

ANNEXURE-SPARE LIST: Essential/ Mandatory spares

SL. NO.	DESCRIPTION	UNIT	QUANTITY	REMARKS
S1	420 KV GIS Mandatory Spares	Lot	1	
1	Gas Filling Valve	Nos.	4	
2	Rupture disc	Nos.	2	
3	CB molecular sieve	Nos.	4	
4	gasket of CB operating mechanism door	Nos.	4	
5	Gasket for CB operating mechanism window	Nos.	6	
6	Set of gaskets (gasket of each type/size/model= 1 no.)	Set	1	
7	Terminal block for VT	Nos.	6	
8	Terminal block for CT	Nos.	6	
9	40 kg gas SF6 bottle	Nos.	1	
10	CB coil for operating or closing	Nos.	3	
11	CB auxiliary contact bloc	Nos.	3	
12	Pressure switches/Density monitor	Nos.	1	
S2	420 KV GIS Tools and Tackles	lot	1	
1	CB analyzer	Nos	1	
2	Hand crank for various GIS mechanisms	Nos	1	
3	Digital manometer	Nos	1	
4	Temperature metering set (Non-contact type)	Nos	1	
5	Relief valve manometer with coupling elements	Nos	1	
6	A wheeled maintenance device with pressure vessel, vacuum pump and all required gauges and fittings for the service of the GIS switchgear, Gas re-filling and evacuating DILO plant MEGA series	Nos	1	
7	Spring charging hand crank for CB mechanism	Nos	1	
8	980 kg SF6 gas additional storage tank	Nos	1	
9	DILO pipe extension	Nos	1	
10	10 m length DILO pipe	Nos	1	
11	120 Cu. m Vacuum pump with maintenance kit	Nos	1	
12	Dew Point measuring device	Nos	1	
13	Portable partial discharge monitoring equipment	Nos	1	
14	Portable SF6 gas leakage detector	Nos	1	
S3	420kV, 125MVA, 3-Ph, Bus Reactor			
1	HV Bushing with metal parts	Nos.	3	
2	HVN Bushing with metal parts	No.	1	
3	Oil temperature indicator	No.	1	
4	Spring operated pressure relief valve	No.	1	
5	Set of valves	Set	1	
6	Magnetic oil level gauge	No.	1	

7	Silica gel breather	No.	2	
8	Winding temperature indicator with all accessories	Set	1	
9	Gaskets	Set	1	
10	Buchholz relay	No.	1	
11	MCCB/MCB / MPCB of each type and rating	Set	1	
12	Silica gel breather	No.	1	
13	Air Cell(oil pressure equipment)	No.	1	
S4	LV Switchgear			
1	Circuit Breaker Components			
i.	Spring charging motor of each type	Nos.	3	
ii.	Power contacts, complete set	Set*	5	
iii.	Auxiliary contact set	Set*	5	
iv.	Limit switches of each type	Nos.	5	
v.	Charging spring of each type	Nos.	5	
vi.	Closing coil of each type	Nos.	5	
vii.	Tripping coil of each type	Nos.	5	
2	Auxiliary Contactor with 2NO and 2NC add-on block	Set	15	
3	Contactor complete set – power & Auxiliary contactor	Set	5	
4	Electronic over load relay with current display unit of each type and rating	Nos.	5	
5	CTs for Overload protection (motor feeder) of each type and rating	Nos.	5	
6	CTs for incomer/ bus coupler and outgoing feeders of each type and rating	Nos.	5	
7	VTs for Incomers and BusVT of each type and rating	Nos.	5	
8	Meters (Multifunction meters, Digital meters, Analog meters) of each type and rating	Nos.	5	
9	Protection Relays of each type and rating	Nos.	5	
10	Control transformer (415V/110V) of each type and rating	Nos.	5	
11	Control transformer (415V/230V) of each type and rating	Nos.	5	
12	Aux. Relay and timer of each type and rating	Nos.	5	
13	Inter posing relays	Nos.	5	
14	Control Switch and selector switch	Nos.	5	
15	MCCB / MPCB / MCB with auxiliary contacts of each type and rating	Nos.	5	
16	Indicating lamps (LEDS) with resistor of different colors	Nos.	10	
17	Annunciation units of each type and rating	Nos.	5	
18	Bus bar supporting insulator	Nos.	10	
19	Anti pumping relay each type & rating	Nos.	5	
20	Lockout replay of each type	Nos.	5	

