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TCN – 02, Dated: 12-08-2008

Sub	Tender change notice (TCN) 02	
Job	Package – A Erection and Commissioning of 500 MW STEAM TURBINE, GENERATOR , PUMPS, AUXILIARIES, PIPING ETC FOR UNIT#1 ALONGWITH COMMON SYSTEMS FOR BOTH THE UNITS (CW PUMPS, MISC. WATER PUMPS ETC) AT 2x500 MW Mejia PH-II Project, UNIT # 1&2 PROJECT. Package – B Erection and Commissioning of 500 MW STEAM TURBINE, GENERATOR , PUMPS, AUXILIARIES, PIPING ETC FOR UNIT#2 AT 2x500 MW Mejia PH-II Project, UNIT # 1&2 PROJECT, WEST BENGAL.	
Ref	1.0	Tender no PSER:SCT:MJA- T899:08.
	2.0	BHEL's NIT vide reference no Ref: PSER:SCT:MJA-T 899:08 Date: 22-07-08.

TENDER DOCUMENT NO. PSER:SCT:MJA-T899:08

WITH REFERENCE TO ABOVE FOLLOWING CHANGES MAY PLEASE BE NOTED AND COMPLIED WHILE SUBMITTING THE OFFER FOR THE SUBJECT JOB:

1. REVISED FACILITY BY BHEL FOR STRAND –JACK ARRANGEMENT (PL SEE ATTACHED FILE)
2. REVISED BILLING SCHEDULE(FILE ATTACHED)

LAST DATE OF OFFER SUBMISSION IS : 18-08-08(15=00 HRS)

BIDDERS TO NOTE THAT THIS **TCN-02** WILL FORM PART OF THE TENDER DOCUMENT AND ARE REQUESTED TO COMPLY.

ALL OTHER TERMS AND CONDITIONS OF SUBJECT TENDER / TENDER DOCUMENTS REMAIN UNCHANGED .

DGM/SCT

FACILITIES TO BE PROVIDED BY BHEL FOR LIFTING AND PLACEMENT OF GENERRATOR STATOR BY STRAND JACK METHOD BY CONTRCATOR (to be read in conjunction with Clause no : 4.8.1 of SCC)

1 For Unloading/Loading/Assembly/Dismantling/Fabrication/Erection and Handling of the Equipment/T&Ps / Structurals to be mobilized by contractor as per work requirement of Strand Jack Arrangement at Job site, suitable Crawler/Mobile Crane assistance including TG Hall EOT Crane with Fuel and Operator shall be provided by BHEL on free of cost at Site. However, for transportation of the above items, suitable Trailers/Trucks are to be arranged by you as a part of your scope without any extra cost.

2 On completion of works, BHEL shall release Strand-Jack -jack structures and Equipment from Site and provide suitable Crane (along with fuel and operators) assistance on free of cost basis for Dismantling/Demobilization of the Equipment and structures.

3 All Civil Works like RCC/PCC/Brickworks etc. as required for Installation of the Lifting Equipment/modular Structural Towers/supporting of temporary structures etc. including Casting of necessary foundations at site is in the scope of BHEL. Necessary Drawings/loading data for this work shall be provided by the contractor with in 14 days of LOI after the same is obtained from his expert agency who will be deployed to carry out this specialized job.

