एन एच पी सी लिमिटेड
NHPC LIMITED
(भारत सरकार का उद्धम)
(A GOVT. OF INDIA ENTERPRISE)

तीस्ता-V पावर स्टेशन
Teesta-V Power Station, Balutar

प्रस्ताव हेतु अनुरोध (आरएफपी)
REQUEST FOR PROPOSAL (RFP)

कार्य का नाम: "अरेवा मेक के 70 एमवीए, 13.8 केवी / (400/√3) केवी सिंगल-फेज जेनरेटर ट्रांसफार्मर की मरम्मत/सुधार" के लिए तकनीकी और वाणिज्यिक प्रस्ताव का अनुरोध।

Name of work: Request for technical and commercial proposal for "Repairing/Rectification of a 70 MVA, 13.8 kV / (400/√3) kV Single-Phase Generator Transformer of Areva Make".

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(A Govt. of India Enterprise)
तीस्ता v पावर स्टेशन
Teesta V Power Station
सिंगतम, पूर्वीसिक्किम- 737134
Singtam, East Sikkim- 737134.

IS/ISO 9001 IS/ISO 14001 IS 18001
आई एम एस प्रमाणित पावरस्टेशन
IMS certified Power Station
दूरभाष/Ph: 03592-247349
फ़ैक्स/Fax: 03592-247227/349
Email: teestav-contract@nhpc.nic.in
CIN No. L40101HR1975GOI032564

एनएच/टीएसवी/संबिदा/ईसी-161/एनआईटी-1012/2025-26/14 **दिनांक: 10/04/2025**

प्रस्ताव हेतु अनुरोध (आरएफपी)

1. "**अरेवा मेक के 70 एमवीए, 13.8 केवी / (400/√3) केवी सिंगल-फेज जेनरेटर ट्रांसफार्मर की मरम्मत / सुधार**" के कार्य के लिए पात्र एकमात्र बोलीदाताओं से तकनीकी और वाणिज्यिक प्रस्ताव (आरएफपी) के लिए ऑनलाइन अनुरोध।"

A. निविदा का संक्षिप्त विवरण:		
क्र. स.	आइटम	विवरण
i)	निविदा का तरीका	**ई-खरीद प्रणाली** **कवर-I: ऑनलाइन टेक्नो-कमर्शियल बोली एवं मूल्य बोली**
ii)	निविदा आईडी सं.	**2025_NHPC_856240_1**
iii)	निविदा संदर्भ संख्या	**NH/TSV/Cont/EC-161/NIT-1012/2025-26/14** **दिनांक: 10/04/2025**
iv)	बोली की वैधता की अवधि	**120 days**
v)	निविदा आमंत्रण प्राधिकरण	**उप महाप्रबंधक (बिद्युत)** **संबिदा विभाग, तीस्ता-V पावर स्टेशन,** **बलुतर, सिंगतम, पूर्वी सिक्किम-737134** **ई-मेल:** teestav-contract@nhpc.nic.in
B. निविदा की महत्वपूर्ण तिथियां:		
vi)	प्रकाशन तिथि और समय	10/04/2025 at 17:00 Hrs
vii)	दस्तावेज़ डाउनलोड प्रारंभ दिनांक और समय	10/04/2025 at 17:00 Hrs
viii)	बोली-पूर्व बैठक की तिथि और समय	आवश्यक नहीं।

ix)	बोली के स्पष्टीकरण की प्राप्ति की अंतिम तिथि	**12/04/2025 at 14:30 Hrs**
x)	बोली प्रस्तुत करने की आरंभ तिथि और समय	**10/04/2025 at 17:00 Hrs**
xi)	ऑनलाइन बोली प्रस्तुत करने की अंतिम तिथि और समय	**17/04/2025 at 17:30 Hrs**
xii)	तकनीकी बोली और मूल्य बोली का ऑनलाइन खोलना (कवर–I)	Venue: Contract Division, Teesta V Power Station, Balutar Date: **19/04/2025** Time: 16:00 Hours

2. संपूर्ण बोली दस्तावेज/निविदा दस्तावेज को केंद्रीय सार्वजनिक खरीद) CPP) पोर्टल **https://eprocure.gov.in/eprocure/app** से देखा और डाउनलोड किया जा सकता है। साइट को NHPC वेबसाइट **www.nhpcindia.com** और CPP पोर्टल के ई–प्रोक्योरमेंट कॉर्नर के माध्यम से भी देखा जा सकता है। कोई भी बोलीदाता जो इस निविदा के लिए बोली लगाना चाहता है, वह ई–टेंडरिंग के लिए ऑनलाइन बोलीदाता पंजीकरण के बाद उपरोक्त पोर्टल से निविदा दस्तावेज डाउनलोड कर सकता है।

3. **सक्षम क्षेत्राधिकार न्यायालय:** अनुबंध की किसी भी शर्त पर की गई कोई भी कानूनी कार्रवाई या कार्यवाही केवल माननीय उच्च न्यायालय सिक्किम के अधिकार क्षेत्र में होगी।

(अंग्रेजी और हिंदी के शब्दों के बीच किसी भी अंतर के मामले में, 'निविदा आमंत्रण सूचना' का अंग्रेजी संस्करण मान्य होगा।)

(एनएचपीसी लिमिटेड की ओर से एवं हेतु(

उप महाप्रबंधक (बिद्युत)
संबिदा विभाग
तीस्ता–V पावर स्टेशन
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CIN No. L40101HR1975GOI032564

NH/TSV/Cont/EC-161/NIT-1012/2025-26/14 **Dated: 10/04/2025**

REQUEST FOR PROPOSAL (RFP)

1. Online Request for technical and commercial proposal (RFP) from eligible **Sole Bidders** for the work of **"Repairing/Rectification of a 70 MVA, 13.8 kV / (400/√3) kV Single-Phase Generator Transformer of Areva Make."**

