

Material Procurement Contract & Specification
Public Utility District #1
of
Okanogan County

Okanogan Substation
115kV Dead Tank Power Circuit Breaker

December 2023

Prepared by:

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1 Overview & Executive Summary

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FOR
PROCUREMENT OF 115 kV DEAD TANK POWER CIRCUIT BREAKER

It is the intent of the Okanogan Public Utility District (District) to procure and install a total of three (3) new 115 kV nominal dead tank power circuit breaker into the existing Okanogan Substation.

This specification outlines the requirements for manufacture and delivery of three (3) new 115 kV dead tank power circuit breaker to the Okanogan County PUD Warehouse Facility in Okanogan Washington.

The new circuit breakers will have the following ratings:

Circuit Breaker Ratings			
Continuous Current Rating	2000 Amps	Closing and Latching Capability	108 kA
Frequency (Hz)	60 Cycles	Opening Time (Circuit Breaker)	3 cycles
Maximum Voltage (kV)	145 kV	Closing (Circuit Breaker)Time	3 cycles
BIL Rating	550 kV	Operational Temperature Range	-30 ⁰ C to +40 ⁰ C
Symmetrical Interrupting Rating	40 kA	Seismic Capability	0.2 G
3 Second Current Carrying Capability	40 kA	Heater Voltage	240 VAC
Insulation Medium	SF6	Spare Auxiliary Contacts	10
Trip and Close Voltage	125 VDC	Spring Charging Voltage	125 VDC

The table used for general reference only and is not to be used specifically for bid preparation or quotation of any kind. Please refer to the technical section for details.

2 General Specifications

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2. Identification of Parties

2.1. Owner:

Contractual Issues

PUD No.1 of Okanogan County

1331 Second Ave. N.

P. O. Box 912

Okanogan, WA 98840

Attention: **Roy Schwilke, Purchasing Manager**

Email: roys@okpud.org

Telephone: (509)422-8484

Fax: (509)422-8478

2.2. Engineer/Technical Issues:

Kyle Richter

System Engineer

1331 Second Ave. N

P.O. Box 912

Okanogan, WA 98840

Email: kylerr@okpud.org

Telephone: (509) 422-8423

Fax: (509) 422-8417

Alternate:

Dan Simpson P.E.

Chief Engineer

1331 Second Ave N.

P.O. Box 912

Okanogan WA 98840

Email: dans@okpud.org

Telephone: (509) 422-8426

Fax: (509) 422-8417

2.3. Manufacture:

The manufacturing firm that the Owner shall select to supply the equipment specified in this document.

2.4. Bid Terms & Conditions

2 General Specifications

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- 2.4.1. All bids shall be firm and remain valid for 30 days from the bid due date. All bids shall be complete with regard to these specifications.
 - 2.4.2. Alternate bids as well as optional equipment and/or services recommended by manufacture shall be delineated and priced separately.
 - 2.4.3. Field installation services shall be priced or bid separately. If priced, price schedule shall include all costs including test equipment costs, shipping and complete travel expenses.
 - 2.4.4. Standard Manufacture's Terms & Conditions do not apply unless agreed to by letter or other written form by Owner.
- 2.5. **Bid Technical Data Requirement:** These requirements are found in the Bid Proposal data sheets to be filled out by Manufacturer.
- 2.6. **Equipment Guarantee:** Without limiting any other provisions of this specification regarding guarantees, the Manufacturer shall guarantee that the complete power circuit breaker, together with all parts included in the original purchase is free of defect in workmanship and materials, and is capable of continuous and satisfactory performance when operated in accordance with the instructions provided by the Manufacture at the specified rating and capacity.

3 Technical Specifications

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FOR

PROCUREMENT OF 115 kV DEAD TANK POWER CIRCUIT BREAKER

3.1 General

- 3.1.1. This specification covers three-phase dead tank power circuit breaker for outdoor application.
- 3.1.2. The circuit breaker shall be designed and manufactured to the latest ANSI/IEEE standards. If this specification indicates stricter performance requirements than ANSI/IEEE, this specification shall prevail.

3.2. Service Conditions

- 3.2.1. Continuous Duty.
- 3.2.2. Ambient temperature - The average temperature of the air for any 24 hour period shall not exceed 40⁰ C or be less than -30⁰ C for the purpose of this specification.
- 3.2.3. Altitude - The altitude of the existing Okanogan Substation is approximately 900 feet above sea level.
- 3.2.4. The circuit breaker and all the associated components shall be braced for operation in Seismic Zone 2B.

