JAMAICA PUBLIC SERVICE COMPANY, LTD.

PROTECTION PANEL PROCUREMENT FOR WASHINGTON BOULEVARD, CANE RIVER, ROCKFORT, DUNCANS SUBSTATIONS PANEL REPLACEMENT PROJECT

REQUEST FOR PROPOSALS

The Supply of -

PROTECTION PANELS INCLUDING

138kV Line Protection Panels
69kV Line Protection Panels
69/24kV Transformer Protection Panels
Circuit Breaker Failure Protection Panels
Control Panels

RFP #1025947

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

September 2025
System Protection & Control Department
693A Spanish Town Road
JPS Co. Ltd., Kingston, Jamaica.

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PART 1

INSTRUCTIONS TO BIDDERS

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Introduction

Invitation to Bidders

The Jamaica Public Service Company Limited, hereinafter referred to as JPS, is hereby inviting proposals from qualified bidders for the design, assembly and supply of protection and control panels for Washington Boulevard, Cane River and Rockfort substations all located in Kingston & St. Andrew, Jamaica and Duncans substation in Duncans, Trelawny.

IB.01 a. Background

The Jamaica Public Service Company Limited (JPSCo) is presently undertaking protection improvement projects at Washington Boulevard, Cane River, Rockfort and Duncans Substations respectively. This involve the procurement and installation of line protection, transformer protection, circuit breaker protection and station control panels, complete with all protection and auxiliary relays.

The objective of this invitation is to secure a contract to design, assemble and supply new protection panels for Washington Boulevard, Cane River, Rockfort and Duncans Substations respectively.

b. Source of Funds

The Jamaica Public Service Company Limited (JPS) will fund the purchase of protection and control panels under the Protection “N-1” Upgrade and Modernization 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 protection and control panels. Bidders shall submit on the complete package, Partial Bids shall be considered incomplete and will be rejected.

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.

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

Name: **Mr. Kolonje McKenzie**
CC: **Mr. Aldeen Morris**
Address: Jamaica Public Service Company Ltd
113 Washington Boulevard
Kingston 20, Jamaica WI

Email: komckenzie@jpsco.com cc: apmorris@jpsco.com

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

(e) Bid Form

(f) Schedules: Schedule of Requirements
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 telefax 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 technical 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.
Communications in regards to this Bid and potential procurement must be directed to the POC.

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.

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.

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; and

(d) Bid security furnished in accordance with Clause IB.15.

(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

(b) A cashier's check or certified check.

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 September 29, 2025, 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 at the method specified under para. IB.18.1 no later than 11:59 pm Eastern Standard Time on **Thursday, October 9, 2025.**

RFP CALENDAR		
ACTIVITY	**DUE DATE**	**RESPONSIBILITY**
RFP date	September 8, 2025	JPS
Bidder submits questions on RFP	September 18, 2025	Bidder
Final date to respond to all queries	September 23, 2025	JPS
Bidder Provide Intension to Bid	September 29, 2025	Bidder

Completion of RFP and deadline for submission of bids to JPS	October 9, 2025	Bidder
Bid Opening	October 10, 2025	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 and/or returned unopened to the Bidder.

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, sealed, marked and dispatched in accordance with the provisions of Clause IB.18. with the inner envelopes additionally marked **Modification** or **Withdrawal** as appropriate. A withdrawal notice may also be sent by telefax or courier but followed by a signed confirmation copy, post marked not later than the deadline for submission of bids.

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 All prices quoted shall be in United States (US) Dollars.

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'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.26.3 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 or to be incorporated in the goods, and the CIF port-of-entry price of the goods offered from outside the Purchaser's country.

IB.26.4 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.26.5 Pursuant to para. IB.26.4 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 as 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 startup 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:

Head Logistics & Inventory Management
Jamaica Public Service Co. Ltd.
P.O. Box 54
Kingston, Jamaica.

Supplier: _____

_____

_____

_____

PART 4

EXHIBITS

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Exhibit 1

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 **Protection and Control Panels.**

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 Protection and Control Panels, 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 Protection and Control Panels. Substation RFP ***#1025947***

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

WASHINGTON BOULEVARD, CANE RIVER, ROCKFORT, & DUNCANS SUBSTATIONS PANEL REPLACEMENT PROJECT

FOR THE SUPPLY OF

PROTECTION AND CONTROL PANELS

RFP #*1025947*

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 a total of twenty-seven (27)

Protection and Control Panels 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.

Accompanying this bid is a bid bond that is:

Issued by _____

In the amount of _____

Dated the _____

Having a Serial No. _____

The following Schedules are attached to and form part of this Bid:

Schedule of Information
Schedule of Prices

Schedule of Deliveries

Schedule of Technical Data

IN WITNESS WHEREOF _____ has executed

these presents this_____ day of_____ 20_____

SEALED WITH the corporate seal of

)

_____)

)

_____)

)

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PART 6

TECHNICAL SPECIFICATIONS

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Technical Specifications

TS.01 Summary of Work

TS.01.1 Description of Project

The project entails the provision of all designs, for protection panels and associated ancillary equipment needed to provide line protection, transformer protection and station control at Washington Blvd, Cane River, Rockfort, and Duncans substations respectively. The provision of Installation, operation and maintenance manuals shall also form a part of this scope.

TS.01.2 Location

Substation sites are located as follows:

Washington Boulevard substation – Washington Boulevard, Kingston
Cane River substation – Bull Bay, St. Andrew
Rockfort substation – Rockfort, Kingston
Duncans substation – Duncans, Trelawny

TS.01.3 Scope of Work

The Supplier shall provide:

- Designs for:
  - ❑ Protective relaying, metering, and control systems
  - ❑ Communication for SCADA interface and tele-protection
  - ❑ Line Protection Panels for three (3) 138kV transmission lines
  - ❑ Line Protection Panels for eleven (11) 69kV transmission lines
  - ❑ Six (6) Transformer Protection Panels with transformer fault indicating, latching relays for Buchholz, oil/winding temperature.
  - ❑ Four (4) Station Control Panels.
  - ❑ Three (3) Circuit Breaker Failure Protection Panel.
  - ❑ Installation, operation and maintenance manuals.
  - ❑ Test results and configuration software
- Drawings to be provided shall include, but not limited to:
  - ❑ Manufacturer's panel outline drawings and schematics.
  - ❑ A.C. & DC schematic design drawings for protection and control. See TS.03.22 for JPS circuit function letters and wire number convention.
  - ❑ Panel equipment wiring diagrams showing all inter-panel wiring, all external termination points inclusive of all wire labels.

TS.01.4 Equipment Requirement List1

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

Details of panels and other equipment to be supplied are as listed below. The quantities of panels and relays indicated in the Technical Specifications are the minimum requirements and should be used as a guide only. The design of the protection and control panels is the responsibility of the Supplier.

The Protection and control panels for:

- Three (3) 138kV transmission lines
- Eleven (11) 69kV transmission lines
- One (1) panel to include both one (1) 138/69kV Interbus & one (1) 69kV/13.8kV grounding transformer
- Four (4) 69/24kV distribution transformers
- One (1) panel to include Two (2) GSU transformers
- Four (4) station control panels
- Three (3) breaker failure panel

TS.01.5 Specification Drawings Figure2

The drawings that accompany and form part of this specification include: Protection & Metering Single Line Diagram.

TS.01.6 Works Not Included

Works not included under this scope are:

- Installation and termination of all cables

- Installation, adjustment and commissioning of equipment on site unless separately and specifically requested by the Purchaser

TS.01.7 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, four (4) 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 with the provisions and intent of this specification. Any drawing of a preliminary nature must be so indicated.