21	Timers of each type	Nos.	5	
22	Moving contacts of assembly of each installed rating	Set	10	
23	Stationary (fixed) contact	Set	10	
24	Air Circuit breaker of each type and rating	Nos.	2	
25	Bus seal off Bushing of each type	Nos.	5	
26	Bus bar support insulator	Nos.	25	
27	Indicating lamps – Qty to be changed as	Nos.	50	
28	Ammeter of each type and rating	Nos.	5	
29	Voltmeter of each type and rating	Nos.	5	
30	Arc chute (for each rating)	Nos.	5	
31	Inter phase barriers of each type	Nos.	3	
S5	Dry type Transformer of each rating			
1	HV Bushings with metal parts for each rating	Nos.	3	
2	Winding Temperature Indicator with all accessories	Nos.	2	
3	Limit Switches	Nos.	2	
4	Temperature scanner	Nos.	2	
S6	Battery			
1	Spares-Battery : 220V DC battery cell without electrolyte	Nos	10	
2	Spares-Battery : 220V DC battery sensing card (Control PCB for sensing maximum 32 nos. of battery cells in 1 card)	Nos	1	
3	Spares-Battery : 220V DC inter cell connectors with insulated cover	Nos	10	
4	Spares-Battery : 220V DC nuts & bolts and washers	Nos	1	
5	Spares-Battery : 220V DC BHMS sensor (manufacturer will provide 10% of used quantity Spare Battery Sensing Card (Control PCB for sensing maximum 32 nos. of battery cells in 1 card) as spare instead of BHMS sensor. As there are no sensor used in the cable used between BHMS & Battery, all the sensor are available in the control card. Total PCB used 4 nos. in each 220V BHMS, so 10% of used card will be 1 no.)	Lot	1	
6	Spares-Battery : 220V DC Battery stand insulator	Nos	10	
7	Spares-Battery : 220V DC inter row/tier connectors with insulated cover	Nos	10	
8	Spares-Battery : 220V DC vent plugs	Nos	10	
9	Spares-Battery : 48V DC battery cell without electrolyte	Nos	10	

10	Spares-Battery : 48V DC battery sensing card (Control PCB for sensing maximum 32 nos. of battery cells in 1 card)	Nos	1	
11	Spares-Battery : 48V DC inter cell connectors with insulated cover	Nos.	10	
12	Spares-Battery : 48V DC nuts & bolts and washers	Set	1	
13	Spares-Battery : 48V DC BHMS sensor (We will provide 10% of used quantity Spare Battery Sensing Card (Control PCB for sensing maximum 32 nos. of battery cells in 1 card) as spare instead of BHMS sensor.As there are no sensor used in the cable used between BHMS & Battery, all the sensor are available in the control card.Total PCB used 1 nos. in each 48V BHMS, so 10% of used card will be 1 no.)	Lot	1	
14	Spares-Battery : 48V DC Battery stand insulator	Nos	10	
15	Spares-Battery : 48V DC inter row/tier connectors with insulated cover	Nos.	10	
16	Spares-Battery : 48V DC vent plugs	Nos.	10	
S7	Battery charger			
1	SPARES- BATTERY CHARGER : 220V DC, SMPS MODULE	Nos.	10	of each type & rating
2	SPARES- BATTERY CHARGER : 220V DC, LED lamps	Nos.	5	of each type & rating
3	SPARES- BATTERY CHARGER : 220V DC, Contactors	Nos.	2	of each type & rating
4	SPARES- BATTERY CHARGER : 220V DC, MFM (MULTIFUNCTION METER)	LOT	1	5% of total population of each type & rating or one number whichever is higher
5	SPARES- BATTERY CHARGER : 220V DC, Blocking Diode	LOT	1	5% of total population of each type & rating or one number whichever is higher

6	SPARES- BATTERY CHARGER : 220V DC, Relay	LOT	1	5% of total population of each type & rating or one number whichever is higher
7	SPARES- BATTERY CHARGER : 220V DC, Electronic circuit module	LOT	1	1 No. of each type & rating
8	SPARES- BATTERY CHARGER : 220V DC, MCCB	LOT	1	10% of total population of each type & rating or one number whichever is higher
9	SPARES- BATTERY CHARGER : 220V DC, Voltage regulator assembly	LOT	1	10% of total population of each type & rating or one number whichever is higher
10	SPARES- BATTERY CHARGER : 48V DC, SMPS MODULE	Nos.	10	of each type & rating
11	SPARES- BATTERY CHARGER : 48V DC, LED lamps	Nos.	5	of each type & rating
12	SPARES- BATTERY CHARGER : 48V DC, Contactors	Nos.	2	of each type & rating
13	SPARES- BATTERY CHARGER : 48V DC, MFM (MULTIFUNCTION METER)	LOT	1	5% of total population of each type & rating or one number whichever is higher
14	SPARES- BATTERY CHARGER : 48V DC, Blocking Diode	LOT	1	5% of total population of each type & rating or one number whichever is higher
15	SPARES- BATTERY CHARGER : 48V DC, Relay	LOT	1	5% of total population of each type & rating or one number whichever is higher

