

PRASAR BHARATI
(Broadcasting Corporation of India)
OFFICE OF THE ADG(E) (SOUTH ZONE)
ALL INDIA RADIO & DOORDARSHAN
Swamy Sivananda Salai, Chennai - 600 005

NO. CESZ/PUR/12/PSEA/2011-12/

Date:- 29.08.2011

SUB: SITC of 11 KV/415V 400 KVA Out Door HT Transformer-1 No. at
HPT, DDK, MehaboobNagar (A.P)- Reg.

Sir,

Kindly find enclosed the tender enquiry for the Supply, Installation, Testing and Commissioning (SITC of 11 KV/415V 400 KVA Out Door HT Transformer-1 No at HPT, DDK, MehaboobNagar (A.P). Tender documents can be downloaded from the following web sites on free of cost:

www.ceszaairdd.org.in/tenders.html

www.allindiaradio.org/tender.html

www.tenders.gov.in.

The tenders will be received at the Office of The ADG(E) (SZ), AIR & DD, Swamy Sivananda Salai, Chennai-5, up to **1230** Hrs on **14.09.2011**. The technical bid and E.M.D. will be opened on the Same day at **1500 Hrs**. The commercial bid will be notified after recommendation of technical committee.

Yours faithfully,

(JOTHI VIJAYAKUMAR)
ASSISTANT ENGINEER
for ADG(E) (SZ)

PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
OFFICE OF THE ADG(E) (SOUTH ZONE)
ALL INDIA RADIO & DOORDARSHAN
SWAMI SIVANANDA SALAI, CHENNAI-600 005.

NO. CESZ/PUR /12/PSEA/2011-12/

Date:-29.8.2011

SUB: SITC of 11 KV/415V 400 KVA Out Door HT Transformer-1 No. at HPT, DDK, Mehaboob Nagar (A.P)- Reg.

DESCRIPTION:-

SEALED TENDERS ARE HEREBY INVITED FOR AND ON BEHALF OF THE PRESIDENT OF INDIA, FROM REPUTED FIRMS FOR THE SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF **11 KV/415V 400 KVA Out Door HT Transformer-1 No. at HPT, DDK, Mehaboob Nagar.**

The tender shall consists of three parts (bids) namely:

(a) **EMD:-** Earnest Money amounting **Rs.12,000** /- (Rupees Twelve thousand Only) in the form of Demand Draft on Nationalized Bank drawn in favor of ADG(E)(SZ),AIR & DD, Chennai-5 should accompany the tender'. EMD by means of Bank guarantee or any other mode of payment other than DD shall not be accepted. Tenders without EMD shall be summarily rejected and their technical cum commercial bid will not be opened at the time of tender opening. (No exemption for payment of EMD is accepted by this office.)

(b) **TECHNICAL BID:**

Technical bid should contain the confirmation to the enclosed technical specifications. This should be submitted in a separate sealed envelope **with "TECHNICAL BID"** written on it.

(c) **COMMERCIAL BID:**

The commercial bid should contain the price bid and acceptance of the commercial terms and conditions of this tender document. The price should be quoted for free delivery of materials at respective destinations. This should be submitted in a separate sealed envelope with **"COMMERCIAL BID"** written on the envelope.

The tenders will be submitted in sealed envelopes with the **name of work**, date of opening and the bid enclosed written on the envelopes.

The above mentioned envelopes should be enclosed and submitted in another large size envelope duly sealed and superscribed with "SITC for 11KV/415V,400KVA outdoor HT Transformer and date of opening. The envelope will be received at this office of The ADG(E) (SZ), AIR & TV, Swamy Sivananda Salai, Chennai-5 up to 1230 hrs. on **14.09.2011**. The technical bid and E.M.D. will be opened on the same day at 1500 hrs. The commercial bid will be notified after recommendation of technical committee.

In case tender opening date falls on a holiday, the bids will be received and opened at the same specified time on next working day. Bids received late or submitted after the scheduled specified time on scheduled date will not be entertained and will be returned back unopened.

3.Tenderer should quote for all the required items. Partial tenders will be rejected.

4. **VALIDITY:-** The tender shall be kept valid for three months **(90 days)** from the date of opening.

5. **PRICES:-** The prices quoted should be firm and for free delivery at site inclusive of transit insurance, excise duty and entry tax and other tax if any should be quoted separately. Tenderers should quote in figures as well as in words the amounts tendered by them. In the case of illiterates, the rates or the amounts tendered should be attested by a witness. Breakup of prices for individual/ whole units should be specified wherever possible instead of bunching all units together. Similarly supply price and works price (Like installation, testing, Commissioning) should be quoted separately.

6. **DUTIES AND TAXES:-**

(a) **EXCISE DUTY:-** The prices should contain an element of Excise Duty which should be indicated separately. Any statutory variation in the Excise Duty taking place after acceptance of tender within the delivery date will be adjusted by the purchaser on Production of documentary proof.

(b) **SALES TAX / VAT: -** The prices should be exclusive of ST/CST/VAT. The prevailing rate of ST/CST/VAT should be clearly mentioned in the tender.. The following certificates are to be submitted by the supplier along with the bills.

