

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

No. ADG(E)(SZ)/PUR/ 55/PSEA/2011-12/

Dated:- 24.10.2011

Sub: **SUPPLY OF LT PANEL** for MW Transmitter Installations of All India Radio,  
KAVARATTI, Lakshadweep Island.

Sir,

Kindly find enclosed the tender enquiry for the SUPPLY OF LT PANEL for the Installation  
of All India Radio, KAVARATTI, Lakshadweep Island.

**CONSIGNEE:** THE MATERIAL TO BE FACTORY TESTED , SECURELY PACKED AND  
DELIVERED at **ALL INDIA RADIO, CALICUT.**

**Tender documents can be downloaded from the following web sites on**  
free of cost:

**[www.cesairdd.org.in/tenders.html](http://www.cesairdd.org.in/tenders.html)**

**[www.allindiaradio.org/tender.html](http://www.allindiaradio.org/tender.html)**

**[www.tenders.gov.in](http://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  
**15.11.2011**. 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,

(M.SUJATHA)  
Assistant Engineer  
For ADG(E)(SZ)

PRASAR BHARATI  
(BROADCASTING CORPORATION OF INDIA)  
OFFICE OF THE Additional Director General (E)(SZ)  
ALL INDIA RADIO & DOORDARSHAN  
SWAMI SIVANANDA SALAI, CHENNAI-600 005.

No. ADG(E)(SZ)/PUR/55 /PSEA/2011-12/

Dated. 24.10.2011

SUB: **SUPPLY OF LT PANEL** for MW Transmitter Installations of All India Radio,  
KAVARATTI, Lakshadweep Island .

DESCRIPTION:-

SEALED TENDERS ARE HEREBY INVITED FOR AND ON BEHALF OF THE PRESIDENT OF INDIA, FROM REPUTED FIRMS FOR THE SUPPLY OF LT PANEL FOR THE Installations of AIR KAVARATTI (LAKSHDWEEP Island)

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

(a) **EMD:-** Earnest Money amounting **Rs.9,000/-** 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 **SUPPLY OF LT PANEL for the Installation of All India Radio, KAVARATTI, LakshdWeep Island**

"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 **15.11.2011**. 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 the reunder. 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 the reunder".

"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 **One month** 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 ADG(E)(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:-** 1. Canvassing in connection with tender is strictly prohibited and the tenders submitted by tenderness who resort to canvassing will be rejected.

2. All the pages of the tender document should be duly signed, stamped and serially numbered on submission, failing which the tender may not be considered as qualified tender.

(M.SUJATHA)  
Assistant Engineer  
for ADG(E) (SZ)

**Encl:- 1. Technical Specification - (Page No.5 - 20)**

**2. General terms & conditions - (Page No 21 - 25)**

PRASAR BHARATI  
[Broadcasting Corporation of India]  
OFFICE OF THE ADDL. DIRECTOR GENERAL (E) (SZ)  
ALL INDIA RADIO & DOORDARSHAN  
Swamy Sivananda Salai, Chennai-600005

No. ADG(E)(SZ)/PUR/55 /PSEA/2011-12/

Dated. 24 .10.2011

**TECHNICAL SPECIFICATION FOR LT DISTRIBUTION BOARD**  
**ALL INDIA RADIO, KAVARATTI (Lakshadweep)**

**General:-**

These specifications cover the technical requirements, Design, Manufacture, Testing at Manufacturer's works & Supply at site, Main Low Tension Board and Sub Distribution Board – 1 No. each as per the enclosed drawings for 415 V, 3 phase distribution of power at 10 kW MW Transmitter, AIR, Kavaratti (Lakshadweep). The tenderers should carefully study the General Conditions and the Technical Specifications and submit the quotations for the Schedule of Requirements mentioned in Section – III A & B.

**SUMMARY OF CONTENTS:-**

- |    |                            |                                      |                            |
|----|----------------------------|--------------------------------------|----------------------------|
| 1. | SECTION -I                 | : General Conditions                 | - Page No. 6 to 8          |
| 2. | SECTION -II                | : Technical Specifications           | - Page No. 9 to 13         |
| 3. | ANNEXURE – A               | : Proforma for Technical Information | - Page No. 14 to 16        |
| 4. | SECTION -III –A & B        |                                      | : Schedule of Requirements |
|    |                            | - Page No. 17 & 18                   |                            |
| 5. | DRAWNING                   | :                                    | - page No. 19 & 20         |
| 6. | GENERAL TERMS & CONDITIONS | :                                    | - page No. 21 to 25        |

**Note:**

1. The Tenderer should go through all the Sections of the Specifications carefully and should confirm clause by clause compliance to all the Sections clearly. Tenders without clause by clause compliance shall be rejected out rightly.
2. The Tenderer should mention the list of items offered as per schedule of requirements in Section – III - A & B, without indicating the Price to assess the completeness of the offer in the Technical bid if there is separate Commercial Bid.
3. The Tenderer shall also give the required technical information in the Proforma as indicated in ANNEXURE – A of Section – II respectively.

