

SALMADAM AFGANISTAN 3X14MW HEP
GENERAL IDEA OF WEIGHTS TO BE HANDLED

ANNEXURE I PART 1

The information given below is tentative. Only a few of the typical components are listed below to give a general idea to the bidder.

The weights and sizes indicated below are only approximate and are liable to vary in this contract
Approximate total weight of materials to be handled break-up is given below

Sl. No.	System	Equipment/component	Package Weight, Kg	Package Length, MM	Package Weight, MM	Package Height, MM	No. of Cases Per Unit	Total Cases for the Project	TOTAL WEIGHT (KG)
GENERATOR									
1		Wound Stator Sector	19000	6200	2100	2600	3	9	171000
2		Poles	700	1100	900	600	20	60	42000
3		Rim Punching	2500	1600	700	850	12	36	90000
4		Shaft	11000	5500	1400	1600	1	3	33000
5		Spider	10000	3400	3400	1200	1	3	30000
6		Top Bracket Housing	5000	2800	2800	600	1	3	15000
7		Top Bracket Arm	800	2000	400	600	6	18	14400
8		Bottom Bracket Housing	16000	2800	2800	1800	1	3	48000
9		Air Coolers	400	1900	700	500	6	18	7200
10		Plug in Type Oil Coolers for Lower Bearing	600	1200	700	900	4	12	7200
11		Plug in Type Oil Coolers for Upper Bearing	200	700	700	500	2	6	1200
12		Generator Large Misc Packages	1000	3000	1500	1200	8	24	24000
13		Generator Medium Misc Packages	750	2000	1000	1000	14	42	31500
14		Generator Small Misc Packages	500	1200	800	800	20	60	30000
TURBINE									
1		DTCONE	3500	2.5	2.5	1.5	1	3	10500
			1000	2.6	2	0.5	1	3	3000
			1000	1.5	1.5	1	1	3	3000
2		DT LINER	3000	3.4	3	3	1	3	9000
			3000	3.6	2.1	6	1	3	9000
			1500	2.6	1.5	1.5	1	3	4500
3		PIER NOSE LINING	1000	2.5	1.8	1.6	1	3	3000
4		STAY RING	7000	4	3.2	1.5	1	3	21000
			2000	3	1.5	1.5	1	3	6000
5		SPIRAL CASING (In about nine segments, maximum plate thickness less than 25 mm)	3000	3.8	2	2	1	3	9000
			3000	4.5	2	2	1	3	9000
			3000	4.7	2.5	2.1	1	3	9000
			3000	2	2	1	2	6	18000
6		PIT LINER	1500	3	2.2	2	1	3	4500
			1500	3	1.6	2	1	3	4500
			1000	1	0.5	0.6	1	3	3000
7		GUIDE Bearing	3000	2	2	1.5	1	3	9000
			1000	1	1	0.8	1	3	3000
			1000	1.5	1.5	0.5	1	3	3000
8		Shaft Sealing	1500	2	2	1.5	1	3	4500
			1000	1	1	0.5	1	3	3000
9		Runner	5000	2.5	2.5	1.5	1	3	15000
10		Shaft	6000	4	1	1	1	3	18000
11		Guide Apparatus	3500	3	3	1	1	3	10500
			1000	2.7	2.7	0.5	1	3	3000
			1000	2	2	0.8	1	3	3000
			1500	1.5	1	1	4	12	18000
12		B.F.Valve	15000	3.5	2.7	1.2	1	3	45000
			2000	2	1	0.5	1	3	6000
			2000	1	1	1	1	3	6000

