



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

PUBLIC AFFAIRS

April 3, 2009

In reply refer to: DK-7

Scott C. Johnson
ABB, Inc.
10 Monticello Drive
Lake Oswego, OR 97035

RE: FOIA #09-026

Dear Mr. Johnson:

This letter is Bonneville Power Administration's (BPA) response to ABB's request under the Freedom of Information Act (FOIA), 5 U.S.C. 552. ABB asked for:

"Contract and related documents issued to GE Energy Services, Inc. on January 30, 2009, for Slatt and Captain Jack Externally Fused Shunt Capacitor equipment, for which offers were submitted on Solicitation No. 173270."

Response:

The enclosed contract and purchase order are the responsive documents to the request. Only the quantity, unit price, and extended price have been redacted from the purchase order pursuant to Exemption 4 of the FOIA, 5 U.S.C. 552 (b)(4).

Exemption 4 protects "trade secrets and commercial or financial information obtained from a person and privileged or confidential." For these documents, the "confidential" requirement for is met if disclosure of the redacted information is likely to cause substantial competitive harm to GE.

The unit pricing information meets the "likely competitive harm" test for redaction under Exemption 4. BPA's technical representative (COTR) for this contract confirmed that the shunt capacitor market is small, but highly competitive. A competitor to GE could likely gain a substantial competitive advantage in this market if the unit price of GE's shunt capacitors is known. For the same reason, the quantity purchased has been redacted--the unit price is easily determined if the number purchased is divided by the extended price.

In normal circumstances, this would allow the extended price to be released. However, according to GE, and confirmed by BPA's COTR, individuals with technical knowledge in this field can determine, by reading the unredacted descriptive portion of the purchase order, how

many capacitors were ordered. As noted above, this would allow the unit price of the capacitors to be calculated. The total purchase order amount has not been redacted.

If you are dissatisfied with this determination, you may make an appeal within thirty (30) days of receipt of this letter to Director, Office of Hearings and Appeals, Department of Energy, 1000 Independence Avenue SW, Washington, DC 20585. The envelope and the letter must be clearly marked "Freedom of Information Act Appeal." There is no charge for this request.

If you have any questions about this letter, please contact Laura M. Atterbury, FOIA/Privacy Act Specialist, at 503-230-7305.

Sincerely,


Christina J. Brannon
Freedom of Information Act/Privacy Act Officer

Enclosure: Responsive Documents

**BONNEVILLE
POWER ADMINISTRATION**

PURCHASE ORDER

Mail Invoice To:
DISBURSEMENT OPERATIONS -FTD
BPA TRANSMISSION
P.O. BOX 3621
PORTLAND OR 97208-3621

Purchase Order : 00041292
Revision :
Release :
Printed : 02/11/09
Page : 1

Contractor:
GE ENERGY SERVICES INC
4601 PARK ROAD
SUITE 600
CHARLOTTE NC 28209

Please Direct Inquiries to:

LINDA E. DIAL
Title: CONTRACT SPECIALIST
Phone: 360-418-8706
Fax : 360-418-8490

Attn: Patrick Yan 360-514-5211

SHIPMENT & INVOICE MUST BE MARKED WITH
BPA PO # TO BE ACCEPTED. NOTIFY CONTACT
ABOVE WITH UPDATED SHIPPING SCHEDULES

Payment Terms % Days Net 30 Days ERS: N Tax Exempt: 93-0334712

FOB
ORIGIN, PREPAID

FOB Point

Instructions & Notes

Attachments to this order include:
BPA/GE Energy Terms & Conditions
Heavy Electrical, BPA General
Specification BPA TNS-22-5
dated February 8, 2006 for
shunt capacitor equipment.
Specific Technical Specifications
for Cat ID 1009897, Slatt and Cat ID
1009901, Captain Jack.

Line	Qty	UP	Item Description	Unit Price	Extended Price
0001	EXA	EA	Catalog ID: 0001009897	0	EXA

CAPACITOR BANK, SHUNT, EXTERNALLY FUSED,
621KV, 475.6MVAR, 3 PHASE, OUTDOOR
RACKED, FREE
STANDING STRUCTURE(S), WYE CONNECTED
WITH NEUTRAL SOLIDLY GROUNDED,
COMPOSED OF 1188 CAPACITOR UNITS
(18 SERIES AND 22 PARALLEL), WITH
EACH CAPACITOR UNIT RATED
19.92KV AND 400KVAR. THE SHUNT
CAPACITOR BANK ASSEMBLY SHALL MEET
THE SEISMIC REQUIREMENTS OF IEEE 693-

Mail Invoice To:
DISBURSEMENT OPERATIONS -FTD
BPA TRANSMISSION
P.O. BOX 3621
PORTLAND OR 97208-3621

Purchase Order : 00041292
Revision :
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Printed : 02/11/09
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2005 HIGH LEVEL, AND BPA SPECIFICATION REQUIREMENTS OF STS 1009897 AND 22-05. THE BANK (EACH WYE) SHALL BE PROTECTED AS FOLLOWS: (VENDOR SUPPLIED)
(1) LOW VOLTAGE HIGH DIELECTRIC CAPABILITY CAPACITOR(S) AT THE NEUTRAL POINT IN SERIES WITH EACH WYE.
a- APPROXIMATE UNIT RATINGS
650 uf AND 825V.
b- APPROXIMATELY HALF THE DIELECTRIC STRESS OF A RACKED CAPACITOR.
(2) PROTECTION CAPACITOR IS MONITORED BY A LOW VOLTAGE POTENTIAL TRANSFORMER (PT). (3) THE OUTPUT OF THE PT IS USED TO DRIVE A SEL 287V (BPA SUPPLIED).
(4) MIN. VOLTAGE DIFFERENTIAL (PT OUTPUT) FOR A UNIT FAILURE IS 0.3V
(5) THE MAX. PT SECONDARY VOLTAGE IS 150V.
(6) THE BANK DESIGN INCLUDING RACKING AND THE NUMBER OF WYE'S MUST INSURE THAT THE 0.3V DIFFERENTIAL IS ACHIEVED.
NOTE; QUANTITY OF (3) ON THE PURCHASE ORDER REFLECTS THE NUMBER OF RACKS REQUIRED FOR A COMPLETE THREE PHASE CAPACITOR BANK ASSEMBLY AS DESCRIBED BY THIS ORDER.

Deliver to: Contact Kathy Gish at
360-418-2472 or 2829 at least 2
working days prior to shipping
date per GE/BPA T&C's page 14, Shipment
Coordination Clause (18-55)
SER Tag Numbers L-2026 - L-2028
Warranty
". . . .5 years from first use or 66
months from delivery whichever occurs
first . . ."

Mfr/Vendor: NEW ITEM
Model : NEW ITEM
Part :

Qty: EX4 Delivery Date: 09/18/09

Mail Invoice To:
DISBURSEMENT OPERATIONS -FTD
BPA TRANSMISSION
P.O. BOX 3621
PORTLAND OR 97208-3621

Purchase Order : 00041292
Revision :
Release :
Printed : 02/11/09
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Line Ship To:

SLATT DISTRICT WHSE - BPA
TAKE HIGHWAY #19 TO RHEA
APPROX 3 MILES SE. OF
ARLINGTON OR 97812

Attention : RECEIVING

Line Terms and Conditions - Text Attached

Standard Name	Revision	Title
1009897	000	STS FOR 1009897
BPA22-05	000	SHUNT CAPACITOR EQUIPMENT--OUTDOOR TYPE
IEEE693-2005	000	IEEE 693-2005 INCORPORATED BY REFERENCE

Qty	UP	Item Description	Unit Price	Extended Price
0002	EX 4	EA Catalog ID:	EX 4	EX 4

LIFTING DEVICE INCLUDING ALL NECESSARY EQUIPMENT TO MAKE UP ONE COMPLETE ASSEMBLY, TO FACILITATE THE CHANGE OUT OF FUSED CAPACITORS. A SET OF BASIC INSTALLATION DRAWINGS AND INSTRUCTION BOOKS OR PAMPHLETS FOR PROPER ASSEMBLY AND DISASSEMBLY PROCEDURES SHALL BE PROVIDED WITH THE DEVICE

Deliver To: Contact Kathy Gish at 360-418-2472 or 2839 at least 2 working days prior to shipping date per GE/BPA T&C's page 14, Shipment Coordination Clause (18-55).

Qty: ~~EX 4~~ Delivery Date: 09/18/09

Line Ship To:

SLATT DISTRICT WHSE - BPA
TAKE HIGHWAY #19 TO RHEA
APPROX 3 MILES SE. OF
ARLINGTON OR 97812

Attention : RECEIVING

Mail Invoice To:
DISBURSEMENT OPERATIONS -FTD
BPA TRANSMISSION
P.O. BOX 3621
PORTLAND OR 97208-3621

Purchase Order : 00041292
Revision :
Release :
Printed : 02/11/09
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Line	Qty	UP	Item Description	Unit Price	Extended Price
0003	EX 4	EA	Catalog ID: 0001009901	0	EX 4

CAPACITOR BANK, SHUNT, EXTERNALLY FUSED,
621KV, 302.4 MVAR, 3 PHASE, OUTDOOR
RACKED, FREE
STANDING STRUCTURE(S).
WYE CONNECTED WITH NEUTRAL SOLIDLY
GROUNDED, COMPOSED OF 756
CAPACITOR UNITS (18 SERIES AND 14
PARALLEL), WITH EACH CAPACITOR UNIT
RATED 19.92KV AND 400KVAR.
THE SHUNT CAPACITOR BANK ASSEMBLY
SHALL MEET THE SEISMIC REQUIREMENTS
OF IEEE 693-2005 HIGH LEVEL, AND
BPA SPECIFICATION REQUIREMENTS OF
STS 1009901 AND 22-05.
THE BANK (EACH WYE) SHALL BE
PROTECTED AS FOLLOWS: (VENDOR SUPPLIED)
(1) LOW VOLTAGE HIGH DIELECTRIC
CAPABILITY CAPACITOR(S) AT THE NEUTRAL
POINT IN SERIES WITH EACH WYE.
a- APPROXIMATE UNIT RATINGS
650 uf AND 825V.
b- APPROXIMATELY HALF THE DIELECTRIC
STRESS OF A RACKED CAPACITOR.
(2) PROTECTION CAPACITOR IS MONITORED
BY A LOW VOLTAGE POTENTIAL
TRANSFORMER (PT). (3) THE OUTPUT OF
THE PT IS USED TO DRIVE A SEL 287V
(BPA SUPPLIED). (4) MIN. VOLTAGE
DIFFERENTIAL (PT OUTPUT) FOR
UNIT FAILURE IS 0.3V. (5) THE MAX. PT
SECONDARY VOLTAGE IS 150V.
(6) THE BANK DESIGN INCLUDING RACKING
AND THE NUMBER OF WYE'S MUST INSURE
THAT THE 0.3V DIFFERENTIAL IS ACHIEVED.
NOTE: QUANTITY OF (6) ON THE PURCHASE
ORDER REFLECTS THE NUMBER OF RACKS
REQUIRED FOR A COMPLETE THREE PHASE

Mail Invoice To:
DISBURSEMENT OPERATIONS -FTD
3PA TRANSMISSION
P.O. BOX 3621
PORTLAND OR 97208-3621

Purchase Order : 00041292
Revision :
Release :
Printed : 02/11/09
Page : 5

CAPACITOR BANK ASSEMBLY AS DESCRIBED
BY THIS ORDER.