3.3. Design Requirements:

- 3.3.1. The breaker shall be dead tank design with sulfur hexafluoride (SF6) gas insulating medium, outdoor type, and with ratings specified in Section 3.4 of this specification.
- 3.3.2. When two or more components of the same specification are required, the components shall be identical.

3.4. Rating & Electrical Characteristics

- 3.4.1. Nominal Voltage: 115kV
- 3.4.2. Maximum voltage: 145 kV line to line
- 3.4.3. Continuous current: 2000 Amperes
- 3.4.4. Frequency: 60 Hertz.

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- 3.4.5. Maximum symmetrical Interrupting Rating: 40 kA
 - 3.4.6. Maximum interrupting time: 3 cycles
 - 3.4.7. Close and latching current: 108kA
 - 3.4.8. Three second short time current: 40 kA
 - 3.4.9. Insulation Medium: Sulfur Hexafluoride (SF₆) or other non-liquid
 - 3.4.10. BIL rating: 550 kV.
 - 3.4.11. Opening Time (Circuit Interrupter Mechanism): 3 Cycles
 - 3.4.12. Closing Time (Circuit Interrupter Mechanism): 3 Cycles
 - 3.4.13. Operational Temperature Range: -30⁰ C to +40⁰ C
 - 3.4.14. Bushing current transformers: 12 total (2 per bushing)
 - 3.4.15. Seismic Capability: 0.2 G
 - 3.4.16. Wind Loading: Capable of withstanding wind loads 90 mph without loss of function.
- 3.5. **Terminal Connections:** Shall conform to the latest ANSI/IEEE standards. All contact surfaces of external terminals shall be silver plated using pure silver free of copper, and the thickness of which shall be not less than 0.001 inch (0.025 mm). All porcelain used shall be free of lamination, cavities, or other flaws. Porcelain glazing shall be defect free. Terminal connections shall have standard NEMA four (4) hole spade configuration suitable for full load current of the breaker.
- 3.6. **Interrupter Open Capability:** Interrupter mechanism shall be capable of withstanding full line voltage applied with the interrupter in the open position indefinitely.
- 3.7. All porcelain shall be **ANSI-#70 light gray glaze.**
- 3.8. **Grounding Pads:** Circuit breaker shall have two stainless steel 2-holed NEMA pads welded to the breaker stand on opposite corners.

- 3.9. **Bushing Current Transformers:** The circuit breaker shall be provided with twelve (12) bushing current transformers (two per bushing) on bushings 1, 3, 5 and 2, 4, 6. All current transformers shall be 1200:5 multi-ratio, C800 relay accuracy class with a thermal rating factor of 2.0 or greater at 30 C.
- 3.9.1. Current transformers shall be in accordance with ANSI C57.13.
- 3.10. **Auxiliary Supply Circuits:** Proper terminal blocks shall be provided for both single phase 240 VAC heater supply and single phase 100 Watt incandescent rough service 120 VAC light and 120 VAC GFI duplex courtesy receptacle.
- 3.11. **Operating Mechanism:** The breaker operating mechanism shall be spring type and be provided with an operations counter.
- 3.11.1. The breaker operating mechanism shall be electrically trip-free with an anti-pumping feature.
- 3.11.2. The operating mechanism shall be capable of storing one “OPEN – CLOSE – OPEN” operations sequence without the need for external power or spring charging.
- 3.11.3. The operating mechanism shall be designed to initiate an alarm locally and/or remote location for both AC and DC potentials, in the event of power loss to the operating mechanism and heating elements.
- 3.12. **Cabinet Heater System:** Strip heaters shall be provided to eliminate moisture condensation in auxiliary cabinet.
- 3.12.1. Heaters will operate on 240 VAC and thermostatically controlled.
- 3.12.2. Heaters shall have no moving parts and shall be equipped with a metal shield or screen to reduce the possibility of contact with heater element.
- 3.12.3. Heater circuit shall have independent circuit breaker or manual on/off switch if dead front fuses are used.
- 3.12.4. Heaters shall be of the low wattage and thermostatically controlled. Heater wattage shall be low enough such that cabinet internal

temperature rise shall not exceed 20⁰ C from ambient outside temperature.