APPENDIX-VII

TENDER NO. PSER:SCT:MJA-T 899:08

BILLING SCHEDULE FOR TG PACKAGE OF 2X500 MW MEJIA PH-II (PACKAGE A)- REV 01

Sl. No.	Activity Description	% Billing
I.0	**CONDENSER (16%)**	
1.1	Preparation of foundation	0.25
1.2	Placement, alignment, assembly and welding of bottom plate segments, hot well, NDT and spring elements placement & Grouting.	1
1.3	Assembly and positioning of water chamber, side plates, bottom plates, welding and NDT	2
1.4	Assembly, alignment and welding & NDT of tube support plates and internals like baffle plates, air evacuation pipes etc.	2
1.5	Assembly, welding & NDT of dome walls and dome stiffeners, extraction piping and steam throw device, LPH-1 support etc.	2
1.6	Insertion, expansion, cutting etc. of condenser tubes	3
1.7	Assembly of Condenser Water Boxes and preparation of Hydro-test	1
1.8	Erection of CW Piping from A-Row end terminal point / butterfly valve upto condenser water boxes including RE Joints, Butterfly valves.	1.5
1.9	Hydro test of steam and water side	1
1.10	Welding of condenser neck joint and NDT& completion of balance works	1.25
1.11	Erection, Commissioning, load testing of condenser water box handling system	1
2.0	**TURBINE (14 %)**	
2.1	Preparation of foundation, placement, alignment and grouting of base plates of LPC and bearing pedestals	1
2.2	Placement and alignment of LP outer casing bottom portion and centre guide keys	0.75
2.3	Placement of LP rotor and alignment with inner casing and checking of blade clearance	1
2.4	Assembly, alignment & welding of LP Outer Casing upper half	1
2.5	Placement and alignment of IP Turbine outer casing and inner casing (lower halves)	0.75
2.6	Placement and alignment of IP Rotor with lower casing and boxing up of inner & outer casing (upper halves) & Roll check	0.75
2.7	Final Box up of IP Turbine	0.75
2.8	Boxing up of LP inner-inner & inner- outer and roll check	0.75
2.9	Placement of HP Turbine, lowering of HP Rotor on bearings and checking of clearances, coupling, HP Turbine swing checks etc.	0.75

2.10	Alignment of all Rotors including reaming, honing and fixing of coupling bolts	1.5
2.11	Assembly of Governing system/equipment	1
2.12	Installation of ESVs, IVs, LPBP Valves, MS Strainers (internals), HRH strainers (internals)	1
2.13	Erection, alignment and welding of cross around piping	0.5
2.14	Final box-up of LP turbine	1
2.15	Assembly and preparation of hydro-test, steam blowing devices and normalisation etc.	0.75
2.16	Final boxing up of Pedestals after Oil Flushing completion	0.75
3.0	**TURBO GENERATOR (20 %)**	
3.1	Submission of Strand jack drawings and receipt of strand jack structures and equipment at Mejia site	5
3.2	Erection of strand jack structure and equipment	1
3.3	Unloading of Generator	0.5
3.4	Lifting and placement of stator on foundation by strand jack method	2.5
3.5	Dismanting of strand-jack structure and equipment	1
3.6	Preparation of foundation, levelling, matching and grouting of foundation plates	1
3.7	Levelling and alignment of Stator	0.5
3.8	Fixing of End Shields on to foundation beams	0.5
3.9	Rotor Insertion	1
3.10	Boxing up of Generator and assembly of Hydrogen Seals	1.5
3.11	Alignment of Generator Rotor with LP Turbine Rotor, run-out checks and Reaming, Honing of coupling holes and fixing of coupling bolts	1
3.12	Erection of Excitation equipments & Alignment of Gen.-Exciter Rotors including Swing check and completion of balance works	2
3.13	Installation of enclosures of Generator/Exciter with all auxiliaries	0.5
3.14	Erection, commissioning of Generator Rotating/Static auxiliaries with piping including main equipment	1
3.15	Final gas tightness test of Stator with complete system	1
4.0	**PUMPS AND AUXILIARIES (24.0 %)**	
4.1	**Erection / testing of one no. Motor Driven BFP (1.5%)**	
4.1.1	Foundation chipping, blue matching of foundation and levelling, centring of grillage/foundation frame and bolt grouting and grouting in totality	0.25
4.1.2	Placement of feed pump, booster pump, motor, hydraulic coupling and preliminary alignment.	0.5
4.1.3	Grouting of grillage/ foundation and final alignment of BFP, BP Motor and HC	0.5