"Certified that the goods on which the sales tax has been charged have not been exempted under central sales tax act of the rules made thereunder. The amount charged on account of Sales Tax/VAT on these goods is not more than what is payable under provision of the relevant act or the rules made thereunder".

"Certified that we are registered as dealers in the State under registration No. for the purpose of Sales Tax. Any Statutory variation in ST/VAT taking place after acceptance of tender within the delivery date will be adjusted by the purchaser. For this purpose, Government order should be produced".

(c) **WORKS CONTRACT:-** If work contract tax is leviable by the concerned State Government on works contracts, the same shall be clearly mentioned in the Tender. The contractor should furnish the service tax number in the quotation.

7. **TERMS OF DELIVERY:-** F.O.R. Destination.

8. **DELIVERY PERIOD:-** Tenderer may note that the entire work shall be completed within **2 months** from the date of the work order. The lay out wirings and other drawings wherever applicable shall be got approved within 10 days from the date of Work order.

EMD of all but the last three tenderer will be returned back within 10 days opening of tenders. EMD of the remaining two tenderer other than that of the successful tenderer will be returned after finalising the contract. EMD of the successful tenderer will be returned after expiry of Guarantee period.

9. **IT CLEARANCE CERTIFICATE:-** Income tax clearance certificate shall be submitted along with the tender, without which the tender is liable to be rejected.

10. EXPERIENCE: The tenderer should give documentary proof for having successfully designed. Fabricated, installed and commissioned similar type of equipment/work. They should also submit list of works which are in hand at the time of submission of tender. The list shall contain the name of work, cost of work and present position of work.

11. AFTER SALES SERVICE:- The Tenderer should give full details of after sales service capability. The locations of service centers across the country shall be indicated. If there is no service centers at/ near the location of the site the tender is likely to be rejected.

12. TECHNICAL SPECIFICATION AND GENERAL TERMS AND CONDITIONS:-
For technical specification for other general terms and conditions see the Annexures. The tenderer should submit necessary pamphlets description of items being offered along with technical bid and also the firms to which similar items were supplied in the near past and completion report.

13. ACCEPTANCE/REJECTION OF TENDER:- The acceptance of a tender will rest with the Chief Engineer(South Zone), AIR & TV, Chennai-5 who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received without assigning any reason.

14. GENERAL:- Canvassing in connection with tender is strictly prohibited and the tenders submitted by tenderness who resort to canvassing will be rejected.

(JOTHI VIJAYAKUMAR)
ASSISTANT ENGINEER
for ADG(E) (SZ)

Encl:- 1. General summary - 1 to 4
2. Specifications - 5 to 12
2. General terms & conditions - 14 to 17

SITC for 11 kV/415V 400 kVA Outdoor

HT TRANSFORMER

Technical Specifications

Sl. No.	INDENTER'S REQUIREMENT		
1	Code & Standards:		
1.1	All equipment and material shall be designed manufactured and tested in accordance with the latest applicable Indian Standard, IEC standard and CBIP manuals except where modified and / or supplemented in this specification.		
1.2	The Transformer offered shall in general comply with the latest issue including amendments of the following Indian standards but not restricted to it :		
	Title	I.S. Code	IEC standard
	Distribution Transformer	IS:2026	IEC:60076
	Method of construction	--	IEC:60616
	Thermal evaluation & Classification of electrical insulation	IS:1271	--
	Fittings & accessories for Distribution Transformer	IS:3639	--
	Guide for loading of oil immersed transformer	IS:6600	--
	Bushing for alternating voltage	IS:2029	--
	Dimension of porcelain transformer bushing	IS:2099/ 3347	--
	New insulating oil for transformer & switchgear	IS:335	--
2	System Description:		
	The distribution transformers shall be installed at Outdoor along 11 kV distribution networks, which consist of overhead /underground network. The HV winding would be connected through 11 kV (E) XLPE/PILC cable. LV winding would be connected to LT switch gear through 1.1 kV XLPE cable.		
3	Design Criteria:		
3.1	The transformers shall be installed in hot, humid tropical atmosphere. All equipments, accessories and wiring shall be provided with tropical finish to prevent fungus growth.		
3.2	The transformers shall be capable of continuous operation of rated output under the operating conditions of voltage and frequency variations as per statutory limits governed by relevant Indian Standard and Electricity Act-2003 and its amendments in force.		
3.3	The transformer shall conform to best engineering practice.		
3.4	The design material construction shall be such that to secure reliability, economy, safe and convenient operation and shall include all specified or unspecified incidental items necessary for similar equipment for convenient working in every respect.		

