



JAMAICA PUBLIC SERVICE COMPANY, LIMITED

INTERBUS TRANSFORMERS SECURITY IMPROVEMENT PROJECT

REQUEST FOR PROPOSALS

The Supply of -

**One (1) 60/80 MVA, 138 – 69KV INTERBUS TRANSFORMER
FOR INSTALLATION AT BELLEVUE SUBSTATION**

RFP # 938931

**Instructions to Bidders
General Conditions of Contract
Special Conditions of Contract
Exhibits
Bid Form
Technical Specifications
Schedules**

**January 2023
Engineering and Standards Department
JPS Co. Ltd., Jamaica**

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PART 1
INSTRUCTIONS TO BIDDERS

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Introduction

IB.01 a. Background

The Jamaica Public Service Company has embarked on one Interbus Transformer Installation Project and is in the process of procuring a transformer to be installed at Belluve Substation.

In order to satisfy this installation at Bellevue substation it has been agreed that one **(1) 60/80 MVA, 138-69kV interbus transformer** (here after referred to as power transformers) shall be procured.

b. Source of Funds

The Jamaica Public Service Company Limited (JPS) will fund the purchase of the one (1) 60/80 MVA, 138-69kV power transformer under the Interbus Transformer North Coast Voltage Security Improvement Project. An International Bank mutually agreed between JPS and the successful tender will effect payments to the Contractor.

c. Subject of Bid

The subject of this invitation consists of the supply of one (1) 60/80MVA interbus power transformers, complete with fittings, accessories and spare parts.

Item	Description	Qty
1	60/80 MVA, 138-69kV interbus power transformer	1

IB.02 Eligible Bidders

IB.02.1 This invitation for Bids is open to all suppliers from eligible source countries as defined under the Guidelines for Procurement of the JPS Purchasing Department list of suppliers.

IB.03 Eligible Goods and Services

IB.03.1 All goods and ancillary services to be supplied under the Contract shall have their origin in eligible source countries, be as defined under the Guidelines for Procurement of the JPS Purchasing Department and all expenditures made under the Contract will be limited to such goods and services.

IB.03.2 For purposes of this clause, "origin" means the place where the goods are mined, grown or produced or from which the ancillary services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

IB.03.3 The origin of goods and services is distinct from the nationality of the Bidder.

IB.04 Cost of Bidding

IB.04.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Jamaica Public Service Company Limited (JPS), hereinafter referred to as "the Purchaser," will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

The Bidding Documents

IB.05 Content of Bidding Documents

IB.05.1 The goods required, bidding procedures and contract terms are prescribed in the bidding documents. In addition to the invitation for Bids, the Bidding Documents include:

- (a) Instructions to Bidders;
- (b) General Conditions of Contract;
- (c) Special Conditions of Contract;
- (d) Exhibits: Form of Bid Bond
 Form of Performance Bond
 Form of Agreement
 Form of Purchase Order
- (e) Bid Form
- (f) Schedules: Schedule of Requirements
 Schedule of Transformers
 Schedule of Information
 Schedule of Prices
 Schedule of Deliveries
 Schedule of Technical Data
- (g) Technical Specifications

- IB.05.2 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Documents. Failure to furnish all information required by the Bidding Documents or submission of a bid not substantially responsive to the Bidding Documents in every respect will be at the Bidder's risk and may result in the rejection of its bid.

IB.06 Clarification of Bidding Documents

- IB.06.1 A prospective Bidder requiring any clarification of the Bidding Documents may notify the Purchaser in writing or by email at the Purchaser's mailing address indicated in the Invitation for Bids. The Purchaser will respond in writing to any request for clarification of the Bidding Documents, which it receives no later than seven (7) days prior to the deadline for submission of bids prescribed by the Purchaser.

Points of Contact (POC)

All communications and questions with JPS regarding this RFP must be directed to the following Point of Contact (POC):

Name: **Kolonje McKenzie**
Address: Jamaica Public Service Company Limited
113 Washington Boulevard
Kingston 20, Jamaica WI
Email: komckenzie@jpsco.com

Unauthorized communications concerning this RFP with other Company employees, executives of contractors may result in immediate disqualification.

All communications and questions should be submitted electronically to the POC's email address. In order to ensure consistency and quality of information provided to Bidders, responses to questions received will be communicated to all participants without revealing the source of the inquiries.

Only written responses will be considered official and binding. JPS reserves the right, at its sole discretion, to determine appropriate and adequate responses to questions and requests for clarification.

A Bidder contact should be provided for all questions and clarifications arising from the Proposal Queries should include:

- (a) Company's name, company address and phone number, contact person, email address, position
- (b) References to specific points within this RFP using the Section number as reference
- (c) Clear and concise questions

IB.07 Amendment of Bidding Documents

- IB.07.1 At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents by amendment.
- IB.07.2 The amendment will be notified in writing to all prospective Bidders, which have received the Bidding Documents and will be binding on them.
- IB.07.3 In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing their bids, the Purchaser may, at its discretion, extend the deadline for the submission of bids.
- IB.07.4 The Purchaser reserves the unilateral right to cancel or reissue the RFP at its sole discretion. Bidders will respond to the final written RFP and any exhibits, attachments and amendments.

Preparation of Bids

IB.08 Language of Bid

- IB.08.1 The Bid prepared by the Bidder and all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in the English language.

IB.09 Documents Comprising the Bid

- IB.09.1 The bid prepared by the Bidder shall comprise the following components:
- (a) A Bid Form and a Schedule of Prices completed in accordance with Clauses IB.10, IB.11 and IB.12;
 - (b) Documentary evidence established in accordance with Clause IB.13 that the Bidder is qualified to perform the contract if its bid is accepted;

- (c) Documentary evidence established in accordance within Clause IB.14 that the goods and ancillary services to be supplied by the Bidders conform to the Bidding Documents
- (d) Bid security furnished in accordance with Clause IB.15. **(The Bid Security is waived)**
- (e) Drawings

IB.10 Bid Form

- IB.10.1 The Bidder shall complete the Bid Form and the appropriate Schedule of Prices furnished in the Bidding Documents, indicating for the goods to be supplied, a brief description of the goods, quantity and prices.
- IB.10.2 For the purpose of granting a margin of domestic preference pursuant to Clause IB.27, the Purchaser will classify a bid, when submitted, in one of three groups, as follows:
- (a) Group A: Bids offering goods manufactured in the Purchaser's country for which the domestic value added in the manufacturing cost is not less than 40% of the ex-factory price;
 - (b) Group B: Bids offering goods manufactured in the Purchaser's country for which the domestic value added in the manufacturing cost is less than 40% of the ex-factory price, and for goods of foreign origin already located in the Purchaser's country; and
 - (c) Group C: Bids offering goods of foreign origin to be imported by the Purchaser directly or through the supplier's local agent.

IB.11 Bid Prices

- IB.11.1 The Bidder shall indicate on the Schedule of Prices attached to these documents the unit prices and total Bid Prices of the goods it proposes to supply under the Contract:
- IB.11.2 Prices indicated on the Schedule of Prices shall be entered separately in the following manner:
- (A) For goods offered from abroad:
 - (i) the price of the goods quoted CIF port-of-entry in the Purchaser's country inclusive of all duties, fees and taxes incurred in exporting country.
- IB.11.3 Fixed price: Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected, pursuant to Clause IB.24.

IB.12 Bid Currencies

IB.12.1 Prices shall be quoted in the following currencies:

- (a) For goods and services which the Bidder will supply from outside the Purchaser's country, the prices shall be quoted in US dollars.

IB.12.2 Further, a Bidder expecting to incur a portion of its expenditures in the performance of the Contract in more than one currency, and wishing to be paid accordingly, shall so indicate in its bid. In such case, either

- (i) The bid shall be expressed in different currencies and the respective amounts in each currency together making up the total price, or
- (ii) The total bid price shall be expressed in one currency and payments required in other currencies expressed as a percentage of the bid price along with the exchange rate used in such calculation.

IB.13 Documents Establishing the Bidder's Eligibility and Qualifications

IB.13.1 Pursuant to Clause IB.09, the Bidder shall furnish, as part of its bid, documents establishing the Bidder's qualifications to perform the Contract if its bid is accepted.

IB.13.2 The documentary evidence of the Bidder's Qualifications to perform the Contract if its bid is accepted, shall establish to the Purchaser's satisfaction:

- (a) That, in the case of a Bidder offering to supply goods under the Contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods' manufacturer or producer to supply the goods in the Purchaser's country;
- (b) **That the Bidder has the financial, technical and production capability necessary to perform the Contract.**

IB.14 Documents Establishing Goods' Eligibility and Conformity to Bidding Documents

- IB.14.1 Pursuant to Clause IB.09, the Bidder shall furnish, as part of its bid, documents establishing conformity to the Bidding Document of all goods and services, which the Bidder proposes to supply under the Contract.
- IB.14.2 The documentary evidence of the goods and services shall consist of a statement in the Schedule of Prices stating the origin of the goods and services offered and shall be confirmed by a certificate of origin issued at the time of shipment.
- IB.14.3 The documentary evidence of the goods' and services' conformity to the Bidding Documents may be in the form of literature, drawings and data, and shall furnish:
- (a) a detailed description of the goods' essential technical and performance characteristics;
 - (b) a list giving full particulars, including available sources and current prices, of all spare parts, special tools, etc., necessary for the proper and continuing functioning of the goods for a period of two years, following commencement of the goods used by the Purchaser; and
 - (c) a clause-by-clause commentary on the Purchaser's Technical Specifications demonstrating the goods' and services' substantial responsiveness to those specifications or a statement of deviations and exceptions to the provisions of the Technical Specifications.
- IB.14.4 For purposes of the commentary to be furnished pursuant to Clause IB.14.3(c) above, the Bidder shall note that standards for workmanship, material and equipment, and references to brand names or catalogue numbers designated by the Purchaser in its Technical Specifications are intended to be descriptive only and not restrictive. The Bidder may substitute alternative standards, brand names and/or catalogue numbers in its bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions are substantially equivalent or superior to those designated in the Technical Specifications.

IB.15 **Bid Security**
(THE BID SECURITY IS WAIVED)

- IB.15.1 Pursuant to Clause IB.09, the Bidder shall furnish, as part of its bid, bid security in the amount of not less than 5% of the total of the Schedule of Prices comprising the Bid.
- IB.15.2 The bid security is required to protect the Purchaser against the risk of the Bidder's conduct, which would warrant the security's forfeiture, pursuant to para. IB.15.7.
- IB.15.3 The bid security shall be denominated in the currency of the bid or another freely convertible currency, and shall be in one of the following forms:

- (a) A Bank Guarantee or Irrevocable Letter of Credit issued by a bank located in the Purchaser's country or abroad acceptable to the Purchaser, in the form provided in the Bidding Documents or another form acceptable to the purchaser and valid for 30 days beyond the validity of the bid; or

IB.15.4 Any bid not secured in accordance with para. IB.15.1 and IB.15.3 will be rejected by the Purchaser as non-responsive, pursuant to Clause IB.24.

IB.15.5 Unsuccessful Bidder's bid security will be discharged/returned as promptly as possible but not later than 30 days after the expiration of the period of bid validity prescribed by the Purchaser, pursuant to Clause IB.16.

IB.15.6 The successful Bidder's bid security will be discharged upon the Bidder's executing the Contract, pursuant to clause IB.34, and furnishing the performance security, pursuant to Clause IB.35.

IB.15.7 The bid security may be forfeited

- (a) if the Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Bid Form; or
- (b) in the case of a successful Bidder, if the Bidder fails:
 - (i) to sign the Contract in accordance with Clause IB.34; or
 - (ii) to furnish performance security in accordance with Clause IB.35.

IB.16 Period of Validity of Bids

IB.16.1 Bids shall remain valid for ninety (90) days after the date of bid opening prescribed by the Purchaser, pursuant to Clause IB.19. A bid valid for a shorter period may be rejected by the Purchaser as non-responsive.

