

Annexure-A			
400/132 KV SWITCHYARD PACKAGE FOR NABINAGAR SUPER THERMAL POWER PROJECT (3X660MW)			
Item	Description	Unit	Quantity
	MANDATORY SPARES & MAINTENANCE EQUIPMENTS		
IA	(I) CIRCUIT BREAKER 400 kV		
1	Relays, power contractors, switch-fuses for electrical control circuit (consisting of one no. each of all types and ratings)	Set	1
2	Set of gaskets, rings and seals	Set	1
3	Molecular filter for Circuit breaker	Set	1
4	Tripping and closing coil (each type)	Set	6
5	Density monitoring system for Circuit Breaker	Set	1
6	Set of Spares for pneumatic/ Springs/hydraulic operated mechanism	Set	1
7	Fixed and moving arcing contact(of each type)	Set	2
8	Terminal connector (of each type)	No.	1
9	SF6 gas filling valve(of each type)	No.	1
10	One Complete Pole including operating mechanism without controlled switching without closing resister and excluding support structure, common control cubicle and terminal connectors		
	a) 3150 A	No.	1
	b) 2000 A	No.	1
II A	ISOLATORS 400 kV		
1	One Complete pole of each type of HCB isolator with 1 E/S alongwith insulator assembly & operating mechanisms etc. without support structure and terminal connectors		
	a) 3150 A	No.	1
	b) 2000 A	No.	1
2	Copper contact fingers for female contacts (of each type)	Nos.	3
3	Relay, Power contactors, switch fuses for electrical control circuit (one no. of each type and rating)	Set	1
4	Limit switch & aux. switch	Nos.	6
5	Terminal Connectors (of each type)	No.	1
6	Rotary bearing for isolator (of each type)	Nos.	3
IIIA	400 kV CURRENT TRANSFORMER complete in all respects including terminal connectors etc.		

Item	Description	Unit	Quantity
	a) 2000 A (120%)	Nos.	2
	b) 3000 A (120%)	No.	1
IV A.	400 kV CAPACITOR VOLTAGE TRANSFORMER complete in all respect including terminal connectors etc.		
	i) 4400 pF	No.	1
	ii) 8800 pF	No.	1
V A.	390 kV SURGE ARRESTER complete in all respects with surge counter, terminal connector etc.	Nos.	2
Notes:	1. Set means for complete replacement of one circuit breaker and isolator (three phase)		
	2. For CT, CVT and Surge Arrester number (No.) means for complete replacement of one pole/phase of the equipment.		
VI A.	String insulator & hardware, Clamp connectors, spacers and Corona bells for 400 kV system (10% of total Quantity of each type of rating - rounded of to next integer)	Lot	
I B	CIRCUIT BREAKER 132 kV		
1	Relays, power contractors, switch-fuses for electrical control circuit (consisting of one no. each of all types and ratings)	Set	1
2	Set of gaskets, rings and seals	Set	1
3	Molecular filter for Circuit breaker	Set	1
4	Tripping and closing coil (each type)	Nos.	6
5	Density monitoring system for Circuit Breaker	Set	1
6	Set of Spares for pneumatic/ Springs/hydraulic operated mechanism	Set	1
7	Fixed and moving arcing contact(of each type)	Sets	2
8	Terminal connector (of each type)	No.	1
9	SF6 gas filling valve (of each type)	No.	1
10	One Complete Pole including operating mechanism without controlled switching without closing resister and excluding support structure, common control cubicle and terminal connectors		
	a) 2000 A	No.	1
	b) 1250 A	No.	1
II B	ISOLATORS 132 kV		

