

TENDER SPECIFICATION

BHEL: PSSR: SCT: 2137

Balance works of Erection, alignment, welding, NDT, fixing of pipe supports, flushing and hydro testing as per requirement of Secondary cycle piping system and all associated Piping for Unit-3

**AT
KUDANKULAM NUCLEAR POWER PROJECT, TAMILNADU**

PRICE BID VOLUME –II



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector – Southern Region

BHEL Integrated Office Complex, TNEB Road

Pallikaranai, Chennai -600100

TENDER SPECIFICATION CONSISTS OF

Tender Specification

Volume - I

Book-I

Notice Inviting Tender

Volume-IA : Technical Conditions of Contract

Part I

Part II

Book-II

Volume-IB: Special conditions of Contract

Volume-IC: General conditions of Contract

Volume-ID : Forms & Procedures

Volume – II: Price Bid

PRICE BID

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PRICE BID

PART A

Instruction to Bidders:

1. The quantity indicated in the BOQ / Price bid (Part C) is approximate only and is liable for variation. Payment will be as per actual quantity executed as certified by BHEL Engineer.
 2. Tenderers are requested to affix their company seal and authorized signature in all pages.
 3. Bidders shall quote 'Total Amount' in the format enclosed as a separate Excel File in BHEL NIC e-Procurement portal for the subject tender and upload the same under 'Packet details - > Tender covers -> Finance '(Cover Type Description – Price Bid)' and same shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope of work defined in specification and in accordance with terms & conditions of the tender. Any other entry elsewhere in the price bid shall be treated as Null and Void. Quoting of rates in any other form/ formats will not be entertained.
 4. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
 5. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part-C.
 6. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
 7. Based on the quantities of individual item and the amount arrived in SI No: 6 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
 8. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.7 above.
 9. Note: BOQ ref no L8.1.1, L8.1.2, L8.1.3, L8.2.1, L8.2.2, L8.2.3, L8.4.1, L8.4.2, L8.4.3 Items were Manpower assistance is to be provided. Bidder to ensure minimum rates of remuneration to the various categories of workmen to be deployed as mentioned under VOLUME-IA PART – I CHAPTER – III Clause 1.3.15 "Fair Wages".
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Part C : Bill of Quantities**Tender Specification for Balance works of Secondary cycle piping system for Unit-3 at KUDANKULAM NUCLEAR POWER PROJECT, TAMILNADU of Unit # 3****at 2 X 1000 MWe Kudankulam Nuclear Power Plant Unit # 3 & 4 - TG & SWS Package**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
--	(Welding, Erection, NDT, Flushing and Testing of Pipelines) - Material Supply by NPCIL	--		
F.1	<p>Welding of CS pipe, Type-Butt Weld : Handling, cutting, edge correction (for pipe spools issued with prepared edges), removal of paint from the joint area, cleaning, fit up, welding using GTAW/ SMAW process including hookup joints, mechanical cleaning of weld joint, visual inspection, repair of welding if any, FME inspection as per manufacturer drawings, documents and specifications.</p> <p>The scope includes joint identification & marking by engraving, preparation of welding inspection report (WIR), QAP, WPS, PQR, JHA, scaffolding & platforms, manpower, welder qualification, P&M, tools & tackles, all consumables (excluding welding filler wire & electrode) etc</p> <p>Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.</p>	--		
F.1.5	Size 108 mm OD to 2420 mm OD, thickness upto 16mm	Inch Dia	32,600	.1695131
F.1.6	Size 108 mm OD to 2420 mm OD, thickness above 16mm and upto 28mm	Inch Dia	5,000	.0437628

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Tender Specification for Balance works of Secondary cycle piping system for Unit-3 at KUDANKULAM NUCLEAR POWER PROJECT, TAMILNADU of Unit # 3