## **SECTION – I**

### **GENERAL CONDITIONS:**

#### **1. SCOPE :**

This section covers the general conditions governing the design, manufacture, factory testing, packing, transportation to upto AIR Calicut for further transportation to AIR Kavaratti.

#### **2. LOCATION :**

The general electrical schematic arrangement shown in the reference drawings are enclosed. The equipment will be installed indoors. It shall, however, be suitable for working under tropical conditions.

#### **3. GENERAL CONDITONS :**

3.1 The Equipment offered shall strictly conform to the Technical Specifications given in Section – II. Should be tenderer desire to depart in any respect from the given specifications either on account of manufacturing practice or for any other reason, he must specifically bring out the modifications in a covering letter explaining in detail each and every departure he proposes to make. Unless otherwise stated, the equipment offered shall be deemed to satisfy these specifications.

3.2 The equipment shall be designed for efficient and trouble free service for long periods of continuous operations. All materials used in the construction shall be of high quality and conform to the relevant IS Specifications.

3.3 All electrical works shall be carried out in accordance with standard electrical practice. The units shall be designed for easy maintenance and complete safety to operating personnel.

3.4 Only easily available standard components should be used as far as possible. Tenderer should undertake to make available spare and replacement parts as and when required for a period of ten years.

3.5 The units shall be designed for economical and compact accommodation of the necessary Change over Switch, MCCBs, MCBs, Bus bar Chamber, etc., keeping in view the functional grouping requirements as per schematic for ease in operation, maintenance and with suitable interlocks for complete safety to operating personnel.

3.6 All components, fittings and accessories like circuit breakers, relays, meters, switches, etc., used in the switchboard shall be of reputed make and brand like Schneider, Havells, Siemens, L&T, GE, English Electric, as per the various latest IS Standards. Any substandard fittings, accessories shall not be acceptable.

3.7 The L.T. switch board shall be complete with interlocking arrangements, safety shutters wherever required, wirings, earthing strips, meter connections, cable boxes and all accessories required for installation and normal service. The design and construction of the switch board and switch gear shall conform to IS 42376 as amended to date.

3.8 The switch board offered shall be capable of withstanding rigorous use and rough handling during transportation. Adequate lifting facility shall be provided for the complete equipment.

3.9 General conditions of contract DG S & D-68 (Revised) and conditions of contract DG S & D-71 governing supplies of plants and machinery shall apply.

#### **4. COMPLETENESS OF CONTRACT :**

All fittings and accessories which may not have been specifically mentioned or which the tenderer may not explicitly mentioned in his tender, but are necessary for the operation of the equipment shall be deemed to be included in the contract and be provided by the contractor without any extra charges. Adequate quantity of installation materials such as cable glands, nuts, bolts, lugs, etc., shall also be included.

#### **5. DOCUMENTATION TO BE SUBMITTED (ALONGWITH TENDER) :**

The tenderer shall submit the following documents in duplicate with the tender

5.1 Printed Leaflets with illustrations relevant to the components offered from original manufacturer.

5.2 List of material offered as per Schedule of Requirement of the specification for each unit.

5.3 Exact dimensional details of the equipment offered and mounting arrangements. The details shall be complete and accurate enough for the Indenter to proceed with the building works for accommodating the equipment.

5.4 Clause by clause compliance of Section-II and information asked for in Annexure – A.

5.5 Supply record of similar type of L.T. Switchgear during the last five years to Government Departments, PSUs, etc.

5.6 Tenderer registered with Government Departments should enclose a copy of the registration/approval certificate along with Tender.

***The tenders without above mentioned documents in the Technical Bids shall be rejected out rightly.***

#### **6. DOCUMENTATION TO BE SUBMITTED (After Acceptance of Tender) :**

6.1 Six copies of the GA drawings showing the dimensions, location, wiring diagram, circuit identification markings, name plate, etc., of the switchboard should be sent to indenter within **three weeks** of acceptance of the tender for approval. Two sets will be returned after approval.

6.2 *Following documents may be supplied to the consignee along with each Switchboard at the time of delivery:*

- i) Two copies of the book of instruction and drawings for the installation, testing, operation and maintenance of switchgear incorporating details of all the items used.
- ii) Factory test certificates showing the results of tests actually conducted on the L.T. Switchgear.
- iii) Test Certificated from an agency stipulated by Central Electricity Authority (CEA) like CPRI, etc.
- iv) Two sets of finalized drawings showing dimensions and other fixtures of the Switchboard.

6.3 Two set of drawings and instruction booklet etc. for the Switchboard should be sent direct to Director (Engg.), AIR Projects, O/o Addl. Director General (SZ), A.I.R. & TV, Swamy Sivananda Salai, Chepauk, Chennai- 600 005 as soon as drawings are approved by the indenter.

6.4 One set of drawing and instruction Booklet etc., for the Switch board should be sent to concern Installation Officer as soon as the drawing is approved by the indenter.

**7. INSPECTION :**

The successful tenderer will have to get the Switchboard inspected by a person authorized by the ADG(E) (SZ), A.I.R. & TV, Swamy Sivananda Salai, Chennai- 600 005 in his workshop/factory before dispatch.