Deliver to: Contact Kathy Gish at
360-418-2472 or 2829 at least 2
working days prior to shipping date per
GE/BPA T&C's page 14, Shipment
Coordination Clause (18-55)
Ser Tag Nos. L-2029 - L-2034
Warranty
"... 5 years from first use or 66
months from delivery whichever occurs
first..."

Mfr/Vendor: NEW ITEM
Model : NEW ITEM

Part :

Qty: ~~EX4~~ Delivery Date: 08/28/09
Qty: Delivery Date: 10/16/09

Line Ship To:

CAPTAIN JACK DISTRICT WHSE - B
16401 MAUPIN ROAD
MALIN
MALIN OR 97632

Attention : RECEIVING

Line Terms and Conditions - Text Attached

Standard Name	Revision	Title
1009901	000	STS FOR 1009901
BPA22-05	000	SHUNT CAPACITOR EQUIPMENT--OUTDOOR TYPE
IEEE693-2005	000	IEEE 693-2005 INCORPORATED BY REFERENCE

Line	Qty	UP	Item Description	Unit Price	Extended Price
0004	EX4	EA	Catalog ID:	EX4	EX4

LIFTING DEVICE INCLUDING ALL NECESSARY
EQUIPMENT TO MAKE UP ONE COMPLETE
ASSEMBLY, TO FACILITATE THE CHANGE OUT
OF FUSED
CAPACITORS. A SET OF BASIC INSTALLATION

BONNEVILLE
POWER ADMINISTRATION

PURCHASE ORDER

Mail Invoice To:
DISBURSEMENT OPERATIONS -FTD
A TRANSMISSION
J. BOX 3621
PORTLAND OR 97208-3621

Purchase Order : 00041292
Revision :
Release :
Printed : 02/11/09
Page : 6

DRAWINGS AND INSTRUCTION BOOKS OR
PAMPHLETS FOR PROPER ASSEMBLY AND
DISASSEMBLY PROCEDURES SHALL BE
PROVIDED WITH THE DEVICE.

Deliver to: Contact Kathy Gish at
360-418-2472 or 2829 at least 2 working
days prior to shipping date per GE/BPA
T&C's page 14, Shipment Coordination
Clause (18-55)

Qty: EX4 Delivery Date: 08/28/09

Line Ship To:

CAPTAIN JACK DISTRICT WHSE - B
16401 MAUPIN ROAD
MALIN
MALIN OR 97632

Attention : RECEIVING

Purchase Order Total Amount

TOTAL THIS PO: \$3,477,222.00

BPA Contracting Officer

[Signature]

3/2/09

Vendor Signature (U.R. Req'd)

PATRICK YAN

Standards and Procedures Text Attached

* * * End of Purchase Order * * *

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SCHEDULE

AGREEMENT: BASIC TERMS (7-6M)

(DEC 07)(BPI 7.2.5.2.1)

- (a) **Effective Period.** This agreement is effective upon receipt and acceptance and continues until canceled by BPA or GE in writing,
- (b) **BPA's Obligation.** This agreement places no obligation on BPA to purchase a minimum amount of supplies or services. BPA is obligated only to the extent of authorized orders actually placed using this agreement.
- (c) **Order Numbers.** A purchase order number will be the identifying number for each order placed using these mutual terms and conditions. Purchase order numbers must be included on all packing slips.

DELIVERY OR PERFORMANCE (12-5M)

(DEC 07)(BPI 12.8.10.1)

The place of delivery or performance shall be as specified. Delivery must be timely. BPA reserves the right to reject shipments that are not properly labeled with BPA purchase order number, or are not accompanied by a complete packing slip.

PAYMENT AND TAXES

ELECTRONIC FUNDS TRANSFER PAYMENT (22-20)

(OCT 07)(BPI 22.6.2)

- (a) **Payment Method.** Payments under this contract, including invoice and contract financing payments, will be made by electronic funds transfer (EFT). Contractors are required to provide its taxpayer identification number (TIN) and other necessary banking information as per paragraph (c) of this clause to receive EFT payment.
- (b) **Contractor EFT arrangement with a financial institution or authorized payment agent.** The Contractor shall designate to BPA, as per paragraph (c) of this clause, and maintain at its own expense, a single financial institution or authorized payment agent capable of receiving and processing EFT using the Automated Clearing House (ACH) transfer method. The most current designation and EFT information will be used for all payments under all BPA contracts, unless the BPA Vendor File Maintenance Team is notified of a change as per paragraph (d) of this clause. An initial designation should be submitted after award, but no later than three weeks before an invoice or contract financing request is submitted for payment.
- (c) **Submission of EFT banking information to BPA.** The Contractor shall submit EFT enrollment banking information directly to BPA Vendor File Maintenance Team, using Substitute IRS Form w9e, Request for Taxpayer Identification Number and Certification. This form is available either from the Contracting Officer(CO) or from the Vendor File Maintenance Team. Submit completed enrollment form to the Vendor Team. Contact and mailing information:

Bonneville Power Administration
PO Box 491
ATTN: NSTS - MODW Vendor Maint.
Vancouver, WA 98666-0491

E-mail Address: VendorMaintenance@BPA.gov
Phone: (360) 418-2800
Fax: (360) 418-8904

- (d) Change in EFT information. In the event that EFT information changes or the Contractor elects to designate a different financial institution for the receipt of any payment made using EFT procedures, the Contractor shall be responsible for providing the changed information to the BPA Vendor File Maintenance Team office. The Vendor Maintenance Team must be notified 30 days prior to the date such change is to become effective.
- (e) Suspension of Payment. BPA is not required to make any payment under this contract until receipt of the correct EFT payment information from the Contractor.
- (f) EFT and prompt payment. BPA shall pay no penalty on delay of payment resulting from defective EFT information. BPA will notify the Contractor within 7 days of its receipt of EFT information which it determines to be defective.
- (g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the Assignment of Claims clause of this contract, the assignee shall provide the assignee's EFT information required by paragraph (c) of this clause.

PAYMENT (22-12)
(FEB 08)(BPI 22.2.5)

- (a) **Payment Due Date.** Payment (including partial payments or progress payments, if authorized, shall be due not later than thirty (30) calendar days after the later of the date on which BPA actually receives a proper invoice in the designated billing office or the date when the items delivered. According to the Prompt Payment Act, a proper invoice to a Federal Agency is to include bank account information requisite to enable Electronic Funds Transfer (EFT) as method of payment. For purposes of payment only, items will be deemed accepted not later than seven (7) working days after proper delivery. If delivered items or completed services are found defective, the provisions of this paragraph will be reapplied upon receipt of a corrected item.
- (b) **Billing Instructions.**
 - (1) Invoices must include the contractor's name and address, invoice date, contract number, task order number (if applicable), contract line item number, description of products delivered or work performed, price and quantity of item(s) actually delivered or rendered (amounts billed for work performed under a task order must be separately identified by task order number), and the name and address of the person to whom payment will be made, and name (where practicable), title, phone number, mailing address of person to be notified in event of a defective invoice and bank account information required to enable Electronic Funds Transfer (EFT) as method of payment (Invoices will not require banking information if the contractor has that information on file at BPA). Failure to submit a proper invoice may result in a delay in payment including a rejection of invoice pending receipt of a properly amended invoice.
 - (2) Contractors may bill monthly, or at more frequent intervals as may be agreed to by the CO.
- (c) **Payment Method.** Payments under this contract will be made by electronic funds transfer whenever possible, or by check in very limited circumstances, at the option of BPA.
- (d) **Prompt Payment Act.** This contract is subject to the provisions of the Prompt Payment Act (31 U.S.C. 3901 et seq.), and regulations at 5 CFR Part 1315.
- (e) **Interest Penalty Payments.** If interest penalty payments are determined due under the provisions of the Prompt Payment Act, payment shall be made at the rates determined by the U.S. Treasury Section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611).

DISCOUNTS FOR PROMPT PAYMENT (22-10)
(SEP 98)(BPI 22.2.5)

In connection with any discount offered for prompt payment, time shall be computed from the date shown on the invoice or if no date is shown then from the date BPA receives the invoice. For the purpose of computing the discount earned, payment shall be considered to have been made on the date which appears on the payment check or the date on which an electronic funds transfer was made.

TAXES AND DUTIES (22-16M)
(DEC 07)(BPI 22.5.3.4)

The contract price shall include all applicable Federal, State, and local taxes and duties. BPA tax exempt number is 93-0334712.

GENERAL CONTRACT ADMINISTRATION

CONTRACT ADMINISTRATION REPRESENTATIVES (14-2)
(SEP 98)(BPI 14.3.2)

- (a) In the administration of this contract, the Contracting Officer may be represented by one or more of the following: Contracting Officer's Representative for administrative matters, and Contracting Officer's Technical Representative, Receiving Inspector, and/or Field Inspector for technical matters.
- (b) These representatives are authorized to act on behalf of the Contracting Officer in all matters pertaining to the contract, except: (1) contract modifications that change the contract price, technical requirements or time for performance, unless delegated field modification authority (see clause 24-25); (2) suspension or termination of the Contractor's right to proceed, either for default or for convenience of BPA; and (3) final decisions on any matters subject to appeal, as provided in a disputes clause. In addition, Field Inspectors may not make final acceptance under the contract.

BANKRUPTCY (14-18)
(OCT 05)(BPI 14.19.1)

In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish written notification of the bankruptcy to the Contracting Officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identify of the court in which the bankruptcy petition was filed, and a listing of Government contract numbers and contracting officers for all Government contracts against final payment has not been made. This obligation remains in effect until final payment under this contract.