Item	Description	Unit	Quantity
1	One Complete pole of each type of HCB isolator with 1 E/S alongwith insulator assembly & operating mechanisms etc. without support structure and terminal connectors		
	a) 2000 A	No.	1
	b) 1250 A	No.	1
2	Copper contact fingers for female contacts (of each type)	Nos.	3
3	Relay, Power contactors, switch fuses for electrical control circuit (one no. of each type and rating)	Set	1
4	Limit switch & Aux. switch	Nos.	6
5	Terminal Connectors (of each type)	No.	1
6	Rotary bearing for isolator (of each type)	Nos.	3
IIIB	132 kV CURRENT TRANSFORMER complete in all respects including terminal connectors etc.		
	a) 1200 A (120%)	Nos.	2
	b) 1200 A (150%)	No.	1
IV B.	132 kV CAPACITOR VOLTAGE TRANSFORMER complete in all respect including terminal connectors etc. (8800 pF)	No.	1
V B.	120 kV SURGE ARRESTER complete in all respects with surge counter, terminal connector etc.	Nos.	2
Notes:	1. Set means for complete replacement of one circuit breaker and isolator (three phase)		
	2. For CT, CVT and Surge Arrester number (No.) means for complete replacement of one pole/phase of the equipment.		
VI B.	String insulator & hardware, Clamp connectors, spacers and Corona bells dor 132 kV system (10% of total Quantity of each type of rating - rounded off to next integer)	Lot	
IC	ISOLATORS 33 kV		
1	One Complete pole of each type of HCB isolator with 1 E/S alongwith insulator assembly & operating mechanisms etc. without support structure and terminal connectors		
	a) 630 A	No.	1
2	Copper contact fingers for female contacts (of each type)	Nos.	3

Item	Description	Unit	Quantity
3	Relay, Power contactors, switch fuses for electrical control circuit (one no. of each type and rating)	Set	1
4	Limit switch & Aux. switch	Nos.	6
5	Terminal Connectors (of each type)	No.	1
6	Rotary bearing for isolator (of each type)	Nos.	3
II C.	30 kV SURGE ARRESTER complete in all respects with surge counter, terminal connector etc.	Nos.	1
Notes:	1. Set means for complete replacement of one circuit breaker and isolator (three phase)		
	2. For CT, CVT and Surge Arrester number (No.) means for complete replacement of one pole/phase of the equipment.		
III C.	String insulator & hardware, Clamp connectors, spacers and Corona bells dor 33 kV system (10% of total Quantity of each type of rating - rounded off to next integer)	Lot	
(B)	400kV/132kV SUBSTATION AUTOMATION SYSTEM INCLUDING GENERATOR RELAY PANELS		
1	Bay Control unit (complete with all components)	Nos.	2
2	Numerical Relays comprising various bay protections units, Bus Bar and Insulating Scheme(of each type)	No.	1
3	Numerical Relays comprising GRP	No.	1
4	Cards/modules of Generator Disturbance Recorder, Line DR (if Stand-alone)	No.	1
5	Energy Meter	No.	1
6	Operator work station (OWS) alongwith software, monitor, mouse, keyboard, printer etc.	No.	1
7	Complete Network Controller/Server along with software	No.	1
8	Complete Programming station along with software monitor etc.	No.	1
9	LAN switches (If included in main package)(of each type)	No.	1
10	Media cleaning solution	Bottles	2
11	Fuses (100 % of each type and rating)	Lot	
12	Terminal blocks (of each type , make, model and rating)	Nos.	5

Item	Description	Unit	Quantity
13	Interface cables containing standards length of each type of cables and its connector for each type of peripheral	Sets	2
14	MCBs (50% of each type, make and model used in the system)	Lot	1
15	Relay other than numerical relays (10% of each type, of total population (min. 1 No.))	Lot	1
16	Gateways (1 no of each type)	No.	1
17	Modem (if applicable) (1 no of each type)	No.	1
18	LIU of OFC including necessary connectors (1 no of each	No	1
19	Transducers (1 no of each type)	No	1
20	Auxiliary CT/PT (1 no of each type)	No	1
21	Lamps used in LVS (50% of total quantity)	Lot	1
II	MAINTENANCE EQUIPMENT		
A	FOR CIRCUIT BREAKER		
	(i) SF6 Gas filling and evacuating plant (portable)	No	1
	(ii) SF6 Gas recycling and purifying plant (300 ltr)	No	1
	(iii) SF6 gas leak detector	Nos	2
	(iv) Operation analyzer with DCRM Kit	No	1
B	FOR SURGE ARRESTER		
	Leakage current analyzer (for gapless surge arrester)	No	1