**8. DELIVERY :**

Free Delivery of the consignment at AIR Calicut for further transportation to **10 kW MW Transmitter, AIR, Kavaratti (Lakshadweep) by department.** The total size and weight of the LT Panel packing and date of delivery of equipment to be informed one month before delivery at AIR Calicut for department to arrange further transportation of materials to Kavaratti. The supply of the entire equipment ordered shall be completed **within 1 months**. This period shall be effective for the date of acceptance of the tender and shall be independent of any other factors. Transit insurance up to AIR, Kavaratti (Lakshadweep) shall be arranged by the tenderer.

**9. PACKING :**

The packing shall be suitable to withstand transportation hazards. Each package shall contain a packing slip giving the details of the contents and bear the address of consignee.

A copy of the packing slip giving list of items included in the package together with the package number shall be mailed in advance to the consignee. If the component parts of the equipment assembly are dismantled to facilitate dispatch / transportation, each component shall be marked for easy identification and re-assembly.

**10. GUARANTEE :**

The tenderer shall quote a period of guarantee during which all equipment failing due to faulty manufacture shall be replaced free of charge. A minimum guarantee of one year of trouble free working for complete Switchboard from the date of its commissioning at site shall be given. The defective unit shall not be sent back to the tenderer but shall be available for inspection by the tenderer or his representative at AIR site. The tenderer shall guarantee the performance figures in respect of each equipment.

**11. ERECTION**

Erection and commissioning at Kavaratti will be done departmentally. However, if any defect or problems in commissioning of LT Panel support to be provided at site by tenderer. All additional materials like grouting bolt, cable lugs ,cable guard etc to be provided

## SECTION – II

### DETAILED TECHNICAL SPECIFICATIONS

Sl. No.	Indentor's requirements	Tenderer's offer
<b>1</b>	<b>General:</b>	
1.1	The low tension Switchboard shall consist of the panels shown in the schematic attached hitherto. It shall be suitable for working on 415 V, 3 Phase, 4 wire 50 Hz. Earthing neutral supply system. General requirement shall be covered by IS-13947, amended up to date.	
1.2	The Switchboard shall be of indoor type, floor mounting, compact, metal clad, totally enclosed and readily extendable. The markings and arrangement for switch gear and control gear shall conform to IS-5578 & 11353 as amended to date.	
1.3	The Enclosure shall provide a degree of protection covered, by type IP-5 of IS-2147 amended to date. The L.T. Switch board shall be provided with necessary ACB/Moulded Case Circuit Breakers with Thermal overload and magnetic release. The sup-distribution board shall be provided with Miniature Circuit Breakers.	
1.4	The cubicle type L.T. Switch board shall have a fault withstand capability of 6.25 MVA at 415 V or fault current withstand capacity of 9 kA for 1 Second.	
<b>2</b>	<b>Construction features :</b>	
2.1	The Switchboard shall be designed for mounting in the floor. Provision for entering the cables from top as well as bottom may be made available. Outlets from ACBs/MCCBs that are above the bus-bars shall be through reverse entry cable boxes. The Switchboard shall be provided with removable Top & bottom plates fitted with cable glands of appropriate size for aluminium cables. Aluminium crimping type lugs shall be provided.	
2.2	The Switchboard shall be of single front construction and equipments shall be mounted only on the front. The depth of the Switchboard shall not exceed 500 mm. The Switchboard shall have a uniform height and depth throughout its length. <b>Operational switches / MCCB's / MCB's shall be mounted above 250 mm from floor level.</b>	
2.3	The Switchboard shall present a flush appearance and shall be made of 2 mm thick (14 SWG) M.S. sheet and shall be free from rust, scales, grease and other foreign matters.	
2.4	The frame work shall be rigid and with modular arrangement. The frame work shall house the ACBs, MCCBs, etc., in multi-tier formation. The equipments shall be mounted independent of the back plate and not on the rear surface of the housing.	
2.5	Each module shall be fitted with individual doors with concealed hinges. All doors shall be held securely against sponge rubber gaskets to make the equipment dust free and vermin proof.	
2.6	The compartment doors shall be interlocked so that it shall not be possible to open the door with the switch in closed (ON) position. Provision may also be made for pad locking the switches in off position wherever required.	