CHANGES - FIXED-PRICE (14-8)
(SEP 98)(BPI 14.10.5.1.1)

- (a) The Contracting Officer may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract to any one or more of the following:
 - (1) Drawings, designs, or specifications when the supplies to be furnished are to be specially manufactured for BPA in accordance with the drawings, designs, or specifications.
 - (2) Method of shipment or packing.
 - (3) Place of delivery or performance.
 - (4) Description of services to be performed.
 - (5) Time of performance (i.e., hours of the day, days of the week, etc.).
 - (6) BPA-furnished property.
 - (7) Place of inspection or acceptance.
- (b) If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this contract, whether or not changed by the order, the Contracting Officer shall

make an equitable adjustment in the contract price, the delivery schedule, or both, and shall modify the contract.

- (c) The Contractor must assert its right to an adjustment under this clause within 30 days from the date of receipt of the written order, but not later than final payment.
- (d) Failure to agree to any adjustment shall be a dispute under a disputes clause if one is included in this contract. However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.
- (e) Constructive Changes. If the Contractor considers that a BPA action or inaction constitutes a change to the contract (constructive change), and the change is not identified as such in writing and signed by the CO, the Contractor shall promptly notify the CO in writing. No equitable adjustment will be made for costs incurred more than 20 days before the Contractor gives written notice of the constructive change.
- (f) Notwithstanding other provisions herein, only the Contracting Officer, or persons specifically delegated authority to do so by the Contracting Officer, are authorized to orally modify or affect the terms of this contract. Contractor response to oral direction from any other source is at its own risk of liability.

POST AWARD CONFIDENTIALITY (18-104)

(DEC 07) (GE)

- (a) In connection with the Contract, Contractor and BPA (as to information disclosed, the "Disclosing Party") may each provide the other party (as to information received, the "Receiving Party") with "Confidential Information." "Confidential Information" means (a) all pricing for Products and Services, (b) all information that is designated in writing and identified as "confidential" or "proprietary" by the Disclosing Party at the time of written disclosure, and (d) all information that is orally designated as "confidential" or "proprietary" by the Disclosing Party at the time of oral disclosure and is confirmed to be "confidential" or "proprietary" in writing within 10 days after oral disclosure. The obligations of this Article shall not apply as to any portion of the Confidential Information that: (i) is or becomes generally available to the public other than from disclosure by the Receiving Party, its representatives or its affiliates; (ii) is or becomes available to the Receiving Party or its representatives or affiliates on a non-confidential basis from a source other than the Disclosing Party when the source is not, to the best of the Receiving Party's knowledge, subject to a confidentiality obligation to the Disclosing Party; (iii) is independently developed by the Receiving Party, its representatives or affiliates, without reference to the Confidential Information; (iv) is required to be disclosed by law, a valid legal process or a government agency; or (v) is approved for disclosure in writing by an authorized representative of the Disclosing Party.
- (b) The Receiving Party agrees: (i) to use the Confidential Information only in connection with the Contract and permitted use(s) and maintenance of Products and Services, (ii) to take reasonable measures to prevent disclosure of the Confidential Information, except to its employees, agents or financing parties who have a need to know for BPA to perform its obligations under the Contract or to use and maintain Products or Services, and (iii) not to disclose the Confidential Information to a competitor of the Disclosing Party. The Receiving Party agrees to obtain a commitment from any recipient of Confidential Information to comply with the terms of this Article. Confidential Information shall not be reproduced without the Disclosing Party's written consent, and the Receiving Party shall return all copies of Confidential Information to the Disclosing Party upon request except to the extent that the Contract entitles the Receiving Party to retain the Confidential Information. Contractor may also retain one copy of BPA's Confidential Information until all its potential liability under the Contract terminates.
- (c) If either party or any of its affiliates or representatives is required by law, legal process or a government agency to disclose any Confidential Information, that party agrees to provide the Disclosing Party with prompt written notice to permit the Disclosing Party to seek an appropriate protective order or agency decision or to waive compliance by the Receiving Party with the provisions of this Article. In the event that efforts to secure confidential treatment are unsuccessful, Contractor may lawfully revise the Confidential Information to make it

nonproprietary or to minimize the loss of its proprietary value. The parties acknowledge that the Freedom of Information Act, 16 USC 552 may control the release of certain information by BPA.

- (d) Nothing in this Article grants the Receiving Party any license under any invention, patent, trademark or copyright now or later owned or controlled by the Disclosing Party.
- (e) BPA shall not disclose Confidential Information to a Contractor unless it is required to do so to enable Contractor to perform work under the Contract. If BPA does disclose Confidential Information, BPA warrants that it has the right to disclose the information, and BPA shall indemnify and hold the Contractor harmless against any claims or damages resulting from improper disclosure by BPA.
- (f) As to any individual item of Confidential Information, the restrictions of this Article shall expire the earlier of five (5) years after the date of disclosure or three (3) years after termination or expiration of the Contract.
- (g) This Article does not supersede any separate confidentiality or nondisclosure agreement signed by the parties.

**SOFTWARE (18-105)
(DEC 07) (GE)**

- (a) If Contractor provides any software to BPA, the terms of this Contract shall apply including the Software License Addendum. Software that is embedded shall not be subject to this Software License Addendum. If there is any conflict between these terms and the terms of any applicable addendum, the terms of the addendum shall prevail
- (b) If Contractor performs Services related to Contractor's own proprietary software, BPA agrees that Contractor owns all proprietary rights, including, but not limited to any patent, copyright, trade secret, trademark and other proprietary rights, in and to that software and any work derived from that software ("Derivative Work"). "Derivative Work" is (i) any work that is based upon one or more pre-existing work, such as a revision, enhancement, modification, translation, abridgement, condensation, expansion, extension or any other form in which such pre-existing work may be recast, transformed, or adapted, and that, if prepared without the authorization of the owner of the copyright to such pre-existing work, would constitute a copyright infringement and (ii) any compilation that incorporates such a pre-existing work. BPA shall have only a "right to use" license to a Derivative Work for internal business purposes and shall not disclose, sell, lease, distribute, or otherwise transfer the Derivative Work to any third party except as may be permitted by these terms or as approved in writing by Contractor.

For the purposes of this Article, "Contractor" means Contractor, its affiliates, and their successors or assigns.

**OTHER RIGHTS AT LAW (14-4)
(OCT 05)(BPI 14.4.2.1)**

BPA, as an independent agency in the Department of Energy, reserves any other rights it may have at law, unless superseded specifically by this contract.

STANDARDS OF CONDUCT

**CERTIFICATION, DISCLOSURE, AND LIMITATION REGARDING PAYMENTS TO INFLUENCE CERTAIN
FEDERAL TRANSACTIONS (3-3)
(SEP 98)(BPI 3.5.6)**

- (a) As used in this clause:

"Covered Federal action" means

- (1) The awarding of any Federal contract.

(2) The extension, continuation, renewal, amendment, or modification of any Federal contract.

"Indian tribe" and "tribal organization" have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and includes Alaskan Natives.

"Influencing or attempting to influence" means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government" means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, includes a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Person" means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation" means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment" means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient" includes all contractors and subcontractors. The term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed" means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

"State" means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State, regional, or interstate entity having governmental duties and powers.

(b) The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that:

- (1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract or the extension, continuation, renewal, amendment, or modification of any Federal contract.
- (2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, Standard Form-LLL, Disclosure of Lobbying Activities, to the Contracting Officer.
- (3) He or she will include the language of this certification in all subcontract awards at any tier and that all sub-recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

- (c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, U.S. Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- (d) A contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using non appropriated funds (to include profits from any covered Federal action), which would be prohibited under this clause if paid for with appropriated funds.
- (e) The contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under paragraph (b) of this clause. An event that materially affects the accuracy of the information reported includes--
- (1) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
 - (2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or
 - (3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.
- (f) The contractor shall require the submittal of a certification, and if required, a disclosure form, by any person who requests or receives any subcontract exceeding \$100,000 under the Federal contract.
- (g) All subcontractor disclosure forms (but not certifications), shall be forwarded from tier to tier until received by the prime contractor. The prime contractor shall submit all disclosure forms to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding contractor.
- (h) Any person who makes an expenditure prohibited under this clause or who fails to file or amend the disclosure form to be filed or amended by this clause shall be subject to a civil penalty as provided by 31 U. S. Code 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

SOCIO-ECONOMIC ISSUES

BUY AMERICAN ACT - SUPPLIES (9-3) (SEP 98)(BPI 9.1.6)

- (a) The Buy American Act (41 U.S. Code 10a-d) provides that the Government give preference to domestic source end products.

"Components" means those articles, materials, and supplies, which are incorporated directly into the end products.

"End products" means those articles, materials, and supplies to be acquired for public use under this contract.

"Domestic end product" means (1) an unmanufactured end product mined or produced in the United States or (2) an end product manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind as the products referred to in (b) (2) or (3) of this clause shall be treated as domestic. Scrap generated, collected, and prepared for processing in the United States is considered domestic.

- (b) The Contractor shall deliver only domestic end products, except those

- (1) That BPA determines are not mined, produced or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality;
- (2) For which BPA determines that domestic preference would be inconsistent with the public interest; or
- (3) For which BPA determines the cost to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, as amended, and Part 9 of the BPI.)

EMPLOYMENT PRACTICES (10-2)
(SEP 98)(BPI 10.2.1)

- (a) The Contractor agrees to comply with all applicable Federal, State, local laws and regulations concerning Equal Employment Opportunity (including, but not limited to, Executive Order 11246), the payment of minimum wages (including, but not limited to, the Fair Labor Standards Act), and the use of safe practices (including, but not limited to, the Occupational Safety and Health Act).
- (b) If the contract requires the furnishing of time and effort rather than the supply of a product, and the value exceeds \$2,500, the Service Contract Act may apply. If the contract is for construction of BPA facilities, and the value exceeds \$2,000, the Davis Bacon Act may apply. If a wage determination is attached to the contract, the Contractor shall assume the respective Act applies and pay prevailing wages and fringe benefits to its laborers and mechanics as specified. The CO will provide additional compliance guidance upon request.

ENVIRONMENT AND SAFETY

HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (15-6)
(SEP 98)(BPI 15.3.1)

- (a) The Contractor agrees to submit a Material Safety Data Sheet (Department of Labor Form OSHA-20), as prescribed in Federal Standard No. 313C, for all hazardous material 5 days before delivery of the material whether or not it is listed in Appendix A of the Standard. This obligation applies to all materials delivered under this contract which will involve exposure to hazardous materials or items containing these materials.
- (b) "Hazardous material," as used in this clause, is as defined in Federal Standard No. 313C, in effect on the date of this contract.
- (c) Neither the requirements of this clause nor any act or failure to act by BPA shall relieve the Contractor of any responsibility or liability for the safety of BPA, Contractor, or subcontractor personnel or property.
- (d) The Contractor shall comply with applicable Federal, state, and local laws, codes, ordinances, and with regulations (including the obtaining of licenses and permits) in connection with hazardous material.
- (e) The Contractor shall insert this clause, including this Paragraph (e), with appropriate changes in the designation of the parties, in subcontracts at any tier (including purchase orders) under this contract involving hazardous material.

