

Unprice Schedule													
NAME OF PROJECT:		4X225 MW ARUN-3 HEP			Enquiry No- PE/PG/ARN/E-6566/2020 Dated 08.12.2020								
NAME OF PACKAGE:		HVAC SYSTEM											
TECHNICAL SPECIFICATION No:		PE-TS-437-571-11000-A-A001			Supply					Services		Total Scope	
S. No.	DESCRIPTION			UNIT	QTY	Unit Ex-works duly packed (INR)	Total Ex- works duly packed (INR)	Freight in %	Freight Amount	Total F.O.R Price BHEL Office Jogbani.	Unit Price	Total Price	Total Price (Supply + Services) in INR
1	Total lump sum firm price inclusive of all prevailing taxes, duties and other levies for Supply part, Supervision of erection & commissioning and Mandatory spares comprising of design (i.e. Preparation and submission of drawing /documents including “As Built” drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles, fill of lubricants & consumables, mandatory spares along with spares for erection, start-up and commissioning as required, forwarding, proper packing, shipment and delivery at site, supervision of erection & commissioning, trial run at site and carrying out Performance guarantee tests at site, training of customer/client O&M staff at site and handover in flawless condition of the package to the end customer complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order.			Lot	1								
2	MAJOR BREAK-UP OF PRICES GIVEN IN 1.0 ABOVE.												
2.1	Total lump sum firm price inclusive of all prevailing taxes, duties and other levies for Supply part comprising of design (i.e. Preparation and submission of drawing /documents including “As Built” drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as applicable), fill of lubricants & consumables along with spares for erection as required, start-up and commissioning spares as required, forwarding, proper packing, shipment and delivery at site for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. (Break-up as per Annexure-I)			Lot	1								
2.2	Total lumpsum firm prices inclusive of all prevailing taxes, duties and other levies for Services part comprising of Supervision of Erection & Commissioning, trial run at site and carrying out Performance guarantee tests at site, training of customer/client O&M staff at site and handover in flawless condition of the package to the end customer complete with all accessories, for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. (Break-up as per Annexure-II)			Lot	1	NA							
2.3	Total lumpsum firm price inclusive of all prevailing taxes, duties and other levies for Mandatory Spares comprising of manufacture, fabrication, assembly, inspection / testing (as applicable) at vendor's & sub-vendor's works, painting, forwarding, proper packing, shipment, delivery at site & guarantee as per tender technical specification above, amendment & agreements till placement of order. (Price break up of mandatory spares is to be furnished as per Annexure- III)			Lot	1								