2.7	All steel work shall undergo a process of degreasing, pickling in acid, cold rinsing, phosphatising, passivating and then be sprayed with a high corrosion-resistant primer. The finishing treatment shall be by application of two coats of heat resistant synthetic Enamel of approved shade (generally Siemen's Grey) as per 63106 IS 5 stoving process will be preferred.	
2.8	A base channel painted black shall be provided to prevent corrosion of sheet cubicles and to facilitate cleaning of floors.	
<b>3</b>	<b>Bus Bar :</b>	
3.1	Single piece, air insulated, bus-bars of hard drawn, high conductivity, electro type copper or equivalent aluminium, rated for the current indicated in the schedule of requirements and corrected for an ambient temperature of 50 degree C and conforming to Grade E91E of IS-5082: 1981 as amended to date shall be provided.	
3.2	Bus bars shall be supported on unbreakable, non-hygroscopic supports rigidly held to the frame work of the chamber so as to withstand the dynamic forces during worst fault conditions. They may be insulated individually with an approved, non-deteriorating, insulating material such as empire tape or sleeved with heat shrinking PVC sleeves to make it dust proof. Phase identification with colour tape also is to provided.	
3.3	The neutral bus bars should be insulated with provision for earthing at one point. Required clearances of bus bars shall be maintained. (Between phase-to phase – at least 32 mm and between phase and neutral at least 26 mm)	
3.4	The bus bars shall have uniform section throughout the length of the Switchboard. The neutral bus bar shall have a rating of at least 50% of the phase bus bar.	
3.5	Red, Yellow and Blue indicating on front panel with projective fuses shall be provided on the bus bar chamber to indicate to the presence of phase voltages.	
<b>4</b>	<b>Air Circuit Breakers:</b>	
4.1	Air circuit Breakers both incoming and outgoing shall be Triple pole, manually operated, trip free, draw out type, mounted on telescopic rails, air break and having a rupturing capacity and ratings as specified in the relevant drawing. For places where D/G supply also is connected, the incoming ACBs shall be four pole. They shall conform to IS-13947 (Part-II). For exact requirement, please refer Section – III.	
4.2	Each circuit Breaker shall be provided with over current releases on all the three phases. These releases may be of direct operated or current transformer type with inverse time current characteristics and shall conform to relevant IS-13947 in respect of time lag in operation.	
4.3	The over current protection shall be from 60-100% of the normal rated current and provision shall be available for setting the over current release at any point in the above range independently for each phase. The supply on all the three phases shall be cut off even if there is a current overload on one/two phases.	

4.4	In addition to the above, each circuit breaker shall be provided with an instantaneous release for short circuit current. However a built in time delay of 25 milli-seconds on short circuit release may be provided to avoid millisecond tripping under transients/faults. The total operating time of ACBs shall be less than 100 milli-seconds.	
4.5	The Air circuit breaker can be either of discriminating type with downstream current limiting or fast acting as specified in the schedule of requirement and it shall have independent manual closing/tripping mechanism to ensure the safety of the operating personnel.	
4.6	The main contacts of the ACBs shall be made of high conductivity silver alloy and the arcing contacts shall be made of materials of anti-welding properties. These contacts shall be housed in arc chutes capable of containing the arc within itself and quenching the arc efficiently & effectively. The secondary isolating contacts should be rated for not less than 15 A.	
4.7	CAB is not to be provided with under voltage trip however shunt tripping is to be provided for remote tripping. E/F relay should be provided with C/T to trip ACB in case of earth fault for the safety of operating personnel.	
4.8	Mechanical ON-OFF indicator shall be provided on the front of the ACBs to give an indication of the status of the breakers.	
4.9	The draw out portion of ACB should be effectively connected to the earth through sliding contact. There shall be different positions available for the ACB for Service, Test, Isolate and for Maintenance.	
4.10	ACBs should have high mechanical life of at least 20,000 operations. They shall conform to duty cycle P2 category B-3'-MB-3' MB as per IS-13947 amended to date. They should have SC breaking capacity of 45KVA at 415V, 0.25 PF and making capacity should be at least 2.5 times the breaking capacity.	
4.11	Test Certificate from the competent Authorities shall be obtained and produced at the time of inspection.	
4.12	The ACBs shall be of reputed make such as L&T, Siemen's. English Electric, Control Switchgear, Schineder Electricals, Crompton Greaves.	
<b>5</b>	<b>Moulded Case Circuit Breakers :</b>	
5.1	All the live parts of MCCBs shall be enclosed in moulded insulated housing. The operating mechanism should be quick make, quick break and trip free. It should be independent of manual operating and conform to relevant sections of IS-13947.	
5.2	The housing should be made of heat resistant and flame retardant thermo insulating material. The operating handle should clearly indicates ON, OFF and TRIP positions.	
5.3	The MCCBs should have thermal overload protection adjustable over a specified range of 75% to 100% of rated current with Inverse time – current characteristics, and instantaneous short circuit protection adjustable over 300% to 800% of the thermal overload adjustable for each phase independently, direct acting and should operate on a common trip bar so that all the phases are disconnected even when a fault occurs on only one/two phases.	

