

SPECIFICATIONS
AND
BID DOCUMENTS
FOR

15 kV

IntelliRupter
Pulse closer Source Transfer Equipment

CITY OF OAK RIDGE, TENNESSEE

Bids due by 2:00 PM Local Time
December 10, 2013

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1.0 INVITATION TO BIDDERS

Sealed proposals will be received by the City of Oak Ridge, Tennessee, at its office in Oak Ridge, Tennessee for the project bid package shown below, until the date and time indicated, and immediately thereafter will be opened, and publicly read.

The City of Oak Ridge reserves the right to reject any or all bids and to waive any informalities or technicalities therein. The bid will be awarded to the lowest and best responsive bidder as determined by the Engineer.

No bidder may withdraw a bid for a period of sixty (60) days after the date set for opening of bids.

Specifications may be obtained from the Engineer. Specifications may be examined at the office of the Engineer.

OWNER: City of Oak Ridge, Tennessee
Electric Department
100 Woodbury Lane
Oak Ridge, TN 37830

ENGINEER: ATTN : Margaret Elgin, P.E.
TEL : 865 425 1818
FAX : 865 482 8313
email : melgin@cortn.org

PROJECT / PACKAGE : 15 kV IntelliRupter Pulsecloser Source Transfer Equipment

BID DATE: **2:00 PM, December 10, 2013**

2.0 INSTRUCTIONS TO BIDDERS

- 2.1 You are invited to submit a Proposal for 15 kV IntelliRupter Pulsecloser Source Transfer Equipment for the City of Oak Ridge, Tennessee.
- 2.2 The Owner does not obligate itself to accept the lowest or any other bid and specifically reserves the right to reject any and all bids.
- 2.3 The Bidder shall provide all information requested. The Bidder shall take care to complete all portions of the Proposal documents and to provide all required submittals. Failure to comply may result in the rejection of the bid.

Bidder shall return three (3) signed and priced copies of the Proposal documents and all submittals required at the time of the Proposal to:

City of Oak Ridge
100 Woodbury Lane
Oak Ridge, TN 37831-0001
ATTN: Materials Management

sealed and marked in the lower left corner :

**"SEALED BID for 15 kV IntelliRupter Pulsecloser Source Transfer Equipment
Confidential - To be delivered to addressee unopened"**

- 2.4 No proposal security will be required to accompany proposals.
- 2.5 The Owner invites cost saving and schedule improving alternatives. A Bidder shall first complete the Proposal as issued by the Owner; Bidder may then submit the alternatives referenced to the base proposal. If the Bidder recommends any changes or deviations from the documents, Bidder shall describe the change fully and furnish complete information so that the Owner can make a decision based upon the alternative information provided.
- 2.6 If the Bidder requires additional information or is in doubt as to the meaning of any part of the Contract documents, Bidder may telephone or submit a written request to the Engineer for such information or clarification. For questions to be answered, they must be received at least two (2) days prior to the Bid due-date. Addenda may be issued as deemed necessary by the Engineer.
- 2.7 The Engineer will represent the Owner in all matters pertaining to the project, including but not limited to, answering technical questions of prospective bidders, bid evaluation and recommendation, review and approval of fabrication drawings and similar documents, and approval of invoices prior to payment by the Owner.
- 2.8 The terms Purchaser and Owner shall refer to the City of Oak Ridge. The terms Bidder, Seller and Manufacturer shall refer to the supplier of the equipment described by the

documents.

- 2.9 If these specifications call for material, equipment or manufacturing procedures different from the Manufacturer's standard, the Manufacturer shall clearly identify all deviations or substitutions in this bid. When possible, the Manufacturer should bid according to the specifications with the Manufacturer's standard as an option.
- 2.10 Equal shall mean a satisfactory equivalent as approved solely by the Engineer.
- 2.11 Proposals should include Manufacturer's best delivery date that is as close as possible to the requested delivery date.
- 2.12 The Bidder shall clearly state all exceptions to this specification. Unless specifically stated otherwise, the Bidder shall furnish equipment, material and services in exact accordance with this specification, and any modifications to equipment, material and services necessary to comply with this specification shall be made by the Bidder at no additional cost to the Purchaser.
- 2.13 The cost to furnish any and all prints, drawings, diagrams, instruction manuals, cutsheets, AutoCad electronic files, reports, and certified test reports shall be included in the bid process and shall not be listed as a separate item.
- 2.14 All requested options, devices, and equipment are required and expected per the specifications, and the cost to furnish fully operational equipment with explanatory documentation shall be included in the bid process and shall not be listed as separate items.

