THE HASHIMITE KINGDOM OF JORDAN
NATIONAL ELECTRIC POWER CO.

P.O. BOX 2310

AMMAN 11181

المملكة الأردنية الهاشمية
شركــة الكهربــاء الوطنيــة م.ع
ص.ب 2310

عمان 11181

TENDER NO. 21 /2025

SUPPLY OF 132 KV DISCONNECTORS

AT REHAB AND IRBID EAST S/S

1. Invitation To Tender.
2. Instructions To Tenderers.
3. Forms of Tender.
4. Conditions Of Contract.
5. Technical specification and drawings.
6. Technical Schedules.
7. Price Schedules.

TENDERER

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NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

SECTION 1

- INVITATION TO TENDER

- TENDER ACKNOWLEDGEMENT

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

INVITATION TO TENDER

The National Electric Power Company (NEPCO) intends to have a loan and /or from NEPCO's own sources towards the cost of **supply (10) pieces of 132KV disconnectors for Rehab and Irbid East Substations (132/33 kV).**

The National Electric Power Company hereby invites sealed Tenders from eligible Tenderers for design, manufacture, inspection, testing, packing for export, supply CFR Aqaba, setting to Works and **warranty for a period of (12) months** from the date of receipt of last consignment at site or NEPCO warehouses.

Interested Eligible Tenderers may obtain further information at the office of:

National Electric Power Company
PO Box 2310
11181 Amman
Jordan

Telephone: +(962) 6-5858615
Telefax: +(962) 6-5818336

A complete set of Tender Documents may be purchased by any interested eligible Tenderer on application to the above and upon payment of a non-refundable fee of **JD 125 (One Hundred Twenty-Five Jordanian Dinars).**

The enclosed Tender Acknowledgement should be returned to the National Electric Power Company.

Tenders must be delivered to The Tenders Committee (**in the form of two envelopes**, **one envelope for Technical and Financial offer and one envelope for Bid Bond**), National Electric Power Company at the above address not later than 13.00 noon Amman time on **…SUNDAY 08/06/2025**..

All Tenders must be accompanied by a Tender Guarantee in the amount of **JD 4800 (Four thousand and eight hundred Jordanian Dinars)** in the form of a Bank Guarantee issued directly by an approved Bank located in Jordan and in the form provided in the Tender Documents.

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

TENDER ACKNOWLEDGEMENT

National Electric Power Co
P.O. Box 2310
11181 Amman
Jordan

Telefax: 00 +(962) 6-5818336

Attention: The Managing Director,

Dear Sirs

We the undersigned

_____

Acknowledge receipt of the Tender Documents for Tender Number (21/2025) comprising one copy of each of the following:

- Invitation for Tenders, Instructions to Tenderers, Conditions of Contract and Tender Forms.
- Technical Specification and Drawings.
- Technical Schedules.
- Price Schedules.

We wish to receive any further information concerning this Tender at the following address:

Name:

_____

Address:

_____

_____

_____

Our local agent in Jordan is:

Name:

_____

Address:

_____

_____

_____

In case of not submitting this form to NEPCO before closing date, it is the Tenderer responsibility of not receiving correspondence, amendments to the tender, addendums… etc.

Section 2

INSTRUCTIONS TO PERSONS TENDERING

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

INSTRUCTION TO PERSON TENDERING

1. The Tender shall be made in one copy on the accompanying form of tender with all blanks therein and in all the Schedules duly filled up in ink and signed, The Tender price shall include all incidental and contingent expenses. In particular, the Form of Tender must be completed and signed without alteration.

Tenderers are particularly directed that the amount entered on the Form of Tender shall be a fixed price for performing the Contract strictly in accordance with the bond document and shall be the sum total of all the amounts printed into and entered by the Tenderer upon the Schedule of Prices.

Should the Tenderer consider that he can offer any advantages to the purchaser by a modification to the Specification he may draw attention to such by an attached document stating the change in the amount of his Tender if such modification is accepted by the Purchaser, but the total entered on the Form of Tender shall be such as represents complete compliance with the bound document.

2. No alteration shall be made in the Form of Tender or in the Schedules there to except in filling up the blanks as directed, If any such alteration to be made or if these Instructions will not be fully complied with the Tender may be rejected. The Tenderer, however, is at liberty to add any further details that he may deem desirable and, in the event of his so doing, shall print or type such details and annex the added matter to the Tender submitted by him. Such additional details shall not be binding upon the Purchaser unless they shall be subsequently incorporated in the Contract.

3. The Tenderer shall submit with his Tender in order of the relevant clauses, a statement of any departures from the Specifications. Notwithstanding any description, drawings or literature which may be submitted, all details other than those in the Statement of Departures shall be assumed to be in accordance with the Specifications.

4. Although IEC Recommendations and British Standards for workmanship, equipment and materials, have been selected in this Specification as a basis of reference, standards and specifications of other countries and recommendations of other international standard organizations will be acceptable provided they are substantially equivalent to the designated Standards and provided furthermore that the Tenderer submits for approval Specifications which he proposes to use.

5. References to brand names or catalogue numbers, if any, in this Specification have been made only for that equipment for which it has been determined that a degree of standardization is necessary to maintain certain essential features, In certain instances such references have also been made for purpose of convenience to specify the requirements. In either case, offers of alternative goods which have similar characteristics and provide performance and quality at least equal to those specified are acceptable.

6. Pre-Tender Meeting and Site Visit:

6.1 **The Bidder is advised to attend the pre-bid meeting and site visit**. A pre-bid meeting and site visit shall be held as mentioned in the invitation letter in NEPCO offices.

6.2 The Bidder is advised to visit and examine the site (Rehab and Irbid East S/S) and surroundings where the Facilities are to be installed and obtain for itself on its own responsibility all information that may be necessary for preparing the tender and entering into a contract. The costs of visiting the site shall be at the Bidder's own expense.

6.3 **The Bidders shall visit the sites (Rehab and Irbid East S/S) and make himself aware of the details of the existing system/facilities and all of dimensions for the disconnectors, clamps and the steel structures. Modification work at the associated substations shall be compatible with the existing system**, site visit is a must during bidding stage, the bidders are responsible to arrange for such site visit and such site visit will also be approved by NEPCO.

6.4 Where the Bidders and any of its personnel or agents have been granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, the Bidders, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury (whether fatal or otherwise) , loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the visit.

6.5 Failure to investigate the Site shall not relieve the Bidders from responsibility for estimating properly the difficulty or cost of successfully performing the Works.

6.6 If the site visit cancels a report of the site visit carried out by NEPCO will be provided.

7. In the event that the intending signatory does not manufacture one or more of the main sections of equipment and materials, then the Tender submitted should give evidence to show that all the obligations imposed by the documents on the intending signatory have been fully understood and accepted, where applicable, by the manufacturer (s) to whom it would be intended to subcontract one or more of the main sections of the equipment and materials.

8. If the Tenderer has any doubt as to the meaning of any portion of the General Conditions or the Specifications or Drawings, he shall when be submitting his Tender, set out in his covering letter the interpretation on which he relies.

9. The purchaser does not bind himself to accept the lowest or any tender, nor to assign any reason for the rejection of any tender, nor to purchase the whole of the equipment and materials specified.

10. The purchaser will not be responsible for, nor pay for, any expense or loss, which may be incurred by a Tenderer in the preparation of his Tender.

11. One copy of the Tender, and its accompanying documents, filled up as directed, together with the drawings called for must be enclosed in a secure envelope

endorsed (Tender for Contract No.21 /2025, should be submitted to the Managing Director, National Electric Power Company, P.O. Box 2310, Amman 11181 The HASHEMITE KINGDOM OF JORDAN, by the time stated in the covering letter.

12. No tender received after that time will be considered.

13. All correspondence in connection with this Tender and Contract and all matter accompanying the Tender which is relevant to its examination shall be in the English language and expressed in metric units.

14. The Tender is to be held open for acceptance or rejection for **a validity period of (90) days from the time fixed for opening the Tenders.**

15. A non-refundable fee of JD **(125 Jordanian Dinar)** will be charged for each set comprising one copy of the Tender Documents.

16. The Tender shall be accompanied by a Tender Bond in the form of a Bank Guarantee valid for at least 90 days from the time **fixed** to Tender closing date, or a certified cheque in favour of and payable to the Purchaser for a sum of **JD 4800 (Four thousand and eight hundred Jordanian Dinars)** as guarantee of good faith.

17. This Bond is to be issued by any approved Bank in Jordan. The Bond will be returned to the unsuccessful Tenderer according to **Regulation No. (8) For the year 2022 Government Procurements Regulation**. In the case of the successful Tenderer the Bond will, subject to the Conditions of Contract, be returned as soon as a formal Contract Agreement and a performance Bond have been entered into.

18. Tenders received prior to the time fixed for opening will be securely kept, unopened. Tenders received after that time will be rejected. The Purchaser bears no responsibility for premature opening of Tenders not properly addressed or identified.

19. Tenders may be withdrawn by formal request received in writing from the Tenderer prior to the time fixed for opening. If for any reason the Tender should be withdrawn after the time fixed for opening and before expiry of the said validity period, the Purchaser has the right to retain the full value of the Tender Bond.

20. A) Any arithmetical error shall be corrected by a decision of the procurement committee and the bidder must be notified accordingly, provided that the arithmetical corrections are as follows:

1. In the event of a discrepancy between the unit price and the total amount, the unit price shall be adopted and the total price shall be corrected accordingly unless there is clear evidence that the decimal point is misplaced.
2. If there is an error in the total amounts in the Bill of Quantities as a result of the addition and subtraction processes of the sub-totals, the subtotals shall be adopted and the total price shall be corrected accordingly.
3. In the event of a discrepancy between the unit price, in figures and in writing, the unit price that mentioned in writing shall be adopted unless the procurement committee finds a basis for the adoption of the price mentioned in figures.
4. If any bidder does not accept the correction of the errors after the analysis and evaluation, its submission shall be excluded and the bid bond shall be forfeited by a decision of the procurement committee.

5. If the bidder has not priced one or more of the items in the works and technical services tendering, these unquoted items shall be considered to be loaded on the other items of the tender, and the bidder shall execute them free of charge, if the tender has been awarded to it, whether the bidder attaches or does not attach those items in the tender.

B) Subject to the provisions of paragraph (a) of this Article, the basis for the examination of submissions included in the unified works contract for the construction projects shall be adopted.

21. Where compliance with a specific Standard Specification is called for the Standard Specification used shall be that in force at the time of Tender.

22. The successful Tenderer shall abide by the commercial and professional regulations as required by the Ministry of Industry & Trade, Engineering Association, Jordan contractor's association and other relevant Institutions in Jordan. (If applicable).

23. The Tenderer may state the Tender Price in Jordanian Diners. If, however, a portion of the Tenderers expenditure under the Contract is expected to be made in countries other than Jordan he may state a corresponding foreign currency portion of the Tender Price in the currencies of those other countries.

24. Tender evaluation will be consistent with the terms and conditions set for in the Tender documents.

In addition to the Tender Price, adjusted to correct arithmetical errors, other relevant factors such as the time of completion of delivery or construction, operating costs where applicable or the efficiency and compatibility of the equipment, the availability of service and spare parts, and reliability of construction methods proposed will be taken into consideration to the extent and in the manner specified in the Tender documents, in determining the evaluated Tender most advantageous to the Purchaser.

25. For comparison of all Tenders, the currency or currencies of the Tender Price for each Tender will be valued in terms of Jordan Dinars. The rates of exchange to be used in such valuation will be the selling rates published by the Central Bank of Jordan, and applicable to similar transactions, on the day of Tenders closing date unless there should be a change in the value of the currencies before the award is made. In the later case, the exchange rates prevailing at the time of the decision to notify the award to the successful Tenderer may be used.

26. Stamp duty and award fees are payable on Jordanian Contracts according to Jordanian laws, it is the Contractor's responsibility to purchase legal stamps to the requisite amount depending on the Contract Value, these fees should be paid within 10 days of the date of LOA and before signing the contract to the Ministry of Finance, otherwise penalties will be imposed according to laws and regulations.

If the final contract price is increased during or after completion of the works, contractor shall pay extra stamp duty and award fees proportional to the amount of increase.

27. Before signing the contract and within 28 days from date Letter of Award, the successful Tenderer shall furnish an irrevocable and **unconditional Performance Bond of (10%) of the total contract price** in the form given and in the same contract currency, and you are required to extend the validity of the Bid Bond until the Performance Bond has been established and accepted by NEPCO.

The Performance Bond shall be valid for a period expiring at least one month after receipt of the last CONSIGNMENT at site or NEPCO warehouse and shall still enforce until submission of the maintenance Guarantee for the Guarantee Period.

Failure of the successful Tenderer to comply with the requirements of above Sub-Clause shall constitute sufficient grounds for the annulment of the award and forfeiture of the tender security, in which event the Employer may make the award to the next lowest evaluated Tenderer or call for new tenders.

If any variation order has been issued to increase the contract price during the contract duration, the contractor must increase the performance bond to the value of (15%) of the increased amount.

The contractor shall seek for releasing Performance Bond upon fully finalized all contractual terms required and submit of maintenance Guarantee.

28. For overseas transport, the Contractor and his sub-contractors Suppliers and Manufacturers shall give priority to Jordan National Line Co., and to Arab shipping companies and their subsidiaries for, the shipping of goods, materials and Plant provided such companies ships call at the port of export. The Contractor shall also give priority to the Royal Jordanian Airlines for airfreight shipment and transport of personnel. Shipment by sea freight must be on direct and regular (liner) vessel less than 15 years old at the time of shipment. The vessel should be classified and in accordance with (ISM) code and should be a member in the P&I club

29. Any further information may be obtained on application in writing to:-

Managing Director

National Electric Power Company,

P.O. Box 2310, Amman, 11181

The Hashemite Kingdom of Jordan.

30. The Contractor should print NEPCO Stock Code No. on the supplied Materials which can be obtained in due time.

31. The bid bond shall be submitted either by the supplier or by the vendor on behalf of supplier in condition that he is fully authorized by Power of attorney letter from the supplier.

32. Tenderer must submit country of origin and name of manufacturer for the offered goods.

33. Tenderer shall submit his offer based on single price, excluding all custom duties and sales tax.

34. Tenderer must fill the schedules of bill of quantities incorporated with breakdown prices of this tender.

35. Tenderer must complete the technical data sheets of this tender.

36. Complete offer shall be complete order; partial offer will not be accepted.

37. Insurance:

NEPCO undertakes to insure all the shipped materials and equipment's with local Jordanian companies against all risks from the time they leave the works until they are delivered at site or at NEPCO warehouse.

The contractor must provide full details of the material to be dispatched in good time for NEPCO to arrange for marine insurance before material is actually dispatched.

38. Payments:

Terms of payment for this contract will be strictly according to paragraph No.8 (Terms of Payment) of General Conditions of the Contract.

39. Contract Incoterms:

For execution of this contract, the chosen incoterms are as follows:

"CFR – Aqaba port - Jordan Incoterms 2020"

In case of locally manufactured materials and the awarding has been done into local Jordanian company the required delivery and prices will be assumed as (delivery to NEPCO Stores).

40. This document is subject to the provisions and instructions of the **Government Procurement Regulation No. (8) Of 2022**.

41. Tenderers Eligibility and Qualification:

In order to satisfy the requirements for eligible experience, the Tenderer shall provide documentary evidence to establish:

A. That, in the case of a Tenderer offering to supply materials and equipment under the contract which the Tenderer does not manufacture or otherwise produce, **the Tenderer has been duly authorised by the manufacturer or producer of the materials and equipment to supply them in the employer's country (authorised certificate shall be provided)**.

B. Documentary evidence of the Tenderers qualification to perform the Contract and the Tenderer has the technical capacity and production capability necessary to perform the contract. In particular, it is required that:

- **The Tenderer shall provide documentation, certified by the owner (Two End user certificates), to show that the 132kv disconnectors to be supplied, having the type and rating (same or above) and the same place of manufacture, is in successful commercial service for a minimum of two years in two different countries within the last 12 years (2013 - 2024).**
- End user certificate should conform the following:
    - Certified (signed and stamped) by the owner of the material (end user) not from the contractor In English language, printed officially and stamped,
    - End-user certificate shall show clearly the following:
        a. Name of customer/company and complete address where equipment is installed.
        b. Date of issuance of certificate.
        c. Date of put in operation.

d. Rating, capacity of related equipment

Original performance certificate maybe returned, if required by tenderer.

C. <u>The Tenderer shall provide documentation, certified by the owner (Type Test)</u>, to show that the 132 kv disconnectors to be supplied, having similar type or above and the same place of manufacture, passed the type test successfully within last 12 years (2013 - 2024).

- Type test certificate should conform the following:
  - Certified (signed and stamped) by the manufacturer / or third party of the material (type test) not from the contractor In English language, printed officially and stamped,
  - Type test certificate shall show the following:
    a. Type of equipment.
    b. Date of issuance of certificate.
    c. All results of test in pass status.

Failure to supply the required qualification documentation (i.e., Type test certificates of equipment, End User Certification & Tenderers qualifications documentation) to the satisfaction of the employer result in rejection of the tender.

Section 3

FORMS

- **Form of Tender**
- **Form of advance payment guarantee**
- **Form of tender Guarantee**
- **Form of Performance Guarantee**
- **Form of Maintenance Guarantee**
- **Form of Declaration for Prohibited Payments**
- **Form of Declaration for Other Payments**
- **Form of Request for Shipping Release**
- **Form of Inspection Certificate**

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/ 2025
SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

FORM OF TENDER

Managing Director
National electric Power Company,
P.O. Box 2310,
Amman, 11181
The Hashemite Kingdom of Jordan.

Dear Sir,

1. Having examined the conditions of contract, Specifications and Schedules for the above Works, we, the undersigned, offer to manufacture, design, engineering, supply of works, and deliver the equipment described in the Specifications and Schedules and in accordance with the said Conditions of the Contract, for the sum of ……
   ……

   Or such other sum as may be ascertained in accordance with the said Conditions.

2. We agree that this Tender shall be held open for acceptance or rejection for the validity period of **90** days from the date fixed for opening Tenders and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

3. Unless and until a formal Agreement is prepared and executed this Tender, together with your written acceptance thereof, shall constitute a binding Contract between us.

4. If our Tender is accepted, we will deliver to National Electric Power Company a performance Bond, according to clause No.26 instruction to person tendering.

5. We undertake if our Tender is accepted and on receipt of your acceptance to commence and manufacture works, and complete for delivery to Aqaba port the whole of the Works offered within **( ) months.** Calculated from the date of Letter of Award (i.e., commencement date), and to deliver on the dock at Aqaba Port, Jordan the whole of the works offered within a further **( ) months**. (Anyhow all delivery dates will be in accordance with the required completion date of as specified for each substation).

6. We will provide details of the plant and materials to be shipped in good time for the National Electric Power Company to arrange for the Marine Insurance.

7. A Guarantee Period will apply to each section of the Works for (12) months from the date of receipt of last consignment at site or NEPCO warehouse.

8. We understand that you are not bound to accept the lowest or any tender you may receive.

Date this …… day of …… 20 ……

Signature ……in the capacity of ……..