SAFETY AND HEALTH - NON-ELECTRICAL CONTRACTOR(S) (15-2)
(OCT 05)(BPI 15.2.1)

- (1) The Contractor shall assure that no person employed on this contract works in surroundings or under conditions that are unsanitary, hazardous, or dangerous to their health or safety. In fulfilling these requirements, the Contractor shall comply with:

(A) Department of Labor Safety and Health Standards for Construction under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327 et seq.).

(B) Occupational Safety and Health Act of 1970, (Public Law 91-598) and applicable rules and regulations as may have been delegated to the States.

INSPECTION AND WARRANTY

INSPECTION - SUPPLIES (18-2M) (OCT 08)(BPI 18.3.1)

- (a) The Contractor shall provide and maintain a quality system covering supplies ("supplies" includes equipment, fabrication processes, raw materials, and intermediate assemblies) in accordance with Unit 4 of this contract.
- (b) The quality control exercised by Contractor in its manufacture of Products shall be in accordance with Contractor's normal quality control policies, procedures and practices. Contractor shall attempt to accommodate BPA's requests to witness Contractor's factory tests of Products, if such witnessing can be arranged without delaying the work. Such access shall be limited to areas directly concerned with Products ordered by Buyer and shall not include restricted areas where development work or work of a proprietary nature is being conducted. If inspection and tests are performed on the Contractors' site, the Contractor shall provide BPA reasonable facilities and assistance. Except as otherwise provided in the contract, BPA shall bear the expense of BPA inspections or tests made at other than the Contractor's or subcontractor's premises; provided that, in case of rejection, BPA shall not be liable for any reduction in the value of inspection or test samples. BPA is not obligated to perform any inspection and test for the benefit of the Contractor unless specifically set forth elsewhere in this contract. BPA will perform inspections and tests in a manner that will not unduly delay the work.
- (c) The Contractor may be charged for BPA's costs of inspection if supplies are not ready at the time specified by the contract for inspection and tests or where prior rejection makes reinspection and retesting necessary. If the Contractor fails to perform tests required by the contract, BPA may perform the tests and charge the Contractor for the costs of such.
- (d) BPA may either reject or require correction of nonconforming supplies.
- (e) If this contract provides for inspection at the factory (see Unit 4) supplies shall not be shipped until all factory tests and inspections have been made and the supplies released by BPA's Contracting Officer's Technical Representative (COTR), unless waived in writing by the Contracting Officer or an authorized representative.
 - (1) If the BPA COTR exercises BPA's right of inspection at the factory, then the materials and equipment will not be reinspected at destination other than for shipping damage and shortages; however, this will apply only to (i) those items specifically inspected at the factory, and (ii) those characteristics and attributes which are verified during factory inspection.
 - (2) Factory inspection and release for shipment shall not constitute acceptance of the contract items by BPA.
- (f) Inspections and tests by BPA do not relieve the Contractor of responsibility for defects or other failures to meet contract requirements discovered before acceptance. Lack of inspection by BPA shall not relieve the Contractor of any obligations under this contract.

ACCEPTANCE - SUPPLIES (18-3) (SEP 98)(BPI 18.3.1)

Unless explicitly accepted or rejected earlier, acceptance shall occur upon delivery. Acceptance shall be conclusive, except for latent defects, fraud, gross mistakes amounting to fraud, or as otherwise provided in this contract.

WARRANTY - HEAVY ELECTRICAL EQUIPMENT (18-9M)
(OCT 08)(BPI 18.5.1)

- (a) Contractor warrants to BPA that (i) the Products shall be shipped free from defects in material, workmanship and title and (ii) the Services shall be performed in a competent, diligent manner in accordance with any mutually agreed specifications. Unless Contractor expressly agrees otherwise in writing, any items not manufactured by Contractor (including incidental materials and consumables used in the Services) shall carry only the warranty that the original manufacturers provide, and Contractor gives no warranty on behalf of the manufacturers of such items. Furthermore, used Products other than Refurbished Parts shall be sold "as is."
- (b) Unless otherwise stated in the Contract, the warranty period for Products shall be five (5) years from first use or 66 months from delivery, whichever occurs first, except that software is warranted for 90 days from delivery. Unless otherwise stated in the Contract, the warranty period for Services shall be one year from completion, except for software related Services, which shall have a warranty period of 90 days from completion.
- (c) If Products or Services do not meet the above warranties, BPA shall promptly notify Contractor in writing within the warranty period. Contractor shall thereupon (i) at Contractor's option, repair or replace the defective Products or (ii) re-perform the defective Services. If in Contractor's reasonable judgment the Product cannot be repaired or replaced or the Services cannot be re-performed, Contractor shall refund or credit monies paid by BPA for that portion of Products or Services that do not meet the above warranties. Any repair, replacement or reperformance by Contractor hereunder shall not extend the applicable warranty period. The parties shall mutually agree on the specifications of any test to determine the presence of a defect.
- (d) BPA shall bear the costs of access (including removal and replacement of systems, structures or other parts of BPA's facility), de-installation, decontamination, re-installation and transportation of Products to Contractor and back to BPA.
- (e) These warranties and remedies are conditioned upon (a) the proper storage, installation, operation, and maintenance of the Products and conformance with the proper operation instruction manuals provided by Contractor or its suppliers or subcontractors, (b) BPA keeping proper records of operation and maintenance during the warranty period and providing Contractor access to those records, and (c) modification or repair of the Products or Services only as authorized by Contractor. Contractor does not warrant the Products or any repaired or replacement parts against normal wear and tear or damage caused by misuse, accident, or use against the advice of Contractor. Any modification or repair of any of the Products or Services not authorized by Contractor shall render the warranty null and void.
- (f) This Article provides the exclusive remedies for all claims based on failure of or defect in Products or Services, whether the failure or defect arises before or during the applicable warranty period and whether a claim, however described, is based on contract, warranty, indemnity, tort/extracontractual liability (including negligence), strict liability or otherwise. The warranties provided in this Article are exclusive and are in lieu of all other warranties and guarantees whether written, oral, implied or statutory. **NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLIES.**

EVENTS SCHEDULE (18-50)
(DEC 00)

The Contractor shall submit an Events Schedule with the critical milestones to the CO within 30 calendar days after date of award. The Contractor shall submit an updated Events Schedule monthly.

**INSTRUCTION BOOKS (18-51)
(JUN 07)**

Prior to or at the time of shipment of the first piece of equipment, the Contractor shall furnish (the number of books will be determined later) instruction books. If the equipment, as finally accepted, does not agree with that described in the final book, the Contractor shall furnish the necessary revisions for each book furnished and the transmittal shall identify the revised sections or paragraphs. Each instruction book shall contain one complete set of final drawings reviewed and revised per the Specification.

One instruction book shall be shipped with each piece of equipment. This book may be the manufacturer's standard instructions and the book shall be marked "For Construction Only" and have the equipment serial number noted.

Instruction books shall be delivered to the address below:

Bonneville Power Administration
Instruction Book Review Unit – TESM-AMPN-2
P.O.491
Vancouver, WA 98666-0491

OR:

Bonneville Power Administration
Instruction Book Review Unit – TESM-AMPN-2
5411 N.E. Highway 99
Vancouver, WA 98663

A letter of transmittal shall accompany each submittal. A copy of the transmittal letter shall be forwarded to the CO and COTR. Each book shall be identified by the BPA Contract Number and Release Number when applicable, and Item Number(s) of all units to which the book applies.

**CONTRACTOR'S DRAWINGS (18-52)
(AUG 07)**

The Contractor shall submit drawings to be processed for review. The time consumed for this review shall be included in the time allowed for completion of the contract. The time consumed by BPA for this review will not exceed 30 calendar days after receipt of the drawings.

The Contractor shall submit one reproducible for each drawing and/or shall submit CAD data files in accordance with the specification requirements. The reproducible may be of any type; however, it must be of a quality that will provide clear and legible copies and shall be full size. Reduced size drawings are unacceptable.

For delivery instructions, please contact the COTR.

**INSTRUCTION BOOK REVIEW (18-53)
(DEC 00)**

Submittal of Instruction Books for preliminary review is only required if this is a first contract with BPA, a new piece of equipment. Instruction books are to provide information necessary for construction, operation, and maintenance activities. Review is to assure that the instruction books contain the required information. Information supplied by manufacturers containing multiple listings of models, ratings, or part numbers shall have specific information pertinent to the equipment furnished, identified by highlighting, an arrow, or some other readily identifiable means. If preliminary review is required, the Contractor shall submit two copies of each book no later than 45 days prior to the scheduled shipment of the first piece of equipment on the contract. BPA assumes no obligation to discover any deficiency in the Contractor's documentation. BPA will comment when discrepancies from the Specifications are noted during review (see below). The CO will transmit comments to the Contractor within 30 calendar days after receipt of the Instruction Books for review.

Each instruction book will be stamped with one of the following categories:

- (a) REVIEWED – NO COMMENTS. The book has been reviewed and no comments are made.
- (b) REVIEWED – SEE COMMENTS. The book has been reviewed and comments noted thereon and/or in the return transmittal letter from the CO. This book shall be revised by the Contractor and resubmitted for review if requested by the CO.
- (c) NOT ACCEPTABLE. The book has been reviewed and is not acceptable. The reason will be stated in the return transmittal from the CO. The book shall be revised and resubmitted in accordance with Unit 3 Specification.

If any book submitted deviates from previously submitted books, these deviations shall be explained in the letter of transmittal.

**RELEASE FOR SHIPMENT (18-54)
(JUN 07)**

No material or equipment shall be shipped until it has satisfactorily passed all applicable inspections and tests, and has been released for shipment by BPA CO/COTR.

**SHIPMENT COORDINATION (18-55)
(DEC 06)**

Due to heightened security, ALL shipments to BPA (including the Ross Warehouse and all other BPA destinations) must be coordinated through the BPA Traffic Office. The vendor MUST contact the Traffic Office at 360-418-2472 or 360-418-2829, by FAX (360) 418-2461, or by e-mail at traffic@bpa.gov at least two working days prior to anticipated shipping date with the carrier's name and phone number. The carrier must call at least 48 hours prior to delivery so that the Traffic Office can verify with the carrier the destination and to coordinate a specific date and time in advance of making the actual delivery.