13		G.V.Servo motor	2000	1	0.8	0.8	1	3	6000
			1000	0.8	0.8	1	2	6	6000
			1000	0.5	0.5	1	2	6	6000
14		BFV. Servo motor	2000	1.2	1.2	2	1	3	6000
15		Large Misc Packages	2000	2	2	2	15	45	90000
16		Medium Misc Packages	1500	2	1	1	15	45	67500
17		Small Misc Packages	500	1.5	1	1	25	75	37500
		GOVERNING & OIL SYSTEM							
1		Hydro Mechanical Cabinet	1700	1500	1600	3000	1	3	5100
2		Electro Hydraulic Governor Controller (EHGC)	900	1200	1200	2520	1	3	2700
3		Tooth Wheel & Magnetic pick-up screen cable	50	750	750	300	1	3	150
4		Maintenance tool for software Modification & Development	10	750	750	300	1	1	10
5		Hydraulic Control panel for MIV	650	850	1000	2350	1	3	1950
6		Oil Pressure Receiver	2300	Ø 1250	Ø 1250	3000	1	3	6900
7		Oil Sump Tank	2900	1600	2100	1300	1	3	8700
		OIL HANDLING & PURIFICATION SYSTEM							
1		Insulating oil filtration system	2500	1500	3000	2000	1	1	2500
2		Lubricating oil filtration system	2500	1500	3000	2000	1	1	2500
3		Dirty oil tank	1700	2000	3500	2500	2	2	3400
4		Clean oil tank	1700	2000	3500	2500	2	2	3400
5		Oil transfer pump	50	500	1000	750	2	2	100
6		Piping & fittings	500	800	3500	1200	1	2	1000
7		Spares	400	800	800	2000	1	2	800
8		First filling of Oil drum	200	Ø 600	Ø 600	900	12	36	7200
		INSTRUMENTS & SPARES FOR OIL SYSTEM							
1		Level controller, Moisture detector	60	800	800	1200	1	1	60
2		Dial Type Thermometer	30	800	800	1200	1	1	30
3		Pressure Transmitter	45	800	800	1200	1	1	45
4		Turbine discharge measuring equipment	60	800	800	1200	1	1	60
5		RTD, Recorder, Thermal relay, Pressure gauge, Limit switch, float switches. EHT tester	65	800	800	1200	1	1	65
6		Mandatory spares Governor EHT	50	800	800	1200	1	1	50
7		Mandatory spares Governor Pump	50	800	1400	1200	1	1	50
8		Mandatory spares Governor MDV	50	800	800	1200	1	1	50
9		Mandatory spares Governor Idler valve & safety valve	50	800	800	1200	1	1	50
10		Recommended spares HMC	10	800	800	1200	1	1	10
11		Recommended spares HMC	10	800	800	1200	1	1	10
12		Mandatory spares MISC	30	800	800	1200	1	1	30
13		HR/TR water level measuring equipment Sensor	10	800	800	1200	1	1	10
14		HR/TR water level measuring equipment	40	800	3500	1200	1	1	40