3.0 TERMS AND CONDITIONS

3.1 Acceptance; Entire Agreement

Acceptance of this order by acknowledgement, shipment or other performance shall be expressly limited to the terms and conditions contained in this order. Any additional or different terms or conditions proposed by the Seller are objected to and are hereby rejected. Upon acceptance, the terms contained in this order shall constitute the entire agreement between Seller and Purchaser with respect to the subject matter of this agreement (hereinafter referred to as the "Agreement") and may not be modified, added to, or rescinded except by a written document signed by Seller and Purchaser.

3.2 Assignment and Setoff

The Seller shall not assign any right or interest under this Agreement nor delegate any work or other obligation to be performed or owned under this Agreement without the prior written consent of Purchaser. Any attempted assignment or delegation in contravention of this provision shall be void. Purchaser shall be entitled to set off any amounts owed by Seller to Purchaser against any amounts payable to Seller.

3.3 Delivery Terms

All goods ordered hereunder shall be shipped F.O.B. destination, unless otherwise agreed. No charge will be allowed for packing, crating, freight, express, or cartage, unless agreed to and specified on this order. This order shall not be filled at prices higher than last quoted or charged without proper authorization.

3.4 Payment

Upon the shipment of any material hereunder, the Seller shall submit to the Purchaser a detailed invoice duplicate of the materials shipped. Within 30 days after written acknowledged receipt, the Purchaser shall make payment thereof to the Seller.

3.5 Time of Performance

Time is of the essence of this Agreement. If tender of conforming goods is not made by the delivery date specified or services are not completed by the completion date specified, Purchaser may treat such failure as a breach hereof and will have all remedies afforded to it by law including, but not limited to, the rights to cover.

3.6 Identification; Risk of Loss

Identification of the goods ordered herein shall occur at the moment this order is accepted by Seller. Risk of loss shall pass to the Purchaser at the time that conforming goods to the Agreement are confirmed received at the Delivery Site .

3.7 Infringement

Seller shall indemnify Purchaser and Purchaser's customers for any and all loss, damage,

expense, (including but not limited to attorney's fees) claims or liability arising out of any infringement or claim of infringement of any patent, trademark, copyright, trade secret or other proprietary interest based on the manufacture, installation, normal use, lease, or sale of any service of material furnished to Purchaser under this Agreement. Purchaser shall notify Seller promptly of any such claim or infringement and Seller shall, at its own cost, defend, compromise, or settle, any such action or actions to satisfy and discharge the same without any cost or expense whatsoever to the Purchaser.

3.8 Warranties

Seller warrants to Purchaser that material furnished will be merchantable, fit for Purchaser's intended purposes and free from defect in design, material and workmanship and will conform to and perform in accordance with Purchaser's drawings and specifications and will be safe for its intended use. Seller also warrants to Purchaser that services will be performed in a first class workmanlike manner consistent with accepted industry standards. In addition, if material furnished contains one or more manufacturers' warranties, Seller hereby assigns such warranties to Purchaser. All warranties shall survive inspection, acceptance and payment. Material not meeting the warranties shall at Purchaser's option be repaired, adjusted or replaced by Seller at no cost to Purchaser. Services not meeting the warranties shall at Purchaser's option be reperformed by Seller at no cost to Purchaser. Such remedies shall be available to Purchaser in addition to all others afforded to it at law or equity.

3.9 Rejected Goods

Purchaser shall give notice to Seller of any rejection of goods, and goods rejected will, at Seller's expense, be returned to Seller or otherwise disposed of as Seller may reasonably request. Payment for the goods prior to inspection and approval shall not constitute acceptance thereof. Neither Purchaser's inspection nor its failure to inspect the goods delivered hereunder shall release Seller from its warranties and obligations under this Agreement.