IB.16.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and responses thereto shall be made in writing (or by courier or telefax). The bid security provided under Clause IB.15 shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request will not be required nor permitted to modify its bid.

IB.17 Format and Signing of Bid

- IB.17.1 Only **Electronic submissions** will be accepted, using ShareFile by Citrix. All uploads will be confidential. Upload should be place in the appropriate folder (TECHNICAL OR Commercial). Document should be PDF format.
- IB.17.2 The bid shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the Contract. The latter authorization shall be indicated by written power-of-attorney accompanying the bid. All pages of the bid, except for un-amended printed literature, shall be initialed by the person or persons signing the bid.
- IB.17.3 The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

Submission of Bids

IB.18 Upload and Labeling of Bids

- IB.18.1 **Only Electronic submissions will be accepted, using ShareFile by Citrix. All uploads will be confidential.**
- 1) Respondents must confirm their intention to bid by February 17, 2023, in order to be setup in JPS ShareFile folder.
 - 2) Access to individual vendor folders will be given 1 weeks before the bid closes to eliminate any issues for bid upload by RFP deadline.
 - 3) Files must be accurately labelled/named. Commercial Information must be a separate file from your Technical Proposal.
 - 4) ShareFile Access will be removed when the bid closes.

Additional information on this software can be accessed by clicking the links below:

- Basic Client Guide <https://citrix.sharefile.com/share/view/s1bff52f8d434781a>
- Training (video) <https://www.sharefile.com/support/training>

IB.19 Deadline for Submission of Bids

IB.19.1 Bids must be received by the Purchaser by the method under para. IB.18.1 no later than 11:59 pm Eastern Standard Time on February 23, 2023.

RFP CALENDAR		
ACTIVITY	DUE DATE	RESPONSIBILITY
RFP date	January 23, 2023	JPS
Bidder submits questions on RFP	February 3, 2023	Bidder
Final date to respond to all queries	February 10, 2023	JPS
Bidders provide their intention to bid	February 17, 2023	Bidder
Completion of RFP and deadline for submission of bids to JPS	February 23, 2023	Bidder
Bid Opening	February 24, 2023	JPS

IB.19.2 The Purchaser may, at its discretion, extend this deadline for the submission of bids by amending the Bidding Documents in accordance with Clause IB.07, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

IB.20 Late Bids

IB.20.1 Any bid received by the Purchaser after the deadline for submission of bids prescribed by the Purchaser, pursuant to Clause IB.19, will be rejected.

IB.21 Modification and Withdrawal of Bids

- IB.21.1 The Bidder may modify or withdraw its bid after the bid's submission, provided that written notice of the modification or withdrawal is received by the Purchaser prior to the deadline prescribed for submission of bids.
- IB.21.2 The Bidder's modification or withdrawal notice shall be prepared, and dispatched in accordance with the provisions of Clause IB.18. with additionally marked **Modification** or **Withdrawal** as appropriate.
- IB.21.3 No bid may be modified subsequent to the deadline for submission of bids.
- IB.21.4 No bid shall be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Bid Form. Withdrawal of a bid during this interval may result in the Bidder's forfeiture of its bid security, pursuant to Clause IB.15.7.

Bid Opening and Evaluation

IB.22 Opening of Bids by Purchaser

The Purchaser will open bids privately.

IB.23 Clarification of Bids

- IB.23.1 To assist in the examination, evaluation and comparison of bids the Purchaser may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing and no change in the price or substance of the bid shall be sought, offered or permitted, except as required to confirm the correction of arithmetical errors.

IB.24 Preliminary Examination

- IB.24.1 The Purchaser will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

- IB.24.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If the supplier does not accept the correction of errors, its bid shall be rejected. If there is a discrepancy between words and figures, the amount in words shall prevail.
- IB.24.3 Prior to the detailed evaluation, pursuant to Clause IB.26, the Purchaser will determine the substantial responsiveness of each bid to the Bidding Documents. For purposes of these Clauses, a substantially responsive bid is one which conforms to all the terms and conditions of the Bidding Documents without material deviations or reservations. A material deviation or reservation is one which affects in any substantial way the scope, quality or performance of the contractual obligations or which limits in any substantial way or is inconsistent with the bidding documents and the rectification of which deviation or reservation would affect unfairly the competitive position of other bidders presenting substantially responsive bids. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.
- IB.24.4 A bid determined as not substantially responsive will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
- IB.24.5 The Purchaser may waive any minor informality or non-conformity or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.

IB.25 Conversion to Single Currency

- IB.25.1 To facilitate evaluation and comparison, the Purchaser will convert all bid prices expressed in the amounts in the various currencies in which bid price is payable, to the United States Dollar currency equivalent and at the selling exchange rate published by an official source and applicable to similar transactions on the day bids are opened or at such later date (30 or 60 days after bid opening) as shall be specified in the call for bids.

IB.26 Evaluation and Comparison of Bids

- IB.26.1 The Purchaser will evaluate and compare the bids previously determined to be substantially responsive, pursuant to Clause IB.24.

IB.26.2 The Purchaser will evaluate proposals using an internal scoring method that weighs various parameters to give the evaluation team insight into the strengths of each proposal relative to JPS needs. JPS internal scoring method values the following proposal attributes (Order of presentation here does not reflect priority)

Technical

CRITERIA	SCORE
Compliance to JPS specification	Pass/Fail
Compliance to International Standards	Pass/Fail

Commercial.

CRITERIA	SCORE (%)
Price	90
Terms of payment	5
Delivery / Lead Time	5
Total	100

IB.26.3 The Purchaser's evaluation of a bid will exclude and not take into account:

- (a) in the case of goods manufactured in the Purchaser's country or goods of foreign origin already located in the Purchaser's country, sales and other similar taxes, which will be payable on the goods if a contract is awarded to the Bidder; and
- (b) in the case of goods of foreign origin offered from abroad, customs duties and other similar import taxes which will be payable on the goods if the Contract is awarded to the Bidder.

IB.26.4 The comparison shall be of ex-factory/ex-warehouse/off-the-shelf price of the goods offered from within the Purchaser's country, such price to include all costs as well as duties and taxes paid or payable on components and raw material incorporated in the goods, and the CIF port-of-entry price of the goods offered from outside the Purchaser's country.

IB.26.5 The Purchaser's evaluation of a bid will take into account, in addition to the bid price and the price of incidental services, the following factors, in the manner and to the extent indicated in para. IB.26.5 and in the Technical Specifications:

- (a) Delivery schedule offered in the bid;**

IB.26.6 Pursuant to para. IB.26.5 the following evaluation methods will be followed:

(a) *Delivery Schedule:*

The purchaser shall receive the goods covered under the invitation, at the time specified in the Schedule of Deliveries. The estimated time of arrival of the goods should be calculated for each bid after allowing for reasonable ocean transportation time. Treating the bid offering the scheduled time of arrival as the base, a delivery "adjustment" will be calculated for other bids at 5% of the ex-factory/CIF price for each month of delay beyond the base and this will be added to the bid price for evaluation.

IB.27 Margin of Preference
Kindly Ignore – this section was intentionally omitted

IB.28 Contacting the Purchaser

IB.28.1 Subject to Clause IB.23, no Bidder shall contact the Purchaser on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded.

IB.28.2 Any effort by a Bidder to influence the Purchaser in the Purchaser's bid evaluation, bid comparison or contract award decisions shall result in the rejection of the Bidder's bid.

Award of Contract

IB.29 Post-qualification

IB.29.1 In the absence of pre-qualification, the Purchaser will determine to its satisfaction whether the Bidder selected as having submitted the lowest evaluated responsive bid is qualified to satisfactorily perform the Contract.

IB.29.2 The determination will take into account the Bidder's financial, technical and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to Clause IB.13, as well as such other information as the Purchaser deems necessary and appropriate.

IB.29.3 An affirmative determination will be a prerequisite for award of the Contract to the Bidder. A negative determination will result in rejection of the Bidder's bid, in which event; the Purchaser will

proceed to the next lowest evaluated bid to make a similar determination of that Bidder's capabilities to perform satisfactorily.

IB.30 Award Criteria

IB.30.1 Subject to Clause IB.32, the Purchaser will award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided it has been determined that the Bidder is qualified to perform the Contract services satisfactorily.

IB.31 Purchaser's Right to Vary Quantities at Time of Award

IB.31.1 The Purchaser reserves the right at any time of award of Contract to increase or decrease by up to 80% the quantity of goods and services specified in the Schedule of Requirements without any change in price or other terms and conditions.

IB.32 Purchaser's Right to Accept Any Bid and to Reject Any or All Bids

IB.32.1 The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser's action.

IB.33 Notification of Award

IB.33.1 Prior to the expiration of the period of bid validity, the Purchaser will notify the successful Bidder in writing by email or by courier or by telefax, to be confirmed in writing by registered letter, that its bid has been accepted.

IB.33.2 The notification of award will constitute the formation of the Contract.

IB.33.3 Upon the successful Bidder's furnishing of performance security pursuant to Clause IB.35, the Purchaser will promptly notify each unsuccessful Bidder and will discharge its bid security, pursuant to Clause IB.15.

IB.34 Signing of Contract

IB.34.1 At the same time as the Purchaser notifies the successful Bidder that its bid has been accepted, the Purchaser will send the Bidder the Contract Form provided in the Bidding Documents, incorporating all agreements between the parties.

IB.34.2 Within fourteen (14) days of receipt of the Contract Form, the successful Bidder shall sign and date the Contract and return it to the Purchaser.

IB.35 Performance Security

IB.35.1 Within fourteen (14) days of the receipt of notification of award from the Purchaser, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, in the Performance Security Form provided in the Bidding Documents or another form acceptable to the Purchaser.

IB.35.2 If the performance Security to be provided by the successful bidder is in the form of a bank guarantee it shall be issued either:

(a) as at the Bidder's option, by a bank located in the country of the Purchaser or by a foreign bank through a correspondent bank located in the country of the Purchaser, or

(b) with the prior written agreement of the Purchaser, directly by a foreign bank acceptable to the Purchaser.

If the Performance Security is to be provided by the successful Bidder in the form of a bond, it shall be issued by a bonding insurance company, which has been previously approved in writing to be acceptable by the Purchaser.

IB.35.3 Failure of the successful Bidder to comply with the requirement of Clause IB.34 or Clause IB.35 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the Purchaser may make the award to the next lowest evaluated bidder or call for new bids.

PART 2

GENERAL CONDITIONS OF CONTRACT

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GC.01

Definitions

In this Contract, the following terms shall be interpreted as indicated:

- (a) "The Contract" means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract Form signed by the parties, including attachments and appendices thereto and all documents incorporated by reference therein;
- (b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations;
- (c) "The Goods" means all of the equipment, machinery, and/or other materials which the Supplier is required to supply to the Purchaser under the Contract;
- (d) "Services" means services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training and other such obligations of the Supplier covered under the Contract;
- (e) "The Purchaser" means the Organization purchasing the Goods;
- (f) "The Supplier" means the individual or firm supplying the Goods under this Contract;
- (g) IFI means the International Financial Institution and stands for the bank agreed on by both the purchaser and the supplier.
- (h) "Approved" means approved by the Purchaser or its delegated representatives; and
- (i) "Specified" means specified by the Purchaser; either on drawings, in the Technical Specifications, or in writing.
- (j) "Delivery" means delivered CIF Kingston, Jamaica unless otherwise specified.
- (K) "Days" means calendar days acceding to the Gregorian calendar.

GC.02 Application

GC.02.1 These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

GC.03 Country of Origin

GC.03.1 All Goods and Services supplied under the Contract shall be as defined under the guidelines of procurement of the JPS Purchasing Department. These rules are explained under the Special Conditions of Contract.

GC.03.2 For purposes of this Clause "origin" means the place where the Goods were mined, grown or produced, or from which the Services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.