ANNEXURE - I : PRICE BREAKUP FOR SUPPLY PART

NAME OF PROJECT:			4X225 MW ARUN-3 HEP		
NAME OF PACKAGE:			HVAC SYSTEM		
TECHNICAL SPECIFICATION No:			PE-TS-437-571-11000-A-A001		
				Unit Ex- works duly packed (INR)	Total Ex-works duly packed (INR)
A	VENTILATION SYSTEM				
1	Fresh Air Centrifugal Blowers (3 X 50 %) each having minimum capacity of 2,50,000 CMH and minimum static pressure of 130 mm with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection, non return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of all floors of Power House including control block, Bus duct galleries, escape tunnels, cable access tunnel and Transformer Hall etc.	3	NO		
2	Fresh Air Centrifugal Blowers (2 X 100 %) each having minimum capacity of 35000 CMH and minimum static pressure of 90 mm with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection, Non return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of Butterfly Valve House.	2	NO		
3	Fresh Air Centrifugal Blowers (2 X 100 %) each having minimum capacity of 20000 CMH and minimum static pressure of 50 mm with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection, Non return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of all floors of Auxiliary Building at Dam site.	2	NO		
4	Exhaust Air Centrifugal Blowers (2X100 %) each having minimum capacity of 2,10,000 CMH and minimum static pressure of 100 mm with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection, Non Return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust air requirement of all floors of Power House including control block, Bus duct galleries, escape tunnels etc.	2	NO		
5	Exhaust Air Centrifugal Blowers (2X100 %) each having minimum capacity of 100000 CMH and minimum static pressure of 90 mm with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection, Non Return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust air requirement of Transformer Hall and cable tunnel.	2	NO		
6	Exhaust Air Centrifugal Blowers (2X100 %) each having minimum capacity of 21000 CMH and minimum static pressure of 60 mm with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection, Non Return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust air requirement of Butterfly Valve House.	2	NO		
7	Cabinet type centrifugal fans along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet Ventilation requirement of miscellaneous areas with minimum capacity as mentioned below:				
7.1*	Exhaust air fans of minimum capacity 15000 CMH, 120 mm static pressure - for Battery room inside Power House	1	NO*		
7.2*	Exhaust Air fans of minimim capacity 10000 CMH, 120 mm static pressure - for toilets inside Power House	1	NO*		
7.3*	Supply Air fans of minimum capacity 10000 CMH, 120 mm static pressure - for staircase pressurisation inside Power house/ Transformer Hall	1	NO*		
7.4*	Supply Air fans of minimum capacity 7500 CMH, 120 mm static pressure - for staircase pressurisation inside Power house/ Transformer Hall	1	NO*		
8*	Wall mounted dampers (gravity operated) along with all accessories for complete installation at site as per specifications and site requirement.	5	SQM*		
9*	Inlet Louvres along with all accessories for complete installation at site as per specifications and site requirement.	5	SQM*		
10	Axial flow supply fans with pre and fine filter (wall mounted) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories for system completeness and installation at site as per specifications and site requirement. (suitable for 415V/3-phase supply). Following fans shall have 30 mmwc static pressure.				
10.1*	Capacity 7500 CMH	2	NO*		
10.2*	Capacity 6000 CMH	4	NO*		
10.3*	Capacity 4000 CMH	5	NO*		
11	Axial flow supply fans with pre filter (wall mounted) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories for system completeness and installation at site as per specifications and site requirement (suitable for 415V/3-phase supply). Following fan shall have 20 mmwc static pressure.				
11.1*	Capacity 6000 CMH	1	NO*		
11.2*	Capacity 4000 CMH	1	NO*		
12	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted for system completeness and installation at site as per specifications and site requirement (suitable for 415V/3- phase supply). Following fan shall have 15 mmwc static pressure.				
12.1*	Capacity 7500 CMH	1	NO*		
12.2*	Capacity 4000 CMH	2	NO*		
12.3*	Capacity 2000 CMH	5	NO*		
13	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq cage induction motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted for system completeness and installation at site as per specifications and site requirement (suitable for 415V/3-phase supply) . Following fan shall have 10 mmwc static pressure.				
13.1*	Capacity 7500 CMH	1	NO*		