In addition to the requirements specified in Section TS.02 "General Requirements" for drawings related to the equipment being supplied, the Supplier shall be responsible for preparing all electrical drawings related to the overall substation including the equipment being supplied. Drawings shall include:

- AC single line diagrams (JPS will provide a guide)
- AC three line diagrams
- Tripping logic diagrams (JPS will provide a guide)
- AC / DC schematic diagrams for protection and control
- Panel wiring diagrams

TS.02 General Requirements

TS.02.1 Work Schedule

The Supplier shall submit within 10 working days of award of contract 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.

The following essential drawings and information are to be submitted for approval before manufacture/fabrication 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

TS.02.3 Submission and Approval of Drawings

The Supplier shall submit four (4) copies of all drawings, and data to the Purchaser for review.

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. Drawings that have been reviewed “as noted” will not have to be re-submitted for acceptance unless so indicated. No major revision affecting the design shall be made after a drawing has been accepted, without re-submitting 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. The Supplier shall submit for final acceptance 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.

After accepted 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 as a "Final" copy. If minor revisions are made subsequently following testing, then one (1) reproducible (Mylar or Dylar) copy of the revised drawing shall be forwarded to the Purchaser. In addition, Purchaser requires that Supplier provide a copy of each Final drawing in AutoCAD 2018 format on unlocked USB drive.

The Bill of Materials shall be treated as a drawing and one (1) reproducible (Mylar or Dylar) copy shall be furnished, as well as being supplied in AutoCAD 2018 format.

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.

Acceptance 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)
- the Substation name (Hunts Bay)
- 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 Size	**Dimension of Drawing Frame** (mm)
A1	566 x 801
A2	400 x 566
A3	283 x 394

Outline drawings of major electrical equipment, panels, and schematics shall be in 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. Manuals 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.

In case of a local supplier, the operation & maintenance manuals shall be delivered at the time of delivery of the equipment and material supply.

The manual shall contain the following minimum information:

- General descriptive information
- Assembly and/or installation 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) where applicable.
- List of recommended spares
- 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 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:

Name	**Abbreviations**
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

(i)	System phase to phase voltage	138 kV		69 kV		24 kV
	Nominal system voltage	138 kV		69 kV		24 kV
	Maximum operating voltage		145 kV		72.5 kV	24 kV
(ii)	Frequency	50 Hz				
(iii)	Auxiliary power supply	240/120V, 3 phase, 50Hz 125V DC +10%, -15%				

TS.02.9 Environmental Conditions

(i)	Altitude:	Less than 100 meters above sea level.
(ii)	Ambient Temperatures:	Maximum 40^0C Average 30^0C over 24hrs Minimum 15^0C

(iii) Atmospheric Conditions: Tropical climate; subject to direct sunlight, 250 km/hr. wind, salt spray and dust.

(iv) Seismic Coefficient: 0.25g

(v) Relative Humidity: Maximum - 100%
Average - 50%

(vi) The distance of the substation from the sea is less than 1kM.

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 weatherproof containers.

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

JPSCo. Ltd.
Name of Substation: Washington Boulevard, Cane River, Rockfort & Duncans
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 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.

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 105^0C. All live and exposed 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 shipment and protected from the harsh environment in 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 panels 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.

TS.02.15 Spare Parts

The Supplier shall recommend spare parts required for 2 years' normal operation. All spare parts ordered by the Purchaser 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 Protection, Metering, and Control Equipment

TS.03.1 Scope of Work

The Scope of Work includes the design, manufacture, testing, packaging for shipment, and delivery of protection, control and metering panels all in accordance with the requirements of this Specification and as shown on the drawings.

The Scope of Work also includes the preparation of all the A.C. and D.C. elementary and wiring diagrams, cable termination diagrams for the complete station as they apply to the protective relaying.

It is the intent of this Specification that the Work enumerated be fully complete in every detail for the functions designated and the Supplier shall furnish all materials, equipment and cubicles. Only proven equipment shall be provided, and evidence of service experience is required.

TS.03.2 Standards

All equipment shall conform to the latest revision of ANSI standard C37.90, C37.90.1 and all other relevant ANSI and IEC Standards. If this specification conflicts in any way with any ANSI standard, this specification shall have precedence and shall govern. However, the bidder shall point out these conflicts in his bid.

TS.03.3 General Protection Requirements

In describing operating locations, the following definitions shall apply

- **local** at the location of the subject circuit breaker, disconnect, transformer, etc.
- **standby** at the location of the control or relay panel in the station control building.
- **remote** at a control point remote from the **local** or **standby** positions and usually supervisory control from System Control via SCADA.

Every protective relay shall be fully equipped with either target units or LEDs to indicate its operation.

Every relay which has a target or which requires manual resetting shall be mounted on the front of the relay panel.

All new distance, directional overcurrent, and line differential relays shall have:

EIA 232 communication ports for the following:
- Direct Trip (Mirrored bit)
- Remote access to the relay

Time code input (Demodulated IRIG –B)

Ethernet Port (10/100Mbit/s) for connection to the RTU (for telemetering).

Directional Overcurrent relays shall be used for providing telemetering inputs to the RTU for the transmission lines. Relays will communicate with RTU using DNP 3.0 protocol.

All relays shall be connected to SEL Synchronized clocks.

The Contractor shall specify, supply, and install all patch cables and materials required for the connection of protection relays supplied to the synchronized clock, the RTU and the communication equipment at the existing and new substations.

All protective relays shall be of the solid-state microprocessor type and, except for certain auxiliary relays, shall be withdrawable from their case without opening current transformer secondary circuits, disturbing external circuits or requiring disconnection of wiring. Relay cases shall be semi-flush, back connected, dust tight, switchboard type with removable transparent covers. Covers shall have means for sealing against unauthorized tampering. All relays shall be suitably marked with the following data in a location such that it is easily legible, without removing the cover, when the relay is mounted on the panel:

- Manufacturer's name
- Type designation and serial number
- Rated value (and range) of the operating quantity
- Rated frequency or symbol for dc
- Rated value or range of time delay if applicable
- Data to permit identification of the operating element(s).

Protective relays shall be designed for maximum accuracy and shall be free from errors caused by normal variations of frequency, waveform, power factor and ambient temperatures between 0^0C and 40^0C. The operating limits of all relays shall be 80% and 110% of the rated values. All current elements shall be able to withstand 35 times element rating for 0.5 seconds.

Each protective relay shall be provided with at least two independent circuit closing contacts, one for tripping and the other for signaling suitable for operation on a 125 V dc ungrounded system.

All equipment shall operate satisfactorily and shall not be subject to deterioration in the range of 80 to 120% of nominal battery voltage.

All current transformer and voltage transformer wiring, on entering the control and relay panels, shall after termination run directly to test switches before terminating on protective relays. Test switches shall be ABB type FT-1 flexitest, or approved equivalent.

All outgoing trip contacts and breaker failure protection start contacts shall be provided with an isolating switch. Where an integral-isolating switch is not available with the relay, a separate ABB type FT-1 Flexitest switch or approved equivalent shall be provided for this purpose.

All protective relay operating supplies shall be obtained from the station dc system. The use of small rechargeable cells within the relay unit or system is not acceptable.

All equipment shall be suitably shielded, grounded and protected so that any surges on the current transformer, voltage transformer, or dc systems do not cause damage or relay malfunction.

All auxiliary voltage supply cables entering relay panels shall, after initial termination, be routed directly through fuse links before connecting to any protective relays. Fuse links shall be Schneider Electric type DF101, 10 x 38 or approved equivalent.