5.4	Earth leakage protection is to be provided with MCCBs for safety of operating personnel. All parts of the circuit breaker shall be enclosed in the moulded housing with only the terminals accessible for external connections.	
5.5	Terminals shall be designed such that they accept links or cable lugs. Adequate separation between adjacent terminals with insulation barriers shall be provided.	
5.6	The circuit breaker shall be provided with suitable arc chute enveloping the contacts is enhanced. The contacts shall be made of silver alloy. The MCCBs shall be of reputed make such as L&T, Siemen's, English Electric, Crompton Greaves, Schneider Electricals.	
5.7	MCCBs shall be tested as per IS-8623. Test certificates for short circuit breaking and making capacity, Mechanical life, etc., shall be obtained from Standard Test House and shall be produced at the time of inspection.	
<b>6</b>	<b><u>Miniature Circuit Breaker (MCB):</u></b>	
6.1	The MCB should have inverse time-current tripping characteristics against overload and instantaneous trip against short circuits. It shall have a breaking capacity greater than 6 kA.	
6.2	The MCB shall have silver layered contacts to reduce arcing time. It shall operate on the current limiting principle and time of interruption shall not exceed 5 milli-seconds.	
6.3	The MCB shall be housed in a non-ignitable, high impact precision moulded reinforced plastic material to ensure high electrical and mechanical properties.	
6.4	The MCB shall be fast acting and free from bouncing of contacts and should ensure long contact life and proper contact pressure.	
6.5	The MCB shall be trip free and should conform to specification IS 8828 amended to date. The MCBs shall be of reputed make such as Morarji Dorman (MDS), Standard, Crompton Greaves, Schneider Electricals, Havells, L & T.	
<b>7</b>	<b><u>Cable Boxes :</u></b>	
7.1	The cable boxes on the circuit Breakers shall be provided with suitable glands to take up PVC sheathed, PVC insulated, Armoured/ un armoured, three and half core cables for incoming mains ACBs outgoing MCCBs as indicated in the schedule of materials attached.	
7.2	The outgoing/ incoming circuit breakers shall have facility for connection of cables as indicated in the schematic. All the MCCB's and MCB's shall be provided with sufficient space for connecting the required size of Aluminum cable lugs as given in the drawing.	
7.3	For connection to the Sub-distribution board only P.V.C. cables shall be used. All control wirings and wiring for metering shall be done by PVC insulated, standard, copper conductors of minimum size 1.5 sq.mm. Wiring for CTs shall be with 2.5 sq.mm. conductors.	
7.4	Suitable heavy duty terminal blocks should be provided at the bottom of the cubicle housing the sub-distribution board. Power terminals should be pressure clamp type suitable for aluminium wires.	

8	<p><b>Indicating Instruments :</b>  Metering shall be provided as per schematic diagram. The meters shall be of reputed make conforming to relevant ISI specifications. The instruments shall be flush mounting type and spring control type of Grade-A accuracy as per relevant IS specification. Instrument transformers shall be provided wherever necessary. Protective current transformers shall conform to IS 2705 (Part III) as amended to date having rated burden of 15 VA and Class I accuracy). The outgoing circuit breakers feeding the transmitter shall be provided with power factor meter to measure the p.f. of the transmitter load.</p>	
9	<p><b>Earthing:</b>  Earth bars shall be of aluminium, minimum size 50 mm x 5 mm. The terminals will be provided on both ends (sides) of the board for connecting the board to external earth through 25 mm wide 4 mm thick copper or G.I. Strips as per Indian Electricity Rules.</p>	
10	<p><b>Testing:</b>  The routine tests on Switchboards shall be conducted in accordance with IS 8623 amended to date and shall comprise of  (a) Inspection of the Switchboard including inspection of wiring and electrical operational tests where necessary.  (b) Dielectric tests.  (c) Checking of protective measures and electric continuity of the protective circuits.</p>	
11	<p><b>Miscellaneous :</b></p>	
11.1	<p>The drawings enclosed and the schedule of requirements shall form part of these specification for major items.</p>	
11.2	<p>Special tools for dismantling and testing of circuit breakers shall be included in the supply of the Switchboard. List of such tools shall be enclosed by the tenderer.</p>	

**ANNEXURE – A**

**Proforma for Technical Information**

**(To be filled up and submitted by tenderer along with Tender)**

Sl. No	Indentor's requirements	Tenderer's offer
<b>A</b>	<b>Constructional features of the Switchboard :</b>	
1	Overall Dimensions of the Switchboard offered (in mm) <b>Requirement:</b> Main LT Board : 1500 (W) x 1800 (H) x 500 (D) (Approx.) <i>[Floor mounting]</i> Sub Dist. Board : 450 (W) x 600 (H) x 250 (D) (Approx.) <i>[Wall mounting]</i>	
2	Number of panels (sketch showing the layout of the various component part may be enclosed)	
3	Thickness of the sheet used in mm :	
	(a) for the front panels	
	(b) for the back panels	
	(c) for the side and top panels	
	(d) for bottom panels/covers	
	(e) for the mounting frame	
4	Material of the sheet used for the switchboard	
5	Whether the sheet used in the cubicle have undergone the process of degreasing, pickling in acid, cold rinsing and phosphatising.	
6	Whether anti corrosive primer and heat resistant synthetic enamel paints are used over the cubicles sheet?	
7	Whether the Switchboard is provided with removable bottom plates?	
8	Whether the Switchboard has been made dust free and vermin proof? Specify the arrangements provided for the same.	
10	Whether the Switchboard safety standards and offers high degree of protection to operating personnel as per relevant ISI and Indian Electricity / CEA Rules.	
<b>B</b>	<b>Bus-Bar :</b>	
1	Specify the material of the bus bars used and the type of insulation provided.	
2	Specify the size of the bus bar used.	
3	Whether bus bars are rated as per schedule of requirements?	
4	Specify the clearance provided between bus bars.	
	(a) Phase to phase	
	(b) Phase to neutral	
	(c) Between bus bars and cubicle panels.	
5	Specify the material used for supporting the bus bars.	
6	Whether the insulating support is unbreakable and non-hygroscopic?	
<b>C</b>	<b>AIR CIRCUIT BREAKERS</b>	
1	Indicate the make and type of Air circuit breakers used.	
2	Specify the ratings of ACBs offered against the requirement of AIR.	

