

ANNEXURE_SPARES_ ITARSI

**BOQ FOR BREAK-UP OF MANDATORY SPARES (SPECIFIED AS LOT ITEMS
IN BID PRICE SCHEDULE)**

Sl. No.	Item Description	Unit	QUANTITY
F	420 kV Isolator		
	3150A, Isolator with one E/S		
1	One complete pole of Isolator including support insulator with 1 E/S with operating mechanism for main isolator and earth switch (excluding support structure)	No.	1
2	Copper contact fingers for female & male contacts	set	2
3	Open/Close Contactor Assembly, Timer, Key Interlock push button switch & auxiliary switches	set	1
4	Limit switch	Nos.	2
5	Terminal pads & Connectors	no	3
6	Corona shielding ring	Nos.	3
G	400kV Current Transformer		
	3000A, with 120% extended current rating	Nos	0
H	336kV Surge Arrester		
1	336kV Surge arrester complete with insulating base and terminal connectors (of each type)	No.	1
2	Surge counter/monitor	Nos.	5
I	220kV SF6 Circuit Breaker		
1	One Complete Pole of 220kV CB Pole column interrupter, with driving mechanism and Marshaling Box but without support structure.		
i	1600 A, 40 KA (No. of Pole)	Nos	1
2	Rubber gasket, 'O' rings and seal (For Complete replacement for one phase)	Set	1
3	Trip coils with resistor	Nos.	3
4	Closing coils with resistor	Nos.	3
5	Terminal Pad of each rating	Nos.	2
6	Molecular filter (For Complete replacement for one phase)	Nos	2
7	Corona Rings	Nos	1
8	Relay Power contactors, switch fuse units, limit switches, push button, timers & MCB etc (One No. of each Type)	Set	1

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Sl. No.	Item Description	Unit	QUANTITY
9	Pressure switch of each type/Density monitor (One No. of each Type)	Set	1
10	Auxiliary switch assembly (For one Phase of CB)	Set	1
J	220 kV Isolator		
J.1	1600A, Isolator with one E/S		
1	One complete pole of Isolator including support insulator with 1 E/S with operating mechanism for main isolator and earth switch (excluding support structure)	No.	1
2	Copper contact fingers for female & male contacts	set	2
3	Open/Close Contactor Assembly, Timer, Key Interlock push button switch & auxiliary switches	set	1
4	Limit switch	Nos.	2
5	Terminal pads & Connectors	no	3
6	Corona shielding ring	Nos.	3
J.2	1600A, Isolator without E/S (Tandem Isolator)		
1	One complete pole of Isolator including support insulator without E/S with operating mechanism for main isolator and earth switch (excluding support structure)	No.	1
2	Copper contact fingers for female & male contacts	set	2
3	Open/Close Contactor Assembly, Timer, Key Interlock push button switch & auxiliary switches	set	1
4	Limit switch	Nos.	2
5	Terminal pads & Connectors	no	3
6	Corona shielding ring	Nos.	3
G	220kV Current Transformer		
	1600A, with 120% extended current rating	Nos	1
K	216kV Surge Arrester		
i	216kV Surge arrester complete with insulating base and terminal connectors (of each type)	No.	1
L.1	Relay and Protection system Transformer Protection panel		
a	Transformer Differential Protection Relay	Nos	1
b	Restricted Earth Fault Protection Relay with non linear resistor	Nos	1

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Sl. No.	Item Description	Unit	QUANTITY
M	Sub-Station Automation /SCADA system		
1	Bay control unit (IED) of each type	Nos.	0
2	Ethernet switch of each type	Nos.	0
N	Fire Protection System		
1	Deluge Valve (of each type)	Set	1
O	400kV GIS SPARES - PLEASE REFER ANNEXURE ANNEXURE_GIS_SPARE	LOT	1
P	500MVA Transformer		
a	Bushing of each rating with metal parts & gaskets and lifting tools		
(i)	420kV, 1250A RIP Bushing	-	1
(ii)	245kV, 2000A RIP Bushing	-	1
(iii)	52kV, 3150A RIP Bushing	-	1
(iv)	36kV, 3150A Bushing	-	1
b	Oil cooler pump with motor	Set	1
c	Cooler fan with motor	No	1
d	Buchholz relay (Main tank) complete with float and contacts	Set	1
e	Local & remote WTI with sensing device & contact	Set	1
f	Magnetic Oil level gauge	No	1
g	Starter, Contactor, switches & relays for electrical control panel (One set of each type)		
h	Remote Tap position Indicator	No	1
i	Oil flow indicator with flow switch	Set	1
j	Spare insulating oil to be handed over to POWERGRID after commissioning for O&M requirements.	KL	10