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				Unit Ex- works duly packed (INR)	Total Ex-works duly packed (INR)
13.2*	Capacity 6000 CMH	1	NO*		
13.3*	Capacity 4000 CMH	6	NO*		
13.4*	Capacity 2000 CMH	5	NO*		
14	Exhaust fan (propeller type) completes with induction motor & mounting frame MS rain protection cowl, bird screen and all other accessories for system completeness and installation at site as per specifications and site requirement (suitable for 240V/ 1 phase). Following fan shall have 5 mmwc static pressure.				
14.1*	Capacity 1200 CMH	10	NO*		
B	AIR CONDITIONING SYSTEM				
1	AIR COOLED DUCTABLE TYPE SPLIT UNITS consisting of outdoor unit (having compressor condenser coils with fan and motor), indoor unit (having evaporator coil, filter,fan with motor), interconnecting refrigerant piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator / MCB, fixing frame for indoor and outdoor unit, drain piping up to nearest drain point, piping support, Stabilizer,etc. and all other accessories for system completeness and installation at site as per specifications and site				
1.1*	15 TR net capacity (415 V, 3 phase with isolation switch).	2	NO*		
1.2*	10 TR net capacity (415 V, 3 phase with isolation switch).	4	NO*		
1.3*	5 TR net capacity (415 V, 3 phase with isolation switch).	2	NO*		
2	MONSOON REHEATING / WINTER HEATING KIT comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc. for Air conditioning areas served with ductable Split AC of below mentioned capacities				
2.1*	2 KW	1	NO*		
2.2*	3 KW	1	NO*		
2.3*	5 KW	1	NO*		
3	Humidifier complete with humidistat, safety controls, make up water piping from make up tank / nearest source of water, valves fittings and all other accessories Air Conditioning areas served with ductable Split AC of below mentioned capacities				
3.1*	15 TR net capacity	1	NO*		
3.2*	10 TR net capacity	1	NO*		
3.3*	5 TR net capacity	1	NO*		
4	AIR COOLED NON DUCTABLE TYPE SPLIT UNITS consisting of outdoor unit (having compressor condenser coils with fan and motor), indoor unit (having evaporator coil, filter,fan with motor), interconnecting refrigerant piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator / MCB, fixing frame for indoor and outdoor unit, drain piping up to nearest drain point, support for piping, Stabilizer,etc. and all other accessories for system completeness and installation at site as per specifications and site requirement (Maximum available BEE star Rating)				
4.1*	2.0 TR capacity (non-ductable type, 240 V, 1 phase isolation switch)	15	NO*		
4.2*	1.5 TR capacity (non-ductable type, 240 V, 1 phase isolation switch)	4	NO*		
5	Cassette AC (non ductable type) with isolation switch, i.e.e MCB of suitable rating as specified, voltage stabilizer, cabling, all supporting structure and refrigerant piping to suite actual site conditions, drain piping up to nearest drain, support for piping etc. and all other accessories for system completeness and installation at site as per specifications and site requirement.				
5.1*	4 TR actual capacity	1	NO*		
5.2*	3 TR actual capacity	1	NO*		
5.3*	2 TR actual capacity	1	NO*		
6	Fine filter arrangement mounted on ducting along with all accessories for rooms provided with ductable split AC	1	LOT		
7*	Thermal Insulation for Air conditioning System with material and finish as per specifications, adhesives, jointing tape and all other required accessories for installation of insulation at site.	1500	SQM*		
C	ITEMS COMMON FOR AIR CONDITIONING AND VENTILATION SYSTEM				
1	GSS zinc coating 275 gms/ m² finished ducting complete with hangers, tie rods, gaskets, sealant, adhesive , nut, bolt, locknut, hilti ,bracing and all other accessories as required for installation of ducting at site as per specifications and site requirement.				
1.1*	18G.	7000	SQM*		
1.2*	20G.	4500	SQM*		
1.3*	22G.	4000	SQM*		
1.4*	24G.	2000	SQM*		
2*	MS Duct With Epoxy paint for battery room complete with hangers, tie rods,gaskets, sealant, adhesive , nut, bolt, lock nut, hilti, bracing and all other accessories as required for installation of ducting at site as per specifications and site requirement.	1000	SQM*		
3	Fire damper.				
3.1*	Fire damper with auto resetting, limit switches, indication lamps and all other accessories required for system completeness and installation at site as per specifications and site requirement.	40	SQM*		
3.2*	Motorized actuator with single phase power supply for the above fire damper with all accessories required for system completeness and installation at site as per specifications and site requirement.	30	NO*		
3.3*	Fusible Link type Fire Damper with all accessories required for system completeness and installation at site as per specifications and site requirement.	10	SQM*		
4*	VOLUME CONTROL DAMPERS in GSS construction as per specifications for supply / return ducts complete with fixing arrangement.	30	SQM*		
5*	MOTORIZED VOLUME CONTROL DAMPERS in GSS construction as per specifications for supply / return ducts complete with fixing arrangement.	40	SQM*		
6*	Motorized actuator with single phase power supply for the above VCD with all accessories required for system completeness and installation at site as per specifications and site requirement.	30	NO*		