In order to make provision for future supervisory alarm requirements, all relays, which initiate alarms, shall be supplied with two annunciation contacts, one for station annunciation and one for supervisory annunciation.
Each protection circuit shall be monitored by means of an under voltage relay connected at the end of the daisy chained positive and negative buses, the relay shall have at least two output contacts suitable for operating an indicator light located on the panel and remote SCADA annunciation signal.

Line/transformer backup protection relays shall provide/facilitate additional functions, including trip circuit supervision, auto-reclosing, and synchronism-check.

TS.03.4 138kV Transmission Line Protection Panel

Number of Transmission Line Protection Panels required = 3;

Duncans substation = 3 Line protection panels (Line 1, Line 2 & Line 3)

Three protective relaying systems (primary A & B and back up) shall be provided for each 138 kV transmission line. The primary A & B systems shall be of the Line Differential family and shall be communications-assisted and based on Permissive Overreaching Transfer Trip (POTT) logic. The backup system shall be non-pilot, i.e. it should operate independently of the communications channel. In addition, breaker failure protection shall be provisioned.

(a) The primary system A shall include;
1 – Line differential, four-zone, three-phase and ground numerical type, programmable distance relay (Device No. 87L/21/21N-P), Schweitzer Engineering Laboratories type **SEL 411L compatible with model number 0411L1X4X5C8DCXH474XXXX and firmware number SEL-411L-1-R123-V1-Z014003-D20180910 (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(b) The primary system B shall include;
1 – Line differential, four-zone, three-phase and ground numerical type, programmable distance relay (Device No. 87L/21/21N-B), type GE **MiCOM P546 (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(c) The backup system shall include;
1 - Three-zone, three phase and ground numerical type, programmable directional overcurrent relay (Device No. 67/67N-B), type **SEL 751 (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each system shall be complete with all necessary auxiliary relays, and any other equipment, not specifically mentioned in the Specification but which are required for the satisfactory operation of the protective system;

(a) D.C. supply supervision relays each with contacts for remote alarms.

(b) Auto-Reclose switch 79CO
(c) FT Switches
(d) Fuses, etc.

Each panel shall be fully provisioned with the following devices to interface with the relays to

provide communication for all relays in 69kV Transmission Line Panels:

(a) One (1) SEL **SEL 2730** (2730M0ARCA1222AAAAX0) switches together with eight (**SEL 8131-01**) All Ethernet connections between 2730M, 3620 2440, 2488, 3355 and protective relays shall be via multi-mode optical fibre.

(b) One (1) **SEL 3620** (3620X3B2XXX0) Ethernet security gateways.

(c) one (1) Discrete Programmable Automation Controller **SEL 2440**.

All intra-panel and inter-panel (to include interface panel and RTU panel) communication wires and

fiber cables, RS232/RS485/Ethernet cables are to be provided by the successful bidder. Each panel shall include an internal path between adjacent panels.

TS.03.5 69kV Transmission Line Protection Panel

Number of Transmission Line Protection Panels required = 11;

Washington Boulevard substation = 3 Line protection panels (Line 1, Line 2 & Line 3)
Cane River substation = 3 Line protection panels (Line 1, Line 2 & Line 3)
Rockfort substation = 3 Line protection panels (Line 1, Line 2 & Line 5)
Duncans substation = 2 Line protection panels (Line 4 & Line 5)

Three protective relaying systems (primary A & B and back up) shall be provided for each 69 kV transmission line. The primary A & B systems shall be communications-assisted and based on Permissive Overreaching Transfer Trip (POTT) logic. The backup system shall be non-pilot, i.e. it should operate independently of the communications channel. In addition, breaker failure protection shall be provisioned.

(d) The primary system A shall include;
1 - Four-zone, three-phase and ground numerical type, programmable distance relay (Device No. 21/21N-P), Schweitzer Engineering Laboratories type **SEL 421 (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(e) The primary system B shall include;
1 - Four-zone, three-phase and ground numerical type, programmable distance relay (Device No. 21/21N-B), type GE **MiCOM P442 (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(f) The backup system shall include;
1 - Three-zone, three phase and ground numerical type, programmable directional overcurrent relay (Device No. 67/67N-B), type **SEL 751 (Panel cut-out and wiring by**

bidder, relay will be procured and installed by bidder).

Each system shall be complete with all necessary auxiliary relays, and any other equipment, not specifically mentioned in the Specification but which are required for the satisfactory operation of the protective system;

(a) D.C. supply supervision relays each with contacts for remote alarms.
(b) Auto-Reclose switch 79CO
(c) FT Switches
(d) Fuses, etc.

Each panel shall be fully provisioned with the following devices to interface with the relays to provide communication for all relays in 69kV Transmission Line Panels:

(a) One (1) SEL **SEL 2730** (2730M0ARCA1222AAAAX0) switches together with eight (**SEL 8131-01**) All Ethernet connections between 2730M, 3620 2440, 2488, 3355 and protective relays shall be via multi-mode optical fibre.

(b) One (1) **SEL 3620** (3620X3B2XXX0) Ethernet security gateways.

(c) one (1) Discrete Programmable Automation Controller **SEL 2440**.

All intra-panel and inter-panel (to include interface panel and RTU panel) communication wires and fiber cables, RS232/RS485/Ethernet cables are to be provided by the successful bidder. Each panel shall include an internal path between adjacent panels.

TS.03.6 Interbus and Grounding Transformer Protection Panel

Number of Transformer Protection Panels required= 1;

Duncans substation = 1 - Transformer protection panel (T1 / T3)

Two protective relaying systems (primary and back up) shall be provided for each Transformer

Each Interbus Transformer primary system shall include;

(a) One (1) Transformer differential relay (Device Nos. 87-T1) shall be six (6) winding, three phase, high speed, biased differential type, of numerical design with means of positively preventing tripping on magnetizing inrush current and with over fluxing features.
NB:- This differential relay shall have provisions to include the grounding transformer as being within the Interbus Transformer Differential zone, such that the grounding transformer neutral CT is used as a direct CT input to the differential relay.
This differential relay shall have provisions to include a 69/24kV mobile transformer, when so connected / installed, as being within the Interbus Transformer Differential zone, such that the mobile transformer HV is directly connected to the Interbus LV

circuit and that the mobile transformer HV CTs are used to provide differential current usage for the mobile.
Relays shall be Schweitzer Engineering Laboratories type **SEL 487E (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(b) One (1) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61, or ELECTROSWITCH type LOR 7805D or equivalent: Device Nos. (86P-T1) with 10NO + 10NC contacts.
NB:- Provisions shall be made for an extension of the trip bus for the 86P-T1 via terminal block to be used for temporary cases, such as mobile transformer installations, etc.
(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).

Each Interbus Transformer back-up system shall include;

(a) One (1) - Three-phase and ground overcurrent relay with programmable time delay (Device No. 67/67N-HV-T1 & 51NN-T1). Relay shall be GE type **MiCOM P143.**

(b) One (1) - Three-phase and ground overcurrent relay with programmable time delay (Device No. 67/67NLV-T1). Relay shall be GE type **MiCOM P143.**

(c) One (1) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61, or ELECTROSWITCH type LOR 7805D or equivalent: Device Nos. (86B-T1) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each Grounding Transformer primary system shall include;

(a) See above note under primary protection subsection (a) for the Interbus Transformer.

(b) See above note under primary protection subsection (a) for the Interbus Transformer.

Each Grounding Transformer back-up system shall include;

(d) One (1) - Three-phase and ground overcurrent relay with programmable time delay (Device No. 51N-T3). Relays shall be Schweitzer Engineering Laboratories type **SEL 751 (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(e) One (1) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61, or ELECTROSWITCH type LOR 7805D or equivalent: Device Nos. (86B-T3) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each system shall be complete with all necessary auxiliary relays, and any other equipment, not specifically mentioned in the Specification but which are required for the satisfactory operation of the protective system;

(a) D.C. supply supervision relays with contacts for remote alarms.