3	Whether the ACBs offered meet all the specifications as given in section II, paras 4.1 to 4.12	
4	Whether the ACBs offered are rated and have been tested as per specification detailed under para 4.11 Section II (Test Certificates from the original Manufacturers are to be produced as per para 4.12) Section II.	
5	Whether Over-Current Short Circuit & Earth fault protection is provided on all the three phases and adjustable independently?	
6	Indicate the range of over-current, short circuit & Earth Fault protection and short circuit protection.	
7	Indicate the Breaking and Making capacity of ACB.	
<b>D</b>	<b>Moulded case Circuit Breaker :</b>	
1	Indicate the make and type of moulded case circuit breakers used.	
2	Specify the ratings of MCCBs offered against the requirement of AIR.	
3	Whether the MCCBs offered meet all the specification given in Section II, Paras 5.1 to 5.7	
4	Whether the MCCBs offered are rated and have been tested as per specification detailed under para 5.7 Section D (Test Certificate from the Standard Test House original manufacturers are to be produced as per para 5.7 Section II)	
5	Whether over-current, Short circuit and Earth Leakage protection is protection is provided on all the three phases and adjustable independently?	
6	Indicate the range of over-current, Short circuit and Earth leakage protection and short circuit protection.	
7	Indicate the Breaking and Making capacity of MCCBs.	
<b>E</b>	<b>Sub-distribution board :</b>	
1	Indicate the type and make of SDB used and the type of miniature circuit breakers housed therein.	
2	Whether in MCBs used meet all the specifications as given in Section II, paras 6.1 to 6.5	
<b>F</b>	<b>Miscellaneous :</b>	
1	Indicate the type and make of the indicating instruments used. Also specify the range. (a) Ammeter (Digital Readout) (b) Power factor meter (Digital Readout) (c) Power factor meter (Analogue readout) (d) Frequency meter (Digital Readout) (e) Phase sequence meter	
2	Whether control wiring and wiring for metering are done with PVC insulated standard copper conductors of required size?	
3	Whether earth fault relays are provided to trip the incoming ACBs in case of Earth Fault?	
4	Indicate the Guarantee for various components of the Switchboard offered and for the Switchboard as a whole.	
5	Whether all the controls, inter-locking, instruments and indicators, as required in AIR Specification have been provided?	

6	Whether the freight charges including insurance for delivery of Switchboard to the destination (viz., Relevant AIR Installation / Station specified in the schedule of requirements) have been included in the price of the Switchboard offered?	
7	Whether the installation material necessary for mounting the Switchboard at site and cable lugs ,cable guards for output and input power connections have been included and charged for the offer?	
8	Whether four copies of the Operation and Maintenance, manuals for the various components used in the Switchboard will be supplied free of charge, along with Switchboard?	
9	Whether power line surge protectors are provided in the incoming?	

## **SECTION – III - A**

### **SECHEDULE OF REQUIREMENT FOR MAIN LT BOARD**

Name of the project where LT Switch board is required	: 10 kW MW Transmitter, All India Radio, : Kavaratti (Lakshadweep).
Location	: Transmitter, AIR, Kavaratti (Lakshadweep).
Size of Switch Board	: Overall size shall not exceed : 1500 (W) x 1800 (H) x 500 (D) (Approx.)
Details of mounting	: Floor mounting
Description of equipment	: Indoor type & totally enclosed steel cubicle : typeLT switch board.

#### **Ratings of MCCB / MCB / Meters :**

<b>Sl. No.</b>	<b>Description</b>	<b>Quantity</b>
01	Incoming MCCB 200 Amps 4 Pole	2 Nos.
02	400 A Bus Bar 3 Phase & Neutral	2 Sets.
03	MCCB 160 Amps, 4 pole	3 Nos.
04	MCCB 100 Amps, 4 pole	3 Nos.
05	MCB 32 Amps, TPN	3 Nos.
06	MCB 25 Amps, TPN	2 Nos.
07	MCB 20 Amps, TPN	4 Nos.
08	MCB 2 Amps, TPN	2 Nos.
09	MCB 32 Amps, SPN	9 Nos.
10	200 Amps, 4 pole, On-load Changeover Switch	1 No.
11	Electrical & Mechanical interlock arrangement	1 Set.
12	Earth Fault Relay	2 Nos.
13	CT 200 : 5	2 Nos.
14	Voltmeter with selector switch 0-500V, (digital)	2 Nos.
15	Ammeter with selector switch 0-100A, (digital)	2 Nos.
16	Frequency meter	1 No.
17	Power Factor Meter	1 No.
18	Phase Sequence Meter	1 No.
19	LED type phase indicator (RYB) 22.5 mm.	2 Sets
20	Power line surge protectors	2 Sets
21	Installation materials like grouting bolts, Cable lugs and guards etc	1 set

