

Design, Supply, Installation, Testing and Commissioning of 400kV Transformer Bay and 230kV Transmission Line Diameter Extension at Kaliakoir Substation on Turnkey Basis					
Schedule 1: Plant & Equipment supplied from abroad					
Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency	
				Unit Price	Total Price
				CIP	CIP
			(1)	(2)	(3) = (1) x (2)
For Kaliakoir substation					
1A1	400 kV Air Insulated Switchgear, equipment connection and steel structures				
1A1.1	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, live tank type, single pole operated, SF6 gas circuit breakers with spring-stored energy operating mechanism with PIR or CSD as phase switching mechanism with support structure	Set	0		
1A1.2	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors with motor/manual operated earthing switch.	Set	1		
1A1.3	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors without earthing switch.	Set	2		
1A1.4	Single-phase, 6-core (Four 5P20 core, Two 0.2S core), 400kV, 50kA/1sec, 4000-2000/1A, 50Hz, 1425kVp BIL, post type current transformer.	No	3		
1A1.5	Single-phase, 3-core, 400kV, 50Hz, 1425kVp BIL, capacitor type voltage transformer.	No	0		
1A1.6	390kV rated voltage, 312kV(rms) continuous operating voltage at 50°C 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters.	No	0		
1A1.7	Post type support insulators for 400kV busbar and switchgear	No	15		
1A1.8	Rigid tubular bus and/ or flexible conductors, insulators, fittings including all necessary clamps and connectors as required for completing extension of 400kV AIS Switchyard				
i)	Rigid Tubular Bus	lot	1		
ii)	Flexible Conductor for jumper, equipment connections	lot	1		
iii)	Insulator	lot	1		
iv)	Fittings, Clamp & Connectors with Nut-Bolts	lot	1		
1A1.9	Steel Structures for gantry and equipment supports				
a)	Equipment support structures including nut & bolts				
i)	DS with ES	set	1		
ii)	DS without ES	set	2		
iii)	CT	No	3		
iv)	CVT/IVT	No	0		
v)	LA	No	0		
vi)	PI	No	15		
b)*	Cable tray including fitting, fixing accessories	lot	1		
1B	230kV Switchyard, structures & connections				
	230kV Air Insulated Switchgear, Equipment Connection and Steel Structure				
1B1	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, live tank type, single-pole operation, SF6 gas circuit breakers with spring-stored energy operating mechanism	Sets	0		
1B2	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors with motor-operated earthing switch.	Sets	3		

Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency	
				Unit Price	Total Price
				CIP	CIP
			(1)	(2)	(3) = (1) x (2)
1B3	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors without earthing switch	Sets	6		
1B4	Single-phase, 5-core (Three 5P20 core, One 0.2S core, One PX core), 230kV, 50kA/1sec, 3000-1500/1A, 50Hz, 1050kVp BIL post type current transformer	Nos	12		
1B5	Single-phase, 3-core, 230kV, 50Hz, 1425kVp BIL, capacitor type voltage transformers.	Nos	0		
1B6	198kV rated voltage, 158kV(rms) continuous operating voltage at 50°C 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters.	Nos	0		
1B7	230kV post type support insulators required for completing 230kV busbar and switchgear as specified in the technical specifications and bid drawings.	Nos	36		
1B8	rigid tubular bus [Aluminium of grade 63401 WP], flexible conductors, insulators, fittings including all necessary clamps and connectors required for completing 230kV busbar and switchgear connection as specified in the technical specifications and bid drawings. Bus capacity shall be minimum 4000A/50kA/1s. Existing Bus is Aluminium Tube with outer dia. 160mm.	lot	1		
1B9	Steel structures for gantry and equipment supports required for completing 230kV busbar and switchgear as specified in the technical specifications and bid drawings.	lot	1		
	a) Gantry Column including nut & bolts	nos	12		
	b) Gantry beam including nut & bolts	nos	6		
	c) Equipment support structures including nut & bolts				
	i) Circuit Breaker	nos	3		
	ii) Disconnecter without Earth Switch	nos	6		
	iii) Disconnecter with Earth Switch	nos	3		
	iv) Current Transformer	nos	12		
	v) Voltage Transformer	nos	9		
	vi) Surge Arrester	nos	12		
	vii) Post type support insulators	nos	36		
	viii) Cable Sealing End(CSE)	nos	8		
	d) Cable tray including fitting, fixing accessories	lot	1		
1C	Power Transformer & Earthing/Auxiliary Transformer				
1C1	Auxiliary transformer 33/0.415kV, 300kVA: to be supplied by power grid. But its installation, 33kV & 415V connection to it, including 33kV CT, PT, LA, CB, DS/DES & other 33kV & 415V equipment as required; necessary 33kV and 415V cables/conductors, LVAC panels as required, including incoming & outgoing feeder breakers (Nos. to be fixed at design stage), busbars and full LVAC panel arrangements shall be under this project scope.	lot	1		
1C2	Necessary grounding arrangements for the tertiary 33kV side of the 400/230/33kV, 520MVA Transformer (project scope), including 33kV LA, PT, and other necessary conductor/clamp-connectors.	lot	1		
1D	Control, Protection, SAS and Metering				
	420kV Circuits				
1D.1	Configuration/modification of existing Control Panel for 400/230kV, 520MVA Power Transformer bay with required accessories and materials.	lot	1		