15		Hydraulic over speed device and turbine junction box	30	800	800	1200	1	1	30
16		Electro magnetic flow meter	24	800	800	1200	1	1	24
		SWITCHYARD EQUIPMENT							
1		Control Cubicle	30	0.70	0.50	0.50	6	6	180
2		123kV Circuit Breaker	1,600	3.30	1.80	0.80	5	5	8000
3			300	1.20	1.10	0.10	5	5	1500
4			250	4.10	0.60	0.40	5	5	1250
5			225	2.40	0.60	0.50	5	5	1125
6		SF6 Gas	87	1.40	0.40	0.40	5	5	435
7		123kV CT	800	3.00	1.00	1.00	15	15	12000
8		123kV CVT	1,000	2.50	1.00	1.00	3	3	3000
9		123kV BPT	1,000	2.50	1.00	1.00	3	3	3000
10		123kV Isolator	200	5.00	0.50	0.50	7	7	1400
11			70	1.50	0.50	0.50	42	42	2940
12			200	1.50	0.50	0.50	21	21	4200
13			150	1.00	1.00	0.50	14	14	2100
14		96kV LA	100	0.60	0.60	2.00	15	15	1500
15		132kV Line Trap	300	1.50	1.50	1.80	3	3	900
16		Disc Insulator	200	2.00	0.50	0.50	54	54	10800
17		Support Post Insulators	150	1.00	0.50	0.50	63	63	9450
18		Conductor Drum	3,000	Dia: 2 M			5	5	15000
19		Overhead Shield Wire	1,000	Dia : 1 M			3	3	3000
20		Power & Control Cables	2,000	1.50	1.50	2.80	10	10	20000
21		Cable Glands							100
22		Control & Protection Panels	1,500	3.00	1.50	2.80	1	1	1500
23		Earthmat rod							1000
24		Earthing Strips	3,000	8.00	2.00	3.00	1	1	3000
25		Pipe Electrode							1000
26		GI Pipe alongwith sockets & bends							1000
27		Cable Trench Material							0
28		CLAMPS	1,000	2.00	1.00	2.00	1	1	1000
29		PLCC Equipment	1500	3	1.5	2.8	1	1	1500
30		SCADA	1500	3	1.5	2.8	1	1	1500
31		Bay Marshalling Kiosk	150	1.00	1.00	0.50	5	5	750
32		CT/ CVT Junction Box	150	1.00	1.00	0.50	7	7	1050
33		Civil Steel Structures & Hardware							
34		Mandatory Spares							
		GENERATOR RELAY PANELS & 110 KV RELAY PANELS							
1		Panels	1200	2200	1200	2600	9	9	10800
2		Panels	1100	2200	1000	2600	2	2	2200
3		Panels	450	950	1000	2600	3	3	1350
4		Panels	550	1200	1000	2450	1	1	550
5		Panels	150	1220	500	500	7	7	1050
		BOP ELECTRICAL							
1		415V AC System							
		1.1 UAB	3700	5500	1000	2450	1	3	11100
		1.2 LTB-1	1200	4000	1000	2450	1	1	1200
		1.3 LTB-2	1000	3600	1000	2450	1	1	1000
		1.4 SSB-1	3700	5500	1000	2450	1	1	3700
		1.5 SSB-2	3700	5500	1000	2450	1	1	3700
		1.6 SSB-3	1100	2700	1000	2450	1	1	1100

	1.7	SSB-4	1100	2700	1000	2450	1	1	1100
	1.8	SSB-5	3200	4500	1000	2450	1	1	3200
	1.9	SSB-6	3200	4000	1000	2450	1	1	3200
	1.1	Spares	500	2000	2000	2000	1	1	500
2	220V DC System								
	2.1	Battery	6000	3500	600	2000	1	1	6000
	2.2	Battery Charger	1200	1250	850	2000	1	1	1200
	2.3	DCDB	1200	3000	400	2000	1	1	1200
	2.4	Spares	500	2000	2000	2000	1	1	500
3	Aux. Pump Motor Starter Panels								
	3.1	H.S. Lub. Pump Motor Control Panel	400	1100	400	1100	1	3	1200
	3.2	Brake Dust Collector Motor Control Panel	200	700	400	700	1	3	600
	3.3	Stator Heaters Control Panel	400	1100	400	1100	1	3	1200
	3.4	Gov. Oil Pumps Motor Control Panel	600	1100	400	1100	1	3	1800
	3.5	MIV Oil Pumps Motor Control Panel	600	1100	400	1100	1	3	1800
	3.6	Oil Leakage Motor Control Panel	200	700	400	700	1	3	600
	3.7	Top Cover Drainage Motor Control Panel	200	700	400	700	1	3	600
	3.8	C.W. System Control Panel	1000	4000	800	2300	1	1	1000
	3.9	H.P. Air Compressor Motor Control Panel	600	1100	400	1100	1	1	600
	3.10	L.P. Air Compressor Motor Control Panel	600	1100	400	1100	1	1	600
									500
3	Starter Panels for								
	3.11	Dewatering Pump Motor Control Panel	600	1100	400	1100	1	1	600
	3.12	Drainage Pump Motor Control Panel	600	1100	400	1100	1	1	600
	3.13	Emr. Drainage Pump Motor Control Panel	600	1100	400	1100	1	1	600
	3.14	Spares	600	2000	2000	2000	1	1	600
									0
4	DG Sets								0
	4.1	DG Sets	13000	8000	3000	3200	2	2	26000
	4.2	Control Panel	1000	3000	1000	2300	1	1	1000
	4.3	Storage Tank	200	3500	2500	1500	1	1	200
	4.4	Pipes & Fittings	1000						1000
	4.5	Loose Oil	200	6000	2000	2000	1	1	200
	4.6	Spares	500						500
									0
5	Aux. Transformers								
	5.1	Station Service Transformer	15000	7500	5000	5500	1	1	15000
	5.2	Marshalling Box	500	1500	400	1500	1	1	500
	5.3	Station Aux. Transformer	4000	2200	2100	2600	2	2	8000
									0
6	Cables, Cable Trays & Accessories								0
	6.1	H.T. Power Cables (1 drum)	6000					1 lot	6000
	6.2	L.T. Power Cables	30000					1 lot	30000
	6.3	Control Cables						1 lot	
	6.3.1	Type-1 (4 drums)	1700						1700
	6.3.2	Type-2 (8 drums)	4000						4000
	6.3.3	Type-3 (8 drums)	6000						6000
	6.3.4	Type-4 (7 drums)	10000						10000
	6.4 Instrumentation Cables							1 lot	
	6.4.1	Type-1 (4 drums)	2000						2000
	6.4.2	Type-2 (8 drums)	2500						2500
	6.4.3	Type-3 (6 drums)	3600						3600

