

Mandatory Spares for Substation Package for Extn. of 400kV Wardha (PG) Substation associated with Mundra Regional System for WR

MANDATORY SPARES FOR EXTN. OF 400kV WARDHA Site

Sl. No.	Item Description	Unit	Qty.
1.0	Circuit Breaker		
a)	420kV Circuit Breaker	LS (As per Annexure-3)	1
2.0	Current Transformer (1 Ph.)		
a)	420kV CT(3000 A 40kA with 120%)	No.	1
3.0	Capacitive Voltage Transformer		
a)	420kV CVT (8800 pf)	No.	1
4.0	Isolator (Three phase) Double Break		
a)	420kV Isolator	LS (As per Annexure-3)	1
5.0	Surge Arrestor		
a)	336kV Surge Arrestor	LS (As per Annexure-3)	1
6.0	Relay & Protection Panels	LS (As per Annexure-3)	1
7.0	Sub-Station Automation System	LS (As per Annexure-3)	1
8.0	Erection Hardware	LS (As per Annexure-3)	1
9.0	400kV BPI'S	Nos.	2
C	Other/common equipments pertaining to C&R system		
(i)	Relay test kit	No.	1
	NOTE: LS is quantified in Annexure-3 .		

ANNEXURE – III

**BILL OF QUANTITY FOR MANDATORY SPARES FOR EXTENSION OF
400kV WARDHA S/S**

S.NO.	DESCRIPTION	UNIT	QTY
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A. 420 kV SF6 Circuit Breaker(3150A, 40 kA)

1.	One pole complete with closing resistor, Grading capacitor complete with column and interruptor with MB and operating mechanism and without support structure	No.	1
2.	SF6 Gas	- 40% of ordered quantity	
3.	Trip coils with resistor	Nos.	3
4.	Closing coils with resistor	Nos.	3
5.	Terminal pad & connectors	Nos.	3
6.	Molecular filter for SF6 Circuit for 1 Pole of CB	Sets	3
7.	Density/Pressure monitor for SF6 circuit for 1 pole of CB.	No.	1
8.	Corona rings of each type	Set	1
9.	Fixed moving and arcing contacts Including insulating nozzles for one pole of CB	Set	1
10	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc.	Set	1
11.	Closing Coil Assembly	No.	1
12.	Trip Coil Assembly	No.	1
13.	Set of Control Valves (of each type)	Set	1

14.	Pressure switches (For one CB)	Set	1
15.	Pressure gauges & Coupling device of each type	Set	1
16.	Aux. contact assembly	No.	1
17.	Operation counter	No.	2
18.	Micro Filter set	Set	1
19.	Micro switches for aux. contact assembly	Set	1
20.	All types of coupling for SF6 gas	Set	1
21.	Pipe length (Copper & Steel)	Set	1

A.1 Pneumatic Operating mechanism (If Applicable)

1.	Complete Operating mechanism	No.	1
2.	All types of Valves for Pneumatic Operating mechanism	Set	1
3.	"O" rings, Gaskets & Seals for operating mechanism	Set	1
4.	Dowty Seal	Sets	2

A.2 Hydraulic Operating mechanism (If Applicable)

1.	Hydraulic Operating mechanism with drive motor	No.	1
2.	Pressure gauges for Hydraulic Operating mechanism and pressure switches	Set	1
3.	"O" rings, Gaskets & Seals for operating mechanism	Set	1
4.	All types of Valves for Hydraulic Operating mechanism	Set	1
5.	Pressure Transducer	No.	1
6.	Pressure switch for Hydraulic circuit/ Pr. gauges	Set	1

7.	Accumulator	No.	1
8.	Hydraulic Oil	-	40% of initial ordered quantity
9.	Hydraulic filter	Sets	3
10.	Pipe length	Set	1

A.3 Spring Operating mechanism (If Applicable)

1.	Complete Operating mechanism	No.	1
2.	Closing Dashpot	Set	1
3.	Opening Dashpot	Set	1
4.	Opening Catch Gear	Set	1
5.	Closing Catch Gear	Set	1

B. 420 kV Double Break Isolator (3150 A)

1.	One complete pole with support insulators, Support structure stool (2 nos.) & for Isolator & Earth switch	Set	1
2.	Copper contact fingers for female & male contacts	Set	1
3.	Terminal pad with connectors	Set	1
4.	Relays, power contactors, MCBs, switch fuses, push buttons and resistors for electrical control circuit as per approved schematic	Set	1
5.	Timers, Key interlock, Push button switch, Limit switch, Aux. Switches, corona shield, Motor having bearing assembly, etc.	Set	1
6.	Corona shield rings	Nos.	3

C. 336kV Surge Arrester

1.	336kV Surge Arrester complete With insulating base, support structure tool & 1 no. terminal connector of each type	Nos.	1
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2.	Surge Counters	Nos.	3
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D. Control and Relay Panel

1. Breaker Relay panel spares

i) Breaker failure relay	No.	1
ii) Trip circuit supervision relay	Nos.	2
iii) Auto Reclose relay with check	No.	1

synchronizing relay and dead
line charging relay(**If stand alone**)

iv) Self reset trip relay	No.	1 relay of each type
v) Hand reset trip relay	No.	1 relay of each type
vi) Timer relay	No.	1 relay of each type
vii) DC supervision relay	No.	1
viii) Flag relays	No.	1 relay of each type
ix) Auxiliary relays	No.	1 relay of each type

2.0 Line Protection Panel Equipment spares

i) Main 1 numerical distance relay (excluding external trip relays)	Set	1
ii) Main 2 Static distance relay (excluding external trip relays)	Set	1
iii) Disturbance recorder comprising of evaluation & acquisition units (If stand alone)	Set	1
iv) Distance to fault locator including mutual compensation units	No.	1

(If stand alone)		
v) Overvoltage protection relay with timers (stage 1 & stage 2) (If stand alone)	Set	1

3.0 Reactors Protection Panel Spares

i) Reactor differential protection relay with 1 no. Non-linear resistor	No.	1
ii) Restricted earth fault protection relay with non-linear resistor	set	1
iii) Reactor Back up impedance protection relay	set	1

E. Substation Automation System

1. Intelligent Electronics Device (IED)	Set	1
2. Set of each type optic fire cables of length of longest section used	Set	1
3. Set of connectors (one of each type) for optic fibre cables	Set	1
4. Ethernet Switch	No	1

F. Erection Hardware Item

5% spares of the actual Quantities for insulator, hardwares, clamps & connectors, spacers, corona bell, At tube, welding sleeves etc.