3.10 Termination

- A) Purchaser may terminate this Agreement for default upon notice to Seller if: 1) Seller fails to comply with any of the terms and conditions of this Agreement, including failure to deliver goods or perform services required within the time specified in this Agreement; 2) at any time reasonable grounds for insecurity arise with respect to Seller's expected performance and Seller fails to furnish adequate assurance of due performance within ten (10) days after a written demand by Purchaser for such adequate assurance; 3) Seller shall become insolvent or make an assignment for the benefit of creditors; or 4) Seller shall file a voluntary petition in bankruptcy or insolvency or shall be involuntarily petitioned into bankruptcy or insolvency.
- B) Purchaser may terminate this Agreement, in whole or in part, for its convenience, at any time by giving written notice to Seller, and Seller shall promptly comply with the directions contained in such notice. In such event, Purchaser shall make payment to Seller for all costs incurred by Seller prior to such termination

reasonably allocable to this Agreement under recognized accounting practice, less any scrap or salvage value.

3.11 Liens

Seller shall promptly pay for all materials, supplies and labor employed by it in manufacturing the ordered goods to the end that such goods may be kept free from Materialmen's, Warehousemen's and Mechanics' liens. Seller shall promptly discharge any such liens arising from the performance of this Agreement.

3.12 Indemnity of the Purchaser

The Seller shall indemnify and hold Purchaser and its officers, employees, and agents harmless from and against all suits or claims that may be based upon any alleged injury to or the death of any person or damage to property that may occur or that may be alleged to have occurred in the course of performance of this Agreement whether or not such claim is made by a third person, except when it shall be proved that the alleged injury was caused solely by a negligent act or omission of the Purchaser. Seller shall, at its own cost and expense, pay all costs and expenses or such suit or claim, including attorney's fees in connection therewith, and if any judgement shall be rendered against the Purchaser in any such action or actions the Seller shall satisfy and discharge the same without cost or expense to Purchaser.

3.13 Compliance with Laws

Seller and all material furnished by Seller shall fully comply with all federal, state, and local laws, ordinances, regulations, orders and codes, including identification and procurement of required permits, certificates, approvals and inspections in performance hereunder. Any provision required to be included in this Agreement by any such law, rule or regulation shall be deemed to be included herein. The Equal Opportunity Clause contained in Executive Order 11246 as amended, relating to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, the Affirmative Action Clause contained in 41 C.F.R. Chapter 60.250 relating to affirmative action obligations to disabled veterans and to veterans of the Vietnam Era, and the Affirmative Action Clause contained in 41 C.F.R. Chapter 60.741 relating to affirmative action obligations to handicapped workers, are incorporated herein by reference. The Seller also certifies that it does not engage in and requires that its subcontractor's (if any) employees or agents not engage in, any form of discrimination based on race, color, religion, sex or national origin. Seller agrees to indemnify Purchaser for any loss or damage that may be sustained by reason of any failure to do so.

3.14 Labeling

All goods and materials to be supplied by Seller under this Agreement shall be labeled in accordance with the requirements of the Federal Occupational Safety and Health Act Hazard Communication Standard (29 CFR 1910.1200) and/or applicable State law or standard of similar effect. Seller shall immediately send to the Purchaser, referencing this purchase order number, all required written safety information materials including without limitation, Material Safety Data Sheets, required under said standards.

3.15 Non-Waiver

No course of dealing or failure of either party to strictly enforce any term, right or condition of this Agreement shall be construed as a waiver of such term, right, or condition.

3.16 Choice of Law

The construction, interpretation and performance of this Agreement and all transactions under it shall be governed and resolved in accordance with the laws of the State of Tennessee.

3.17 Notification

The Manufacturer shall acknowledge in writing to the Engineer that the Owner's Purchase Order or acceptance has been received within 5 days ARO. The acknowledgement shall include the date that the Purchase Order or acceptance is received and the date that equipment delivery is expected.

3.18 Terminology

The terms "shall" and "will" which appear in the Proposal and specifications place an absolute obligation on the Manufacturer to do that which is designated and/or specified.