GC.03.3 The origin of Goods and Services is distinct from the nationality of the Supplier.

GC.04 Standards

GC.04.1 The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' country of origin and such standards shall be the latest issued by the concerned institution.

GC.05 Use of Contract Document and Information

GC.05.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, of any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

GC.05.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated in para. GC.05.1 except for purposes of performing the Contract.

GC.05.3 Any document, other than the Contract itself, enumerated in para. GC.05.1 shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser

GC.06 Patent Rights

GC.06.1 The Supplier shall indemnify the Purchaser against all third party claims of infringement of patent, trademark or industrial design rights arising from the use of the Goods or any part thereof in the Purchaser's country.

GC.07 Performance Security

GC.07.1 Within fourteen (14) days after the Supplier's receipt of notification of award of the Contract, the Supplier shall furnish performance security to the Purchaser in the amount specified in the Special Conditions of Contract.

GC.07.2 The proceeds of the performance security shall be payable to the Purchaser as liquidated damages for the Supplier's failure to satisfactorily perform its obligations under the Contract and not as a penalty.

GC.07.3 The Performance Security shall be denominated in the currency of the Contract or in freely convertible currency acceptable to the Purchaser, and shall be in one of the following forms:

- (a) A bank guarantee or irrevocable Letter of Credit, issued by a bank located in the Purchaser's country or abroad acceptable to the Purchaser, and in the form provided in the Bidding Documents or another form acceptable to the Purchaser; or
- (b) A cashier's check or certified check.

GC.07.4 The performance security will be discharged by the Purchaser and returned to the Supplier not later than 30 days following the date of completion of the Supplier's performance obligations, including any warranty obligations, under the Contract.

GC.08 Inspections and Tests

GC.08.1 The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract. The Special Conditions of Contract and/or the Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing of the identity of any representatives retained for these purposes.

GC.08.2 The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at point of delivery and/or at the Good's final destination. Where conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance - including access to drawings and production data - shall be furnished to the inspectors at no charge to the Purchaser.

GC.08.3 Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject them and the Supplier shall either replace the rejected Goods or make all alterations necessary to meet specification requirements free of cost to the Purchaser.

GC.08.4 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Good's arrival in the Purchaser's country shall in no way be limited or waived by reason of the Goods having been previously inspected, tested and passed by the Purchaser or its representative prior to the Goods' shipment from the country of origin.

GC.08.5 Risk in the Goods passes to the Purchasers after the Goods arrival in the Purchaser's Country and the Purchaser has inspected, tested and accepted the goods.

GC.08.6 Nothing in Clause GC.08 shall in any way release the Supplier from any warranty or other obligations under this Contract.

GC.09 Packing

GC.09.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points of transit.

GC.09.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract and, subject to Clause GC.18, in any subsequent instructions ordered by the Purchaser.

GC.10 Delivery and Documents

GC.10.1 Delivery of the Goods shall be made by the Supplier in accordance with the terms specified by the Purchaser in its Schedule of Deliveries and the Special Conditions of Contract. Delivery of the Goods takes place after the goods have been tested, inspected and accepted by the Purchaser upon arrival of the Goods in the Purchaser's Country.

GC.10.2 Subject to SC-7 For the purposes of this Contract, **FOB,CFR, CIF** and other trade terms used to describe the obligations of the parties shall have meanings assigned to them by the current edition of the International Rules for the Interpretation of the Trade Terms published by the International Chamber of Commerce, Paris, and commonly referred to as INCOTERMS.

GC.11 Insurance

GC.11.1 The Goods supplied under the Contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the Special Conditions of Contract.

GC.11.2 Where delivery of the goods is required by the Purchaser on a CIF basis, the Supplier shall arrange and pay for marine insurance, naming the Purchaser as the beneficiary. Where delivery is on an FOB or CFR basis, marine insurance shall be the responsibility of the Purchaser.

GC.12 Transportation

- GC.12.1 Where the Supplier is required under the Contract to deliver the Goods FOB, transport of the Goods, up to and including the point of putting the Goods on board the vessel at the specified port of loading, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.
- GC.12.2 Where the Supplier is required under the Contract to deliver the Goods **CFR or CIF, Kingston, Jamaica** or to a specified destination within the country, transport of the Goods to the port of discharge or such other point in the country of destination as shall be specified in the Contract shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.
- GC.12.3 Where the Supplier is required to effect delivery under any other terms, for example, by post or to another address in the same source country, the Supplier shall be required to meet all transport and storage expenses until delivery.
- GC.12.4 In all of the above cases, transportation of the Goods after delivery shall be the responsibility of the Purchaser.
- GC.12.5 Where the Supplier is required under the contract to deliver the Goods CIF, shipment shall be made in a carrier operating under the flag of the purchaser's country. Where the Supplier is required in the Contract (i) to deliver the Goods FOB, and (ii) to arrange on behalf and at the expense of the Purchaser for ocean transportation on specified conference vessels or on national flag carriers of the Purchaser's country, the Supplier may arrange for such transportation on alternative carriers if the specified conference vessels or national flag carriers are not available to transport the Goods within the time period(s) specified in the Contract.

GC.13 Incidental Services

GC.13.1 As specified in the Special Conditions of contract, the Supplier may be required to provide any or all of the following services:

- (a) Performance or supervision of on-site assembly and/or start up of the supplied Goods;
- (b) Furnishing of tools required for assembly and/or maintenance of the supplied Goods;
- (c) Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
- (d) Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- (e) Conduct of training of the Purchaser's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance and/or repair of the supplied Goods.

GC.13.2 Prices charged by the Supplier for the preceding incidental services, shall not be included in, shall be quoted separately in the Contract Price for the Goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged by other parties by the Supplier for similar services.

GC.14 Spare Parts

GC.14.1 As specified in the Special Conditions of Contract, the Supplier may be required to provide any or all of the following materials and notifications pertaining to spare parts manufactured or distributed by the Supplier:

- (a) Such spare parts as the Purchaser may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
- (b) In the event of termination of production of the spare parts:
 - advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirement; and
 - following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if and when requested.

GC.15 Warranty

GC.15.1 The Supplier warrants that the goods supplied under the Contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that the Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except insofar as the design or material is required by the Purchaser's Specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions obtaining in the country of final destination.

GC.15.2 This warranty shall remain valid for twelve (12) months after the Goods, or any portion thereof as the case may be, have been delivered (and commissioned) to the final destination indicated in the Contract.

GC.15.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.

GC.15.4 Upon receipt of such notice, the Supplier shall, depending on which of the methods can be achieved more expeditiously with reasonable speed, repair or replace the defective Goods or parts thereof, without costs to the Purchaser and under the terms and conditions as if the replacement Goods or parts were being delivered to the Company for the first time.

GC.15.5 If the Supplier, having been notified, fails to remedy the defect(s) within a reasonable period, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

GC.16 Payment

GC.16.1 The method and conditions of payment to be made to the Supplier under the Contract shall be as specified in the Special Conditions of Contract.

GC.16.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and Services performed, and by shipping

documents, submitted pursuant to Clause GC.10, and upon fulfillment of other obligations stipulated in the contract.

GC.16.3 Payments shall be made promptly by the Purchaser within sixty (60) days of submission of an invoice/claim by the Supplier.

GC.16.4 The currency or currencies in which payment is made to the Supplier under this Contract shall be as specified in the Special Conditions of Contract subject to the following general principle: Payment will be made in the currency or currencies in which the Contract Price has been stated in the Supplier's bid, as well as in other currencies in which the Supplier had indicated in its bid that it intends to incur expenditures in the performance of the Contract and wishes to be paid.

GC.17 Prices

GC.17.1 Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not, with the exception of any price adjustments authorized by the Special Conditions of Contract, vary from the prices quoted by the Supplier in its bid.

GC.18 Change Orders

GC.18.1 The Purchaser may at any time, by a written order given to the Supplier pursuant to Clause GC.31, make changes within the general scope of the Contract in any one or more of the following:

- (a) drawings, designs or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
- (b) the method of shipment or packing;
- (c) the place of delivery; or
- (d) the Services to be provided by the Supplier.

GC.18.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any part of the work under the Contract, whether changed or not changed by the order, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall be amended accordingly. Any claims by the Supplier for adjustment

under this clause must be asserted within thirty (30) days from the date of the Supplier's receipt of the Purchaser's change order.

GC.19 Contract Amendments

GC.19.1 Subject to Clause GC.18, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the duly authorized agents of both parties.

GC.20 Assignment

GC.20.1 The Supplier shall not assign, in whole or part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

GC.21 Subcontracts

GC.21.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under the Contract if not already specified in his bid. Such notification, in his original bid or later, shall not relieve the supplier from any liability or obligation under the Contract with the Purchaser.

GC.21.2 Contracts with Subcontractors must comply with the provisions of Clause GC.03, GC.05, GC.09 and GC.15.

GC.22 Delays in the Supplier's Performance

GC.22.1 Delivery of the Goods and performance of Services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser in its Schedule of Deliveries.

GC.22.2 A delay by the Supplier in the performance of its delivery obligations shall, subject to the provisions of clause GC.25, render the Supplier liable to any or all of the following sanctions: forfeiture of its performance security, imposition of liquidated damages, and/or termination of the Contract for default, unless the reason for such delay is acceptable to the Purchaser.

GC.22.3 If at any time during the performance of the Contract, the Supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may at its discretion extend the Supplier's time for performance, in which

case the extension shall be ratified by the parties by amendment of the Contract, or terminate the Contract in accordance with the provision of clause GC.22.2.

GC.23 Liquidated Damages

GC.23.1 Subject to Clause GC.25, if the Supplier fails to deliver any or all of the Goods or perform the Services within the time period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to two point five percent (2.5%) of the delivered price of the delayed Goods or unperformed Services for each week of delay until actual delivery or performance, up to a maximum deduction of fifteen percent (15%) of the delayed Goods or Services contract price. Once the maximum is reached, the Purchaser may consider termination of the Contract.

GC.24 Termination for Default

GC.24.1 The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or in part:

- (a) if the Supplier fails to deliver any or all of the Goods within the time period(s) specified in the Contract, or any extension thereof granted by the Purchaser pursuant to Clause GC.22; or
- (b) if the supplier fails to perform any other obligation(s) under the Contract.

GC.24.2 In the event the Purchaser terminates the Contract in whole or in part, pursuant to para. GC.24.1, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods. However, the Supplier shall continue performance of the Contract to the extent not terminated.

GC.25 Force Majeure

GC.25.1 Notwithstanding the provisions of Clauses GC.22, 23, 24, the Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

GC.25.2 For the purposes of this clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include,

but are not restricted to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

GC.25.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

GC.26 Termination for Insolvency

GC.26.1 The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, without compensation to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.

GC.27 Termination for Convenience

GC.27.1 The Purchaser, may by written notice sent to the Supplier, terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of work under the Contract is terminated, and the date upon which such termination becomes effective.

GC.27.2 The Goods that are complete and ready for shipment within 30 days after the Supplier's receipt of notice of termination shall be purchased by the Purchaser at the Contract terms and prices. For the remaining goods, the Purchaser may elect:

(a) to have any portion completed and delivered at the Contract terms and prices; and/or

(b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and for materials and parts previously procured by the Supplier.

GC.28 Resolution of Disputes

GC.28.1 The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

GC.28.2 If, after thirty (30) days from the commencement of such informal negotiation, the Purchaser and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms specified in the Special Conditions of Contract. The mechanism shall be specified in the Special Conditions of Contract.

GC.29 Governing Language

GC.29.1 The Contract shall be written in the language of the bid, as specified by the Purchaser in the Instructions to Bidders. Subject to Clause GC.30, that language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract which are exchanged by the parties shall be written in that same language.

GC.30 Applicable Law

GC.30.1 The Contract shall be interpreted in accordance with the laws of the Purchaser's country.