Sl. No.	Particulars
3.5	The transformers shall be capable of withstanding the short circuit stresses due to terminal fault between phase to phase and phase to ground on one winding with full voltage maintained on the other windings for a minimum period of three seconds.
3.6	The transformers shall be free from annoying hum or vibration. The design shall be such as not to cause any undesirable interference with radio or communication circuits.
4	Specific Requirement:
4.1	Requirement: 11000/415 Volt 3 phase Oil immersed, 400 kVA, natural Oil cooled (ONAN), double wound, core type suitable for installation.
4.2	Voltage Ratio: No load voltage 11000/415 volts within tolerance as stipulated in IS: 2026.
4.3	Rating: The transformer shall have a continuous rating as specified at any of the specified tapping position and with the maximum temperature rise specified. The rated kVA shall be the product of the rated voltage in kV, the corresponding rated current and the phase factor 1.73. When the transformer is operated with the rated primary voltage applied to the terminals of the primary winding, the apparent power (kVA) at the terminals of the secondary winding, when carrying the rated secondary current differs from rated kVA by an amount corresponding to the regulation of the transformer and is the product of the actual secondary voltage, the rated secondary current and phase factor 1.73.
4.4	System: 11000 volts A.C., 50 Hz supply, having non-effectively earthed neutral (resistively earthed) system on H V side. The 11 kV systems shall have basic insulation level of 36 kV for one minute / 95 kVp impulse and maximum fault level of 26 kA. 415 Volts A.C, 50 Hz supply shall be rated for 1.1 kV grade and basic insulation of 3 kV for one minute and 7.5 kVp impulse. The variations in input & output supply shall be as per statutory variation governed by relevant Indian Standard and Electricity Act-2003 with latest amendments in force. The L.V. specified neutral shall be earthed solidly. The transformers will be connected overhead.
4.5	Temperature Rise: The maximum temperature rise at the specified maximum continuous output shall not exceed 40°C by thermometer in the hottest portion of the oil or 50°C measured by resistance of winding above ambient temperature of 47°C.
4.6	Type of Load: The transformer shall be suitable for carrying load within temperature rise indicated in the Indian Standard specification IS: 6600, "Guide for loading of oil immersed Transformer".
4.7	Overloads: The transformers shall be suitable for carrying overload within temperature rise indicated in IS: 6600, "Guide for Loading of oil immersed Transformer".
4.8	Connections: H.V. Delta and L.V Star connected with neutral brought out on the secondary side for connection to earth; Vector group DYN 11 of IS: 2026.

Sl. No.	Particulars																										
4.9	<p>Transformer Tappings : OFF-CIRCUIT TAP-CHANGER Each transformer shall be provided with an off-circuit tap changing switch suitable for varying its effective ratio of transformation whilst the transformer is de-energized and without producing phase displacement. The off-circuit switch handle will be provided with a locking arrangement along with tap position indicator, thus enabling the switch to be locked in position. A warning plate, indicating that switch shall be operated only when the transformer is de-energized, shall be fitted.</p>																										
	<table border="1"> <thead> <tr> <th data-bbox="209 546 536 591">Tap No.</th> <th data-bbox="536 546 983 591">H V Volts</th> <th data-bbox="983 546 1541 591">L V Volts</th> </tr> </thead> <tbody> <tr> <td data-bbox="209 591 536 636">1</td> <td data-bbox="536 591 983 636">11825</td> <td data-bbox="983 591 1541 636">415</td> </tr> <tr> <td data-bbox="209 636 536 680">2</td> <td data-bbox="536 636 983 680">11550</td> <td data-bbox="983 636 1541 680">415</td> </tr> <tr> <td data-bbox="209 680 536 725">3</td> <td data-bbox="536 680 983 725">11275</td> <td data-bbox="983 680 1541 725">415</td> </tr> <tr> <td data-bbox="209 725 536 815">4 (Principal Tap)</td> <td data-bbox="536 725 983 815">11000</td> <td data-bbox="983 725 1541 815">415</td> </tr> <tr> <td data-bbox="209 815 536 860">5</td> <td data-bbox="536 815 983 860">10725</td> <td data-bbox="983 815 1541 860">415</td> </tr> <tr> <td data-bbox="209 860 536 904">6</td> <td data-bbox="536 860 983 904">10450</td> <td data-bbox="983 860 1541 904">415</td> </tr> <tr> <td data-bbox="209 904 536 936">7</td> <td data-bbox="536 904 983 936">10175</td> <td data-bbox="983 904 1541 936">415</td> </tr> </tbody> </table>	Tap No.	H V Volts	L V Volts	1	11825	415	2	11550	415	3	11275	415	4 (Principal Tap)	11000	415	5	10725	415	6	10450	415	7	10175	415		
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5	Tank :																										
5.1	<p>The transformer tank and cover shall be fabricated from robust M.S. plate steel without pitting & shall have adequate thickness (top cover 6 mm min., side plates 5 mm min., bottom plate 6 mm min.) with external cooling tubes/radiators. The tank and cover shall be of welded construction. All seams shall be welded and where practicable they shall be double welded. All edges shall be double welded. The tank wall shall be reinforced by stiffener to ensure rigidity, so that it can withstand without any deformation the mechanical shock during transportation. All removable covers shall be provided with weatherproof, hot oil resistant, resilient gaskets. The design shall be such as to prevent any leakage of water into or oil from the tank.</p>																										
5.2	<p>The tank shall be subjected to a pressure test of 0.35 kg/cm² with hot oil for 12 hours when the transformer is complete with all fittings. During the test average oil temperature shall be maintained at 45°C above ambient temperature throughout test period by circulating suitable current in H.V. winding and short circuiting L.V. winding. There shall be no leakage of oil during or after the test. Also there shall be no deflection at all when the pressure is removed. The purchaser's representative may be present during these tests for which advance intimation shall be given. Otherwise, test Certificate shall be produced in triplicate before dispatching the units.</p>																										
5.3	<p>The top cover of the tank shall be suitably sloped to facilitate water drain off and shall be so designed as to facilitate lifting of the same, in case required, with minimum disconnection of pipe work and accessories. Air release plugs shall be provided on main tank top cover to cover entire area suitably.</p>																										
6	Cleaning & Painting:																										
6.1	<p>All steel surfaces shall be thoroughly cleaned by sand blasting or chemical agents as required to produce a smooth surface free of scales, grease & rust.</p>																										
6.2	<p>The terminal surfaces in contact with insulating oil shall be painted with heat resistant and insulating oil resistant paint, which shall not react nor be soluble in the insulating liquid used.</p>																										