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Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency	
				Unit Price	Total Price
				CIP	CIP
			(1)	(2)	(3) = (1) x (2)
1D.1.1	Configuration/modification of Relay Panel for 400/230kV, 520MVA Power Transformer bay. Required accessories and materials shall be supply to complete the Protection functionality as per Power Grid Standard.	lot	1		
1D.2	Modification / Extension of Busbar Protection including all necessary requirements.	set	1		
1D.3	Tarif metering : Energy Meters (Main & Check) total 2 Nos with Panel	lot	1		
	230kV Circuits				
1D.4	Control, Monitoring, Protection (Main-1 & Main-2 relay) & Substation Automation Facility including event recording function for 230KV circuits line bays.	sets	2		
1D.5	Upgradation/modification of existing CRP Panel of line feeder to use as a 230kV incomer bays of 400/230kV Transformer and to integrate SAS system	sets	1		
1D.6	Renovation/Extension of existing Busbar protection for 230kV system.	lot	1		
1D.7	Tarif metering : Energy Meters (Main & Check) total 6 Nos with Panel	Lot	1		
1D.8	Extension of the existing Substation Automation System, including all necessary requirements.	Lot	1		
1E	Digital Fault & Disturbance Recorder (Modification/Extension of existing system), including all necessary requirements.	Lot	1		
1F	Extension of Fibre Optic Multiplexer Equipment and PLC Equipment for Communication and Protection	Lot	1		
1G	Power Cable				
1G.1	2000 mm ² (least), 245 kV, 2,000A, 50kA/ 1 sec, 50Hz, 1,050/460 kV BIL, single phase XLPE cable. Four phases cable shall be laid of which one phase as spare. Length: 330x4=1320 meter.	m	1320		
1G.2	245 kV, 2,000A, 50kA/ 1 sec, 50Hz, 1,050/460 kV BIL, cable terminal end & associated support structures for single phase XLPE cable.	Nos.	8		
1H	Multicore Cables				
1H.1	Multicore Cables for control, protection, metering & power circuits				
	i) LV Control Cable	lot	1		
	ii) LV Power Cable	lot	1		
1I	Earthing and Lightning Protection				
1I.1	Extension of Earthing system	lot	1		
1I.2	Extension of Lightning Protection System	lot	1		
1J	Batteries, chargers & DC distribution (detail in scope of work)				
1J.1	110V Ni-cad Batteries with chargers & distribution board				
	a) Extension of 110V DC Distribution panel and board and New DCDB panel	Lot	1		
	b) 110V Ni-cad Batteries with chargers				
	i. 110V Battery Banks, not less than 400Ah	set	1		
	ii. Charger, not less than 150A	set	1		
1J.2	48V Ni-cad Batteries with chargers & distribution board				
	i) Extension of 48V DC Distribution panel and board/New DCDB panel	Lot	1		
1K	LVAC Distribution (detail in scope of work)				
1K.1	Extension of AC 415V or 240V distribution panels and new panel	lot	1		
1L	Civil Works, Building and Foundation				