3.12.5. Heaters shall be placed on cabinet wall as close to the floor as recommended by manufacturer.

3.13. **Trip and Closing Voltages:** Tripping and Closing solenoids shall be designed for 125 VDC nominal operation. Trip solenoid shall operate the tripping mechanism at 50% or less of rated voltage. Closing solenoid shall operate the closing mechanism at 85% or less of rated voltage

3.14. **Charging Motor Voltage:** Charging motor shall be suitable for 125 VDC nominal operation. Motor shall be capable of charging stored energy operator at 85% or less of rated voltage with out overheating or damage.

3.15. **Terminal Blocks** (other than CT or power supply): Terminal blocks shall be of heavy duty construction with a 20 Ampere, 600 VAC rating. Terminal blocks shall have #10-32 screws suitable for ring tongue compression wire terminals. DIN rail mounting is acceptable. All status and indication contacts shall be brought out from device and terminated on terminal blocks. Customer shall wire from terminal blocks to customer apparatus.

3.16. **Auxiliary Position Switch:** Circuit breaker shall have at least five spare sets of "A" (normally open) and five spare sets of "B" (normally closed contacts) for customer's use.

3.17. **SF6 Insulation Gas Density Monitor**

3.17.1. Adjustable Alarm contacts; shall have one form "C" contact.

3.17.2. Adjustable Trip contacts; shall have one form "C" contact.

3.17.3. Gas density monitor must be at ground potential.

3.18. Remote Monitoring (Optional Equipment)

- 3.18.1. Circuit breaker shall have a 4-20 mA transducer for remote indication of insulation density.
- 3.18.2. Circuit Breaker Monitor for measuring and recording breaker timing, SF6 gas density, breaker position, phase currents and cabinet temperature. Monitor shall use DNP protocol over TCP/IP for SCADA integration. Ethernet connections shall be fiberoptic LC type connectors.

3.19. Joints and Gaskets (if applicable):

- 3.19.1. All gasket joints are to be provided with machined surfaces.
- 3.19.2. All joints shall be provided with the necessary stops to assure even and effective pressure on the gasket at all points.
- 3.19.3. The gasket shall be provided with suitable means to prevent overstressing the gasket and to maintain oil tightness of the joint under all service conditions.
- 3.19.4. The joints shall be provided with gasket retainers and metal-to-metal stops.

3.20. Circuit Breaker and Apparatus Height:

- 3.20.1. Manufacturer shall conform to latest National Electric Safety Code for height of energized parts above 600 volts.
- 3.20.2. Manufacturer shall provide an outline drawing with each bid.
- 3.20.3. Picking eyes or similar devices, and a rigging and maintenance procedure shall be provided for the hoisting and handling of circuit breaker.

3.21. Insulation Medium:

- 3.21.1. Circuit breaker shall be shipped with the high voltage insulation installed. If additional insulation is required for operational service, manufacture shall supply appropriate returnable gas cylinders.

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3.21.2. A certified test report shall be supplied certifying the integrity of the insulation medium.

3.21.3. A means for filling the insulation medium system in the field without disassembly of the circuit breaker must be provided.

3.22. **Paint (if applicable)** - All exterior surfaces are to be thoroughly cleaned of mill scale and rust by shot or grit blasting. Surfaces are to be prepared in accordance with Steel Painting Council SSPC-10 near white blast cleaning. Oil and grease are to be removed by suitable solvent. One epoxy based primer and two epoxy based finish coats of paint shall be applied in a quality manner. Minimum thickness of each coat shall be (DFT) 0.003 inches (76 micro-meters). Color shall be ANSI #70 light gray. Powder coating of the exterior surfaces are considered superior to painting. Manufacturer shall include additional price for powder coating if such capability is available. Powder coat must be capable of long term outdoor weather exposure. Please refer to "Bid Proposal Data Form".