6.3	The external surfaces, after cleaning, shall be given two coats of high quality, rust resistant primer as per IS:2074 with latest amendments thereto followed by two coats of weather resisting battleship poly urethane paint specially recommended for transformer use.
6.4	The paints shall be carefully selected to withstand tropical heat rain, and other environmental effects. The paint shall not scale off or crinkle or be removed by abrasion due to normal handling.
6.5	Sufficient quantity of touch up paint shall be furnished for application after installation at site.
6.6	Special care shall be taken by the manufacturer to ensure against rusting of nuts, bolts and fittings during operation. All bushings and current carrying parts shall be cleaned properly after final painting.
7	Cable Boxes:
7.1	The transformer shall be fitted with suitable cable box on 11 kV side to terminate one 11 kV / 3C aluminum conductor XLPE/PILC cable up to 240 mm ² size. The bidder shall ensure the arrangement of H.T. cable box so as to prevent the ingress of moisture into the box due to rainwater directly falling on the box. The cable box on H.T. side shall be of the split type with faces plain and machined and fitted with Neo-k-Tex or similar quality cork sheet gasket and complete with brass wiping gland to be mounted on separate split type gland plate with nut-bolt arrangement and MS earthing clamp. The bushings of the cable box shall be fitted with nuts & stem to take the cable cores without bending them. The stem shall be of copper with copper nuts. The cross section of the connecting rods shall be stated and shall be adequate for carrying the rated currents. On the HV side the terminal rod shall have a diameter of not less than 12 mm. The material of connecting rod shall be copper. HT cable support clamp should be provided to avoid tension due to cable weight.
7.2	The transformer shall be fitted with suitable LV cable box having non-magnetic material gland plate with appropriate sized single compression brass glands on LV side suitable for 2x630 mm ² single core armoured aluminium cable per phase and 1x630 mm ² single core armoured aluminium cable for Neutral.
7.3	Terminal:
	Primary: Terminals shall be provided with 12 kV porcelain bushing as per IS: 3347 for heavily polluted atmosphere having suitable diameter with nuts and check nuts.
	Secondary: Terminals shall be provided with 1.1 kV Epoxy bushings as per IS: 3347 for heavily polluted atmosphere having fixed palm type connectors with suitable locking arrangements to restrict the rotation of palm assembly. The palm shall be of copper and stud of copper duly brazed at the joint. A suitable clamping arrangement shall be provided so as to clamp the for 2x630 mm ² single core armoured aluminium cable per phase and 1x630 mm ² single core armoured aluminium cable for Neutral. Each clamp shall be detachable type with nut bolt arrangement for ease in removal/replacement of LV cables.
8	Drying-Out: The transformer winding shall be thoroughly dried out & kept immersed in oil to avoid any further drying out by the purchaser & to facilitate immediate commissioning of the transformer on receipt.
9	Oil:
9.1	The necessary quantity of new transformer oil according to IS: 335 shall be supplied & filled in the transformer tank up to a height above the minimum filling mark of conservator tank. The supplier shall furnish the relevant technical particulars and test certificates of the