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Schedule B2: Plant & Equipment Supplied from within the Procuring Entity's Country

Item No.	Description of Equipment Requirement	Unit	Quantity	Unit Price		Total Price	
				Foreign Currency	Local Currency	Foreign Currency	Local Currency
				EXW	EXW	EXW	EXW
			(1)	(2)	(3)	(4) = (1)	(5) = (1)
For Kaliakoir substation							
1A1	400 kV Air Insulated Switchgear, equipment connection and steel structures						
1A1.1	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, live tank type, single pole operated, SF6 gas circuit breakers with spring-stored energy operating mechanism with PIR or CSD as phase switching mechanism with support structure	Set	0				
1A1.2	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors with motor/manual operated earthing switch.	Set	1				
1A1.3	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors without earthing switch.	Set	2				
1A1.4	Single-phase, 6-core (Four 5P20 core, Two 0.2S core), 400kV, 50kA/1sec, 4000-2000/1A, 50Hz, 1425kVp BIL, post type current transformer.	No	3				
1A1.5	Single-phase, 3-core, 400kV, 50Hz, 1425kVp BIL, capacitor type voltage transformer.	No	0				
1A1.6	390kV rated voltage, 312kV(rms) continuous operating voltage at 50°C 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters.	No	0				
1A1.7	Post type support insulators for 400kV busbar and switchgear	No	15				
1A1.8	Rigid tubular bus and/ or flexible conductors, insulators, fittings including all necessary clamps and connectors as required for completing extension of 400kV AIS Switchyard						
i)	Rigid Tubular Bus	lot	1				
ii)	Flexible Conductor for jumper, equipment connections	lot	1				
iii)	Insulator	lot	1				
iv)	Fittings, Clamp & Connectos with Nut-Bolts	lot	1				
1A1.9	Steel Structures for gantry and equipment supports						
a)	Equipment support structures including nut & bolts						
i)	DS with ES	set	1				
ii)	DS without ES	set	2				
iii)	CT	No	3				
iv)	CVT/IVT	No	0				
v)	LA	No	0				
vi)	PI	No	15				
b)*	Cable tray including fitting, fixing accessories	lot	1				
1B	230kV Switchyard, structures & connections						
	230kV Air Insulated Switchgear, Equipment Connection and Steel Structure						
1B1	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, live tank type, single-pole operation, SF6 gas circuit breakers with spring-stored energy operating mechanism	Sets	0				
1B2	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors with motor-operated earthing switch.	Sets	3				
1B3	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors without earthing switch	Sets	6				
1B4	Single-phase, 5-core (Three 5P20 core, One 0.2S core, One PX core), 230kV, 50kA/1sec, 3000-1500/1A, 50Hz, 1050kVp BIL post type current transformer	Nos	12				
1B5	Single-phase, 3-core, 230kV, 50Hz, 1425kVp BIL, capacitor type voltage transformers.	Nos	0				
1B6	198kV rated voltage, 158kV(rms) continuous operating voltage at 50°C 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters.	Nos	0				

