

ATTACHEMENT 03

Design, Supply, Installation, Testing & Commissioning of 400/230/132 kV AIS Substation at Pekua and associated single /double circuit 400kV/230kV/132kV LILO Lines on turnkey basis (Package-1)
[Contract No.: PGCB/ADB/400kV/PEKUA/PTSIREP/PACKAGE-1]

Schedule 2D: Plant and Mandatory Spare Parts Supplied from within the Employer's

Item	Description	Unit	Quantity	Unit Price ¹		Total Price ¹	
				Local Currency [In BDT]	Foreign Currency [In]	Local Currency [In BDT]	Foreign Currency [In]
				EXW	EXW	EXW	EXW
1	2	3	4	5	6	7 = 4x5	8 = 4x6
1A	420 kV Air Insulated Switchgear						
1A.1	SF6 Circuit breaker,4000A, 63kA/1s, live tank, gang operating	set	4				
1A.2	SF6 Circuit breaker, 4000A,63kA/1s, live tank, single pole operating	set	9				
1A.3	Disconnect switch with E/S , 4000A,63kA/1s	set	4				
1A.4	Disconnect switch without E/S, 4000A,63kA/1s	set	27				
1A.5	Busbar grounding Switch	set	2				
1A.6	Single phase current transformer, multi core, 4000/1,63kA/1s	nos.	57				
1A.7	Single phase capacitive voltage transformer, multi-core	nos.	27				
1A.8	Single phase surge arrester,390kV rated,10kA	nos.	27				
1A.9	Wave Trap,single phase, 420kV, 4000A, 63kA/1s	nos.	4				
1A.10	Post type support insulators for 400kV busbar and switchgear	lot	1				
1A.11	Rigid tubular bus and required conductors, insulators, fittings including all necessary clamps and connectors for busbar compositions						
i)	Rigid Tubular Bus	lot	1				
ii)	Flexible Conductor for jumper, equipment connections	lot	1				
iii)	Insulator	lot	1				
iv)	Fittings	lot	1				
1A.12	Steel Structures for gantry and equipment supports						
a)	Gantry Column including nut & bolts	lot	1				
b)	Gantry beam at Main Bus & Jack-Bus height including nut & bolts	lot	1				
c)	Equipment support structures including nut & bolts						
i)	Circuit Breaker	set	13				
ii)	Disconnect with Earth Switch	set	4				
iii)	Disconnect without Earth Switch	set	27				
iv)	Bus Earth Switch	set	2				
v)	Current Transformer	nos.	57				
vi)	Capacitive Voltage Transformer	nos.	27				
vii)	Surge Arrester	nos.	27				
viii)	Wave Trap	nos.	4				
ix)	Post type support insulators for 400kV busbar and switchgear	lot	1				
d)	Cable tray including fitting, fixing accessories	lot	1				
1B	245 kV Air Insulated Switchgear						
1B.1	SF6 Circuit breaker,2000A,50kA/1s, live tank, gang operating for Transformer Bay	set	5				
1B.2	SF6 Circuit breaker,2000A, 50kA/1s, live tank, single pole operating for Line Bay	set	4				
1B.3	SF6 Circuit breaker,3150A,50kA/1s, live tank, gang operating for Bus Coupler Bay	set	1				
1B.4	Disconnect switch without E/S, 2000A,50kA/1s for Transformer Bay	set	15				
1B.5	Disconnect switch without E/S, 2000A,50kA/1s for Line bay	set	8				
1B.6	Disconnect switch without E/S, 3150A,50kA/1s for bus coupler bay	set	2				
1B.7	Disconnect switch with E/S, 2000A,50kA/1s for line bay	set	4				
1B.8	Single phase current transformer,50kA/1s multicore for Transformer Bay	nos.	15				
1B.9	Single phase current transformer,50kA/1s multicore for line bay	nos.	12				
1B.10	Single phase current transformer,50kA/1s multicore for bus coupler bay	nos.	3				
1B.11	Single phase capacitive voltage transformer (CVT), multi core	nos.	33				
1B.12	Single phase surge arrester, 198kV rated,10kA	nos.	27				
1B.13	Flexible conductors for bus and jumper, insulators, fittings including all necessary clamps and connectors for busbar compositions						
i)	Flexible Conductor for Bus, jumper, equipment connections	lot	1				
ii)	Insulator	lot	1				
iii)	Fittings	lot	1				
Sub-Total Price carried forward							
Sub Total Price in words.....							

