

Project : 765kV/400kV S/S Banaskantha		ANNEXURE-VI			
Customer : POWERGRID CORPORATION OF INDIA LTD.					(Rev.01)
	List of Mandatory Spares	Unit	Main Qty	Extn Qty	Total Qty
A)	765KV SF6 CB				
II	765 kV SF6 Circuit Breaker				
1	One complete pole of 765 kV CB with PIR including Grading Capacitor, Pole column, Interrupter, driving mechanism and Marshaling Box without support structure	Lot	1	1	2
2	Grading capacitor (if applicable)	No	1	1	2
3	Rubber gasket, 'O' rings and seal (For Complete replacement for one phase)	Set	1	1	2
4	Trip coils with resistor	Nos.	3	3	6
5	Closing coils with resistor	Nos.	3	3	6
6	Terminal Pad	Nos.	2	2	4
7	Molecular filter (For Complete replacement for one phase)	Nos	2	2	4
8	Corona Rings	Nos	1	1	2
9	Relay Power contactors, switch fuse units, limit switches, push button, timers & MCB etc (One No. of each Type)	Set	1	1	2
10.0	Pressure switch of each type/Density monitor (One No. of each Type)	Set	1	1	2
11.0	Auxiliary switch assembly (For one Phase of CB)	Set	1	1	2
B)	420kV, 125Mvar Bus Reactor				
1.0	Buchholz relay complete with contacts	nos.	1		1
2.0	Local WTI with sensing device and contacts	nos.	1		1
3.0	Remote WTI with sensing device and contacts	nos.	1		1
4.0	Oil temperature indicator (OTI) with contacts and sensing device	nos.	1		1
5.0	420kV Bushing with metal parts and gaskets along with lifting tools	Set	1		1
6.0	145kV Bushing with metal parts and gaskets along with lifting tools	Set	1		1
7.0	Spares insulating oil for washing of oil storage tank , hose pipe, reactor tank inside etc.	KL	10		10
C.	3000A, 50kA, 765kV, 6 core Current Transformer (1-Ph) complete in all respect including terminal connectors	No.	1	1	2
D	765kV, 8800pf CVT (1-Ph) complete in all respects including terminal connector	No.	1	1	2
E.	624kV Surge Arrester				
1.0	624kV Surge arrester complete with insulating base and terminal connectors	No.	1	1	2
2.0	Surge counter/monitor	No.	2	5	7
F)	765 kV Isolator				
F1	3150A, 50kA, Isolator with one E/S				

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1.0	One complete pole of Isolator including support insulator with 1 E/S with operating mechanism for main isolator and earth switch (excluding structure)	No.	1	1	2
2.0	Copper contact fingers for female & male contacts	set	2	2	4
3.0	Open/Close Contactor Assembly, Timer, Key Interlock push button switch & auxiliary switches	set	1	1	2
4.0	Limit switch	Nos.	2	2	4
5.0	Terminal pads & Connectors	no	3	3	6
6.0	Corona shielding ring	Nos.	3	3	6
F2	2000A, 50kA, Isolator with one E/S				
1.0	One complete pole of Isolator including support insulator with 1 E/S with operating mechanism for main isolator and earth switch (excluding structure)	No.	1	1	2
2.0	Copper contact fingers for female & male contacts	set	2	2	4
3.0	Open/Close Contactor Assembly, Timer, Key Interlock push button switch & auxiliary switches	set	1	1	2
4.0	Limit switch	Nos.	2	2	4
5.0	Terminal pads & Connectors	no	3	3	6
6.0	Corona shielding ring	Nos.	3	3	6
G	400kV SF6 Circuit Breaker				
1.0	One Complete Pole of 400kV CB without PIR including Grading Capacitor, Pole column interrupter, with driving mechanism and Marshaling Box but without support structure.	Pole	1		1
1(a)	One Complete Pole of 400kV CB with PIR including Grading Capacitor, Pole column interrupter, with driving mechanism and Marshaling Box but without support	Pole	1		1
2.0	Grading capacitor (if applicable)	No	1		1
3.0	Rubber gasket, 'O' rings and seal (For Complete replacement for one phase)	Set	1		1
4.0	Trip coils with resistor	Nos.	3		3
5.0	Closing coils with resistor	Nos.	3		3
6.0	Terminal Pad	Nos.	2		2
7.0	Molecular filter (For Complete replacement for one phase)	Nos	2		2
8.0	Corona Rings	Nos	1		1
9.0	Relay Power contactors, switch fuse units, limit switches, push button, timers & MCB etc (One No. of each Type)	Set	1		1
10.0	Pressure switch of each type/Density monitor (One No. of each Type)	Set	1		1
11.0	Auxiliary switch assembly (For one Phase of CB)	Set	1		1
H	3000A, 63kA, 400kV, 6 core Current Transformer (1-Ph) complete in all respect including terminal connectors	No.	1		1