(b) FT Switches

(c) Fuses, etc.

Each panel shall be fully provisioned with the following devices to interface with the relays to

provide communication for all relays in Transformer Panels:

(a) One (1) SEL **SEL 2730** (2730M0ARCA1222AAAAX0) switches together with eight (**SEL 8131-01**) All Ethernet connections between 2730M, 3620 2440, 2488, 3355 and protective relays shall be via multi-mode optical fibre.

(b) One (1) **SEL 3620** (3620X3B2XXX0) Ethernet security gateways.
(c) one (1) Discrete Programmable Automation Controller **SEL 2440** with sufficient contact ratings
for trip and close coils for (20) devices.

All intra-panel and inter-panel (to include interface panel and RTU panel) communication wires and

fiber cables, RS232/RS485/Ethernet cables are to be provided by the successful bidder. Each panel shall include an internal path between adjacent panels.

TS.03.7 Distribution Transformer Protection Panel

Number of Transformer Protection Panels required= 4;

Washington Boulevard substation = 2 - Transformer protection panels (T1 /T2, & T3)
Rockfort substation = 1 - Transformer protection panel (T1)
Duncans substation = 1 - Transformer protection panel (T2)

Two protective relaying systems (primary and back up) shall be provided for each Transformer

Each Distribution Transformer primary system shall include;

(c) One (1) Transformer differential relay (Device Nos. 87-T1, 87-T2, 87-T3) shall be three winding, three phase, high speed, biased differential type, of numerical design with means of positively preventing tripping on magnetizing inrush current and with over fluxing features. Relays shall be Schweitzer Engineering Laboratories type **SEL 787 (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(d) One (1) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61, or ELECTROSWITCH type LOR 7805D or equivalent: Device Nos. (86P-T1, 86P-T2, and 86P-T3) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each Distribution Transformer back-up system shall include;

(f) One (1) - Three-phase and ground overcurrent relay with programmable time delay (Device No. 50/51N-T1 & 51NN-T1, 50/51N-T2 & 51NN-T2, 50/51N-T3 & 51NN-T3). Relay shall be GE type **MiCOM P143.**

(g) One (1) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61, or ELECTROSWITCH type LOR 7805D or equivalent: Device Nos. (86B-T1, 86B-T2 and 86B-T3) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each system shall be complete with all necessary auxiliary relays, and any other equipment, not specifically mentioned in the Specification but which are required for the satisfactory operation of the protective system;

(d) D.C. supply supervision relays with contacts for remote alarms.

(e) FT Switches

(f) Fuses, etc.

Each panel shall be fully provisioned with the following devices to interface with the relays to

provide communication for all relays in Transformer Panels:

(a) One (1) SEL **SEL 2730** (2730M0ARCA1222AAAAX0) switches together with eight (**SEL 8131-01**) All Ethernet connections between 2730M, 3620 2440, 2488, 3355 and protective relays shall be via multi-mode optical fibre.

(b) One (1) **SEL 3620** (3620X3B2XXX0) Ethernet security gateways.
(c) one (1) Discrete Programmable Automation Controller **SEL 2440** with sufficient contact ratings for trip and close coils for (20) devices.

All intra-panel and inter-panel (to include interface panel and RTU panel) communication wires and

fiber cables, RS232/RS485/Ethernet cables are to be provided by the successful bidder. Each panel shall include an internal path between adjacent panels.

TS.03.8 GSU Transformer Protection Panel

Number of GSU Transformer Protection Panel required = 1;

Rockfort substation = 1 GSU Transformer Protection Panel GT1/GT2

Two protective relaying systems (primary and back up) shall be provided for each GSU transformer.

Each primary system for GSU transformer shall include;

(a) One (1) Transformer current differential relay (Device Nos. 87-GT1, 87-GT2), shall be three winding, three phase, high speed, biased differential type, including four-zone distance and directional overcurrent backup shall be included for each primary. Relays shall be Schweitzer Engineering Laboratories type **SEL 387. (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(b) One (1) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE
type HEA61, or ELECTROSWITCH type LOR 7805D or equivalent: Device Nos. (86L-GT1 & 86L-GT2) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each backup system shall include;

(a) 1 Three-zone, three phase and ground numerical type, programmable directional overcurrent relay (Device No. 67/67N-GT1 & 67/67N-GT2) shall be included for each backup. Relays shall be GE type **MiCOM P143. (Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(b) (b) One (1) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61, or ELECTROSWITCH type LOR 7805D or equivalent: Device Nos. (86B-GT1 &
86B-GT2) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each system shall be complete with all necessary auxiliary relays, and any other equipment, not specifically mentioned in the Specification but which are required for the satisfactory operation of the protective system.

(a) D.C. supply supervision relays with contacts for remote alarm.
(b) FT Switches
(c) Fuses, etc.

Each panel shall be fully provisioned with the following devices to interface with the relays to
provide communication for all relays in Generator 69kV - Tie Line Panels:

(a) One (1) SEL **SEL 2730** (2730M0ARCA1222AAAAX0) switches together with eight (**SEL 8131-01**) All Ethernet connections between 2730M, 3620 2440, 2488, 3355 and protective relays shall be via multi-mode optical fibre.

(b) One (1) **SEL 3620** (3620X3B2XXX0) Ethernet security gateways.

(c) one (1) Discrete Programmable Automation Controller **SEL 2440**.

All intra-panel and inter-panel (to include interface panel and RTU panel) communication wires and

fiber cables, RS232/RS485/Ethernet cables are to be provided by the successful bidder. Each panel shall include an internal path between adjacent panels.

TS.03.9 Breaker Failure Protection

Number of Breaker Failure Protection Panel required = 3;

Rockfort substation = 2 - Breaker Failure Protection Panel (BF – Panel 1 & BF – Panel 2).
Duncans substation = 1 - Breaker Failure Protection Panel (BF – Panel 1).

Each circuit breaker shall have breaker failure protection, comprising the following:

- One (1) 3-phase and ground overcurrent relay with programmable time delay (Device No. 50 BF…) Schweitzer Engineering Laboratories type **SEL 501-2** with X and Y elements [one (1) element per circuit breaker].
- 1 - Lockout relay per element, GE type HEA61 or ELECTROSWITCH Type LOR 7805D or equivalent.
- 1 - DC supply supervision relay with contacts for remote alarms

(a) Rockfort Breaker Fail Protection Panel **(BF - Panel 1)**

Three (3) 3-Phase and ground overcurrent relays with programmable time delay Schweitzer Engineering Laboratories type **SEL 501-2** (Device Nos. 50BF-1 & 2, 50BF-3 & 6, & 50BF-4 & 5).

- Six (6) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61 or ELECTROSWITCH type LOR 7805D or equivalent (Device No. 86BF-1, 86BF-2, 86BF-3, 86BF-4, 86BF-5 & 86BF-6) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(b) Rockfort Breaker Fail Protection Panel **(BF - Panel 2)**

Three (3) 3-Phase and ground overcurrent relays with programmable time delay Schweitzer Engineering Laboratories type **SEL 501-2** (Device Nos. 50BF-7 & 8, 50BF-9 & 10, & 50BF-11 & 12).

- Six (6) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61 or ELECTROSWITCH type LOR 7805D or equivalent (Device No. 86BF-7, 86BF-8, 86BF-9, 86BF-10, 86BF-11 & 86BF-12) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

(b) Duncans Breaker Fail Protection Panel **(BF - Panel 1)**

Two (2) 3-Phase and ground overcurrent relays with programmable time delay Schweitzer Engineering Laboratories type **SEL 501-2** (Device Nos. 50BF-1 & 2, &

50BF-3 & 4).