Duly authorised to sign Tender for and on behalf of……..……..

……...…....

Address ……...

Occupation…….

Telephone No:
Fax No. :

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

FORM OF ADVANCE PAYMENT GUARANTEE

GUARANTEE NO.

M/S., National Electric Power Co. (NEPCO)
Amman – Jordan

NAME OF CONTRACT: TENDER NO. 21/2025 SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

At the request of bank… (The Foreign Bank) and on behalf of M/S……..…
(The contractor Name and Address), we the.… (The Local Bank) issue in your favour our irrevocable and unconditional Advance Payment Guarantee No…...in the amount of (----------) (In words).

In this connection we … (Local bank) hereby consider ourselves responsible for the unconditional payment to you or your authorized representatives of the above sum on your first Written demand in whole or in part not withstanding any objections on the part of the above-named contractor and without any need for notarial warning or judicial proceedings.

This guarantee remains valid from the date of issue till its expiry date on …/…/…… unless it's extended or renewed upon your request within the guarantee validity, and it will not be cancelled unless our bank received an official letter duly issued and signed by you attached with original guarantee and all related original amendments and or extensions.

Bank (Local Bank)

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

FORM OF TENDER GUARANTEE

To: **M/S., NATIONAL ELECTRIC POWER COMPANY (NEPCO)**

AMMAN – JORDAN.

NAME OF CONTRACT: TENDER NO. 21/2025 SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

WHEREAS (*Name of Tenderer*) (hereinafter called "the Tenderer") has submitted its Tender dated (*date of Tender*) for the performance of the above-named Contract (hereinafter called "the Tender").

At the request of _____ Bank (the *Foreign Bank*) and on behalf of M/S._____ *(the Contractor Name and Address*), we _____(*the Local Bank*) issue in your favour our irrevocable and unconditional Tender Guarantee

No. _____ in the amount of, **JD ---------- (**---------- (i*n words)*).

This guarantee will remain in full force for a period of 90 days from the tender closing date, and any demand in respect thereof must reach the Bank not later than the above date.

Bank (Local Bank)

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

FORM OF PERFORMANCE GUARANTEE

GUARANTEE NO.

M/S., Beneficiary

Amman – Jordan

NAME OF CONTRACT: TENDER NO. 21/2025 SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

At the request of the Bank… (The Foreign Bank) and on behalf of M/S. (The contractor Name and Address), we ...(The Local Bank) issue in your favour our irrevocable and unconditional performance guarantees No…xxx... In the amount of (XXX) (in words).

In this connection we…. **(local bank)** hereby consider ourselves responsible for the unconditional payment to you or your authorized representatives of the above sum on your first written demand in whole or in part not withstanding any objections on the part of the above named contractor and without any need for notarial warning or judicial proceedings.

This guarantee remains valid from the date of issuance until its expiry date on **(…….)** and it shall be automatically renewed for consecutive periods; each period for three months, and it will not be cancelled unless our bank received an official letter duly issued and signed by you attached with original guarantee and all related original amendments and or extensions**.**

Bank (Local Bank)

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

FORM OF MAINTENANCE GUARANTEE

GUARANTEE *NO.*

M/S., Beneficiary
Amman – Jordan

NAME OF CONTRACT: TENDER NO. 21/2025 SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

At the request of bank (The Foreign Bank) and on behalf of M/S…
(The contractor Name and Address), we the.… (The Local Bank) issue in your favour our irrevocable and unconditional **maintenance *guarantee*** No…...in the amount of (XXXX) (In words).

In this connection we … (**Local bank)** hereby consider ourselves responsible for the unconditional payment to you or your authorized representatives of the above sum on your first Written demand in whole or in part not withstanding any objections on the part of the above-named contractor and without any need for notarial warning or judicial proceedings.

This guarantee remains valid from the date of issue till its expiry date on …/…/…….. unless it's extended or renewed upon your request within the guarantee validity, and it will not be cancelled unless our bank received an official letter duly issued and signed by you attached with original guarantee and all related original amendments and or extensions.

BANK (LOCAL BANK)

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

FORM OF DECLARATION FOR PROHIBITED PAYMENTS *

(i) We, the undersigned, ----------
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declare that we have read and comprehended the provisions under Item 14 of General Condition of the Contract related to this Contract and in compliance with this clause; we enclose a declaration properly signed and sealed representing and warranting to The Employer that no direct or indirect commissions, consulting fees, agent fees, Tender fees or other payments, and no inducements or the giving of anything of value (collectively referred to as "Prohibited Payments"), have been made or promised to be made, directly or indirectly, by or on behalf of the Contractor, its sub-Contractor and its or their Employees, agents or representatives, to The Employer, including without limitation any official, employee, agent or representative (whether or not acting in an official capacity) of The Employer, in connection with the solicitation, bidding, negotiation, award or performance of this Contract; and (ii) hereby covenants and agrees that no Prohibited Payments shall be made or promised to be made, directly or indirectly, by or on behalf, of Contractor, its sub-Contracts and its or their employees, agents or representatives, to any official, employee, agent or representative (whether or not acting in an official capacity) of The Employer in connection with the amendment, modification, renewal, extension or performance of this Contract.

Tenderers Name----------
Name of authorized signatory

Signature

Seal ----------

*** The Tenderer is required to submit a declaration for other payments in a separate envelope whether such payments have been paid or not and the offers of all Contractors that do not include such a declaration will be rejected.**

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

FORM OF DECLARATION FOR OTHER PAYMENTS *

(i) We, the undersigned, ----------
---

declare that we have read and comprehended the provisions under Item 15 of General Condition of the Contract related to this contract and in compliance with this sub-clause; we enclose a declaration properly signed and sealed disclosing any and all direct or indirect commissions, consulting fees, agent fees, tender fees or other payments, or inducements or the giving of anything of value (collectively referred to as "Other Payments") to third parties other than any official, employee, agent or representative (whether or not acting in an official capacity) of The Employer, including without limitation a detailed description of the basis therefore, made or to be made, directly or indirectly, by or on behalf of Contractor, its subcontractors, and its or their employees, agents or representatives, in connection with the solicitation, bidding, negotiation, award or performance of this Contract; and (ii) hereby covenants and agrees promptly to disclose to The Employer in writing the existence of any Third Party Payments including without limitation, a detailed description of the basis therefore, upon the earliest to occur of Contractor making or being obligated to make, any such Third Party Payments.

Contractor's Name

Name of authorized signatory

Signature

Seal ----------

*** The Tenderer is required to submit a declaration for other payments in a separate envelope whether such payments have been paid or not and the offers of all Contractors that do not include such a declaration will be rejected.**

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

FORM OF REQUEST FOR SHIPPING RELEASE

REQUEST FOR SHIPPING RELEASE

TENDER NO. 21/2025
Supply of 132 kv Disconnectors REHAB AND IRBID EAST S/S

Request No: Date:

To: **National Electric Power company**

Your contract reference:

Our contract reference:

We would be pleased to receive your shipping release.

Manufacturer	Equipment	Qty.	Total No. Of Packages

CONTRACTOR SIGNATURE	RECORD PURPOSE ONLY Local Release No: Date:

Yours faithfully,

* Note : The request must be sent to NEPCO along with the FAT documents.

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

FORM OF INSPECTION CERTIFICATE

INSPECTION CERTIFICATE NO.				
CLIENT	**NATIONAL ELECTRIC POWER COMPANY(NEPCO)**			
PROJECT	**Supply of 132 kv Disconnectors AT REHAB AND IRBID EAST S/S.**			
CONTRACT NO.	**21/2025**		**ORDER COMPLETE**	**(YES/NO)**
MAIN CONTRCTOR			**L/C NO.:**	
EMPLOYER	**NEPCO**			
TENDERER				
INSPECTED AT			**DATE OF INSPECTION**	
Routine test by manufacturer not witnessed by NEPCO				
EQUIPMENT/ MATERIAL INSPECTED:				
NUMBER INSPECTED: -				
	According to Annex		**Quantity**	
RESULT OF INSPECTION:				
ATTACHMENTS:				
This is to certify that the Equipment/Material covered by this report has been examined				
in accordance with the relevant specification (s) as well as the drawings and diagrams,				
as appropriately tested and described and found to be in condition stated.				
Approved for Dispatch		**Approved for further Work**		**NOT APPROVED**
Waived Inspection Engineer:		**For and on behalf of**		
		National Electric Power Co.		

SECTION 4
GENERAL CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT
FOR THE SUPPLY AND DELIVERY OF MATERIALS BASED ON
UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
PUBLICATION REF.: ME/ 188
GENEVA. MARCH, 1953

1. **PREAMBLE**:

1.1 These General Conditions shall apply, save as varied by express agreement accepted in writing by both parties.

1.2 Definition Of Terms

The "Purchaser" shall mean the “National Electric Power Company" hereinafter called “NEPCO", and shall include NEPCO legal personal representatives and duly appointed Engineers.

The "Engineer" shall mean the “National Electric Power Company" or persons for the time being or from time to time duly appointed in writing by the purchaser to act as Engineer for the purpose of the Contract.

The words “approved" and” approval" where used in these Conditions or in the specification shall mean "approved by" and “approval of" the purchaser respectively.

The "Vendor" shall mean the "Contractor" whose Tender has been accepted by the Purchaser and shall include the Vendor's (Contractor's") legal personal representatives, successors and permitted assigns.

“F.O.B Price" shall mean the cost of the equipment delivered free on board of the ship or truck or aircraft, all port charges and handling charges (also heavy lift if applicable) included. The Contractor must insure the material against all risks from the time it leaves the works until it is placed F.O.B.

"C&F or CFR Price" shall mean F.O.B. Price plus freight. Including unloading at the port of destination. All Marine Insurance will be effected by the Purchaser. The Contractor must provide full details of the material to be dispatched in good time for NEPCO to arrange for Marine Insurance before the material is actually dispatched.

2. FORMATION OF CONTRACT:

2.1 The Contract shall be deemed to have been entered into when the Purchaser has sent an acceptance in writing before time set in the Tender for acceptance or any such later date extended by the Tenderer at the request of the Purchaser.

2.2 Notwithstanding that the Contract and correspondence in connection with the Contract shall be in the English language, the Contract shall be and be deemed to be Jordanian Contract and shall accordingly be governed by to the laws for the time being in force in the Hashemite Kingdom of Jordan.

2.3 Power To Vary The Work

No alterations, amendments, omissions, additions, suspensions, or variations of the work, (hereinafter referred to as "variations") under the Contract as shown by the Contract Drawings or the Specification shall be made by the Contractor except as directed in writing by the purchaser but the Purchaser shall have full Power, subject to the provision hereinafter contained, from time to time during the execution of the Contract by notice in writing to instruct the Contractor to make such variation without Prejudice to the Contract and the Contractor shall carry out such variations, and be bound by the same Conditions, as far as applicable, as though the said variations occurred in the Specification.

If any suggested variations would, in the opinion of the Contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the Contract, he shall notify the Purchaser thereof in writing, and the Purchaser shall decide forthwith whether or not the same shall be carried out, and if the Purchaser confirms his instructions, the Contractor's obligations and guarantees shall be modified to such an extent as may be justified. The difference in cost, if any, occasioned by any such variations, shall be added to or deducted from the Contract Price as the case may require. The amount of such difference, if any, shall be ascertained and determined in accordance with the rates specified in the Schedule of Prices so far as the same may by applicable, and where the rates are not contained in the said Schedule, or are not applicable, they shall be settled by the Purchaser and the Contractor jointly. But the Purchaser shall not become liable for the payment of any charge in respect of any such variations, unless the instruction for the performance of the same shall have been given in writing by him.

In the event of the Purchaser requiring any variations, such reasonable and proper notice shall be given to the Contractor as will enable him to make his arrangements accordingly, and in cases where goods materials are already prepared, or any designs, drawings, or patterns made or work done that requires to be altered a reasonable sum in respect thereof shall be allowed by the Purchaser.

Provided that no such variation shall, except with the consent in writing of the Contractor, be such as will involve an increase or decrease of the total price payable under the Contract by more than 25 percent thereof.

The power given to the purchaser to make any alteration, amendment, omission, addition or variation to, from or in any part of the works shall include power to vary from time to time the date for the completion of the works or any part thereof.

2.4 Precedence:

In the event of any discrepancy or contradiction between the provisions of the Conditions of Contract and of the Specification, the Conditions of Contract shall take precedence.

2.5 Prices

2.5.1 The Tender calls for firm prices for the definite works.

2.5.2 Provisional items may or may not in whole or in part be purchased by the Purchaser under the Contract.

3. Drawings And Descriptive Documents

3.1 The weights, dimensions, capacities, prices, performance ratings and other data included in catalogues, prospectuses, circulars, advertisements, illustrated matter and price lists constitute an approximate guide.

These data shall not be binding save to the extent that they are by reference expressly included in the Contract.

3.2 Any drawings or technical documents intended for use in the construction of the plant or of part thereof and submitted to the Purchaser prior or subsequent to the formation of the Contract remain the exclusive property of the Vendor. They may not, without the Vendor's consent, be utilized by the Purchaser or copied, reproduced, transmitted or communicated to a third party. Provided, however, that the said plans and documents shall be the property of the Purchaser:

a) If it is expressly so agreed, or.

b) If they are referable to a separate preliminary Development Contract on which no actual construction was to be performed and in which the property of the Vendor in the said plans and documents was not reserved.

3.3 Any drawings or technical documents intended for use in the construction of the plant or of part thereof and submitted to the Vendor by the Purchaser prior or subsequent to the formation of the Contract remain the exclusive property of the purchaser. They may not, without his consent be utilized by the Vendor or copied, reproduced, transmitted or communicated to third party.

3.4 Drawing Guidelines for Contract Drawings

All drawing shall confirm to the following:

1) All drawings are to be prepared on the international sizes as described in BSI BS EN ISO 5457. They are to be of "A" series.

DESIGNATION	SHEET SIZE
A 0	**814 x 1189**
A1	**594x841**
A2	**420x594**
A3	**297x420**
A4	**210x297**

2) The NEPCO title block must be added to all drawings produced for the Contract. The block may be reduced in size, depending on sheet size, The NEPCO drawing number must appear in bottom right hand corner of drawing, the drawings must also include the Contractor's / Consultant's title block adjacent to NEPCO title block.

3) Each drawing to have its own individual number. For schedules, a drawing number to be given and then sheet 1 of x sheets.

4) All descriptive information must be entered in NEPCO title block. All drawings must contain NEPCO drawing numbers as so described and issued by NEPCO.

5) The title block should contain the following:

1. Revision block as NEPCO requirement.
2. Name of subject i.e. power station, substation, equipment.
3. Nature of drawing i.e. site layout, general arrangement, single line diagram.
4. Any other information or notes.
5. Dimensions to be in MM or M.
6. Scale i.e. 1:50, 1:1000.
7. Contract No. i.e. 12/ 2024
8. DRG. No. NEPCO drawing numbers that allocated by NEPCO.
9. Rev. to contain latest revision number.
10. Title block for Contractor/Consultant.
11. Graphical bar scales where required, not required for single line diagrams or reinforced concrete details.

6) Drawing sheet should be laid out according to NEPCO requirement.

7) Scales to be in multiples of 1:5, 1:10.

8) All information to be stenciled on drawings, block capital letters should be used throughout. No freehand printing on drawing except for "revision or hold" cloud.

9) 1. Revisions must be lettered and indicated block provided, all revisions to be checked and approved by Engineer.

2. Revisions must be interred and highlighted by pencilling cloud around the part revised on the reverse side of the tracing sheet as shown rev. b

3. Vague descriptions of revisions such as "general revisions" should be avoided. Revisions should be specific. No matter how small the revisions, it should be recorded.

10) Notes, reference drawing, and legends should be recorded on drawing, if key plan and north point is required, then apply NEPCO requirement.

11) Example of drawing title blocks and titles should be submitted to NEPCO for approval before commencement of drawings.

12) On completion of contract, the final drawings submitted to NEPCO are to be marked "as built" dated and signed, The drawings must be accompanied by a complete drawing schedule, listing all the drawings in the order of the NEPCO Numbers. The drawings schedule should be in the region of A3 or A4 size.

4. Packing Of Materials And Shipping Marks:

4.1 All materials, equipment and goods shall be very well packed, in seaworthy containers and/or wooden cases, etc. These should protect the material during shipping, handling, unloading, and for a reasonable period of storage at Aqaba and later storage at NEPCO central stores.

Packing for indoor materials should be done in such a manner as to adequately ensure no ingress of moisture during the shipping and storage periods.

Packing of fragile equipment (e.g. including instruments and porcelain) should be done in a way which ensures a reasonable resistance to impact breakage during transport.

Packing shall in general be adequate and in compliance with the best international practice.

A descriptive and fully itemized list shall be prepared for the contents of each packing case. A copy of this list shall be placed in a waterproof envelope under a metal or other suitable plate securely fastened to the outside of one end of the case, and its position adequately indicated by stenciling on the case. Where appropriate, drawings showing the erection markings of the item concerned shall be placed inside the case.

NEPCO will supply the successful Tenderer with a drawing of its shipping Mark for utilization.

All packing cases, crates, barrels and drums shall remain the property of the purchaser.

5. Inspection And Tests:

5.1 The contractor is required to provide all facilities to enable the employer's representatives (**Two Persons for 5 days excluding traveling days**) to carry out the necessary inspection and testing. The costs of all tests during manufacture and preparation of test records including airfares, hotel accommodations, transport, and all meals are to be borne by the contractor. In case of failure of test all costs of repeated trips of the employer’s representatives will be borne by the contractor. The performance of any such inspections and tests in the presence of the purchaser and /or an independent testing authority does not relieve the contractor from his contractual obligations.

5.2 If as a result of such inspection and checking the purchaser shall be of the opinion that any materials or parts are defective or not in accordance with the contract, he shall state in writing his objections and the reasons therefore.

5.3 Testing instruments shall be approved and shall, if required by the employer's representative, be calibrated by the national physical laboratory or such other body as may be approved, at the expense of the contractor.

5.4 Acceptance tests will be carried out and, unless otherwise agreed, will be made at the vendor's works instruments, if the tests are not specified in the contract, the tests will be carried out in accordance with the general practice obtaining in the appropriate branch of the industry in the country where the plant is manufactured.

5.5 The vendor shall give to the purchaser sufficient notice of the tests to permit the purchaser's representative to attend. If the purchaser is not represented at the tests, the test report shall be communicated by the vendor to the purchaser and shall be accepted as

accurate by the purchaser. After completion of the FAT the vendor is required to send complete test report with request for shipping release.

The purchaser will check test report/test results and if accepted a shipping release certificate will be issued within 10 days from the receipt of the report/ shipping release request.

5.6 If on any test (other than a test on site, where tests on site are provided for in the contract) the plant shall be found to be defective or not in accordance with the contract, the vendor shall be with all speed make good the defect or ensure that the plant complies with the contract thereafter, if the purchaser so requires, the test shall be repeated.

5.7 Unless otherwise agreed, the vendor shall bear all the expenses of tests carried out in his works.

5.8 If the contract provides for tests on site, the terms and conditions governing such tests shall be such as may be specially agreed between the parties.