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I	400kV, 4400pf CVT (1-Ph) complete in all respects including terminal connector	No.	1		1
J	336kV Surge Arrester				
1.0	336kV Surge arrester complete with insulating base and terminal connectors	No.	1		1
2.0	Surge counter/monitor	No.	2		2
K	400kV Isolator				
K.1	3150A, 63kA, Isolator with one E/S				
1.0	One complete pole of Isolator including support insulator with 1 E/S with operating mechanism for main isolator and earth switch (excluding structure)	No.	1		1
2.0	Copper contact fingers for female & male contacts	set	2		2
3.0	Open/Close Contactor Assembly, Timer, Key Interlock push button switch & auxiliary switches	set	1		1
4.0	Limit switch	Nos.	2		2
5.0	Terminal pads & Connectors	no	3		3
6.0	Corona shielding ring	Nos.	3		3
K.2	2000A, 63kA, Isolator with one E/S				
1.0	One complete pole of Isolator including support insulator with 1 E/S with operating mechanism for main isolator and earth switch (excluding structure)	No.	1		1
2.0	Copper contact fingers for female & male contacts	set	2		2
3.0	Open/Close Contactor Assembly, Timer, Key Interlock push button switch & auxiliary switches	set	1		1
4.0	Limit switch	Nos.	2		2
5.0	Terminal pads & Connectors	no	3		3
6.0	Corona shielding ring	Nos.	3		3
Q	Bus Post Insulator				
1.0	765kV	Nos.	2	1	3
2	400kV	Nos.	1		1
3	145 kV	Nos.	0	1	1
R	Relay and Protection system				
1.0	Line Protection panel spares				
a	Main-I Numerical distance relay (complete unit)	Nos.	1	1	2
b	Main-II Numerical distance relay (complete unit)	Nos.	1	1	2
c	Numerical Line current differential relay (complete unit)	Nos.	1		1
2.0	Transformer protection panel spare				0
a	Transformer differential protection	Nos.	1		1
b	Restricted earth fault protection relay with non-linear	Nos.	1		1
c	Direction O/C & E/F relay (if stand alone)	Nos.	1		1
3.0	Reactor Protection panel spare				0
a	Reactor differential protection relay	Nos.	1	1	2

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b	Reactor Back up impedance relay (if standalone)	Nos.	1	1	2
c	Restricted earth fault protection relay with non-linear	Nos.	1	1	2
4	Common Spares				0
a	Power supply module for Bus Bar protection.(If applicable)	Nos.	1		1
b	Bus Bar Bay unit module if Applicable	Nos.	1		1
S	Sub-Station Automation /SCADA system				
1.	Bay control unit (IED) of each type	Nos.	1	1	2
2.	Ethernet switch of each type	Nos.	1	1	2
T	PLCC, DPC and EPAX Spares				
1.	Set of prints for carrier terminal	Set	2	2	4
2.	Set of prints for Analogue protection coupler (of each type)	Set	2	2	4
3.	Set of prints for EPAX	Set	1	1	2
4.	Set of print for Digital Protection coupler	Set	2	2	4
U	Fire protection System				
1.0	Deluge Valve	Set	1	1	2
V	220V Battery Charger				
1.	Set of Control Cards	Set	1		1
2.	Set of relays	Set	1		1
3.	Rectifier transformer	Set	1		1
4.	Thyristor/ Diode	Set	1		1
5.	Fuses of Thyristor with indicators	Set	1		1
W	48V Battery Charger				
1.	Set of Control Cards	Set	1		1
2.	Set of relays	Set	1		1
3.	Rectifier transformer	Set	1		1
4.	Thyristor/ Diode	Set	1		1
5.	Fuses of Thyristor with indicators	Set	1		1
X	DG SETS :				
1	Self starter assembly	Nos.	1		1
2.0	AVR (Auto Voltage Regulator)/ AVR card	Set	1		1
Y	Mandatory Spare for Telecommunication equipment				
1	Transmission Equipment				
	SDH Equipment (STM- 16 MADM, upto 3 MSP protected directions)				
(I)	Common cards, Cross-connect/control cards, Optical base cards, Power supply cards, power cabling, other hardware & accessories (each)	Set	1		1
(II)	Optical cards / SFP@ for :				
(a)	S16.1	No.	1		1
(b)	L16.1	No.	1		1
(c)	L16.2	No.	1		1

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(d)	Optical Line Interface card (to support minimum 150 km) for STM-16**	No.	1		1
(e)	Optical Line Interface card (to support minimum 225 km) for STM-16**				
i	To support minimum 175 km	No.	1		1
ii	To support minimum 200 km	No.	1		1
iii	To support minimum 225 km	No.	1		1
(III)	Tributary Cards				
(a)	E1 Interface card (Minimum 16 interfaces per card)	No.	1		1
(b)	Ethernet interfaces 10/100 Mbps with Layer-2 switching (Minimum 4 interfaces per card.)	No.	1		1
2	Termination Equipment				
A1	Drop & Insert Multiplexer Base Equipment (Common cards, Power supply cards, power cabling, other hardware & accessories including sub-racks, etc. fully equipped excluding subscriber line interface cards)	Set\$\$	1		1
A2	Subscriber Line Interface Cards				
a)	2 wire (sub/sub) voice channel cards (min 8 channels per card)	No.	1		1
b)	4 wire (E&M) voice channel cards (min 8 channels per card)	No.	1		1
c)	Asynchronous Sub Channels data cards (V.24/V.28) , minimum 4 channels per card	No.	1		1
3.0	Pre Connectorized Optical Fiber Patch Cords (10 Mtrs) – Pack of six Patch cords	Set	3		3
4.0	4 port VOIP gateway for remote locations (RTU locations)	No.	1		1