- Four (4) high speed, electrical trip, manually reset, dc operated multi contact lockout relay, GE type HEA61 or ELECTROSWITCH type LOR 7805D or equivalent (Device No. 86BF-1, 86BF-2, 86BF-3, & 86BF-4) with 10NO + 10NC contacts. **(Panel cut-out and wiring by bidder, relay will be procured and installed by bidder).**

Each system shall be complete with all necessary auxiliary relays, and any other equipment, not specifically mentioned in the Specification but which are required for the satisfactory operation of the protective system.

(a) One (1) Ethernet Security Gateway SEL 3620.

(b) DC Supervision relays with contacts for remote alarms

(c) FT Switches

Each panel shall be fully provisioned with the following devices to interface with the relays to

provide communication for all relays in Breaker Failure Panels:

(a) One (1) SEL **SEL 2730** (2730M0ARCA1222AAAAX0) switches together with eight (**SEL 8131-01**) All Ethernet connections between 2730M, 3620 2440, 2488, 3355 and protective relays shall be via multi-mode optical fibre.

(b) One (1) **SEL 3620** (3620X3B2XXX0) Ethernet security gateways.

(c) one (1) Discrete Programmable Automation Controller **SEL 2440**.

All intra-panel and inter-panel (to include interface panel and RTU panel) communication wires and

fiber cables, RS232/RS485/Ethernet cables are to be provided by the successful bidder. Each panel shall include an internal path between adjacent panels.

TS.03.10 Local Control Panel

Number of Control Panels required = 4;

Washington Boulevard substation = 1
Cane River substation = 1
Rockfort substation = 1
Duncans substation = 1

The Supplier shall supply each Control Panel containing:-

(a) a remote/standby selector switch (Device No. 43S/R) labelled “Station Control”, ELECTROSWITCH type **24-2-10-B**, where the selector switch has two (2) permanent position states, labelled as “Remote” & “Standby”.
***NB:- This selector switch shall provide enough contacts to provide at minimum one (1) contact that is closed when the switch is in remote state AND at minimum one (1) contact that is closed when the switch is in standby state for each circuit named, and / or shown in the single line drawing, whether explicitly or implicitly, for each SEL-2440 spread over the respective protection panels, for reporting the state of the switch through SCADA and provide at minimum one (1) spare set of contacts for future use. Where the remote/standby selector switch cannot support all circuits, then an appropriate number of approved by-stable multiplier relay(s) shall be used, such that ideally all SEL-2440 devices and SCADA are connected directly to the remote/standby selector switch and the remaining circuits connected to the approved by-stable multiplier relay(s), such that at minimum one (1) spare set of contacts for future use is available.**

(b) Circuit breaker control switches, labelled as “Breaker Control”, ELECTROSWITCH type **24-PC-38D,** where the switches have two (2) momentary position states, labelled as “Trip” & “close” and a centre normal return position with three (3) led lights (or equivalent) with colours Red for Closed, Green for Open and Amber (or white) for Trip circuit OK to facilitate control of 138kV, 69kV & 24kV circuit breakers, and also motorised disconnects respectively from within relay building (Device Nos. 52CS-1, 52CS-2…52-B1, 52-R1…89CS-L1, 89CS-L2…89CS-11, 89CS-12…etc.).

Washington Boulevard substation:

Control Panel shall be supplied with;

- Remote/standby selector switch (Device No. 43S/R), ELECTROSWITCH type **24-2-10-B.**
- Circuit breaker control switch ELECTROSWITCH type **24-PC-38D** to facilitate control of Seven (7) 69kV circuit breakers (Device No. 52CS-1, 52CS-2, 52CS-3, 52CS-4,52CS-5, 52CS-6 & 52-CS-7), and eight (8) 24kV circuit breakers switch (Device No. 52-B1, 52-B2, 52-R3,52-R4, 52-R5, 52-R6, 52-R7, 52-R8).

- Mimic diagram per single diagram WBLVD_SLD_001.

Cane River substation:

Control Panel shall be supplied with;

- Remote/standby selector switch (Device No. 43S/R), ELECTROSWITCH type **24-2-10-B.**

- Circuit breaker control switch ELECTROSWITCH type **24-PC-38D** to facilitate control of
Six (6) 69kV circuit breaker (Device No. 52CS-1, 52CS-2, 52CS-3, 52CS-4, 52CS-5 & 52CS-6) and ight (8) 24kV circuit breaker (Device No. 52B-1, 52B-2, 52R-3, 52R-4, 52R-5 & 52R-6).

- Mimic diagram per single diagram CRV_SLD_001.

Rockfort substation:

Control Panel shall be supplied with;

- Remote/standby selector switch (Device No. 43S/R), ELECTROSWITCH type **24-2-10-B.**

- Circuit breaker control switch ELECTROSWITCH type **24-PC-38D** to facilitate control of
  thirteen (13) 69kV circuit breaker (Device No. 52CS-1, 52CS-2, 52CS-3……52CS-13), and four (4) 24kV circuit breaker (Device No. 52B-1, 52R-2, 52R-3, 52R-4).

- Mimic diagram per single diagram RKFT_SLD_001.

Duncans substation:

Control Panel shall be supplied with;

- Human Machine Interface (HMI)
  The system shall be provisioned/configured per the following:

  General characteristics
  Power supply: 48VDC AND 125VDC
  Can withstand operating temperature of 70oC
  IP65 rated
  One multimode Ethernet port
  Two 100 or 1000mb/s Ethernet (1000 preferred)
  Support industry standard protocols
  IRIG-B time synchronization or better

  Main unit
  Main processing unit shall have none rotational main storage. Similar to SEL3355 dual 250GB SSD, 12GB Ram, I-RIG B, two (2) 3390 expansions cards with RJ45 and SFP ports.

  Display 17 inch diagonal electronic display that fits a standard 19inch rack

  Keyboard
  Track Pad, LCD display, HMI software and appropriate OS.

  Security Two step operation

  The typical functions to be controlled and monitored by the JPS SCADA system are:

  Control:

  - 138 kV circuit breakers

- 69 kV circuit breakers
- 24 kV circuit breakers
- 138 kV motorized disconnect switches
- 69 kV motorized disconnect switches

- Remote/standby selector switch (Device No. 43S/R), ELECTROSWITCH type **24-2-10-B.**

- Circuit breaker control switch ELECTROSWITCH type **24-PC-38D** to facilitate control of five (5) 138kV circuit breakers (Device No. 52CS-1, 52CS-2, 52CS-3, 52CS-4, & 52CS-5), five (5) 69kV circuit breakers (Device No. 52CS-9, 52CS-10, 52CS-11, 52CS-12, & 52CS-15), four (4) 24kV circuit breakers (Device No. 52CS-B1, 52CS-R1, 52CS-R2, & 52CS-R3), five (5) 138kV motorised disconnects (Device No. 89CS-L1, 89CS-L2, 89CS-L3, 89CS-3, 89CS-32), and five (5) 69kV motorised disconnects (Device No. 89CS-4, 89CS-11, 89CS-12, 89CS-17, & 89CS-33)

- Provision shall be made to facilitate manual synchronism of the 138kV and 69kV circuit breakers with synchro scopes or approved equivalent.

- Mimic diagram per single diagram Duncans_SLD_001.