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Schedule 2D: Plant and Mandatory Spare Parts Supplied from within the Employer's Country

Item	Description		Quantity	Unit Price ¹		Total Price ¹	
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				Currency /In EXW	Currency EXW	Currency /In EXW	Currency /In EXW
1	2	3	4	5	6	7 = 4x5	8 = 4x6
Sub-Total brought forward							
1B.14	Steel Structures for gantry and equipment supports						
a)	Gantry Column including nut & bolts	lot	1				
b)	Gantry beam at Main Bus & Jack-Bus height including nut & bolts	lot	1				
c)	Equipment support structures including nut & bolts						
i)	Circuit Breaker	set	10				
ii)	Disconnecter without Earth Switch	set	25				
iii)	Disconnecter with Earth Switch	set	4				
iv)	Bus Earth Switch	set	0				
v)	Current Transformer	nos.	30				
vi)	Capacitive Voltage Transformer	nos.	33				
vii)	Surge Arrester	nos.	27				
viii)	Wave Trap	set	0				
ix)	Post type support insulators	lot	1				
d)	Cable tray including fitting, fixing accessories	lot	1				
1C	145 kV Air Insulated Switchgear						
1C.1	SF6 Circuit breaker, 1600A, 40kA/1s, live tank, gang operating for Transformer Bay	set	2				
1C.2	SF6 Circuit breaker, 1600A, 40kA/1s, live tank, single pole operating for Line Bay	set	4				
1C.3	SF6 Circuit breaker, 3150A, 40kA/1s, live tank, gang operating for Bus Coupler Bay	set	1				
1C.4	Disconnecter switch without E/S, 1600A, 40kA/1s for Transformer Bay	set	6				
1C.5	Disconnecter switch without E/S, 1600A, 40kA/1s for Line bay	set	8				
1C.6	Disconnecter switch without E/S, 3150A, 40kA/1s for bus coupler bay	set	2				
1C.7	Disconnecter switch with E/S, 1600A, 40kA/1s for line bay	set	4				
1C.8	Single phase current transformer, 40kA/1s multi core for Transformer Bay	nos.	6				
1C.9	Single phase current transformer, 40kA/1s for line bay	nos.	12				
1C.10	Single phase current transformer, 40kA/1s for bus coupler bay	nos.	3				
1C.11	Single phase voltage transformer (IVT), multi-core	nos.	24				
1C.12	Single phase surge arrester, 120kV rated, 10kA	nos.	18				
1C.13	Flexible conductors for bus and jumper, insulators, fittings including all necessary clamps and connectors for busbar compositions						
i)	Flexible Conductor for Bus, jumper, equipment connections	lot	1				
ii)	Insulator	lot	1				
iii)	Fittings	lot	1				
Sub-Total Price carried forward							

Sub Total Price in words:

Design, Supply, Installation, Testing & Commissioning of 400/230/132 kV AIS Substation at Pekua and associated single /double circuit 400kV/230kV/132kV LILO Lines on turnkey basis (Package-1)
[Contract No.: PGCB/ADB/400kV/PEKUA/PTSIREP/PACKAGE-1]