3.19 Taxes

City of Oak Ridge, Tennessee is exempt from sales tax.

4.0 EQUAL OPPORTUNITY PROVISIONS

- 4.1 This Contract is subject to the provisions of Section 202 of Executive Order Number 11246 of September 24, 1965 as amended relating to Equal Opportunity and to the Affirmative Action requirements of 41CFR60. The Contractor, in performing the work or services of this contract, shall not discriminate against any person seeking employment with or by the contractor because of race, creed, color, sex, sexual orientation, or national origin or other legally protected status.
- 4.2 The City of Oak Ridge, Tennessee encourages the utilization of minority and women-owned businesses in its contracting and subcontracting projects and the Bidder is encouraged to actively solicit the participation of these businesses.
- 4.3 Each Bidder shall complete the following Equal Opportunity Compliance Certificate as part of the submitted proposal.

**EQUAL OPPORTUNITY
COMPLIANCE CERTIFICATE**

We hereby certify:

As a(n): _____ Division of Parent Company _____

_____ Subsidiary

_____ Affiliate Address _____

_____ Separate Corporation _____

And being: _____ a Small Business (Ref: ASPR-1-701-1)

_____ Minority Owned Business (Ref: 41CFR-1.701-1)

_____ from a Labor Surplus Area (Ref: 41CFR 1-1.801-1);

Having _____ employees in all divisions , subsidiaries, affiliates and parent (number) company;

That we shall comply with the applicable portions of the Equal Opportunity Clause as promulgated under Executive Order 11246. September 24, 1965 as amended, and all other federal laws and regulations pertaining to the Equal Employment Opportunity and Affirmative Action obligations of Federal Government Contractors, and shall submit the required compliance reports, and shall maintain non-segregated facilities.

Contractor _____

Address _____

Signature of Authorized Representative _____

Date of Signing _____

5.0 SHIPPING

- 1 Equipment shall be furnished **F.O.B. Destination**, Freight Prepaid and Allowed to the destination. Unloading will be provided by the Owner. Destination is: City of Oak Ridge Warehouse, 100 Woodbury Lane, Oak Ridge, TN 37830
- 2 Manufacturer shall be responsible for obtaining necessary permits, providing and verifying routing and, in general, making all the necessary arrangements for transporting the equipment provided to Purchaser's destination.
- 3 No incomplete or partial or unfinished shipments shall be accepted or received without written permission from the Engineer.
- 4 **Provide forty-eight (48) hours advance notice to the Engineer of the exact time delivery will be made at destination, along with information listed 5.5 below.**
- 5 The manufacturer shall, at the time arrangements for delivery are to be made, inform the Engineer of:
 - a. Purchase Order Number
 - b. Number of items being shipped per purchase order
 - c. Weight of each item (heaviest)
 - d. Estimated time of arrival
 - e. Location of use ("to be used for:" not "ship to:")

6.0

Technical Requirements for Overhead Distribution Fault Interrupting and Source Transfer IntelliRupter System

1.0 GENERAL

1.01 The automated distribution fault interrupting and source transfer system shall conform to the following specification.

Quantity Four, S&C IntelliRupter® PulseCloser overhead source transfer system

KV, maximum design	15.5
KV, BIL	110
Continuous, amperes	630
Elevated continuous rating, amperes	800 with 2fps wind
Fault Interrupting, amperes	16,000

S&C Catalog Number 248122-P262-C1-N1-W2-R80, Upright-Crossarm Disconnect Style, includes hookstick-removable protection and control module containing control hardware and software, status light, and hot-line tag light; plus hookstick-removable communication module providing short-distance secure WiFi communication link, with Global Positioning System clock for 1-ms accurate time-stamping of events. Communication module is furnished with S&C SpeedNet 900 mHZ radio, providing communication via DNP 3.0 protocol, and IntelliTEAM source transfer software. Antenna with integral surge suppressor is mounted to the base of IntelliRupter, battery in communication module support operation for a minimum of four hours after loss of ac line voltage, Integrated Power Modules fed from one phase on both sides of the IntelliRupter, six surge arresters mounted and wired, IntelliTEAM Designer Slot catalog number 008-007006-0, optional features included;