	6.4.4	Type-4 (4 drums)	5000						5000
	6.4.5	Type-5 (5 drums)	5000						5000
	6.4.6	Type-6 (3 drums)	1000						1000
	6.5	Cable Accessories	1000					1 lot	1000
	6.6	Cable Trays	50000					1 lot	50000
7	Illumination System								
	7.1	Luminaries & Accessories	15000	6000	2000	2000	1	1	15000
	7.2	Street Lighting Poles	4000	11000	2000	2000	1	1	4000
	7.3	Panels	2000	600	300	600	4	4	2000
8	Fire Fighting & Fire Detection System								
	8.1	Panels	800	1200	800	2200	1	1	800
	8.2	Hydrant Service Systems & other equipments	5000	6000	2000	2000	1	1	5000
	8.3	Pipes	8000	6000	2000	2000	1	1	8000
	8.4	Panels	800	1200	800	2200	1	1	800
	8.5	Hydrant Service Systems & other equipments	5000	6000	2000	2000	1	1	5000
	8.6	Pipes	8000	6000	2000	2000	1	1	8000
	8.7	Panels	800	1200	800	2200	1	1	800
9	Public Address System								
	9.1	Control Panels	800	1200	800	2200	1	1	800
	9.2	Hand Sets, Loudspeakers & accessories	1000	4000	2000	2000	1	1	1000
10	Switchgear								
	10.1	Panels	2500	2750	2650	4155		2	5000
	10.2	Panels	2500	1450	2650	4155		1	2500
11	Electrical Lab. Eqpt.								
	11.1	Instruments	4000						4000
		BOP MECHANICAL							
12	EOT Crane 1 x 75/ 15T								
	12.1	Crane Component	650	2000	2100	1000	10	10	6500
	12.2	Crane Component	400						4000
	12.2	Crane Component	250	2000	1000	600	15	15	3750
	12.2	Crane Component	200	1500	1200	600	20	20	4000
	12.2	Crane Component	150	1000	1200	600	20	20	3000
	12.2	Loose Items	60000						
13	Ventilation System								
	13.1	Component of Ventilation	650	3000	1000	500	10	10	6500
	13.2	Component of Ventilation	550	1500	1200	800	12	12	6600
	13.3	Component of Ventilation	200	1200	800	600	15	15	3000
14	Elevator								
	14.1	Elevator component	650	3000	2500	500	12	12	7800
	14.2	Elevator component	250	2000	1200	600	10	10	2500
	14.3	Elevator component	200	1200	800	600	9	9	1800
15	Mechanical Workshop Equipments								
	15.1	Mech. W/S Component	500	3000	1500	1000	6	6	3000
	15.2	Mech. W/S Component	300	2000	1200	1000	15	15	4500
	15.3	Mech. W/S Component	250	1500	1200	1000	12	12	3000
									1569104
16	GEN.TRANSFORMER								
		TRANSFORMER	50000	4500	3500	3500	1	3	150000