GC.31 Notices

GC.31.1 Any notice given by one party to the other pursuant to the Contract shall be sent in writing or by courier or telefax and confirmed in writing to the address specified for that purpose in the Special Conditions of Contract.

GC.31.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

GC.32 Taxes and Duties

GC.32.1 A foreign Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the Purchaser's country.

GC.32.2 A local Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Purchaser.

PART 3

SPECIAL CONDITIONS OF CONTRACT

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SC General

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The corresponding clause number of the General Conditions is indicated in parentheses.

KINDLY NOTE THAT THE FOLLOWING SECTIONS WERE INTENTIONALLY OMITTED:

SC.02	SC.04	SC.05	SC.06	SC.09
SC.12	SC.17	SC.18	SC.19	SC.20
SC.21	SC.22	SC.23	SC.24	SC.25
SC.26	SC.27	SC.29	SC.30	

SC.01 Definitions (Clause GC.01)

- (a) The Purchaser is The Jamaica Public Service Company Limited (JPS)
- (b) The Supplier is the successful Bidder
- (c) The Bank is the Bank agreed on by the purchaser and the supplier.
- (d) Delivery is delivered **CIF Kingston, Jamaica, W.I.** PROVIDED THAT risk in the Goods arrival in the Purchasers' Country and the Purchaser has inspected, tested and accepted the Goods.

SC.03 Country of Origin (Clause GC.03)

All member countries as per JPS Purchasing Department pre-qualification list.

SC.07 Performance Security (Clause GC.07)

The Performance Security shall be in the amount of 10% of the Contract price.

SC.08 Inspection and Tests (Clause GC.08)

The required inspection and tests are specified in the Technical Specifications.

SC.10 Delivery and Documents (Clause GC.10)**(a) For Imported Goods**

Prior to shipment, the Supplier shall notify the Purchaser and its Insurance Company by email or telefax the full details of the shipment including contract number, description of Goods, quantity, the vessel, the bill of lading number and date, port of loading, date of shipment, port of discharge, date of arrival at port of discharge or other information which may be relevant to the purchaser or insurance company. The Supplier shall mail the documents listed in clause 3 of the Purchaser's Purchase Order in accordance with the terms and conditions therein.

- (i) Original and two (2) copies of the Supplier's invoice showing Goods description, quantity, unit price, total amount;
- (ii) First and Second Original of negotiable, clean, on-board bill of lading marked freight prepaid and one (1) copy of non-negotiable bill of lading;
- (iii) Original and two (2) copies of the packing list identifying contents of each package;
- (iv) Original and two (2) copies of the Insurance certificate;
- (v) Original and two (2) copies of the Manufacturer's/supplier's warranty certificate;
- (vi) Inspection certificate, issued by the nominated inspection agency and the Supplier's factory inspection report; and

The above documents shall be received by the Purchaser at least one week before arrival of Goods at the port and, if not received, the Supplier will be responsible for any consequent expenses.

Customs Regulations Governing Import of Chemical, Liquids, Solvents and Gases:

All goods falling in the above category deemed hazardous or non hazardous require an import permit.

The Supplier is expected to submit the following documents, minimum ten (10) working days prior to shipment.

- (a) Material Safety Data Sheet (MSDS)
- (b) Packing list indicating the description of the item, packing type and quantity.

No shipment should be effected for the above categories of goods without notification that a permit is in place.

SC.11 Insurance (Clause GC.11)

Notwithstanding GC 10.2, the marine insurance shall be in an amount equal to 110% of the CIF value of the goods from "warehouse to warehouse" on "All Risks" basis including War Risks and Strike clauses. Warehouse to warehouse shall mean from the warehouse of the supplier to the warehouse of the Purchaser.

SC.13 Incidental Services (Clause GC.13)

All required incidental services have been included in the Technical Specifications. The cost shall be included in the Contract price.

SC.14 Spare Parts (Clause GC.14)

Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares such as gaskets, washers, etc. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order and establishment of Letter of Credit.

SC.15 Warranty (Clause GC.15)

In partial modification of the provisions, the warranty period shall be twelve (12) months from the date of commissioning.

SC.16 Payment (Clause GC.16)

(a) Payment for Goods.

On Receipt of Goods: 100% of the Contract Price of the Goods received shall be paid within 30 days of receipt of Goods on submission of claim supported by Acceptance Certificate issued by the Purchaser's representative.

SC.28 Resolution of Disputes (Clause GC.28)

The dispute resolution mechanism to be applied pursuant to Clause GC.28 of the General Conditions shall be as follows:

- (a) In the case of a dispute between the Purchaser and a Supplier which is a national of the Purchaser's country, the dispute shall be referred to adjudication/arbitration in accordance with the laws of the Purchaser's country; and
- (b) In the case of a dispute between the Purchaser and a foreign Supplier, the dispute shall be settled by arbitration in accordance with the provisions of the UNCITRAL Arbitration Rules.
- (c) The Appointing Authority shall be the President for the time being of the Jamaica Institute of Engineers (J.I.E.).
- (d) There shall be one Arbitrator.

SC.31 Notices (Clause GC.31)

For the purpose of all notices, the following shall be the address of the Purchaser and the Supplier.

Purchaser:

**Purchasing Manager
Jamaica Public Service Co. Ltd.
P.O. Box 54
Kingston, Jamaica.**

Supplier:

PART 4

EXHIBITS

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Exhibit 1 – This Requirement is waived”

FORM OF BID BOND

KNOW ALL MEN _____

as Principal, and _____

as Surety, are held and firmly bound unto Jamaica Public Service Company Limited with Head Office at 6 Knutsford Boulevard, Kingston 5, Jamaica W.I. (hereinafter called the Purchaser) in the sum of

_____ Dollars (\$.....),

as hereinafter set forth and for the payment on demand of which sum well and truly to be made we bind ourselves, our Executors, our Administrators, Successors and Assigns, jointly and severally, by these present.

WHEREAS, the Principal has submitted a Bid dated _____ day of _____ 20____ for the supply of **one (1) three phase, 60/80 MVA, 138-69kV interbus power transformer.**

NOW THEREFORE, the conditions of the obligation are that if the Purchaser receives the Bid of the Principal and:

- (a) If the Bidder does not withdraw the Bid during the bid validity specified by the Bid in the Tender Document, and/ or
- (b) If the Purchaser accepts the Bid of the principal, and the principal executes such Contract Documents, if any as may be required by the terms of the bid and give such Supplier's Bond or Bonds for the performance of the contract and for the prompt payment of material furnished or works executed for the project as may be specified in the bid, then this obligation shall be null and void otherwise shall remain in full force and effect
- (c) In the event of withdrawal of the bid during the bid validity period or in the event of failure of the Principal to execute such document, if any, and give such Supplier's Bond or Bonds if the Principal shall pay to the Purchaser

the difference, not to exceed the sum hereof, between the amount specified in the Bid and such larger sum for which the Purchaser may in good faith Contract with another party to furnish materials for the project, then this obligation shall be avoided to here-wise remain in full force and effect, and shall be payable forthwith as damages on demand made by the Purchaser. It being expressly agreed that such a demand shall be conclusive evidence as between the Purchaser and the Surety that the sum demanded is properly due and payable.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by _____ day of _____ 20 _____.

PRINCIPAL (SEAL)

Attest: **BY** _____

SECRETARY

TITLE

SURETY

Attest: **BY** _____

SECRETARY

TITLE

Exhibit 2

FORM OF PERFORMANCE BOND

To: Jamaica Public Service Company Limited

WHEREAS _____ hereinafter called "the Supplier" has undertaken to supply one (1) 60/80MVA Interbus Power Transformers, hereinafter called "the Contract".

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract. AND WHEREAS we have agreed to give the Supplier a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of

(_____
_____ Dollars \$ _____)

and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limits of

(_____
_____ Dollars \$ _____)

as aforesaid, without your needing to prove or to show grounds or reasons for your demand of the sum specified therein.

This guarantee is valid until the _____ day of _____ 20 _____

Signature and Seal of the Guarantors

Date: _____

Address: _____

Exhibit 3

FORM OF AGREEMENT

This Agreement made the _____ day of _____, 20____ for the supply of one (1) 60/80MVA Interbus Power Transformer. Substation **RFP #**

BY AND BETWEEN

JAMAICA PUBLIC SERVICE COMPANY LIMITED, a company incorporated under the laws of Jamaica with Head Office at No. 6 Knutsford Boulevard in the Parish of St. Andrew, Jamaica; hereinafter called the "Purchaser".

AND

with registered office at _____ hereinafter called the "Supplier".

WITNESSETH that the Purchaser and the Supplier agree as follows:

1. The following documents shall be deemed to form and be read and construed as part of this Agreement, which shall constitute a binding Contract between the Purchaser and the Supplier:
 - (a) The Addenda (if any)
 - (b) The letter of award/acceptance
 - (c) The Technical Specifications
 - (d) Drawings referred to in the Specification
 - (e) The Special Conditions of Contract
 - (f) The General Conditions of Contract
 - (g) The Bidders Proposal
 - (h) The Instructions to Bidders

The aforesaid documents shall be taken as complimentary and mutually explanatory of one another but in the case of ambiguities or discrepancies shall take precedence in the order set out above.

2. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier agrees to furnish the materials and equipment complete in every respect in conformity with the provisions of this Contract and to the satisfaction of the Purchaser and the delivery of such materials and equipment shall be made on or before

3. In consideration of the Execution of the Works in accordance with the Provisions of this Contract and to the satisfaction of the Purchaser, the Purchaser agrees to pay the Contract Price to the Supplier at the time and in the manner prescribed herein. The Contract Price shall consist of unit prices and lump sums named in the attached Schedule of Prices having a total (based on estimated quantities in the case of unit price items) of

_____ dollars \$ _____

The Supplier has furnished and the Purchaser accepts:

A Performance Bond that is:

Issued by the _____

In the amount of _____

Dated the _____

Having a Serial No.

With respect to the execution of the Works by the Supplier which bond shall operate according to its tenure.

This Agreement bears the formal date aforementioned and shall be for all purposes retroactive to such date even though signed and acknowledged on the dates mentioned below.

The Supplier and the Purchaser for themselves, their successors, and assigns hereby agree to the full performance of the covenants herein contained in witness whereof they have executed this Agreement as of the day and year first written above.

SIGNED SEALED AND DELIVERED)
by the said SUPPLIER in the)
presence of)

WITNESS

SIGNED SEALED AND DELIVERED)
by the said PURCHASER in)
the presence of)

WITNESS

PART 5
BID FORM

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Bid for
THE JAMAICA PUBLIC SERVICE COMPANY LIMITED

**NORTH COAST INTERBUS TRANSFORMERS
UPGRADE & RATIONALIZATION PROJECT
FOR THE SUPPLY OF**

**One (1) 60/80 MVA, 138-69KV INTERBUS POWER TRANSFORMERS FOR THE
INSTALLATION AT BELLEVUE SUBSTATION**

RFP # 938931

Proposed by _____
of _____
a Company duly incorporated under the laws of _____
and licensed to carry on business in the Country of _____
and having its head office at _____
hereinafter called the Bidder.

**TO: THE JAMAICA PUBLIC SERVICE CO. LTD.
6 KNUTSFORD BOULEVARD
P. O. BOX 54
KINGSTON 5, JAMAICA W.I.**

Having examined the Bid Documents including Instructions to Bidders, General Conditions of Contract, Special Conditions of Contract, Exhibits, Technical Specification and Attachments to the above named documents the undersigned Bidder hereby proposes and offers to supply one (1) 60/80MVA, 138-69kV Interbus Power Transformer in conformity with the Specification for and at the prices set out in the annexed Schedule of Prices and by the date specified in the Schedule of Requirements.