	oil supplied. An additional 10% of the total quantity of oil required shall be supplied loose along with the transformer.										
9.2	Leakage of Oil: Suitable approved type of material such as "Neoprene" of RC 70 C grade which has an oil proof agent, as specified in IS: 1866 shall be provided at all joints to prevent leakage of oil during continued operation or during transportation.										
10	Clamping of Leads: All leads from the coils to the terminals shall be suitably clamped to prevent snagging and fouling with other parts and the tank.										
11	Phase Marking: Phase markings as per IS: 2026 punched on small non-corrosion metallic tags shall be permanently fixed for H.V. just below the cable box or on some suitable removable part of the tank and above L.V. bushings. Phase markings tags shall be properly fixed with proper alignment.										
12	Core and Coil:										
12.1	The transformer may be of core type. The core shall be built up with high grade, non-aging, low loss, high permeability, grain oriented, cold-rolled silicon steel laminations especially suitable for core material. The grade of core lamination shall be premium grade M-OH or better quality with appropriate thickness. The transformer shall be so designed as to have minimum humming noise.										
12.2	The coils shall be manufactured from electrolytic copper conductor and fully insulated for rated voltage. Copper for winding shall be purchased from "Original Copper Manufacturer".										
12.3	Insulating material shall be of proven design. The insulating material shall be class 'A' specified as per IS: 1271 with latest amendments thereto. Coils shall be so insulated that impulse and power frequency voltage stresses are minimum. Due consideration shall also be given to the fact that the transformers will be connected at the end of 11 kV overhead feeders, in a lightning prevalent area.										
12.4	Coil assembly shall be suitably supported between adjacent sections by insulating spacers and barriers. Bracing and other insulation used in assembly of the winding shall be arranged to ensure a free circulation of the oil and to reduce the hot spot of the winding.										
12.5	All leads from the windings to the terminal board and bushings shall be rigidly supported to prevent injury from vibration or short circuit stresses. Guide tube shall be used wherever practicable.										
12.6	The core and coil assembly shall be securely fixed in position so that no shifting or deformation occurs during movement of transformer. The core and coil assembly shall be capable of withstanding without injury, the thermal and mechanical effects of short circuit at the terminals of any winding as per IS: 2026 with latest amendments thereto.										
13	Insulation Level: The transformer shall be designed to withstand the following. <table border="1" data-bbox="215 1585 1535 1794"> <thead> <tr> <th>Voltage</th> <th>Impulse Voltage (KVP) (i)</th> <th>Power Frequency Voltage (kV) (ii)</th> </tr> </thead> <tbody> <tr> <td>HT - 11000</td> <td>95</td> <td>36</td> </tr> <tr> <td>LT - 415</td> <td>7.5</td> <td>3</td> </tr> </tbody> </table>		Voltage	Impulse Voltage (KVP) (i)	Power Frequency Voltage (kV) (ii)	HT - 11000	95	36	LT - 415	7.5	3
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14	Losses: The transformer losses at 75° C and at normal tap without any positive tolerance shall be as under: <table border="1" data-bbox="215 1899 1305 2110"> <thead> <tr> <th>Rating</th> <th>No load loss at rated voltage on principal tapping and rated frequency in watts</th> <th>Load loss at rated voltage on principal tapping and rated frequency in watts</th> </tr> </thead> <tbody> <tr> <td>400 kVA</td> <td>650</td> <td>5350</td> </tr> </tbody> </table>		Rating	No load loss at rated voltage on principal tapping and rated frequency in watts	Load loss at rated voltage on principal tapping and rated frequency in watts	400 kVA	650	5350			
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400 kVA	650	5350									

	NOTE: These are maximum permissible values with no positive tolerance. The maximum losses specified as above will be binding on the supplier and any unit which exceeds these losses shall be rejected.
15	Percentage impedance: The % impedance at 75°C temperature shall be better than 5%.
16	Regulation: The regulation at 75° C at full load at unity and 0.8 power factor subject to the usual tolerance as per IS: 2026 shall be specified in the bid.
17	Over fluxing: The transformer shall be suitable for over fluxing (due to combined effect of voltage & frequency) up to 10% of any tapping without injurious heating at full load conditions.
18	Maximum efficiency: The distribution transformer shall be designed so as to ensure that the maximum efficiency of the transformer is at 75°C at Unity Power Factor. The same shall be verified during routine test failing which the same shall be liable for rejection.
19	Fittings & Accessories: The following accessories conforming to IS: 3639 shall be provided.
19.1	Oil conservator with drain plug, oil filling hole with blanking plate and oil level indicator with minimum level marking. Conservator tank shall have capacity of for storing 10% of total oil in main tank. Oil level indicator shall be so designed that it indicates 10% to 90 % oil quantity in the conservator tank. Normal level shall be marked at 50% of oil level indicator
19.2	Silica gel breather shall contain minimum 0.5 kg dehydrated silica gel. The breather shall be connected with conservator with pipe having ¾" diameter
19.3	Pressure relief vent
19.4	Earthing terminals
19.5	Lifting lugs
19.6	Air release plug
19.7	Oil filling hole with plug
19.8	Oil drain outlet with stainless steel full turn type valve along with valve guard at the bottom of the main tank
19.9	Oil filter inlet with Stainless steel full turn type valve
19.10	Jacking lugs
19.11	Oil temperature indicator of Mercury in steel type with Maximum Temperature Indicator
19.12	Four Nos. of unidirectional flat rollers to facilitate the rolling of transformer in the direction parallel to the side where the terminals have been brought out
19.13	LV cable frames with clamps to hold (as per the submitted drawing)
19.14	The name/rating plate shall indicate specified particulars including No load and Copper losses, date of manufacture, order no. etc.
19.15	Buchholz Relay suitably mounted.
20	Tests:
20.1	Routine Tests: Following tests shall constitute the routine test :- All transformers or a part of the order quantity as may be desired by the purchaser shall be subjected to routine tests as per IS: 2026. All results obtained during the tests shall be furnished to the purchaser in triplicate for approval/comments.
20.1.1	Measurement of winding resistance.
20.1.2	Ratio, polarity and phase relationship.