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Item No.	Description of Equipment Requirement	Unit	Quantity	Unit Price		Total Price	
				Foreign Currency	Local Currency	Foreign Currency	Local Currency
				EXW	EXW	EXW	EXW
			(1)	(2)	(3)	(4) = (1)	(5) = (1)
1B7	230kV post type support insulators required for completing 230kV busbar and switchgear as specified in the technical specifications and bid drawings.	Nos	36				
1B8	rigid tubular bus [Aluminium of grade 63401 WP], flexible conductors, insulators, fittings including all necessary clamps and connectors required for completing 230kV busbar and switchgear connection as specified in the technical specifications and bid drawings. Bus capacity shall be minimum 4000A/50kA/1s. Existing Bus is Aluminium Tube with outer dia. 160mm.	lot	1				
1B9	Steel structures for gantry and equipment supports required for completing 230kV busbar and switchgear as specified in the technical specifications and bid drawings.	lot	1				
	a) Gantry Column including nut & bolts	nos	12				
	b) Gantry beam including nut & bolts	nos	6				
	c) Equipment support structures including nut & bolts						
	i) Circuit Breaker	nos	3				
	ii) Disconnecter without Earth Switch	nos	6				
	iii) Disconnecter with Earth Switch	nos	3				
	iv) Current Transformer	nos	12				
	v) Voltage Transformer	nos	9				
	vi) Surge Arrester	nos	12				
	vii) Post type support insulators	nos	36				
	viii) Cable Sealing End(CSE)	nos	8				
	d) Cable tray including fitting, fixing accessories	lot	1				
1C	Power Transformer & Earthing/Auxiliary Transformer						
1C1	Auxiliary transformer 33/0.415kV, 300kVA: to be supplied by power grid. But its installation, 33kV & 415V connection to it, including 33kV CT, PT, LA, CB, DS/DES & other 33kV & 415V equipment as required; necessary 33kV and 415V cables/conductors, LVAC panels as required, including incoming & outgoing feeder breakers (Nos. to be fixed at design stage), busbars and full LVAC panel arrangements shall be under this project scope.	lot	1				
1C2	Necessary grounding arrangements for the tertiary 33kV side of the 400/230/33kV, 520MVA Transformer (project scope), including 33kV LA, PT, and other necessary conductor/clamp-connectors.	lot	1				
1D	Control, Protection, SAS and Metering						
	420kV Circuits						
1D.1	Configuration/modification of existing Control Panel for 400/230kV, 520MVA Power Transformer bay with required accessories and materials.	lot	1				
1D.1.1	Configuration/modification of Relay Panel for 400/230kV, 520MVA Power Transformer bay. Required accessories and materials shall be supply to complete the Protection functionality as per Power Grid Standard.	lot	1				
1D.2	Modification / Extension of Busbar Protection including all necessary requirements.	set	1				
1D.3	Tarif metering : Energy Meters (Main & Check) total 2 Nos with Panel	lot	1				
	230kV Circuits						
1D.4	Control, Monitoring, Protection (Main-1 & Main-2 relay) & Substation Automation Facility including event recording function for 230KV circuits line bays.	sets	2				
1D.5	Upgradation/modification of existing CRP Panel of line feeder to use as a 230kV incomer bays of 400/230kV Transformer and to integrate SAS system	sets	1				

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Item No.	Description of Equipment Requirement	Unit	Quantity	Unit Price		Total Price	
				Foreign Currency	Local Currency	Foreign Currency	Local Currency
				EXW	EXW	EXW	EXW
			(1)	(2)	(3)	(4) = (1)	(5) = (1)
1D.6	Renovation/Extension of existing Busbar protection for 230kV system.	lot	1				
1D.7	Tarif metering : Energy Meters (Main & Check) total 6 Nos with Panel	Lot	1				
1D.8	Extension of the existing Substation Automation System, including all necessary requirements.	Lot	1				
1E	Digital Fault & Disturbance Recorder (Modification/Extension of existing system), including all necessary requirements.	Lot	1				
1F	Extension of Fibre Optic Multiplexer Equipment and PLC Equipment for Communication and Protection	Lot	1				
1G	Power Cable						
1G.1	2000 mm ² (least), 245 kV, 2,000A, 50kA/ 1 sec, 50Hz, 1,050/460 kV BIL, single phase XLPE cable. Four phases cable shall be laid of which one phase as spare. Length: 330x4=1320 meter.	m	1320				
1G.2	245 kV, 2,000A, 50kA/ 1 sec, 50Hz, 1,050/460 kV BIL, cable terminal end & associated support structures for single phase XLPE cable.	Nos.	8				
1H	Multicore Cables						
1H.1	Multicore Cables for control, protection, metering & power circuits						
	i) LV Control Cable	lot	1				
	ii) LV Power Cable	lot	1				
1I	Earthing and Lightning Protection						
1I.1	Extension of Earthing system	lot	1				
1I.2	Extension of Lightning Protection System	lot	1				
1J	Batteries, chargers & DC distribution (detail in scope of work)						
1J.1	110V Ni-cad Batteries with chargers & distribution board						
	a) Extension of 110V DC Distribution panel and board and New DCDB panel	Lot	1				
	b) 110V Ni-cad Batteries with chargers						
	i. 110V Battery Banks, not less than 400Ah	set	1				
	ii. Charger, not less than 150A	set	1				
1J.2	48V Ni-cad Batteries with chargers & distribution board						
	i) Extension of 48V DC Distribution panel and board/New DCDB panel	Lot	1				
1K	LVAC Distribution (detail in scope of work)						
1K.1	Extension of AC 415V or 240V distribution panels and new panel	lot	1				
1L	Civil Works, Building and Foundation						
1L.1	Complete civil items required for outdoor works including boundary wall,	Refer to Schedule B4					
1L.2	Complete civil works for new Switchyard Panel Room (SPR) & repair, modification works of other control houses for the extension work.	Refer to Schedule B4					
1L.3	Testing of Foundation	Refer to Schedule B4					
1M	Lighting, small power, air conditioning and Ventilation						
1M.1	Extension of Lighting, Air Conditioning system, small power and emergency DC lighting for new SPR and Local control houses.	lot	1				
1M.2	Extension of Lighting for outside building for security, roadway, switchyard and emergency DC lighting.	lot	1				
	TOTAL (To be indicated in Schedule No.6 Grand Summary)						