The total amount of this Bid calculated according to the said Schedule of Prices is

United States Dollars (US\$ _____). The Bidder undertakes to enter into a Contract incorporating Bid Documents and this Bid and the Bidder hereby agrees that until such a Contract is executed, the said documents and the Notification of Acceptance of Bid by the Purchaser to the successful Bidder shall constitute a binding Contract.

The Bidder agrees that his Bid shall continue open to acceptance and irrevocable until the formal Contract is executed by the successful Bidder for the said work and the Purchaser may at any time within ninety (90) days of the closing date for Bids, accept this Bid without notice, whether any other Bid has previously been accepted or not.

PART 6

TECHNICAL SPECIFICATIONS

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Technical Specifications

TS.01 Summary of Work

TS.01.1 Description of Works

This specification covers the design, manufacture, factory testing and delivery of one (1) 60/80 MVA, 138000-69000V, interbus power transformer complete with all necessary fittings, accessories and spare parts. The transformer is to be supplied as per schedule of delivery in 2022.

This transformer is being purchased as a security improvement transformer for the existing interbus transformer at Bellevue substation under the Interbus Transformer Security Improvement Project. The other special requirements are outlined in this specification.

TS.01.2 Location

Bellevue Substation, St. Ann, Jamaica

TS.01.3 Scope of Work

The Supplier shall design, supply, factory test and deliver to Kingston, Jamaica, W. I. all equipment and material in accordance with these specifications.

TS.01.4 Specification Drawings

The Supplier is free to use designs and arrangements that best suit the equipment proposed. Detailed design and provision of proper electrical working clearances, phase to phase, and phase to ground shall be the responsibility of the Supplier.

The dimensions of the power transformer to be supplied should not exceed those as outlined in this specification.

TS.01.5 Works Not Included

The following work shall not form part of this contract

- Assembly, installation, adjustment and commissioning of equipment on site unless separately and specifically requested by Purchaser.

TS.01.6 Supplier's Drawings and Schedules

The Supplier shall submit two (2) copies of drawing(s) showing any proposed deviations from the original tender, for review by the Purchaser.

The Supplier shall submit, for review, within the time specified in the agreed Work Schedule, two (2) copies of all general assembly drawings, together with such additional detailed drawings as are required or specifically requested to fully demonstrate that all parts of the equipment to be furnished will conform to the provisions and intent of this specification. Any drawing of a preliminary nature must be so indicated.

One copy of each drawing submitted for review will be returned with any necessary changes or comments noted on the drawing. The drawings will be reviewed only for general design, overall dimensions and materials. Review by the Purchaser will not relieve the supplier of responsibility for conformity to the specification, correct details and fit of parts when erected. Only drawings with 'as noted' should be returned for review by the Purchaser. No major revision affecting the design shall be made after a drawing has been approved, without resubmitting the drawing for review. Every revision shall be shown by number, date and subject in a revision block. The symbology to be used shall be in accordance with ANSI Standards.

All applicable requirements in the preceding paragraphs, with reference to drawings, shall apply to catalog cuts, illustrations, printed specifications or any other data submitted.

After reviewed drawings have been received, the Supplier shall without delay complete all necessary corrections or additions and furnish the Purchaser with one (1) reproducible (Mylar or Dylar) copy of each drawing. If minor revisions are made subsequently, one (1) reproducible (Mylar or Dylar) copy of the revised drawing shall be forwarded to the Purchaser.

The Bill of Materials shall be treated as a drawing and one (1) reproducible (Mylar or Dylar) copy shall be furnished.

TS.02 General Requirements**TS.02.1 Work Schedule**

The Supplier shall submit within 15 working days of acceptance of the tender a general Work Schedule showing key dates required for sub-orders and drawing approvals so that the specified delivery date(s) shall be met.

The schedule shall indicate commencement and completion dates for the principal features of the Works including, but not limited to, engineering design and submittal of drawings for review.

TS.02.2 Information to be Submitted by the Supplier

The Supplier shall submit to the purchaser drawings, design data, operation and maintenance manuals, as may be called for herein, or as the purchaser may reasonably require. The Supplier's drawings and design data shall bear the Supplier's official verification that the information shown thereon has been checked by the Supplier and is correct for use in construction, except for

drawings of a preliminary nature furnished for information only, which shall be clearly identified as such.

Where applicable, the following drawings and information are to be submitted for approval before manufacture commences.

- Equipment arrangement - plan and elevations
- Dimensioned outline drawings, details and weights of all equipment
- Equipment type test reports
- Nameplate diagram
- Equipment wiring diagrams
- Schematic control diagrams
- Manuals for installation, operation and maintenance of the equipment
- Testing and commissioning procedures

Certification from an independent testing laboratory, attesting that the level of PCBs in the oil is not more than 2 ppm shall be provided.

TS.02.3 Submission and Approval of Drawings

The Supplier shall submit two (2) copies of all drawings, and data to the Purchaser for approval.

The Purchaser will either approve these documents or, request changes or modifications to be made, and shall return one (1) copy to the Supplier within two (2) weeks after receipt of the drawings. The time required for the approval, revision and possible resubmission of drawings must be allowed for in the overall schedule.

The Supplier shall submit for final approval revised copies within two (2) weeks of the receipt of the marked-up drawings. Any manufacturing done before approval of the drawings will be at the Supplier's own risk. The Purchaser will have the right to require the Supplier to make any changes in design which are necessary, in the opinion of the Purchaser, to make the equipment conform to the requirements and intent of the Specifications without additional cost.

All drawings or documents submitted to the Purchaser shall bear the Supplier's stamp "For Approval", the date of submission and the Supplier's signature.

Drawings will be reviewed only for general design, overall dimensions and materials. Approval by the Purchaser of the Supplier's drawings shall not relieve the Supplier of his responsibility for the correctness of his drawings.

Drawings and data shall be submitted within the agreed time after the date on which an order or letter of intent is received by the Supplier.

TS.02.4 Drawing Format

Each Drawing shall have a title block provided at the lower right-hand corner. At least the following information shall be included in the title block:

- the Supplier's name
- the Purchaser's name (Jamaica Public Service Company Limited)
- drawing title (brief description of drawing)

- drawing and revision number
- first date and revision dates
- scale and scale bar (where applicable).

Letters and figures shall be clear, uniform and evenly spaced. The graphical symbols on electrical drawings, diagrams, and other documents shall be in accordance with ANSI standards.

Dimensions of Drawing frames without folding margin shall be as follows:

Drawing	Dimension of Size Drawing Frame (mm)
A1	566 x 801
A2	400 x 566
A3	283 x 394

Outline drawings of major electrical equipment, panels, schematics and substation steel details shall be A1 format.

Units of measure and weights shall be expressed in the metric (SI) system of measurements.

TS.02.5 Installation, Operation and Maintenance Manual

Seven (7) copies of the installation, operation and maintenance manual shall be furnished by the Supplier not later than thirty (30) days before shipment of equipment and materials. This must be written in English.

If this schedule is not met, the supplier shall send the O&M manuals by airfreight to arrive Kingston, Jamaica before the equipment.

The manual shall contain the following minimum information:

- General descriptive information
- Assembly and/or erection details
- Operating and Maintenance instructions
- Instructions for testing and adjustments
- One copy of each approved drawing including catalog cuts and other pertinent data.
- Test Certificate(s)
- List of recommended spares
- Equipment insulation curves
- Parts identification list for each item of equipment furnished
- Manufacturer's descriptive information and instructions for all accessory equipment

TS.02.6 Inspection and Testing

All equipment and materials supplied under this Contract shall be subject to inspection and testing by the Purchaser or his appointed representative. Satisfactory completion of such inspection and testing shall not prejudice the right of the Purchaser to reject the equipment if it fails to comply with the Specifications or fulfill the function for which it was intended.

The Supplier shall perform factory tests on all materials, equipment, parts, assemblies and sub-assemblies in accordance with the latest revisions of the applicable standards. The Supplier

shall comply in every respect with the provisions of Section GC.08 of the General Conditions of Contract concerning Inspection and Tests of material and equipment.

At least three (3) weeks notice of the date, time and place of all tests shall be given to the Purchaser so that arrangements can be made to witness the tests. The Supplier shall conduct the tests and provide all necessary labor and equipment to carry out the tests.

TS.02.7 Standards

All equipment and materials shall conform to the latest editions of all relevant ANSI standards. Where equipment, components or materials are not covered by appropriate ANSI standards, relevant IEEE, NEMA, ASTM, AISC and AWS shall apply. If equipment or materials conforming to other recognized national standards are offered, the bidder shall submit a copy, in English, of the standard offered and shall itemize the pertinent areas where the standard differs from the requirements of the relevant ANSI standard.

The foregoing referenced standards and their abbreviations are as follows:

<u>Name</u>	<u>Abbreviations</u>
American National Standards, Inc	ANSI
American Society for Testing and Materials	ASTM
National Electrical Manufacturers Ass.	NEMA
Institute of Electrical and Electronic Engineers, Inc.	IEEE
Insulated Cable Engineers Association	ICEA
American Welding Society	AWS
American Institute of Steel Construction	AISC

TS.02.8 System Characteristics

	<u>HIGH VOLTAGE SIDE</u>
(i) System Phase to phase voltage	138 kV
Maximum operating voltage	144.9 kV
(ii) System BIL	650 kV
(iii) Number of phases	3
(iv) Frequency	50 Hz
(v) System connection	Wye
(vi) Method of Grounding	Solid

(vii) Fault level (symmetrical), kA	4189
	<u>LOW VOLTAGE SIDE</u>
(i) System Phase to phase voltage	69 kV
Maximum operating voltage	72.5 kV
(ii) System BIL	350 kV
(iii) Number of phases	3
(iv) Frequency	50 Hz
(v) System connection	Delta
(vi) Method of Grounding	Grounding transformer
(vii) Fault level (symmetrical), kA	4971
(viii) Auxiliary power supply	240V 120V, 1 phase, 50Hz

TS.02.9 Environmental Conditions

(i) Altitude	Sea level.
(ii) Ambient Temperatures	Maximum 40°C
Average 30°C over 24hrs	Minimum 15°C
(iii) Atmospheric Conditions:	Tropical climate subject to direct sunlight, 200 km/hr wind. High salt spray and dust.

The distance of the substations from the sea range: Adjacent to the seashore.

(iv) Seismic Coefficient	0.25g
(v) Relative Humidity	maximum - 100%
	average - 50%

TS.02.10 Preparation for Shipment

The Supplier shall prepare all equipment and their components in such a manner as to facilitate handling and to adequately protect them from contamination, corrosion or damage in-transit and shall be responsible for and make good any or all damages due to improper preparation or loading.

Small or fragile pieces shall be carefully boxed or otherwise protected against loss or damage during shipment. Delicate electrical and other parts shall be boxed in weather-proof containers.

Detachable items such as transformer radiators, transformer bushings shall be removed for shipment and shall be crated in such a way as to prevent weight from being directly placed on the equipment during transportation.

Oil filled shipment of transformers is preferred, but transformers may be shipped under pressure of

dry gas. If shipped under pressure of dry gas, sufficient oil shall be provided and shipped in non-returnable steel drums with the transformer. Only new clean drums shall be used.

Transformers are to be fitted with impact recorders prior to shipment.

The impact recorders shall have sufficient data storage and mechanical or battery energy capacity for at least three months operation.

It shall be the responsibility of the Supplier to take any other precautions required to ensure the arrival of the equipment in an undamaged and satisfactory working condition.

All crates, sacks and bundles shall be clearly marked to facilitate field identification as follows:

**Jamaica Public Service Company Limited.
60/80MVA Interbus Transformer**

Order No. _____

Jamaica Public Service Co. Ltd.
Kingston,
Jamaica, W.I.

“and any other relevant identification marks”

All external markings shall be legible and durably printed or stenciled on two sides and both ends (where applicable) of containers in letters at least 50 mm high.

In order to facilitate field identification, shipping documents shall include lists with type and quantities of materials contained in each crate.