5.9 In case of third party testing the contractor will conduct all required tests by the employer through the appointed third-party testing company of the list attached hereto all costs for a/m tests will be incurred by the contractor.

6. Passing Of Risk:

6.1 Save as provided in paragraph 7.6, the time at which the risk shall pass shall be fixed in accordance with the International Rules for the Interpretation of Trade Terms (INCOTERM) of the International Chamber of Commerce in force at the date of the formation of the Contract.

7. Delivery:

7.1 Unless otherwise agreed the delivery period (CFR Aqaba Docks) should be within (10) months from the commencement date (i.e., Letter of Award).

7.2 Should delay in delivery be caused by any of the circumstances mentioned in Clause 10 or by an act or omission of the Purchaser and whether such cause occur before or after the time or extended time for delivery, there shall be granted subject to the provisions of paragraph 7.5 hereof such extension of the delivery period as is reasonable having regard to all the circumstances of the case.

7.3 If a fixed time for delivery is provided for in the Contract and the Vendor fails to deliver within such time or any extension thereof granted under paragraph 2 hereof, the purchaser shall be entitled, on giving to the Vendor within a reasonable time notice in writing, to claim a reduction of the price payable under the Contract. Such reduction shall be calculated at the rate of one half of one percent of that part of the price payable under the Contract which is properly attributable to such portion of the Plant as cannot in consequence of the said failure be put to the use intended for each complete week of delay commencing on the due date of delivery, but shall not exceed a maximum percentage reduction of (15) percent. Such reduction shall be allowed when a payment becomes due on or after delivery. Save

as provided in paragraph 7.5 hereof, such reduction of price shall be to the exclusion of any other remedy of the purchaser in respect of the Vendor's failure to deliver as aforesaid.

7.4 If the time for delivery mentioned in the Contract is an estimate only, either party may after the expiration of two thirds of such estimated time require the other party in writing to agree on a fixed time.

Where no time for delivery is mentioned in the Contract, this course shall be open to either party after the expiration of seven months from the formation of the Contract.

If in either case the parties fail to agree, either party may have recourse to arbitration, in accordance with the provisions of Clause 13, to determine a reasonable time for delivery and the time so determined shall be deemed to be the fixed time for delivery provided for in the Contract and paragraph 3 hereof shall apply accordingly.

7.5 If any portion of the plant in respect of which the purchaser has become entitled to the maximum reduction provided for by paragraph 3 hereof, or in respect of which he would have been so entitled had he given the notice referred to therein, remains undelivered, the purchaser may by notice in writing to the vendor require time to deliver and by such last mentioned notice fix a final time for delivery which shall be reasonable taking into account such delay as has already occurred. If for any reason whatever the Vendor fails within such time to do everything that he must do to effect delivery, the purchaser shall be entitled by notice in writing to the Vendor, and without requiring the consent of any Court, to terminate the Contract in respect of such portion of the plant and thereupon to recover from the vendor any amount not exceeding that part of the price payable under the Contract which is properly attributable to such portion of the plant as could not in consequence of the Vendor's failure e put to the use intended.

7.6 If the purchaser fails to accept delivery on due date he shall nevertheless make any payment conditional in delivery as if the plant had been delivered. The Vendor shall arrange for the storage of the plant at the risk and cost of the purchaser, If required by the purchaser, the Vendor shall insure the plant at the cost of the purchaser, Provided that if the delay in accepting delivery is due to one of the circumstances mentioned in clause 10 and the Vendor is in a position to store it in his premises without prejudice to his business, the cost of storing the plant shall not be borne by the purchaser.

7.7 Unless the failure of the purchaser is due to any of the circumstances mentioned in Clause 9, the Vendor may require the purchaser by notice in writing to accept delivery within a reasonable time.

If the purchaser fails for any reason whatever to do so within such time, the Vendor shall be entitled by notice in writing to the purchaser, and without requiring the consent of any Court, to terminate the Contract in respect of such portion of the plant as is by reason of the failure of the purchaser aforesaid not delivered and thereupon to recover from the purchaser any loss, suffered by reason of such failure up to an amount not exceeding the value of the plant, the delivery of which has not been accepted.

8. Terms of Payment:

8.1 Subject to any deductions which the purchaser may be authorized to make under the contract, or subject to any additions or deductions provided for under clause 2.3 above, the contractor shall be entitled strictly to payment as follows:-

i. **Ten (10) percent** of contract value as advance payment within sixty (60) days from the Contractor's correct application of payment (invoice) against submitting of the following:

- Receiving accepted Advance Payment Bank Guarantee in the form given for the same advance payment value and same contract currency.
- Receiving accepted Performance Guarantee as specified in Instructions to Tenderers.
- Commercial Invoice or payment request in two originals plus four copies.
- Interim payment certificate issued and signed by NEPCO in one original and four copies.

ii. **Seventy (70) percent** of contract value as interim payment for shipment of material within sixty (60) days from the Contractor's correct application of payment (invoice) supplemented with the following documents:

- Commercial Invoice in two originals plus four copies, showing commodity, description, quantity, unit price, total price and delivery base, reference to items as per schedule of prices.
- Interim payment certificate issued and signed by NEPCO in one original and four copies.
- Packing list in one original plus four copies.
- Bill of lading – three negotiables, four non-negotiable.
- Inspection certificate and / or waived inspection certificate issued and signed by NEPCO (one original) and /or test certificates, two copies and /or shipping release issued and signed by NEPCO – two copies.
- Certificate of origin in one original and four copies.
- Vessel certificate less than 15 years old (Certificate).

iii. **Fifteen (15) percent** of contract value as interim payment for receipt at NEPCO's warehouses of material within sixty (60) days from the Contractor's correct application for interim payment (invoice) supplemented with the following documents:

- Receipt of an invoice or payment request in one original and four copies for the correct amount.
- Receiving report issued and signed by NEPCO committee as evidence that the material has been received at NEPCO's warehouses in satisfactory condition.
- Interim payment certificate issued and signed by NEPCO.

iv. **The remaining Five (5) percent** of contract value will be paid against the interim certificate to the Contractor after 60 days from the date of expiring of the maintenance period or (depends on the employer approval) against the submitting of maintenance bond of (5%) of the Contract amount, for the purpose of replacement and\or adjustment of defective material.

Submission of shipping Documents & Invoices:

Shipping documents must be submitted early for clearance purposes.

Shipping documents shall be submitted to the bank if payment made by CAD or LC. If payment is through bank transfer the shipping documents shall be submitted directly to NEPCO as specified.

Shipment:

Shipment by sea freight must be on direct and regular (liner) vessel less than 15 years old at the time of shipment. The vessel shall be classified and certified in accordance with the (ISM) code and shall be a member in the P&I club.

If the Contract has been terminated the claim for termination costs shall be accompanied by:

1) Written justification by Contractor supporting in detail the claimed charge.

2) Either written concurrence by the Employer to the Contractor's claim or a certified copy of an arbitration award.

If the Contractor claims payment for suspension of the works the claim for suspension costs shall be accompanied by:

1) Written justification by the Contractor supporting in detail the claimed charge.

2) Either written concurrence by the Employer to the Contractor's claim or a certified copy of an arbitration award.

8.2 All bank charges, commissions and expenses inside and outside Jordan are to be for the vender account.

8.3 If delivery has been made before payment of the whole sum payable under the contract, plant delivered shall, to the extent permitted by the law of the country where the plant is situated after delivery, remain the property of the vendor until such payment has been effected. If such law does not permit the vendor to retain the property in the plant, the vendor shall be entitled to the benefit of such other rights in respect thereof as such law permits him to retain. The purchaser shall give the vendor every assistance in taking any measures required to protect the vendor’s right of property or such other rights as aforesaid.

8.4 A payment conditional on the fulfillment of an obligation by the vendor shall not be due until such obligation has been fulfilled, unless the failure of the vendor is due to an act or omission of the purchaser.

8.5 If the purchaser delays in making any payment, the vendor may postpone the fulfillment of his own obligations until such payment is made, unless the failure of the purchaser is due to an act or omission of the vendor.

8.6 If delay by the purchaser in making any payment is due to one of the circumstances mentioned in clause 10, the vendor shall not be entitled to any interest on the sum due.

8.7 Save as aforesaid, if the purchaser delays in making any payment, the vendor shall on giving to the purchaser within a reasonable time notice in writing be entitled, and without requiring the consent of any court, to terminate the contract and thereupon to recover

from the purchaser the amount of his loss up to the value of the plant, the payment for which has been unreasonably delayed.

9. Guarantee:

9.1 Subject as hereinafter set out, the Vendor undertakes to remedy any defect resulting from faulty design, materials or workmanship.

9.2 This liability is limited to defects which appear during the period (hereinafter called the Guarantee period) of **(12) months after receipt of last consignment at site or NEPCO warehouses.**

9.3 In fixing this period due account has been taken of the time normally required for transport as contemplated in the Contract.

9.4 In respect of such parts (whether of the Vendor's own manufacture or not) of the plant as are expressly mentioned in the Contract. The Guarantee Period shall be such other period (if any) as specified in respect of each of such parts.

9.5 In order to be able to avail himself of his rights under this clause the purchaser shall notify the Vendor in writing without delay of any defects that have appeared and shall give him every opportunity of inspecting and remedying them.

9.6 On receipt of such notification the Vendor shall remedy the defect forthwith and at his own expense. Save where the nature of the defect is such that it is appropriate to effect repairs on site, the Purchaser shall return to the Vendor any part in which a defect covered by this Clause has appeared, for repair or replacement by the Vendor, and in such case the delivery to the purchaser of such properly repaired or a part in replacement thereof shall be deemed to be a fulfillment by the Vendor of his obligations under this paragraph in respect of such defective part.

9.7 The guarantee Period is based on the continuous use of the plant in service for 24 hours every day.

9.8 The Vendor shall bear all the costs and risks of the transport of defective parts or equipment's and their replacements.

9.9 Where, in pursuance of paragraph 7 hereof, repairs are required to be effected on site, the conditions covering the attendance of the Vendor's representatives on site shall be such as may be specially agreed between the parties.

9.10 Defective parts replaced in accordance with this Clause shall be placed at the disposal of the Vendor.

9.11 If the Vendor refuses to fulfil his obligations under this Clause or fails to proceed with due diligence after being required to do so, the purchaser may proceed to do the necessary work at the Vendor's risk and expense.

9.12 The Vendor's liability does not apply to defects arising out of materials provided, or out of a design stipulated, by the purchaser.

9.13 The Vendor's liability shall apply only to defects that appear under the conditions of operation provided for by the Contract and under proper use, it does not cover defects due

to causes arising after the risk in the Plant has passed in accordance with Clause 6. In particular it does not cover defects arising from the purchaser's faulty maintenance or erection, or from alterations carried out without the Vendor's consent in writing, or from repairs carried out improperly by the purchaser, nor does it cover normal deterioration.

9.14 Save as in this Clause expressed, the Vendor shall be under no liability in respect of defects after the risk in the plant has passed in accordance with Clause 6, even if such defects are due to causes existing before the risk so passed, It is expressly agreed that the purchaser shall have no claim in respect of personal injury or of damage to property not the subject matter of the circumstances of the case that the Vendor has been guilty of gross misconduct.

9.15 "Gross misconduct" does not comprise any and every lack of proper care or skill, but means an act or omission on the part of the Vendor implying either a failure to pay due regard to serious consequences which a conscientious contractor would normally foresee as likely to ensure, or a deliberate disregard of any consequences of such act or omission.

9.16 A fresh guarantee period equal to that stated in paragraph 2 hereof shall apply, under the same terms and condition as those application to the original plant, to part supplied in replacement of defective part or to part renewed in pursuance of this clause this provision shall not apply to the remaining part of the plant, the guarantee period of which shall be extended only by a period equal to the period during which the plant is out of action as a result of defect covered by this clause.

10. <u>Relief's:</u>

10.1 The following shall be considered as cases of relief if they intervene after the formation of the Contract and impede its performance. Industrial disputes and any other circumstances (e.g., fire, mobilization, requisition, embargo, currency restrictions, insurrection, shortage of transport, general shortage of materials and restriction in the use of power) when such other circumstances are beyond the control of the parties.

10.2 The party wishing to claim relief by reason of any of the said circumstances shall notify the other party in writing without delay on the intervention and on the cessation thereof.

10.3 The effects of the said circumstances so far as they affect the timely performance of their obligations by the parties, are defined in Clauses 7 and 8. Save as provided in paragraphs 7.5, 7.7., and 8.7, if, by reason of any of the said circumstances, the performance of the Contract within a reasonable time becomes impossible, either party shall be entitled to terminate the Contract by notice in writing to the other party without requiring the consent of any court.

10.4 If the Contract is terminated in accordance with paragraph 3 hereof, the division of the expenses incurred in respect of the Contract shall be determined by agreement between the parties.

10.5 In default of agreement, it shall be determined by the arbitrator which party has been prevented from performing his obligations and that party shall bear the whole of the said expenses. Where the purchaser is required to bear the whole of the expenses and has before termination of the Contract paid to the Vendor more than the amount of the Vendor's expenses, the purchaser shall be entitled to recover the excess.

If the arbitrator determines that both parties have been prevented from performing their obligations, he shall apportion the said expenses between the parties in such manner as to him seems fair and reasonable, having regard to all the circumstances of the case.

10.6 For the purposes of this Clause "expenses" means actual out-of- pocket expenses reasonably incurred, after both parties shall have mitigated their losses as far as possible. Provided that as respects plant delivered to the purchaser the Vendor's expenses shall be deemed to be that part of the price payable under the Contract which is properly attributable thereto.

11. Limitation Of Damages:

11.1 Where either party is liable in damages to the other, these shall not exceed the damage which the party in default could reasonably have foreseen at the time of the formation of the Contract.

11.2 The party who sets up a breach of the Contract shall be under a duty to take all necessary measures to mitigate the loss which has occurred provided that he can do so without unreasonable inconvenience or cost. Should he fails to do so, the party guilty of the breach may claim a reduction in the damages.

12. Rights At Termination:

12.1 Termination of the contract, from whatever cause arising, shall be without prejudice to the rights of the parties occurred under the Contract up to the time of termination.

13. Arbitration And Law Applicable:

13.1 If any dispute, question or controversy shall arise between the Purchaser and the Contractor concerning this Contract the matter in dispute shall be referred to an arbitration committee composed of three (3) arbitrators. One arbitrator shall be nominated by the Purchaser and one by the Contractor, and the third arbitrator shall be appointed by both parties.

If either party fails to appoint his arbitrator within one month of the appointment of the arbitrator by the other party, or if the two parties fail to agree on the third arbitrator within two months of the date of the request to refer the dispute to arbitration, such arbitrator shall be appointed by the president of the highest Court in Jordan at the request of either or both parties.

13.2 The decision of the arbitrators shall be final and binding on both the purchaser and the Contractor. Any such reference shall conform to the statutory enactment or regulation governing arbitration's as may be in force in Jordan at the time. The assessment of costs incidental to the reference and award respectively shall be at the discretion of the arbitration committee.

14. Declaration for Prohibited Payments

A - The tenderer shall represent and warrant to The Employer in the Declaration for Prohibited Payments attached to this Tender, that no direct or indirect commissions, consulting fees, Tender fees or other payments, and no inducements or the giving of anything of value, (collectively referred to as "Prohibited Payments"), have been made or promised to be made, directly or indirectly, by or on behalf of the Contractor, its sub-Contractors and its or their employees, agents or representatives, to The Employer including without limitation any official, employee, agent or representative (whether or not acting in an official capacity) of The Employer, in connection with the solicitation, bidding, negotiation, award or performance of this Contract; and hereby covenants and agrees that no Prohibited Payments shall be made or promised to be made, directly or indirectly, by or on behalf of the Contractor, its sub-Contractors and its or their employees, agents or representatives, to any official, employee, agent or representative (whether or not acting in an official capacity) of The Employer in connection with the amendment, modification, renewal, extension or performance of this Contract.

B - In the event of any violation or breach of the provisions of paragraph A of this clause, The Employer at its sole option and discretion shall take all or any of the following Actions: (i) terminate the Contract; and /or (ii) deduct from all or any payments due to the Contractor under this Contract an amount equal to two times the amount of any Prohibited Payment; and/or (iii) demand that the Contractor pay forthwith to the Employer, which demand the Contractor hereby irrevocably agrees to honour, an amount equal to two times the amount of any Prohibited Payment, it being the intention, subject to paragraph D below, that the aggregate of all amounts to which The Employer is entitled under paragraph B shall not exceed the amount which is two times the amount of all Prohibited Payments.

C - The Tenderer agrees that provisions substantially similar (but in no event less restrictive) to paragraphs A and B above shall be incorporated by the Contractor in all agreements with the Contractor's Sub-Contractors, suppliers or contractors arising out of or relating to this Contract, and which provisions shall also expressly provide that the same may, at The Employers sole discretion, be enforced directly by The Employer. The Tenderer further agrees promptly to supply to The Employer true and complete copies of such agreements, forthwith upon entering into by the Contractor of such agreements.

D - The rights and remedies of The Employer under this clause are in addition to and not in derogation of any other rights The Employer may have under applicable law or regulations.

E - This clause shall survive the termination of the Contract.

15. Declaration for other Payments

A- The Tenderer shall fully disclose in the Declaration for Other Payments attached to this Tender any and all direct or indirect commissions, consulting fees, agent fees, tenders fees or other payments, or inducements or the giving of anything of value (collectively referred to as "Other Payments") to third parties other than any official employee, worker, representative or agent of The Employer, including without limitation a detailed description of the basis therefore, made or to be made, directly or indirectly, by or on behalf of the Contractor, its sub-contractors and its or their employees, agents or representatives, in connection with the solicitation, bidding, negotiation, award or performance of this Contract, and hereby covenants and agrees promptly to disclose to The Employer in writing the existence of any Third Party Payments including without limitation, a detailed description of the basis therefore, upon the earliest to occur of the Contractor making or being obligated to make, any such Third Party Payments.

B- In the event of any violation or breach of the provisions of paragraph A of this clause, The Employer at its sole option and discretion shall take all or any of the following Actions: (i) terminate the Contract; and /or (ii) deduct from all or any payments due to the Contractor under this Contract an amount equal to two times the amount of any Third Party Payments; and/or (iii) demand that the Contractor pay forthwith to the Employer, which demand the Contractor hereby irrevocably agrees to honour, an amount equal to two times the amount of any Third Party Payments, it being the intention, subject to paragraph D below, that the aggregate of all amounts to which The Employer is entitled under paragraph B shall not exceed the amount which is two times the amount of all Third Party Payments.

C- The Tenderer agrees that provisions substantially similar (but in no event less restrictive) to paragraphs A and B above shall be incorporated by the Contractor in all agreements with the Contractor's Sub-Contractors, suppliers or Contractor arising out of or relating to this Contract, and shall also expressly provide that the same may, at The Employers sole discretion, be enforced directly by The Employer. The Contractor further agrees promptly to supply to The Employer true and complete copies of such agreements, together with evidence of their inclusion in such agreements, forthwith upon entering into by the Contractor of such agreements.