A. Brief details of the tender:		
Sl. No.	**Item**	**Description**
i)	Mode of tendering	e-Procurement System
		Cover-I: Online Techno-Commercial Bid and price bid
ii)	Tender ID No.	**2025_NHPC_856240_1**
iii)	Tender reference No.	**NH/TSV/Cont/EC-161/NIT-1012/2025-26/14 Dated: 10/04/2025**
iv)	Period of Bid Validity	**120 days**
v)	Tender inviting Authority	**Dy. General Manager (Elect.)** **Contract Division, Teesta-V Power Station, Balutar,** **Singtam, Distt : East Sikkim-737134** **E-mail: teestav-contract@nhpc.nic.in**
B. Critical dates of tender:		
vi)	Publishing Date & Time	10/04/2025 at 17:00 Hrs
vii)	Document Download Start Date & Time	10/04/2025 at 17:00 Hrs
viii)	Pre bid meeting Date & Time	Not required.
ix)	Last date of Receipt of clarification of Bid	12/04/2025 at 14:30 Hrs
x)	Bid Submission Start Date & Time	10/04/2025 at 17:00 Hrs
xi)	Online Bid Submission Closing Date & Time	17/04/2025 at 17:30 Hrs
xii)	Online Bid Opening of Technical Bid and price bid (Cover-I)	Venue: Contract Division, Teesta V Power Station, Balutar Date: **19/04/2025** Time: 16:00 Hours

2 Complete Bid Document /Tender Document can be viewed and down loaded from Central Public Procurement (CPP) Portal **https://eprocure.gov.in/eprocure/app**. The site can also be viewed through e-procurement corner of NHPC website **www.nhpcindia.com** and CPP Portal. Any Bidder who wishes to quote for this Tender can download the Tender Document from aforesaid portal after online Bidder registration for e-tendering.

3 **COURT OF COMPETENT JURISDICTION**: Any legal action taken or proceeding initiated on any of the terms of the contract shall be only in the jurisdiction of Hon'ble High Court of Sikkim.

(In case of any difference between wordings of English and Hindi, version of 'Notice Inviting Tender', English version shall prevail)

4 Disclaimers

This RFP is neither an agreement and nor an offer by NHPC to the prospective Bidders or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in submitting their proposals pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived in relation to the Project. This RFP document and any assumptions, assessments and statements made herein do not purport to contain all the information that each Bidder may require. The Bidder shall bear all its costs associated with or relating to the preparation and submission of proposal pursuant to this RFP. Where necessary, NHPC reserves the right to amend or supplement the information, assessment or assumptions contained in this RFP. NHPC also reserves the right to withdraw the RFP or foreclose the procurement case at any stage. The issuance of this RFP does not imply that NHPC is bound to shortlist a Bidder for the Project. NHPC also reserves the right to disqualify any Bidder should it be so necessary at any stage on grounds of National Security.

Requisite details in this regard are attached herewith as under for proposal:

(i) Detail of Site Location.
(ii) Technical Specifications & Scope of work.
(iii) Drawings.
(iv) Tentative Special Conditions.
(v) Technical & Commercial Offer.

(i) **DETAIL OF SITE LOCATION:**

NHPC Ltd (A Govt. of India Navratna Enterprise), Teesta-V PS desires to do Repairing/Rectification of a 70 MVA, 13.8 kV / (400/√3) kV Single-Phase Generator Transformer of Areva Make.

Teesta-V PS (510MW) is located in Gangtok District of Sikkim. The project envisages harnessing of Teesta water, between Dikchu and

Sirwani. The site location (proposed prefab KV school) is in Left Bank side, Balutar. Proper approach road is available with adequate of space available for unloading of materials for the structure.
Nearest Railway Station: - Siliguri, approximately 110 Kms from Teesta-V PS, Balutar.
Nearest Airport: - Bagdogra, approximately 110 Kms from Teesta-V PS, Balutar.
Nearest Bus Stop: - Singtam, approximately 06 Kms from Teesta-V PS, Balutar.

(ii) TECHNICAL SPECIFICATIONS & SCOPE OF WORK :

Name of Work: Repairing/Rectification of a 70 MVA, 13.8 kV / (400/√3) kV Single-Phase Generator Transformer of Areva Make.

TECHNICAL SPECIFICATIONS:

Transformer Specification

Type of Cooling		OFWF
Rated Power-		70MVA
Rated Voltage(kV)	HV	400/√3
	LV	13.8
Rated Line Current(A)	HV	303.1
	LV	5072.5
No of Phases		1
Maximum Temperature	TOP OIL(K)	55
Rise Over Water Inlet Temp of 25 °C	AVG.WDG(K)	60
Impedance Voltage at 70MVA Base(%)	HV-LV	TAP1-13.59 TAP3-13.24 TAP5-14.89
Type		DOUBLE WOUND
Vector Group For 3 Phase Bank		YNd11
Frequency		50 Hz
Insulation Level(Kv)	HV	LI 1425 AC 630
	HVN	LI- AC 38
	LV	LI 110 AC 38
Core and Coil Mass(Kg)		57000
Tank and Fitting Mass(Kg)		18000

Mass of Oil(Kg)		34000
Total Mass		109000
Transport Mass(Gas Filled)		69000
Volume of Oil		38000
Year of Manufacturing		2004

Off Circuit Tap Changer

Tap Position	Lead Joined	HV Voltage(kV)	HV Current(A)	LV Voltage(KV)	LV Current
1(MAX)	2-7	420/√3	288.7	13.8	5072.5
2	2-6	410/√3	295.7		
3(NOR)	2-5	400/√3	303.1		
4	2-4	390/√3	310.9		
5(MIN)	2-3	380/√3	319.1		

SCOPE OF WORK

Scope of Work for Repair/Rectification of 70MVA,13.8 / 400 kV, Single phase Generator Transformer of Areva Make.

Areva make 70 MVA 13.8 / 400 kV, Single phase Generator Transformer, is kept at Power House of Teesta V Power Station. This Transformer was removed from operation due to presence of high concentration of Ethylene and other dissolved Hydrocarbon gas in the transformer oil.
To investigate the reason for generation of gases and further rectification/ repair, the transformer Core laminations has to be removed.

All the activity mentioned shall be performed on site at Teesta V Power Station, Balutar, Singtam, Sikkim.

As per previous inspection, it is recommended to remove the core of transformer and check the damage of insulation on lamination. But Contractor shall thoroughly check and investigate the reason of generation of ethylene and other gases in the transformer and do the repairing work as required.

The dismantling and reassembling of the 13.8/400 kV Generating Transformer is a critical task that requires precision, technical expertise, and strict adherence to safety protocols. The scope of work includes the following activities:

1**. Pre-Dismantling Activities:**

i. Site Preparation as per Standard Safety Measures:

- Arrangement of safety barricading and obtain necessary permits (NHPC Scope)
- Deploy required lifting tools, tackles, jacks, and specialized equipment.
- Ensure an oil handling system (filtration unit, storage tanks) is ready (NHPC Scope).

ii. Inspection & Documentation:

- Conduct pre-dismantling inspection and record baseline parameters.
- Photograph and document the transformer's condition, connections, and components.
- Preparation of sequence plan for dismantling and reassembly.