4.1.4	Erection of lube. Oil piping, & other balance piping like mechanical seal etc, Erection of panel/racks and oil flushing of oil piping	0.25
4.2	**Erection / Testing of Turbine Driven BFP (for both pumps) (3% @1.5% for each pump)**	
4.2.1	Chipping / blue matching of foundation, placing, centering levelling of BFPs, Booster pumps, gear boxes and blue matching of Turbine foundation packers.	0.5
4.2.2	Alignment of Turbine, BFP, BP, Gear box and grouting in totality and coupling.	1
4.2.3	Erection of Lube. Oil piping. Jacking oil piping, Governing oil piping, Governing oil console, oil tanks, oil pumps, oil purification unit, coolers, and other equipments, acid cleaning, oil flushing of pipelines.	1
4.2.4	Erection of gland steam piping, drainage piping, cooling water piping, sealing lines etc.	0.5
4.3	Erection, Testing, grouting etc. of CW Pumps	3
4.4	Erection, Testing, grouting etc. of DMCW (BOILER) Pumps	1
4.5	Erection, Testing, grouting etc. of DMCW (TG) Pumps	1
4.6	Erection, Testing, grouting etc. of Condensate Extraction Pumps	1.5
4.7	Erection, Testing & commissioning of Lube oil pumps, oil centrifuge, main oil tank, coolers and other related equipments / Items with related grouting etc.	0.5
4.8	Erection, Testing & commissioning of Vacuum Pumps including auxiliaries and connected pipelines	0.5
4.9	Erection, Testing & commissioning of Seal oil, Primary Water and Gas System	1
4.10	Erection, Testing & commissioning of Control Fluid tank, C.F. Coolers, C.F. Pumps, Purification unit etc.	1
4.11	Erection, Testing & commissioning of HP & LP heaters	1
4.12	Erection, Testing & commissioning of Gland Steam Condenser, Drain Coolers	0.5
4.13	Erection, Testing & commissioning of De-aerator, Feed Storage Tank and associated approach platform with ladders etc.	2.5
4.14	Erection, Testing & commissioning of Tanks & Vessels	0.5
4.15	Erection & Testing of other Misc. Pumps Package (Horizontal & Vertical)	1.5
4.16	Erection, Testing & commissioning of Plate Heat Exchanger Package	0.5

4.17	Erection, Testing & commissioning of Condenser on load tube cleaning package	1
4.18	Erection, Testing & commissioning of self cleaning strainer package	0.5
4.19	Erection, Testing & commissioning of Centralised Lube oil purification package	1
4.20	Erection, Testing & commissioning of Misc. Hoists & Chain Pulley Blocks.	1
5.0	**INTEGRAL PIPING & TG PIPING (14.5%)**	
5.1	Lube. Oil and Jacking Oil Piping	0.6
5.2	Control Fluid Piping for ESV's, IV's, LPBP Valves, NRV's	0.6
5.3	Gland Seal Steam Piping	0.6
5.4	TG PIPING	11
5.5	Generator Seal Oil Piping	0.6
5.6	Generator Primary Water Piping	0.5
5.7	Generator Gas Piping	0.6
6.0	**PAINTING** with arrow marking and nomenclature, preservation of all equipments, Piping etc.	**1.50**
7.0	**COMMISSIONING (10%)**	
7.1	Oil Flushing of lube. Oil, seal oil and control fluid, Gas system etc. of TG .	1.5
7.2	Commissioning of MD- BFP & TD-BFP's including chemical cleaning, oil flushing etc.	1.5
7.3	Commissioning of CW Pumps	1
7.4	Steam blowing and barring gear	1
7.5	Commissioning of other Misc. Pumps	1
7.6	Commissioning of CEPs	0.5
7.7	Steam rolling and over-speed test	0.5
7.8	Synchronisation	1
7.9	Trial operation completion	1
7.10	PG Test assistance	0.5
7.11	Attending to punch points/stabilisation/defect points	0.5
	Grand Total	***100.0***