D- Nothing in this Section shall expressly or impliedly make lawful or permissible any Third-Party Payments that are otherwise prohibited under applicable law or regulations. The rights and remedies of The Employer under this clause are in addition to and not in derogation of any other rights The Employer may have under applicable law or regulations.

This clause shall survive the termination of the Contract

16. Force Majeure:

16.1 A Party's failure or delay in performing any of its obligations under this Contract will not be deemed a breach of this Contract to the extent that such failure or delay is directly due to any Force Majeure Event.

16.2 For the purposes of this Clause, "Force Majeure Event" means an event or situation beyond the control of a Party that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of a Party. Such events may include, but are not limited to, acts of a Party in its, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

16.3 If a Force Majeure Event arises, the affected Party shall promptly notify the other Party in writing of such condition and the cause thereof. Unless otherwise directed by the other party in writing, the affected Party shall continue to perform its obligations under the Contract as far as is reasonably practicable, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure Event.

Section 5

Technical Specifications

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

1. - GENERAL CLAUSES

1.1 - Nature of work

This Specification provides for the design, manufacture, testing in factory, packing for export, supply CFR (C&F - cost and freight) Aqaba-Jordan, setting to work at site and **warranty for a period of 12 calendar months from the date of receipt the last consignment of 132KV Disconnectors at site or NEPCO warehouses.**

1.2 - Extent of work

The Contract Works to be supplied shall include all work incidental thereto whether specified in detail or not and in general is to be carried out by the Contractor in accordance with the Conditions of Contract and shall comprise the following: -

1.2.1 - Definite work. The design, manufacture, testing in factory, supply CFR Aqaba, setting to work in accordance with the Conditions of Contract and this Specification at the prices stated in the Schedules, on the following basis: -

Work at fixed schedule prices. The disconnectors and ancillary items of which the numbers, quantities and details are specified in the Schedules, the type(s), voltage and rating(s) as described and of which particulars of the detailed equipment are given, such equipment including all accessories, wiring

1.2.2 - Work at the option of the Employer. This shall include but not be limited to:

i. **Spare apparatus and materials**. The manufacture, testing, supply CFR Aqaba may require in accordance with the Conditions of Contract at the prices stated in the Schedules, of such quantities of the apparatus and materials enumerated and such repeats (if any) thereof as the Employer shall order from the Contractor at any time before the expiration of the Defects Notification Period of the Definite Work.

ii. **Tools and appliances.** The supply CFR Aqaba may require in accordance with the Conditions of Contract at the prices stated in the Schedules, of such quantities of the apparatus enumerated and such repeats (if any) thereof as the Employer shall order from the Contractor at any time before the expiration of the Defect Notification Period of the Definite Work.

Each separate order for Work at the Option of the Employer shall constitute a Section for the purpose of payment and taking over.

1.4 - Site Access

Aqaba, Jordan's only seaport can be reached by sea via the Red Sea and the Straits of Tiron. Amman can be reached by road from Aqaba or by air directly from Europe and other countries.

Access to all substation sites is available by existing roads. Rail access is not available at these sites.

1.5 - General particulars and guarantees

The Contract Works shall comply with the general particulars and guarantees specified in the Schedules.

All plants and apparatus supplied under this Contract shall be to approval.

The Contractor shall be responsible for any discrepancies, errors or omissions in the particulars and guarantees, whether or not such particulars and guarantees have been approved by the Engineer.

1.6 - Compliance with Specification

Notwithstanding any description, drawings or illustrations which may have been submitted with the tender, all details other than those shown in the Schedule of Departures from the Specification will be deemed to be in accordance with the Specification and the standard specifications and codes referred to therein.

No departures from the Specification, except those shown in the Schedule of Departures and approved by the Employer, shall be made without the written approval of the Engineer.

1.7 - Variance with Conditions of Contract

In the event of there being any inconsistency between the provisions of this Specification and the Conditions of Contract, the provisions of the Conditions of Contract shall prevail and shall be considered as incorporated in the Contract.

1.8 – Quality Assurance

Samples of all materials used shall be taken and tests performed to ensure compliance with the specifications. All test results shall be recorded and test certificates supplied as required. Samples of materials and workmanship shall be provided to the Engineer from manufacturers as required.

All records shall be kept available for inspection by the Engineer

1.9 - Places of manufacture

The manufacturer and places of manufacture, testing and inspection of the various portions of the Contract Works shall be stated in the Schedules.

1.10 - Sub-contracts

The Contractor shall supply three copies of all orders placed with sub-contractors. Information is to be given on each sub-order sufficient to identify the material or equipment to which the sub-order relates and to notify the sub-contractor that the conditions of the Specification apply.

1.11 - Dates for completion

The dates of readiness for inspection and testing, access to site(s), delivery and completion of the various Sections of the Contract Works shall be as stated in the Schedules.

1.12 - Access to manufacturer's works

Access to the Contractor's and sub-contractor's works shall be granted to the representatives of the Engineer for the purpose of inspection, testing and ascertaining progress.

1.13 - Programme, progress reports and meetings

The Contractor shall submit for approval within 1 month of the starting date four copies of an outline production and delivery chart. Within a further period of one month the Contractor shall provide four copies of a detailed programme in a form to be specified by the Engineer showing plant manufacture and delivery; this programme shall also include details of drawing submission and circuit outage requirements.

The Contract Works of this Specification shall be incorporated in the supply systems with the minimum of interruption of supply and the Contractor shall arrange his Programme of Work, in conjunction with the Engineer, to obtain maximum availability of plant at all times.

If at any time during the execution of the Contract it is found necessary to modify the approved chart, the Contractor shall inform the Engineer and submit a modified chart for approval. Such approval shall not be deemed to be consent to any amendment of the completion date stated in the Schedules.

At monthly intervals after approval of the programme chart the Contractor shall submit to the Engineer three copies of written detailed progress reports in an approved form, indicating the stage reached in the design, ordering of material, manufacture and delivery of all components of plant.

The progress reports shall include good quality colour photographs of approximately half-plate size to show details of the required equipment. A minimum of ten photographs shall be incorporated.

If during execution of the Contract the Engineer considers the progress position of any section of the work to be unsatisfactory, he will be at liberty to call such meetings, either at the Amman Office or at Site, as deemed to be necessary. If required by the Engineer a responsible representative from the Contractor's works shall attend such meetings.

1.14 - Testing and inspection

The Contractor shall carry out the tests stated in accordance with the conditions of this Specification and, without extra charge, such additional tests as in the opinion of the Engineer are necessary to determine that the Contract Works comply with this Specification under either test (in manufacturer's works, on the Site or elsewhere) or ordinary working conditions.

Type tests may be omitted at the discretion of the Engineer if satisfactory evidence is given that tests already made.

All materials used shall be subjected to and shall withstand satisfactorily such routine tests as are customary in the manufacture of the types of plant included in the Contract Works.

All tests shall be carried out to the Satisfaction of the Engineer and in his presence, at such reasonable times as he may require, unless agreed otherwise.

Not less than 30 days' notice of all tests shall be given to the Engineer in order that he may be represented if he so desires. Failure of the Contractor to give such notice which results in a delay in the completion of the tests cannot be used by the Contractor as a reason for failure to meet the overall completion date and any extra costs incurred by the Contractor are not recoverable. As many tests as possible shall be arranged together. Three copies of the Contractor's record of tests shall be supplied to the Engineer.

Measuring apparatus shall be approved by the Engineer and if required shall be calibrated at the expense of the contractor at an approved laboratory.

The Contractor shall be responsible for the proper testing of the work completed or plant or materials supplied by a sub-contractor to the same extent as if the work, plant or materials were completed or supplied by the Contractor himself.

All apparatus, instruments and connections required for the above tests shall be provided by the Contractor but the Employer will permit the Contractor to use for the tests on site any instruments and apparatus which may be provided permanently on site subject to the operation of the system and the carrying out of other Contracts and conditional upon the Contractor accepting liability for any damage which may be sustained by the Employer's equipment during the test.

The Employer is responsible to provide on-site electrical energy for the purpose of approved preliminary tests and for the official tests.

Any costs incurred by the Employer or the Engineer in connection with inspection and re-testing as a result of a failure of the subject under test, shall be to the account of the Contractor.

No inspection or lack of inspection or passing by the Engineer of work, plant or materials, whether carried out or supplied by the Contractor or sub-contractor, shall relieve the Contractor from his liability to complete the Contract Works in accordance with the Contract or exonerate him from any of his guarantees.

1.15 - Language and system of units

The English language shall be used in all written communications between the Employer the Engineer and the Contractor with respect to the services to be rendered and with respect to all documents and drawings procured or prepared by the Contractor pertaining to the work, unless otherwise agreed by the Engineer.

It is required that all equipment labels or plates and the Operating and Maintenance Instructions be written in English.

The design features of all equipment shall be based on the SI system of units.

1.16 – Drawings and models

A list of the drawings attached to the Specification is given in the Schedules.

A list of the drawings and models (if any) to be submitted by the Contractor with his Tender and a list of drawings, and models (if any) to be submitted after the Commencement Date, are also given in the Schedules. The Contractor shall also provide free of charge any additional drawings and/or copies of any drawing required by the Engineer.

The Contractor shall submit all drawings and models for approval, a period of Four weeks from receipt of the drawings by the engineer shall be allowed in the program for checking and permit modifications to be made if such are deemed necessary, and the drawings and models to be re-submitted without delaying the initial deliveries or completion of the Contract Works.

Three copies of all drawings shall be submitted for approval and three copies of any subsequent revision. Following approval, four further copies will be required for distribution to the Employer and to site for installation.

All dimensions marked on the drawings shall be considered correct although measurement by scale may differ therefrom. Detailed drawings shall be worked to where they differ from general arrangement drawings.

All detailed drawings submitted for approval shall be to scale not less than 1:20. All-important dimensions shall be given and the material of which each part is to be constructed shall be indicated.

Drawings and models submitted by the Contractor and approved by the Engineer shall not be departed from without the instruction in writing of the Engineer.

The Contractor shall be responsible for any discrepancies or errors in or omissions from the drawings, whether such drawings have been approved or not by the Engineer. **Approval given by the Engineer to any drawing shall neither relieve the Contractor from his liability to complete the Contract**

Works in accordance with this Specification and the Conditions of Contract nor exonerate him from any of his guarantees.

If the Contractor needs urgent approval of any drawing in order to avoid delay in the completion of the Contract Works, he shall advise the Engineer to such effect when submitting the drawings.

All drawings and models shall be submitted in accordance with the provisions of this Specification and shall become the property of the Employer.

1.17 – Operating and maintenance instructions

When the general arrangements and details of the 132 Kv disconnectors have been finalised and not later than three months before erection commences, the contractor shall submit to the Engineer for approval a fully detailed operating and maintenance instruction manual.

The details shall cover all associated ancillary equipment as supplied under the contract. It will not be sufficient to incorporate manufacturer's standard brochures as part of the text unless they refer particularly to the equipment supplied and are free of extraneous matter.

The information provided should include essential flow and circuit diagrams, pipe works general arrangement and detailed drawings of the installation, make mention of special materials were used and include schedules of lubricants, diagrams should be reduced to a convenient size and bound into the volume and not inserted into cover pockets.

If the complete text of the manual is unduly bulky, then this shall be appropriately sub-divided and produced in multi – volume form. When approved three copies of the complete text, diagrams and drawings as made up in the draft form shall be handed to the Engineer for use during erection commences.

1.18 - Spares

The Contractor shall list details of recommended spare parts together with their individual prices. The Employer may order all or any of the parts and those ordered within three months of placing the Contract shall be available at the time of commissioning the plant.

A separate list of spares shall include consumable items sufficient for a plant operational period of three years after commissioning, as well as essential replacement parts to cover the event of a break-down which would affect the availability or safety of the plant.

Any spare apparatus, parts and tools shall be subject to the same specification, tests and conditions as similar material supplied under the Definite Work section of the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identification and prepared for storage by greasing or painting to prevent deterioration.

All spare apparatus or materials containing electrical insulation shall be packed and delivered in cases suitable for storing such parts or material over a

period of years without deterioration. Such cases shall have affixed to both the underside and topside of the lid a list detailing its contents. The case will remain the property of the Employer.

1.19 - Compliance with regulations

All apparatus and material supplied, and all work carried out shall comply in all respects with such of the requirements of the Regulations and Acts in force in the country of the Employer as are applicable to the Contract Works and with any other applicable regulations to which the Employer is subject.

1.20 - Fire precaution

All apparatus, connections and cabling shall be designed and arranged to minimize the risk of fire and any damage which might be caused in the event of fire.

1.21- Packing, shipping and transport

The Contractor shall be responsible for the packing, loading and transport of the plant from the place of manufacture, whether this is at his own works or those of any supplier, to CFR Aqaba –Jordan.

All apparatus shall be carefully packed for transport by sea, rail and road as necessary and in such a manner that it is protected against climatic conditions.

Where oil for the first filling is to be provided it shall be supplied in non-returnable drums.

Precautions shall be taken to protect parts containing electrical insulation against the ingress of moisture.

All bright parts liable to rust shall receive a coat of anti-rusting composition and shall be suitably protected. The machined face of all flanges shall be protected by means of a blank disc bolted to each face.

Where appropriate all parts shall be boxed in substantial crates or containers to facilitate handling in a safe and secure manner. Each crate or container shall be marked clearly on the outside of the case to show where the mass is bearing and the correct position for the slings. Each crate or container shall also be marked with the notation of the part or parts contained therein, contract number and port of destination, and shall become the property of the Employer after delivery.

The Engineer may require to inspect and approve the packing before the items are dispatched but the Contractor shall be entirely responsible for ensuring that the packing is suitable for transit and such inspection will not exonerate the contractor from any loss or damage due to faulty packing.

Any damage due to defective or insufficient packing shall be made good by the Contractor at his own expense and within reasonable time when called upon by the Employer to do so. Three copies of complete packing lists showing the number, size, marks, mass and contents of each package shall be posted to the Engineer immediately the material is dispatched.

The Contractor shall inform himself fully as to all relevant transport facilities and requirements and loading gauges and ensure that the equipment as packed for transport shall conform to these limitations.

1.22 - Erection and shipping marks

Before leaving the Contractor's Works all apparatus and fittings shall be painted or stamped in two places with a distinguishing number and/or letter corresponding to the distinguishing number and/or letter on an approved drawing and material list.

All members comprising multipart assemblies, e.g., steel frameworks, piping installations etc. shall be marked with distinguishing numbers and/or letters corresponding to those on the approved drawings or material lists. These erection marks, if impressed before painting or galvanising, shall be clearly readable afterwards.

The erection marks on galvanized material shall be stamped before galvanizing and shall be clearly legible after galvanizing.

Colour banding to an approved code shall be employed to identify members of similar shape or type but of differing strengths or grades.

All markings shall be legible; weatherproofed tags, where used, shall be durable, securely attached and duplicated.

Prior to dispatch each separate box, crate or package of plant shall be clearly labelled in the English language and bear the markings shown on the appropriate tender drawing.

Marking shall be by means of block letters not less than 13 mm high, stencilled on the box, crate or package with black paint in an easily read location. When stencilling is not possible the information shall be marked on a durable metal tag that shall be securely wired to the box, crate or package.

1.23 - Padlocks

When required by the specification, non-ferrous (brass) padlocks with different key changes and three keys for each lock and a master key for each station shall be subjected to approval and provided under this contract.

The padlocks and keys shall be engraved with a suitable identify code or inscription

Cabinets for the accommodation of padlocks and keys, whilst not in use, shall be provided and shall be suitably labelled so that keys will be readily identifiable.

1.24 – Locking Facilities

Locking facilities shall be provided on each item of substation equipment as detailed below and shall be additional to the mechanical interlocking devices where specified.

Locks and keys shall be in accordance with the requirements of this specification.

Where a mechanism is to be locked in a specific position, the locks shall be fitted to that part of the mechanism where the operating power is applied and not remote or ancillary linkages.

The following locking facilities shall be provided:

(A) All Busbar disconnectors switches in both open and closed positions.

(B) All Line disconnectors switches in both open and closed positions.

(C) All Line earthing switches in both open and closed positions

Locks shall be designed construction and located on the equipment so that they will remain serviceable in the climatic conditions specified without operating or maintenance for continuous periods of up to two years and with suitable maintenance shall be fit for indefinite service.

1.25 - Spanners and special tools

A complete set of spanners shall be supplied to fit every nut and bolt head on the apparatus supplied under this Contract, together with all special tools required for the adjustment and maintenance of the equipment.

Eyebolts, which have to be removed after use, shall be accommodated in the cabinets.

Spanners and other maintenance equipment provided under the Contract shall not be used for the purpose of erection of the contract Works.

Any special devices, slings or tackle necessary for the complete overhaul of the plant shall be provided under this contract.

Before delivery of any or all of these tools detailed technical data, catalogues, shall be submitted for Engineer approval.

1.26 – Contractors Responsibilities

Unless stated specifically to the contrary in the tender with full supporting explanations the Contractor will be deemed to have concurred as a practical manufacturer with the design and layout of the works as being sufficient to ensure reliability and safety in operation freedom from undue stresses and working plant.

The contractor shall include the whole of the works, which are described in or implied by the contract document. **All matters omitted from the contract document, which may be inferred to be obviously necessary for the efficiency, stability and completion of the work shall be deemed to be included in the contract price**.

Works shown upon the drawings and not mentioned or described in the specification and works described in the specification and not shown on the drawings will nevertheless be held to be included in this contract and their

execution shall be covered by the contract price in the same manner if they had been expressly shown upon the drawings and described in the specification.

The Engineer will set out a datum line from which the contractor on his own responsibility shall duly set out all other works but under the direction and to the satisfaction of the Engineer and according to the drawings supplied or approved by the Engineer.

1.27 - Design and standardization

The Contract works shall be designed to facilitate inspection, cleaning and repairs, and for operation where continuity of supply is the first consideration. All apparatus shall also be designed to ensure satisfactory operation in all atmospheric conditions prevailing at the Site(s) and during such sudden variation of load and voltage as may be met with under working conditions on the system, including those due to faulty synchronising and short circuit.

The design shall incorporate all reasonable precautions and provision for the safety of those concerned in the operation and maintenance of the Contract Works and of associated works supplied under other contracts.

All outdoor apparatus and fittings shall be designed so that water cannot collect at any point.

Cubicles and similar enclosed compartments shall be adequately ventilated to restrict condensation. All contactor or relay coils and other parts shall be suitably protected against corrosion.

All apparatus shall be designed to avoid the risk of accidental short circuit due to animals, birds, insects, mites, rodents or micro-organisms.

Corresponding parts shall be interchangeable. Where required by the Engineer the Contractor shall demonstrate this quality.

Fully detailed specifications and materials of several parts of the plants are to be submitted describing particularly the materials to be used.

All equipment is to operate without undue vibration and with the least possible amount of noise and is not to cause a nuisance.