20.1.3	Impedance voltage.
20.1.4	No load losses and no load current.
20.1.5	Load losses.
20.1.6	Insulation resistance.
20.1.7	Induced over voltage withstand test
20.1.8	Separate source voltage withstand test
20.1.9	Unbalance current test (unbalance current should not be more than 2% of full load current in neutral at full load condition)
20.2	Type test :
20.2.1	Impulse voltage withstand test
20.2.2	Temperature rise test
20.2.3	Short circuit test
20.2.4	Heat run test
20.2.5	Dielectric Test
20.2.6	Zero sequence impedance test
20.2.7	Tan Delta test
20.2.8	Noise level measurement
20.2.9	Harmonic Analysis test
20.3	Test certificates: The equipment offered shall be fully type tested as per the relevant standards. In case the equipment of the type and design offered has already been type tested, the bidder shall furnish the type test reports along with the offer.
21	Contract Drawing: An outline drawing of front (both primary & secondary sides) and end-elevation and the plan of the tank and terminal gear with the principal dimensions shall be given. Typical general arrangement drawings of the windings with the details of the insulation at each point and core construction of transformer. Typical general arrangement drawing showing both primary and secondary sides and End-Elevation and plan of the transformer.
22	Conditions & Requirements :
22.1	HV and LV bushings shall be on the opposite sides of the transformer main tank. HV bushing shall be mounted at an angle perpendicular to the main tank.
22.2	Transformer shall be designed for 11 kV non-effectively earthed system.
23	Inspection:
23.1	In respect of raw material such as core stampings, winding conductors, insulating paper and oil, you shall use these materials manufactured / supplied by standard manufacturers and furnish the manufacturers" test certificate as well as the proof of purchase from these manufacturers (excise gate pass) for information of the Department.
23.2	The successful bidder will give ten days advance intimation to the Department to organize stage inspection of the transformer in which the assembling of core and the winding could be inspected
23.3	The Department may, at its option, open the transformer supplied to the stores, in your presence at site or at the departmental stores. If any of the technical particulars are seen to be at variance than the guaranteed technical particulars, the transformer will be rejected and risk purchase resorted to.
23.4	To ascertain the quality of the transformer oil the original manufacturer's test report should be submitted at the time of inspection. Also arrangement should be made for testing of transformer oil, after taking out the sample from the manufactured transformer and tested in the presence of Department's representative or in an independent laboratory.
23.5	If Department intends to have inspection by competent / authorized body at manufacturer's premises during the manufacturing and testing process, the selection of the party will be at sole discretion of the Dept. and the manufacture will have to trust & provide all the facilities.

24	Deviations: The bidders are not allowed to deviate from the principal requirements of the Specifications. However, the bidder is required to submit with his bid in the relevant schedule a detailed list of all deviations without any ambiguity. In the absence of a deviation list in the deviation schedules, it is understood that such bid conforms to the Bid Specifications and no post-bid negotiations shall take place in this regard.
24.1	All deviations from the specification shall be brought out in the schedules of deviations. Discrepancies if any, between the specification and the catalogues and /or literatures submitted as part of the offer by the bidders shall not be considered and representations in this regard will not be entertained.
24.2	If it is observed that there are deviations in the offer in guaranteed technical particulars other than those specified in the deviation schedules, then such deviations shall be treated as deviations.
24.3	All schedules shall be prepared by vendor & are to be enclosed with the bid.
25	Guarantee for the Transformers:
25.1	Guarantee period shall be 12 months from the date of commissioning. If any transformer fails during this guarantee period, the supplier shall repair the same at his cost at the respective AIR site.
25.2	The supplier shall have to establish suitable and adequate arrangement for repairing and testing of failed transformer at his cost. This arrangement shall have to be continued up to the completion date of guarantee period of supply.
25.3	After intimation of failure of transformer failed within guarantee period, the Supplier will arrange for the dispatch of guarantee period failed transformer to firm's works at the cost of the supplier. The failed transformer shall be repaired immediately and the repaired unit duly tested shall be dispatched by supplier at his cost to the consignee from where the failed unit was received along with the test report. If the transformer is not repaired and delivered back or dispatched without complete test report within this period, then the cost of GP failed transformer shall be recovered from the supplier's security deposit/ensuing bill against the order or any other of order. In case, the supplier does not have further order, the cost of failed transformers shall be recovered from the Bank Guarantee furnished. Testing of transformer will be done in presence of CE(SZ) Engineer to ensure no change in losses as per Guaranteed Technical Particulars after repair. Transformer found with higher losses than GTP will not be accepted and cost thereof will be recovered
26	Weight in kgs.
	(a)Core and Windings
	(b)Tank, Fitting and Accessories
	(c)Oil Quantity in Litres
	(d)Total Weight with oil
27	Overall Dimensions including all fitting in mm.
	(a)Length
	(b)Breadth
	(c)Height
	(d)Spacing between wheels

GENERAL TERMS AND CONDITIONS FOR WORK ORDER

1. **NAME OF PURCHASER** : **The President of India**
2. **PAYING AUTHORITY** : **The ADG(E)(SZ)**
All India Radio & Doordarshan
Swami Sivananda Salai,
Chennai-600 005.

3. PAYMENT TERMS:

- (i) 80 % of the contract price for the equipments/materials inclusive of excise duty and Sales tax shall be paid on initial inspection and delivery of equipments at site in good condition.
- (ii) 20 % of the contract price for equipments and 100 % of installation charges on satisfactory completion of installation, commissioning and handing over.

4. BILLS:

All the supplies and works shall be in conformity with the order and all the part bill shall be prepared in quadruplicate in the same format as that of the order. All those part bills shall be submitted to the consignee for necessary certificates and onward transmission to the paying authority.