BPA purchase order and/or release number along with the PO line item numbers must be included on all packing slips.

**SHIPPING DOCUMENTS (18-56)
(JUN 07)**

Within 48 hours after each shipment, one copy of the shipping manifest and packing slip should be mailed to the address below:

Bonneville Power Administration
Traffic Office, NSLT – Warehouse
P.O. Box 491
Vancouver, WA 98666-0491

OR:

By Fax (360) 418-2461

If a COTR is assigned to this contract, please forward two copies to the COTR.

**SHIPPING MARKS (18-57)
(AUG 07)**

All shipping packages shall be plainly marked by indelible stencil or firmly fastened weatherproof tag with the following information:

Bonneville Power Administration (BPA)

Destination
Contract Number and Delivery Order Number (when applicable)
Contract Item Number(s)
Quantity & BPA Catalog ID Number (see top line on Schedule of Items)

DELIVERY-TITLE TRANSFER, RISK OF LOSS (18-101)
(DEC 07) (GE)

- (a) For shipments within the US, Contractor shall deliver Products FOB Destination, BPA facility or jobsite. Partial deliveries will be permitted. If Products delivered do not correspond in quantity, type or price to those itemized in the invoice for the shipment, BPA will so notify Contractor within 10 days after receipt. Contractor may deliver any or all Products in advance of the delivery schedule. Delivery times are approximate and are dependent upon prompt receipt by Contractor of all materials and information necessary to proceed with the work without interruption.
- (b) Title to Products shipped shall pass to BPA immediately upon arrival at the specified BPA facility or jobsite. Title to Services shall pass to BPA as performed. Notwithstanding the foregoing, for any software provided by Contractor hereunder, only the license to the software transfers as set forth herein, and title to Leased Equipment shall remain at all times with Contractor.
- (c) Notwithstanding paragraph 1 above, in all events risk of loss shall transfer to BPA upon title passage.

EXCUSABLE DELAYS (18-102)
(DEC 07) (GE)

Contractor shall not be liable nor in breach or default of its obligations under the Contract to the extent performance of such obligations is delayed or prevented, directly or indirectly, due to causes beyond its reasonable control, including, but not limited to, acts of God, fire, terrorism, war (declared or undeclared), epidemics, insurrection, intentional acts (or omissions) of BPA or BPA's suppliers or agents, any act (or omission) by any governmental authority, strikes, or labor disputes. The delivery or performance date shall be extended for a period equal to the time lost by reason of delay, plus such additional time as may be reasonably necessary to overcome the effect of the delay. If Contractor is delayed by intentional acts (or omissions) of BPA, or by the prerequisite work of BPA's other contractors or suppliers, Contractor shall be entitled to an equitable price and performance adjustment.

LIMITATION OF LIABILITY (18-103M)
(OCT 08) (GE)

- (a) The total liability of Contractor for all claims arising out of or relating to the performance or breach of the Contract or use of any Products or Services or any order shall not exceed (a) the Contract price or (b) if this Contract is in the form of a frame or master agreement under which BPA places an order with Contractor for the Products and Services to be purchased, (i) the final price of the particular order under which the specific Products or Services giving rise to the claim are supplied or performed or (ii) if a claim is not explicitly connected with a particular contract, then the final price of the last acknowledged order between the parties shall represent each of the parties total liability. Contractor's liability shall terminate upon the expiration of the applicable warranty period, provided that BPA may enforce a claim that accrued prior to that date by commencing an action or filing an arbitration, as applicable under the dispute resolution clause, before the expiration of the applicable statute of limitations or repose, but not later than one year after the expiration of such warranty period.
- (b) Contractor shall not be liable for loss of profit or revenues, loss of product interruption of business, cost of capital, cost of cover, downtime costs, increased operating costs, claims of BPA's customers for such damages, or for any special, consequential, incidental, indirect, punitive or exemplary damages. Contractor shall retain liability for any direct damage caused by its negligence.
- (c) Buyer's supply or sale of products acquired by third parties is limited to the terms under this section and do not create any additional third party rights.

- (d) Contractor shall not be liable for any advice or assistance that is not required under the Contract.
- (e) For the purposes of this Article, the term "Contractor" shall mean Contractor, its affiliates, subcontractors and suppliers of any tier, and their agents and employees, individually or collectively.
- (f) The limitations and exclusions in this Article shall apply regardless of whether a claim is based in contract, or warranty.

TERMINATION

TERMINATION FOR DEFAULT (20-3.1M) ALTERNATE I (OCT 08)(BPI 20.5.1)

- (a) BPA reserves the right to terminate any or all of any undelivered or unexecuted portion of this contract for cause if the contractor fails to make any delivery, fails to prosecute the work, or to perform as scheduled, or if any of the contract terms are breached. BPA shall first provide Contractor with detailed written notice of the breach and of BPA's intention to terminate the contract, and (b) Contractor shall have failed, within 7 days after receipt of the notice (or such extended period as is considered reasonable by the parties), to either (1) commence and diligently pursue cure of the breach, or (2) provide evidence which BPA shall reasonably consider that the breach has not occurred. However, the contractor shall not be terminated for default if the failure to perform arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of those causes are: (1) acts of God or of the public enemy, (2) acts of the Government in its sovereign or BPA in its contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather.
- (b) The Contracting Officer may direct the disposition of material produced or acquired for the work terminated, and the disposition of any completed or partially completed items.
- (c) BPA may acquire, under the terms and in the manner the Contracting Officer considers appropriate, supplies or services similar to those terminated.

TERMINATION FOR THE CONVENIENCE OF BPA (20-2) (MAY 07)(BPI 20.4.1)

- (a) BPA may terminate all or any part of this contract, at any time, upon written notice to the contractor. Upon receipt of the termination notice, the contractor shall stop work on the terminated portion of the contract.
- (b) The contract amount shall be revised as a result of termination under this clause. On fixed-price contracts the revised amount shall not exceed the pre-termination contract price, excluding payments already received, plus reasonable termination expenses. On cost-reimbursement contracts it will not exceed the total of allowable and allocable costs of performance prior to termination, excluding payments already received, plus reasonable termination expenses, plus an adjustment of the fee on the terminated portion of the contract. No payment will be made for anticipated profits on the terminated portion, or consequential damages, of the contract. The contractor shall submit a settlement proposal within 30 days of the notice of termination.
- (c) The Contracting Officer may direct the disposition of material produced or acquired for the work terminated, or any completed or partially completed items.

DISPUTES

APPLICABLE LAW (21-5) (SEP 98)(BPI 21.3.12)

Irrespective of the place of performance, this contract will be construed and interpreted according to the federal common law of government contracts, as enunciated and applied by federal judicial bodies, boards of contract

appeals, and quasi-judicial agencies of the Federal Government. To the extent that the federal common law of government contracts is not dispositive, the laws of the State of Oregon shall apply.

DISPUTES (21-2)
(SEP 98)(BPI 21.3.12)

Disputes arising under or related to this contract will be settled in accordance with Bonneville Purchasing Instructions, Subpart 21.3. The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any pending decision of the Contracting Officer regarding matters in dispute.

DISPUTES RESOLUTION PROCESS (21-3)
(OCT 05)(BPI 21.3.12)

- (a) All disputes arising under or relating to this contract shall be resolved under this clause.
- (b) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract. A claim arising under a contract, unlike a claim relating to that contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment or equitable adjustment that is not in dispute when submitted is not a claim. The submission may be converted to a claim, by complying with the requirements of this clause, if it is not disputed either as to liability or amount or is not acted upon in a reasonable time.
- (c) A claim by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision before final payment. A claim by BPA against the Contractor shall be subject to a written decision by the Contracting Officer.
- (d) For Contractor claims of \$100,000 or less, the Contracting Officer must, if requested in writing by the Contractor, render a decision within 60 days of receipt of the request. For Contractor claims in excess of \$100,000, the Contracting Officer must, within 60 days, decide the claim or notify the Contractor of the date when the decision will be made. At any time prior to issuance of the Contracting Officer's final decision, either party may request mediation or other alternate disputes resolution process (see paragraph (g)) by a third party in order to assist in settling the claim. Should the contractor request the use of an alternate disputes resolution process, the time frames for issuing a CO decision and payment of interest shall be suspended.
- (e) The decision of the Contracting Officer shall be final and conclusive and not subject to review by any forum, tribunal, or Government agency unless:
- (1) Within 90 days from the date of receipt of such decision the Contractor or Contracting Officer initiates disputes resolution processes described in Subchapter IV of the Administrative Disputes Resolution Act of 1990 (P. Law 101-552, 104 Stat. 2736) with the Seattle Office of the American Arbitration Association at the address,

American Arbitration Association
701 Pike Street, Suite 950
Seattle, WA 98101-4111

whose telephone number is (206) 622-6435 and facsimile number is (206) 343-5679; or

- (2) Within 90 days from the date of receipt of such decision the Contractor appeals the decision to the US Department of Energy, Board of Contract Appeals at either its postal or courier address:

US Postal Service (USPS) mailing address: US Department of Energy
Board of Contract Appeals
HG-50, Building 950
L'Enfant Plaza Building

1000 Independence Avenue SW
Washington, DC 20585-0116

Courier and other than USPS address:

US Department of Energy
Board of Contract Appeals
Suite 810
950 L'Enfant Plaza SW
Washington, DC 20024

whose telephone number is (202) 287-1900 and facsimile (202) 287-1700, in the manner specified in the decision; or

- (3) Within 12 months from the date of receipt of such decision the Contractor brings an action thereon in the United States Court of Federal Claims.
- (f) The authority of the Contracting Officer under the Act does not extend to claims or disputes which by statute or regulation other agencies are expressly authorized to decide.
- (g) Alternative disputes resolution process.
 - (1) The parties are encouraged to attempt an alternative dispute resolution as described by Subchapter IV of the Administrative Disputes Resolution Act of 1990 (P. Law 101-552, 104 Stat. 2736), including, at the request of any party, mediation or binding arbitration, prior to commencing litigation in any court, board or tribunal. Mediation shall be accomplished as agreed between the parties. Arbitration, if any, shall be done through the Seattle, Washington Office of the American Arbitration Association, and shall be done according to the Commercial Arbitration Rules of the American Arbitration Association, using one arbitrator unless otherwise agreed to by the parties. If the contractor rejects BPA's request to use an alternate dispute resolution process, the reason for its rejection shall be furnished to the Contracting Officer.
 - (2) The parties stipulate that any tribunal to which any controversy or claim is brought should stay its proceedings, except in aid of arbitration, pending completion of arbitration and the issuance of the Arbitrator's award.
 - (3) Service of summons in any court action to enforce or challenge an award must be effectuated according to Rule 4 of the Federal Rules of Civil Procedure for the United States District Courts or under the comparable rule of another court or tribunal with subject matter jurisdiction.
 - (4) Except as specified below in this paragraph, there shall be no discovery in connection with any dispute resolution process. However, in the event that any party to such dispute resolution process shall receive information pertaining to the dispute through anyone's use of the Freedom of Information Act with the Department of Energy or Bonneville Power Administration, then, at the option of Bonneville Power Administration, other discovery shall be permitted and, if thus permitted at all, shall be opened fully to all parties. To the extent that such discovery cannot be effectuated by consent and agreement, it shall be under the supervision of the individual assisting with the dispute resolution.
- (h) BPA shall pay interest on the amount found due and unpaid from: (1) the date the Contracting Officer receives the claim, or (2) the date payment otherwise would be due, if that date is later, until the date of payment. Simple interest on claims shall be paid at the rate fixed by the Secretary of the Treasury, and applicable for each 6-month period as fixed by the Treasury Secretary during the pendency of the claim.
- (i) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

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Unless otherwise agreed to by Licensor, the following terms shall mean:

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"Terms and Conditions" means BPA's Terms and Conditions to which this License is attached.