## **SECTION – III - B**

### **SECHEDULE OF REQUIREMENT FOR SUB DISTRIBUTION BOARD**

Name of the project where LT Switch board is required	: 10 kW MW Transmitter, All India Radio, : Kavaratti (Lakshadweep).
Location	: Transmitter, AIR, Kavaratti (Lakshadweep).
Size of Switch Board	: Overall size shall not exceed : 450 (W) x 600 (H) x 250 (D) (Approx.)
Details of mounting	: Wall mounting
Description of equipment	: Indoor type & totally enclosed steel cubicle : typeLT switch board.

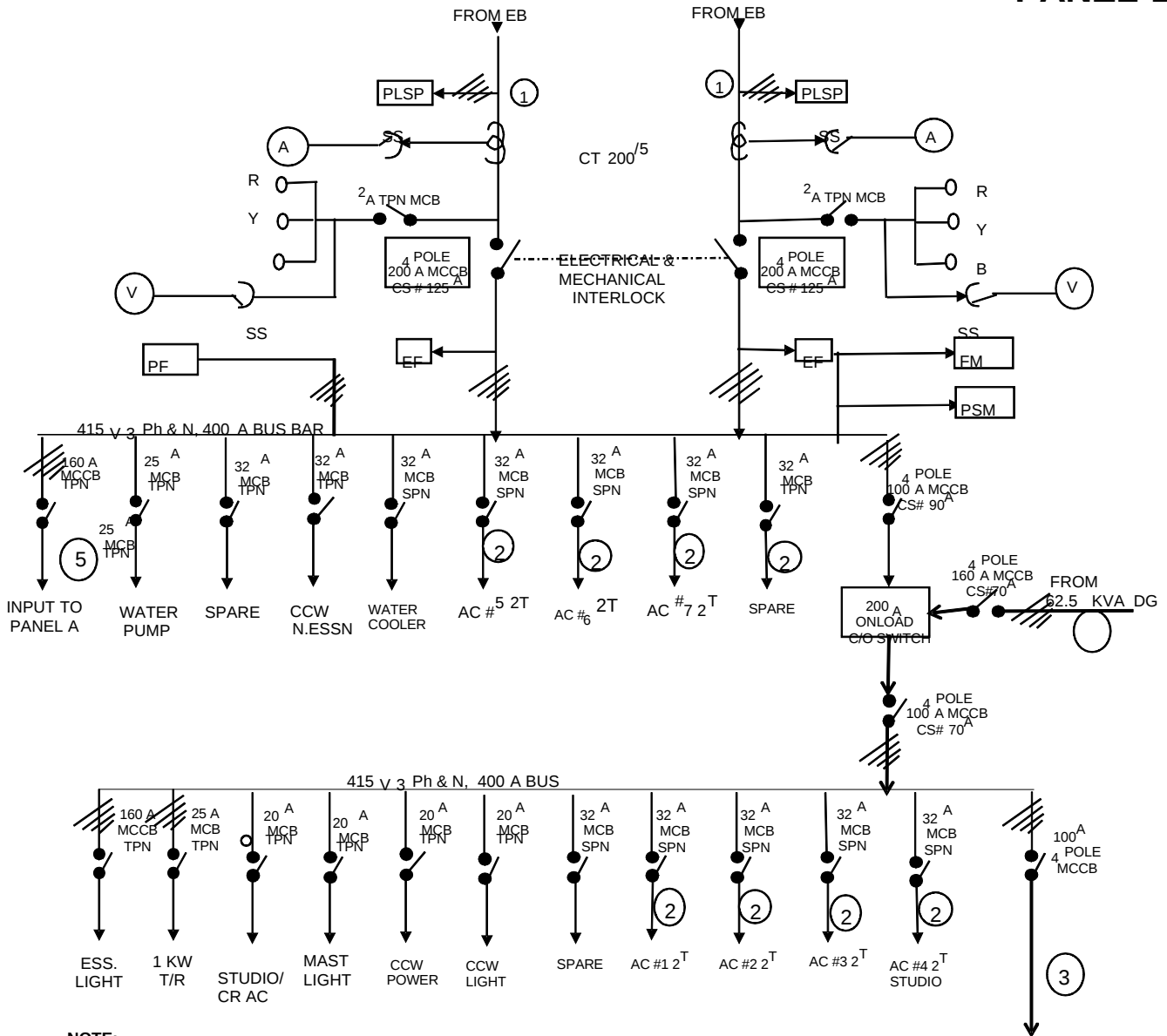
**Ratings of MCCB / MCB / Meters :**

<b>Sl. No.</b>	<b>Description</b>	<b>Quantity</b>
01	MCCB 100 Amps, 4 pole	1 No.
02	200 Amps, Bus Bar 3 Phase & Neutral	1 Set
03	MCCB 63 Amps, 4 pole	2 Nos.
04	MCB 15 Amps, SPN	5 Nos.
05	MCB 10 Amps, SPN	4 Nos.
06	MCB 2 Amps, TPN	1 No.
07	CT 100 : 5	1 No.
08	Voltmeter with selector switch 0-500V, (digital)	1 No.
09	Ammeter with selector switch 0-100A, (digital)	1 No.
10	Installation materials like cable lug, gurd, grouting bolts etc	1 set