at 2 X 1000 MWe Kudankulam Nuclear Power Plant Unit # 3 & 4 - TG & SWS Package

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.2	<p>Welding of small bore CS piping : Type-Butt Weld: Handling of pipe size ranging from 10 NB to 80 NB mm or 14 mm OD to 89 mm OD, cutting, removal of paint from the joint area, edge preparation, cleaning, fit up, welding using GTAW/ SMAW process including hookup joints, mechanical cleaning of weld joint, visual inspection, repair of welding if any, FME inspection as per manufacturer drawings, documents and specifications. The scope includes site survey, joint identification & marking by engraving, preparation of welding inspection report (WIR), QAP, WPS, PQR, JHA scaffolding & platforms, man power, welder qualification, P&M, tools & tackles, all consumables (excluding welding filler wire & electrode) etc . Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.</p>	Inch Dia	15,000	.0704659
F.3	<p>Welding of SS pipe, Type-Butt Weld : Handling, cutting, edge correction (for pipe spools issued with prepared edges), cleaning, fit up, purging-dam fixing, purging, welding using GTAW/SMAW process including hookup joints, mechanical cleaning of weld joint, visual inspection, repair of welding if any, FME inspection as per manufacturer drawings, documents and specifications. The scope includes joint identification & marking by engraving, preparation of welding inspection report (WIR), QAP, WPS, PQR, JHA, purging dam log sheet, scaffolding & platforms, man power, welder qualification, P&M, tools & tackles, all consumables (excluding welding filler wire & electrode except for temporary arrangements) etc. Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.</p>	--		

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.3.3	Size 108 mm OD to 2420 mm OD, thickness upto 16mm	Inch Dia	4,000	.0298227
F.4	<p>Welding of small bore SS piping Type-Butt Weld: Handling of pipe size ranging from 4 NB to 80 NB mm or 6 mm OD to 89 mm OD, cutting, removal of paint from the joint area, edge preparation, cleaning, fit up, welding using GTAW/ SMAW process including hookup joints, mechanical cleaning of weld joint, visual inspection, repair of welding if any, FME inspection as per manufacturer drawings, documents and specifications.</p> <p>The scope includes site survey, joint identification & marking by engraving, preparation of welding inspection report (WIR), QAP, WPS, PQR, JHA, scaffolding & platforms, man power, welder qualification, P&M, tools & tackles, all consumables (excluding welding filler wire & electrode) etc</p> <p>Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.</p>	Inch Dia	6,400	.0479482
F.5	<p>Welding of Titanium tube, Type-Butt Weld- Size upto 159 mm OD : Handling, cutting, edge correction (for pipe spools issued with prepared edges), cleaning, fit up, purging-dam fixing, purging, welding using GTAW process including hookup joints, mechanical cleaning of weld joint, FME inspection as per manufacturer drawings, documents and specifications with acceptance of EIC.</p> <p>The scope includes joint identification & marking by engraving, preparation of welding inspection report (WIR), QAP, WPS, PQR, JHA, purging dam logsheet, scaffolding & platforms, man power, welder qualification, P&M, tools & tackles, all consumables (excluding welding filler wire & electrode) etc</p> <p>Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.</p>	Inch Dia	500	.0076933

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F6	<p>Welding of CS pipes and fittings.Type-Fillet Weld: Work includes handling, cutting, grinding removal of paint from the joint area, cleaning, fit up, welding using GTAW/ SMAW process including hookup joints, cleaning of weld joint, visual inspection, repair of welding if any, FME inspection as per manufacturer drawings, documents and specifications. The scope includes site survey, joint identification & marking by engraving, preparation of welding inspection report (WIR), scaffolding & platforms, man power, P&M, tools & tackles, all consumables (excluding welding filler wire & electrode) etc. Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.</p>	--		
F.6.1	Pipe size ranging from 20 NB to 80 NB or 28 mm OD to 89 mm OD.	Inch dia	500	.003397
F.6.3	Size 108 mm OD to 2420 mm OD, thickness up to 16 mm	Inch dia	2,500	.0276338
F.7	Preparation of Weld edge (CS/SS) :	--		
F.7.1	Preparation of Weld edge (CS/SS) by bevelling machine-J/V- groove for pipe: Identification of pipe spool, marking, setting up of pipe bevelling machine, performing V or J- groove preparation, removing out all the debris, cleaning, visual inspection, preparation of reports, arrangement of necessary manpower, tools, tackles, scaffolding & platforms, consumables etc and work completion as per drawings, documents and specifications with acceptance of EIC.	Inch Dia	200	.0007915
F.7.2	Preparation of Pipe Weld Edge (CS/SS) by cutting and grinding operation : Identification of pipe spool, marking, cutting,grinding, preparing edge (v-groove), cleaning, visual inspection, preparation of reports, arrangement of necessary manpower, tools, tackles, scaffolding & platforms, consumables etc and work completion as per drawings, documents and specifications with acceptance of EIC.	Inch Dia	800	.00256