ANNEXURE_GIS_SPARE				
400KV GIS (OUTDOOR TYPE) AT 400/220KV ITARSI SUBSTATION (REV 00)				
SL	DESCRIPTION	UNIT	QTY	REMARKS
C	Mandatory Spares for GIS			
C.1	General (For 400kV Voltage Class)			
C.1.1	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - BUS BAR SECTIONS INCLUDING BUS BAR INTERCONNECTION MODULES, BUS DUCTS SECTIONS, COMPENSATORS/ EXPANSION JOINTS/BELLOWS, BENDS, END COVERS ALONG WITH ENCLOSURE OF EACH TYPE. FOR EACH OF THE ABOVE MODULE/ENCLOSURE ALL ACTIVE PARTS SUCH AS CONDUCTOR, CONDUCTOR JOINTS, CORONA SHIELD ETC.	SET	1	1 SET= 1 number of each type and rating
C.1.2	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - SF6 GAS PRESSURE RELIEF DEVICE	SET	1	1 SET= 1 number of each type and rating
C.1.3	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - SF6 PRESSURE GAUGE CUM SWITCH / DENSITY MONITORS AND PRESSURE SWITCH AS APPLICABLE	SET	3	1 SET= SF6 Pressure gauge cum switch / Density monitors of each type.
C.1.4	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - COUPLING DEVICE FOR PRESSURE GAUGE CUM SWITCH FOR CONNECTING GAS HANDLING PLANT	SET	2	1 SET= 1 number of each type and rating
C.1.5	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - RUBBER GASKETS, "O" RINGS AND SEALS FOR SF6 GAS FOR GIS ENCLOSURE	SET	3	1 SET= Rubber Gaskets, "O" Rings and Seals for SF6 gas for GIS enclosure of each type
C.1.6	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - MOLECULAR FILTER FOR SF6 GAS WITH FILTER BAGS	SET	1	1 SET= 10% (In weight) of total molecular filter quantity.
C.1.7	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - CONTROL VALVES FOR SF6 GAS	SET	1	1 SET= Control Valves for SF6 gas of each type
C.1.8	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - SF6 GAS (20 % OF TOTAL GAS QUANTITY) IN NON-RETURNABLE CYLINDERS	LOT	1	In addition with SF6 gas mentioned at S. no. A.08.
C.1.9	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - PIPE LENGTH FOR SF6 CIRCUIT	SET	1	1 SET = Pipe length (Copper or Steel as applicable) for SF6 Circuit of each type (if applicable)
C.1.10	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - LOCKING DEVICE TO KEEP DISCONNECTORS (ISOLATORS) AND EARTHING SWITCHES/ FAST EARTHING SWITCHES IN CLOSE OR OPEN POSITION IN CASE OF REMOVAL OF THE DRIVING MECHANISM	SET	1	1 SET= 1 number of each type and rating
C.1.11	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - UHF PD SENSORS WITH BNC CONNECTOR	SET	2	1 SET= 1 number of each type and rating
C.1.12	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - BUS SUPPORT INSULATOR	SET	4	1 SET= 1 number of each type and rating
C.1.13	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - GAS BARRIERS	SET	4	1 SET= 1 number of each type and rating
C.1.14	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS - SF6 TO AIR BUSHING	NO	1	of each type and raing. Complete in all respect.
C.2	400kV SF6 CIRCUIT BREAKER:			
C.2.1	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - CIRCUIT BREAKER POLE WITHOUT PIR COMPLETE WITH INTERRUPTER, MAIN CIRCUIT, ENCLOSURE AND MARSHALLING BOX WITH OPERATING MECHANISM	SET	1	1 SET= complete material to enable replacement of all applicable type/rating of CB by spare

