

ANNEXURE-A

LIST OF SPARES

**Project : 400kV SWITCHYARD FOR PRAGATI -III COMBINED CYCLE POWER
PROJECT 1500MW (NOMINAL) AT BAWANA DELHI**

Sl.No.	Description	Unit	Quantity
D3	LIST OF MANDATORY SPARES FOR 400KV RELAY PANELS		
1.00.00	PROTECTIVE RELAYS		
1.01.00	EHV bus bar protection	No. module of each type	1
1.02.00	Breaker failure relay	No. single pole relay	3
1.03.00	Trip relay	Nos.	2
1.04.00	Aux. relay	Nos. of each type	2
1.05.00	Voltage selection relay	No.	1
1.06.00	Contact multiplication relay	Nos.	2
1.07.00	Tee zone diff. relay	No. of each type	1
1.08.00	Trip circuit supervision relay	Nos.	2
1.09.00	Event Logger module of each type and rating	each	1
1.11.00	Time synchronisation equipment	No.	1
2.00.00	METERS AND RECORDERS		
a)	Voltmeters (1 No. each for different ranges)	No.	1
b)	Ammeter (1 No. each for different ranges)	No.	1
c)	MW meter (1 No. each for different ranges)	No.	1
d)	MVAR meter (1 No. each for different ranges)	No.	1
e)	MW transducer	Nos.	2
f)	MVAR transducer	Nos.	2
g)	MWH meter	Nos. of each type and accuracy	2
h)	MVARH meter	No. of each type and accuracy	1
i)	Frequency meter	Nos.	2
j)	Synchroscope	No.	1
k)	MW transducer (Summation)	No.	1
l)	MVAR transducer (Summation)	No.	1
4.00.00	SUB-STATION AUTOMATION SYSTEM		
1	Bay control unit (complete with all components)	Nos.	2
2	Numerical Relays comprising various bay protection units	No. of each type	1
3	Interface relays used in the system	10% of each type of total population (min. 1 No.)	Lot
4	Operator work station (OWS) alongwith software, monitor, mouse, keyboard etc.	No.	1
5	Complete server(if included in main package)	No.	1
6	Complete Programming station alongwith software, monitor etc.	No.	1
7	Hard Disks for OWS	No.	1
8	Hard Disk for Servers(if supplied)	No.	1
9	Lamps/LEDs used in the system	100% of total quantity	Lot
10	Power supply modules used in the system	Nos. of each type	2
11	Lan switches (if included in main package)	No. of each type	1
12	Media cleaning solution	Bottles	2
13	Fuses	100% of each type and rating	1

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Sl.No.	Description	Unit	Quantity
14	Terminals Blocks	5 Nos. of each type,make, model and rating	Lot
15	Interface cables containing standard length of each type of cable and its connector for each type of peripheral	Sets	2
16	MCBs	50% of each type, make and model used in the system	Lot
17	Relays other than numerical relays type	No. of each type	1
8.00.00	DC BATTERIES (Following spares for each battery size)		
8.01.00	Vent plugs	Nos.	10
8.02.00	Cell insulaators	Nos.	16
8.03.00	Container	Nos.	4
8.04.00	Acid level indicator float	Nos.	4
9.00.00	BATTERY CHARGERS (Following spares for each charger rating)		
9.01.00	SCRs	Nos.	4
9.02.00	Fuses	No. of each type	2
9.03.00	Blocking diode	No	6
9.04.00	Potential meter	No	2
9.05.00	Electronic Cards (with all components mounted)	Set of each type and rating	1
13.12.00	Fire Fighting System :		
i)	Hydrant valve complete (internal) single headed with instantaneous female coupling	20 % of population	Lot
ii)	Hydrant valve complete (external) single headed with instantaneous female coupling	20 % of population	Lot
v)	Spindle with nuts of Hydrant valve	20 % of population	Lot
vi)	Bonnet, gland nut, rubber assembly of hydrant valve	25 % of population	Lot
vii)	Seat, check nut, washer assembly of hydrant valve	25 % of population	Lot
viii)	Rubber washer for female coupling	50 % of population	Lot
ix)	Instantaneous, female coupling assembly complete for hydrant valve	20 % of population	Lot
x)	Lock pin assy. For hydrant valve	20 % of population	Lot
13.13.00	Smoke/Heat Detectors		
i)	Photo-electric type detector	10 % of population	Lot
ii)	Multisensor type detectors (Addressable)	10 % of population	Lot
iii)	Indicators assembly for smoke detectors provided in false ceiling (Response indicator)	5% of population	Lot
ix)	Detector base	10 % of each type	Lot
x)	Detector head (including ionisation, photoelectric, heat types)	10 % of each type	Lot
xi)	Manual pull stations	10 % of each type	Lot
13.14.00	Control/Annunciation Panels (Addressable)		
i)	Control supply transformer	No. of each type	1
ii)	Relay and timer	No. of each type	1
iii)	Contactors	No. of each type	1
iv)	Ammeter	No. of each type	1
v)	Voltmeter	No. of each type	1

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Sl.No.	Description	Unit	Quantity
vi)	LEDs	Nos. of each type	4
vii)	Control Switches	No. of each type	1
viii)	Push Button complete with contact elements	No. of each type	1
ix)	Control fuse base with carrier complete set for panel	Nos. of each type	2
x)	Bi-metallic overload relays	No. of each type	1
xi)	Alarm buzzer	Nos. of each type	2