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6.2 For the purposes of this Article, the term "Licensor" shall mean Licensor, its affiliates, and their successors or assigns.

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7.1 Licensor warrants, for Licensee's benefit alone, that under normal use the media in which the Software is embedded shall be free from defects in material and workmanship, for a period of ninety (90) days from the date of delivery of the initial Software ("Warranty Period").

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8.3 The confidentiality obligations set forth in the Terms and Conditions with respect to items of Confidential Information shall expire, with respect to Software and Documentation, five years after termination of the Contract.

8.4. Upon request Licensee agrees to provide Licensor with a signed copy of this License.

By:

Name:

Title:

Date:

SPECIFIC TECHNICAL SPECIFICATION, STS 1009897
FOR 525KV SHUNT CAPACITOR EQUIPMENT
OUTDOOR TYPE

This portion of the specification prescribes the specific technical requirements of Shunt Capacitor equipment being furnished. "NA" in any column means "not applicable" to the item. For a complete technical description of the equipment, this specification is to be used in conjunction with the SCHEDULE OF ITEM description and the GENERAL TECHNICAL SPECIFICATION TNS 22-05.

SCHEDULE ITEM NUMBER

- A- Bank type (external fuse or fuseless)**
1. Fused or Fuseless Fused
 2. Number of Phases..... Three
- B- System Voltage, L-L, kV rms**
1. Maximum System Voltage, kV rms L-L (Cap Capability) 621.
 2. Nominal System Voltage, kV rms L-L..... 525.
 3. System Frequency, Hz..... 60
- C- Bank Characteristics and Ratings**
1. Bank Connection (Gnd Wye or UnGnd Wye)..... Gnd Wye
 2. Bank Reactive
 - a. Mvars @ Nominal voltage..... 339.6
 - b. Mvars @ Cap Unit rating 475.2
 3. Capacitor Bank Reactance Tolerance..... +10 to 0
At Nominal Voltage and 25 C, +/- %
 4. Reactive Unbalance between Phases at max. 1
Temperature Extremes and Nominal Voltage, %
 5. Capacitor Units (series/parallel) per Phase (see note)
 - a. Initial 18/22
 - b. Ultimate 18/32
- D- Capacitor Unit Ratings:**
1. Capacitor Unit Rated Voltage, kV rms..... 19.92
 2. Capacitor Unit Reactive Rating, kvars@rated..... 400
- E- Bank Insulation**
1. Insulation to Ground minimum, BIL kV crest 1800
 2. Low Freq Wet Withstand min, kVrms 710
 3. Min L-G Leakage Distance, in 319
 4. Min Neutral BIL, kV crest 110
 5. Bus and Neutral Insulation, Min. BIL kV crest..... 150
- F- Bank Protection**
1. Protection System (LV Capacitor), Yes or No Yes
 2. Protection System Details See Note
 3. PT Secondary Voltage Limit (150V) 150
 4. Potential Transformers (Across capacitor racks)..... No
 5. BPA Drawing, 25381 Yes
- G- Seismic & Environmental**
1. IEEE 693-2005 Annex O 0.5G High Level
(0.3, 0.4 or 0.5G, BPA site specific)

- 2. Temperature Range, °C -40/+40
- 3. Ice Loading See Note
- 4. Wind Loading, mph 120

H- Other Features

- 1. Cabinet Heater Voltage, AC V rms 240
- 2. Capacitor Unit Lifting Device Yes

Notes:

- C.5 Max number of parallel units per wye limited to 4650 kvars and 12500 J, unless the vendor can demonstrate through tests that higher values are allowed without case rupture.
- E.5 Bus, Rack-Rack and Neutral Insulation, Min Insulation Level for both scheduled items shall equal or exceed the BIL based on 3 x actual rms stress rounded to next highest wet withstand in ANSI C29.9.
- F.2 The protection system shall be designed to provide Alarm-Alarm-Trip protection, in addition to the following: The protection PT output shall provide not less than .3V differential voltage for an pack or fuse failure and at a voltage not to exceed 150 V. A SEL 287V or equivalent will be used for bank protection. Second alarm level stress shall be below 1.1 PU and the bank will trip when the stress exceeds 1.1 PU
- G.3 Ice Loading Requirements
 - a. Extreme Ice - 56 mph wind speed (without a gust factor) with 1.0 inch of glaze ice, (density = 57 pcf)
 - b. Extreme Rime - 40 mph wind speed (without a gust factor) with 2.0 inches of glaze rime ice, (density = 15 pcf)
 Testing to meet the ice loading requirements may be preformed separately from the testing of seismic loading requirements.

SPECIFIC TECHNICAL SPECIFICATION, STS 1009901
FOR 525KV SHUNT CAPACITOR EQUIPMENT
OUTDOOR TYPE

This portion of the specification prescribes the specific technical requirements of Shunt Capacitor equipment being furnished. "NA" in any column means "not applicable" to the item. For a complete technical description of the equipment, this specification is to be used in conjunction with the SCHEDULE OF ITEM description and the GENERAL TECHNICAL SPECIFICATION TNS 22-05.

SCHEDULE ITEM NUMBER

- A- Bank type (external fuse or fuseless)**
1. Fused or Fuseless Fused
 2. Number of Phases Three
- B- System Voltage, L-L, kV rms**
1. Maximum System Voltage, kV rms L-L (Cap Capability) 621.
 2. Nominal System Voltage, kV rms L-L 525.
 3. System Frequency, Hz 60
- C- Bank Characteristics and Ratings**
1. Bank Connection (Gnd Wye or UnGnd Wye) Gnd Wye
 2. Bank Reactive
 - a. Mvars @ Nominal voltage 216.1
 - b. Mvars @ Cap Unit rating 302.4
 3. Capacitor Bank Reactance Tolerance +10 to 0
At Nominal Voltage and 25 C, +/- %
 4. Reactive Unbalance between Phases at max. 1
Temperature Extremes and Nominal Voltage, %
 5. Capacitor Units (series/parallel) per Phase (see note)
 - a. Initial 18/14
 - b. Ultimate 18/16
- D- Capacitor Unit Ratings:**
1. Capacitor Unit Rated Voltage, kV rms 19.92
 2. Capacitor Unit Reactive Rating, kvars@rated 400
- E- Bank Insulation**
1. Insulation to Ground minimum, BIL kV crest 1800
 2. Low Freq Wet Withstand min, kVrms 710
 3. Min L-G Leakage Distance, in 319
 4. Min Neutral BIL, kV crest 110
 5. Bus and Neutral Insulation, Min. BIL kV crest 150
- F- Bank Protection**
1. Protection System (LV Capacitor), Yes or No Yes
 2. Protection System Details See Note
 3. PT Secondary Voltage Limit (150V) 150
 4. Potential Transformers (Across capacitor racks) No
 5. BPA Drawing, 25381 Yes
- G- Seismic & Environmental**
1. IEEE 693-2005 Annex O 0.5G High Level
(0.3, 0.4 or 0.5G, BPA site specific)

- 2. Temperature Range, °C -40/+40
- 3. Ice Loading Sec Note
- 4. Wind Loading, mph 120

H- Other Features

- 1. Cabinet Heater Voltage, AC V rms 240
- 2. Capacitor Unit Lifting Device Yes

Notes:

- C.5 Max number of parallel units per wye limited to 4650 kvars and 12500 J, unless the vendor can demonstrate through tests that higher values are allowed without case rupture.
- E.5 Bus, Rack-Rack and Neutral Insulation, Min Insulation Level for both scheduled items shall equal or exceed the BIL based on 3 x actual rms stress rounded to next highest wet withstand in ANSI C29.9.
- F.2 The protection system shall be designed to provide Alarm-Alarm-Trip protection, in addition to the following: The protection PT output shall provide not less than .3V differential voltage for an pack or fuse failure and at a voltage not to exceed 150 V. A SEL 287V or equivalent will be used for bank protection. Second alarm level stress shall be below 1.1 PU and the bank will trip when the stress exceeds 1.1 PU
- G.3 Ice Loading Requirements
 - a. Extreme Ice - 56 mph wind speed (without a gust factor) with 1.0 inch of glaze ice, (density = 57 pcf)
 - b. Extreme Rime - 40 mph wind speed (without a gust factor) with 2.0 inches of glaze rime ice, (density = 15 pcf)
 Testing to meet the ice loading requirements may be preformed separately from the testing of seismic loading requirements.

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TECHNICAL SPECIFICATION

SHUNT CAPACITOR EQUIPMENT--OUTDOOR TYPE, TNS 22-05, FEB. 8, 2006

SUPERSEDING No. EES 22-05.3, dated OCT 10, 1998

3-1 SCOPE

This specification covers the general technical requirements for outdoor, open rack, static shunt capacitor equipment for use in BPA substations at voltages from 14.4 kV through 525 kV.