APPENDIX-VII

TENDER NO. PSER:SCT:MJA-T 899:08

BILLING SCHEDULE FOR TG PACKAGE OF 2X500 MW MEJIA PH-II (PACKAGE B)- REV 01		
Sl. No.	**Activity Description**	**% Billing**
I.0	**CONDENSER (16%)**	
1.1	Preparation of foundation	0.25
1.2	Placement, alignment, assembly and welding of bottom plate segments, hot well, NDT and spring elements placement & Grouting.	1
1.3	Assembly and positioning of water chamber, side plates, bottom plates, welding and NDT	2
1.4	Assembly, alignment and welding & NDT of tube support plates and internals like baffle plates, air evacuation pipes etc.	2
1.5	Assembly, welding & NDT of dome walls and dome stiffeners, extraction piping and steam throw device, LPH-1 support etc.	2
1.6	Insertion, expansion, cutting etc. of condenser tubes	3
1.7	Assembly of Condenser Water Boxes and preparation of Hydro-test	1
1.8	Erection of CW Piping from A-Row end terminal point / butterfly valve upto condenser water boxes including RE Joints, Butterfly valves.	1.5
1.9	Hydro test of steam and water side	1
1.10	Welding of condenser neck joint and NDT& completion of balance works	1.25
1.11	Erection, Commissioning, load testing of condenser water box handling system	1
2.0	**TURBINE (14 %)**	
2.1	Preparation of foundation, placement, alignment and grouting of base plates of LPC and bearing pedestals	1
2.2	Placement and alignment of LP outer casing bottom portion and centre guide keys	0.75
2.3	Placement of LP rotor and alignment with inner casing and checking of blade clearance	1
2.4	Assembly, alignment & welding of LP Outer Casing upper half	1
2.5	Placement and alignment of IP Turbine outer casing and inner casing (lower halves)	0.75
2.6	Placement and alignment of IP Rotor with lower casing and boxing up of inner & outer casing (upper halves) & Roll check	0.75
2.7	Final Box up of IP Turbine	0.75
2.8	Boxing up of LP inner-inner & inner- outer and roll check	0.75
2.9	Placement of HP Turbine, lowering of HP Rotor on bearings and checking of clearances, coupling, HP Turbine swing checks etc.	0.75

2.10	Alignment of all Rotors including reaming, honing and fixing of coupling bolts	1.5
2.11	Assembly of Governing system/equipment	1
2.12	Installation of ESVs, IVs, LPBP Valves, MS Strainers (internals), HRH strainers (internals)	1
2.13	Erection, alignment and welding of cross around piping	0.5
2.14	Final box-up of LP turbine	1
2.15	Assembly and preparation of hydro-test, steam blowing devices and normalisation etc.	0.75
2.16	Final boxing up of Pedestals after Oil Flushing completion	0.75
3.0	**TURBO GENERATOR (20 %)**	
3.1	Submission of Strand jack drawings and receipt of strand jack structures and equipment at Mejia site	5
3.2	Erection of strand jack structure and equipment	1
3.3	Unloading of Generator	0.5
3.4	Lifting and placement of stator on foundation by strand jack method	2.5
3.5	Dismanting of strand-jack structure and equipment	1
3.6	Preparation of foundation, levelling, matching and grouting of foundation plates	1
3.7	Levelling and alignment of Stator	0.5
3.8	Fixing of End Shields on to foundation beams	0.5
3.9	Rotor Insertion	1
3.10	Boxing up of Generator and assembly of Hydrogen Seals	1.5
3.11	Alignment of Generator Rotor with LP Turbine Rotor, run-out checks and Reaming, Honing of coupling holes and fixing of coupling bolts	1
3.12	Erection of Excitation equipments & Alignment of Gen.-Exciter Rotors including Swing check and completion of balance works	2
3.13	Installation of enclosures of Generator/Exciter with all auxiliaries	0.5
3.14	Erection, commissioning of Generator Rotating/Static auxiliaries with piping including main equipment	1
3.15	Final gas tightness test of Stator with complete system	1
4.0	**PUMPS AND AUXILIARIES (22.0 %)**	
4.1	**Erection / testing of one no. Motor Driven BFP (2.0%)**	
4.1.1	Foundation chipping, blue matching of foundation and levelling, centring of grillage/foundation frame and bolt grouting and grouting in totality	0.25
4.1.2	Placement of feed pump, booster pump, motor, hydraulic coupling and preliminary alignment.	0.75
4.1.3	Grouting of grillage/ foundation and final alignment of BFP, BP Motor and HC	0.75