1.28 - Topicalization

In choosing materials and their finishes, due regard shall be given to the humid tropical conditions under which equipment is to work, and the recommendations of British Standard Code of Practice 1014 or equivalent should be observed unless otherwise approved. Some relaxation of the following provisions may be permitted where equipment is hermetically sealed but it is preferred that tropical grade materials should be used wherever possible: -

a. Metals. Iron and steel shall generally be painted or galvanised as appropriate. Indoor parts may alternatively have chromium or copper-nickel plated or other approved protective finish. Small iron and steel parts (other than rustless steel) of all instruments and electrical equipment, the cores of electromagnets and the metal parts of relays and mechanisms shall

be treated in an approved manner to prevent rusting. Cores, etc., which are built up of laminations or cannot for any other reason be anti-rust treated, shall have all exposed parts thoroughly cleaned and heavily enamelled, lacquered or compounded.

When it is necessary to use dissimilar metals in contact, these should, if possible, so be selected that the potential difference between them in the electrochemical series is not greater than 0.5 volts. If this is not possible, the contact surfaces of one or both of the metals shall be electroplated or otherwise finished in such a manner that the potential difference is reduced to within the required limits, or if practicable, the two metals shall be insulated from each other by an approved insulating material or a coating of approved varnish compound.

b. Screws, nuts, springs pivots, etc. The use of iron and steel is to be avoided in instruments and electrical relays wherever possible. Steel screws, when used, shall be zinc, cadmium or chromium plated, or when plating is not possible owing to tolerance limitations, shall be of corrosion-resisting steel.

   All wood screws shall be of dull nickel-plated brass or of other approved finish. Instrument screws (except those forming part of a magnetic circuit) shall be of brass or bronze. Springs shall be of non-rusting material, e.g., phosphor-bronze or nickel silver, as fast as possible. Pivots and other parts for which non-ferrous material is unsuitable are to be of approved rustless steel where possible.

c. Fabrics, Cork, paper, etc. Fabrics, cork, paper and similar materials, which are not subsequently to be protected by impregnation, shall be adequately treated with an approved fungicide. Sleeving and fabrics treated with linseed oil or linseed oil varnishes shall not be used.

d. Wood. The use of wood in equipment shall be avoided as far as possible. When used, woodwork shall be of thoroughly seasoned teak or other approved wood that is resistant to fungal decay and shall be free from shakes and warp, sap and wane, knots, faults and other blemishes. All woodwork shall be suitably treated to protect it against the ingress of moisture and from the growth of fungus and termite attack, unless it is naturally resistant to those causes of deterioration. All joints in woodwork shall be dovetailed or tongued and pinned as far as possible. Metal fittings where used shall be of non-ferrous material.

e. Adhesives. Adhesives shall be specially selected to ensure the use of types which are impervious to moisture, resistant to mould growth, and not subject to the ravages of insects. Synthetic resin cement only shall be used for joining wood. Casein cement shall be used.

f. Rubber. Neoprene and similar synthetic compounds, not subject to deterioration due to the climatic conditions, shall be used for gaskets, sealing rings, diaphragms, etc., instead of the standard rubber-based materials.

1.29- Bolts and nuts

All bolts, studs, screw threads, pipe threads, bolt heads and nuts shall comply with the appropriate national standards for metric threads, or the technical equivalent.

Except for small wiring, current carrying terminal bolts or studs, for mechanical reasons, shall not be less than 6 mm in diameter.

All nuts and pins shall be adequately locked.

Wherever possible bolts shall be fitted in such a manner that in the event of failure of locking resulting in the nuts working loose and falling off, the bolt will remain in position.

All bolts, nuts and washers placed in outdoor positions shall be treated to prevent corrosion of the threads and electrolytic action between dissimilar metals.

Where bolts are used on external horizontal surfaces where water can collect, methods of preventing the ingress of moisture to the threads shall be provided.

Each bolt or stud shall project at least one thread but not more than three threads through its nut, except when otherwise approved for terminal board studs or relay stems. If bolts and nuts are placed so that they are inaccessible by means of ordinary spanners, special spanners shall be provided.

The length of the screwed portion of the bolts shall be such that no screw thread may form part of a shear plane between members.

Taper washers shall be provided where necessary.

1.30 - Galvanizing

All galvanizing shall be applied by the hot dip process and shall comply with BS EN ISO 1461 2009 but shall not be less than 0.61 kg/m2.

All welds shall be descaled, all machining carried out and all parts shall be adequately cleaned prior to galvanizing. The preparation for galvanizing and the galvanizing itself shall not adversely affect the mechanical properties of the coated material.

The threads of all galvanized bolts and screwed rods shall be cleared of spelter by spinning or brushing. A die shall not be used for cleaning the threads unless specially approved by the Engineer. All nuts shall be galvanized with the exception of the threads which shall be oiled.

Surfaces which are in contact with oil shall not be galvanized or cadmium plated.

Partial immersion of the work will not be permitted and the galvanizing tank must therefore be sufficiently large to permit galvanizing to be carried out by one immersion.

Galvanizing of wires shall be applied by the hot dip process and shall meet the requirements of BS EN 10244-2.

All steel and malleable iron parts including the supporting steelwork shall be galvanised.

Fittings made of steel or malleable iron shall be galvanized in accordance with this Specification. All bolts and nuts shall comply with the BS 4190 and shall, unless otherwise specified, be locked by locknuts. All bolt threads shall be greased before erection.

1.31 - Rating plates, nameplates and labels

Each main and auxiliary item of plant shall have permanently attached to it in a conspicuous position, a rating plate of indelible material upon which shall be engraved any identifying name, type or serial number, together with details of the loading conditions under which the item of plant has been designed to operate, and such diagram plates as may be required by the Engineer or Employer.

All items of plant shall be provided with a nameplate or label indicating, where necessary, its purpose and service position. The inscriptions shall be approved by the Engineer or be as detailed in the appropriate sections of this Specification. Each phase of alternating current and each pole of direct current equipment and connections shall be coloured in an approved manner to distinguish phase or polarity.

Phases of three phase alternating current systems shall be identified as follows: -

Phase	Colour
A R	Red
B S	Yellow
C T	Blue

Phases on outdoor equipment shall be identified by coloured discs attached to the structures at the following locations: -

(i) On tubular busbars midway between taps and at tapping points.

(ii) On tensioned busbars or other tensioned connection spans, next to the anchor points at one end of every span.

(iii) On line gantries, transformer gantries, next to the anchor points.

Such nameplates or labels shall be of non-hygroscopic, non-transparent or translucent heat resisting material with engraved lettering of a contrasting colour or, alternatively, in the case of indoor circuit breaker, starters, etc, of transparent plastic material with suitably coloured lettering engraved on the back. Size, colour and engravings shall be subject to acceptance by the Engineer.

All inscriptions shall be in English except for Danger and Warning signs which shall be in both English and Arabic. Colour for Danger and Warning signs shall be approved by the Engineer.

Items of plant, such as valves, which are subject to handling, shall be provided with an engraved chromium plated brass nameplate or label not less than 3 mm thick with engraving filled with enamel.

The interior of each piece of equipment shall be clearly marked to show the phases and for this purpose either coloured plastic discs screwed to fixed components or identification by means of plastic sleeve or tape shall be used.

1.32 Cleaning and painting

All paints shall be applied in strict accordance with the paint manufacturer's instructions.

All painting shall be carried out on dry and clean surfaces and under suitable atmospheric and other conditions in accordance with the paint manufacturer's recommendations.

Works processes:

a. All steelwork, plant supporting steelwork and metalwork, except galvanized surfaces or where otherwise specified, shall be shot blasted to BS 7079 (second quality finish) or Swedish Standard SA 2½.

b. All surfaces shall then be painted with one coat of epoxy zinc rich primer, two pack type, to a film thickness of 50 microns. This primer shall be applied preferably by airless spray and within twenty minutes but not exceeding one hour of shot blasting.

c. All rough surfaces of coatings shall be filed with an approved two pack filler and rubbed down to a smooth surface.

d. The interior surfaces of all steel tanks and oil filled chambers shall be shot blasted in accordance with BS 7079 (first quality finish) or Sa3 and painted within a period of preferably twenty minutes but not exceeding one hour with an oil resisting coating of a type and make to the approval of the Engineer.

e. The interior surfaces of mechanism chambers, boxes and kiosks, after preparation, cleaning and priming as required above, shall be painted with one coat zinc chromate primer, one coat phenolic based undercoating, followed by one coat phenolic based finishing paint to a light or white colour. For equipment for outdoor use this shall be followed by a final coat of anti-condensation paint of a type and make to the approval of the Engineer, to a light or white colour. A minimum overall paint film thickness of 150 microns shall be maintained throughout.

f. All steelwork and metalwork, except where otherwise specified, after preparation and priming as required above shall be painted with one coat metallic zinc primer and two coats of micaceous iron oxide paint to an overall minimum paint film thickness of 150 microns.

g. Galvanized surfaces shall not be painted in the works.

h. All nuts, bolts, washers etc, which may be fitted after fabrication of the plant shall be painted as described above after fabrication.

j. After erection at site, the interior surfaces of mechanism chambers and kiosks shall be thoroughly examined, and any deteriorated or mechanically damaged surfaces of such shall be made good to the full Specification described in paragraph e. above.

k. All surfaces of steelwork and metalwork included in paragraph f. above shall be thoroughly washed down, any deteriorated or otherwise faulty paint-work removed down to bare metal and made good to the full Specification described in paragraph f. then painted one further coat of phenolic based undercoating and one coat phenolic based hard gloss finishing paint to provide an overall minimum paint film thickness of 200 microns.

l. Any nuts, bolts, washers, etc, which have been removed during site erection, or which may be required to be removed for maintenance purposes shall be restored to their original condition.

m. All paintwork shall be left clean and perfect on completion of the works.

1.33 - Earthing

All metal parts, other than those forming part of any electrical circuit, shall be connected to the main earth system by means of a hard drawn high conductivity copper earth bar with a cross sectional area such that the current density is not greater than 200 A/mm^2 for 1 second fault durations and 115 A/mm^2 for 3 second fault durations with a minimum of 30 mm^2.

1.34 - Lubrication

Bearings which require lubrication either with oil or grease shall be fitted with nipples.

Grease lubricators shall be fitted with nipples complying with BS 1486. Where necessary for accessibility, the nipples shall be placed at the end of extension piping. The Contractor shall supply at least one grease gun for each type of nipple provided. Where more than one special grease is required a grease gun for each special type shall be supplied and permanently labelled.

1.35 – Cubicles (Cable boxes)

All disconnectors' cubicles (Cable boxes) shall be suitable for cables entering from above or below as may be specified. They shall be weatherproof, rodent and insect-proof and be complete with all gaskets, compression glands wiping glands and associated fittings as may be required to make-off the cables.

Gland plates shall be insulated from the cable boxes and in the case of single core cables shall be of non-magnetic, or insulating material. If metallic gland plates are used, single core cable glands shall be insulated from the gland plate. Gland plate insulation shall be capable of withstanding a dry high voltage test of 2000 volts ac for one minute.

Where cable boxes are provided for three core cables, the sockets on the outer phases shall be inclined towards the centre to minimise opening of the cable cores. Cable sockets shall be supplied under this Contract.

Cable boxes for voltages up to and including 3.3 kV shall be suitable for XLPE or PVC insulated steel-wire armoured PVC covered cables with copper conductors. The boxes shall be air insulated and designed to accommodate all the fittings required by the cable manufacturer. Front covers and gland plates shall be removable and a 12 mm diameter breathing hole covered with wire gauze shall be provided.

Cable boxes for 3.3 kV cables shall be air insulated and suitable for 3-core XLPE insulated, PVC covered cables with copper conductors.

Cable boxes shall be capable of withstanding on site the cable high voltage test level in accordance with IEC 60055, IEC 60141 or IEC 60502 as appropriate.

1.36 - Cubicle wiring

Cubicle connections shall be insulated with PVC to IEC 60227. Wires shall not be jointed or teed between terminal points. Bus wires shall be fully insulated and run separately from one another along the top or bottom of the cubicle. Fuses and links or miniature circuit breakers shall be provided to enable all circuits in a cubicle, except a lighting circuit, to be isolated from the bus wires.

The dc trip and ac voltage supplies and wiring to main protective gear shall be segregated from those for back-up protection and also from protective apparatus for special purposes. Each such group shall be fed through separate fuses or miniature circuit breakers from the bus wires. There shall not be more than one set of supplies to the apparatus comprising each group. All wires associated with the tripping circuits shall be provided with red ferrules marked "Trip".

It shall be possible to work on small wiring for maintenance or test purposes without making a switchboard dead.

Insulated stranded wire shall have not less than seven strands and each strand shall be not less than 0.67 mm diameter. If single conductor is used it shall be annealed copper of circular cross-sectional area of not less than 2.5 mm2.

Claw washers or crimped connectors of approved type shall be used to terminate all small wiring.

When connections rated at 380 volt and above are taken through junction boxes they shall be adequately screened and "DANGER" notices shall be affixed to the outsides of junction boxes or marshalling kiosk.

All metallic cases of instruments, control switches etc. mounted in cubical shall be connected by copper conductors of not less than 3.5 mm2 section to the nearest earth bar.

Where connections to other equipment and supervisory equipment are required, the connections shall be grouped together.

1.37- Termination of cables and wires

PVC sheathed auxiliary control and protection cables shall be terminated by compression glands complying with BS 6121 (or equivalent).

Auxiliary cables shall be terminated with compression type glands, clamps or armour clamps complete with all the necessary fittings.

Colours shall be marked on cable box tail ends and single core cables at all connecting points and/or any positions the Engineer may determine. Cable boxes shall be marked with stamped brass labels indicating the purpose of the supply where such supply is not obvious or where the Engineer may determine.

All cables shall be identified and shall have phase colours marked at their terminations.

All incoming and outgoing connections shall be terminated at a terminal block. Direct termination into auxiliary switches will not be accepted.

Where cable cores are liable to contact with oil or oil vapour the insulation shall be unaffected by oil.

1.38- Terminal boards and terminal blocks

Terminal boards shall be of good quality non-flammable insulating material, with a comparative tracking index (CTI) of not less than 500 V, relative to IEC 60112.

Terminal boards shall be spaced not less than 100 mm apart and the bottom of each board shall not be less than 200 mm above the incoming cable gland plate. Separate studs shall be provided on each terminal strip for internal connection and outgoing cables including spare cores.

Studs of stud type terminal boards shall be locked in the base to prevent turning and all connections shall be made on the front of the terminal board using lock nuts or lock washers.

Terminals shall be of the insertion clamp type incorporating captive pressure screws which do not bear directly on the wire but on a serrated clamping plate. The pressure screws shall have an inherent locking feature and terminal entries should be shrouded such that no current carrying metal is exposed.

Terminations shall be grouped according to function and labels shall be provided on the fixed portion of the terminal boards showing the function of the group.

The use of terminal boards as junction points for wires which are not required in the associated cubicle shall be avoided wherever practicable.

All terminal boards shall have a minimum of 20 per cent spare terminals.

Identification ferrules of the wires shall be according to the following:

For internal wires the ferrule shall have at each end the equipment and terminal number to which it connected and the other end equipment and terminal number (destination)

1.39 - Miniature circuit breakers, fuses and links

For protection and isolation of circuits associated with protection control and instruments, miniature circuit breakers or fuses and links should be used, although miniature circuit breakers are preferred.

Miniature circuit breakers shall be designed and tested in accordance with IEC 60947-5-1 and supplementary requirements of this specification. They shall be suitable for use over the full range of expected voltage variation as specified in the Schedules.

They shall be suitably rated for both the continuous and short circuit loadings of the circuits they are protecting, under all service and atmospheric conditions stated in the specification.

For three phase circuits, the miniature circuit breakers shall be of the three-pole type; for single phase circuits they shall be of the double pole type and for dc circuits they shall be of the double pole type.

Where miniature circuit breakers are used in circuits containing inductive loads, e.g., operating coils, it is essential that they are suitable for satisfactory operation in the circuit in which they are used, i.e., account is taken of the circuit time constant.

All miniature circuit breakers shall be provided with an auxiliary contact(s) for remote indication of circuit breaker operation.

Means shall be provided to prevent the miniature circuit breakers being inadvertently switched to the `OFF' position.

Miniature circuit breakers shall be mounted in such a manner so as to give easily visible indication in order to facilitate identification and easy replacement.

1.40 - Degrees of protection of the cable box

The following degrees of protection shall be provided in accordance with IEC 60947-1and IEC 60529.

For outdoor applications, IP 55.

Where the cable box must be designed to resist and protect against the rain water from all directions. And to resist and protect against the dust particles.

1.41 - Supply voltage

All incoming supplies of greater than 125 V to earth shall have their terminations shrouded by a suitable insulating material.

1.42- Auxiliary Switches

Where appropriate, each item of plant shall be equipped with all necessary auxiliary switches, contactors and mechanisms for indication, metering, control, interlocking, supervisory and other services. All auxiliary switches shall be wired up to a terminal board on the fixed portion of the plant, whether they are in use or not in the first instance.

All auxiliary switches and mechanisms shall be mounted in approved accessible positions clear of the operating mechanisms and shall be protected in an approved

manner. The contacts of all auxiliary switches shall be strong and shall have a positive wiping action when closing.

Banks of auxiliary switches and associated terminal boards shall be arranged to facilitate extension when required.

Apart from auxiliary switches used for the control and interlocking of disconnectors and earth switches **the following numbers of normally open (NO) and normally closed (NC) auxiliary switches are required:**

- **Busbar Disconnectors:** **10 NO and 10 NC**
  4 NO and 4 NC (Early Make & Late Brake)
- **Line Disconnectors:** **10 NO and 10 NC**
- **Earth switches:** **8 NO and 8 NC**

The timing of all auxiliary contacts shall suit the particular application.

Auxiliary switch repeat relays may only be used where the requirements cannot be met by actual auxiliary switch contacts and with the specific approval of the Engineer.

1.43– Allowance for Damage, Breakage and Loss

The contractor shall supply not less than 5 per cent of the net requirements for erection materials (insulators, hardware, fixing devices, cables, conductors, etc) as an allowance for damage, breakage and loss during erection.

1.44 – Standards

The contractor shall provide one copy of the latest standards (IEC, BS, ANSI, DIN or other applicable standards) which are applicable to this contract to the Employer.

2. - SUBSTATION DESIGN

2.1 – Interlocking

The applicable recommended interlocking facilities of IEC 62271 shall be provided. Padlocking to the requirements of this specification shall be provided for operational and maintenance security.

2.1.1 - Philosophy. All disconnecting and earthing devices within the substation shall be interlocked in a manner that ensures that they always operate safely. The system employed shall satisfy two distinct categories:

a. **Operational interlocking**. Interlocking associated with normal system operation and switching and intended to ensure that a predetermined switching sequence is satisfied. Such interlocking shall be achieved by electrical and mechanical means in a manner that permits the equipment to perform any safe operation. Contacts used for interlocking shall be auxiliary contacts of the main device which are directly driven.

b. **Maintenance interlocking**. Interlocking associated with a series of switching operations to render the equipment or sections of the

substation safe for access and maintenance by personnel. Such interlocking shall be achieved by mechanical interference type interlocks.