(a) Communication Devices

The panel shall be fully provisioned with the following devices to interface with the relays to provide communication for all relays in 69kV Line Panels:

One (1) SEL **SEL 2730M** (2730M0ARCA1222AAAAX0) switches together with two (**SEL 8131-01**)

One (1) **SEL 3620** (3620X3B2XXX0) Ethernet security gateways

One (1) SEL 2488 clock complete antenna and cables suitable for dual constellation use.

All intra-panel and inter-panel (to include interface panel and RTU panel) communication wires and fiber cables, RS232/RS485/Ethernet cables are to be provided by the successful bidder. Each panel shall include an internal path between adjacent panels.

(b) Instrument Cables

Multimode fiber optic cable (multi pair) shall be supplied by bidder to interconnect group of panels in a loop with existing panels, with appropriate terminations.

(c) RS485 Signal Cables

The interconnecting RS485 signal cables between Intelligent Electronic Devices such as protection relays and the Remote Terminal Unit shall be shielded pair with shield wire and a characteristic impedance of 120 ohms.

(d) BNC type IRIG-B coaxial Cable

All relays that has an option for IRIG-B clock sync signal shall be ordered and pre-wired in the

relay panels as such and shall be appropriately interconnected the SEL2488 clock to be supplied by the bidder.

TS.03.11 Auxiliary Relays and Devices

(a) **Trip Circuit Supervision Function**

The circuit breakers shall be provided with trip circuit supervision (Device No. 74). The trip circuit supervision relay shall detect the failure of trip circuit supply and opening of circuit breaker trip coil or trip circuit wiring whether the circuit breaker is open or closed.

The trip supervision (74) function shall be provided via the protective relays (see Protection & Metering Single Line Diagram), along with indicating LED lamp and alarm facilities.

(b) **Indicating (Target) Relays**

Indicating (target) relays, voltage operated (Device No. 30) shall be supplied to provide visual indication on the operation of all transformer non-electrical protection devices (Buchholz, sudden pressure, oil temperature, winding temperature, low oil level, etc). Relays shall be AREVA type PRS 12 or equivalent.

(c) **Under-voltage Relays**

DC under-voltage Relays (Device No. 27) shall be Potter & Bromfield, type KRP 11D or equivalent.

(d) **Synchro-check**

The closure of circuit breakers shall be controlled by synchro-check function (Device No. 25), which will allow the following closing circuit operations:

- closing of the breakers when both the bus and the line are dead
- closing of the breakers when the bus is dead and the line is live
- closing of the breakers when the bus is live and the line is dead
- closing of the breakers when both the bus and line are live and when their respective voltages are approximately normal, equal in phase and of the same frequency.

The relay shall be programmable for operating voltage angle differences of 20° to 60° and for the setting of the relay operating time.

The synchro-check (25) function shall be included in the protective relays (see Protection & Metering Single Line Diagram).

(e) **Lockout Relays**

The transformers shall be provided with two lockout relays (Device No. 86P-Tn and 86B-Tn). The Beakers shall be provided with lockout relays for each breaker fail protection scheme (Device No. 86BF-n). See protection and metering single line and tripping logic diagram.

The trip relay shall be a relay especially designed for high-speed circuit breaker tripping duty in protective relaying systems. The lockout relays shall be dc electrically operated, manually reset, multi-contact auxiliary relay designed for application where several independent circuits must be energized or de-energized upon operation of a primary relay. This relay shall be GE MVAJ type with sufficient make and break contacts as may be required. All spare contacts for each lockout relay shall be terminated on terminal blocks for future connection.

(f) **Discrete Programmable Automation Controller SEL 2440**

The SEL-2440 listed in the above-mentioned protection panels are for SCADA interfacing ONLY, where it is used for the SCADA controlling and visibility of control devices as well as their associated alarms, such as circuit breakers, and / or visibility and alarms associated with non-controllable field devices, such as transformers and manual switches, associated with the respective protection panel and where the requisite SCADA interfacing in the respective panel exceeds the available SEL-2440 control input and outputs, then the additional SEL-2440 devices shall be installed in the said panel until the required number of inputs and outputs are met.

The SEL-2440 listed in the above-mentioned protection panels shall provide NO Protection nor Logic functions save and except for permitting of all of the respective contact outputs to be operated via communication protocol, when the Station Control in Remote Mode input (IN315) is asserted AND if the Station Control in Standby Mode input (IN316) is de-asserted, and the blocking of all of the contact outputs from operating when IN315 AND IN316 are in any other combination.

The SEL-2440 control outputs are to be utilised in adjacent pairs for trip and close with the trip being in the first position and close in the second position. Example OUT101 is the SCADA control open and OUT102 is the SCADA control close output to control device one, such that the sixteen (16) control outputs for the SEL-2440, namely OUT101, to OUT116, are reserved for controllable devices, such as for 52-1, 52-2, 52-17, 52B-1, 52R-1, 52R-2, 89-L1, 89-4, 89-33, etc,.

The first eight (8) control inputs for the SEL-2440, namely IN201, to IN208, are reserved for controllable devices status point, such as for 52-1, 52-2, 52-17, 52B-1, 52R-1, 52R-2, 89-L1, 89-4, 89-33, etc,.

The last three (3) control input for the SEL-2440, namely IN314, IN315 and IN316, are reserved such that IN314 is used for Station Control in Remote Mode, IN315 is used for Station Control in Standby Mode, and IN316 is used for wetting voltage monitoring by being bolted (at the end of the daisy chain) to the wetting voltage positive and negative supplies.

The SEL-2440 listed in the above-mentioned protection panels is for the SCADA controlling and visibility of control devices associated with the protection panel and where the requisite SCADA interfacing in the respective panel exceeds the available SEL-2440 control input and outputs, then the additional SEL-2440 devices shall be installed in the said panel until the required number of inputs and outputs are met.

(g) **Digital Fault Recorder (DFR)**

Trip / operate contacts shall be provided and wired out to terminal blocks for triggering of a Digital Fault Recorder.

Duncans substation:

Provision shall be made for the existing ERL Phase Power Technologies' Tesla Digital Fault Recorder's input module, called Tesla Input Module (TIM) with model number 110739, which has 4 AC Channel Isolated Current Module and 5 amps nominal be mounted, on DIN RAILs, in ALL above-mentioned protection panels for Duncans Substation. Such provision shall include but not limited to, having the DFR TIM current input connections in series and at the end of the chain with the respective redundant primary / back up protection devices, appropriate make before break test switches, and the communication level current outputs all pre-wired, including the ground wire, in place awaiting the installation and hence connection to the DFR TIM.

TS.03.12 Metering & Instruments

(a) **Metering of Circuit Quantities**

Protection relays shall be utilized for local and remote indication of line and transformer metering quantities. For remote indication purposes, the relays shall provide access to their real-time metering data (MW, MVAR, V, A) using DNP 3.0 communication protocol.

Metering is required for the following circuits:

- 138kV Transmission Lines
- 69kV Transmission Lines
- 138-69 kV Transformer HV and LV
- 69-24 kV Transformer HV and LV

TS.03.13 Other Accessories

The following accessories shall be provided on the control and relay panels:

(a) Test and Isolating Switches and Fuse Links

(b) Nameplates

(c) Auxiliary relays

Test and Isolating switches shall be ABB type FT-1 or equivalent, each having the requisite number of shorting type current and potential switches.

Primary A and B protections shall be separately fused, to be supplied from separate panel boards. Fuses and fuse holders shall be AREVA type C1A HRC type and C30H respectively or approved equivalent. Links and link holders shall be AREVA type SS and HRC type SS-P respectively or approved equivalent.

***NB:- Fuses, fuse holders, links and link holders shall be covered with clear cover, such as Plexiglas to prevent inadvertent contact, but remain visible for visual inspection as required.**

TS.03.14 Panel Construction

The panels shall be of unit type construction forming a rigid, self-supporting, dustproof, freestanding and vermin proof structure.