2. **Core Dismantling Process:**

1. **Oil Draining & Filtration**:

- Drain transformer oil in a controlled manner into oil storage tanks provided by NHPC.
- Filtration of the oil for reuse if required or arrange for fresh oil procurement (Oil shall be provided by NHPC if required.

2. **External Component Removal**:

- Disconnection and removal of bushings (HV, LV, neutral).
- Removal of conservator tanks, water-oil coolers, RTD, DTT, PRV, Buchholz Relay, associated piping and other thing whichever is necessary.
- Disconnect tap changers, neutral grounding, and protection devices.

3. **Core & Coil Dismantling:**

- Open transformer tank cover and remove all internal bracings.
- Carefully lift the active part (core and windings) using a crane. Crane to be provided by NHPC
- Check insulations layer by layer to find any damage.
- Inspection of core laminations and inter-laminar insulation for damages if any.
- Re-insulation of the inter-laminar insulation if required.
- Replacement of core-laminations if any lamination is damaged beyond re-insulation

3**. Core Reassembly Process:**

1. **Reassembly of Core & Windings:**

- Clean and reassemble the core laminations in original alignment.
- Reinstall windings with proper insulation.
- Ensure correct tightening of core bolts and press boards.

- Apply vacuum drying or heating process to remove moisture.

2. **Re-installation of External Components:**

- Reinstall tap changers, bushings and conservator tanks.
- Ensure proper connections of Water Oil cooler, pipes, and protection relays.

3. **Refilling of Transformer Oil & Testing:**

- Refill oil with precaution to prevent moisture contamination.
- Conduct oil filtration and dielectric strength testing.
- Perform pressure testing and ensure no leaks in the system.

4. Post-Reassembly Activities & Testing:

1. **Electrical Testing:**

- Insulation resistance (IR) testing.
- Transformer turns ratio (TTR) testing.
- Magnetizing Current Testing.
- HV and LV winding Resistance Test.
- SFRA (Sweep Frequency Response Analysis) for core integrity check.
- Power factor / Dissipation factor testing.
- Functional checks of tap changer and protection relays.

2. Commissioning & Final Checks:

- Conduct no-load and full-load testing if possible.
- Verify transformer cooling system operation if possible
- Monitor temperature rise and operational stability if possible.
- Conduct final inspection and hand over for regular operation.

Safety & Compliance:

- Work to be performed as per IS/IEC standards and OEM guidelines.
- Proper grounding and isolation to be ensured before work.
- Use of PPE (Personal Protective Equipment) for all workforce.
- Adherence to environmental and fire safety norms during oil handling.

5. Chockfast used for providing proper alignment of Core with the tank shall also be in scope of contractor.

6. *This is general overview of the activity to be performed. If any other activity is required for proper function and repair/rectification of high content of ethylene and other hydrocarbon cases shall also be done by the contractor.*

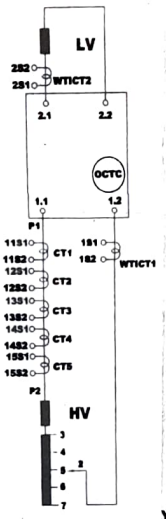
(iii)Drawings:

TYPE OF COOLING			OFWF		
RATED POWER HV		MVA	70		
RATED POWER LV		MVA	70		
RATED VOLTAGE AT NO LOAD	HV	kV	400/√3		
	LV		13.8		
RATED LINE CURRENT	HV	A	303.1		
	LV		5072.5		
NO. OF PHASES			1		
MAX. TEMPERATURE RISE OVER WATER INLET TEMP. OF 25°C	TOP OIL	K	55		
	AVG. WDG.		60		
IMPEDANCE VOLTAGE AT 70 MVA BASE	HV-LV	%	TAP 1	TAP 3	TAP 5
MAKER'S REFERNCE NO.			[redacted]		
PURCHASE ORDER NO.			[redacted]		

TYPE			DOUBLE WOUND
VECTOR GROUP FOR 3 PHASE BANK			YNd11
FREQUENCY		Hz	50
INSULATION LEVEL	HV	kV	LI 1425 AC 630
	HVN		LI – AC 38
	LV		LI 110 AC 38
CORE & COIL MASS		kg	57000
TANK & FITTINGS MASS			18000
MASS OF OIL			
TOTAL MASS			
TRANSPORT MASS(GAS FILLED)			69000
VOLUME OF OIL		l	
DIAGRAM DRG. NO.			[redacted]
YEAR OF MANUFACTURE			200[redacted]

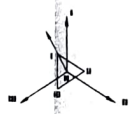
OFF CIRCUIT TAP CHANGER - "TELK" MAKE

TAP POSITION	LEAD JOINED	HV VOLTAGE (kV)	HV CURRENT (A)	LV VOLTAGE (kV)	LV CURRENT (A)
1 (MAX)	2 - 7	420/√3	288.7	13.8	5072.5
2	2 - 6	410/√3	295.7		
3 (NOR)	2 - 5	400/√3	303.1		
4	2 - 4	390/√3	310.9		
5 (MIN)	2 - 3	380/√3	319.1		



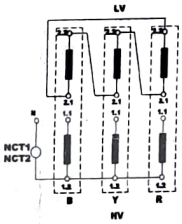
BUSHING CURRENT TRANSFORMER TO IEC : 60044

NOMENCLATURE	RATIO	ACC. CLASS	BURDEN (VA)	KNEE POINT VOLTAGE	Imag AT Vk/2 (mA)	R_{CT} (MAX) 75°C (OHMS)	APPLICATION
WTICT2	5072 / 2	3	30	-	-	-	WDG. TEMP.
WTICT1	319.1 / 2	3	30	-	-	-	WDG. TEMP.
CT1	350 / 1	5P20	15	-	-	-	PROTECTION
CT2	350 / 1	5P20	15	-	-	-	PROTECTION
CT3	350 / 1	0.5	15	-	-	-	MEASUREMENT
CT4	350 / 1	X	-	≥ 200 V	70	≤ 1	PROTECTION
CT5	350 / 1	X	-	≥ 200 V	70	≤ 1	PROTECTION
NCT1	350 / 1	5P20	15	-	-	-	PROTECTION
NCT2	350 / 1	5P20	15	-	-	-	PROTECTION



YNd11

YNd11 (ON 3-PHASE BANK)



NOTES :
1- THE RELATIVE TERMINAL POSITIONS OR TRANSFORMER ARE APPROXIMATELY AS SHOWN.
2- TAKE OIL SAMPLES EVERY 3 MONTHS FOR DIELECTRIC TESTS.
3- TANK IS DESIGNED FOR FULL VACUUM.
4- REFER INSTRUCTION MANUAL BEFORE ERECTION, APPLYING VACUUM & UNTANKING.