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.8	Erection of CS, SS and Ti piping systems of all sizes: Identification of pipe spool, handling, cutting, erection and alignment of CS, SS & Ti piping along with accessories, at various elevations and locations, FME inspection, preparation of erection reports, asbuilt drawings and work completion as per manufacturer drawings, documents and specifications with acceptance of EIC. The scope includes temporary supports, providing SS shims, scaffolding & platforms, man power, P&M, tools & tackles, all consumables(excluding welding filler wire & electrode) etc. Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.	Inch-Meter	123,000	.2223774
F.11	Cold bending of pipes : Fabrication of bends for pipes of diameter upto 50 mm using bending machine with dyes with internal mandrels, visual inspection, DPT, preparation of reports, arrangement of man power, tools & tackles, plant & machinery, consumables, scaffolding & platforms, cleaning aids etc as per drawings, documents and specifications with acceptance of EIC. Note : 1. DPT is in scope of work and no separate payment shall be made. 2. Sample bends for each pipe size shall be prepared and examined after sectioning for conformance with thickness and ovality acceptance as per standards.	Nos	250	.0006167
F.12	Assembly of Flanged joints : Identification of joints, handling, cleaning of gasket seating area, preparation of gasket for required flange size, placement of gasket, installation of fasteners, alignment, lubrication, sequential tightening by torque wrench, providing leak tight joint, preparation of flange alignment report, arrangement of man power, tools & tackles, plant & machinery, scaffolding & platforms, cleaning aids etc and work completion as per manufacturer drawings, documents and specifications with acceptance of EIC.	--		

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at 2 X 1000 MWe Kudankulam Nuclear Power Plant Unit # 3 & 4 - TG & SWS Package

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.12.1	Size upto 80 NB OD	SET	60	.0001989
F.12.2	Size from 100 NB OD -300 NB OD	SET	20	.0001811
F.12.3	Size above 300 NB OD	SET	70	.0016746
F.13	Valve Testing (CS/SS/Ti): Identification, de-preservation, handling, shifting of valves from stores/erection site to valve testing facility, installation of valve on test bench, testing of valves, removal & shifting of valve to erection site after testing, preparation of reports, man power, P&M, scaffolding & platforms, tools & tackles, including consumables like rubber, gaskets, cleaning kits etc. with acceptance of EIC.	--		
F.13.1	Depreserving ,testing & represerving of valves (up to 50 NB (including))	MT	10	.002022
F.13.2	Depreserving ,testing & represerving of valves (above 50 to 200 NB (including))	MT	40	.0058355
F.13.3	Depreserving ,testing & represerving of valves (above 200 NB)	MT	40	.0040327
F.14	Erection of Valves (CS/SS/Ti) : Handling, de-preservation, identification, pre-assembly, installation in design position , erection of manual and electric operated valves, FME, boxup, preservation, preparation of reports and carrying out all works as per manufacturer drawings, documents and specifications including temporary supports, scaffolding & platforms, man power, P&M, tools & tackles, all consumables etc with acceptance of EIC. Note: 1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 2. Arranging required scaffolding is in the scope of contractor.	--		
F.14.1	Shifting, handling and erection SS & CS valves (DN 15 TO 50 (including))	MT	10	.0024578

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.14.2	Shifting, handling and erection SS & CS valves (DN above 50 TO 200 (including)	MT	40	.0088453
F.14.3	Shifting, handling and erection SS & CS valves (DN above 200)	MT	100	.0214104
F.15	<p>Fabrication and erection of supports</p> <p>Identification and handling of various components of pipe supports, cutting, straightening, grinding, fabrication, fit up, welding with SMAW process, weld visual of joints and bolting.</p> <p>Shifting of pipe supports to the location, assembly, alignment, pad welding by GTAW, tacking in position, welding of pipe support saddle and its support metal structure.</p> <p>Spring height adjustment to the required value in cold condition, spring unit locking, pre-assembly of spring units, hangers, installation in design position, inspection/checking of elevation, spring unit lock release after hydro test, preparation of reports and work completion as per manufacturer drawings, documents and specifications with acceptance of EIC.</p> <p>The scope includes temporary supports, arrangement of SS shims, man power, scaffolding & platforms, tools & tackles, P&M, consumables (excluding welding filler wire & electrode), cleaning aids etc as with acceptance of EIC.</p> <p>Note:</p> <p>1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor.</p> <p>2. Arranging required scaffolding is in the scope of contractor.</p>	--		
F.15.1	Pipe supports for piping size from 14 mm OD to 89 mm OD	MT	100	.0268974
F.15.2	Pipe supports for piping size from 108 mm OD and above	MT	200	.0506996