3.23. **Lifting, Moving and Jacking Facilities** -

3.23.1. Lifting lugs welded near the top of support stand suitable for lifting the fully assembled circuit breaker.

3.23.2. A complete set of rigging, lifting, moving and installation instructions shall be provided.

3.24. Wiring & Conduit Methods:

- 3.24.1. Wiring, conduit, and piping shall be fabricated and installed in a neat, workmanlike manner considered acceptable in the industry.
- 3.24.2. All wiring shall be stranded copper. Control wiring shall not be smaller than #12 AWG and current transformer circuit wiring shall not be smaller than #10 AWG.
- 3.24.3. All control wiring shall be terminated using insulated compression barrel, ring type connectors.
- 3.24.4. Terminal blocks shall be heavy duty, protected washer-screw type equal to the GE EB-25. Machine printed marker strips shall be provided.
- 3.24.5. All current transformer secondary leads shall be terminated in short circuited, easily identifiable, washer-screw type terminal blocks equal to GE EB-27
- 3.24.6. All wiring runs shall be in rigid steel or aluminum conduit, except for short flexible conduit runs to equipment.
- 3.24.7. Short runs of flexible cable shall be outdoor rated cable, NEC rated "SOOW", such as Anixter 4AX series or approved equal. Cable shall be expressly rated for exposure to moisture and weather in an outdoor application. Minimum size on flexible cable shall be #12 AWG.
- 3.24.8. Flexible cable runs shall be long enough so that connected equipment may be mechanically un-mounted from the circuit breaker without interference from flexible cord.
- 3.24.9. All devices shall be wired to terminal blocks (as per the Electrical section) located in rain-tight NEMA 3R enclosure near the base of the circuit breaker. These enclosures shall have provision for four (4), two-inch conduit connections on the bottom. All enclosures shall be mounted in a position readily accessible from the ground when the circuit breaker is mounted at the recommended pad height.
- 3.24.10. All wiring shall be marked at both ends using permanent machine printed, heat shrink type, wire markers. Wire marker wire designator shall correspond to wiring diagrams submitted. Adhesive wire

markers are not considered by Owner to be permanent and not allowed.

3.25. Miscellaneous Requirements:

3.25.1. A temperature compensated SF6 density switch shall be provided to actuate an alarm relay for SF6 gas pressure lower than normal. A blocking relay shall prevent the breaker operations and actuate an additional alarm when the SF6 pressure falls below a value where full interrupting capability cannot be obtained.

3.26.2 Additional alarm contacts shall be provided for the following:

3.26.2.1 Loss of DC power

3.26.2.2 Loss of AC power

3.26.2.3 Low spring operating energy

3.26.2.4 Trip Coil Monitor (one per Trip Coil)

3.26.3. The breaker shall be equipped with two (2) electrically and mechanically independent trip coils.

3.26.4. A copper ground bar 12 inches in length, 1 inch in width and ¼ inch thick shall be mounted near the bottom of the control cabinet for grounding.

3.26.5. The ground terminal on current transformer shorting blocks shall be wired to the ground bar in the control cabinet. Routing of grounding leads shall be on the internal wiring side of terminal boards.

3.27. **Tools:** Tool box containing manual charging wrench, charging hose, gas fitting, speed transducer bracket, and a can of touch up paint shall be included for each breaker.

3.27.1. Any special maintenance tools required for assembly/disassembly of operator mechanism.

3.27.2. Any special plumbing connections required for filling or removing SF6 gas or other non-liquid insulating medium. Two (2) complete sets.

3.28. **Spare Equipment:** Manufacturer shall provide the following spares included in bid. Manufacturer shall also provide a list of additional spares recommended by Manufacturer at extra cost to Owner.

Note: The total number of spares is for the complete order of one circuit breaker.

- 3.28.1. Complete set of gaskets (if gaskets are applicable), one set.
- 3.28.2. Cabinet heater, one (1) in total.
- 3.28.3. Manufacturer shall supply a spare charging motor per breaker.
- 3.28.4. Manufacturer shall supply spare trip and close solenoids, one (1) each.

3.29. Inspection and Tests - General

- 3.29.1. Option for Engineer and Owner (2 people) to be present during any tests made on the circuit breaker. Manufacturer shall notify Owner in writing 21 days prior to any and all tests or inspections required as part of this specification. Owner may wave this requirement by written documentation provided to manufacturer.
 - 3.29.2. Standard tests shall be made on the circuit breaker, except as specifically stated below. All tests shall be made in accordance with the current version of ANSI C37. The Manufacturer is to record which test method was used when more than one test method is allowed by test code.
 - 3.29.3. Electronic copies of each test and inspection reports shall be delivered to the Owner within 10 days of completion of the test. Additionally, a complete set of test and inspection reports and results shall be submitted upon project completion.
- 3.30. **Tests:** All tests shall be performed and completed in strict adherence with ANSI/IEEE specification C37, latest version.
- 3.30.1. Resistance: The cold micro-resistance of each set of main contacts. Test current shall be at 100 Amperes.
 - 3.30.2. Speed Test of main contacts: The opening and closing time shall be determined at +20⁰ C. These tests shall be performed at least 25 times and the results recorded.
 - 3.30.3. Speed Test of Recharge or Reset Stored Energy Operator: The time required for the circuit breaker motor to recharge the stored energy mechanism shall be determined at +20⁰ C and nominal motor

voltage. This test shall be performed at least 25 times and the results recorded.