[redacted]

NOTES TO PLATE MANUFACTURER

1. MATL.-1.6 THK STAINLESS STEEL
2. BACKGROUND TO BE SATIN SILVER.
3. ALL LETTERS & FIGURES,DIVIDING LINES,BORDER LINES & DIAGRAM TO BE BLACK.
4. PLATE TO BE MANUFACTURED BY ETCHING PROCESS.
5. VALUE OF $\sqrt{3}$ = 1.732 FOR CURRENT CALCULATION

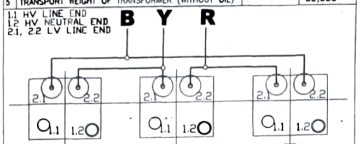
NOTE TO SHOP :-

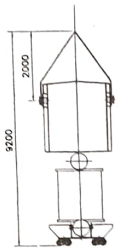
ACTUAL FIGURES FOR IMPEDANCE VOLTS, YEAR OF MANUFACTURE, MAKER'S SERIAL NO., MASS OF OIL,TOTAL MASS TRANSPORT MASS AND VOLUME OF OIL SHALL BE PUNCHED AFTER FINAL TESTING OF TRANSFORMER

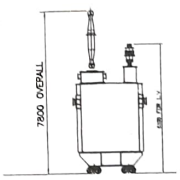
APPROX. WEIGHTS AND DIMENSIONS

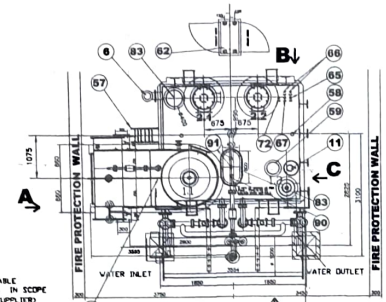
NO.				
1	CORE AND WINDINGS MASS		57,000	kg.
2	TANK AND FITTINGS		18,000	kg.
3	APPROXIMATE TOTAL OIL IN COMPLETE TRANSFORMER	33,000 Ltr	29,000	kg.
4	TOTAL WEIGHT OF TRANSFORMER (WITH OIL)		104,000	kg
5	TRANSPORT WEIGHT OF TRANSFORMER (WITHOUT OIL)		69,000	kg

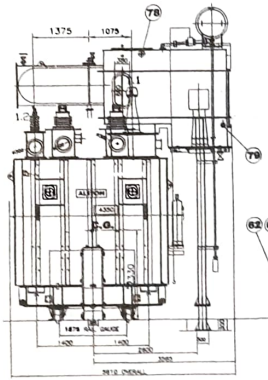
1.1 HV LINE END
1.2 HV NEUTRAL END
2.1, 2.2 LV LINE END