- P262: Integral Power Module fed from one phase on both sides of IntelliRupter
- C1: Standard Control with battery backup and source transfer software
- N1: 9 kV Metal Oxide Surge Arresters, mounted on each side
- W2: Wildlife protection
- R80: SpeedNet Radio, 900 mHZ unlicensed spread spectrum

1.02 The fault interrupting system shall be an outdoor, three-pole device incorporating vacuum fault

interrupters, individually operated by magnetic latching actuators capable of 2 millisecond close-open (pulse) operation; an integral power modules; an integral protection and control module; an integral communication module; and integral sensors. All metallic housing components shall be stainless steel or corrosion resistant non-painted materials, and all components shall be mounted on a unitized stainless-steel base.

1.03 The unitized base shall be furnished with single-point lifting means to facilitate installation.

1.04 The unitized base shall include provisions for mounting and grounding three surge arresters on each side. No additional grounding connections shall be required for the surge arresters.

1.05 Polymer-housed metal-oxide surge arrestors shall be factory-installed and wired on both sides of the fault interrupting system.

1.06 Appropriate venting shall be provided to prevent gas and moisture buildup within the unitized base. Vents and seals shall prevent insects, dust, wind-driven rain, and fluid from pressure-washing from entering the base, protection and control module, and communication module.

1.07 The fault interrupting and source transfer system shall be furnished in the Disconnect Style, in the Upright-Crossarm mounting configuration, with two phases on one side of the pole, and one phase on the other side of the pole. The integral three-pole group-operated disconnect shall provide a visible air gap and can be operated with a hot stick from below the unit. It shall be interlocked to permit operation only when the fault interrupters are open. The disconnect shall be capable of the full load current capacity and the fault current capability of the unit. The disconnect shall include:

- (1) Maintenance-free wiping contacts to prevent operational difficulties arising from corrosion.
- (2) Maintenance-free bearings.
- (3) Low-resistance contacts indicating the open and closed positions of the disconnect.

1.08 Control power shall be derived from two integral power modules, each fed from a different phase on both sides of the fault interrupting system.

1.09 The integral power modules shall provide all control power for the fault-interrupting system in standalone (non-communicating) applications. No batteries shall be required but ac line voltage must be available to the integral power modules.

1.10 Wildlife protection shall be furnished for the fault interrupting system to reduce wild-life-related nuisance outages.

1.11 The fault interrupting system shall be suitable for application in an ambient temperature range of -40°C to +40°C.

1.12 The manufacturer shall have a minimum of 10 years experience in the production of distribution automation and protection equipment.

1.13 The manufacturer shall supply all internal wiring for the fault-interrupting and source transfer system.

1.14 The following design tests shall have been performed on the fault interrupter, and certified test reports shall be provided upon request:

Interrupting: ANSI C37.60-2003

Dielectric: ANSI C37.60-2003

Temperature Rise: ANSI C37.60-2003

Short Time: ANSI C37.60-2003

Fault Closing: ANSI C37.60-2003

Mechanical Endurance: ANSI C37.60-2003

The following design tests shall have been performed on the control, and certified test reports shall be provided upon request:

Electrostatic Discharge: IEC 801.2 (IEC 1000-4-2)

Fast Transient: IEC 801.4

Power Line Surge: ANSI C62.41

Surge Withstand: ANSI C37.90.1

Radio-Frequency Interference: ANSI C37.90.2

Electromagnetic Interference: FCC Part 15 Class B

Electromagnetic Compatibility: EN 61000-4-3

Dielectric: ANSI C37.90

2.0 FAULT INTERRUPTERS

2.01 Each fault interrupter shall be furnished with a magnetic latching actuator, described in Section 3.0, providing a close-open (pulse) of 2 millisecond or less.

2.02 The fault interrupter housing shall be molded from cycloaliphatic epoxy resin.

2.03 The fault interrupter and actuator shall be maintenance-free. They shall have been tested and rated for at least 10,000 mechanical close-open operations.