3-2 GENERAL

3-2.1 REFERENCED DOCUMENTS

The following standards and specifications, including revisions to the dates shown, form a part of this specification:

- a. American National Standards Institute (ANSI/IEEE) Standards:
 - ANSI/IEEE Std. 18-1992 Shunt Power Capacitors
 - C29.9-1983 Wet-Process Porcelain Insulators Apparatus, Post-Type
 - C57.13-1993 Requirements for Instrument Transformers
 - IEEE 693, 1997 Recommended Practices for Seismic Design of Substations
 - Z55.1-1967 Gray Finishes for Industrial Apparatus and Equipment (R1973)
- b. National Electrical Manufacturers Association (NEMA) Standards:
 - CC 1-1993 Electric Power Connectors
 - CP 1-1992 Shunt Capacitors
- c. American Society for Testing and Materials (ASTM) Standards:
 - A123-1989 Rev. A Zinc (Hot Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips
 - A153/A153M-1995 Zinc Coating (Hot Dip) on Iron and Steel Hardware
 - B98-1993 Copper-Silicon Alloy Rod, Bar and Shapes
 - D4059-1996 Analysis of Polychlorinated Biphenyls in Mineral Insulating Oils by Gas Chromatography
- d. International Electrotechnical Commission (IEC) Standards:
 - 871-1 Shunt Capacitors for AC Power Systems Having a Rated Voltage above 660 V, Part 1 - General Performance, Testing and Rating
 - 871-2 Shunt Capacitors for AC Power Systems Having a Rated Voltage above 660 V, Part 2 - Endurance Testing
- e. Canadian Standards Association (CSA) Standards:
 - CAN3-C155-M84 Shunt Capacitors for AC Power Systems

3-2.2 DEFINITIONS

The term "capacitor rack" as used herein shall mean a completely assembled single-phase or three-phase structure. "Multi-unit rack" shall refer to a NEMA-type "building block" unit which is stacked in combinations to form capacitor banks.

3-2.3 IDENTIFICATION

- 3-2.3.1 Each rack shall be plainly marked with an identification (ID) number stamped into the rack material with a metal die (before galvanizing on steel racks). The figures shall be at least 12 mm high. In lieu of a stamped number into the rack, the ID number may be stamped on the rack nameplate. Unless all racks

are identical and interchangeable these numbers shall be shown on the installation drawings to facilitate bank assembly.

3-2.3.2 Duplicate identification marks in dark red letters 25 mm high shall be painted or stenciled on each rack adjacent to the stamped numbers.

3-2.3.3 The capacitor nameplate(s) shall be of non-corrosive metal type, and shall include: information identified in IEEE 18-1992 Section 6.8--6.8.1, and the common name of the PCB-free fluid, the design capacitance rating (microfarads) with $\pm\%$ tolerance or the actual production measured capacitance, the month and year of manufacture, and warranty expiration date. Actual capacitance or actual $\pm\%$ deviation from design capacitance, and warranty expiration date may be on separate metalized labels or weatherproof tags.

3-2.3.4 Each phase of capacitor banks shall be provided with a seismic tag of noncorrosive metal type with information identified similar to the sample tag shown in the APPENDIX DRAWINGS Section. The wind speed noted on the tag shall be the maximum wind speed calculated from the SEISMIC, WIND AND OTHER LOAD REQUIREMENTS Section, but not less than the wind speed as specified in either the SCHEDULE ITEM DESCRIPTION or the SPECIFIC TECHNICAL SPECIFICATION. The tag shall be installed on the racks by the Contractor.

3-2.4 CONTRACTOR'S DRAWINGS

One complete set of full-size reproducibles for each type of equipment and rating shall be furnished within 60 days for new designs and 30 days for existing designs after the contract award or date of delivery order, unless otherwise specified in the ITEM DESCRIPTION. Reduced size drawings are not acceptable. The following drawings shall be furnished, as minimum, in addition to any other drawings that the Contractor may deem necessary to make one complete set of drawings:

- a. Outline drawings of the assembled equipment, both in elevation and cross-section, showing:
 1. Dimensions required for design of foundations for the capacitor racks.
 2. Location of connections, including connections for mounting BPA-furnished PTs, to the capacitor racks.
 3. Magnetic clearance between the capacitor racks and the BPA-furnished current-limiting reactors.
 4. Weight of the individual multi-unit racks.
 5. Total weight of the assembled racks including insulators.
 6. Location of center of gravity of the assembled racks including insulators.
- b. Detail drawing of bank bus and electrical connections.
- c. Circuit diagram showing main and accessory circuits.
- d. Outline drawings of each type of capacitor showing height, width and depth of the case, height of the bushing, height from the bottom of the mounting ears to the top of the case, mounting dimensions, weight of the complete unit, and details of the terminal connectors. These outline drawings are required only for the type of capacitor that is to be assembled on the racks. Outline drawings for spare capacitor units of identical type are not required.
- e. Fuse, holder, and flipper spring installation drawings.
- f. Installation drawings shall be submitted for each type of structure. Each piece shall be identified by its proper mark number. At each connection the number and length of bolts required and the number and type of washers required for proper assembly of the structure shall be shown. There shall also be a complete

tabulation listing all material needed for one structure or the portion of the structure shown thereon, including all bolts, nuts, washers and locknuts. The tabulation shall show the number of pieces required in the structure, the mark number of each piece, the description of each piece, including dimensions. If the Contractor desires to furnish this tabulation on a separate materials list he may do so, providing the materials list is numbered, and the number is listed on the installation drawing.

- g. Coordination curves and information which illustrates that the fuses will blow within the safe zone of the case rupture curves, assuming 10% overvoltage when operating the bank at maximum system voltage.
- h. Internal capacitor electrical schematic diagram showing the discharge resistors, and internal series and parallel roll arrangement shall be provided.
- i. Seismic outline drawings shall be provided in accordance with IEEE 693, A 6.2
- j. Drawings of high-voltage and high-strength insulators showing all critical dimensions, voltage rating, BIL, and creepage distance.

Contractor may propose an alternative means of submitting drawings as required in paragraphs a through j above using different media, such as CAD data files, provided that such media are compatible with BPA's existing processing capabilities. This alternate means of drawing submittal is subject to review and approval by the Contracting Officer.

3-2.4.1 **SUBMITTAL:** The Contractor shall submit drawings to the Substation Specification Group to be processed for review. The time consumed for this review shall be included in the time allowed for completion of the contract. The time consumed by BPA for this review will not exceed 30 calendar days after receipt of drawings. Drawing changes required for contract compliance will not be justification for an extension of the Contract Delivery Date (CDD).

3-2.4.1.1 Each drawing shall be identified by a drawing number and date, the BPA contract number and the contract item number(s). The preferred location for this information is the lower right-hand corner of the drawing. All revisions shall be noted and dated in an obvious location and manner. All drawings and revisions shall be accurate, complete, and signed or initialed by a responsible representative of the Contractor. Only drawings with the latest revisions shall be submitted.

3-2.4.1.2 Each submittal shall be accompanied by a letter of transmittal to the Substation Specification Group, with a copy to the CO/COR. The letter of transmittal shall contain a list of the individual drawings including their title, drawing number, and revision number. If any drawing submitted for review deviates from previously reviewed drawings, these deviations shall be described in the letter of transmittal.

3-2.4.2 Drawings, which require changes, shall be resubmitted within 30 calendar days from the date the reviewed drawings were mailed to the Contractor. Any resubmittal shall include one reproducible for each revised drawing. Reduced size drawings are not acceptable.

3-2.4.2.1 **REVIEW:** Drawings are to provide information necessary for design, construction, and maintenance activities. BPA reviews are to assure that the drawings contain the required information. BPA assumes no obligation to discover any deficiency in the Contractor's drawings. BPA will comment when discrepancies are discovered during review of drawings. Comments on the drawings do not constitute a contract change.

3-2.4.2.2 BPA will return to the Contractor one reviewed copy of each drawing submitted, within 30 calendar days after receipt.

3-2.4.2.3 Each drawing returned will be appropriately stamped with one of the following categories:

- a. **REVIEWED - NO COMMENTS/NO RESUBMITTAL REQUIRED.** The drawing has been reviewed and no comments are made. Resubmittal is not required for the drawing. The drawing can now be incorporated into Instruction Book.

- b. REVIEWED – WITH COMMENTS/NO RESUBMITTAL REQUIRED. The drawing has been reviewed and comments are noted thereon. The drawing shall be revised as noted and then incorporated into Instruction Book.
- c. REVIEWED – WITH COMMENTS/RESUBMITTAL REQUIRED. The drawing has been reviewed and comments are noted thereon. The drawing shall be revised and resubmitted in accordance with the Section 3-2.4.3 SUBMITTAL above.

3-2.4.3 If changes are made in the material or equipment after any drawing review, the Contractor shall revise the appropriate drawing and resubmit for review in accordance with the Sections SUBMITTAL and REVIEW above. When a drawing has been changed or superseded, the new drawing shall state the number of the revision or superseded drawing and note the reason for the change.

3-2.4.4 As-Built Drawings: If drawing changes are made during construction that are within the Contractor's scope of supply, the Contractor shall revise the appropriate drawing and resubmit for review in accordance with the Sections SUBMITTAL and REVIEW above, within 45 calendar days of acceptance.

3-2.5 INSTRUCTION BOOKS

Unless otherwise specified in the SCHEDULE ITEM DESCRIPTION, one preliminary set of instruction books (IBs) for each type of equipment with the information described below shall be furnished to the Instruction Books Review Unit for review 45 days prior to the shipment of the first piece of each type of equipment. These "For-Review" IBs need not include the test reports as described in the Design Test Report and the Routine Test Report sections below to meet the submittal due date.

Once reviewed and notified by BPA, the Contractor shall complete and deliver eight (8) final sets of IBs (three hard copies and five CD's) to the Instruction Books Review Unit prior to or at the time of shipment of the first piece of equipment. To be considered final, these IBs shall include the test reports as required in the Design Test Report and Routine Test Report sections described below. In the event that the test reports are not ready for inclusion at time of shipment, provisions shall be made in the instruction book sets for BPA to insert the reports later when they are completed. These test reports shall be completed and forwarded to BPA within 7 days after delivery of equipment.

In addition to the 8 final sets of IBs above, one set of IBs which may be of manufacturer's standard format shall be shipped with each unit of equipment for use by receiving inspection and construction personnel, and shall be marked "FOR CONSTRUCTION ONLY". The equipment serial number shall also be noted.

The following information shall be included in the final instruction book sets as a minimum and organized according to the sections as identified. The final instruction books shall be in three ring binders, size 8 1/2" x 11", large hole, single sided, 1" margin on left, and font type >10 point.