Panels shall be constructed from cold-rolled steel, minimum thickness of 3 mm, welded and reinforced where necessary. All surfaces shall be flat, free from surface blemishes, and suitably stiffened to prevent buckling. All sharp edges and burrs shall be removed before final assembly and painting.

Panels shall have lift-off-hinged doors at the rear, with a minimum door swing of 120 degrees for internal access. The door-closing mechanism shall latch at three positions top, bottom and center-operated by a twist type handle. Doors shall be fitted with a key-operated lock. The key shall be trapped in the lock in the **open** position and removable in the **locked** position. The relay panel front arrangements shall consist of full height mounting rails for 19" rack mounting of equipment, with a full height safety glass viewing key lockable door with gasket.

All unused rack space shall be covered by steel screw-down rack mounted type blanking plates.

Overall panel dimensions shall be 2200 x 800 x 700mm (H x W x D). The width (W) may be increased, or alternatively multiple panels provided, to allow for adequate layout of lights, lock out relays etc. (Refer to panel arrangement)

Removable lifting lugs shall be provided at the top of each panel.

Panels shall be equipped with removable blank metal cable gland plates for both top and bottom cable entry. The panels are to be bolted together, not welded, and the individual panel doors shall be removable without disturbing the adjacent panels. Anti-condensation heaters shall be provided, each heater circuit protected by miniature circuit breakers.

The panels shall be suitable for bolting directly to the floor and all necessary drilled type expansion anchor bolts shall be provided. Size of anchor bolts must be specified.

(a) **Painting**

All surfaces shall be thoroughly cleaned and free from grease, oil, rust, scale, etc, and a rust resistant primer shall be applied. A minimum of three coats of paint shall be used; namely a primer and two coats of finishing gloss. Each coat shall be air dried, sanded and dusted before application of the next coat.

The panel interior shall be glossy white and the exterior shall be semi-gloss light grey. Blanking plates shall be matt black.

(b) **Auxiliary Wiring**

All panel interior wiring shall be stranded copper 2.5 sq. mm (or 12 AWG) minimum unless approved by the Purchaser in writing. Current transformer secondary wiring shall be 4 sq. mm (or 10AWG) minimum. Insulation shall be of moisture and flame-retardant 105^0C cross-linked polyethylene (XLPE) or of fluoridated polycarbon material.

All wiring shall be neatly run and securely fixed in such a manner that, wherever practical, wiring can be easily checked against diagrams.

Wiring shall be so arranged that access to panel-mounted equipment terminals is not impeded.
Wiring for current transformer circuits shall be such that the return is grounded at the first point of entry and said ground wire provisioned in place (connected between the panel ground bar and the respective terminal block) as per relevant A.C. schematics.

Where provision is made for future equipment to be mounted on a panel, suitable means of supporting and terminating the wiring shall be used. Wires shall not be jointed or teed between terminals. No more than two wires shall be connected to one side of any terminal.
All wiring shall be fitted with numbered marker ferrules. The ferrules shall be black on white, of heat shrink or ring type, made of non-combustible insulating material and with a glossy finish to prevent the adhesion of dirt. C type ferrules are not acceptable.

The ferrules shall not be affected by moisture or oil and shall be clearly and permanently marked; temporary marking shall not be used. The same ferrule marking shall not be used on wires forming connections not directly in series or parallel in the same panel.

Wherever practicable, all power circuits shall be kept physically separated from the control wiring and low-level signal wiring. Separated raceways shall be provided for the above systems. The working voltage of each circuit shall be marked on the associated terminal boards.

(c) **Terminals**

Panels are to be equipped with terminal blocks of the duty type mounted on either side on vertical columns. All terminal blocks must be clearly labelled (i.e. TB1, TB2 etc). They must be rated for 600 V D.C.; 12 way with pan head screws suitable for accommodating ring type terminal lugs with a stud size of 8-10; and barriers between terminals.

Terminals shall be insulated for 600 V minimum and shall be suitable for terminating up to 6 sq. mm stranded wire or 2- 4 sq. mm wires.

Panel wiring shall be connected to one side of the terminal leaving the other side clear for the connection of external cables. Insulating barriers shall be installed between terminals of different voltages or from different sources of supply. Transparent insulating covers shall be fitted to terminals connected to voltage higher than 125 V.

Terminals shall be provided for all external connections plus 25% spare terminals for each column. Spare terminals mean that no wire shall be terminated on either side of the terminal block. Adequate space shall be provided on both sides of the terminals, for connection of wiring. All cables are to be terminated using ring tongue compression type lugs.

Terminations shall be grouped according to function and labels shall be provided on the fixed portion of the terminal racks showing the function of each group. No more than two terminations must be done on any terminal.

Supplier shall submit details of the types of terminals it proposes to use for acceptance of Purchaser.

(d) **Grounding**

Each row of panels shall have a continuous copper ground bus, 25 x 3 mm minimum area, run at the bottom of each panel. A clamp type connector, suitable for #4/0 equivalent copper weld cable shall be provided at each end of this bus for connection to the main station grounding system. Metal cases of instruments, relay cases, switches, etc, shall have individual connections made to the ground bus by 2.5 sq. mm conductor.

(e) **Labels**

The Supplier shall supply and install identifying labels for each item of equipment on, or in, each panel, including panel identification labels. Equipment mounted on the panel front shall have one label mounted on the front of the panel and an identical label mounted inside the panel, adjacent to the equipment and readily visible. Labels shall be of laminated plastic, **WHITE** lettering on **BLACK** background. Size and inscriptions on nameplates shall be **Approved by Purchaser** prior to fabrication.

All wire labels shall be of the oval permanent conforming to JPSCo. Ltd labeling standards specified for type in accordance with the Purchaser's standard of labeling wires. See JPS Co's Circuit Function Letters and Wire Number Convention – **see Section TS.03.19** of this specification. See accompanying schematic drawings and wiring diagrams for labeling convention.

(f) **Lighting and Power**

Each panel shall be equipped with an interior light controlled by a door-operated switch as well as a metal-clad, 125 V, 15 A, 3 pin (line, neutral & ground) duplex outlet to North American standards. The power supply available on site is from a single-phase, 120 VAC, 50 Hz, system.

TS.03.15 Detailed Requirements

The panels required are listed in section TS.01.4 of this specification and in Part 6 "Schedule of Requirements".

The typical arrangement for each type of panel is shown on the attached drawings and is intended to indicate the desired relative location of relays, instruments and control devices. The Supplier is free to modify the arrangement to suit the particular equipment proposed. The Supplier shall be responsible for including all necessary equipment and devices required to complete the protection and control systems whether or not shown or detailed on the single line, dc schematic diagrams or logic diagrams, panel outlines or specified herein.

TS.03.16 Works Tests and Inspection

All relay, metering and control panels shall be fully assembled and tested prior to shipping from the Supplier's Works to prove that the equipment fully meets with the requirements of this Specification in all respects. These Works tests will be witnessed. No shipment shall be made without prior written approval indicating the Purchaser's acceptance of these tests.

The Supplier shall provide the Purchaser with a schedule of proposed tests at least 3 weeks prior to the testing date. The Supplier shall make as many tests, as in the opinion of the

Purchaser can be made together. All arrangements for the test and the methods of computing test results shall be approved by the Purchaser. All instruments to be used for testing shall be calibrated by a recognized and approved laboratory. The test certificates shall bear the details of calibration. All tests, including calibration tests, will be witnessed by the Purchaser or its representative. At least 3 weeks' notice shall be given to the Purchaser so that arrangements can be made to witness the tests.