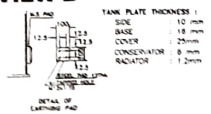


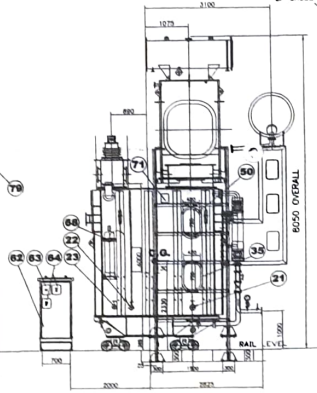




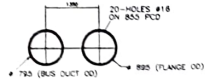


VIEW B

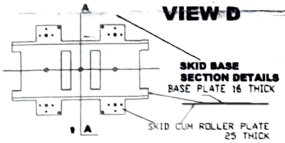


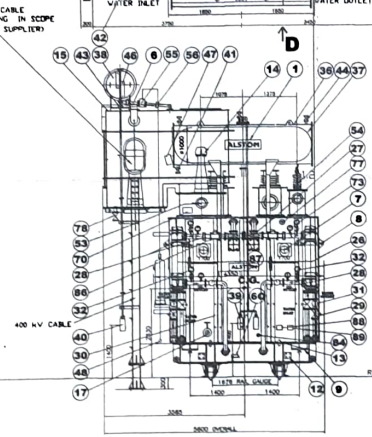


VIEW A

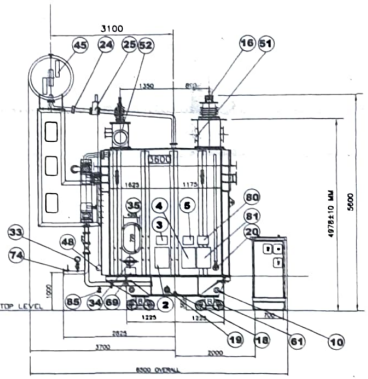


LV BUS DUCT FLANGE DETAIL



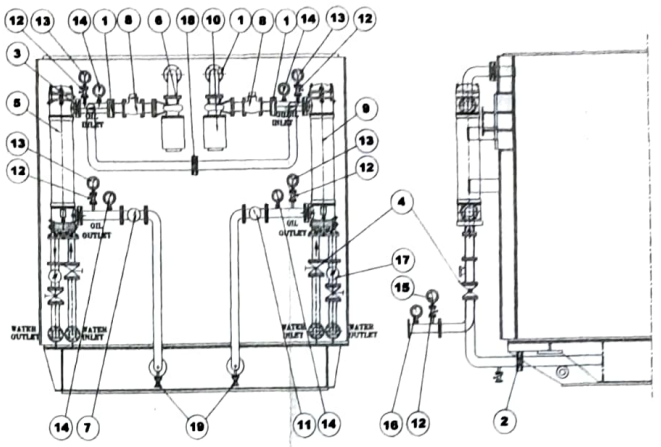


VIEW D



VIEW C

COOLER DIAGRAM PLATE



IT.NO.	DESCRIPTION	QTY.
1	ISOLATING VALVE ON TOP TANK & FOR PUMP (100 BORE)	4
2	ISOLATING VALVE ON BOTTOM TANK (100 BORE)	2
3	HEAT EXCHANGER ISOLATING VALVE OIL CIRCUIT (100 BORE)	4
4	HEAT EXCHANGE WATER CIRCUIT ISOLATING VALVE (80 BORE) GLOBE.	4
5	HEAT EXCHANGER LEFT BANK	1
6	CENTRIFUGAL PUMP LEFT BANK	1
7	OIL FLOW INDICATOR LEFT TO RIGHT	1
8	NON RETURN VALVE	2
9	HEAT EXCHANGER RIGHT BANK	1
10	CENTRIFUGAL PUMP RIGHT BANK	1
11	OIL FLOW INDICATOR RIGHT TO LEFT	1
12	ISOLATING VALVE FOR PRESSURE GAUGE	8
13	PRESSURE GAUGE FOR OIL CIRCUIT	4
14	THERMOMETER FOR OIL CIRCUIT	4
15	PRESSURE GAUGE FOR WATER CIRCUIT	4
16	THERMOMETER FOR WATER CIRCUIT	4
17	WATER FLOW INDICATOR TOP TO BOTTOM	2
18	ISOLATING VALVE FOR INTERCONNECTION PIPE	1
19	DRAIN VALVE FOR COOLER PIPES (15 BORE)	2

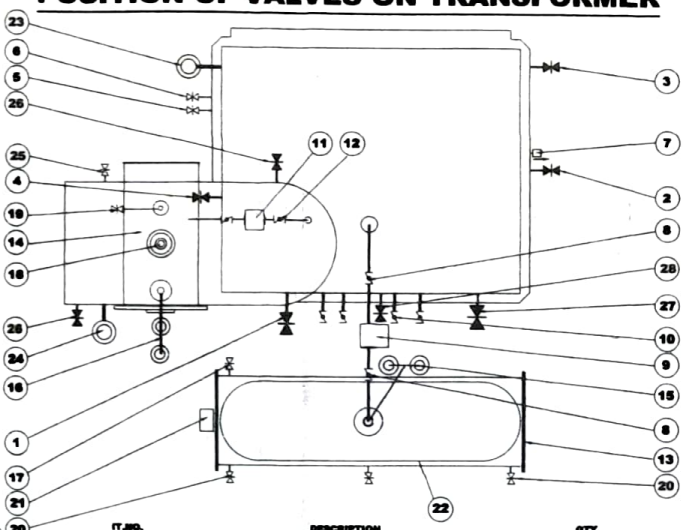
TECHNICAL DATA 275 kW OIL TO WATER COOLER		
	OIL	WATER
FLOW (LPM)	1200	500
PRESSURE DROP (kg/sqcm)	0.18	0.17
MAX: WATER INLET PRESSURE 2.0 kg/Cm2, 20°C		
NUMBER OF COOLER/PUMP IN SERVICE		ONE

NOTE:- INTERCONNECTION PIPE ARRANGEMENT IS SHOWN DOWNWARDS FOR CLARITY .

378
340

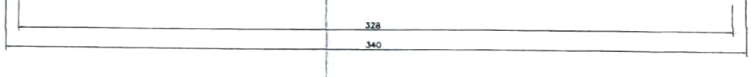
NOTES TO PLATE MANUFACTURER
1. MATL-1.6 THK STAINLESS STEEL
2. BACKGROUND TO BE STAIN SILVER
3. ALL LETTERS AND FIGURES TO BE BLACK
4. PLATE TO BE MANUFACTURED BY ETCHING PROCESS.

POSITION OF VALVES ON TRANSFORMER



IT.NO.	DESCRIPTION	QTY.
1	TOP TANK DRAIN VALVE (100 BORE)	1
2	BOTTOM TANK DRAIN CUM FILTER VALVE (50 BORE)	1
3	TOP TANK TOP FILTER VALVE (50 BORE)	1
4	TOP TANK BOTTOM FILTER VALVE (50 BORE)	1
5	TOP SAMPLING VALVE (15 BORE)	1
6	BOTTOM SAMPLING VALVE (15 BORE)	2
7	VAPOUR PHASE DRAIN CUM SAMPLING PLUG (15 BORE)	1
8	CONSERVATOR SHUT OFF VALVE (80 BORE)	2
9	BUCHHOLZ RELAY (80 BORE).	1
10	ISOLATING VALVE- (100 BORE)	4
11	BUCHHOLZ RELAY FOR CABLE SEALING BOX CONSERVATOR (80 BORE).	1
12	ISOLATING VALVE FOR CABLE SEALING BOX BUCHHLOZ RELAY (80 BORE)	2
13	MAIN CONSERVATOR.	1
14	CONSERVATOR FOR CABLE SEALING BOX.	1
15	SILICAGEL BREATHER FOR MAIN CONSERVATOR	2
16	SILICAGEL BREATHER FOR CABLE SEALING BOX CONSERVATOR	2
17	OIL FILLING CUM DRAIN VALVE FOR MAIN CONSERVATOR. (25 BORE)	1
18	OIL FILLING HOLE ON CABLE SEALING BOX CONSERVATOR. (50 BORE)	1
19	CABLE SEALING BOX CONSERVATOR DRAIN VALVE. (25 BORE)	1
20	AIR RELEASE VALVE FOR MAIN CONSERVATOR. (25 BORE)	3
21	250mm DIA MAGNETIC OIL LEVEL GAUGE FOR MAIN CONSERVATOR	1
22	FLEXIBLE SEPARATOR.	1
23	PRESSURE RELIEF DEVICE FOR TARANSFORMER	1
24	PRESSURE RELIEF DEVICE FOR CABLE SEALING BOX	1
25	SAMPLING VALVE FOR CABLE SEALING BOX (15 BORE)	1
26	DRAIN CUM FILTER VALVE FOR CABLE SEALING BOX (50 BORE)	2
27	VALVE FOR PORTABLE D.G.A. (50 BORE)	1
28	VALVE FOR ONLINE MOISTURE ANALYSER (25 BORE)	1

