Bharat Heavy Electricals Limited
Industry Sector, Transmission Business Group
Integrated Office Complex
Lodhi Road, New Delhi-110 003
Phones: 011-41793299,Fax: 011-24365869

AMENDEMENT-01 TO NIT **DATE: 18.12.08**

SUB : AMENDMENT- 01 OF NIT 5612 For 400 kV & 220 kV HT cables & accessories.

REF: E-4583195/UKAI/HT-CABLE **ENQUIRY DATE 20/10/2008.**

With reference to above tender for 400 kV & 220 kV HT cables & accessories for **1 x 500 MW unit-6 UKAI TPS- 420/220kV Substation, GSECL**, following amendments may be noted.

1. The Revise Due Date for submission of offers against the above mentioned Tender is 20/01/2009.

2. Separate offers for 220 kV & accessories and 400 kV & accessories are acceptable.

3. Amendments to the technical specification are at pages 02 to 05

4. All other terms & conditions of the NIT 5612 dated 17.11.08 shall remain unchanged.

Please enclose with your offers a copy of the amendment-01 along with all the enclosures duly signed by your authorized signatory and stamped.

AGM/TBMM

400/220kV Substation at Ukai

400/220kV HT Power Cables –

Date -12.12.08

AMENDMENT OF TECHNICAL SPECIFICATION OF 400/220kV HT CABLE

DOCUMENT No. TB-308-316-024, Rev. No.-00

1. Section -1, Cl. 1.0 A. SUPPLIES I. should be read as **"Supply of power cable, single core, Copper conductor compacted circular stranded, XLPE-insulated, corrugated Aluminium sheathed, HDPE outer sheathed with outer conductive layer".**

2. **In Section -1 , Section-2 and BOQ "Corrugated Aluminium /laminated Aluminium sheathed "** should be read as **"Corrugated Aluminium sheathed",**

3. **Section-4 (GTP) is replaced by rev-01 attached with this amendment.**

Saroj Kumar
12/12/08

400/220kV Substation at Ukai
400/220kV HT Power Cables –
FORMAT FOR GTP

Section-4(Rev-01)

Guaranteed Technical Particulars for the 400kV and 220kV XLPE Insulated Cable

Sl. No.	Item Description	Unit	Data
1	Manufacturer's Name & Address		
2	Cable Type		
3	Rating		
a)	Rated voltage	kV	
b)	Maximum rated voltage	kV	
4	Applicable Standard		
5	Number of cores		
6	**CONDUCTOR**		
a)	Cross sectional area	mm^2	
b)	Material		
c)	Design		
d)	Overall diameter	mm	
e)	Soldering Temperature	deg C	
6.1	**CONDUCTOR SCREEN**		
a)	Material		
b)	Nominal thickness	mm	
c)	Diameter over conductor screen	mm	
7	**INSUALTION**		
a)	Material		
b)	Type of curing		
c)	Nominal thickness	mm	
7.1	**INSULATION SCREEN**		
a)	Material		
b)	Nominal thickness	mm	
c)	Diameter over insulation screen	mm	
8	**METAL Screen and SHEATH**		
a)	Material		
b)	Nominal thickness	mm	
c)	Cross sectional area	sq mm	
8.1	**WATER SEALING LAYER**		
a)	Material		
b)	Thermal resistivity of material	km/W	
9	**OUTER SHEATH**		
a)	Material		
b)	Minimum average thickness	mm	
c)	Diameter over outer sheath	mm	
10	**COMPLETED CABLE**		
a)	Overall diameter	mm	
b)	Weight per meter	kg/m	
c)	Maximum drum length	m	
11	**MAXIMUM DIELECTRIC STRESS**		
a)	At the conductor (assumed smooth)	MV/m	
b)	At the conductor screen	MV/m	
12	**MAXIMUM CONDUCTOR TEMPERATURE**		

a)	Laid direct in ground	deg C	
b)	Drawn in ducts	deg C	
c)	Erected in air	deg C	
13	**MINIMUM RADIUS OF BEND AROUND WHICH CABLES WILL BE LAID**		
a)	Laid direct	m	
b)	In ducts	m	
c)	In air	m	
d)	Nominal internal diameter of pipes or ducts through which cable may be pulled		
14	**MAXIMUM DC RESISTANCE PER METER OF CABLE AT 20 DEC C**		
a)	Conductor	Micro-ohm	
b)	Metallic layer	Micro-ohm	
c)	Metallic sheath	Micro-ohm	
15	**AC RESISTANCE PER METER OF CABLES AT MAXIMUM CONDUCTOR TEMPERATURE**		
a)	Conductor	Micro-ohm	
b)	Metallic layer	Micro-ohm	
c)	Metallic sheath	Micro-ohm	
16	Insulation resistance		
a)	At 20 deg C	Mega-Ohm	
b)	At maximum rated temperature	Mega-Ohm	
17	Current carrying capacity of cable in RCC trench with removable cover		
a)	In air (Ambient temperature 50 deg C)		
	One circuit	A min	
	Two circuit	A min	
	Three circuit	A min	
18	Maximum dielectric loss angle of charging VA of cable at nominal voltage and frequency and conductor temperature of		

Sarvaj Kumar 12/12/08

a)	50% rated voltage		
b)	200% rated voltage		
19	Creepage distance of sealing end porcelain	mm	
20	Metallic layer earth fault current carrying capacity for one second, cable fully loaded prior to earth fault and final screen temperature of 250 deg C	kA	
21	Dielectric loss of completed cable when laid direct in ground per 1000 meters and at maximum continuous operating temp	W	
22	Impulse withstand voltage		
a)	Positive 1.2/50 micro-second wave	kVp	
b)	Negative 1.2/50 micro-second wave	kVp	
23	Short circuit capacities with a conductor temperature of 90°C at the commencement		
a)	0.5 s duration		
b)	1.0 s duration		
c)	2.0 s duration		
d)	3.0 s duration		

CABLE TERMINATION KIT FOR 400kV and 220kV XLPE INSULATED CABLE

S. No.	Item Description	Unit	Data
			Termination Kit
1.	Manufacturer's Name & Address		
2.	Country of Manufacture		
3.	Type of Cable Termination		
4.	Applicable Standards for manufacturing		
5.	Applicable Standards for testing		
6.	Rated Voltage	kV	
7.	Maximum service voltage	kV	
8.	Type & Material of bushing		
9.	Creepage Distance	mm	
10.	Whether full details of termination and BOQ furnished with offer		
11.	Whether cable sealing end is complete with all accessories		
12.	Whether descriptive pamphlet enclosed		
13.	Whether full details of tests to be carried out furnished with offer		
14.	Copies of type test reports enclosed		

Note – Please submit separate GTP for each size of HT cables

Sanjay Verma
12/12/08