The total cost (all expenses paid) for witnessing the final shop and function tests by two (2) of the Purchaser's Engineers shall be included in the quoted CIF.

The tests shall include but not be limited to those specified below.
- All tests specified in this section shall be performed at the Supplier's Works and all equipment shall be tested in accordance with relevant standards.

- Point-to-point wire checks, including continuity.

- Routine tests of individual relays, instruments, etc, shall be made and test reports shall be submitted to the Purchaser for approval.

- Voltage-actuated indicators and relays shall operate satisfactorily at 80% of the station service voltage.

- Secondary wiring shall be subjected to a high-voltage test of 1000 V to ground for a duration of 1 minute.

- For the purposes of testing, all inputs shall be simulated (current transformer, voltage transformer, line signaling, etc) and all outputs (circuit breaker trip and close signals, breaker failure trip signals, line signaling, alarms, etc) shall be monitored at the relay panel terminal blocks.

- Testing shall be performed on complete protective relaying systems to demonstrate their function, accuracy and timing.

- Final inspection to verify completion in conformance with approved drawings.

- Documentation of test results.

TS.03.17 Spares & Special Tools

Bidders shall provide separate prices for all required spare parts and special tools. These should include:

- one protection relay of each type
- one control switch of each type
- one indicating instrument of each type
- two auxiliary relays of each type
- one lockout and one tripping relay of each type
- ten signaling lamps of each type
- ten fuses of each type
- One complete set of special tools necessary for equipment dismantling and assembling as well as for normal maintenance
- One set of tools and connectors for testing of the protective relays

The Supplier shall specify any other type of device and quantities for which spares are recommended.

TS.03.18 Operation and Maintenance Instruction Manual

The Operation and Maintenance Instruction Manual shall comply with provisions according to Section TS.02.5 and with those stated below.

Operation and Maintenance Instruction Manual shall include as minimum the following:

- General Information
- Manufacturer's description literature including recommended setting, testing and maintenance procedure on all component parts such as relays, switches, etc.
- Operation instructions suitable for training.
- Equipment list of all component parts.
- Complete set of final as-built drawings.

TS.03.19 JPS Co's Circuit Function Letters and Wire Number Convention

CIRCUIT FUNCTION LETTERS AND WIRE NUMBERS

Circuit function letter	*Circuit function*	*Wire Numbers*
A	Current transformers for primary protection, excluding over current.	10-29 Red phase 30-49 Yellow phase 50-69 Blue phase 70-89 Residual circuits and neutral current transformers. 90 Earth wires directly connected to the earth bar. 91-99 Test windings, normally inoperative
B	Current transformers for busbar	
C	Current transformers for overcurrent protection (including) to the earth bar. Combined earth-fault protection and instruments.	
D	Current transformers for metering and voltage control.	
E	Reference voltage for instruments metering and protection.	
F	Reference voltage for voltage control.	
G	Reference voltage for synchronizing	
H	A. C. supplies	1-69 Switchgear and generators.
J	D.C. Supplies	
K	Closing and tripping control circuits.	
L	Alarms and indications initiated by auxiliary switches and relay contacts, excluding those for remote selective control and for General Indication equipment.	Any number from 1 upward.
M	Auxiliary	1-19 Switch gear 20-69 Generators 70-99 Transformers
N	Tap change control, including AVC tap position and progress indication	Any number from 1 upward.
O	An indication that the ferruling is not in accordance with the general scheme and that if it is not double ferruling will be required for co-ordination with the remaining equipment in the station.	
P	D.C. Tripping circuits used solely for busbar protection.	
R	Interlock circuits not covered above	
S	D. C. instruments and relays, excited and field circuits for generators	
T	Pilot conductors (including directly associated connections) between panels, independent of the distance between them, for pilot-wire protection, for inter-tripping or for both.	
U	Spare cores and connections to spare contacts.	Spare cores shall be numbered from 1 upwards in each cable and shall be so arranged that they can be readily identified on site with the cable containing them. This shall be achieved by suitable grouping, and unless the location of each group is clear from the diagram, the groups shall be labeled. Alternatively, the core number shall be preceded by the cable number.
W	Connections to and from light current control equipment	Any number from 1 upward.

X	Alarm and. General Indications to remote selective control equipment.	
Y	Telephones	

If, for functions A-G and for functions H, J, and M, more numbers are required, add multiples of one hundred (e.g.10-29 may be extended to 110-129, 210-229, etc.)

NOTE: The term "remote selective Control" denotes "control at a Point distant from the switch gear by the transmission of electrical signals through common communication channels using selective means to operate one of a number of switching devices.

CABLE IDENTIFICATION

All cables should be properly labeled using numbers or a combination of letters and numbers. Examples:

(a) Numbers I, 2, 3, 4, etc.

(b) Letters and numbers SERI, SER2, SER3, etc.

Note: Letters may represent an abbreviation of the project e.g. in example (b) above SER represents Sequence of Events Recorder.

PART 7

SCHEDULES

Table of Contents

Schedules

SCH.01 Schedule of Requirements

Item	Equipment Description	Unit	Qty.
1.0	138kV Line Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	**Ea.**	**3**
2.0	69kV Line Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	**Ea.**	**11**
3.0	Interbus and Grounding Transformer Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	**Ea.**	**1**
4.0	Distribution Transformer Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	**Ea.**	**4**
5.0	GSU Transformer Protection panels with communication and time synchronization provisioned (with all protection relays included).	**Ea.**	**1**
6.0	Breaker Failure Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	**Ea.**	**3**
7.0	Local Control panel with communication and SEL-2488 gps clock provisioned.	Ea.	4
8.0	Two (2) Purchaser's Engineers to witness the final shop and function tests by **(total cost, i.e. all expenses paid, including but not limited to air fare, accommodation, ground transportation, meals).**	lot	1
	TOTAL C.I.F COST (US$)		

Notes:

1. The validity of prices shall be for a period of ninety (90) days

   Bidder's Proposal: _____ Days

2. The delivery of all material to JPS Stores shall be twenty (20) weeks A.R.O

   Bidder's Proposal: _____ Weeks ARO

Bids shall be submitted to JPS Purchasing Department at the earliest, but no later than **Friday, September 19, 2025.**

Total C.I.F. Cost: US$_____

Bidder's Signature: _____

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 (Draft Layout)

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 Protection Panel

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

Item No.	Description	Qty	Unit Price	Total (CIF) US$
1.0	138kV Line Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	3		
2.0	69kV Line Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	11		
3.0	Interbus and Grounding Transformer Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	1		
4.0	Distribution Transformer Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	4		
5.0	GSU Transformer Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	1		
6.0	Breaker Failure Protection panels with communication and time synchronization provisioned **(with all protection relays included).**	3		
7.0	Local Control panel with communication and SEL-2488 gps clock provisioned.	4		
8.0	Two (2) Purchaser's Engineers to witness the final shop and function tests by **(total cost, i.e. all expenses paid, including but not limited to air fare, accommodation, ground transportation, meals).**	Sum		

_____ex-works/CIF Currency of

Bid _____

Inland Transportation _____

Port Costs, Insurance

Name of Bidder_____

Signature of Bidder _____

SCH.03.2 Spare Parts

Item No.	Parts Description	Unit Quantity	Price

Total CIF Cost of Recommended Spare Parts and Special Tools _____

Name of Bidder _____

Signature of Bidder _____

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

Description	Weeks from award of Contract	Weeks from award of Contract proposed by supplier
Final Drawings	4 weeks (ARO)	
Testing of Panel	18 weeks (ARO)	
Shipment	20 weeks (ARO)	

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, and 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.