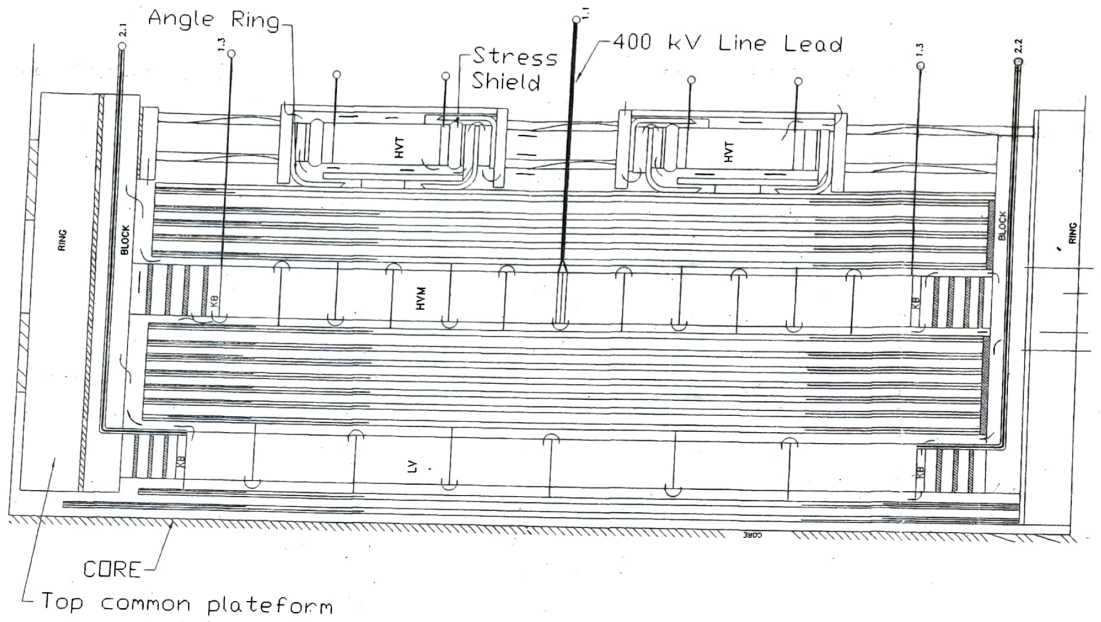
GLOBE VALVE	:	OPEN	CLOSE
GATE VALVE	:	OPEN	CLOSE
BUTTERFLY VALVE	:	OPEN	CLOSE
		OSV	CSV



NOTES TO PLATE MANUFACTURER

1. MATL.-1.6 THK STAINLESS STEEL
2. BACKGROUND TO BE STAIN SILVER.
3. ALL LETTERS AND FIGURES TO BE BLACK.
4. PLATE TO BE MANUFACTURED BY ETCHING PROCESS.

ISSUE - 2


Angle Ring
Stress Shield
400 kV Line Lead
2.1
1.3
1.1
1.3
2.2
HVT
HVT
RING
BLOCK
KB
HVM
KB
BLOCK
RING
OIL INLET
KB
LV
KB
CORE
CORE
Top common plateform

FOR WIRING CONNECTION OF	2.5Sq.mm CABLE			1.5Sq.mm CABLE
	2-CORE	3-CORE	4-CORE	4-CORE
A SHUNT TCR WTI MV & LV LEAK DETECTOR RELAY OIL LEVEL MOISTURE MONITORING SENSOR.	60 Mtrs.	-	-	-
B PUMPS AND PI100 OF WTI H.V.-L.V. & O.T.I.	-	75 Mtrs.	-	-
C PRV FOR TRANSF & H.V. CABLE BOX & RELAY FOR TRANSF & H.V. CABLE BOX	-	-	50 Mtrs.	-
D WOLG. OTI-1, OTI-2 & WTI-1, WTI-2 AND OCTC	-	-	50 Mtrs.	-
E CT-1 & 2 , CT-3 & 4 , CT-5, H.V. WTI CT-1, L.V. WTI CT-2	-	-	-	75 Mtrs.
TOTAL LENGTH (IF ITS 50 mtr LENGTH)	60 Mtrs.	75 Mtrs.	100 Mtrs.	75 Mtrs.

NOTES:-

DETAIL OF CABLE GLAND :
SKINDITCH BRASS CABLE GLANDS NICKLE PLATED, SIZE PG-16 WITH LOCK NUT, LAPP MAKE

DETAIL OF CABLE :
OLFLEX 100 1 CY STEEL WIRE BRAIDED ARMOURED, PVC INSULATED / SHEATHED COLOUR CODED. 1.1 KV GRADE, LAPP MAKE

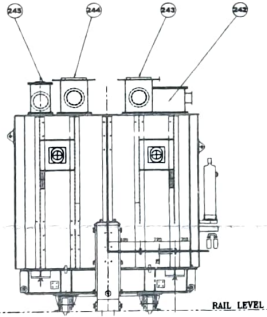
BOSS WELDING DETAIL ON L.V. SIDE 'T' STIFFENER

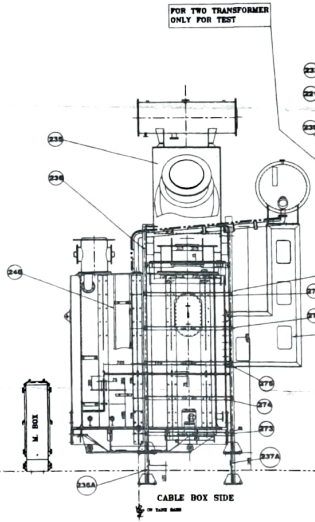
PART NOs.	DESCRIPTION
201 TO 207	BUCHHOLZ RELAY PIPE CONNECTION FOR TRANSF. & H.V. CABLE BOX
210 TO 212	EQUALISER PIPE CONNECTION FOR TURRET
215 TO 220	BREATHER PIPES FOR TRANSF. AND H.V. CABLE BOX PIPE, BREATHER PIPE SUPPORT FOR TRTR. AND HV CABLE BOX.
228 TO 231	MAIN CONSERVATOR SUPPORT & TIE ANGLE
232 TO 233	PRV PIPE FOR TRANSF. AND H.V. CABLE BOX
330 TO 339 & 334 & 337	H.V. CABLE BOX SUPPORT AND TEST BUSHING MOUNTING TURRET ON HV CABLE BOX
242 TO 245	H.V.-L.V. AND NEUTRAL TURRET
246	LADDER
350 TO 367	COOLER PIPE CONNECTIONS
272	PUMP SUPPORT
273 TO 277	400 kV SUPPORTS WITH CLAMPS