16	SPARES- BATTERY CHARGER : 48V DC, Electronic circuit module	LOT	1	1 No. of each type & rating
17	SPARES- BATTERY CHARGER : 48V DC, MCCB	LOT	1	10% of total population of each type & rating or one number whichever is higher
18	SPARES- BATTERY CHARGER : 48V DC, Voltage regulator assembly	LOT	1	10% of total population of each type & rating or one number whichever is higher
S8	Lighting (Illumination) System supply material including Spares			
1	SUPPLY- ILLUMINATION EQUIPMENT : OUTDOOR LIGHTING PANEL	No.	4	
2	SUPPLY- ILLUMINATION EQUIPMENT : INDOOR LIGHTING PANEL	No.	6	
3	SUPPLY- ILLUMINATION EQUIPMENT : STREET LIGHTING PANEL	No.	2	
4	SUPPLY- ILLUMINATION EQUIPMENT : EMERGENCY OUTDOOR LIGHTING PANEL	No.	2	
5	SUPPLY- ILLUMINATION EQUIPMENT : INDOOR EMERGENCY LIGHTING PANEL	No.	2	
6	SUPPLY- ILLUMINATION EQUIPMENT : DC EMERGENCY LIGHTING PANEL INDOOR	No.	2	
7	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - SURFACE MOUNTED LED	No.	146	
8	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - RECESSED MOUNTED LED	No.	103	
9	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - SURFACE MOUNTED LED CORROSION RESISTANT	No.	10	
10	SUPPLY- ILLUMINATION EQUIPMENT : LED INDOOR HIGH BAY FITTINGS TYPE IHB	No.	49	
11	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - AC LED DOWNLIGHTER	No.	27	
12	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - DC LED BULKHEAD	No.	38	
13	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - DC LED DOWNLIGHTER	No.	31	

14	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED FLOOD LIGHT TYPE 1	No.	18	
15	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED FLOOD LIGHT TYPE 2	No.	117	
16	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED STREET LIGHT	No.	21	
17	SUPPLY- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED POST TOP LANTERN	No.	9	
18	SUPPLY- ILLUMINATION EQUIPMENT : PORTABLE EMERGENCY LIGHTS	No.	2	
19	SUPPLY- ILLUMINATION EQUIPMENT : SWITCHBOARDS WITH 8 NO. SWITCH, 2 NO. 3 PIN 240V TYPE RECEPTACLE AS PER TECHNICAL SPECIFICATION	No.	10	
20	SUPPLY- ILLUMINATION EQUIPMENT : SWITCHBOARDS WITH 6 NO. SWITCH, 1 NO. 3 PIN 240V TYPE RECEPTACLE AS PER TECHNICAL SPECIFICATION	No.	24	
21	SUPPLY- ILLUMINATION EQUIPMENT : SWITCHBOARDS WITH 4 NO. SWITCH, 1 NO. 3 PIN 240V TYPE RECEPTACLE AS PER TECHNICAL SPECIFICATION	No.	15	
22	SUPPLY- ILLUMINATION EQUIPMENT : MODULAR TYPE FAN REGULATOR	No.	25	
23	SUPPLY- ILLUMINATION EQUIPMENT : SWITCHBOARDS WITH 3 NO. DC SWITCH AS PER TECHNICAL SPECIFICATION	No.	10	
24	SUPPLY- ILLUMINATION EQUIPMENT : JUNCTION BOXES FOR OUTDOOR	No.	15	
25	SUPPLY- ILLUMINATION EQUIPMENT : MCB BOX	No.	3	
26	SUPPLY- ILLUMINATION EQUIPMENT : TELEPHONE JB	No.	1	
27	SUPPLY- ILLUMINATION EQUIPMENT : TELEPHONE POINTS- SINGLE OUTLET TELEPHONE SOCKET INCLUDING CABLE/WIRE AND ACCESSORIES	No.	10	
28	SUPPLY- ILLUMINATION EQUIPMENT : RECEPTACLE - 5/15A (DECORATIVE) RA TYPE	No.	54	
29	SUPPLY- ILLUMINATION EQUIPMENT : 15A/240V RECEPTACLE TYPE RO (INDUSTRIAL TYPE)	No.	27	
30	SUPPLY- ILLUMINATION EQUIPMENT : 32A DP RECEPTACLES WITH MCB FOR AC UNIT	No.	16	
31	SUPPLY- ILLUMINATION EQUIPMENT : 63A, 415V, 3 PHASE WELDING RECEPTACLE (INDOOR/OUTDOOR)	No.	4	