LA

Schedule 4: Civil Works

Item No.	Description of Equipment Requirement		Unit	Quantity	Local Currency (in BDT)	
					Unit Price	Total Price
				(1)	(2)	(3) = (1) x (2)
1M	Civil Works, Building and Foundation					
1M.1	Complete civil items required for outdoor works including boundary wall, necessary land development and slope protection					
	i	Outdoor equipment foundation 400kV switchyard				
	a)	CB	set	1		
	b)	DS with ES	set	1		
	c)	DS without ES	set	2		
	d)	CT	No.	3		
	e)	CVT	No.	3		
	f)	LA	No.	3		
	g)	PI	No.	15		
	ii	Outdoor gantry foundation 230kV switchyard	Nos.	12		
	iii	Outdoor equipment foundation 230kV switchyard				
	a)	CB	set	3		
	b)	DS with ES	set	3		
	c)	DS without ES	set	6		
	d)	CT	Nos.	12		
	e)	CVT	Nos.	9		
	f)	LA	Nos.	12		
	g)	PI	Nos.	36		
	iv	Internal road				
	a)	8m wide road	m	30		
	b)	4.5m wide road	m	85		
	v	Cable Trench / Tunnel with soakpit for				
	a)	L.V power & control cable for 230kV system, main control room etc.	m	300		
	b)	HV Power cable for 230kV system	m	330		
	vi	Whole scope area with necessary land development, surface finishing with	lot	1		
	vii	Gravelling in switchyard area	sqm	3500		
	viii	Transformer pad with foundation for auxiliary transformer	lot	1		
1M.2	Complete civil works for Control Room, Operation & Panel Room					
	a)	Modification works for Control Room and SPR room as necessary for 400kV & 230kV system	Lot	1		
	b)	Complete civil works for 1 No. 230kV Switchyard Panel Room with battery				
	i)	Foundation works	lot	1		
	ii)	Super structures	lot	1		
	iii)	All finish works	lot	1		
1M.3	Testing of Foundation					
	i)	Compression Test	No.	1		
	ii)	Uplift Test	No.	1		
1N	Lighting, small power, air conditioning and Ventilation					
1N.1	Extension of Lighting, Air Conditioning system, small power and emergency DC lighting for new SPR and Local control houses.		lot	1		
1N.2	Extension of AC Lighting for outside building for security, roadway, switchyard and incorporation of emergency DC lighting for all.		lot	1		
	TOTAL (To be indicated in Schedule No.6 Grand Summary)					

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Schedule 5: Installation and Other Services

Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)	
				Unit Price	Total Price
			(1)	(2)	(3) = (1) x (2)
For Kaliakoir substation					
1A1	400 kV Air Insulated Switchgear, equipment connection and steel structures				
1A1.1	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, live tank type, single pole operated , SF6 gas circuit breakers with spring-stored energy operating mechanism with PIR or CSD as phase switching mechanism with support structure	Set	1		
1A1.2	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors with motor/manual operated earthing switch.	Set	1		
1A1.3	420kV, 4000A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors without earthing switch.	Set	2		
1A1.4	Single-phase, 6-core (Four 5P20 core, Two 0.2S core), 400kV, 50kA/1sec, 4000-2000/1A, 50Hz, 1425kVp BIL, post type current transformer.	No	3		
1A1.5	Single-phase, 3-core, 400kV, 50Hz, 1425kVp BIL, capacitor type voltage transformer.	No	3		
1A1.6	390kV rated voltage, 312kV(rms) continuous operating voltage at 50°C 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters.	No	3		
1A1.7	Post type support insulators for 400kV busbar and switchgear	Nos	15		
1A1.8	Rigid tubular bus and/ or flexible conductors, insulators, fittings including all necessary clamps and connectors as required for completing extension of 400kV AIS Switchyard				
i)	Rigid Tubular Bus	lot	1		
ii)	Flexible Conductor for jumper, equipment connections	lot	1		
iii)	Insulator	lot	1		
iv)	Fittings, Clamp & Connectos with Nut-Bolts	lot	1		
1A1.9	Steel Structures for gantry and equipment supports				
a)	Equipment support structures including nut & bolts				
i)	DS with ES	set	1		
ii)	DS without ES	set	2		
iii)	CT	No	3		
iv)	CVT/IVT	No	3		
v)	LA	No	3		
vi)	PI	Nc	15		
b)*	Cable tray including fitting, fixing accessories	lot	1		
1B	230kV Switchyard, structures & connections				
	230kV Air Insulated Switchgear, Equipment Connection and Steel Structure				
1B1	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, live tank type, single-pole operation, SF6 gas circuit breakers with spring-stored energy operating mechanism	Sets	3		
1B2	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors with motor-operated earthing switch.	Sets	3		
1B3	230kV, 3150A, 50kA/1sec, 50Hz, 1425kVp BIL, horizontal double break, post type, motor operated disconnectors without earthing switch	Sets	6		

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Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)	
				Unit Price	Total Price
				(1)	(2) = (1) x (2)
1B4	Single-phase, 5-core (Three 5P20 core, One 0.2S core, One PX core), 230kV, 50kA/1sec, 3000-1500/1A, 50Hz, 1050kVp BIL post type current transformer	Nos	12		
1B5	Single-phase, 3-core, 230kV, 50Hz, 1425kVp BIL, capacitor type voltage transformers.	Nos	9		
1B6	198kV rated voltage, 158kV(rms) continuous operating voltage at 50°C 10kA nominal discharge current, 50Hz, Heavy duty station class, gapless metal oxide type, single phase surge arresters.	Nos	12		
1B7	400kV post type support insulators required for completing 400kV busbar and switchgear as specified in the technical specifications and bid drawings.	Nos	36		
1B8	rigid tubular bus [Aluminium of grade 63401 WP], flexible conductors, insulators, fittings including all necessary clamps and connectors required for completing 230kV busbar and switchgear connection as specified in the technical specifications and bid drawings. Bus capacity shall be minimum 4000A/50kA/1s. Existing Bus is Aluminium Tube with outer dia. 160mm.	lot	1		
1B9	Steel structures for gantry and equipment supports required for completing 230kV busbar and switchgear as specified in the technical specifications and bid drawings.	lot	1		
	a) Gantry Column including nut & bolts	nos	12		
	b) Gantry beam including nut & bolts	nos	6		
	c) Equipment support structures including nut & bolts	nos			
	i) Circuit Breaker	nos	3		
	ii) Disconnecter without Earth Switch	nos	6		
	iii) Disconnecter with Earth Switch	nos	3		
	iv) Current Transformer	nos	12		
	v) Voltage Transformer	nos	9		
	vi) Surge Arrester	nos	12		
	vii) Post type support insulators	nos	36		
	viii) Cable Sealing End(CSE)	nos	8		
	d) Cable tray including fitting, fixing accessories	lot	1		
1C	Power Transformer & Earthing/Auxiliary Transformer				
1C1	Auxiliary transformer 33/0.415kV, 300kVA: to be supplied by power grid. But its installation, 33kV & 415V connection to it, including 33kV CT, PT, LA, CB, DS/DES & other 33kV & 415V equipment as required; necessary 33kV and 415V cables/conductors, LVAC panels as required, including incoming & outgoing feeder breakers (Nos. to be fixed at design stage), busbars and full LVAC panel arrangements shall be under this project scope.	lot	1		
1C2	Necessary grounding arrangements for the tertiary 33kV side of the 400/230/33kV, 520MVA Transformer (project scope), including 33kV LA, PT, and other necessary conductor/clamp-connectors.	lot	1		
1D	Control, Protection, SAS and Metering				
	420kV Circuits				
1D.1	Configuration/modification of existing Control Panel for 400/230kV, 520MVA Power Transformer bay with required accessories and materials.	lot	1		
1D.1.1	Configuration/modification of Relay Panel for 400/230kV, 520MVA Power Transformer bay. Required accessories and materials shall be supply to complete the Protection functionality as per Power Grid Standard.	lot	1		