TS.02.11 Shipping Documents

The following should be adhered to when issuing shipping documents:

- (a) Original invoice must be signed and state whether prices are FOB or CIF.
- (b) No lot value should appear on the invoice, each item should have a unit price and total value.
- (c) A proper description or generic description with part number or catalogue number is required and not part number or catalogue number only.
- (d) In the case of NO CHARGE ITEMS state “Value for customs purposes only”.

TS.02.12 Tropicalization of Equipment

In the selection of materials and equipment, due regard shall be given to the **harsh, corrosive hot and humid** conditions to which they will be subjected. Untreated organic materials, such as cotton, paper or wood, shall not be used. Operating coils of relays and meters shall be impregnated with a fungus-inhibiting varnish. Marking strips and nameplates shall be of plastic laminate or anodized aluminum. Paper label shall not be used even if protected in a plastic envelope.

Panels, enclosures and cubicles shall totally enclose the equipment. Doors of panels shall be close-fitting and ventilated openings shall be suitably screened to prevent entrance of insects and rodents. All cable entrances to equipment shall be tightly sealed with gland plates. All enclosures containing motors, instruments, control and switching equipment shall be equipped with anti-

condensation heaters. The construction of the enclosures and placement of heaters shall be such as to ensure effective air circulation while avoiding local overheating. Internal wiring shall be dual insulated thermoplastic or rubber and Teflon or halogen based non-flammable insulation suitable for a minimum continuous operating temperature of 105°C. All live conductors and connections shall be suitably insulated to prevent short-circuiting by vermin.

Prior to shipment, surfaces of wiring and all other parts susceptible to moisture absorption or fungus attack shall receive treatment with fungicidal varnish.

TS.02.13 Packing and Delivery

The Supplier shall ensure that all shipments are packed properly for shipping and protected from the harsh environment to which it may be subjected over a long period.

No delivery of equipment or materials shall be initiated without the written approval of the Purchaser. Deliveries should be made in accordance with the Schedule of Deliveries and unnecessarily early delivery will not be acceptable.

All equipment and materials shall be delivered to:

Jamaica Public Service Company Ltd.
Kingston, Jamaica

TS.02.14 Design and Workmanship

The design of the equipment and materials shall be such as to give long and continuous service with minimum maintenance under all operating conditions. Equipment shall be of the best quality and most suitable for the function intended, and shall withstand all normal working conditions without deterioration. All equipment shall operate without excessive vibration and noise. Equipment and accessories shall be of well-proven design and provide ease of inspection and maintenance.

The Specification layout drawings showing structures are intended to show only governing dimensions, unless otherwise indicated, and are not intended to define exact details to be furnished.

The Supplier should utilize designs and arrangements to suit his particular equipment and the design loads specified.

TS.02.15 Spare Parts

The Supplier shall supply spare parts required for 2 years normal operation. All spare parts shall be identical to the original parts and shall be properly treated and packed for prolonged storage in the prevailing ambient conditions. Each part shall be clearly identified with its description and function on the outside of the package.

All spare parts shall be shipped with the main equipment and shall be appropriately labeled as spares.

TS.03 Interbus Power Transformer

TS.03.1 General

This section of the Specifications covers the design, manufacture, factory testing, guarantee and delivery of one (1) 60/80 MVA, 138-69kV interbus transformer.

TS.03.2 Standards

The Work shall conform to the requirements of all applicable ANSI C57 series standards and all other relevant ANSI standards.

If this Specification conflicts with any of the above standards or codes, this Specification shall have precedence and shall govern. However, the Bidder shall point out these conflicts in his Bid.

TS.03.3 Transformer Type

The transformers shall be a three-phase, two winding, 50-Hz, oil-filled, outdoor type transformer with motor operated off-circuit tap changer as specified herein. The physical arrangement, that is the location of bushings, surge arresters and other components of the transformer, must conform to ANSI standards as the transformer must be interchangeable with other similar units on the system. Special precaution - provision for corrosion and contamination due to salt spray must be taken into account during design and construction.

TS.03.4 Transformer Ratings

Rated Capacity		60/80 MVA
Temperature Rise		65°C above 40°C ambient
Cooling		ONAN / ONAF
Rated Frequency		50 Hz
Rated Voltage	-High	138 kV
	-Low	69 kV
Connection	-	See table below
Vector Grouping	-	See table below
Short Circuit Impedance at Base MVA		12 +/- 1%

Impedance

Position	HV-LV (ONAN Rating)	HV-LV (ONAF Rating)
1	13.07%	19.30%
5	12.45%	18.45%
9	12.05%	17.91%

BIL -

See table below

Item	Rating	Connection	Vector Group	BIL
1	60/80 MVA 138 - 69 kV	Primary Wye Secondary delta	YNd1	Primary 650kV Secondary 350kV Neutral 110kV

TS.03.5 Short-circuit Withstand Capability

When connected for normal, full-load operation, the transformers shall be capable of withstanding, without injury, a 3-phase or line-to-ground short circuit on any terminal in accordance with the requirements of ANSI.

It shall be assumed that the rated voltage shall be maintained behind the reactance of the system. The values for system fault level to be used for designing short-circuit capability are given in Section TS.02 (General Requirements) of this Specification.

TS.03.6 Losses

In the design of the transformer, the Supplier shall take into consideration the transformer losses which will be evaluated in accordance with the following formula:

$$\text{Cost of transformer losses} = A + B$$

where

A = US \$8465 x kilowatt core loss at rated voltage

B = US \$4863 x kilowatt copper loss at maximum OA Rating

The cost of the guaranteed transformer losses will be added to the cost of the transformer in the evaluation of bids.

If the actual transformer losses as determined by shop tests, exceed the guaranteed values, the value of the excess (actual - guaranteed) losses will be calculated using the above formula and that amount deducted from the CIF price of the transformer.

TS.03.7 Surge Arresters

The transformers shall be protected against incoming surges to both the high voltage and low voltage windings by means of surge arresters mounted on brackets attached to the transformer tank. The arresters to be supplied shall be metal oxide gap-less type and shall have a voltage rating suitable for the minimum and maximum transformer tap setting and system over-voltages. Each arrester shall be provided with a surge discharge counter mounted approximately 1.5 m above grade and insulated. The arresters shall have insulated bases and the ground lead supplied from the arrester to the discharge counter shall be insulated.

The arresters shall conform to the requirements of this specification including the provision of suitable terminal connectors.

TS.03.8 Bushings

The transformer shall be supplied with high voltage and low voltage bushings which have a lightning impulse withstand level equal to that of the connected winding.

All bushings shall be designed to eliminate harmful stressing of any parts due to temperature changes and to provide for conductor expansion. All porcelain used in the bushings shall be homogeneous, free from laminations, cavities and have good dielectric quality. The glazing shall be uniform in color and free from blisters, burns and other defects. All porcelain parts shall be one piece, well vitrified, tough and impervious to moisture. All bushing shall be designed for extra-creepage (2.5cm per nominal kV).

The location of the external terminal bushings on the top of the transformer tank shall be strictly in accordance with ANSI standard C57.12.70. ie, *H1 bushing shall be on the right hand side when facing the HV side of the tank*. All bushings shall be designed such that it is not necessary to lower the oil in the tank to a level, which would expose the winding to atmosphere when changing a bushing.

All bushings shall be ANSI 61 Grey in color.

All HV and LV bushings shall be provided with bimetallic clamp type terminal connectors to accommodate cables in the range of 4/0 AWG to 500 kcmils, LV will require 4/0 AWG to 1000 kcmils ie. Bundle. In addition the following connectors shall be provided loose:

- For HV bushings - Expansion type clamp connectors for 1.5" IPS copper tubing
- For LV bushings - Expansion type clamp connectors for 2.0" IPS copper tubing

TS.03.9 Current Transformers

The transformer shall be equipped with three bushing type current transformers on each high-voltage and low-voltage bushing. The neutral bushing shall have two current transformer cores.

Current transformer ratios and accuracy ratings shall be:

High voltage Ratio - 1200:5 A multi-ratio Accuracy - C400 at 1200:5 A

HV Neutral Ratio - 1200:5 A multi-ratio Accuracy - C400 at 1200:5 A

Low voltage Ratio - 1200:5 A multi-ratio Accuracy - C400 at 1200:5 A

TS.03.10 Tap Changers: (60/80 MVA, 138 - 69 kV Interbus Transformer)

An off-circuit, motor operated tap changer shall be provided in the high voltage winding and shall be rated for the full FA capacity of the transformer with provision for manual operation.

The tap changer shall have the following characteristics:

Voltage range	+/- 10%
Voltage change per tap	2.5%
No. taps above normal	4
No. of taps below normal	4

The tap changer contacts shall be silver plated, and shall be self-cleaning during operation. The tap changer shall have a position indicator, and provision for padlocking the operating mechanism in any position. The operating handle shall be installed in a convenient location for operation by a

person standing on the ground. The tap change mechanism shall be operable by means of both a hand crank and a 240/120 V, 50Hz, single-phase motor.

TS.03.11 Transformer Construction

Core and Coils

The core shall be manufactured of high-grade, cold rolled, grain-oriented, non-aging sheet steel laminations having smooth surfaces. The core steel and all insulation associated with the core shall be designed so that no detrimental changes in physical or electrical properties will occur during the life of the transformer.

The core shall be grounded through externally accessible grounding links located on top of the core to permit testing of the core package for grounds.

The core steel and windings shall be suitably braced to prevent displacement or distortion during transportation and conditions of permissible short circuit and overload. Suitable lifting attachments shall be provided for un-tanking the core and coils with a minimum of headroom. The design and location of lifting points shall be such as to preclude distortion of the core or damage to the core bolt insulation under lifting stresses. Lifting stress shall not be transferred between top and bottom clamps through the core steel.

The windings shall be of high conductivity copper, insulated with pure cellulose paper.

TS.03.12 Transformer Tank

The transformer tank shall be constructed by welded metal plates stiffened by suitable steel sections. The transformer shall be fitted with a bolted type cover and the tank shall be one single body with no subdivisions. All the welded seams of the plate shall be as far as possible double welded to ensure adequate mechanical strength as well as oil tightness.

All fabricated steel shall be free from distortion and constructed according to the approved drawings. All oil-filled compartments mounted on the side of the main tank shall have a 12-mm minimum raised lip to prevent dripping of oil with the covers removed.

The cover construction shall include one or more manholes. Each manhole shall be of sufficient size to permit entry of a 0.5-m diameter (minimum) sphere. All manholes, bushings and other major openings in the cover shall have flanges around the edges. The cover shall be constructed so that no water will accumulate on its surface.

To maintain oil tightness, gasketed joints shall be designed and constructed to ensure even and effective pressure without overstressing the gasket, even under conditions experienced during vacuum filling of the main tank. When installed in position, the outer edges shall be protected by metal-to-metal stops or fire-resistant stop gasket material.

A self-resealing mechanical pressure relief device shall be installed, complete with deflector shield, to direct oil away from the control box or tap changer locations. The pressure relief device shall have a mechanical trip indicator and an alarm contact suitable for use on 125-V dc control voltage.

The transformer tank and assembled radiators, but not the conservator, shall be suitable for filling with oil in the field under a vacuum of one atmosphere. The completely assembled transformer with oil shall withstand a pressure of 35 kPa measured at the elevation of the cores.

Base and Jacking Steps

The transformers shall be provided with fixed structural skids, suitable for skidding or rolling the transformer in any direction.

Eyes for attaching hauling equipment shall be supplied on the front and rear of the transformer, so that the transformer may be hauled on or off of its temporary or permanent locations. Location of the eyes shall be approved by the Purchaser.

The transformers shall be fitted with jacking steps having a 0.35-m clearance from the underside of step to bottom of the base. The steps shall have a minimum free surface of 0.2-m by 0.2-m for the head of the jack. Location of the steps shall permit use of jacks having base dimensions of 0.3-m by 0.3-m without fouling any part of the transformer. The arrangement of jacking steps and base members shall be such that the transformers can be safely jacked in 50mm lifts using a pair of steps parallel to either axis. Each jacking step shall have capacity for lifting one half the weight of the completely assembled transformer filled with oil.