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				Unit Ex- works duly packed (INR)	Total Ex-works duly packed (INR)
7	Grills / Diffusers				
7.1*	SUPPLY AIR DIFFUSERS / GRILLS with VCD (Extruded Aluminium powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc	10	SQM*		
7.2*	RETURN AIR DIFFUSERS / GRILLS without VCD (Extruded Aluminium powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc	10	SQM*		
7.3*	SUPPLY AIR DIFFUSERS / GRILLS with VCD (MS Powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc	50	SQM*		
7.4*	RETURN AIR DIFFUSERS / GRILLS without VCD (MS Powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc	30	SQM*		
7.5*	RETURN AIR DIFFUSERS / GRILLS without VCD (MS epoxy painted) complete with fixing frames, nuts, bolts, gaskets, washers etc	10	SQM*		
8	Local Control Panels along with support structure for HVAC system for completeness of HVAC system as per tender specification	1	LOT		
9	FIELD INSTRUMENTS like transmittermeters, gauges, switces etc. for measurement of flow, temperature, pressure, level, humidity and other instrument required for local monitoring & control etc for HVAC System alongwith all hook up accessories for system completeness and insatllation at site.	1	LOT		
10	Electrical Switchboards, LPBS, Local Motor Starters, Cable trays, Tray support, Termination & Jointing kit, cabling items, Above ground earthing material, LT power cables, LT control cables, Screened control cables etc. for completeness of HVAC system.				
10.1	LV Switchgear (panels, feeder modules, cabinet etc.) with base frame and angle/channel for floor mounting/wall mounting				
a	Power House & Transformer Hall Switchboard-A (800A, 415V, 3PH-4 wire, Incomer power cable size - 2 RUN-1C-400 SQMM/Phase, 1RUN-1C-400 SQMM Neutral, floor mounted) with incomer & buscoupler as breaker and outgoing feeder with breaker/MCCB as applicable.	1	LOT		
b	Power House & Transformer Hall Switchboard-B (1000A, 415V, 3PH-4 wire, Incomer power cable size - 2 RUN-1C-400 SQMM/Phase, 1RUN-1C-400 SQMM Neutral, floor mounted) with incomer & buscoupler as breaker and outgoing feeder with breaker/MCCB as applicable.	1	LOT		
c*	Power House ACDB (100A, 415V, 3PH-4 wire, incomer power cable size - 3.5C-50 sqmm) incoming & outgoing feeder with MCCB.	2	NO*		
d	Butterfly valve house switchboard (400A, 415V, 3PH-4 Wire, Incomer Power Cable Size - 1RUN-1C-240 SQMM/Phase, 1RUN-1C-120 SQMM Neutral) with incomer, buscoupler and outgoing feeder with MCCB.	1	LOT		
e	Dam site Main control building ACDB (63A, 415V, 3PH-4 wire, incomer power cable size - 3.5C-25 sqmm) incoming & outgoing feeder with MCCB.	1	NO		
f	Dam site Main control building ACDB (100A, 415V, 3PH-4 wire, incomer power cable size - 3.5C-50 sqmm) incoming & outgoing feeder with MCCB.	1	NO		
g	Dam site Auxiliary building ACDB (63A, 415V, 3PH-4 wire, incomer power cable size - 3.5C-25 sqmm) incoming & outgoing feeder with MCCB.	1	NO		
10.2	Local Push Button Stations (LPBS) for motor drives.	1	LOT		
10.3	Local Motor Starter panel for Supply and Exhaust fans of smaller rating for local control	1	LOT		
10.4	Cabling Items (Cable tray, tray support, clamps, tie, connector, cable glands & lugs, termination & joining kit and cable junction box etc.)	1	LOT		
10.5	Above Ground Earthing Material	1	LOT		
10.6	LT Power Cables	1	LOT		
10.7	LT Control Cables	1	LOT		
10.8	Screend (instrumentation) Control Cables	1	LOT		
10.9	Insulated Mats for LT boards mentioned under S.No. 10.1 above	1	LOT		
10.10	Communicable ethernet switches,CAT-6E and OFC cable for numerical relays integration of LT boards(as applicable) mentioned under S.No.. 10.1 above. All the numerical relays to be integrated and one common point to be made available for upper level DCS/SCADA communication.	1	LOT		
11*	Fibre Optic cable from hooking up of local control panel with upper level DCS/SCADA	500	mts*		
12	Complete Structural work for routing & supporting ducts (through duct racks,bracket support, channels, angles, hilti etc.) along with bolting for fixing/anchoring.	1	LOT		
13	Total lumpsum price for special tools & tackles for maintenance inclusive of packing forwarding, transportation up to site, etc. (Bidder shall submit item-wise price break-up as per APPENDIX -A).	1	LOT		