32	SUPPLY- ILLUMINATION EQUIPMENT : OUTDOOR POWER RECEPTACLE FOR OIL FILTRATION UNIT (63A)	No.	2	
33	SUPPLY- ILLUMINATION EQUIPMENT : OUTDOOR POWER RECEPTACLE FOR OIL FILTRATION UNIT (250A)	No.	2	
34	SUPPLY- ILLUMINATION EQUIPMENT : RECEPTACLE - 5/15A (FLAMEPROOF)	No.	4	
35	SUPPLY- ILLUMINATION EQUIPMENT : 20A/240V RECEPTACLE TYPE RO (INDUSTRIAL TYPE)	No.	5	
36	SUPPLY- ILLUMINATION EQUIPMENT : CEILING FAN, 240V, 1200/1400MM SWEEP WITH SUSPENSION ROD CANOPY AND COMPLETE ACCESSORIES.	No.	25	
37	SUPPLY- ILLUMINATION EQUIPMENT : 400MM SWEEP WALL MOUNTED FAN	No.	32	
38	SUPPLY- ILLUMINATION EQUIPMENT : 300 MM SWEEP EXHAUST FANS	No.	14	
39	SUPPLY- ILLUMINATION EQUIPMENT : 500 MM SWEEP PEDASTAL FANS	No.	5	
40	SUPPLY- ILLUMINATION EQUIPMENT : EXIT BOARDS	No.	34	
41	SUPPLY- ILLUMINATION EQUIPMENT : OCTAGONAL LIGHTING POLE	No.	21	
42	SUPPLY- ILLUMINATION EQUIPMENT : HIGH MAST WITH FEEDER PILLAR	No.	3	
43	SUPPLY- ILLUMINATION EQUIPMENT : 4.5M HIGH LIGHTING POLE FOR POST-TOP LANTERN	No.	5	
44	SUPPLY- ILLUMINATION EQUIPMENT : SELF SUPPORTED ALUMINIUM LADDER AS PER TECHNICAL SPECIFICATION.	No.	1	
45	SUPPLY- ILLUMINATION EQUIPMENT : PORTABLE ALUMINIUM LADDERS OF VARIOUS SIZES	No.	2	
46	SUPPLY- ILLUMINATION EQUIPMENT : EARTHING MATERIAL - 25X6MM GS FLAT	KG	2000	
47	SUPPLY- ILLUMINATION EQUIPMENT : EARTHING MATERIAL - 3M , 20MM DIA MS ROD ELECTRODE	No.	33	
48	SUPPLY- ILLUMINATION EQUIPMENT : EARTHING MATERIAL - GS WIRE FOR EARTHING OF SIZE 16 SWG	KG	200	
49	SUPPLY- ILLUMINATION EQUIPMENT : 2 WIRE TELEPHONE CABLE (ISI MARKED).	m	500	