2.1.2 - Principles. The following assumptions shall be made:

a. Disconnectors are capable of switching the capacitive currents of associated connections.

b. Disconnectors have neither load making nor breaking capacity.

c. Disconnectors are not capable of making or breaking transformer magnetizing current.

d. Disconnectors are capable of the duty imposed when operated under parallel switching conditions.

e. It shall not be possible to close or open any earth switch unless the point of application is disconnected from all possible sources of supply, and the power operating devices of such disconnectors are selected to the local control position.

f. It shall not be possible to operate any disconnectors if an associated earth switch is already closed.

g. Disconnectors concerned with supplies from a remote point cannot be fully interlocked and shall carry a warning notice to this effect. Similar notices shall be applied to earth switches.

h. Circuit breakers shall be interlocked so that except under maintenance conditions are not possible to close a circuit breaker unless the select busbar and circuit disconnectors are closed.

3. – DISCONNECTORS AND EARTHING SWITCHES

3.1 - General Design

Disconnectors shall be provided and installed to permit maintenance of any section of the substation plant when the reminder is alive and shall be so located that the minimum safety clearance stated in latest standards IEC 61936-1, IEC 62271-1, IEC 62271-102&.

Disconnectors shall be suitable for outdoor installation, and shall be of the single throw double rotating post, horizontal centre-break type and shall be to the approval of the Engineer.

Disconnectors and earthing switches shall be designed in accordance with the requirements of the latest Standard IEC 61936-1, IEC 62271-1 &IEC 62271-102. They shall have high reliability during operation and shall require minimal maintenance and **shall have a long lifetime (M2 class)**.

Busbar disconnectors shall be without earthing switches. Overhead line disconnectors shall be fitted with approved three phase line earthing devices,

mechanically coupled or interlocked with the main disconnector so that the earthing device and main disconnector cannot be closed at the same time.

The air gap between terminals of the same pole with the disconnectors open shall be of a length to withstand a minimum impulse voltage wave of at least 115 per cent of the specified impulse insulation rating to earth.

Disconnectors shall be designed for rated current and live operation and will not be required to break current other than the charging current of open busbars and connections or load currents shared by parallel circuits.

Service conditions require that Disconnectors shall remain alive and in continuous service for periods of up to two years in the climatic conditions specified and without operation or maintenance. The contacts shall carry their rated load and short circuit currents without over-heating or welding and at the end of the two years period the maximum torque required at the operating handle to open a 3-phase disconnector shall not exceed 35kgm.

Main contacts shall be of the high-pressure line type and arcing contacts, if provided, shall be to the Engineer's approval.

Disconnector's mechanism could be manually operated (which is preferred) or motor driven type with facility for manual operation. Disconnectors shall be suitable for manual operation from ground level. Mechanisms shall be so designed that the disconnector cannot be opened by forces due to fault currents, winds, or during life washing for insulators and shall be self-locking in both the open and closed positions. The mechanism shall operate all three phases simultaneously. Earthing switches of the line disconnectors shall be manually operated.

Disconnectors shall be interlocked with the associated circuit breakers and other Disconnectors in each circuit to prevent the possibility of making or breaking load current.

All Disconnectors shall be provided with auxiliary contacts and wiring for "open" and "closed" position indication in the local substation plant house and at the remote supervisory control station where specified.

Disconnectors shall be designed with one operating mechanism for all three poles. operating mechanisms shall be of robust construction, carefully fitted to ensure free action and shall be unaffected by the climatic conditions at site. Mechanisms shall be as simple as possible and comprise a minimum of bearing and wearing parts. Approved grease lubricating devices shall be fitted to all principal bearings. The mechanisms shall be housed in a weatherproofed enclosure complete with auxiliary switches, terminal blocks and cable glands. All steel and malleable iron parts including the supporting steelwork shall be galvanised.

The power operating mechanisms shall be suitable for the operation from voltage specified in the Schedules of this Specification.

The disconnectors shall be suitable for slow closing operation. Manual operation of the disconnectors for maintenance purposes shall be provided.

The number of normally open and normally closed auxiliary switches required shall be as dictated by the particular scheme of application. Where any particular scheme requires special timing of auxiliary contacts, these shall be provided.

It is required that the manual effort to operate the disconnectors or earth switches shall not be greater than 150 N. There shall be adequate access for the manual operation.

In the case where the operating mechanism comprises an energy storage system followed by triggering for completion of the operation, the design shall exclude any possibility of operation by accidental triggering. Switch operation shall be effective only after full charging of the operating mechanism and after deliberate operator action.

The operating handles for manual operation of power operated mechanisms may be detachable, in which case. only three handles of each type are required.

The mounting of the Disconnectors should be Parallel Disconnectors. And disconnectors insulators shall be of the highest quality, made of brown-glazed porcelain and they shall be envisaged for the minimum creepage as required by schedule D.

Porcelain and flange shall be connected by Portland cement. The connection itself shall be treated with silicone, or some other adequate way, to prevent any retaining or intrusion of moisture. And should be suitable for live washing

The existing base or structure (as mentioned in schedule A) Will be used for Disconnector's support. So, the dimensions of the offered disconnectors should match the existing base or steel structures (as mentioned in Schedule A) related existing equipment in the substation, and the bidder has to take all necessary dimensions and information for all disconnectors and steel structures during the site visit (All dimensions of disconnectors, clamps and steel structures shall be taken by the bidder himself and it will be upon his responsibility during manufacturing), as mentioned in Item No. 6 (Pre-tender Meeting and Site Visit).

For the bidder reference, the dimensions of the base and existing busbar disconnectors are shown by figures 1, 2, 3, 4, and 5. The rated characteristics of disconnectors & earthing switches are given in by schedule D.

Mechanical strength of disconnectors shall correspond to the minimum number of operations cycles for M2 class as per IEC 62271.

Earthing switch electrical endurance type shall correspond to the minimum capability to withstand two short circuit making operations (E1 class as per IEC 62271).

3.2 – Operating Mechanism

Disconnector's mechanism could be manually operated (which is preferred) or motor driven type with facility for manual operation. Disconnectors shall be suitable for manual operation from ground level. Mechanisms shall be so designed that the disconnector cannot be opened by forces due to fault currents, winds, or during life washing for insulators and shall be self-locking in both the open and closed positions. The mechanism shall operate all three phases simultaneously. **Earthing switches of the line disconnectors shall be manually operated.**

The operating mechanisms (motor and manual) shall be designed so that any of its elements can be easily accessed for potential replacement.

Disconnectors & earthing switches shall be suitable for manual operation from the ground level. Disconnectors shall be equipped with a swing lever or crank for manual closing/opening without the need for opening of any door. Manual operating device shall be placed at readily accessible position.

Manual operating mechanism shall be of robust construction, simple as possible and composed of minimum bearing and wearing parts. Approved grease lubricating devices shall be fitted to all principal bearings. Manual mechanisms shall be so designed that the disconnector & earthing switch cannot be opened by forces due to fault currents, winds, or during life washing for insulators and shall be self-lockable in both the open and closed positions. Operating conditions require that disconnectors shall remain alive and in continuous service for periods of up to two (2) years in the climatic conditions at the Site and without operation or maintenance. At the end of the two (2) year period, the maximum torque required at the operating handle to open a 3-phase disconnector shall not exceed 35 kgm.

Operating mechanism cubicle shall be made of aluminium or stainless steel minimum thickness 2 mm. with degree of protection as per subclause 1.39 (Degrees of protection of the cable box).

For power supply of the disconnector operating mechanism motor (for motor driven type disconnector), the 110 V DC voltage shall be used. The same voltage (110 V DC) shall be used for the control and signalling circuits.

Design of the operating mechanism motor (for motor driven type disconnector) shall not require maintenance. Motor protection shall be provided by the adequate miniature circuit breaker (MCB), with the signalling contact. It is necessary to provide signalling of the MCB position.

The selector switch "Local/Manual/Remote" shall be installed on the operating mechanism cubicle (for motor driven type disconnector)

The operating mechanism cubicle and the cubicle shall contain, at least, the following auxiliary equipment:

- Heater with thermostat against condensation and on/off switch,
- Lighting,

For power supply of the above-mentioned disconnector operating mechanism auxiliary equipment, the 230 V AC shall be used. Protection of the circuit for power supply of operating mechanism auxiliary equipment shall be provided with the adequate miniature circuit breaker (MCB), with the signalling contact.

It shall be possible to mechanically block and padlock the disconnector and earth switch in either operational position.

For motor driven type disconnector means shall be provided so that the handle for manual operation cannot be inserted if selection switch is not in neutral position (manual position).and when the handle is inserted, electrical controls over disconnector shall not be possible regardless of the position of selector switch.

Cable entry into the operating mechanism cubicle shall be from the bottom side, through the cable glands, in order to avoid moisture ingress.

Cu busbar for earthing of the sheaths/armours of copper cables which enter the operating mechanism cubicle shall be installed at the bottom of the operating mechanism cubicle. An external earthing terminal shall be provided for the Cu earthing busbar. A detachable plate shall be provided at the operating mechanism cubicle bottom.

Operating mechanism cubicle shall be provided with access doors at the front. Doors and access covers shall not be secured by nuts and bolts but shall be fastened with integral handles with provision for locking.

3.3 – Control circuits and signalization:

Motor driven type disconnector shall be designed and equipped with, at least, the following control devices, which shall be located in/on the disconnector cubicle:

- Lockable rotary switch for manual closing/opening (3-position spring return to centre/neutral),
- Selector switch for selection of the control place “Local/Manual/Remote”. Position of the selector switch “Local/Manual/Remote” shall be signalized within the Control System.

Disconnectors and earthing switches shall be equipped with facility for manual operation with all required interlocks mentioned in subclause 3.2

The control circuits for motor driven type disconnector shall be designed to operate under the following conditions:

- Remotely, from control building (from mimic diagrams or via RTU/SAS, where available),
- Locally, by lockable rotary switch,
- Locally, by using the corresponding crank or lever which shall be inserted in an opening of the motorized mechanism to access the reduction gear coupling.

For remote signalization, at least, the following shall be provided:

- Position of disconnector & earthing switch,
- Tripping of the miniature circuit breakers (MCBs) for power supply of the operating mechanism motor (for motor driven type disconnector) and the operating mechanism auxiliary equipment (heater, lighting)
- Operating mechanism motor overload (for motor driven type disconnector)
- Opened door of the disconnector cubicle (for motor driven type disconnector)
- Position of selector switch “Local/Manual/Remote” (for motor driven type disconnector)
- Other necessary signals.

All terminal strips (terminals) within the disconnector cubicle shall be clearly separated into power supply, signalling and protection terminal strips. 20% extra spare terminals shall be provided.

3.4 – Interlockings:

Interlockings shall be provided to avoid the following conditions:

- Closing of the earthing switch when the disconnector is in service,
- Closing of the disconnector when the earthing switch is in service,
- Simultaneous use of the opening and closing contactors (for motor driven type disconnector)
- Use of the electrical motor during manual operation (for motor driven type disconnector)
- Electrical operation when crank is inserted (for motor driven type disconnector).

Disconnectors are capable of the duty imposed when operated under parallel switching conditions.

It shall not be possible to close or open any earth switch unless the point of application is disconnected from all possible sources of supply, and the power

operating devices of such disconnectors are selected to the local control position.

Earth switches shall be complete with interlocking facilities. Interference type interlocks between the earth switch and associated disconnectors shall be such that the operating linkages are not strained.

3.5 – Testing

Every facility is to be provided by the Contractor to enable the Employer's representatives to carry out the necessary inspection and testing of the purchased materials. The costs of all tests during manufacturing and preparation of test records shall be borne by the Contractor.

Instruments shall be approved and shall, if required by the Employer's representative, be calibrated by the National physical Laboratory or such other body as may be approved at the expense of the contractor.

3.5.1 Type Tests:

Type test report for Disconnectors and earth switches should be in accordance to latest standards IEC 62271-102, IEC 62271-1, IEC 60060 or such other standards as may be approved.

3.5.2 Routine Tests:

Routine tests shall be according to the latest IEC 62271-102, IEC 62271-1, IEC 60060 or such other standards as may be approved and shall include the following:

- Dielectric tests on the main circuit.
- Tests on auxiliary and control circuits.
- Measurements of resistance of the main circuit.
- Design, Dimensional and visual check.
- Mechanical operating test.

3.5.3 Materials Testing:

Three copies of the Contractor's record of tests shall be supplied to the Engineer. The purchaser will check test report/test results and if accepted a shipping release certificate will be issued within 14 days from the receipt of the report/ shipping release request.

4. - INSULATORS AND FITTINGS (PORCELAIN INSULATOR)

4.1 - General

The design shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to the development of defects.

Each insulator shall be legibly and indelibly marked as required by the appropriate IEC together with such other marks as may assist in the representative selection of batches for the purpose of type tests.

Marking of ceramic insulation by indentations will not be accepted.

All Porcelain insulators shall be dimensioned in accordance with IEC 60273 and tested in accordance with IEC 60168. They shall comprise fully interchangeable units of either the pedestal or solid core cylindrical type and shall be designed so that they can be used either upright or inverted.

The use of post insulators comprising units graded according to mechanical strength is not precluded, provided corresponding units are fully interchangeable and clearly identified according to their mechanical characteristics.

4.2 TESTING

Every facility is to be provided by the Contractor to enable the Employer's representatives to carry out the necessary inspection and testing of the purchased materials. The costs of all tests during manufacturing and preparation of test records shall be borne by the Contractor.

Instruments shall be approved and shall, if required by the Employer's representative, be calibrated by the National physical Laboratory or such other body as may be approved at the expense of the contractor.

4.2.1 Type Test:

Type test report for insulators should be in accordance to IEC publications 60168, 60437, or such other standards as may be approved.

4.3.2 Routine Tests:

Routine tests shall be according IEC 60168 and shall include the following tests:

- Visual inspection
- Mechanical test.
- Electrical test.

4.4 MARKING

Every insulator body shall have a durable and legible trademark and year of manufacture as well as the rated combined M& E strength in Kilo Newton & Kilo Volt.

4.5 PACKING

The whole of the insulators shall be packed in non-returnable cases. The cases shall be convenient for ocean and overland transportation.

Packing cases shall be strongly constructed and in no case timber less than 25mm in thickness is to be used. The contents of the packing cases shall be securely fastened in position with struts or cross battens.

Aluminum, Plastic or PVC, name plate shall be fixed to each case and clearly marked with the following: -

- Contract No.
- Number and size of insulators.

All packing will be inspected before shipment.

4.6 INSULATOR FITTINGS

Routine tests shall be carried out on fittings in accordance with the appropriate section of BS.3288 part 1 or such other standard as may be approved.

5 CONDUCTORS FITTINGS (JOINTS, CLAMPS AND SPACERS)

All joints, clamps and busbar conductor fittings shall be designed to avoid possibility of deforming the conductor; the fixing method for stranded conductor shall avoid separating the individual strands of the conductor.

All fittings shall have sufficient electromechanical strength to withstand the maximum mechanical forces due to wind, ice, expansion, contraction and short circuit dynamic loads together with the factors of safety specified in the Schedules without permanent deformation or breakage.

Fitting assemblies shall be corona free and shall not cause radio interference above the levels stated in the Schedules.

Where flexible connections are used in conjunction with tubular conductors to limit thermal forces, they shall be so designed that all induced forces are absorbed within the connector.

Fittings for stranded conductor shall be of either the compression or bolted type.

The design of joints shall be such as to make it impossible to position the conductor incorrectly. The electrical conductivity and current carrying capacity of all joints shall not be less than those of the main conductor. Tension joints shall not permit slipping of or cause damage to or failure of the complete conductor or any part thereof at a load less than 95 per cent of the ultimate strength of the main conductor stated in the Schedules. Non-tension joints shall not permit any slip or damage of the jumper connection at a load of less than 25 per cent of the ultimate strength of the conductor. All joints shall be designed so that no loosening of the connections can occur in service.

The design of the fittings and any special tools to be used in their assembly shall be such as to reduce to a minimum the possibility of faulty assembly and erection. Erection tools and methods shall be to approval, and no alteration in methods of erection or tools shall be made, after approval, without the written agreement of the Engineer.

All fittings shall consist of as few parts as possible and there shall be no danger of relative movement between individual layers of the conductor during assembly.

Where mating surfaces and jumper terminals are to be bolted together, they are to be protected at the Manufacturer's Works by a strippable plastic coating or other approved means.

Where a copper-to-aluminium connection is to be made precautions shall be taken to avoid electro-chemical deterioration of the connecting surfaces. All fittings shall be subject to test in accordance with BS EN 61238 parts 1, 2 and 3; tests in accordance with part 3 will also be applied for the fittings of tubular conductor.

Following the installation of joints, the electrical resistance shall be measured by means of approved micro-ohm meter equipment. The values of resistance measured shall be recorded on a schedule which shall be submitted to the Engineer as part of the final records.

Conductor suspension clamps shall be free to pivot in the vertical plane about a horizontal axis passing through and transverse to the centre line of the conductor. Suspension clamps shall be mechanically clamped in an approved manner but shall permit the complete conductor to slip before failure of the latter occurs. Unless otherwise approved, the outermost point of clamping pressure shall not be less than two conductor diameters inside the outermost point of contact between the conductor and its supporting groove (the conductor being assumed to be horizontal). The supporting groove beyond the latter point shall be curved in the vertical plane to a minimum radius of 150 mm and for a sufficient distance to allow for the conductor leaving the clamp at the maximum inclination to be obtained in service. The mouth of the supporting groove shall also be slightly flared in plan. The grooves in the clamping piece or pieces shall be bell-mouthed at each end to a minimum radius of 25 mm for a distance of 12.5 mm, unless otherwise approved.

All conductor grooves and bell-mouths in ferrous clamps shall, after galvanising, be smooth and free from waves, ridges or other irregularities.

Fittings shall be designed so that the equipment is corona-free and voltage stress at the surface shall not exceed a value equivalent of 16.5kV (rms)/cm at sea level.

Ferrous suspension clamps for conductors with outer aluminium strands shall be provided with soft pure aluminium liners to protect the conductor. Where armour rods are specified, the liners shall be omitted.

All connecting fittings between the conductor and the structure such as a clevis to tongue, shackle to plate or link which are subject to a tensile load in service shall comply with BS 3288 except that each fixing pin shall be replaced by a bolt and nut secured by means of a split pin. A backing washer is not required and the unthreaded shank of the bolt shall extend 3 mm through the clevis or shackle. The nut shall, during erection, be tightened to the end of the thread and be backed by a phosphor bronze or stainless-steel split pin. A clevis or shackle opening shall not exceed the thickness of a corresponding tongue, plate or link by more than 3 mm. Adequate bearing area between

fittings shall be provided and point or line contacts shall be avoided wherever this is possible without adversely affecting the flexibility of the fitting.

Fittings made of steel or malleable iron shall be galvanized in accordance with this Specification. All bolts and nuts shall comply with the BS 4190 and shall, unless otherwise specified, be locked by locknuts. All bolt threads shall be greased before erection.

At the connection point between fitting adequate bearing area shall be provided and `point' contacts shall be avoided.

