



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TCN - 04

Ref: PSER:SCT:BAR-T1130:TCN-04

Date: 23/10/2010

Sub	Tender change notice (TCN) 04.	
Job	Handling at site stores/ storage yard including unloading of stator at designated place, Transportation to site of work, Unloading at site, Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar .	
Ref	1.0	Tender no PSER:SCT:BAR-T1130:10.
	2.0	BHEL's NIT, vide ref no Ref: PSER:SCT:BAR-T1130:10 Dated 30/09/10
	3.0	BHEL's TCN-01 Dt. 13/10/2010
	4.0	BHEL TCN-02 vide ref. no. PSER:SCT:BAR-T1130:TCN-02 Dated 18/10/2010.
	5.0	BHEL TCN-03 vide ref. no. PSER:SCT:BAR-T1130:TCN-03 Dated 20/10/2010.
	6.0	Other references (if any).

With reference to above, following points, relevant to tender, may please be noted and complied with while submitting offer.

- 1.0 Addition/ Modification to Tender terms as per Annexure-A to TCN-04.
- 2.0 Billing Schedule has been revised as per Annexure-B to TCN-04.
- 2.0 Revised 'No deviation certificate' is attached. Bidder to submit 'No deviation certificate' as per attached format only.
- 3.0 All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

ENGR (SCT)

Encl

- 1.0 Revised 'No deviation certificate' format.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 23211798/ 1691

FORMAT FOR NO DEVIATION CERTIFICATE
(To be submitted in the bidder's letter head)

BHARAT HEAVY ELECTRICALS LIMITED,
Power Sector - Eastern Region,
Plot no 9/1, DJ Block, Sector – II, Salt Lake City,
Kolkata – 700 091

Sub	No Deviation Certificate.	
Job	Handling at site stores/ storage yard including unloading of stator at designated place, Transportation to site of work, Unloading at site, Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar .	
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	2.0	BHEL's NIT, vide ref no Ref: PSER:SCT:BAR-T1130:10 Dated 30/09/10
	3.0	BHEL's TCN-01 Dt. 13/10/2010
	4.0	BHEL TCN-02 vide ref. no. PSER:SCT:BAR-T1130:TCN-02 Dated 18/10/2010.
	5.0	BHEL TCN-03 vide ref. no. PSER:SCT:BAR-T1130:TCN-03 Dated 20/10/2010.
	6.0	BHEL TCN-04 vide ref. no. PSER:SCT:BAR-T1130:TCN-04 Dated 23/10/2010.
	7.0	Other references (if any).

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed/ modified the tender documents as appeared in the website/ issued by you and in case of such observance at any stage, it shall be treated as null and void.

We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT. We hereby confirm our unqualified acceptance to all terms & conditions, unqualified compliance to technical specification and acceptance to reverse auctioning process.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized
representative of the bidder)

Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar.

TENDER NO. PSER:SCT:BAR-T1130:10

ANNEXURE-A TO TCN-04

Following changes in the tender may be published in the web for intimation to all the bidders:

SL NO.	CLAUSE NO.	CHANGES MADE
1	VOL-1F,CL. NO. 4.2.6	Following point is added after the last line : <i>"Concrete slabs as per approved drawings are to arranged by the contractor during unloading of the stator."</i>
2	Vol-1F,CL. NO. 4.8.1	Clause no. 4.8.2 is added after cl. No. 4.8.1 as per following : <i>"The design of the stator lifting arrangement including design of the foundations for installation of the temporary structures for strand jack system is included in the scope of work."</i>
3	VOL-1F,CL. NO. 12.4	The billing schedule is attached as per Appendix-VI. This super cedes the payment break up indicated in the GCC Vol-1B and also indicated in TCN-03.
4	VOL-1F,CL. NO. 3-G	The clause stands deleted.
5	VOL-1F,CL. NO. 4.2.6	The 1 st paragraph of cl. No. 4.2.6 stands modified as below: <i>"Handling and lifting from special trailer/resting place in front of A row or along A-row, and placement on TG foundation with the help of Strand-Jack is included in the scope of contractor. The contractor shall tie up with specialized agency sufficiently experienced in handling of 500 MW Generator stator by strand jack method and take approval of BHEL regarding the agency and the method before start of work. The contractor shall submit the credentials of this agency to BHEL for review and approval."</i>
6	VOL-1F,CL.NO. 4.8.1	The 1 st paragraph of the clause may be read as : <i>"Handling, lifting from special trailer/resting place in front of A row and placement on TG foundation with the help of Strand-Jack is included in the scope of contractor. The contractor shall tie up with specialized agency sufficiently experienced in handling of 500 MW Generator stator by strand jack method and take approval of BHEL regarding the agency and the method."</i>
7	VOL-1F,CL.NO. 4.16.1	<i>The scope approach platform also includes the following:</i> <i>f. Oil Room/TDBFP Oil Tank ,Oil Pump area</i>

Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar.

TENDER NO. PSER:SCT:BAR-T1130:10

ANNEXURE-A TO TCN-04

8	VOL-1F,CL.NO. 4.16.7	Following sentence is added after the last line : “Necessary approach platform is to be provided by the contractor for this purpose.”
9	VOL-1F,CL.NO. 4.16.10	Clause no. 4.16.10 is added as per following : <i>Preparation and cutting of Insert plates/items which will be required in the area of TG Oil canal, TDBFP and associated areas for which the vendor will do erection of main equipment. This para is to be included.</i>
10	VOL-1F,CL. NO. 5.2.8	<i>The special tap set shall be of size M64 X 2 size or bigger size as required</i>
11	VOL-1F,CL. APPENDIX-VI (LIST OF CONSUMABLES TO BE PROVIDED BY THE CONTRACTOR WITHIN QUOTED RATES FOR EACH 660 MW UNIT)	The description of item no.-01 of APPENDIX-VI shall be read as : “Gases like O2, CO2, N2, Argon, D/A and others as per requirement (FOR CONSTRUCTION PURPOSE AND NOT FOR COMMISSIONING USES)”
12	VOL-1F,CL. APPENDIX-III CONSOLIDATED WEIGHT SCHEDULE FOR EACH 660MW UNIT INCLUDING COMMON SYSTEMS	<i>Revised APPENDIX-III (CONSOLIDATED WEIGHT SCHEDULE FOR EACH 660MW UNIT INCLUDING COMMON SYSTEMS) is attached.</i>

All other terms and conditions of the tender shall remain unaltered.

Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar.

TENDER NO. PSER:SCT:BAR-T1130:10

ANNEXURE-A TO TCN-04

APPENDIX – III Rev.01
CONSOLIDATED WEIGHT SCHEDULE FOR EACH 660MW UNIT
INCLUDING COMMON SYSTEMS

SI.No.	EQUIPMENT / PACKAGE	APPROX. WT. (in MT)
A	STEAM TURBINE & AUX.	1650.00
B.	TURBO GENERATOR & AUX.	
C.	HEAT EXCHANGERS	1200.00
D.	PUMPS, TURBO DRIVE & MOTORS	267.00
E.	TG & AUX INTEGRAL PIPING	95.00
F	TG PIPING SYSTEM, CW /MISC PIPING SYSTEM	300.00
G.	TANKS & VESSELS ETC	580.00
H.	BOUGHT OUT ITEMS (BHEL PEM Scope)	65.00
I	PLATFORM & STRUCTURES	200.00
J	COMMON SYSTEM (INCLUDED)	320.00

NOTE :

- 1) The quantities/weights mentioned in weight schedule is approximate only and given to facilitate the contractor to make assessment of the magnitude of work under this specification. These are liable to variations as per design consideration. The tenderer has to keep his lump sum quoted rates firm for variation in weights for items under **rate schedule and no revision of rates / extra work will be entertained for increase in weight of these items except for Gr. F of annexure-III [weight schedule].**
- 2) The quoted lump sum price shall remain firm for variation up to (+/-) 20% in the weight for TG / Misc piping, i.e. under items "F" , as indicated in Annexure-III, i.e. up to (+/-)20% of 300 MT for TG Piping, etc (under Gr F) .
- 3) If the variation in actual erected tonnage of TG piping, etc crosses the limit of +/- 20% of the individual group (i.e. Gr. F) as indicated in appendix-III, the differential tonnage payment beyond the prescribed limit will be made/recovered in the final bill at the rate prescribed below:
For Gr-F [TG cycle piping etc] of weight schedule, appendix-III - Rs 20,000.00/MT.

Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar .

TENDER NO. PSER:SCT:BAR-T1130:10

ANNEXURE-B TO TCN-04

REVISED BILLING SCHEDULE FOR TG PACKAGE OF 2X660 MW BARH STG-II,UNIT-4 & UNIT-5

Sl. No.	Activity Description	% Billing
1.0	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

Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar .

TENDER NO. PSER:SCT:BAR-T1130:10

ANNEXURE-B TO TCN-04

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 (22 %)	
3.1	Submission & approval of Strand jack drawings	2
3.2	Receipt of strand jack structures and equipment at site	2.5
3.3	Erection of strand jack structure and equipment	2.5
3.4	Unloading of Generator	2.5
3.5	Lifting and placement of stator on foundation by strand jack method	3.5
3.6	Dismanting of strand-jack structure and equipment	1.5
3.7	Preparation of foundation, levelling, matching and grouting of foundation plates	0.5
3.8	Levelling and alignment of Stator	0.5
3.9	Fixing of End Shields on to foundation beams	0.5
3.10	Rotor Insertion	0.75
3.11	Boxing up of Generator and assembly of Hydrogen Seals	1.5
3.12	Alignment of Generator Rotor with LP Turbine Rotor, run-out checks and Reaming, Honing of coupling holes and fixing of coupling bolts	1
3.13	Erection of Excitation equipments & Alignment of Gen.-Exciter Rotors including Swing check and completion of balance works	0.75
3.14	Installation of enclosures of Generator/Exciter with all auxiliaries	0.5
3.15	Erection, commissioning of Generator Rotating/Static auxiliaries with piping including main equipment	0.75
3.16	Final gas tightness test of Stator with complete system	0.75
4.0	PUMPS AND AUXILIARIES (22.0 %)	
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

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TENDER NO. PSER:SCT:BAR-T1130:10

ANNEXURE-B TO TCN-04

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 DMCW (BOILER) Pumps	1.5
4.4	Erection, Testing, grouting etc. of DMCW (TG) Pumps	1.5
4.5	Erection, Testing, grouting etc. of Condensate Extraction Pumps	1.5
4.6	Erection, Testing & commissioning of Lube oil pumps, oil centrifuge, main oil tank, coolers and other related equipments / Items with related grouting etc.	0.5
4.7	Erection, Testing & commissioning of Vacuum Pumps including auxiliaries and connected pipelines	0.5
4.8	Erection, Testing & commissioning of Seal oil, Primary Water and Gas System	1
4.9	Erection, Testing & commissioning of Control Fluid tank, C.F. Coolers, C.F. Pumps, Purification unit etc.	1
4.10	Erection, Testing & commissioning of HP & LP heaters	1
4.11	Erection, Testing & commissioning of Gland Steam Condenser, Drain Coolers	0.5
4.12	Erection, Testing & commissioning of De-aerator, Feed Storage Tank and associated approach platform with ladders etc.	2.5
4.13	Erection, Testing & commissioning of Tanks & Vessels	0.5
4.14	Erection & Testing of other Misc. Pumps Package (Horizontal & Vertical)	1.5
4.15	Erection, Testing & commissioning of Plate Heat Exchanger Package	0.5

Erection, Testing, Commissioning and Handing over of steam turbine & its auxiliaries, generator & its auxiliaries, condenser, pumps, LP dosing, condenser on line tube cleaning system, Plate heat exchangers, Integral piping, TG piping, various TG Aux and misc equipment etc. at 2x 660 MW, UNIT# 4 & 5 at Barh stage-II Project, Dist-Patna, Bihar .

TENDER NO. PSER:SCT:BAR-T1130:10

ANNEXURE-B TO TCN-04

4.16	Erection, Testing & commissioning of Condenser on load tube cleaning package	1
4.17	Erection, Testing & commissioning of self cleaning strainer package	0.5
4.18	Erection, Testing & commissioning of Centralised Lube oil purification package	1
4.19	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