5. SECURITY DEPOSIT:

The contractor shall furnish the security deposit within 2 weeks of placement of order at the rate of 10 % of the contract value subject to a maximum of Rs. 5 Lakhs at the time of signing the contract.

The security deposit shall be furnished in favour of **The ADG(E)(SZ)** AIR & TV, Chennai-5" in any one of the forms mentioned below.

- a) Cash in full (b) DD Payable at Chennai (c) Bank Guarantee from any Nationalized Bank valid upto the end of warranty period as per contract. The warranty period starts from the date after completion of the SITC work and taking over. (Not from the date of supply of DG and Standard Control Panel set).

The EMD received will be returned after receipt of S.D. The security Deposit shall be refunded in full on completion of successful guarantee/Warranty.

6. DESPATCH INSTRUCTIONS:

The packing and marking of goods shall be as laid down in clause-12 of general conditions of contract DGS & D 69 (Revised).

- a) The contractor shall arrange to dispatch the goods duly insured direct to the consignee after prior intimation for delivery at site by whichever mode of transport he may choose, to ensure safe delivery of goods at site. Unloading shall be done at site at the contractor's Expense. Only storage space will be provided by the consignee. The contractor will provide his own security like locking etc and store the materials at his own risk.

b) The contractor must submit his challans in triplicate to the consignee sufficiently in advance of the actual arrival of the stores at the destination failing which he will be held responsible for any subsequent discrepancies between the actual receipt and the material detailed in the challan received later. The challan must also contain the following informations:

1. Brief description of stores.
2. Railway/ Lorry Receipt No. & Date.
3. Supply order No. & Date.
4. Inspection note No. & Date

c) The consignment received at site shall be opened and checked for Shortages/damages by the contractor himself. He shall show all the Materials received at site to the consignee to enable him to certify Receipt of stores in good condition. However, in exceptional circumstances, the contractor may request the consignee to check the consignment on his behalf. In such cases the consignee shall notify the contractor of the shortage/damages immediately on receipt of consignment at site. Expenses incurred, if any, in any, in checking the consignments shall be debitible to the contractor's account.

7. INSPECTION:

a) SCOPE OF INSPECTION:

i) PRE INSPECTION:

Manufacturers / Contractors must satisfy themselves that the stores are in accordance with the terms of the contract and fully conform to the required specification by carrying out thorough pre-inspection of each lot before actually tendering the same for inspection to the inspecting officer nominated under the terms of the contract. A declaration by the contractor the necessary pre-inspection has been carried out on the stores tendered shall be submitting along with the challan. The declaration will also indicate the method followed in carrying out pre-inspection showing the features checked, tested and will have the certificates attached to the challan/declaration. If the Inspecting officer finds that pre-inspection of the consignment' as required above has not been carried out the consignment is liable for rejection.

ii) INITIAL INSPECTION:

All the supplies including fabricated items and bought out items shall be inspected before actual inspection. The place of inspection shall be as at below. Also the installation at the site shall be inspected periodically during installation. If the inspecting officer finds initial inspection that the supplies are not according to specification, the suppliers are liable for rejection. The purchaser may at his discretion waive initial inspection in respect of those supplies which bear ISI certificates or manufacturer's test certificates. The contract shall approach the inspecting officer for inspection at least two weeks in advance of the actual date of inspection. All arrangements for inspection shall be made by the contractor. Any deviation in stores after initial acceptance by the Inspector and their receipt by the consignee shall be to the account of the contractor. The contractor shall forward the relevant copies of the inspection certificates of the stores to the consignee along with delivery challan.

iii) FINAL INSPECTION:

The entire installation shall be inspected by the inspecting officer on completion of **Installation, commissioning and Complete work at the project.**

INSPECTING OFFICER: Consignee or Nominees of the ADG(E) (SZ) /I.O. at Site.

8. INSURANCE:-

The contractor shall arrange for the insurance covering the risk during transit, Storage and installation till commissioning. All the charges for such insurance shall be borne by the contractor.

9. ADDITIONAL QUANTITIES:-

The purchaser reserves the right to place order for additional quantity upto 100% of the ordered quantity at the same rates and terms and condition during the currency of the contract.

10. PENALTY FOR DELAY:-

If the contractor is unable to complete the supply, installation, testing and commissioning within the stipulated time limit the purchaser may at his option allow such additional time as may considered justified with/without penalty and without altering terms and conditions of the order. In the event of failure of the contractor to complete the supply, installation testing and commissioning within the stipulated time or the extended time, the purchaser has the right to impose penalty of Rs.350/- per week or part thereof for every Rs.1,00,000/- of the total contract price. The contractor's liability for delay, however, shall not exceed 5% of the total contract price.

11. GUARANTEE / WARRANTY:-

The contractor shall accept clause-18 of the Form No. DGS & D-71 with exception that his obligation shall be limited for a period of 24 months from the date of taking over completion of the successful performance excluding down time during which the equipment was not working satisfactorily due to defective parts, faulty material/design/workmanship or fault erection. During the guarantee period the contractor shall repair or replace free of charge any parts that will become defective due to faulty material design, workmanship or erection.