Where necessary to ensure correct spacing and restrict clashing of conductor's spacers shall be provided. Spacer clamps shall be of aluminium and not less than 120 mm long, and shall be provided with an adequate clamping surface secured by not less than two bolts and with a radius at the clamp mouth to prevent damage to the conductor. All screws and nuts on spacers shall be locked in an approved manner.

All bolt threads shall be greased before erection.

Any Electrical and mechanical calculation required by engineer should be submitted.

6 STANDARDS

The following standards shall be considered in the design or testing of the offered insulators .

These standards shall be applied in part or whole to the offered insulators.

IEC 60060 - High Voltage Test Techniques

IEC 60168 - Tests on insulators

IEC 60437 - Radio interference test on high Voltage insulators

IEC 61936-1 - Power installations exceeding 1kV AC and 1.5 kV DC.

IEC 62271 - High voltage switchgear and control gear.

BS EN 1562 - Malleable Iron-Castings.

BS EN ISO 1461 - Hot dip galvanized coatings on iron and steel articles.

BS EN 10083 - Forged Steel.

10084 - Hardening Steel.

BS 1563 - Iron castings with spheroidal or modular graphite (ductile).

BS 3228 - Procedures for obtaining properties of steel structure at elevated temperature

BS EN 12163 - Copper and copper Alloys.

12164 - Copper and copper Alloys.

12167 - Copper and copper Alloys (Table 8 for chemical composition and mechanical properties of phosphor bronze for pins or locking devices).

Section 6

Technical Schedules

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS AT REHAB AND IRBID EAST S/S

Schedule A

MANUFACTURER TECHNICAL PARTICULARS AND GURANTEES

(Information to be submitted with tender)

Item No.	Description	Quantity Set
	At Rehab S/S:	
A1	**Three poles 132 kV 2000A Busbar disconnectors** (**Horizontal Center Break Disconnectors**), complete with supporting steel structure, operating mechanism, locks, electrical interlocks, auxiliary switches and labels (the new steel structures to be mounted on the existing cement base and anchor bolts as shown in figure 1). • For your reference refer to figure 2 for the height and displacement from busbar for132 kV Bus Coupler disconnectors. • For your reference refer to figure 3 for the height and displacement from busbar for132 kV GT12 disconnectors. • For your reference refer to figure 4 for the height and displacement from busbar for132 kV GT13 disconnectors.	4
A1.1	Clamps, (bi-Metal where necessary), to connect Busbar disconnectors terminals with the existing copper cylindrical tube **ϕ80/70** conductor, Clamp rating should be as disconnector rating.	12
A1.2	Clamps, (bi-Metal where necessary), to connect Busbar disconnectors terminals with the existing Double Wires copper conductor **ϕ=26.5*2 (500mm2)**, Clamp rating should be as disconnector rating.	6
A1.3	Clamps, (bi-Metal where necessary), to connect Busbar disconnectors terminals with the existing Single Wires copper conductor **ϕ=26.5 (mm2)**, Clamp rating should be as disconnector rating.	6
A1.4	**Three poles 132 kV 2000A line disconnectors (Horizontal Center Break Disconnectors) with three poles line earthing switches** complete with steel structure, operating mechanisms, locks, electrical interlocks, auxiliary switches and labels, (the new steel structures to be mounted on the existing cement base and anchor bolts as shown in figure 1).	2

A1.5	Clamps, (bi-Metal where necessary), to connect Line disconnectors terminals with the existing Single Wire copper conductor **ϕ26.5** Clamp rating should be as disconnector rating.	12
	<u>At Irbid East S/S</u>:	
A2	**Three poles 132 kV 2000A Busbar disconnectors (Horizontal Center Break Disconnectors)** with operating mechanism, locks, electrical interlocks, auxiliary switches and labels to be mounted on the existing steel structure **(<u>without steel structures</u>).** • For your reference refer to <u>figure 5</u> for 132kV Bus Section and Bus Tie in Irbid East Bus Bar disconnectors	4
A2.1	Clamps, (bi-Metal where necessary), to connect Busbar disconnectors terminals with the existing double Wire Aluminum conductor **ϕ36 mm2** Clamp rating should be as disconnector rating.	12

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SCHEDULE B

PERIODS OF READINESS FOR INSPECTION AND DELIVERY
(Information to be supplied with Tender)

Item No.	Description	Completion Of Manufacturing
1	Within which the materials will be ready for inspection and testing:	
1.1	132 kV busbar disconnectors switches	
1.2	132 kV line disconnectors switches/ Earth switches	
2	Within which the materials will be ready for shipping:	
2.1	132 kV busbar disconnectors switches	
2.2	132 kV line disconnectors switches/ Earth switches	

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SCHEDULE C

MANUFACTURERS AND PLACE OF MANUFACTURE, TESTING AND INSPECTION
(Information to be supplied with Tender)

Item No.	Description	Manufacturer	Place of manufacture	Place of testing and inspection
MAIN EQUIPMENT				
1	132 KV Busbar disconnectors.			
2	132 KV Line disconnectors /earthing switch.			

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AT REHAB AND IRBID EAST S/S

SCHEDULE D
SUMMARY & MAIN SYSTEM PARAMETERS

(Information to be submitted with tender and shall be completed by the contractor)

Information to be submitted with tender and shall be completed by the contractor			
Item No.	**Item Description (NEPCO DATA PARAMETERS REQUIREMENT)**	**Value (Particulars)**	**Offered**
1	Substation Type	AIS	
2	The mounting of the Disconnectors should be:	Parallel Disconnectors and Horizontal Centre Break	
3	Busbar **disconnector** current rating (A)	2000 A	
4	Line **disconnector** current rating (A)	2000 A	
5	Short time withstand output short circuit rating (KA)	40 KA (3 sec.)	
6	All voltage rating values for operation at site altitude	145 kV	
7	Insulator Creepage Distance (mm/ kv).	35	
8	Disconnector Insulator.	PORCELAIN Brown	
9	Site Altitude.	650 – 800	
10	Minimum temperature (º C) .	-10	
11	Relative humidity.	36 – 70 %	
12	Thunder storms (days / year).	15	
13	Average annual rainfall (approx.).	23 cm	
14	Design temperature (º C).	55	

15	Maximum daily range of air temperature (º C).	36	
16	Seismic Conditions (Horizontal acceleration)	Zone 2B	
17	Solar Radiation	1150W/Sq.m	
18	Insulation level (IEC-62271-1)		
18.1	Lightning impulse withstand (1.2/50 wave) - positive and negative		
	a. To earth, closed contacts - kVp	650	
	b. Across, open contacts - kVp - kVp + kV_{ACp}	750	
18.2	Power frequency withstand - dry/wet		
	a. To earth, closed contacts - 1 minute kV	275	
	b. Across, open contacts - 1 minute kV	315	
19	Method of operation	1- Manual operation 2- **Or** Motorized.	
20	LINE EARTHING SWITCHES		
20.1	Fault making capacity pk KA	100	
20.2	Electromagnetic coupling Induced current Arms Induced Voltage kV rms	Classification Class B to IEC 62271-102	
	Electrostatic Coupling Induced Current Arms Induced Voltage kV rms	Classification Class B to IEC 62271-102	
20.3	Method of operation	Manual	

NOTES:

- **All outdoor equipment must be suitable for live washing.**
- **All steel work shall be galvanized in accordance with tender specification.**
- **Complete arrangement drawing and calculation should be submitted.**
- **All cable copper glands to be supplied under this contract.**

NATIONAL ELECTRIC POWER COMPANY
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SCHEDULE E

DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS MANUALS

Attention is called to the general requirements for submission of drawings for approval and to the details laid out below: -

Drawing sizes should be from the ISO `A' series, shall not exceed A0 standard dimensions and shall contain the title block shown in the tender drawing at the bottom right-hand corner of the drawing containing the following information:

National Electric Power Co.

Contract No. /2025

132kV Irbid Substation

NEPCO Drawing No.

All drawings must contain the Contractor's name, date, scale, number and title irrespective of whether they are drawings produced specifically for the Contract or standard drawings.

All drawings shall have a NEPCO drawing number, which shall be selected from a block of numbers issued by the Employer.

Drawing outlines shall be 0.5 mm thick, dimension lines 0.3 mm thick and characters at least 3.5 mm high.

On completion of installation the Contractor is required to provide a complete drawing schedule listing the drawings in the order of the NEPCO drawing numbers. The maximum drawing schedule size shall be A3.

Each drawing must have its own individual number, and the use of sheet numbers will only be permitted for the drawing schedule.

After completion of work on site all drawings shall be revised where necessary to show the equipment as installed and two copies submitted for approval. Following approval, one reproducible 0.75 mm transparency, three prints and an electronic copy in AutoCAD release 14 format should be provided within two months after the

provisional taking over date, and shall be of sufficient detail to enable all parts to be identified. These shall be sent directly to the Employer.

1. The following is a list of drawings attached to this Specification: -

Drawing Revision	**Title**
001	Title block for drawings
002	Shipping Mark
Drawing 1	132kv Busbar disconnectors for Irbid S/S
Drawing 2	132kv Line disconnectors/earth switch for Irbid S/S

2. The following is a list of the drawings, which shall be submitted by the Contractor with the tender.

Description

a. Layout of the disconnectors.

3. The following drawings to be submitted by the Contractor for approval within the period stated in the Schedules.

Description

a. Contract Works Progress Chart (submitted monthly).

b. Detailed Sub-Order Chart.

c. Final drawings corresponding to all drawings submitted by the Contractor with his Tender.

d. Structures. Detail drawings showing dimensions of principal members.

e. Arrangement and details of disconnectors and earthing switches.

k. Details of maintenance and handling equipment.

n. Details of test equipment.

o. Material lists.

OPERATING AND MAINTENANCE INSTRUCTIONS MANUALS

Two months before erection commences of disconnectors, the Contractor shall submit operating and maintenance instructions and diagrams for approval by the Engineer.

Details of any equipment to be supplied for erection and maintenance shall be provided at the time of tendering, as shall the procedures to be adopted. The equipment shall include the instruments etc. necessary for ensuring the integrity and compliance of the insulating and interrupting medium of the main equipment being supplied.

The instructions shall be fully detailed and shall cover all associated ancillary equipment as supplied under the Contract. Manufacturer's standard brochures will not be accepted as part of the text unless they refer particularly to the equipment supplied and are free from extraneous matter.

The information provided should include essential flow and circuit diagrams, pipework, general arrangement and detailed drawings of the installation, make mention of special materials were used and include schedules of lubricants and all ball and roller races employed. The drawings and diagrams, which may be approved existing drawings, reduced to a convenient size, should be bound into the volume and not inserted into cover pockets. If the complete text of the manual is unduly bulky, then this shall be appropriately sub-divided and produced in multi-volume form.

When approved, three copies of the complete text, diagrams and drawings as made up in draft form shall be handed to the Engineer for use during erection and these shall be provided not later than one month before erection commences.

A further three copies of the manual shall be reproduced as books of approximately quarto size bound into strong black durable imitation leather covers inscribed with gold letters upon the front generally in the form of the title page to this document except that the reference to Specification, Conditions of Contract, Drawings, etc, will be replaced by "Operating and Maintenance Instructions".

The name of the main Contractor, but not that of any sub-contractor, may also be inscribed upon the cover.

CONSTRUCTION AND ERECTION MANUALS

Three copies of construction and erection manuals should be supplied before the erection work start. The construction and erection manuals should include erection, drawings, and schematic details of any equipment to be supplied under this contract.

NATIONAL ELECTRIC POWER COMPANY
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AT REHAB AND IRBID EAST S/S

SCHEDULE F

TESTS

GENERAL

1. GENERAL TESTS REQUIREMENTS

Test shall include all routine, electrical, mechanical and hydraulic tests in accordance with the relevant standards, and in addition any tests, called for by the Engineer to ensure that the plant being supplied meets the requirements of the specification. The costs of all tests including the provision of the necessary test equipment at the manufacturer's works shall be borne by the contractor and shall be deemed to be included in the contract price.

Not less than 30 days notice shall be given to the Engineer when equipment is ready for test.

The contractor shall supply four copies for all test certificates.

After satisfactory completion of the witnessed tests at the works, the contractor shall submit shipping release request for NEPCO.

No item of plant shall be despatched to site until the Engineer has given his approval and issued the relevant shipping release.

2. DISCONNECTORS AND EARTHING SWITCHES (OPEN TERMINAL)

Every facility is to be provided by the Contractor to enable the Employer's representatives to carry out the necessary inspection and testing of the purchased materials. The costs of all tests during manufacturing and preparation of test records shall be borne by the Contractor.

Instruments shall be approved and shall, if required by the Employer's representative, be calibrated by the National physical Laboratory or such other body as may be approved at the expense of the contractor.

2.1 Type Test:

- Type test report for Disconnectors and earth switches should be in accordance to IEC 62271-102, IEC 62271-1, IEC 60060 or such other standards as may be approved.
- **Type tests may be omitted at the discretion of the Engineer if the Tenderer provided documentation, certified by the owner (Type Test), to show that the 132 kv disconnectors to be supplied, having similar type or above and the same place of manufacture, passed the type test successfully within last 12 years (2013 - 2024).**

2.2 Routine Test:

- Routine tests shall be carried out in presence & witness of FAT Tests by the Employer's inspectors.
- Routine tests shall be according to the latest IEC 62271-102, IEC 62271-1, IEC 60060 or such other standards as may be approved and shall include the following:

- Dielectric tests on the main circuit.
- Tests on auxiliary and control circuits.
- Measurements of resistance of the main circuit.
- Design, dimensional and visual check.
- Mechanical operating test.

3. Porcelain Insulators

Every facility is to be provided by the Contractor to enable the Employer's representatives to carry out the necessary inspection and testing of the purchased materials. The costs of all tests during manufacturing and preparation of test records shall be borne by the Contractor.

Instruments shall be approved and shall, if required by the Employer's representative, be calibrated by the National physical Laboratory or such other body as may be approved at the expense of the contractor.

3.1 Type Test:

Type test certificates shall be provided, and the type test reports for insulators should be in accordance to IEC publications 60168, 60437, or such other standards as may be approved.

3.2 Routine Tests:

Routine tests shall be according IEC 60168 and shall include the following tests:

- Routine Visual inspection
- Routine Electrical test.

SECTION 7

PRICE SCHEDULES

NATIONAL ELECTRIC POWER COMPANY
TENDER NO. 21/2025
SUPPLY OF 132 KV DISCONNECTORS
AT REHAB AND IRBID EAST S/S

SCHEDULE G

PRICE OF EQUIPMENT

NOTE:

All equipment tabulated in the technical schedule (A) are to be supplied and considered in the scope of work although if they are not mentioned in these financial schedules, any discrepancy can be indicated during the Tendering stage.

ITEM	Description	Qty	Unit	Price			
				Foreign Currency			
				Unit price FOB	Total price FOB	Freight	Total price CFR
1	132 kV outdoor busbar disconnectors) as in Schedule A, Item No. A1	4	Set				
2	132 kV outdoor line disconnectors with Earthing switch as in Schedule A, Item No. A1.4	2	Set				
3	Clamps as per Schedule A, Item No. A1.1	12	Piece				
4	Clamps as per Schedule A, Item No. A1.2	6	Piece				
5	Clamps as per Schedule A, Item No. A1.3	6	Piece				
6	Clamps as per Schedule A, Item No. A1.5	12	Piece				
6	132 kV outdoor busbar disconnectors (without steel structure) as in Schedule A, Item No. A2	4	Set				
7	Clamps as per Schedule A, Item No. A2.1	12	Piece				
TOTAL TO OVER ALL SUMMARY SCHEDULE G							

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SCHEDULE H

SPARE PARTS QUANTITIES AND PRICES FOR ANCILLARY EQUIPMENT

The Tenderer shall complete this Schedule. The Tenderer shall furnish a complete list of spares with breakdown of prices, which may not in whole or in part be purchased by the Employer under the Contract, including but not necessarily confined to the following:

Quantity	Description	(Foreign Currency)			
		Unit Price FOB	Total prices FOB	Freight	Total prices CFR
132 kV disconnectors spare parts					
2 sets	Male and Female contacts for disconnector. Note: 2 sets of male and female contacts mean: a- Six pieces of Male contacts for disconnector. b- Six pieces of Female contacts for disconnector.				
3 Pieces	Post insulators.				
3 Pieces	Auxiliary Contact.				
4 Pieces	Release Coil.				
TOTAL TO OVER ALL SUMMARY SCHEDULE H					

NATIONAL ELECTRIC POWER COMPANY
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AT REHAB AND IRBID EAST S/S

SCHEDULE S

SUMMARY OF LUMP SUM PRICES FOR DEFINITE WORK

The prices entered below for the various items, whether or not the items are fully described, shall include everything necessary to leave the equipment complete and in working order in accordance with the provisions of the Contract.

The following Schedule to be filled in completely and without omission by Tenderers and their manner and breakdown should not be changed. However, this Schedule may be supplemented by extra sheets, should this is necessary.