ANNEXURE_GIS_SPARE				
400KV GIS (OUTDOOR TYPE) AT 400/220KV ITARSI SUBSTATION (REV 00)				
SL	DESCRIPTION	UNIT	QTY	REMARKS
C.2.2	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - FIXED, MOVING AND ARCING CONTACTS INCLUDING INSULATING NOZZLES	SET	1	1 SET= 1 number of each type and rating (for Main Chamber)
C.2.3	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - TRIP COIL ASSEMBLY WITH RESISTOR, AS APPLICABLE	SET	3	1 SET= 1 number of each type and rating
C.2.4	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - CLOSING COIL ASSEMBLY WITH RESISTOR, AS APPLICABLE	SET	3	1 SET= 1 number of each type and rating
C.2.5	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER- RELAYS, POWER CONTACTORS, PUSH BUTTONS, TIMERS & MCBS ETC.	SET	1	1 SET= 1 number of each type and rating
C.2.6	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - AUXILIARY SWITCH ASSEMBLY	SET	3	1 SET= 1 number of each type and rating
C.2.7	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - OPERATION COUNTER	SET	3	1 SET= 1 number of each type and rating
C.2.8	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - WINDSCOPE/ OBSERVING WINDOW	SET	2	1 SET= 1 number of each type and rating (if applicable)
	For Hydraulic Operated Mechanism, if applicable			
C.2.9	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - HYDRAULIC OPERATING MECHANISM WITH DRIVE MOTOR	SET	3	1 SET= 1 number of each type and rating
C.2.10	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - FERRULES, JOINTS AND COUPLINGS	SET	3	1 SET= 1 number of each type and rating
C.2.11	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - HYDRAULIC FILTER	SET	3	1 SET= 1 number of each type and rating
C.2.12	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - HOSE PIPE	SET	3	1 SET= 1 number of each type and rating
C.2.13	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER- NITROGEN ACCUMULATOR	SET	3	1 SET= 1 number of each type and rating
C.2.14	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - VALVES	SET	3	1 SET= 1 number of each type and rating
C.2.15	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - PIPE LENGTH	SET	3	1 SET= Pipe length (copper & steel) of each size & type, if applicable
C.2.16	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - PRESSURE SWITCHES	SET	3	1 SET= 1 number of each type and rating
C.2.17	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - PRESSURE GAUGE WITH COUPLING DEVICE	SET	3	1 SET= 1 number of each type and rating
C.2.18	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - HYDRAULIC OIL	SET	1	1 SET= 20% of total Oil quantity
C.2.19	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - PRESSURE RELIEF DEVICE	SET	3	1 SET= 1 number of each type and rating
	For Spring Operated Mechanism, if applicable			
C.2.20	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - SPRING OPERATING MECHANISM INCLUDING CHARGING MECHANISM ETC.	SET	3	1 SET= 1 number of each type and rating
C.2.21	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CIRCUIT BREAKER - SPRING CHARGING MOTOR	NO	2	1 SET= 1 number of each type and rating
C.3	400kV ISOLATORS :			