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1	2	3	4	5	6	7 = 4x5	8 = 4x6
Sub-Total brought forward							
1C.14	Steel Structures for gantry and equipment supports						
a)	_Gantry Column including nut & bolts						
i)	For Main Bus	lot	1				
ii)	For Jack-Bus	lot	1				
b)	_Gantry beam at Main Bus & Jack-Bus height_ including nut & bolts	lot	1				
c)	_Equipment support structures_ including nut & bolts						
i)	Circuit Breaker	set	7				
ii)	Disconnecter without Earth Switch	set	16				
iii)	Disconnecter with Earth Switch	set	4				
iv)	Bus Earth Switch	set	0				
v)	Current Transformer	nos.	21				
vi)	Voltage Transformer	nos.	24				
vii)	Surge Arrester	nos.	18				
viii)	Wave Trap	set	0				
ix)	Post type support insulators	lot	1				
d)	_Cable tray including fitting, fixing accessories	lot	1				
1D	33kV Switches & connection						
1D.1	33kV Vacuum Circuit breaker	set	2				
1D.2	33kV Disconnecter switch	set	4				
1D.3	33kV Inductive voltage transformer (IVT), 2 core	nos.	15				
1D.4	Single pahse surge arrester, 30kV rated,10kA	nos.	15				
1D.5	Tertiary side connection including necessary fittings, structures, 33kV XLPE cable and conductors	lot	1				
1D.6	33kV Current transformer	nos.	6				
1E	Power Transformer & Earthing/Auxiliary Transformer						
1E.1	400/230/33 kV, 400/520MVA (ONAN/ONAF), three phase Power Transformer	set	3				
1E.2	230/132/33 kV, 225/300MVA (ONAN/ONAF), three phase Power Transformer	set	2				
1E.3	33/0.4 kV, 500kVA Earthing auxiliary Transformer	set	2				
1E.4	Complete water spray fire fighting system for all 400/230/33 kV three phase outdoor type power transformer	Set	1				
1E.5	Complete water spray fire fighting system for all 230/132/33 kV three phase outdoor type power transformer	Set	1				
1F	Control, Protection, SAS and Metering						
1F.1	Complete Station SAS Panels	lot	1				
	420kV Circuits						
1F.2	Complete Control, Protection,monitoring & SAS Panel for overhead line circuits	set	4				
1F.3	Complete Control, Protection,monitoring & SAS Panel for Auto transformer circuits	set	3				
1F.4	Complete Busbar Protection Panel	set	2				
1F.5	Comeplete Digital Fault Diturbance Recorder (DFDR) panel	Set	1				
1F.6	Complete Tariff metering panel	lot	1				
	230kV Circuits						
1F.7	Complete Control, Protection,monitoring & SAS Panel for overhead line circuits	set	4				
1F.8	Complete Control, Protection,monitoring & SAS Panel for Auto transformer circuits	set	5				
1F.9	Complete Control, Protection,monitoring & SAS Panel for Bus Coupler circuits	set	1				
1F.10	Complete Busbar Protection Panel	set	2				
1F.11	Comeplete Digital Fault Diturbance Recorder (DFDR) panel	Set	1				
1F.12	Complete Tariff metering panel	lot	1				
	145kV Circuits						
1F.13	Complete Control, Protection,monitoring & SAS Panel for overhead line circuits	set	4				
1F.14	Complete Control, Protection,monitoring & SAS Panel for Auto transformer circuits	set	2				
1F.15	Complete Control, Protection,monitoring & SAS Panel for Bus Coupler circuits	set	1				
1F.16	Complete Busbar Protection Panel	set	1				
1F.17	Comeplete Digital Fault Diturbance Recorder (DFDR) panel	Set	1				
1F.18	Complete Tariff metering panel	lot	1				
	36kV Circuit						
1F.19	Control, Monitoring, Protection & SAS for 33kV station power system	lot	1				
1F.20	Tariff metering	lot	1				
1G	Multicore Cables						
1G.1	Multicore Cables for control, protection, metering & power circuits						
i)	_LV Control Cable	lot	1				
ii)	_LV Power Cable	lot	1				
Sub-Total Price carried forward							
Sub Total Price in words.....							

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Sub-Total brought forward							
1H	Earthing and Lightning Protection						
1H.1	Earthing system for complete substation	lot	1				
1H.2	Lighting Protection System for complete substation	lot	1				
1I	Batteries, chargers & DC distribution						
1I.1	110V Ni-cad Batteries with chargers & distribution board & others						
a)	for 400kV System						
i)	110V Battery Banks, Ah	set	2				
ii)	Charger, A	set	2				
iii)	110V DC Distribution panel, MCC type	lot	1				
c)	for 230kV System						
i)	110V Battery Banks, Ah	set	2				
ii)	Charger, A	set	2				
iii)	110V DC Distribution panel, MCC type	lot	1				
iv)	Inverter for SAS	set	2				
b)	for 132kV System						
i)	110V Battery Banks, Ah	set	2				
ii)	Charger, A	set	2				
iii)	110V DC Distribution panel, MCC type	lot	1				
1I.2	48V Ni-cad Batteries with chargers & distribution board						
i)	48V battery Banks,Ah	set	2				
ii)	Charger, A	set	2				
iii)	48V DC Disatribution Panel	lot	1				
1J	LVAC Distribution						
1J.1	AC 415V or 240V distribution panels (MCC type)	lot	1				
1J.3	Tariff metering at LV side(Main & Check)	lot	1				
1K	Civil Works, Building and Foundation	Refer to Schedule B4					
1L	Lighting, small power, air conditioning and Ventilation						
1L.1	Lighting, small power, air conditioning and Ventilation and emergency DC lighting for control building and local control houses	lot	1				
1L.2	Lighting for outside building for security, roadway, switchyard and emergency DC lighting	lot	1				
1M	Fibre Optic Multiplexer Equipment and PLC Equipment for Communication and Protection						
1M.1	Indoor Fibre Optic Multiplexer Equipment	lot	1				
1M.2	under ground optical fiber cable, armoured, 48/24 core including Outdoor termination box,indoor MDF & optical cables	lot	1				
1M.3	PLC Equipment	lot	1				
1N	SCADA system for Telecontrol and Telemetry						
1N.1	Complete SCADA hardware & software	lot	1				
Sub-Total Price carried forward							