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.18	<p>Stub/O-let drilling- Handling, shifting of pipe spools, marking of position and orientation, drilling of holes (primary and secondary) on pipe bosses/equipments/ pipe lines of carbon steel /stainless steel in shop/In-situ for sizes upto 65 mm diameter and depth upto 120 mm using portable drilling machines with special jigs, fixtures and arrestors along with drill bits/end mill cutter/ special cutting tools, FME inspection, preparation of reports, arrangement of man power, tools & tackles, plant & machinery, consumables, scaffolding & platforms, cleaning aids etc, as per drawings, documents and specifications and work completion with acceptance of EIC.</p> <p>Note :</p> <p>1. Stub/O-let drilling is inclusive of both primary & secondary drilling and drilling in number of stages.</p> <p>2. The drilling machine used shall have drill bit locking provision so as to prevent falling of drill bits inside the pipes/equipments</p>	Cubic-Cm	25,000	.00675
F.19	<p>Weld Joint Inspection by RT (Gamma Ray) :</p> <p>Identification of the weld joints, marking, radiographic examination of the weld joint including intersections by ISNT/ ASNT RT qualified personnel, developing of films, preparation of reports and submission to NPCIL for acceptance along with RT film, arrangement of man power, tools & tackles, plant & machinery, consumables, scaffolding & platforms, cleaning aids, storage of source etc, as per drawings, documents and specifications with acceptance of EIC.</p>	Inch Dia	10,000	.0204812
F.20	<p>Weld Joint Inspection by RT (X-ray) for Titanium piping:</p> <p>Identification, radiographic testing of the weld joints by ISNT/ ASNT RT qualified personnel, developing of films, interpretation, preparation of reports and submission to NPCIL for acceptance along with RT film, arrangement of man power, equipments, tools & tackles, consumables, cleaning aids, scaffoldings, platforms, handling safety arrangements and work completion as per drawings, documents and specifications as with acceptance of EIC.</p>	Inch Dia	500	.0027904

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.21	Weld Joint Inspection by UT (Ultrasonic Test): Identification of the weld joints, marking, pre-cleaning, ultrasonic examination of the weld joint including intersections by ISNT/ ASNT UT qualified personnel, post cleaning, preparation of reports and submission to NPCIL for acceptance including arrangement of man power, tools & tackles, plant & machinery, consumables, scaffolding & platforms, cleaning aids etc, as per drawings, documents and specifications with acceptance of EIC.	Inch Dia	12,500	.0294419
F.22	Weld Joint Inspection by DPT (Dye Penetrant Test): Identification of the weld joints, marking, pre-cleaning, dye penetrant examination of the weld joint by ISNT/ ASNT PT qualified personnel, post cleaning, preparation of reports and submission to NPCIL for acceptance including, arrangement of man power, tools & tackles, plant & machinery, consumables, scaffolding & platforms, cleaning aids etc, as per drawings, documents and specifications with acceptance of EIC.	Running Meter	1,000	.0046545
F.23	Hydro/Pneumatic test of Piping System : Making required arrangement on the erected pipelines for carrying out hydro/pneumatic testing, blanking, filling of pipeline, venting, pressurising, holding for required time, draining, drying, de-watering, cleaning, providing all required tools and tackles, blanks, hoses, clamps, calibrated PG, SRVs etc, preparation of as-built drawings, hydro-test scheme, CRR, test reports, arrangement of man power, tools & tackles, P&M, scaffolding & platforms, consumables (except welding electrode & filler wire), cleaning aids etc, as per drawings, documents, specifications and work completion as with acceptance of EIC. Note: 1. During testing of circuits, if leaks are observed, such circuits may need pressurization and testing more than once. Such re-testing and pressurization will be in the scope of the Contractor without any extra claim. 2. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor. 3. Arranging required scaffolding is in the scope of contractor.	Inch-Meter	98,000	.031286