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OVERALL SUMMARY OF PRICES (SCHEDULE S)

REFERENCE	ITEM	FOREIGN CURRENCY
		Total Price CFR
SCHEDULE G	Supply of 132kv disconnectors	
SCHEDULE H	SPARE PARTS	
Inspection as per tender specifications	Witnessing of FAT Tests by the Employer's inspectors	
TOTAL TENDER PRICE		

TOTAL TENDER PRICE **Plus**

_____ _____

Foreign Currency **Total Jordanian Dinars**

Say (in words):

……

……

……

- **The total Tender price should be filled the Form of Tender.**
- **Prices shall be excluding all custom duties and sales tax.**

Figures

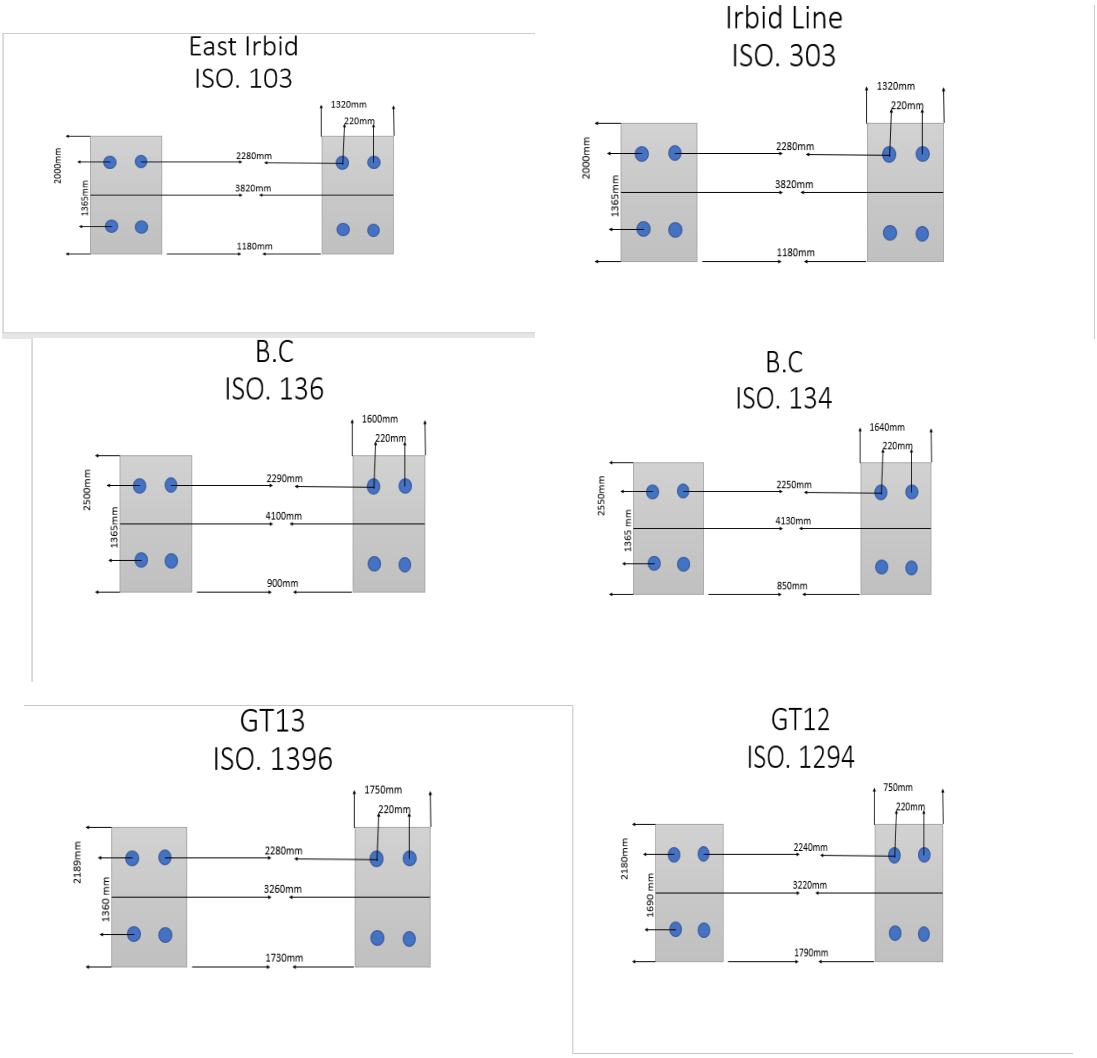
East Irbid
ISO. 103
1320mm
220mm
2000mm
2280mm
1365mm
3820mm
1180mm
Irbid Line
ISO. 303
1320mm
220mm
2000mm
2280mm
1365mm
3820mm
1180mm
B.C
ISO. 136
1600mm
220mm
2500mm
2290mm
1365mm
4100mm
900mm
B.C
ISO. 134
1640mm
220mm
2550mm
2250mm
1365 mm
4130mm
850mm
GT13
ISO. 1396
1750mm
220mm
2189mm
2280mm
1360 mm
3260mm
1730mm
GT12
ISO. 1294
750mm
220mm
2180mm
2240mm
1690 mm
3220mm
1790mm

Figure - (1)

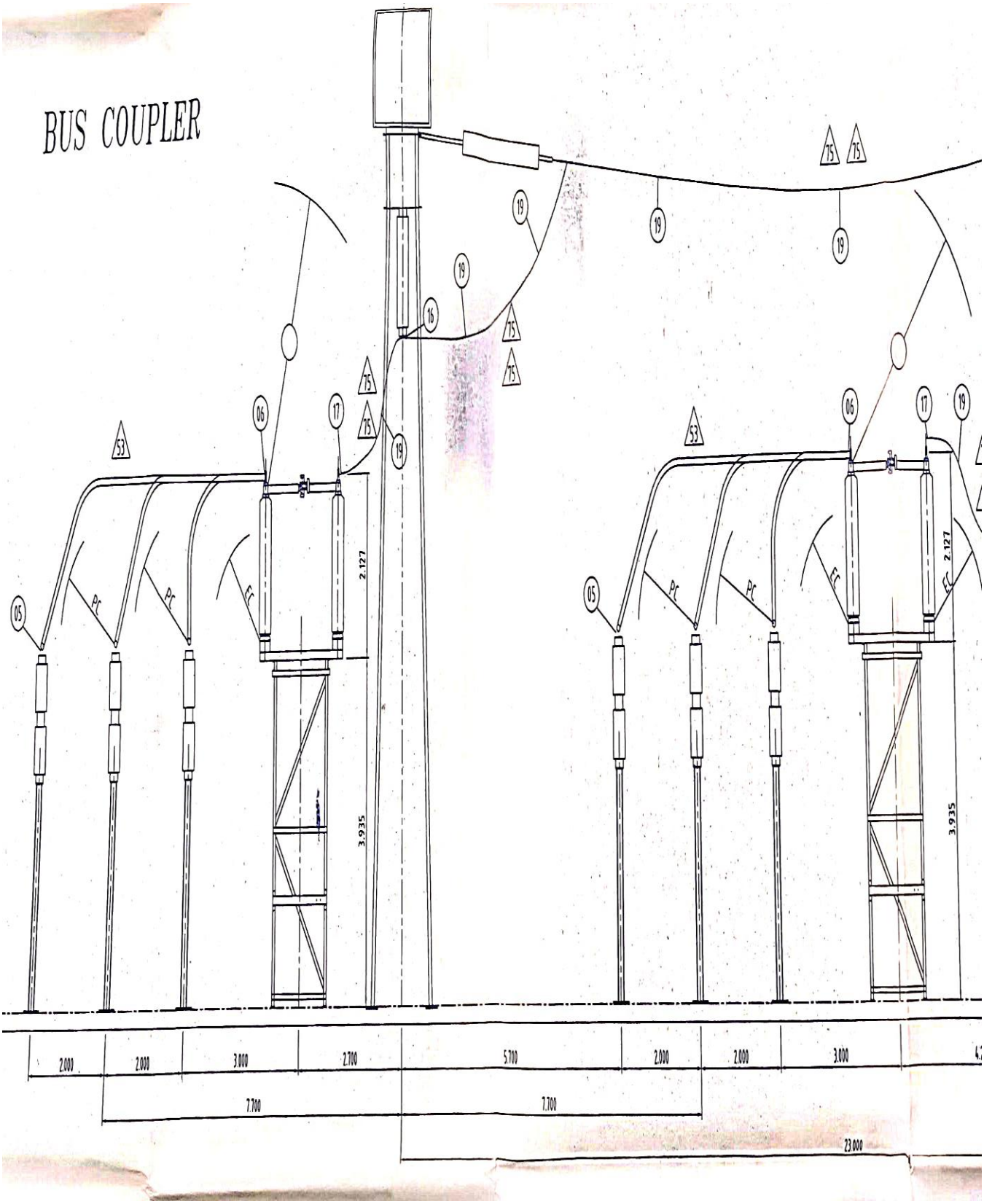
BUS COUPLER
2.000
2.000
3.000
2.700
5.700
2.000
2.000
3.000
7.700
7.700
23.000
3.935
2.127

Figure - (2)

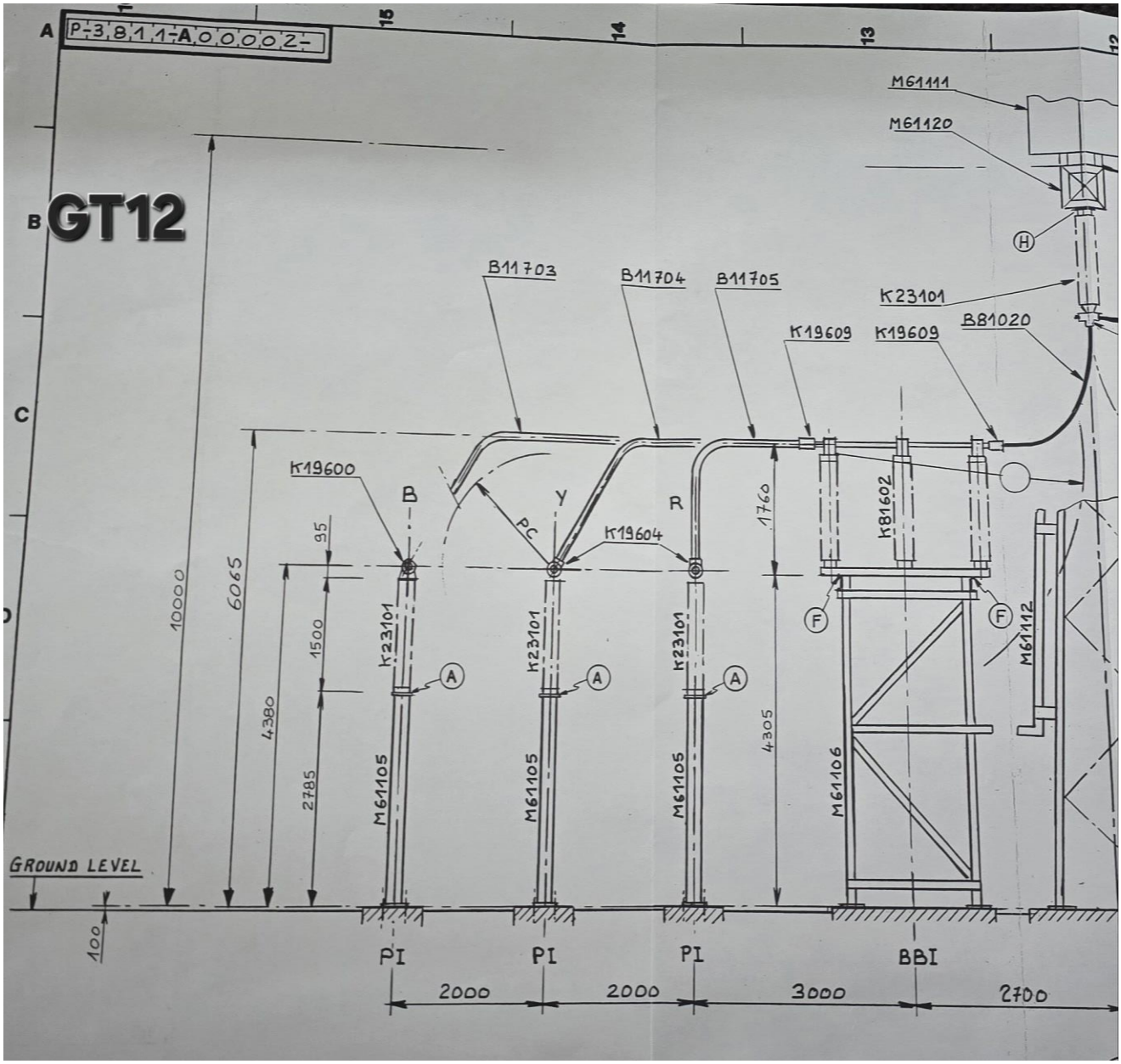
P-3,8,1 1-A,0,0,0,0 2-
GT12
M61111
M61120
H
B11703
B11704
B11705
K23101
K19609
K19609
BB1020
K19600
B
Y
R
PC
K19604
K81602
1760
95
10000
6065
1500
4380
2785
K23101
K23101
K23101
A
A
A
M61105
M61105
M61105
4305
F
F
M61112
M61106
GROUND LEVEL
100
PI
PI
PI
BBI
2000
2000
3000
2700

Figure - (3)

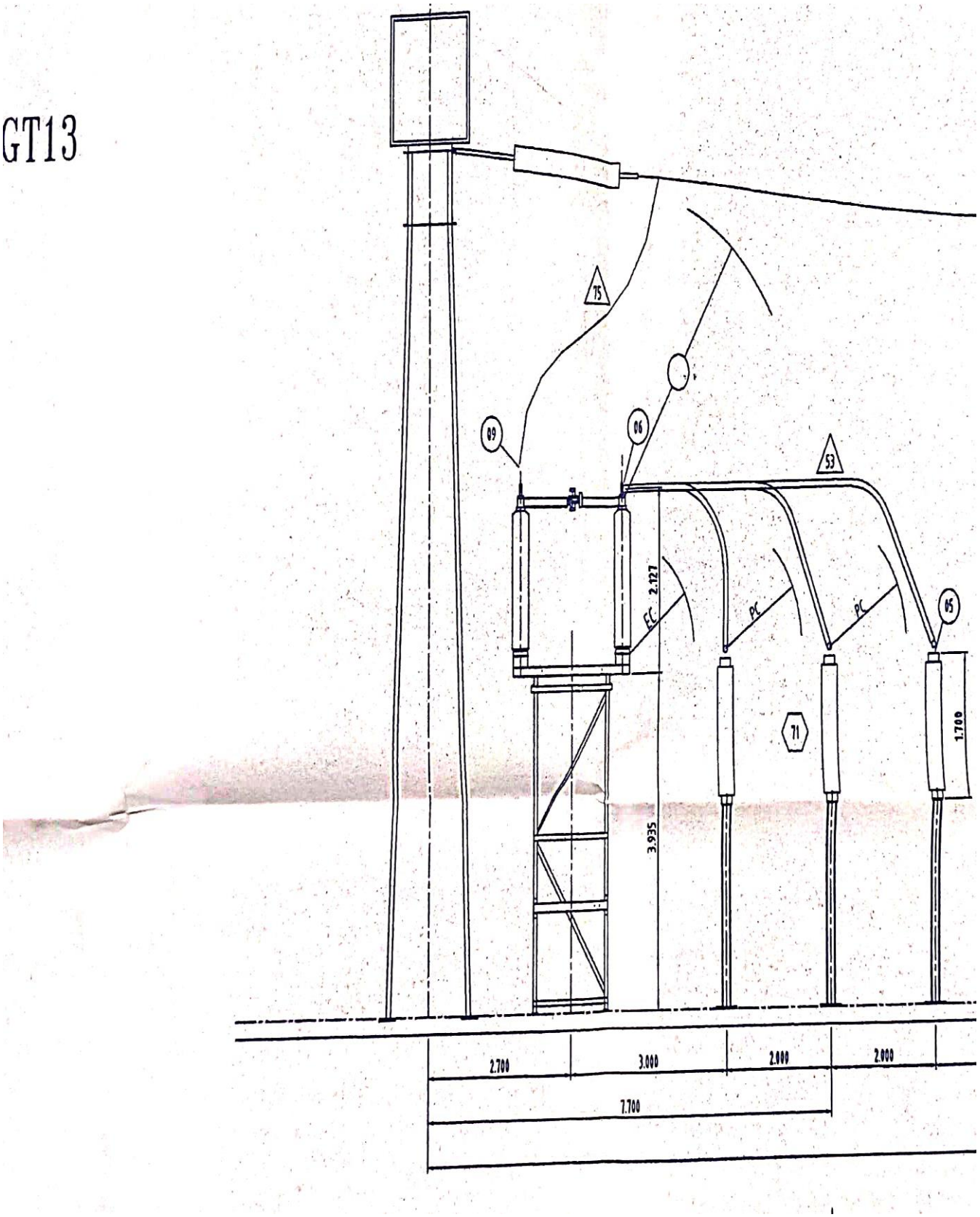
GT13
75
09
06
53
95
71
EC 2.127
PC
PC
1.700
3.935
2.700
3.000
2.000
2.000
7.700

Figure - (4)

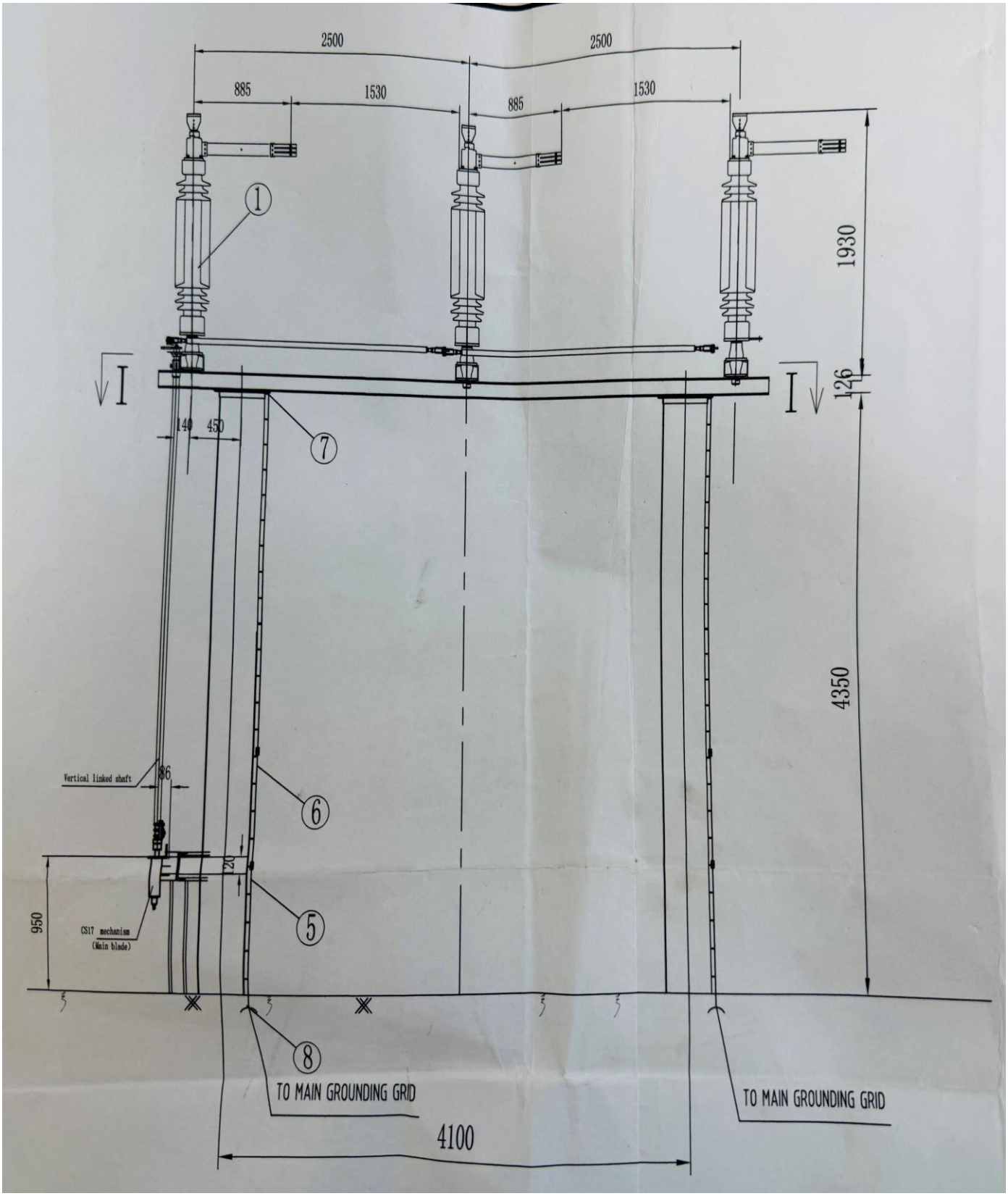
2500
2500
885
1530
885
1530
1930
126
4350
I
I
140
450
Vertical linked shaft
86
120
950
CS17 mechanism
(Main blade)
1
7
6
5
8
TO MAIN GROUNDING GRID
TO MAIN GROUNDING GRID
4100

Figure - (5)