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Sub-Total brought forward						
Mandatory Spare parts including Maintenance and Test Equipment						
420 kV SWITCHGEAR						
1	Complete SF6 gas, livetank type 420kV Circuit Breaker (single-pole operation type)	1				
2	Complete 420kV disconnector switch	1				
3	Set of interrupting chamber including insulators, fixed and moving contacts for 420kV offered type circuit breakers	2				
4	420 kV post insulators suitable for disconnector	3				
5	Set (three phase) contacts for 420kV disconnector	2				
6	390 kV surge arrester	6				
7	420kV capacitive voltage transformer	3				
8	Closing coils	3				
9	Tripping coils	3				
10	Motor for 420kV circuit breaker operating mechanism	2				
11	Motor for disconnector drive	2				
12	Coils for Blocking magnet in disconnector drive	3				
145 kV SWITCHGEAR						
13	Complete SF6 gas, livetank type 145kV Circuit Breaker (single-pole operation type)	2				
14	Complete 145 kV disconnector switch	2				
15	Set of interrupting chamber including insulators, fixed and moving contacts for 145kV offered type circuit breakers	2				
16	145 kV post insulators suitable for disconnector	3				
17	Set (three phase) contacts for 145 kV disconnector	2				
18	120 kV surge arrester	6				
19	145 kV capacitive voltage transformer	3				
20	Closing coils	3				
21	Tripping coils	3				
22	Motor for 145 kV circuit breaking operating mechanism	2				
23	Motor for disconnector drive	2				
24	Coils for Blocking magnet in disconnector drive	3				
TRANSFORMERS						
37	Auto-transformer 420kV bushings (Single Phase)	1				
38	Auto-transformer 230 kV bushings (Single Phase)	1				
39	Auto-transformer 145 kV bushings (Single Phase)	1				
40	Earthing transformer 36 kV bushings	1				
41	Sets of auto transformer gaskets	1				
42	Sets of earthing transformer gaskets	1				
43	Sets of tap changer spares	1				
44	Set of special tools, gauges and spanners (Bidders to give details)	1				
45	Spare transformer oil	32000				
46	Silica gel 100% spare for all supplied transformer	1				
47	Transformer oil treatment plant, 8000litre/hr (Clause 4.13.2)	1				
Sub-Total Price carried forward						
Sub Total Price in words.....						

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Sub-Total brought forward						
WATER SPRAY SYSTEM						
48	Water spray nozzles	10				
49	Release sprinklers	5				
50	Set of internal parts of deluge valve	1				
51	Set of sealings for deluge valves of each type	1				
52	Set of sealings for pipes and flanges	1				
53	Set of spare parts for jockey pump	1				
54	Set of spare parts for control panel and automatic level indicator	1				
55	Set of spare parts for the air supply and reducing devices	1				
56	Fire fighting pump complete with coupling	1				
PROTECTION, CONTROL, METERING						
57	Distance relay	set	2			
58	Line differential relay with distance backup	set	2			
59	Biased different relay (3-phase)	set	2			
60	Overcurrent and Earth fault relay	sets	2			
61	Bay Control Unit	sets	2			
62	Central Unit for BBP	sets	1			
63	Bay Unit for BBP	sets	2			
64	Tripping relay (electrical reset)	sets	3			
65	Trip circuit supervision relay	sets	3			
66	Multifunction Meter	nos.	3			
67	Bulbs for discrepancy switches	nos.	30			
68	kWh & kVarh meter (Energy Meter)	nos.	2			
POWER & CONTROL CABLES						
Spare cable comprising:						
69	control cable, 7 core	meter	500			
70	control cable, 12 core	meter	500			
Batteries, Chargers, & DC Distribution						
71	Battery fuses	nos.	4			
72	Set DC board incoming MCCB	sets	2			
73	Sets outgoing MCBs	sets	4			
74	Battery Charger complete unit, 110V	sets	1			
LV AC SWITCHGEAR						
75	3-phase set LVAC board incoming MCCB	no.	1			
76	3-phase sets outgoing MCCBs	nos.	3			
77	1-phase sets outgoing MCBs	nos.	3			
Fiber Optic Multiplexer Equipment						
78	Set of spare modules of necessary function	lot	1			
O&M EQUIPMENT						
79	3-phase portable (maintenance) earthing equipment devices with connectors and telescopic glass fibre operating pole suitable for plant supplied	sets	3			
Total Columns 7 and 8 to be carried forward to Schedule No. 5 - Grand Summary						

Total Price in words

¹ Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-stage Bid. Create and use as many columns for Unit Price and Total Price as there are currencies.