4.1.4	Erection of lube. Oil piping, & other balance piping like mechanical seal etc, Erection of panel/racks and oil flushing of oil piping	0.25
4.2	**Erection / Testing of Turbine Driven BFP (for both pumps) (6% @3.0% for each pump)**	
4.2.1	Chipping / blue matching of foundation, placing, centering levelling of BFPs, Booster pumps, gear boxes and blue matching of Turbine foundation packers.	0.75
4.2.2	Alignment of Turbine, BFP, BP, Gear box and grouting in totality and coupling.	2.5
4.2.3	Erection of Lube. Oil piping. Jacking oil piping, Governing oil piping, Governing oil console, oil tanks, oil pumps, oil purification unit, coolers, and other equipments, acid cleaning, oil flushing of pipelines.	2
4.2.4	Erection of gland steam piping, drainage piping, cooling water piping, sealing lines etc.	0.75
4.4	Erection, Testing, grouting etc. of DMCW (BOILER) Pumps	1
4.5	Erection, Testing, grouting etc. of DMCW (TG) Pumps	1
4.6	Erection, Testing, grouting etc. of Condensate Extraction Pumps	2.5
4.7	Erection, Testing & commissioning of Lube oil pumps, oil centrifuge, main oil tank, coolers and other related equipments / Items with related grouting etc.	0.5
4.8	Erection, Testing & commissioning of Vacuum Pumps including auxiliaries and connected pipelines	0.5
4.9	Erection, Testing & commissioning of Seal oil, Primary Water and Gas System	1
4.10	Erection, Testing & commissioning of Control Fluid tank, C.F. Coolers, C.F. Pumps, Purification unit etc.	1
4.11	Erection, Testing & commissioning of HP & LP heaters	1
4.12	Erection, Testing & commissioning of Gland Steam Condenser, Drain Coolers	0.5
4.13	Erection, Testing & commissioning of De-aerator, Feed Storage Tank and associated approach platform with ladders etc.	2.5
4.14	Erection, Testing & commissioning of Tanks & Vessels	0.5
4.16	Erection, Testing & commissioning of Plate Heat Exchanger Package	0.5
4.17	Erection, Testing & commissioning of Condenser on load tube cleaning package	1
4.18	Erection, Testing & commissioning of self cleaning strainer package	0.5
5.0	**INTEGRAL PIPING & TG PIPING (16.5 %)**	
5.1	Lube. Oil and Jacking Oil Piping	0.8
5.2	Control Fluid Piping for ESV’s, IV’s, LPBP Valves, NRV’s	0.8
5.3	Gland Seal Steam Piping	0.8
5.4	TG PIPING	12

5.5	Generator Seal Oil Piping	0.8
5.6	Generator Primary Water Piping	0.5
5.7	Generator Gas Piping	0.8
6.0	**PAINTING** with arrow marking and nomenclature, preservation of all equipments, Piping etc.	**1.50**
7.0	**COMMISSIONING (10%)**	
7.1	Oil Flushing of lube. Oil, seal oil and control fluid, Gas system etc. of TG .	1.5
7.2	Commissioning of MD- BFP & TD-BFP's including chemical cleaning, oil flushing etc.	1.5
7.3	Steam blowing and barring gear	1
7.4	Commissioning of CEPs	1.5
7.5	Commissioning of other Misc. Pumps	1
7.5	Steam rolling and over-speed test	0.5
7.6	Synchronisation	1
7.7	Trial operation completion	1
7.8	PG Test assistance	0.5
7.9	Attending to punch points/stabilisation/defect points	0.5
	Grand Total	***100.0***