2.04 A color-coded open/close indicator shall be provided for each fault interrupter, on the underside of the unitized base, that indicates green for open and red for closed. The indicator shall be readily visible from the ground.

2.05 Mechanical loading from jumpers to the fault interrupter terminal pads shall not exceed 90 lbs. in-line, and 30 lbs. perpendicular to the terminal pads, per IEEE Standard ANSI C37.32-1996 Section 8.8.2.2.

2.06 Ratings

60-Hz APPLICATIONS

Ratings				
kV ^①			Amperes, RMS	
Minimum	Maximum	BIL	Continuous ^②	Interrupting, Sym.
11.43	15.5	110	630	16,000

① Minimum and maximum ratings assure adequate power from the integral power module(s).

② Allowable continuous current capability: 800 amperes with a minimum wind velocity of 2 ft./sec.

3.0 MAGNETIC LATCHING ACTUATORS, OPERATING MECHANISM, AND EXTERNAL CONTROL LEVERS

3.01 The magnetic latching actuators shall be capable of electrically opening and reclosing the fault interrupters, as well as performing pulseclosing circuit testing.

3.02 The actuator shall utilize direct drive magnetic actuation or solenoid actuation. No solenoid shall remain energized when either in the open or closed position.

3.03 Pulseclosing circuit testing shall rapidly close and open the interrupters to produce a current pulse of 2 to 8 millisecond duration. Detection algorithms shall analyze the current pulse to determine if a fault is present. The fault interrupting system shall not close if the fault is still present.

3.04 The operating mechanism shall provide three-phase tripping of the vacuum interrupters and three-phase lockout. The unit shall be configurable to allow single phase or three phase operation.

3.05 An external open/close/ready lever shall be provided, allowing manual three-phase tripping of the vacuum interrupters using a standard or extendible hookstick. Control power shall not be required.

3.06 When the interrupters have been tripped by means of the open/close/ready lever, electrical closing of the interrupters by the magnetic latching actuators shall be mechanically blocked until the lever is returned to its ready position. The open/close/ready lever shall have provision for tagging or locking in the open position.

3.07 The magnetic latching actuators shall be electrically interlocked with the integral disconnect discussed in Section 1.07 such that the magnetic actuators can only be operated when the disconnect is in the fully open or fully closed position. The disconnect shall be mechanically interlocked such that it can only be operated when the fault interrupters are open.

3.08 An external lever shall be provided to allow manual application of a hot line tag, to mechanically prevent reclosing functions and allow quick trip operation while hot-line work is being performed. The lever shall have provision for tagging or locking in the hot line tag active position. It shall only be possible to remove a manually applied hot line tag using this lever. If the lever is operated to give a second “remove” command, it shall also remove a hot line tag applied by a SCADA or secure WiFi command.

3.09 The unit shall incorporate a Ground defeat mechanism, mechanically and electronically, to allow defeat of the ground relay during paralleling operations.

4.0 CONTROL AND COMMUNICATION

4.01 A control group, consisting of a protection and control module and a communication module, shall be located in the base of the fault interrupting system. The modules shall be removable while the unit is energized with a module-handling fitting attached to a standard 8-foot hookstick.

4.02 The communication module shall communicate, via a secure WiFi connection, to a CORED laptop computer within range. Required configuration software shall be provided with the fault interrupting system. The unit shall not transmit a WiFi signal until an encrypted wake-up message is sent by the securely recognized laptop. All wireless communications shall be adequately encrypted with CORED definable encryption keys and password protected for security purposes. The control program shall permit the selection of local or remote operation. It shall also indicate the open/closed position of each fault interrupter, phase voltages and currents, reason for a phase trip, etc. When local operation has been selected, the control program shall command local electrical opening and closing of the fault interrupters.

4.03 Trip curves shall be permanently resident In control memory, even upon loss of all ac or dc power. Trip curves shall be selectable from a library of Industry standard recloser Time Current Curves.

4.04 The control program shall feature selectable programming for a minimum of four cycles for recloser control (i.e. three openings) with separate and different programmable timing for each cycle.