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400KV GIS (OUTDOOR TYPE) AT 400/220KV ITARSI SUBSTATION (REV 00)				
SL	DESCRIPTION	UNIT	QTY	REMARKS
C.3.1	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - DISCONNECTOR INCLUDING MAIN CIRCUIT, ENCLOSURE, DRIVING MECHANISM AND SUPPORT INSULATOR	SET	1	Complete SET of 3-phase dis-connector of each type including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Isolator by spare
C.3.2	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - MAINTENANCE EARTHING SWITCH, INCLUDING MAIN CIRCUIT, ENCLOSURE, DRIVING MECHANISM AND SUPPORT INSULATOR ETC.	SET	1	Complete SET of 3-phase Maintenance Earthing switch of each type, including main circuit, enclosure, driving mechanism and support Insulator etc to enable complete replacement of all applicable type/rating of Earth Switch by spare
C.3.3	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - COPPER CONTACT FINGERS & CORONA SHIELD FOR MALE & FEMALE CONTACT – FOR DIS-CONNECTOR	SET	1	for one complete (3-phase) dis-connector of each type and rating
C.3.4	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - COPPER CONTACT FINGERS & CORONA SHIELD FOR MALE & FEMALE CONTACT – FOR MAINTENANCE EARTHING SWITCH	SET	1	for one complete (3- phase) earthing switch of each type and rating
C.3.5	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - OPEN / CLOSE CONTACTOR ASSEMBLY, TIMERS, KEY INTERLOCK, INTERLOCKING COILS, RELAYS, PUSH BUTTONS, INDICATING LAMPS, POWER CONTACTORS, RESISTORS, FUSES, MCBS & DRIVE CONTROL CARDS ETC FOR ONE COMPLETE MOM BOX - FOR DIS-CONNECTOR	SET	1	for one complete MOM box (3 – phase gang operated or 1 – phase unit)- For isolator
C.3.6	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - OPEN / CLOSE CONTACTOR ASSEMBLY, TIMERS, KEY INTERLOCK, INTERLOCKING COILS, RELAYS, PUSH BUTTONS, INDICATING LAMPS, POWER CONTACTORS, RESISTORS, FUSES, MCBS & DRIVE CONTROL CARDS ETC FOR ONE COMPLETE MOM BOX - FOR MAINTENANCE EARTHING SWITCH	SET	1	for one complete MOM box (3 – phase gang operated or 1 – phase unit)- For Maintenance Earth switch
C.3.7	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - LIMIT SWITCHES AND AUXILIARY SWITCH - FOR DIS-CONNECTOR	SET	1	for complete 3 phase equipment
C.3.8	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - LIMIT SWITCHES AND AUXILIARY SWITCH - FOR MAINTENANCE EARTHING SWITCH	SET	1	for complete 3 phase equipment (if applicable)
C.3.9	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - DRIVE MECHANISM- FOR DIS-CONNECTOR	SET	1	1 SET= 1 number of each type and rating
C.3.10	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - DRIVE MECHANISM- FOR MAINTENANCE EARTHING SWITCH	SET	1	1 SET= 1 number of each type and rating
C.3.11	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - MOTOR FOR DRIVE MECHANISM- FOR DIS-CONNECTOR	SET	1	1 SET= 1 number of each type and rating
C.3.12	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS DISCONNECTOR - MOTOR FOR DRIVE MECHANISM- FOR MAINTENANCE EARTHING SWITCH	SET	1	1 SET= 1 number of each type and rating

ANNEXURE_GIS_SPARE				
400KV GIS (OUTDOOR TYPE) AT 400/220KV ITARSI SUBSTATION (REV 00)				
SL	DESCRIPTION	UNIT	QTY	REMARKS
C.4	400kV CURRENT TRANSFORMER			
C.4.1	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR GIS CURRENT TRANSFORMER - COMPLETE CT WITH ENCLOSURE	NO	1	Complete CT of one pole with enclosure to enable replacement of all applicable type/rating of CT by spare
C.5	LOCAL CONTROL CUBICLE			
C.5.1	SPARES- GIS : 400KV, MANDATORY SPARES SUITABLE FOR LOCAL CONTROL CUBICLE - AUX. RELAYS, CONTACTOR, PUSH BUTTONS, SWITCHES, LAMPS, ANNUNCIATION WINDOWS, MCB, FUSES, TIMERS ETC.	SET	2	1 SET= 1 number of each type and rating
	SF6 GAS PLANT			
B.04	SPARES- GIS : MANDATORY MAINTENANCE EQUIPMENT SUITABLE FOR GIS - SF6 GAS FILLING, EVACUATING, FILTERING, DRYING, PUMPING & STORAGE PLANT-SPARES FOR FIVE YEAR SUCCESSFUL OF EQUIPMENT	SET	1	For equipment mentioned at s. no. B.02