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				Unit Ex- works duly packed (INR)	Total Ex-works duly packed (INR)
14	Total lumpsum price for commissioning spares inclusive of packing forwarding, transportation up to site, etc. (Bidder shall submit item-wise price break-up as per APPENDIX - B).	1	LOT		
15	Handling arrangement for HVAC equipment.				
15.1*	Manually operated, platform trolley of 1 Ton capacity with base area 2m x 1.5m	3	NO*		
15.2*	1T Chain Pulley Block arrangment with travelling trolley	2	NO*		
15.3*	1T Chain Pulley Block arrangment without travelling trolley with tripod stand	1	NO*		
15.4*	2T Chain Pulley Block arrangment with travelling trolley	1	NO*		
15.5*	3T Electric Hoist along with monorail arrangement as per specification	1	NO*		
NOTE					
1	The bidder shall furnish unit rates for variable item (marked *) for necessary adjustment (plus or minus) variation during detailed engg. stage. The unit rates quoted above shall be considered for adjustment and no separate unit rates shall be quoted. Unit rates shall be valid throughout the contract. Final qty. shall be paid as per actual measurment at site for erection for all the variable items.				
2	Price format shall not be changed by the bidder as the bidder may get disqualified by doing so.				
3	The BOQ mentioned above shall be read in conjunction with technical specification requirement. Any item required as per technical specification but not specifically indicated in above BOQ, shall deemed to be incuded in total prices quoted by bidder. No additional price shall be payable against such items.				

ANNEXURE II: PRICE BREAKUP FOR SERVICE PART

NAME OF PROJECT:	4x225 MW ARUN-3 HEP
NAME OF PACKAGE:	HVAC SYSTEM
TECHNICAL SPECIFICATION:	PE-TS-437-571-11000-A-A001

S. No.	DESCRIPTION	QTY	UNIT	Unit Price (INR)	Total Price (INR)
1.0	Total lumpsum firm prices inclusive of all prevailing taxes, duties and other levies for Services part comprising of Supervision of Erection & Commissioning, trial run at site and carrying out Performance guarantee at site, training of customer/client O&M staff and handover in flawless condition of the package to the end customer complete with all accessories, for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order.	1	LOT		
2.0	Break Up Prices of 1.0				
2.1	Total lump sum prices for visits (should include travel expenses to/ fro site, visa/ insurance (if applicable), intermediary stay) for Supervision of erection and commissioning for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	6	Nos.		
2.2	Total lump sum prices for Supervision of erection and commissioning (in days) for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	90	days		
2.3	Total Lump sump price for successful conductance of Performance Guarantee test and handover in flawless condition of the package to the customer with site visit charges, local transportation, boarding, lodging & other related exepenses	1	LOT		
2.4	Total of 2.0 (2.1. to 2.3)				

Note:

1. No. of days at site defined at S.N. 2.2 above shall be calculated on the basis of presence at site (travel time is excluded).
2. No. of Visits and days for Site assessment during contract stage for layout drawing preparation and supervision of Erection & Commissioning may vary depending on site requirement. Any variation in no. of visits & no. of days shall be exercised based on unit rate arrived from S.N. 2.1 & 2.2 above respectively.
3. Bidder to quote the Prices in 'figures' along with corresponding 'words'.