PART II 12840
PART III 22600
1754544
SPARES/MISC ITEMS 87727.2
1842271.2
SAY 1900

Table of Panels and tentative dimensions ANNEXURE I PART II

W.B.S. Element no.: CE/0352-SH1-52-01
 CE/0352-SH2-52-01
 CE/0352-SH3-52-01
 CE/0352-PR1-52-01
 CE/0352-PR2-52-01
 CE/0352-PR3-52-01

Project : Salma Dam H.E.P 3 x 14MW
 Equipment : Controls & supervision systems

Reference	Description	Qty	Total weight in Kgs	Shipping section	Panel dimensions in mm			Dimensions of packed shipping section in mm		
					Width	Depth	Height	Width	Depth	Height
ASE	Auto sequencer Eqpt.	3	2500	1	3053	800	2415	3053+75+75= 3203	800+75+75= 950	2415+150+75 =2635
TMP	Temp. Measurement panel	3	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75 =2635
GP	Gauge panel	3	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75 =2635
TGIP	Turbine Generator Instrument Panel	3	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75 =2635
UAP	Unit Alarm Panel	3	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75 =2635

CCP	Common control	1	1500	1	2302	800	2415	2302+75+75= =2452	800+75+75= 950	2415+150+75= =2635
SCP	Switch Yard Control Panel	1	2000	1	3053	800	2415	3053+75+75= =3203	800+75+75= 950	2415+150+75= =2635
MMP	Mosaic Mimic Panel	3	1500 Each	3	2277	800	2415	2277+75+75= =2427	800+75+75= 950	2415+150+75= =2635
					2252	800	2415	2252+75+75= =2402	800+75+75= 950	2415+150+75= =2635
					2277	800	2415	2277+75+75= =2427	800+75+75= 950	2415+150+75= =2635
DIP	Dam Interface Panel	1	1500	1	2302	800	2415	2302+75+75= =2452	800+75+75= 950	2415+150+75= =2635
SAP	Switch Yard Alarm Panel	1	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75= =2635
CAP	Common Alarm Panel	1	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75= =2635
UPS	UPS	1	2500	1	3053	800	2415	3053+75+75= 3203	800+75+75= 950	2415+150+75= =2635
HMI	HMI	1	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75= =2635
LOOSE ITEMS-1	LOOSE ITEMS	1	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75= =2635
LOOSE ITEMS-2	LOOSE ITEMS	1	900	1	1000	800	2415	1000+75+75= 1150	800+75+75= 950	2415+150+75= =2635

Table of panels and tentative dimensions

ANNEXURE I PART III

W.B.S. Element no.: CE/0352-SH1-48-01
 CE/0352-SH2-48-01
 CE/0352-SH3-48-01

Project : Salma Dam H.E.P 3 x 14MW
 Equipment : Static Excitation equipment with dynamic braking

Reference	Description	Qty.	Total weight in Kgs	Shipping section	Panel dimensions in mm			Dimensions of packed shipping section in mm		
					Width	Depth	Height	Width	Depth	Height
REG	Regulation cubicle	1	1000	1	1200	1250	2295	1200+150+50 =1400	1250+100+100= 1450	2295+175+250 =2720
FS	Field Suppression	1	4400	1	3243	1250	2295 Refer note 1)	3243+150+50 =3443	1250+100+100= 1450	2295+175+250 =2720
TY	Thyristor cubicle	3								
AUX. TR	Aux. Transformer cubicle for dynamic braking	1	1500	1	1500	1250	2295	1500+150+50 =1700	1250+100+100= 1450	2295+175+250 =2720
IS	Isolator cubicle	1	2000	1	2750	1500	2000	2750+150+50 =2950	1500+100+100= 1700	2000+175+250 =2425
TR	Transformer cubicle	1	1200	1	2550	1500	2450 Refer Note 2)	2550+150+50 =2750	1500+100+100= 1700	2450+175+250 = 2875