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.29.6	<p>Fabrication and Erection of CS piping loop for flushing of piping systems : (Material supply by BHEL)</p> <p>Preparation of flushing drawings based on the NPCIL's flushing schemes and submission for approval, fabrication of mitre bend, reducer, Tee, blanks, flanges & spectacle flanges, erection and welding of temporary piping loop (CS) and supports, valves, strainers, gaskets and fasteners, submission of as built drawing of flushing arrangement, dismantling of temporary arrangement after flushing completion, depositing all materials to NPCIL's stores, preparation of reports, arrangement of man power, scaffolding & platforms, tools & tackles, P&M, consumables including welding filler wires / electrodes, cleaning aids etc, as per drawings, documents and specifications with acceptance of EIC.</p> <p>Note:</p> <p>1. Temporary structures shall be provided by BHEL on returnable basis. Required welding electrodes and consumables for erection of temporary structures is in the scope of the contractor.</p> <p>2. Arranging required scaffolding is in the scope of contractor.</p>	MT	104	.0281041
F.29.8	<p>Flushing of piping systems (water/steam/air) :</p> <p>Planning the flushing sequence, identification & marking of flushing loops, operating the valves , filling and venting the piping systems, operating pumps / compressors, open loop and closed loop flushing (loop by loop), flushing in number of stages in repetitive manner till acceptance by EIC, change over from one flushing loop to another, draining , drying of pipelines, dewatering of the sump, preparation of reports and work completion including arrangement of man power, scaffolding & platforms, tools & tackles, P&M, pumps & compressors, cleaning aids etc as per procedures with acceptance of EIC.</p>	Inch-Meter	206,500	.0430851

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.31	Digitization of RT films : Collection of RT films of various sizes, scanning and digitizing the films, converting to soft form in NPCIL acceptable formats, submitting the soft copies along with proper indexing for easy identification and retrieval, preparation of reports and completion of work with acceptance of EIC. Scope includes arranging all necessary plant & machinery, manpower, tools & tackles, consumables etc.	Inch-film	20,000	.0024035
L.8	Repair, Re-preservation and System Pre-handing over checks:	--		
L.8.1	Manpower assistance for repair : Providing manpower assistance along with tools and tackles and general consumables for repair of deformed structure/components and restoring to original shape by bend removal, straightening (with or without the application of heat), deformation correction etc., preparation of reports and work completion and as per the instructions of the EIC. Note: Carrying out such repair activities by the one labour in a day (8 hrs.) along with general consumables like wire brush, lint free cloth, emery etc and P&M for heating and bend removal, general tool kit will be treated as one operation day for each sub-item for the above works based on the instruction from EIC.	--		
L.8.1.1	Skilled man power operation	Operation-day	50	.000543
L.8.1.2	Semi-Skilled man power operation	Operation-day	75	.0007064
L.8.1.3	Un-Skilled man power operation	Operation-day	100	.0007336

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
L.8.2	<p>Manpower assistance for re-preservation of Equipment & Piping : Providing manpower assistance along with tools and tackles and general consumables for internal and external preservation work on static & rotary equipments as per the preservation document and technical specification of NPCIL involving activities such as handling, cleaning, painting (including peel-off paint), greasing on machined surfaces & fasteners, temporary blanking of the openings, covering of the equipments etc, adding and removal of silica gel, regeneration of silica gel, N2 purging & boost-up for static equipments, measurement of N2 parameters such as N2 pressure, purity & dew point, opening and closing of the manhole covers/inspection flanges, opening & closing of metallic cap and PVC cap, general cleaning of equipments, disassembly of equipment, complete overhauling, draining/filling of oil and assembly of the equipment, pump rotation, return of excess/unused materials to NPCIL stores, along with the necessary machinery, tools & tackles, lighting arrangements, cables, extension boards and applicable PPEs required for the completion of work including documentation work and as per the instructions of the EIC.</p> <p>Note: Carrying out such preservation activities by the one labour in a day (8 hrs.) along with general consumables like wire brush, lint free cloth, emery etc and general tool kit will be treated as one operation day for each sub-item.</p>	--		
L.8.2.1	Skilled man power operation	Operation-day	90	.0009774
L.8.2.2	Semi-Skilled man power operation	Operation-day	150	.0014127
L.8.2.3	Un-Skilled man power operation	Operation-day	150	.0011006