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Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)	
				Unit Price	Total Price
				(1)	(2) = (1) x (2)
1D.2	Modification / Extension of Busbar Protection including all necessary requirements.	set	1		
1D.3	Tarif metering : Energy Meters (Main & Check) total 2 Nos with Panel	lot	1		
	230kV Circuits				
1D.4	Control, Monitoring, Protection (Main-1 & Main-2 relay) & Substation Automation Facility including event recording function for 230KV circuits line bays.	sets	2		
1D.5	Upgradation/modification of existing CRP Panel of line feeder to use as a 230kV incomer bays of 400/230kV Transformer and to integrate SAS system	sets	1		
1D.6	Renovation/Extension of existing Busbar protection for 230kV system.	lot	1		
1D.7	Tarif metering : Energy Meters (Main & Check) total 6 Nos with Panel	lot	2		
1D.8	Extension of the existing Substation Automation System integration, including all necessary requirements.	Lot	1		
1E	Digital Fault & Disturbance Recorder (Modification/Extension of existing system), including all necessary requirements.	Lot	1		
1F	SCADA system for Telecontrol and Telemetry including as follows:				
1F.1	Modification/Extension of SCADA hardware & software				
	a) Modification/Extension of SCADA hardware & software including all necessary requirements.	Lot	1		
	b) Integration work with Master & Backup NLDG including Engineering & Commissioning	Lot	1		
1G	Extension of Fibre Optic Multiplexer Equipment and PLC Equipment for Communication and Protection				
1H	Power Cable				
1H.1	2000 mm ² (least), 245 kV, 2,000A, 50kA/ 1 sec, 50Hz, 1,050/460 kV BIL, single phase XLPE cable. Four phases cable shall be laid of which one phase as spare. Length: 330x4=1320 meter.	m	1320		
1H.2	245 kV, 2,000A, 50kA/ 1 sec, 50Hz, 1,050/460 kV BIL, cable terminal end & associated support structures for single phase XLPE cable.	Nos.	8		
II	Multicore Cables				
II.1	Multicore Cables for control, protection, metering & power circuits				
	i) LV Control Cable	lot	1		
	ii) LV Power Cable	lot	1		
1J	Earthing and Lightning Protection				
1J.1	Extension of Earthing system	lot	1		
1J.2	Extension of Lightning Protection System	lot	1		
1K	Batteries, chargers & DC distribution (detail in scope of work)				
1K.1	110V Ni-cad Batteries with chargers & distribution board				
	a) Extension of 110V DC Distribution panel and board and New DCDB panel	Lot	1		
	b) 110V Ni-cad Batteries with chargers				
	i. 110V Battery Banks, not less than 400Ah	set	1		
	ii. Charger, not less than 150A	set	1		
1K.2	48V Ni-cad Batteries with chargers & distribution board				
	i) Extension of 48V DC Distribution panel and board/New DCDB panel	Lot	1		

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Item No.	Description of Equipment Requirement	Unit	Quantity	Local Currency (in BDT)	
				Unit Price	Total Price
			(1)	(2)	(3) = (1) x (2)
1L	LVAC Distribution (detail in scope of work)				
1L.1	Extension of AC 415V or 240V distribution panel and new panel	lot	1		
1O	Transportation of equipments				
1O.1	Transportation of Item no: 1A1.1, 1A1.5, 1A1.6, 1B1, 1B5, 1B6	lot	1		
	TOTAL (To be indicated in Schedule No.6 Grand Summary)				

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