4.05 The control program shall indicate the position of the integral disconnect discussed in Section 1.07.

4.06 The communication module shall include an integrated Global Positioning System clock for 1 millisecond accurate event time-stamping of events.

4.07 A status light on the protection and control module shall provide local indication of normal

operation, WiFi connection and disconnection, and loss of control voltage. The status light shall also provide local indication that the open/close/ready lever has been moved from the ready position to the open position, from the open position to the ready position, and from the ready position to the closed position.

4.08 A hot line tag light on the protection and control module shall provide local indication of hot line tag application or removal.

4.09 An integrated communication antenna mounting system consisting of a female N-Type antenna connector with integral surge suppressor shall be mounted to the unitized base, for use with a radio. The connector shall permit installation of a remotely located antenna.

4.10 A non-volatile memory module installed in the unitized base shall back up configuration data and site-specific information such as the device identifier, sensor calibration data, and operation counter reading. If the protection and control module is replaced, site-specific information shall be loaded in the new module, and as an option, the module shall be fully configured automatically, upon insertion in the base. Sensor calibration data and the operation counter reading shall not change when new set points are loaded in the memory module.

4.11 The IntelliTEAM SG® SpeedNet control group shall be furnished with an S&C SpeedNet™ Radio, providing communication via DNP 3.0 Protocol. IntelliTEAM SG software is to be provided for initial source transfer application and future configuration into a distribution automation network. Replaceable batteries in the communication module shall support operation for a minimum of four hours after loss of ac line voltage on both sides of the fault interrupting system, permitting extended dead-line switching and SCADA communication.

4.12 The control shall include the following protection and control elements:

- (1) Simultaneous independent directional phase, ground, and negative-sequence time-overcurrent elements
- (2) Simultaneous independent directional phase, ground, and negative-sequence instantaneous-overcurrent elements
- (3) Simultaneous independent directional phase, ground, and negative-sequence definite-time elements
- (4) Directional blocking overcurrent elements
- (5) Intelligent fuse saving overcurrent elements
- (6) Overvoltage/undervoltage elements

The protection and control elements shall enable sequence coordination, phase unbalance detection, and synchronization check functions, and include a cold-load pickup modifier.

5.0 SENSORS

5.01 Voltage and current sensors shall be integrally molded into the fault interrupter housings.

5.02 The sensors shall provide three-phase monitoring of line current and three-phase monitoring of system line voltage on both sides of the fault interrupting system.

5.03 Total system voltage sensing accuracy shall be within $\pm 2\%$ across the tested temperature range of -40°C to $+40^{\circ}\text{C}$.

5.04 Total system current sensing accuracy shall be within $\pm 2\%$ across the tested temperature range of -40°C to $+40^{\circ}\text{C}$, and linear over the full range of load and fault current.

6.0 Training and Startup

6.01 Supplier is to provide comprehensive onsite training and start up assistance.

7.0 PROPOSAL

In submitting this Proposal, the Manufacturer agrees as follows:

The prices set forth herein do not include any sums which are or may be payable by the Manufacturer on account of taxes imposed by any taxing authority upon the sale, purchase, or use of the equipment. If any such tax is applicable to the sale, purchase, or use of the equipment, the amount thereof shall be added to the purchase price and paid by the Owner.

The prices set forth herein are firm if accepted by the Owner within sixty (60) days and shall include the cost of delivery to the job site, inspection, testing and certification.

The equipment shall be delivered to the Delivery Site on or before Delivery Date and certified for the Owner's use by the Manufacturer on or before the Certification Date. Include delivery dates with proposal.

Descriptive literature, including dimensions and weight of manufacturer equipment, shall be furnished with the proposal.

PROPOSAL FORM

TO: CITY OF OAK RIDGE, TENNESSEE

Manufacturer_____

Supplier_____

Item 1 Quantity Four

15 kV IntelliRupter Pulsecloser Source Transfer Equipment (as described in Section 6.0, Technical Specification)

Extended Cost_____

Delivery, ARO (weeks) _____

Bidder : _____

Manufacturer:_____

Address:_____

City, State, Zip_____

Prepared By:_____

Title:_____

Telephone Number : _____

Fax Number :_____

email :_____

Date : _____