APPENDIX-A
Special tools & tackles for maintenance

NAME OF PROJECT:		4X225 MW ARUN-3 HEP			
NAME OF PACKAGE:		HVAC SYSTEM			
TECHNICAL SPECIFICATION No:		PE-TS-437-571-11000-A-A001			
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex- works duly packed (INR)	Total Ex-works duly packed (INR)
1	Measuring tape	NO	1		
2	Tachometer	NO	1		
3	Double ended spanner	SET	1		
4	RING SPANNER - 6 MM TO 32 MM (12 Pcs)	SET	1		
5	Gasket punch	NO.	1		
6	Center punch	NO.	1		
7	Hammer with wooden handles	NO.	1		
8	Scissors for sheet metal cutting	NO.	1		
9	Torch light (suitable for 2 cells)	NO.	1		
10	Multimeter	NO.	1		
11	Anemometer	NO.	1		
12	Compound pressure gauge	NO.	1		
13	Slide wrench (6 ", 8" and 10")	NO.	1		
14	Box spanner set	SET	1		
15	Screw driver set	SET	1		
16	Align key set (2 MM TO 10 MM)	SET	1		
17	Insulated Pliers	NO.	1		
18	Adjustable Spanner	NO.	1		
19	Grease Gun	NO.	1		
20	Oil gun	NO.	1		
21	TORCH LIGHT FOR 2 CELL	NO.	1		
22	Line Tester	NO.	1		
23	Gas Charging kit for filling gas in ductable/non ductable split ac and Cassette AC	No.	2		
24	HAMMER 1 LB	NO.	1		
25	TUBE CUTTER	NO.	1		
26	POCKET THERMOMETER - 0 TO 50 DEG. C)	NO.	1		
27	INSULATION TAPE ROLL	NO.	1		
28	NITROGEN CHARGING ADAPTER	NO.	1		
29	FREON PRESSURE GAUGE (2 1/2" DIA DIAL) 0 - 300 MM PSI	NO.	1		
30	PSYCHRO METER	NO.	1		
31	Vaccum Pump	NO.	1		
NOTES					
1	ABOVE IS THE MINIMUM LIST. ANY OTHER TOOL / TACKLE REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION. Tools shall be supplied in Tool box				

APPENDIX-B
Commissioning spares

NAME OF PROJECT:		4X225 MW ARUN-3 HEP			
NAME OF PACKAGE:		HVAC SYSTEMM			
TECHNICAL SPECIFICATION No:		PE-TS-437-571-11000-A-A001			
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-works duly packed (INR)	Total Ex-works duly packed (INR)
1	Fan Belts (each type & size)	SET	1		
2	Filter (each size)	SET	1		
3	Bearing of Blowers (each size)	SET	1		
4	Bearing of Motors(each size)	SET	1		
5	On off push buttons of MCC panels	SET	1		
6	Relays (each rating)	NO	1		
7	Pressure Gauge (for each type and range)	NO	1		
8	Temprature Gauge (for each type and range)	NO	1		
9	Dry Nitrogen Cylinder	NO	1		
10	Refrigerant gas of each type in a non-returnable cylinders	kg	20		
NOTES					
1	ABOVE IS THE MINIMUM LIST. ANY OTHER COMMISSIONING SPARE REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION.				