Two ground pads shall be fitted to diagonally opposite corners of the base. Each pad shall include clamp type terminal and bolts suitable for two - No. 7 # 5 (0.428 in dia) copperweld ground wires. Boltholes in the pad shall be to NEMA standard.

Anchor Plates

The transformer shall be provided with two anchor plates welded to the cover, one at each end. These anchor plates shall be of the “**Uni-Anchor Plates**” type (part number 17422, plate with tie-off anchor). They should be able to provide anchoring for the portable fall-arrest anchor post (Uni-Anchor System, part number 16691).

TS.03.13

Conservator Tank

The transformers shall be equipped with an oil-resistant, neoprene rubber bag type oil conservator for oil/air separation.

The conservator shall be equipped with a dehydrating silica gel breather and oil seals shall be accessible from grade level.

The conservator tank shall also have a 50-mm valve with plug at the top of the tank, a sump and a 50-mm drain valve at the lower end of the tank, and a manhole in the end of the tank for inspection and cleaning.

The connecting pipe of the main tank shall be 50-mm diameter minimum, shall project at least 25 mm inside the expansion tank, and shall contain a brass globe valve, with a handle which clearly indicates the position of the valve.

TS.03.14 Cooling Equipment

The necessary heat transfer for the dissipation of heat shall be obtained by the use of an external oil-to-air, heat exchanger.

(a) Radiators

The transformer shall be provided with a sufficient number of radiators to permit operation at the self-cooled and forced-cooled ratings without exceeding the specified temperature rise.

Radiator valves shall be provided on each radiator connection to the interconnecting pipe, so that any radiator may be removed for repairs without complete draining of the oil. The radiator valves shall have provisions for locking in the open and closed positions and shall have the open and closed positions clearly marked. Radiators shall be equipped with provisions for draining.

(b) Fans

Cooling fans mounted on the radiator structure shall be provided to achieve the forced cooled rating as specified.

Each fan shall form an integral unit with its individual motor. Fan blades shall be made of aluminum alloy, dynamically balanced, and equipped with hot-dipped, galvanized guards.

Fan motors shall be totally enclosed, squirrel cage, and weatherproof, 240V, 1-phase, 50-Hz, 80°C rise above 40°C ambient. Fan motors shall be placed in the path of the cold air flow.

The induction motors shall be of the direct-on-line starting type and shall operate satisfactorily under a voltage fluctuation of +/- 10%.

(c) Control

All equipment and components necessary for the control and protection of the fan motors shall be mounted in the main control cabinet. The cooling controls shall be designed for operation at 240V, 50Hz. A "Manual-Off-Auto" heavy duty selector switch shall be provided for the control of the forced cooling stage as follows:

Manual	-	fans operate
Off	-	fans stopped
Auto	-	fans controlled by temperature device.

Means for remote indication of the following conditions shall be provided:

- "Manual-Off-Auto" selector switch position
- Fans operating
- Fan failure
- Loss of control supply

(d) Oil

The transformers shall be shipped either filled with oil or inert gas. A sufficient quantity of oil shall be provided in non-returnable drums plus 10% extra.

The oil shall have a dielectric strength, when shipped, of at least 52kV as measured in accordance with ASTM specification D 1816 (2 mm gap).

The oil shall be mineral oil complying with the latest edition of ASTM D 3487 for new transformer insulating oil and shall be suitable for operation at the maximum ambient temperatures stated. Three certified copies of test reports stating the dielectric strength of the oil shall be supplied to the Purchaser with the shipment.

Supplier must also submit three copies of a certificate issued by an independent testing laboratory, attesting that the level of PCB's in the oil is not more than 2 ppm.

TS.03.15 Fittings and Accessories

Each transformer shall be equipped with the following:

- (a) Oil valves for filling, draining and sampling in all compartments including the tap changer. The valves shall be suitable for connection to oil purifying equipment.
- (b) Two (2) element gas detector relay, located so they collect all gas evolved in the main tank and tap changer compartments. The relay shall be equipped with two sets of contacts, one set to alarm on slow gas accumulation and one set to trip on fast gas accumulation. All pockets or spaces over 80 cm³ which are vented to the transformer tank shall be piped to the relay. A copper tube, minimum 8-mm ID, shall extend from the gas accumulation element to a suitable valve located on the tank wall near the bottom, to permit bleeding from ground level. A shutoff valve shall be provided in the pipe between the relay and main tank, with the valve position visible from the ground.
- (c) Two (2) magnetic oil gauges with dial legible from the ground shall be provided for indication of transformer main tank and tap changer compartments oil levels. Dial markings shall show normal, minimum, maximum and 25°C oil levels. The gauges shall contain two sets of alarm contacts, one set of low-level contacts adjustable on Site, and one set of contacts to close when the oil reaches a dangerously low level.
- (d) A dial type oil thermometer, equipped with three separately adjustable contacts, one set to start the forced-air cooling fans, one set adjustable between 60°C and 110°C for alarm, and the other adjustable between 100°C and 125°C for tripping, and with a scale legible from the ground. The temperature-sensitive element shall be installed in an oil-filled or close-fitting well, located in the hottest oil, as far as is practicable.
- (e) A winding temperature indicator and relay to indicate the hot-spot temperatures of the windings. Associated plant such as heating coils, thermometer bulb, heating well, gauge and current transformer shall be provided. The indicator-relay shall be automatically reset at approximately 7.5°C ± 2.5°C below the closing temperature, and shall be provided with the following electrically independent, adjustable contacts:
 - one set to start the forced air cooling fans
 - one set to initiate an alarm, setting to be adjustable between 60°C and 110°C
 - one set to initiate tripping, setting to be adjustable between 100°C and 125°C.

The thermometer bulb and the heating coil shall be removable from the well in the tank wall without the loss of liquid or lowering of the oil level.

- (f) Two (2) -100-Ω platinum resistance type temperature detectors, one to simulate the winding hot-spot temperature and one for the top oil temperature, shall be provided on the transformer. The RTD and heating coil shall be removable from the well in the tank wall without the loss of liquid or lowering of the oil level. Leads from the temperature detectors shall be terminated in

the transformer control cabinet for use with a temperature indicator mounted in the control room.

(g) **Intelligent On-Line Continuous Gas-in-Oil Monitor (Transformer Incipient Fault Monitor)**

The transformer shall be equipped with an Intelligent On-Line continuous gas-in-oil Incipient Fault Monitor similar to (HYDRAN 201R Model i Intelligent transformer incipient fault monitor manufactured by Syprotec).

The fault monitor shall an intelligent transmitter (HYDRAN 201ti) with no moving parts or pump to detect and continuously monitor the evolution of the composite value of hydrogen, carbon monoxide, acetylene and ethylene.

- The fault monitor shall come complete with Dynamic oil sampling features.
- A Communications controller (HYDRAN 201Ci-1) shall provide for Dual Level Visual Alarm Indicators and continuous ppm display for remote and local communication.
- The assembly shall be connected via a 30 foot (9m) interconnecting cable.
- The controller shall provide networking capabilities and shall allow for a single RS-232 entry point.
- The controller shall enable, via RS-485, remote access to as many as 32 other Intelligent On-Line continuous gas-in-oil Incipient Fault Monitor Controllers (HYDRAN 201R Model i or other controllers from the HYDRAN 201i system family)

Installation

- Unless otherwise specified, the Intelligent On-Line Continuous Gas-in-Oil Transmitter (HYDRAN 201Ti) shall be mounted on a One-and-a-half (1-1/2) inch (38mm) ball or gate valve with no internal restrictions, with continuous contact with the oil body. The distance from the sensor to the main oil body shall not exceed nine (9) inches (225mm).
- The valve shall be located on a radiator return pipe and on the discharge side of the pump on a straight section of the pipe. Where an installation on the return pipe is not practical an acceptable alternative shall be to locate the valve on the main transformer tank where good convection flow exist. This special location must be confirmed as being acceptable by the manufacturer (Syprotec)
- In all cases, the valve and sensor shall be located at a height where they can be safely accessed by personnel.
- The valve body shall be at ground (earth) potential.
- A heat dissipater (Heat Fin Adapter by Syprotec) shall be mounted between the valve and the Transmitter.
- The Communications Controller (HYDRAN 201Ci-1) shall be mounted up to 30 feet (9m) away from the transmitter (HYDRAN 201Ti) as standard. Longer distances must be approved by the manufacturer (Syprotec).
- The unit shall be mounted on a vibration-free structure or shall be installed on vibration absorbing mounts available as an option from the manufacturer (Syprotec).
- The unit shall be of NEMA-4X construction and operate in ambient temperatures of -50°C to +55°C.
- The Communication controller shall be connected to the Intelligent On-Line Continuous Gas-in-Oil Transmitter (HYDRAN 201Ti) via a cable supplied by the manufacturer (Syprotec). This cable shall run inside a dedicated steel conduit, rigid or flexible. Splices shall not be permitted.
- The unit shall operate on either 115 VAC (230 VAC on request) at 50HZ. This AC supply cable shall also run inside a separate dedicated steel conduit, rigid or flexible. Splices shall not be permitted.
- The controller shall be effectively grounded.

SPECIFICATIONS

The transformer shall be equipped with an Intelligent On-Line continuous gas-in-oil Incipient Fault Monitor similar to (DYDRAN 201R Model i Intelligent transformer incipient fault monitor manufactured by Syprotec) shall meet the following specifications:

- Display Range: 0 - 2000 PPM
- Accuracy: -/+ 10% of reading and -/+ 25 PPM
- Functions: On-Line Continuous Gas in oil composite reading of:
hydrogen, carbon monoxide, and Acetylene in varying relative %

Hourly and Daily Trend

History and Events Log
Automatic periodic sensor test
Calibration, configuration & self-test
Networking capability
Modem control
Remote software upgrading

Configurable Analog Output Signal:

Transmitter (H201Ti) Isolated 4-20 mA
Controller (H201Ci-1) Isolated 0-1mA, 4-20mA, 0-1V, 0-10V

- Alarms: Threshold - Two (2) Gas level alarms adjustable from 0 - full scale
Trend - Alarming capabilities based on rate of rise
- Alarm contacts: Gas Hi, Gas Hi-Hi, Fail
- Dual level visible alarm indicators
- Serial Port RS-232: Standard
- RS-485 Communications port: Standard
- Data Analysis Software: HYDRAN Host Software
- Installation Tube wrench: Required
- Heat Dissipater: Required
- Vibration absorbing mounts: Required

- (h) The transformer tap changer shall be provided with pipe fittings and valves brought to one (1) meter above ground level to facilitate filtering of the tap changer oil without operating the tap changer compartment.
- (i) The transformers shall be equipped with two (2) earthing terminals and connectors for grounding purposes.

Accessories

A weatherproof control cabinet for the cooling fan controls and for the termination and connection of all auxiliary and control leads to the transformer electric equipment shall be provided.

The cabinet shall be conveniently accessible from the ground and shall be equipped with the following.

- Ground bus for individually grounding each circuit requiring ground points.
- A 15-A, 120-V, 3-pin, grounded, duplex, convenience outlet and switched incandescent lamp.
- A suitable pocket or holder for one copy of the instruction manual. A plain removable plate located in the bottom of the cabinet of adequate size for terminating all conduits leaving the transformer. (The plate shall be drilled in the field.)

All control wiring shall be 600-V, flame- and oil-resistant, stranded copper, XLPE insulated wire. Wire sizes shall be appropriate for the function, but not less than 2.5 mm² for control circuits. All power and control wiring shall be shielded from metering conductors.

All wiring connections shall be readily accessible and removable for test or other purposes. Wiring between terminals of the various devices shall be point to point. Splices or tee connections are not acceptable. Wire runs shall be neatly trunked or in wiring troughs. All wires shall be identified at both ends with sleeve type markers.