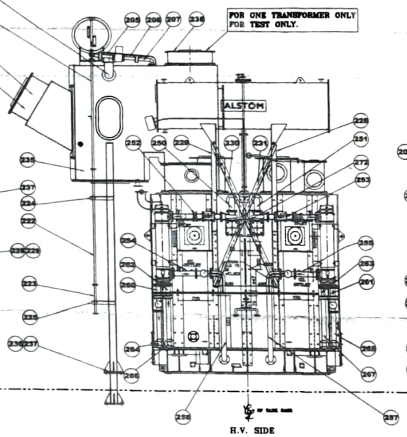
NOTES :-

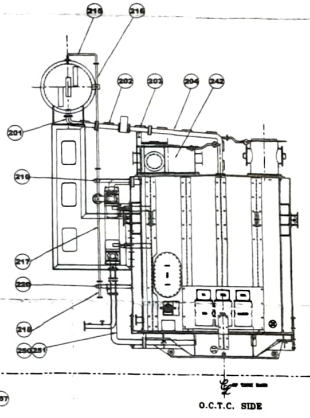
1. FOR PART NO.36 FOR MAIN CONSERVATOR & PART NO.38 FOR H.V. CB CONSR. REFER GA DRG. NO [redacted].
2. FOR CABLE TRAY FIXING ARRANGEMENT REFER DRG. NO. [redacted]
3. ——— SHOWS ROOT OF 200 WIDE CABLE TRAY.
4. — — — SHOWS ROOT OF 100 WIDE CABLE TRAY.
5. — • — • — SHOWS ROOT OF CABLE ONLY.
6. FOR BOSS WELDING DETAIL REFER DRAWING NO. [redacted].
7. o INDICATES BOSS TO DRG. NO. [redacted] FIG.-1, TYPE-2 WELDED AT 300mm PITCH APPROX. QTY.-AS REQD.

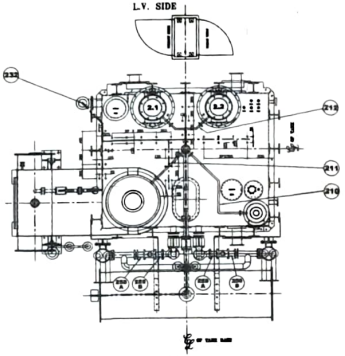
FOR BOSS WELDING DETAIL REFER DRAWING NO. [redacted].
CABLE WIRING LUG TO DRG No. [redacted] TO BE WELDED AT DISTANCE OF 300mm APPROX ON MAIN CONSERVATOR B/R. PIPE AND H.V. CABLE BOX B/R PIPE AND COOLER PIPE.











NOTE:

1. IF HANDLE IS TURNED CLOCKWISE TAP MOVES FROM POSITION 1→5
2. TURN HANDLE THROUGH 360° FOR ONE COMPLETE OPERATION
3. THE TAP LEADS CONNECTED MUST NOT CAUSE ANY TENSION TO THE TAP CHANGER
4. THE TAP CHANGER SHOULD BE DRIED AT 100° ± 5° FOR 96 HOURS
5. AFTER DRYING THE TAP CHANGER SHALL NOT BE EXPOSED TO ATMOSPHERIC CONDITION FOR MORE THAN 8 HOURS DURING STORAGE KEEP IT IN PURE TRANSFORMER OIL OR IN 'N2' FILLED TANK

SPECIFICATIONS		
TYPE		STRAIGHT
NO. OF TAP		5
NO. OF PHASE		1
RATED CURRENT		800
STEP VOLTAGE		6000 V
INS. CLASS TO EARTH	60s 50Hz oc TEST VOLTAGE (kV rms)	140
	1.2/50 IMPULSE TEST VOLTAGE (kV PEAK)	325
INS. CLASS BETWEEN MAX. & MIN. TAP	60s 50Hz oc TEST VOLTAGE (kV rms)	50
	1.2/50 IMPULSE TEST VOLTAGE (kV PEAK)	300
APPROXIMATE WEIGHT	(kg)	80
MOUNTING		TANK

TAKE-OFF TERMINAL POTENTIAL

VIEW FROM TOP

DETAILS OF PART (2) (GASKET)
THICKNESS 5.4

DETAILS OF PART (2) TO BE PROVIDED ON TRFR. TANK

DETAILS OF PART (1) (GASKET)

DETAILS OF PART (1) (GASKET)

SPLIT PIN

CONNECTION DIAGRAM

TAP NO.	LEAD CONN.
1	2 – 7
2	2 – 8
3	2 – 5
4	2 – 4
5	2 – 3

TB

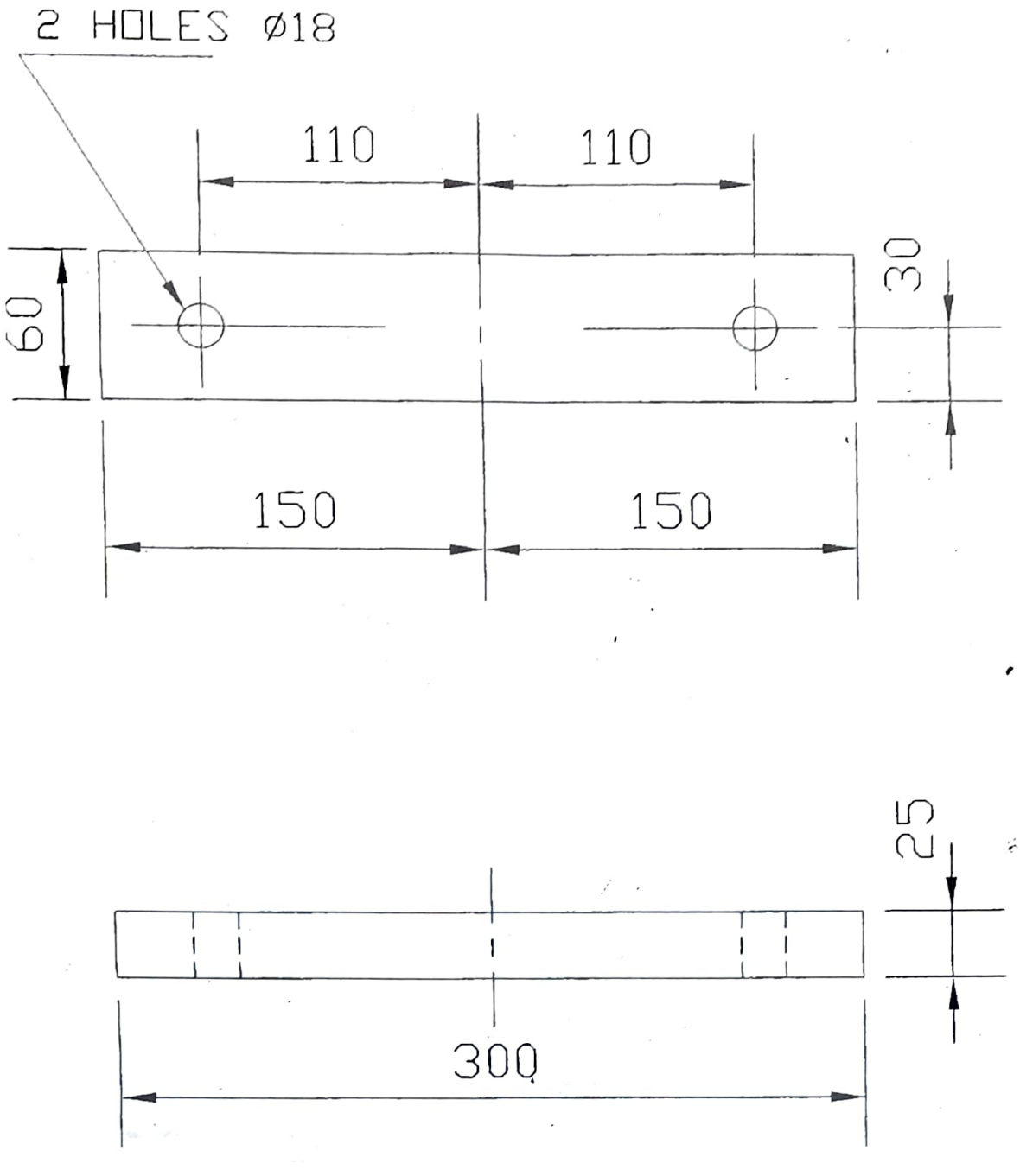
01	L1
02	L3
03	L4
04	
05	
06	N108A
07	N101A
08	N102A
09	N103A
10	N104A
11	N105A
12	N106A
13	N107A
14	N108A
15	