ANNEXURE - II
LIST OF MANDATORY SPARES

NAME OF PROJECT:		4X225 MW ARUN-3 HEP		
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S. No.	Description	UNIT	Qty	Total Ex-works duly packed (INR)
A	MECHANICAL			
1	Filter bank type and size used	Set	4	
2	V-belts of type and size used	Set	4	
3	Blower Bearings	Set	2	
4	Exhaust air fans (each used type)	No	1	
5	Grills, louvers, dampers, fixtures, etc.	10 % of installed capacity		
6	Industrial type vacuum cleaner suitable for cleaning of filter banks of ventilation system	Set	1	
7	Axial air fans (each type used)	No	2	
8	Power contactors, fuses etc.	10 % of installed capacity		
9	Anemometer (of suitable capacity)	No	1	
10	Flow rate meter (sensor and display unit)- each type used	No	1	
11	Motor for fire dampers (each type used)	No	1	
12	Bearing heating devices suitable for replacement of bearing (preferably of induction type)	Set	1	
13	Bearing puller of suitable size for facilitating bearing replacement of coupling shaft etc.	Set	1	
14	Items for completeness of system as per clause no. 25.1.1.4 of Sub-section C2A under section I of Technical specifications.	10 % of installation		
B	ELECTRICAL			
1	LT AC SYSTEM			
1.1	MCCB of each type used	No	8	
1.2	Current transformer of type used	No	2	
1.3	Supporting insulator of type used	No	6	
1.4	Bushing of type used	No	1	
1.5	Main contacts for three poles, with spring, bolts, nuts etc. for circuit breaker (each used type)	Set	12	
1.6	Primary isolating contacts (each used type)	Set	12	
1.7	Coils for tripping and closing of type used	No	12	
1.8	Complete motor drives of type used	No	4	
1.9	Complete spring closing mechanism for the breakers (each used type) (If applicable)	No	2	
1.10	Sandwich bus duct and associated accessories (If applicable)			
1.10.1	Bends	5% of installed bends		
1.10.2	Bus duct (straight section)	5% of installed section		
1.11	Relays (each used type)	No	2	
1.12	Indication lamps used including assemblies (each used type)	No	10	
1.13	Fuses (each used type)	No	10	
1.14	Control and instrumentation switches (each used type)	No	3	
1.15	Contactors (each used type)	No	2	
1.16	Indicating instruments (each used type)	No	2	

ANNEXURE - II
LIST OF MANDATORY SPARES

NAME OF PROJECT:		4X225 MW ARUN-3 HEP		
NAME OF PACKAGE:		HVAC SYSTEM		
TECHNICAL SPECIFICATION No:		PE-TS-437-571-11000-A-A001		
S. No.	Description	UNIT	Qty	Total Ex-works duly packed (INR)
1.17	Items for completeness of System as per clause no.20.1.1.5 of 415 LTAC system section 20 under subsection C3 of section I of Technical specifications.	10% of installation		
2	CABLES AND CABLE TRAYS			
2.1	LV power cable of each type	10% of installed quantity		
2.2	Control cable of each type	10% of installed quantity		
2.3	Communication cable of each type	10% of installed quantity		
2.4	Lugs of each size, cable ties	20% of installed quantity		
2.5	Coaxial cables	10% of installed quantity		
2.6	Cable glands of each size	20% of installed quantity		
2.7	Junction boxes of each size	20% of installed quantity		
2.8	Cable Trays along with accessories	10% of Installed quantity of all type		
2.9	Crimping Pliers for all sizes of Thimbles			
2.9.1	a) Ordinary	No	4	
2.9.2	b) Hydraulic	No	2	
2.10	Wire Cutter for all sizes of cables	No	3	
2.11	Wire Strippers	No	3	
2.12	Gland cutter(all sizes)	Set	2	
2.13	Items for completeness of System as per clause no. 18.1.1.6 of Cables and cable trays section 18 under subsection C3 of section I of Technical specifications.	10% of installation		
	TOTAL			

Notes:

a) Spares listed in Price Schedule is bare minimum requirement. In case any additional mandatory spares required for 5 years of successful operation of the system or those covered elsewhere in the tender specification apart from specified above, same shall be deemed to have been covered in bidder's scope of supply.

b) Wherever "set" is indicated, it shall mean complete replacement for one main equipment.

c) All Spares shall be supplied as per the requirement of the specifications. In case any spare indicated in the specification is "not applicable" for particular equipment, then suitable applicable alternate spare has been offered / shall be supplied by the bidder without any financial implication."

d) Any item which is quoted as "not applicable" by the bidder in the above list and is found to be "applicable" at a later date shall be supplied by the bidder without any commercial and delivery implication.

e) Any cell left blank in the unpriced schedule shall be treated as "Quoted" and is included in total price.