Terminal blocks with removable marking strips shall be provided for all circuits and 20% of the total number of spare terminals shall be supplied. Terminal blocks for the current transformer leads shall be of the grounding and short-circuiting type and shall be mounted separately from control terminals.

Terminal blocks should be capable of accommodating a minimum 4 mm² wire. External wiring from the control cabinet to transformer accessories shall be run in rigid conduit, except where inappropriate, in which case liquid-tight, flexible metal conduit shall be used.

TS.03.16 Finish

Special consideration must be given to the choice of finish, based on the intended harsh corrosive salt spray conditions in which the transformer will operate.

All exposed un-galvanized metal parts shall be thoroughly cleaned and painted with two primer coats and on the exterior with two finish coats of outdoor, organic, weatherproof paint suitable for a tropical climate subject to direct sunlight and heavy salt pollution. The color shall be light gray.

The base of the transformer designed for grade mounting shall, in addition to the above, be treated with bitumastic compound to prevent corrosion.

The interior of the tank shall be painted with two coats of white or clear, oil-resistant finish.

The transformer shall be supplied with five (5) liters of touch up paint.

TS.03.17 Nameplates and Marking

Nameplates, instruction plates, labels and tags, warning signs, and any necessary marking whatsoever on the transformer and accessories thereof shall be supplied by the Supplier. The Supplier shall submit to the Purchaser descriptions of all nameplates, labels and instruction plates for comment.

The transformer nameplate shall be of stainless steel with black enamel lettering.

Nameplates attached to control cabinets, control boards, cubicles and control boxes shall be made of acrylic resin (white letters on black background).

TS.03.18 Shop Tests

The transformer shall be tested at the Supplier's works in accordance with ANSI requirements for routine and type tests. At least 3 weeks' notice of the date, time and place of all tests shall be given to the Purchaser so that arrangements can be made to witness the tests.

In addition to the requirements of ANSI the following tests on each transformer shall be performed and witnessed by the Purchaser. The total cost for carrying out these tests, inclusive of the cost of all expenses including air fares, hotel transfers and accommodations paid for two (2) of the Purchaser's engineers to witness such tests, shall be included in the quoted CIF cost for the transformer to be tested in 2022.

- (a) Impulse voltage withstand tests, including chopped waves.
- (b) Heat run test.
- (c) Core insulation test. Insulation resistance shall be measured at 1000 V and shall indicate a minimum resistance of 50 MΩ to ground. These tests on the transformer shall be made at completion of winding and at the conclusion of all other tests, prior to shipment.
- (d) Partial discharge tests shall be as per IEC standards. Note: 12.2, 12.3, and 12.4 as quoted.
- (e) Pressure tests at 35 kPa for a duration of 6 hours shall be made on the transformer immediately following the temperature rise test while the oil is hot.

The Supplier shall supply three certified copies of all analysis and test results. If the Supplier can show, by certified test data obtained from type tests on a transformer of the same design, these tests, (except those specifically required above), may be waived by the Purchaser at its discretion, but such waiver shall in no way relieve the Supplier from its obligations under the Contract.

The test report shall be supplied prior to delivery, but no longer than 2 weeks after completion of the tests.

TS.03.19 Performance Guarantees

Subject to the allowable tolerances stated in ANSI the manufacturer shall guarantee the performance data as provided in Part 6 "Schedule of Technical Data" covering the following:

- No load losses and load losses at rated conditions
- Exciting current
- Impedance at base (ONAN) rating at rated conditions

TS.03.20 Spares

An itemized price for the following spare parts shall be provided.

- One high voltage bushing complete with gaskets
- One low voltage bushing complete with gaskets
- One neutral bushing complete with gaskets
- One set of spare gasket complete with gasket cement
- One refill for dehydrating breather
- One pressure relief device
- One set of indicators and detectors
- One set of fixed and movable tap changer contacts.
- One tap changer motor

The bidder shall recommend any additional spares considered necessary for the satisfactory operation and maintenance of the transformer for a period of five years.

TS.03.21 Oil

Oil shall be mineral oil specifically designed for use as an insulating and cooling medium for electrical equipment and conform to the requirements of ASTM Standard Specification D3487. The PCB content of the oil shall be not more than 2 ppm. The supplier must furnish a certificate duly signed by an independent approval body in the Supplier's country indicating the PCB content of the oil.

A sufficient quantity of oil, plus an additional 10% to allow for spillage shall be supplied to fill the transformer and all accessories. Oil shall be supplied in non-returnable 45 gallon drums.

TS.03.22 Dimensions

The overall dimensions of the transformer shall not exceed the following;

Height	6,800 mm
Length	7,000 mm
Width	4,100 mm

Failure to submit dimensions with Bid shall result in rejection of Bid.

PART 7
SCHEDULES

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Schedules

SCH.01 Schedule of Requirements

One (1) – 60/80 MVA, 138 – 69 kV interbus transformer OA/FA, 3 ph, 50 Hz, rated for 65°C rise, completed with all necessary auxiliary equipment, insulating oil for first filling, air cooling radiators and fans, all as specified herein.

SCH.02 Schedules of Information

SCH.02.1 Financial Data

The Bidder attaches the following information concerning his financial resources and previous experience in order to fully demonstrate his ability to undertake the Works:

SCH.02.2 Addenda to Bid Documents

The Bidder has received the following Addenda to the Bid Documents prior to submission of this Bid.

ADDENDA NO.

DATED

Name of Bidder _____

Signature of Bidder _____

SCH.02.3 Deviations from Specification

The deviations from the Specification are as follows:

SCH.02.4 Appendices to Bid

The appendices which form an integral part of the Bid are as follows:

Appendix A - Tender Drawings

Name of Bidder _____

Signature of Bidder _____

SCH.02.5 Sub-Contracted Work

Sub-suppliers may be used to supply the following materials and services:

SCH.02.6 Change in Quantities

The maximum percent (%) change in quantities allowable within quoted rates is:

For and on behalf of

(Supplier's name)

Title

Name of Bidder _____

Signature of Bidder _____

SCH.03 SCHEDULE OF PRICES

SCH.03.1 Interbus Transformer One (1) – 60/80 MVA, 138 - 69 kV

Bidder shall provide the price for the equipment specified in SCH.01 Schedule of Requirements.

_____ex-works/CIF Currency of

Bid _____

Inland Transportation _____

Port Costs, Insurance

Name of Bidder _____

Signature of Bidder _____

SCH.03.2 Spare Parts

Bidder shall provide separate prices for the spare parts listed in section TS.02.20 of these specifications, which shall be supplied as part of this contract.

Item No.	Parts Description	Unit Quantity	Price
-------------	----------------------	------------------	-------

Total CIF Cost of Required Spare Parts _____

Recommended Spare Parts

Bidder shall list here with unit prices, any additional spare parts and special tools it recommends for continuous operation of the plant for a period of 5 years.

SCH.04 SCHEDULE OF DELIVERIES

Interbus Power Transformer One (1) –60/80MVA

Purchaser's Required Delivery: Seven (7) months A.R.O

Supplier's Proposed Delivery: _____

Name of Bidder: _____

Signature of Bidder: _____

SCH.05 Schedule of Technical Data

SCH.05.1 Materials and Workmanship

The Supplier guarantees that the equipment/material furnished hereunder will be entirely suitable for the service specified, will conform to all conditions of performance and design, be free from manufacturing and material defects.

The Supplier also guarantees that he will at the convenience of and without charge to the Purchaser replace, repair and install any of the Works or part thereof which prove defective as a result of faulty

design, materials or workmanship, in accordance with the warranty requirements stated in section SC-10 of this specification.

SCH.05.2 Transformer Technical Data

Item: One (1) 60/80 MVA, 138 – 69kV Interbus Power Transformer

(a) Guaranteed Performance and Characteristics

1. Capacity, at rated voltage, frequency, continuous rating, at 65 ° C temperature rise by resistance method.

- AN base rating. _____ MVA
 - AF rating. _____ MVA

2. Efficiency at rated voltage and frequency not less than

- at 50% MVA @ 1.0 pf _____ %
 - at 75% MVA @ 1.0 pf _____ %
 - at 100% MVA @ 1.0 pf _____ %
 - at 125% MVA @ 1.0 pf _____ %

3. Efficiency at rated voltage and frequency not less than

- at 50% MVA @ 0.8 pf _____ %
 - at 75% MVA @ 0.8 pf _____ %
 - at 100% MVA @ 0.8 pf _____ %
 - at 125% MVA @ 0.8 pf _____ %

4. Guaranteed Losses rated voltage and frequency, 65 ° C temp. rise

- no load loss _____ kw
 - load loss at rated MVA _____
 kw
 - excluding no load loss _____
 kw
 - Total losses (rated MVA) _____ kw

5. Cooling Equipment power at 65 ° C temp. rise and full MVA, _____ kw

6. Exciting current on base MVA

- at 90% rated voltage _____ %
 - at 100% rated voltage _____ %
 - at 110% rated voltage _____ %
7. Regulation, not more than, at
 100% MVA, 0.8 pf for 65°C rise _____ %
 100% MVA, 1.0 pf for 65°C rise _____ %
8. Impedance on base MVA, at rated voltage and
 frequency, subject to ANSI tolerances.
 - rated voltage _____ %
 - maximum raise _____ %
 - maximum lower _____ %
9. Maximum Temperature Rise by resistance measurement
 - AN _____ °C
 - AN/AF _____ °C
10. Guaranteed Noise Level
 - with fans _____ dB
 - without fans _____ dB

(b) Technical Data

1. Manufacturer _____
2. Frequency _____ Hz
3. Voltage and Connection
 HV winding _____
 LV winding _____
4. Insulation Level (LIWL)
 HV winding _____ kV
 HV neutral _____ kV
 LV winding _____ kV
5. Tap Changer
 Type _____

Manufacturer

Tap range

Number and % of taps

%

6. C.T. Ratios and Accuracy
 HV bushings _____
 HV neutral bushings _____
 LV bushings _____
7. Bushing Leakage Length
 High Voltage _____ mm
 High Voltage Neutral _____ mm
 Low Voltage _____ mm
8. Weights
 - Assembled transformer in service _____ kg
 - Shipping wt. of heaviest part _____ kg
 - Core and coils (Untanking) _____ kg
 - Tank (if oil filled) _____ kg
 - Oil (if oil filled) _____ kg
 kg _____
9. Material of winding _____
10. Provide drawing showing assembled dimensions of transformer as well as shipping dimensions and lifting clearances for untanking and removal of bushings.
11. Oil
 - PCB content _____ ppm
12. Dimensions: Height _____ mm
 Length _____ mm
 Width _____ mm
13. Any other information specifically requested, or which may be useful to the Purchaser:

SCH.05.3 SURGE ARRESTERS**Technical Data**

- | | | | |
|-----|--|-----------------|-----------|
| 1. | Nominal System Voltage | 138kV | 69kV |
| 2. | Manufacturer | _____ | _____ |
| 3. | Type | _____ | _____ |
| 4. | Rated Frequency | _____ Hz | _____ Hz |
| 5. | System Grounding | Effective Soild | Gnd. Xfmr |
| 6. | Maximum continuous operating voltage (mcov) | _____ kV | _____ kV |
| 7. | Maximum temporary overvoltage | _____ kV | _____ kV |
| 8. | Maximum 0.5 μ s discharge voltage | _____ kV | _____ kV |
| 9. | Maximum switching surge protective level
- 45 μ s to crest | _____ kV | _____ kV |
| 10. | Maximum discharge voltage
5,000 amp crest | _____ kV | _____ kV |
| | 10,000 amp crest | _____ kV | _____ kV |
| | 20,000 amp crest | _____ kV | _____ kV |
| 11. | Weights | _____ | _____ |
| 12. | Any other information specifically requested, or which may be useful to the Purchaser. | | |