50	SUPPLY- ILLUMINATION EQUIPMENT : 1C, 1.5 SQMM PVC INSULATED STRANDED CU. WIRE RED/YELLOW/BLUE/BLACK/GREY (ISI MARKED WITH VALID CML NUMBER). COLOUR CODED.	m	6000	
51	SUPPLY- ILLUMINATION EQUIPMENT : 1C, 2.5 SQMM PVC INSULATED STRANDED CU. WIRE RED/YELLOW/BLUE/BLACK/GREY (ISI MARKED WITH VALID CML NUMBER). COLOUR CODED.	m	12000	
52	SUPPLY- ILLUMINATION EQUIPMENT : 1C, 4 SQMM PVC INSULATED STRANDED CU. WIRE RED/YELLOW/BLUE/BLACK/GREY (ISI MARKED WITH VALID CML NUMBER). COLOUR CODED.	m	8000	
53	SUPPLY- ILLUMINATION EQUIPMENT : GALVANIZED STEEL RIGID CONDUIT OF 20MM SIZE	m	4000	
54	SUPPLY- ILLUMINATION EQUIPMENT : GALVANIZED STEEL RIGID CONDUIT OF 25MM SIZE	m	5000	
55	SUPPLY- ILLUMINATION EQUIPMENT : GALVANIZED STEEL FLEXIBLE CONDUIT OF 20MM SIZE	m	500	
56	SUPPLY- ILLUMINATION EQUIPMENT : GALVANIZED STEEL FLEXIBLE CONDUIT OF 25MM SIZE	m	500	
57	SUPPLY- ILLUMINATION EQUIPMENT : GALVANIZED STEEL RIGID CONDUIT OF 25MM SIZE WITH ADDITIONAL EPOXY COATING FOR CORROSIVE AREAS	m	800	
58	SPARE- ILLUMINATION EQUIPMENT : RECEPTACLE - 5/15A (DECORATIVE) RA TYPE	No.	6	
59	SPARE- ILLUMINATION EQUIPMENT : 15A/240V RECEPTACLE TYPE RO (INDUSTRIAL TYPE)	No.	3	
60	SPARE- ILLUMINATION EQUIPMENT : 32A DP RECEPTACLES WITH MCB FOR AC UNIT	No.	2	
61	SPARE- ILLUMINATION EQUIPMENT : 63A, 415V, 3 PHASE WELDING RECEPTACLE (INDOOR/OUTDOOR)	No.	1	
62	SPARE- ILLUMINATION EQUIPMENT : OUTDOOR POWER RECEPTACLE FOR OIL FILTRATION UNIT (63A)	No.	1	
63	SPARE- ILLUMINATION EQUIPMENT : OUTDOOR POWER RECEPTACLE FOR OIL FILTRATION UNIT (250A)	No.	1	
64	SPARE- ILLUMINATION EQUIPMENT : RECEPTACLE - 5/15A (FLAMEPROOF)	No.	1	

65	SPARE- ILLUMINATION EQUIPMENT : 20A/240V RECEPTACLE TYPE RO (INDUSTRIAL TYPE)	No.	1	
66	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - SURFACE MOUNTED LED	No.	15	
67	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - RECESSED MOUNTED LED	No.	11	
68	SPARE- ILLUMINATION EQUIPMENT : LED INDOOR HIGH BAY FITTINGS TYPE IHB	No.	5	
69	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - AC LED DOWNLIGHTER	No.	3	
70	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - DC LED BULKHEAD	No.	4	
71	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - DC LED DOWNLIGHTER	No.	3	
72	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED FLOOD LIGHT TYPE 1	No.	2	
73	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED FLOOD LIGHT TYPE 2	No.	12	
74	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED STREET LIGHT	No.	3	
75	SPARE- ILLUMINATION EQUIPMENT : LIGHTING FIXTURE - LED POST TOP LANTERN	No.	1	
76	SPARE- ILLUMINATION EQUIPMENT : LIGHTING SWITCH	No.	38	
77	SPARE - ILLUMINATION EQUIPMENT : JUNCTION BOX	No.	10	
78	SPARE- ILLUMINATION EQUIPMENT : PHOTO VOLTAIC SENSOR WITH ELECTRONIC CIRCUIT	No.	2	
79	SPARE- ILLUMINATION EQUIPMENT : HRC FUSE	No.	10	
S9	Substation Automation			
1	BCU	Nos.	2	
2	Ethernet Switch of each type	No.	1	
3	Numerical relay of each type and rating –	Nos.	10% of total population or 2-Nos whichever is higher	

4	Auxiliary relays of each type and rating –	Nos.	10% of total population or 2-Nos whichever is higher	
5	Multiplexers	Nos.	10% of total population or 2-Nos whichever is higher	
S10	OPGW Communication equipment			
a)	Power supply cards	Nos.	2	
b)	Subscriber Line Interface Cards	Nos.	2	
c)	Common cards	Nos.	2	
d)	Fuse	Set*	1	
S11	Control / Relay / SAS Panel Spare including relays			
1	Breaker failure relay	Nos.	5	
2	Trip Circuit supervision relay	Nos.	5	
3	Self reset trip relay	Nos.	5	
4	Hand reset trip relay	Nos.	5	
5	Timer relay	Nos.	5	
6	Auxiliary relays	Nos.	5	
7	DC supervision relay	Nos.	5	
8	Pole discrepancy relay	Nos.	5	
9	Fuse failure relay	Nos.	5	
10	MCBs of each rating	Nos.	2	
11	Auxiliary relays of each type	Nos.	2	
12	Relays of each type	Nos.	2	
13	Voltmeter, ammeter, MW meter, MVA meter, Frequency meter for each type and rating	Nos	2	
14	Transducers of each type and rating	Nos	2	
15	Synchroscope	Nos	1	