T1	Excitation Transformer	1	1800	1	1400	670	1900	1400+250 =1650	670+630=1300	1900+250 = 2150
Others	Loose items & Accessories a] cooling Fans	4	110 each					870	870	600
	B] loose items	3	100 each					870	870	600
	C]Cables	2						Cable drums		

Note :

- 1) 2295 mm is cubicle height. Above each of the three thyristor cubicles there is a cooling fan and its height is 245mm.
- 2) 2300mm is cubicle height. 150mm is the height of duct and flange together on top of the cubicle. (Total height = 2400 = 2300 + 150)
- 3) **In addition** to the different shipping sections of panels, there will be **about 8 boxes** which will contain loose dispatch items, like thyristor cooling fans, module packing box, foundation bolts, special cables with connectors pre-fabricated at both ends etc. The packed size of each of these boxes is **width x depth x height = 870 x 870 x 600 mm.**
- 4) **Depending** on the Scope of supply for **cables** required for Static Excitation Equipment the **no. of boxes** can increase.

ANNEXURE I PART III

SALMA HEP (3x 14) MW FURTHER DETAILS OF TURBINE & GENERATOR

TURBINE:

I DRAFT TUBE

1.	Draft Tube Knee Liner plate thickness	:	8mm
2.	No. of segments	:	02
3.	Draft tube knee lining flange dia (OD/ID)	:	2720/2280mm
4.	Out let dimensions – width-6160mm, height	:	1316.5mm
5.	Weight	:	7 Tons

II DRAFT TUBE CONE

1.	No of cones	:	01
2.	Dia of cone upper flange	:	2315mm
3.	Dia of cone lower flange	:	2720mm
4.	Height of cone	:	1496mm
5.	No of parts of each cone supplied	:	01

III STAY RING & SPIRAL CASING

1.	No of stay ring parts	:	01
2.	No of segments of spiral casing	:	09
3.	Weight of stay ring	:	05 Tons
4.	Weight of spiral casing	:	12 Tons
5.	Inlet dia of spiral casing	:	2074mm
6.	Spiral casing thickness	:	16 to 20mm
7.	No of joints to be welded at site	:	09
8.	Outer dia of stay ring	:	3132.4mm
9.	Throat height	:	461.3mm
10.	No of stay vanes	:	20

IV TURBINE PIT LINER

1.	Upper Pit Liner supplied in two halves- ID-2900mm	:	To	be
2.	Weight of upper and lower pit liner together	:	4.2 Tons	
3.	Thickness of plate	:	06mm	
4.	Lower pit liner ID	:	3600mm	

V FOUNDATION RING ASSEMBLY

1.	Weight	:	1.5 Tons
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2. Height : 566mm

VI GUIDE APPARATUS

1. No of Guide vanes : 20
2. Feather height : 459mm
3. PCD of guide vanes : 2208mm
4. Regulating ring located Inside of guide vanes

VII RUNNER & SHAFT ASSEMBLY

1. Runner OD : 2040mm
2. Height : 1072mm
3. weight : 5.2 Tons
4. Shaft length : 3840mm
5. Flanged at both ends

VIII TURBINE GUIDE BEARING

1. Pad Type
2. No of segments of guide bearing housing : 02
3. Weight : 5.5 Tons

GENERATOR

I STATOR

1. Type of machine : Semi Umbrella
2. Total weight of wound stator : 47 Tons
3. No of segments of stator : 03
4. Bars to be layed at site : Jointing segments
5. No of slots : 192
6. Stator Bore : 4500mm

II ROTOR

1. Rotor Total weight : 69 Tons
2. No. of Poles : 20
3. Pole Height : 670mm
4. Rim height : 950mm
5. Generator shaft length : 4868mm
6. Generator shaft one piece weight : 9 Tons
7. Spider to be assembled at site