3.30.4. Operating Voltage Test: The trip and close solenoids shall be tested to determine minimum operating voltage. These tests shall be repeated at least 5 times and the results recorded.

3.30.5. Auxiliary Devices Resistance Test: The heater, DC charging motor, trip and close solenoids shall have their respective resistance measured and recorded.

3.30.6. Functional and operational tests of all power and control circuits

3.30.7. CT Ratio and Polarity test to verify integrity of bushing current transformers

3.30.8. Dielectric Tests:

3.30.8.1. Control and Auxiliary Circuit Dielectric Test: These devices shall be tested by application of 500 Volt DC Megger to ground. Electronic equipment manufacturers shall be consulted as to the ability of such equipment to withstand such test without damage.

3.30.7.2. Interrupter Dielectric Test: Each interrupter shall pass a power frequency withstand test at 60 Hz for one minute. The required test value shall be at least three times rated line to ground voltage.

3.30.8. Insulating Medium Leak Test: A leak test shall be performed on each of the interrupters. Leak rate shall be less than 0.5% per year.

3.30.9. Insulation Power Factor test: Each closed phase of the circuit breaker shall be given a power factor test, and this data recorded.

3.31. **Insulating Medium**: Documentation stating the manufacture and specification of the insulating medium furnished.

3.32. **Test Documentation**

3.32.1. Each test and inspection shall be documented as per applicable IEEE standard for each test.

3.32.2. Results of every test or inspection shall be submitted by Manufacturer to Owner within 10 days of the completion of the test.

3.32.3. Submittals may be electronic in standard format (Word, Excel, PDF, or other Owner approved application), or in duplicate hard copy. Electronic copy is preferred.

3.33. Photographs:

3.33.1. A complete set of photo documentation of the manufacturing process and critical fabrication and assembly steps is required.

3.33.2. Photos shall be comprehensive for all major physical attributes.

3.34. Delivery and Shipment:

All bids shall include Freight On Board (F.O.B.), Pre-Paid, delivery to

PUD No.1 of Okanogan County
1331 2nd Ave N
Okanogan WA 98840

Attention: **Roy Schwilke, Purchasing Manager**

Telephone: (509)422-8484

Fax: (509)442-8478

3.34.1. Circuit breaker to be shipped via truck.

3.34.2. Circuit breaker shall be off-loaded at the Okanogan warehouse by Owner. A complete set of picking and rigging instructions shall be submitted by Manufacturer for the safe off loading of the equipment at the Owner's site.

3.34.3. Circuit breaker shall be shipped filled with insulating medium or filled with an anhydrous (no moisture) nitrogen blanket of positive pressure.

3.34.4. A 15 day advance notice of circuit breaker delivery shall be provided to Owner. In addition, the transportation agent shall notify Owner by telephone or fax no less than 48 hours in advance of the breaker's arrival at the site.

- 3.34.5. Delivery shall be between 07:00 and 15:00 Monday through Thursday to allow circuit breaker unloading during normal working hours.
- 3.34.6. The Manufacturer shall be responsible for the circuit breaker and all related equipment during shipment and shall take whatever inspections are necessary after arrival to locate all shipping damage. Inspections shall be performed in the presence of Owner's representative. The Manufacturer shall settle any damage claims with the shipper.
- 3.34.7. Manufacturer shall provide a field service representative to supervise the unloading. Owner shall have the right to perform electrical and mechanical tests to the circuit breaker at the Owner's expense prior to energization. If circuit breaker is not placed in service immediately, Owner shall be responsible for the cost of redeploying field service representative. However, the cost of such deployment shall be stated in the Bid Proposal Data Form and shall be a firm price for 12 months.