# MAIN LT BOARD

MAIN LT BOARD AIR - KAVARATTI

PANEL-B



**NOTE:**

- EF : EARTH FAULT RELAY
- PSM: PHASE SEQUENCE METER
- FM : FREQUENCY METER
- PLSP: POWER LINE SURGE PROTECTOR
- PF : POWER FACTOR METER
- A : AMMETER
- V: VOLTMETER

**CABLES:**

1. 185 Sqmm 3 1/2 core Aluminium AR Cable
2. 6 Sqmm 2 core COPPER cable
4. 25 Sqmm 4 core copper cable
5. 95 Sqmm 3 1/2 core Aluminium AR cable

SIZE: 1500(W) X 1800(H) X 500(D)

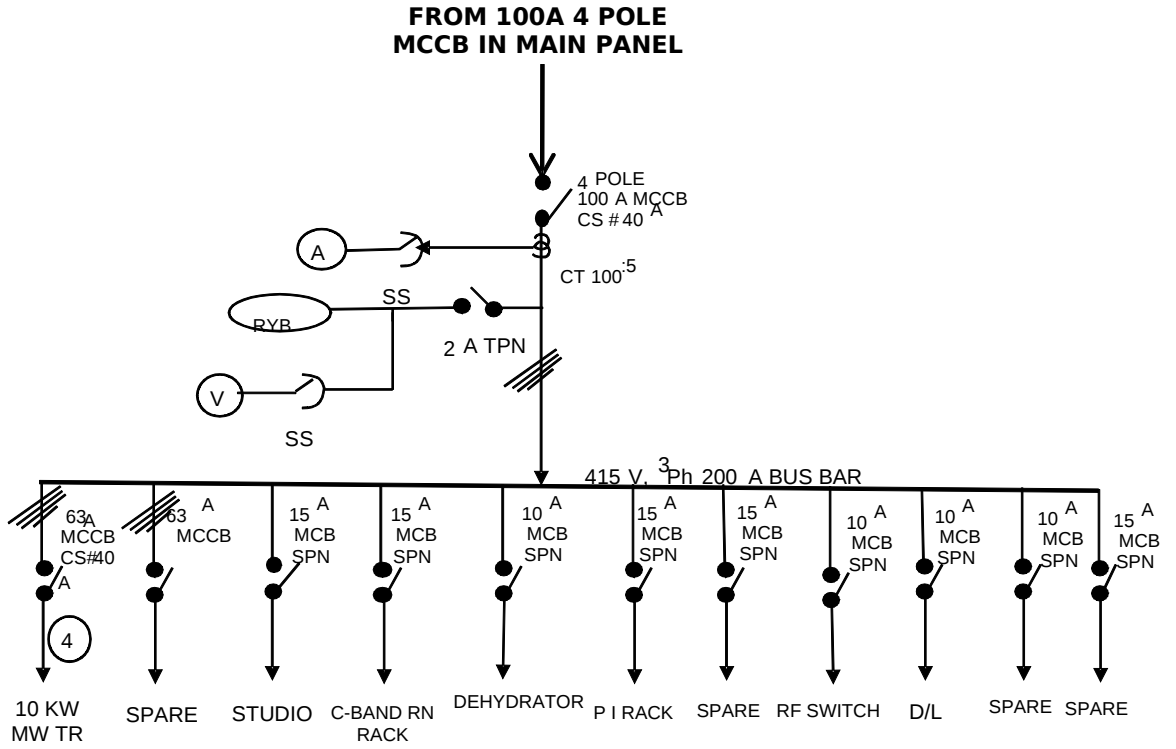
TO TRANSMITTER SDB

POWER SUPPLY ARRANGEMENT AT 10 KW MW TRANSMITTER, KAVARATTI

# SUB DISTRIBUTION BOARD

**SUB DISTRIBUTION BOARD AIR KAVARATTI  
(WALL MOUNTABLE TYPE)**

**TR - SDB**



SIZE: 450 (W) X 600 (H) x 250 (D)

POWER SUPPLY ARRANGEMENT AT  
10 KW MW TRANSMITTER  
AIR, KAVARATTI

## GENERAL TERMS AND CONDITIONS

1. **NAME OF PURCHASER** : The President of India
2. **PAYING AUTHORITY** : The Additional Director General (E)(SZ)  
All India Radio & Television  
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 Chief Engineer (South Zone) 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. Un loading 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 information's:

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 supersede 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 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 leviable 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 notwithstanding 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 be subject to the conditions set out in preceding paragraph.
- ii) In case 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 be 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 cancel 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.

**(M.SUJATHA)**  
**Assistant Engineer**  
**for ADG(E) (SZ)**