SALMA 3X14MW HEP									
BILLING BREAK UP OF									
STORAGE, INSTALLATION, TESTING AND COMMISSIONING									
Annexure A									
SNO	ACTIVITY				UNIT NO				TOTAL (% of CV)
					I	II	III	COM	
A	TURBINE								
1	Alignment and positioning of D/T sections, Welding, NDT and handing over of draft tube for concreting				1.0	1.0	1.0		3.00
2	Installation of stay ring in place, Assembly & welding of spiral casing, Hydraulic testing of spiral casing				2.0	2.0	2.0		6.00
3	Lowering of Turbine shaft in pit, guide apparatus incl servomotor assembly				2.0	2.0	2.0		6.00
4	Erection of OPU (Turbine).				0.5	0.5	0.5		1.50
5	Erection of Grease Lubrication System				0.5	0.5	0.5		1.50
6	Erection of HMC, electronic cabinet of Governer for turbine, oil pipe lines				0.75	0.75	0.75		2.25
7	Assembly of MIV in service bay, lowering of MIV in position, Jointing of inlet/ outlet pipes, Installation of servomotor, oil & water pipe lines				1.75	1.75	1.75		5.25
B	GENERATOR								
1	Assembly, testing of stator in service bay, Dressing of foundation, Installation of stator in pit				2.0	2.0	2.0		6.00
2	Assembly, testing of rotor in service bay, Lowering of rotor in position				3.0	3.0	3.0		9.00
3	Assembly of Lower bracket, top bracket in service bay, its lowering in position				2.0	2.0	2.0		6.00
C	ELECTRICAL SYSTEMS								
1	Installation of generator Transformers				2.0	2.0	2.0		6.00

2	Installation of Unit Auxiliary, Excitation, Station Transformers	0.5	0.5	0.5		1.50
3	Installation of Unit SP Bus Duct, Unit Control & Auxiliary board.	1.5	1.5	1.5		4.50
4	Installation of static excitation, Generator Protection system	0.5	0.5	0.5		1.50
D	COMMON SYSTEMS					
1	Installation of EOT crane, load testing				1.0	1.00
2	Installation of DG SETS				1.0	1.00
3	Erection of Unit HP & LP air compressors				1.0	1.00
4	Installation of Cooling water system, Drainage and Dewatering System	0.5	0.5	0.5	0.50	2.00
5	Generator Fire Fighting system				0.50	0.50
6	Installation of PLCC, EPBAX				1.00	1.00
7	Installation of 220 V Batteries, DC Boards				1.00	1.00
8	Installation of station Bus Duct, Station, Dam Distribution, Main / sub distribution, Auxiliary and 20KV board.				1.00	1.00
9	Installation of station Fire Fighting System, Public Addressal system				1.00	1.00
10	Installation of cable trays, control and power cables for unit and station				2.00	2.00
11	Installation of illumination system, Ventillation system				1.00	1.00
12	Installation of Passenger lift				1.00	1.00
13	Electrical Lab & Mechanical Workshop				0.50	0.50
14	Installation of Oil handling system, purifiers				0.50	0.50
15	Installation of SCADA, Control room panels				0.50	0.50
E	110 KV SWITCH YARD					
1	Installation of structures,				1.00	1.00
2	Installation of Circuit Breakers, CT, VT, Isolators, conductors				1.00	1.00
3	Installation of cable trays, accessories, cables and its terminations, LT Boards				1.00	1.00

F	UNIT BOXING UP, SPINNING, TESTING, COMMISSIONING					
1	Combined Unit Axis Alignment	1.00	1.00	1.00		3.00
2	Setting of berings, brackets, Boxing up of Unit	1.00	1.00	1.00		3.00
3	Testing of unit controls and auxiliary panels	1.00	1.00	1.00		3.00
4	Spinning of unit.	0.50	0.50	0.50		1.50
5	Synchronisation of unit.	0.50	0.50	0.50		1.50
					TOTAL	90.00