MS

POTENTIAL FREE CONTACTS FOR SCADA

WIRING TABLE

WIRE CODE	FROM	TO	COLOUR	SIZE Sq.mm.
L1	MS.1	TB.1	GRAY	2.5
L2	MS.2	TB.2	"	"
L3	MS.3	TB.3	"	"
L4	MS.4	TB.4	GRAY	2.5


2 HOLES Ø18
110
110
60
30
150
150
25
300

(iv)Tentative Special Conditions

1. Eligibility Criteria
   a) Bidder should have experience of rectification/repairing of 400KV voltage level & 35 MVA capacity or above rating transformer preferably Generator Transformer in last 7 years from the date of publish of bid. He shall submit documentary proof of at least two works done of such type.
   Work shall be in nature of core removal, re-lamination of core, re-insulation of lamination of core etc.
   b) Bidder shall submit performance certificate of at least one year from date of commissioning of transformer after repairing/rectification.

   Document for the above criteria is not required during time of submission of budgetary offer. But bidder has to fulfill above criteria at time of tendering of work.

2. Spares required for the work shall be provided by NHPC if available. If it is not available with NHPC, Contractor should be in a position to provide the spares in a short notice. Payment for the same shall be made separately on mutually agreed rate, terms and conditions**.**
3. Rate of this repairing work shall be firm and inclusive of all taxes and duties.
4. No extra payment shall be made for transportation charges of equipments or manpower. Accommodation and fooding shall be on chargeable basis subject to availability of rooms in guest house.
5. **Completion Time**-Work should be completed within 60 days from date of issue of Letter of Award (LOA).

(v) **Technical & Commercial Offer:**

Name of Work: Repairing/Rectification of a 70 MVA, 13.8 kV / (400/√3) kV Single-Phase Generator Transformer of Areva Make.								
Sl. No.	**Description**	**Unit**	**Qty.**	**Rate (₹)**	**GST @ ……%**	**Rate (₹) with ……% GST**	**Final Rate (₹)**	**Amount (₹)**
1	Repairing/Rectification of a 70 MVA, 13.8 kV / (400/√3) kV Single-Phase Generator Transformer of Areva Make of Teesta V Power Station	Lot	1					
							Grand Total (Rs.)	
In words:								

Notes:- 1) SAC Code of BOQ Items of Contract: ……..

2) Offered Rates (on RFP) should be inclusive of all taxes including applicable GST, transportation charge, local octroi & all other charges and should be quoted in manually on the above table.

(ii) Prospective bidder shall submit Company Prolife/credentials along their offer in support of their capability of offering quotation for this work.

(For & on behalf of NHPC Ltd.)

Dy. General Manager (Elect.)
Contract Division
Teesta-V Power Station
Email: teestav-contract@nhpc.nic.in

(Seal & Signature of Participated Firm)

BRIEF DESCRIPTION OF THE PROJECT

1. 1.1 ABOUT SIKKIM AND TEESTA RIVER.

Sikkim is a small and beautiful state located in the northeast Himalayas. It is one the youngest state of Indian union. It is surrounded by vast stretches of Tibetan plateau in the north, Chubi valley of Tibet and Kingdom of Bhutan in the east, Darjeeling Gorkha Hill council in the south and kingdom of Nepal in the west.

Due to prevalent cold and moderate climatic conditions with very low ambient dual level, the state presents ideal opportunity for development of high-tech industries like microelectronics and ancillary products which impose less burden on transportation facilities and earn rich dividends. However, for such developmental efforts, abundance of cheap and clean power is vital.

Sikkim is drained by a large number of perennial rivers, the prominent ones being Teesta and Ragit. The Teesta river originates from Zemu glacier and Rangit river from Talung glacier in west Sikkim which, after flowing for about 60kms, joins the Teesta river near the state border with West Bengal.

The elevation of Sikkim ranges from 300 m to 8583 m above mean sea level. It consists of lower, middle & higher hills.

1.2 LOCATION OF THE PROJECT

Nearest Railway Station :- Siliguri, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Airport :- Bagdogra, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Bus Stop :- Singtam, approximately 06 Kms from Teesta-V PS, Balutar.

1.3 BRIEF DESCRIPTION OF THE PROJECT

Teesta HE project, stage-V is located in South-East Sikkim. The project envisages harnessing of Teesta water, between Dikchu (27º 24’ 00’’ E: 88º 31’30’’N) and Sirwani (27º14’54’’E: 88 29’ 56’’N). The scheme comprise; 95m high Concrete Gravity Dam (located 2 Kms downstream of its confluence with Dikchu nala) 17.106 Km long HRT housed on the left bank, a 95m high, 30m dia Surge Shaft and an underground power house near Sirwani, to generate 510MW of Power, utilizing a gross head of 200m.