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
L.8.4	<p>Man power assistance for System Pre-handing over checks: Providing manpower assistance along with tools and tackles and general consumables for pre-handing over checks for activities such as cleaning and box-up of equipments, shifting of materials for supporting pre-handing over activities, bolt tightening, strainer/filter cleaning, valve opening/closing, gasket replacement, greasing, support spring measurements & adjustment of charged and hot systems etc preparation of reports and work completion and as per the instructions of the EIC.</p> <p>Note: Carrying out such pre-handing activities by the one labour in a day (8 hrs.) along with general consumables like wire brush, lint free cloth, emery etc and general tool kit will be treated as one operation day for each sub-item for the above works based on the instruction from EIC.</p>	--		
L.8.4.1	Skilled man power operation	Operation-day	90	.0009774
L.8.4.2	Semi-Skilled man power operation	Operation-day	150	.0014127
L.8.4.3	Un-Skilled man power operation	Operation-day	200	.0014675

Part C : Bill of Quantities

Tender Specification for Balance works of Secondary cycle piping system for Unit-3 at KUDANKULAM NUCLEAR POWER PROJECT, TAMILNADU of Unit # 3

at 2 X 1000 MWe Kudankulam Nuclear Power Plant Unit # 3 & 4 - TG & SWS Package

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
L.8.5	<p>Scaffolding works :</p> <p>Erection of scaffolding for making approach/working platforms to carry out preservation, inspection & prehanding over check activities and removal of the scaffolding after the completion of the work as directed by EIC. The work includes handling, arrangement of manpower and material supply required for scaffolding like MS pipes, clamps and base plates, platforms, ladders, transportation, tool and tackles etc,preparation of reports with acceptance of EIC.</p> <p>Note: The base size (plan) & height of the scaffolding erected shall be considered for the measurement . No Inclined supports, lateral support bracing etc projected beyond base size shall be considered in measurement for payment.</p>	--		
L.8.5.1	Erection and dismantling of Scaffolding	Cubic Meter	2,500	.0082967
L.8.5.2	Hire charge for scaffolding erected as per the above item, number of days for rent will be considered from the next day of completion of erection and clearance by NPCIL safety department and up to date clearance (inclusive) from engineer for dismantling.	Cubic Meter Day	9,000	.0035599
L.9	Insitu Modification works:	--		
L.9.1	<p>Cutting by oxy acetylene up to 12mm:</p> <p>Identification, marking, handling, carrying out cutting and edge preparation of carbon steel plates of thickness up to 12mm using oxy acetylene flame and grinding machine, preparation of reports, including arrangement of manpower, P&M, scaffolding & platforms, tools & tackles and consumables etc and completion of work as per the instructions of EIC.</p>	Running Meter	60	.0012792
L.9.2	<p>Cutting by oxy acetylene above 12mm:</p> <p>Identification, marking, handling, carrying out cutting and edge preparation of carbon steel plates of thickness above 12mm using oxy acetylene and grinding machine, preparation of reports, including arrangement of manpower, P&M, scaffolding & platforms, tools & tackles and consumables etc and completion of work as per the instructions of EIC.</p>	Running Meter	30	.0008008

Part C : Bill of Quantities

Tender Specification for Balance works of Secondary cycle piping system for Unit-3 at KUDANKULAM NUCLEAR POWER PROJECT, TAMILNADU of Unit # 3

at 2 X 1000 MWe Kudankulam Nuclear Power Plant Unit # 3 & 4 - TG & SWS Package

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
L.9.3	Longitudinal seam Welding (Butt/groove) of carbon steel, low alloy steel, stainless steel components using SMAW process: The work includes Butt/groove welding of components including fit-up using SMAW process, grinding, cleaning, visual inspection, including arranging required manpower, plant & machinery, scaffolding & platforms, consumables (excluding electrode), tools & tackles etc, preparation of reports and completion of work as per drawings and specification with acceptance of EIC. Scope includes similar and dissimilar weldiing of Butt/groove joint configuration of various weld sizes.	Cubic-Cm	20,000	.0293407
L10	Shifting & handling of materials	--		
L.10.1	Shifting and handling of materials from NPCIL's store to BHEL/contractors store/yard for prefabrication,painting works or for any other work involved. Appr. distance between NPCIL to BHEL yard/stores is 6kms.	MT	1,000	.011482
L.10.2	Shifting and handling of materials from BHEL yard/stores/contractor's storage to erection site, handling of materials during erection/construction and inspection before erection of items including return of empty crating of FIM to NPCIL's store. Appr. distance between BHEL yard/stores to erection site is 6kms.	MT	1,400	.0160748
TOTAL Weightage				0.9999999