12. CONDITIONS OF CONTRACT:-

DGS & D-68 (Revised and DGS & D-71 as amended upto date. However, Such of these conditions stipulated on this tender shall supercede corresponding conditions in DGS & D-71. The contractor shall sign a contract agreement form in triplicate in the prescribed Proforma and submit the same along with Security Deposit within 15 days. The complete form with the purchaser's signature shall be sent back to the contractor. No supplies will be made and no work shall start unless the agreement is signed by the contractor and the purchaser.

13. SPECIAL CONDITIONS:-

In addition to the terms and conditions contained in the general conditions of contract DGS & D-68 (Revised and DGS & D-71, the contract would also be governed by the following special conditions:-

- i) In case where only a portion of the stores ordered is tendered for inspection at the fag end of the delivery period the purchaser reserves the right to cancel the balance quantity not found acceptable after carrying out the inspection at the risk and expense of the contractor. If however, the stores tendered for inspection are found acceptable the purchaser may grant an extension of the delivery period subject to the following conditions:-
- (a) That no increase in price on account of any statutory increase in or fresh imposition of customs duty, excise duty, sales tax or on account of any other tax or duty leviabale in respect of the stores specified in the acceptance of tender shall be admissible on such of the stores as are delivered after the expiry of the delivery period stipulated in the A/T.
 - (b) That not withstanding any stipulation in the contract for increase in price or any other grounds no such increase which takes place after the date of delivery stipulated in the A/T. shall be admissible on such of the stores as are ordered after the expiry of the delivery period stipulated in the A/T.
 - (c) But, nevertheless the purchaser shall be entitled to the benefit of any decrease in price on account of reduction in or remission of customs duty, excise duty, sales tax on account of any other ground stipulated in the price of variation clause which takes place after the expiry of the date of delivery stipulated in the A/T.
 - (d) The contractor shall not dispatch the stores till such time extension in delivery period is granted by the purchaser and accepted by the supplier before and extension letter as aforesaid is issued by the purchaser, the same are deemed to the subject to the conditions set out in proceeding paragraph.
- ii) Incase where the entire quantity has not been tendered for inspection within the delivery period stipulated in the A/T and the purchaser chooses to grant and extension of delivery period, the same would be subject to conditions mentioned in (i) above.
- iii) The contractor shall refund any advance/part payment issued to him in respect of the rejected stores within 14 days of the receipt of intimation from the consignee about the rejection of such prices. This is strictly without prejudice and in addition to the rights provided in the clause-17 (8) of form DGS & D-67.
- iv) The contractor is required to replace the rejected stores forthwith but in any event not later than a period of 14 days from the date of rejection and the contractor shall bear all the costs of such replacement including freight, if any but without being entitled to any extra payment or any other account.
- v) Where under the contract, price payable is fixed F.O.R. dispatching station, the contractor shall, if the stores are rejected at destination by the Consignee, be able to, in addition to his other liabilities (including refund of price recoverable in respect of the stores rejected) to reimburse to the purchaser the freight and all other expenses.

14. ENFORCEMENT OF LABOUR LAWS:-

While engaging labour for carrying out obligations under the contract the contractor shall satisfy the conditions laid down under contract labour (Regulation and Audition) Act 1970 and (Central) Rules 1971 as amended from time to time and observe all formalities required as per

said Act/Rules. The supplier shall also observe the provision under minimum wages act 1948 (Central) Rules 1950 amended from time to time while engaging labour.

15. FORCE MAJURE:-

If any time during the continuance of the contract the performance in whole or in part by the contractor shall be prevented or delayed by reason of any war, hostility acts of the public enemy. Civil commotion, Sabotage, fires, floods, explosions, epidemics, Quarantine restrictions, strikes, lock-outs or acts of God (therein after restrictions refer to as events and provided notice of happenings of any such eventuality is given by the contractor within 21 days from the date of occurrence thereof, the purchaser shall by reason of such event, neither he entitled to cancel this order nor shall have any claim for damages against the contractor in respect of such non-performance or delay in performance and delivery shall be resumed as soon and practicable after such events have come to an end or ceased to exist. Provided further that if the performance in whole or part or any obligation under this order is prevented or delayed by reasons of any such event for a period exceeding 180 days, the purchaser and the contractor shall meet to find a natural agreement to any effect resulting the reform or the purchaser may at his option cancel order provided also that if the order is cancelled the order provided also that if the order is cancelled under this clause, the purchaser shall be at liberty to take over from the contractor at order prices all unused, un-damaged and acceptable material bought out components and stores in course of manufacture in the possession of the supplier at the time of such cancellation or such portion thereof as the purchaser may deem fit accepting such material, bought out components and stores as the supplier may with the concurrence of the purchaser elect to retain.

16. TECHNICAL MANUALS & DRAWINGS

Contractor shall furnish six copies of comprehensive technical manuals for use by the operation staff. Such manuals shall contain instructions from the preventive as well as routine maintenance of the plant. The contractor shall also furnish copies of approved wiring diagrams, schematics, etc., for various items equipment.

17. CANCELLATION:

The purchaser reserves the right to cancel the order in the event of non-performance or unsatisfactory performance by the contractor and recover payment already made if any, along with losses/damages incurred.

(JOTHI VIJAYAKUMAR)
ASSISTANT ENGINEER
for ADG(E) (SZ)