3.35. Instruction Manuals and Drawings:

- 3.35.1. Owner shall be provided with two complete sets of installation, operation and maintenance instructions upon receipt of each circuit breaker. These requirements are per circuit breaker if the Owner orders more than one circuit breaker. Replacement parts bulletins complete with identification symbols/drawings shall also be included with each instruction set.
 - 3.35.2. Manufacturer shall also include in each set of documentation, a nameplate drawing with information as stamped on the circuit breaker nameplate, complete with individual circuit breaker serial number.
 - 3.35.3. Manufacturer shall provide a complete set of drawings with each set of documentation. Such drawings will show both internal and external physical features of circuit breaker.
- 3.36. **Approval Drawings:** The Manufacturer shall submit electronic copies of the following approval drawings after the Manufacturer's bid has been accepted (one copy of approval drawings shall be in pdf format and one copy in AutoCAD format):

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3.36.1. All drawings and details listed in Section 5 Manufacturers Submittal

3.37. **Final Drawings:** The Manufacturer shall submit two hard copies of the final drawings after the Manufacturer's design has been accepted. Final drawings shall be submitted in hard copy and electronic pdf and AutoCAD formats.

3.37.1. The minimum required drawings and details are listed in Section 5 Manufacturers Submittals.

4 Bid Proposal Data Form

FOR
PROCUREMENT OF 115 KV DEAD TANK POWER CIRCUIT BREAKER

The Bid Proposal Data Form is to be filled out by the Manufacture and submitted with the Manufacture’s Bid Package:

Bid Pricing Data Form		
	Item	Cost Total
P-A	Base bid price per Circuit Breaker; as per specifications above, delivered in 2023, to PUD warehouse Okanogan, WA	
P-B	Owner progress payments computed as a percentage of base bid (per circuit breaker): 15% upon order 20% at 4 months ARO 20% at 8 months ARO 20% upon successful completion of testing 25% upon final acceptance by Owner Total percent deduction (one (1) circuit breaker) offered by Manufacture for progress payments:	
P-C	Cancellation Fee (each circuit breakers) 2 months ARO: 4 months ARO:	
P-D	Warranty Period (one circuit breaker) Standard Warranty period from date of energization: 3 year extended if available: 5 year extended if available: 10 year extended if available:	
P-E	Field Service Representative: Representative is offered at the following rate including all expenses (each circuit breaker):	
P-F	Formal Factory Interview: Should Manufacturer be selected for an Owner’s representative site visit and capability discussion at Manufacturer’s facility (2 people), cost:	
P-G	Design Conference at Owner’s Facility: Cost for Manufacturer to provide design conference at Owner’s facility prior to any award by Owner to any Manufacture:	
P-H	Powder Coating of Breaker Exterior surfaces in lieu of painting, if available.	
P-I	Identification of Point of Manufacture, City and Country	
P-J	Itemized cost of optional equipment (per section 3.18)	

Additional Information Required with Proposal: The circuit breaker bid shall be complete and submitted along with the other information itemized below. Any exceptions taken by the Manufacturer to this specification shall be itemized in a separate letter of transmittal and made part of the proposal. The two (2) complete copies of the information shall be submitted in hard copy and electronic format.

- 1 Circuit breaker manufacturer
- 2 DC trip and close voltage rating
- 3 DC trip and close current
- 4 Manufacturer's supplemental descriptive data for all proposed equipment and accessories.
- 5 Breaker nameplate drawing.
- 6 Outline drawing showing plan and elevations with descriptions of all devices and accessories.
- 7 Outline drawing and base detail showing lifting, grounding, and anchoring provisions.
- 8 Control cabinet details.
- 9 Bushing details.
- 10 Detailed point to point wiring diagram
- 11 Current transformer manufacturer and saturation curves
- 12 Spare parts list
- 13 Installation, operating, and maintenance instruction manual which covers all the equipment furnished
- 14 Factory test procedures for all tests specified and any additional factory recommended tests.
- 15 Minimum and maximum operating temperatures
- 16 Minimum creepage distance on bushings
- 17 Proposed Warranty.

5 Manufacturer Submittals

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18 Identify items that will be shipped unattached to the circuit breaker.

Information on Bid Proposal Data form is guaranteed by manufacture:

Manufacturer: _____

Manufacturer's Officer: _____

Officer's Title: _____

Date: _____

Bid shall be valid for 30 days from Owner's submission deadline