DN 80 Sh.40	1						
5.39	30PUQ40BR003	90x8.2	DN 80 Sh.40	1						
5.40	30PUQ40BR004	90x8.2	DN 80 Sh.40	1						
5.41	40PUQ10BR003	90x8.2	DN 80 Sh.40	1						
5.42	40PUQ10BR004	90x8.2	DN 80 Sh.40	1						
5.43	40PUQ20BR003	90x8.2	DN 80 Sh.40	1						
5.44	40PUQ20BR004	90x8.2	DN 80 Sh.40	1						
5.45	40PUQ30BR003	90x8.2	DN 80 Sh.40	1						
5.46	40PUQ30BR004	90x8.2	DN 80 Sh.40	1						
5.47	40PUQ40BR003	90x8.2	DN 80 Sh.40	1						
5.48	40PUQ40BR004	90x8.2	DN 80 Sh.40	1						
6.00	GML (R28.KK34.30UQA.GML.WK.OK.WD001 & R28.KK34.40UQA.GML.WK.OK.WD001)									
6.01	3GML30	ISO 4427 PE-100 SDR11	0.3	39	0.45	20	-	-	-	-
6.02	4GML30						-	-	-	

PROJECT: 2x 1000 MWe Kudankulam NPP - 3 & 4
PACAKGE: - HDPE Piping and Fittings
ENQUIRY NO. PE/PG/KKN/E-6522/20, Dated 04.09.20
ANNEXURE -III (TO) INSTRUCTIONS TO PACKING LIST

For faster verification of bills, successful bidder to submit detailed Bill of Material (BOM) at the time of drawings/ documents submission after placement of PO. Each item of the BOM to be uniquely identified with item code no. or item Sl. No. Supplier to ensure that all items which will find separate mention in the packing list are covered in this detailed BOM.

Supplier to also give the following undertaking in the BOM:

“The BOM provided herewith completes the scope (in content and intent) of material supply under PO No. Dated Any additional material which may become necessary for the intended application of the supplied items/package will be supplied free of cost in most reasonable time.

Packing List must indicate:

- a) Packing size
- b) Gross weight and net weight of each package
- c) Contents of the package with cross reference to BOM item code no. / Sl. No.
- d) Quantity of each items separately.

The packing list must cover all the BOM items.

Supplier to give following undertaking in the packing list:

The Packing list provided herewith is as per BOM approved under PO No. -----

ANNEXURE IV
2x 1000 MWe Kudankulam NPP - 3 & 4
HDPE Piping and Fittings
ENQ. NO. PE/PG/KKN/E-6522/20, Dated 04.09.20

Letter head of Company

Ref.....

Date.....

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

Subject: - Certification regarding local content

Reference: Tender Enquiry No-.....

Name of Package:

Dear Sir,

We hereby certify that items offered by us of(package name).....(Project Name/Rate contract) meets the requirement of minimum local content in line with clause no. ... of NIT and the Public Procurement (Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018 & 29.05.2019 & 04.06.20.

We further confirm that details of location at which the local value addition is made will be our registered works at(address of the works)

Yours very truly

..... (authorized signatory of company)

..... (firm name)

authorized signatory
of company

		Project - 2x 1000 MW Kudankulam Nuclear Power Plant	
		NUCLEAR POWER CORPORATION OF INDIA LIMITED (Directorate of Engineering – LWR)	
KUDANKULAM NUCLEAR POWER PROJECT - 3&4 TECHNICAL SPECIFICATION FOR HDPE PIPES		REV NO.	: R02
		DATE	: Feb, 2018
		PAGE No.	: Page 11 of 17

- 14.12 Material test certificates (physical property, chemical composition & heat treatment report) shall also be furnished for the pipes supplied.
- 14.13 Videography/digital photography carried out during manufacture, details of examination/testing, loading/unloading, shipment etc. shall be made available to purchaser as & when demanded. Same shall be transferred on CD and submitted to NPCIL on completion.
- 14.14 Contractor shall prepare history docket, for all the items covered under this tender and submit two (02) copies of the same along with the soft form.
- 14.15 The Vendor Data requirements (VDR) provides minimum list of documents to be submitted. Review/information category documents listed shall be taken as guidance. However, approved Document Control Index (DCI), including all required deliverables for completion of Contractor's scope of work shall be governing.

Sr. No.	DESCRIPTION	Documents to be submitted With Bid	Documents to be submitted After Placement of Order		Final Documents required after Completion
			Review	Information	
1.	Document Control Index (DCI)	-	✓		✓
2.	Deviation/Exception List	✓		-	-
3.	Vendor evaluation document	✓			
4.	Mechanical Datasheet	-	✓	-	✓
5.	Complete Mechanical Design Calculations including Lifting calculations	-	✓	-	✓
6.	General arrangement drawing giving design data, basic dimensions, thickness, pipe along with orientation and material specifications.	-	✓	-	✓
7.	Bill of material for each item showing part size, Quantity, Material specification, Scope of supply and weight etc.	-	✓	-	✓
8.	Procedure & Manuals for fabrication and Inspection of pipes.	-	✓	-	✓
9.	Approved QAP/ITP	-	✓	-	✓
10.	Safety procedure & safety hazard analysis.	-	✓	-	✓
11.	Material test certificates, if any	-	✓	-	✓
12.	Final Inspection Certificate and hydrostatic test certificate	-	✓	-	✓
13.	All Destructive/Non Destructive test reports	-	✓	-	✓
14.	List & Schedule of Sub-orders	-	-	✓	✓



NUCLEAR POWER CORPORATION OF INDIA LIMITED
(Directorate of Engineering – LWR)

KUDANKULAM NUCLEAR POWER PROJECT - 3&4
TECHNICAL SPECIFICATION FOR
HDPE PIPES

REV NO. : R02
DATE : Feb, 2018
PAGE No. : Page 12 of 17

15.	List of Spare parts with details like Part No., Material of Construction, Quantity, Size, Weight etc.	-	-	✓	✓
16.	Packing & Forwarding instructions.	-	-	-	✓
17.	Erection/Lifting Drawings including weights, centre of gravity and slinging facilities, Stiffing Details etc.)	-	✓	-	✓
18.	All Deviations/Concession Reports, if any	-	-	-	✓
19.	Construction Completion Certificate	-	-	-	✓
20.	Final as built drawings & Documents	-	-	-	✓

15.0 PACKAGING, MARKING& SHIPPING REQUIREMENTS

- 15.1 All pipes shall be marked in accordance with the applicable codes, standards and specifications.
- 15.2 Paint or ink for marking shall not contain any harmful metal which may cause any damage to HDPE material.
- 15.3 Pipes shall be dry, clean and free from moisture, dirt and loose foreign materials of any kind.
- 15.4 All the pipes, blocks, and fittings shall be numbered sequentially with reference to Piping block division plan for erection.
- 15.5 Both ends of the pipe shall be protected with end caps.
- 15.6 Pipes shall be properly supported & packed for rail transport or road transport from manufacturer's works to site, so that no transit damage occurs to any component.
- 15.7 Small components, not assembled with Equipment, shall be properly packed in totally enclosed boxes & properly marked with equipment & part number for identification.
- 15.8 No equipment shall be dispatched without the written shipping release from the Purchaser.
- 15.9 Preservation requirements shall be furnished by Contractor considering humid tropical climate with marine atmosphere for preserving the till the time of Erection.
- 15.10 All the parts and assembly units and welded joints shall be clearly marked in the fabrication drawings.