- a. Cover Page
 - 1. Manufacturer/Vendor.
 - 2. Date of Manufacture.
 - 3. BPA Destination (Substation), Contract No., Item No., BPA Equipment SER No., & Vendor Order No(s).
 - 4. Equipment Ratings: Voltage (L-L rms), Connection (Y Grd, etc.), 3 Phase MVAR and Seismic Rating.
 - 5. Warranty Period/Expiration.
 - 6. Vendor Contact Information: Address, Phone, & E-Mail.
- b. Table of Contents: Identify contents of each section.
- c. Section 1, Introduction

- d. Section 2, Safety
 - 1. Protection against shock.
 - 2. Explosion hazard.
 - 3. Handling of failed capacitors.
 - 4. Combustible impregnant fire hazard.
 - 5. Disposal of capacitors or impregnant.
 - 6. PCB Certification or Test Report, and Material Safety Data Sheets (MSDS) for each different dielectric fluid supplied. See Section 3-4.1.2 for summary of PCB testing and reporting requirements
- e. Section 3: Bank Information.
 - 1. Capacitor Bank Nameplate -- with all information supplied.
 - 2. Capacitor Units Series/Parallel-Installed/Future, Capacitors per Rack, No. of Racks, Racks per Stack (HV to LV) & Outline Dwg. Nos. of Each.
- f. Section 4: Specific Equipment Electrical & Mechanical Ratings (subsection tabs if necessary to speed locating specific information).
 - 1. Capacitors: Vendor, Vendor No., Drawing No., Rated Voltage, KVARs, Bushing BIL, Internal Arrangement Series/Parallel, Discharge Resistor Value, Internal Schematic (3-2.4.h), & Nameplate (completed).
 - 2. Fuse Assembly: Vendor, Vendor No., & Dwg. No. of Fuse Link, Tube & Flipper, and Specific Ratings (where applicable).
 - 3. Insulators: Vendor, Vendor No., TR No., Low Freq. Wet Rating, BIL, Creepage, and Outline Dwg. Nos.
 - 4. Instrument Transformers (if supplied): Vendor, Vendors No., Ratio, Insulation Class, Resistance, BIL, Burden, & Nameplate (completed).
- g. Section 5: Operation and Maintenance.
 - 1: Operation and Maintenance of Equipment and Accessories.
 - 2. Vendor's Standard Operating Manual and Maintenance Instruction Books.
 - 3. Specific information describing detection, location, removal and replacement of capacitor units with internal failed elements. This includes formatted sheets where measured values are to be logged in following installation, alarms and/or during routine maintenance. The meaning of measurements that appear to be out of tolerance, and temperature correction factors if required shall also be included. The safe removal and replacement of units including detailed instructions for use of the approved lifting device shall also be discussed in this section.
 - 4. A section on testing procedures, recommended instruments to be used and standard forms where base test values and future test data may be entered with expected reading for various numbers of failures shall be provided.
- h. Section 6: Bill of Materials.
 - 1. Drawing Reference No., Description, Drawing No., Part Numbers and Quantity.

i. Section 7: Drawings.

1. Drawing Index - Sorted by Item and Number (subsection tabs if necessary to speed locating specific information).
2. Complete Set of Contract Drawings as finally submitted meeting the requirements as identified in Section 3-2.4 above except as provided elsewhere in this section.
3. Other Outline Drawings: Instrument Transformers (if supplied), Fuse Holder, Flipper Spring, Fuse Link, Terminal Clamps, NEMA Pads, etc.

j. Section 8: Spare Parts.

1. Drawing Reference No., Description, Vendor, Vendor No., & Contract Price.
2. Parts List Showing Manufacturer Part Numbers and Quantity.

k. Section 9: Design Test Report.

1. Summary sheets of all Design Tests performed on shunt capacitor equipment as required by this specification and references. Summary sheets shall at minimum identify the date, BPA contract for which the tests were performed and approved. They shall also describe the electrical and mechanical characteristics of the components on which the tests were performed, and provide a critical comparison of the characteristics of the components tested vs. those supplied in a tabulated format.
2. Fuse Coordination Curve (3-2.4.g)
3. An abbreviated report of seismic and wind load analysis showing criteria, method of analysis and summary of results.

l. Section 10: Routine Test Report.

A complete routine test report covering all tests performed on shunt capacitor equipment as required by this specification and references shall be provided.

3-2.6 ORDER OF DOCUMENT PRECEDENCE

In case of conflict between documents, the order of precedence shall be:

- a. SCHEDULE ITEM DESCRIPTION.
- b. SPECIFIC TECHNICAL SPECIFICATION.
- c. GENERAL TECHNICAL SPECIFICATION, except REFERENCED DOCUMENTS portion.
- d. QUALITY ASSURANCE PROVISIONS.
- e. Referenced ANSI/IEEE Standards.
- f. Referenced IEC Standards.
- g. Referenced CSA Standards.
- h. Referenced NEMA Standards.
- i. Referenced ASTM Standards.

3-2.7 MATERIALS

Materials shall be of recent manufacture, unused, and free of defects or irregularities. Recycled substances shall be utilized to the maximum practical extent without jeopardizing material requirements and equipment performance.

3-3 PERFORMANCE

3-3.1 GENERAL

All capacitor equipment shall meet the performance requirements of the REFERENCED DOCUMENTS and herein.

3-3.2 LOSSES

The losses of each capacitor, including losses in the internal discharge resistor shall not exceed 0.3 watts per kVAR, as measured during production, at rated voltage and frequency corrected to 25°C case and internal temperature.

3-3.3 AMBIENT TEMPERATURE

All capacitor equipment shall be suitable for energization and continuous operation at ambient temperature range from 40 °C to -40°C or as identified in the SPECIFIC TECHNICAL SPECIFICATION.

3-3.4 SEISMIC AND WIND LOADING REQUIREMENTS

These forces may be considered as occurring independently.

3-3.4.1 GENERAL: The term "equipment" for this paragraph shall include the shunt capacitors, fuses, connections between associated components, supporting structures, and anchorage assemblies.

3-3.4.2 Equipment shall be designed and built to maintain structural integrity and perform the intended electrical function during and after seismic or wind events up to the limit as specified in either the SCHEDULE ITEM DESCRIPTION or the SPECIFIC TECHNICAL SPECIFICATION. Performing the intended electrical function includes, but is not limited, to the following (as applicable):

- a. No degradation of dielectric strength below the specified BIL.
- b. Capacitors not rupturing.
- c. Integrity of leak-tight systems maintained.

3-3.4.3 SEISMIC LOAD REQUIREMENT: As specified in the SCHEDULE ITEM DESCRIPTION or the SPECIFIC TECHNICAL SPECIFICATION, the equipment shall withstand either the High or Moderate Required Response Spectrum as defined in IEEE Standard 693, Figures A.1 and A.2, in accordance with the requirements of Annex O.

3-3.4.4 WIND LOAD REQUIREMENT: The equipment in its service configuration shall withstand the wind velocity in any horizontal direction specified in either the SCHEDULE ITEM DESCRIPTION or the SPECIFIC TECHNICAL SPECIFICATION. This wind velocity shall include height and gust factors. The equipment shall be designed to withstand wind loads in combination with dead (wire tensions and mechanical forces) loads. Wind load stresses shall be as follows: stresses in steel shall not exceed those specified in the American Institute of Steel Construction Manual, Ninth Edition. Stresses in aluminum shall not exceed those specified in the Aluminum Construction Manual. The 1/3 increase in allowable stress shall not be used for structural connection and anchorage design. Stresses in cast aluminum shall not exceed 50 percent of the ultimate mechanical strength. Stresses in ceramic materials shall not exceed 50 percent of the ultimate mechanical strength for extreme wind load conditions.

3-3.4.5 OTHER LOAD REQUIREMENT: Stresses in ceramic materials shall not exceed 40 percent of the ultimate mechanical strength for other load conditions.

3-3.5 VISIBLE CORONA

Capacitor equipment rated 115 kV and above shall exhibit no visible corona at 120 percent of system voltage when viewed in complete darkness.

3-3.6 CAPACITANCE

The capacitance of each series group of capacitors shall be balanced within ± 2 percent of the average group capacitance for the total bank of capacitors. In addition, the overall capacitance of each phase shall be balanced within ± 1 percent of the average phase capacitance for the total bank of capacitors.

3-3.7 SWITCHING DUTY

Each capacitor bank shall be suitable for being switched, either separately or as one of parallel banks, with power circuit breakers or circuit switchers furnished by BPA. To limit transients, BPA may employ current limiting reactors and/or controlled closing for back-to-back and some other applications. The switching device provided by BPA may restrike in accordance with ANSI C37.04 which allows up to 1 restrike in 50 operations. Although restriking will not be this often, the shunt capacitor equipment and its accessories shall withstand this duty.

3-4 DESIGN AND CONSTRUCTION

3-4.1 CAPACITORS

All capacitors shall be manufactured in accordance with the REFERENCED DOCUMENTS and herein.

3-4.1.1 BUSHINGS and TERMINALS: The bushings and terminals shall be located on top and at opposite ends of the capacitor case. All terminals shall be solderless type with No-Ox applied to all electrical connections, except aluminum connections where Penetrox shall be applied. All terminals shall be equipped with bird guards and shall withstand a minimum torsional load of 34 newton-meters. Bushings shall be ANSI Z55.1 No. 70 light gray.

3-4.1.2 INSULATING FLUID: The capacitor dielectric fluid shall be the manufacturer's standard or recommended type which shall contain no detectable (≤ 1 ppm) chlorinated or otherwise halogenated compounds or any other toxic materials whose use is prohibited by the Environmental Protection Agency. In addition, the capacitor dielectric fluid shall be fully biodegradable.

The Contractor shall provide certified test reports before the time of field acceptance that the fluid in the equipment to be supplied did not (during factory tests) and will not (as delivered) contain detectable polychlorinated biphenyls (PCB's). Test reports shall include the following:

- a. Equipment used to determine concentration of PCB's.
- b. Accuracy and minimum detection range of the test equipment.
- c. Measured levels.

3-4.1.3 INTERNAL CONSTRUCTION: The capacitor shall consist of plastic film and aluminum wound sections with suitable connections. All wound sections shall be vacuum dried prior to immersion in the insulating fluid.

3-4.1.4 CASES: Cases shall be type 409(MF-1) stainless steel, or an equivalent approved by the Contracting Officer, and shall have adequate provisions for expansion and contraction due to temperature changes resulting from changes in weather and loading conditions from no load to 135 percent of rated kVAR.

3-4.1.5 **LIFTING PROVISIONS:** The capacitor shall be furnished with lifting eyes or similar provisions for lifting the unit to and from the rack.

3-4.1.6 **MOUNTING BRACKET LOCATION:** The distance from the bottom of the mounting bracket to the bottom of the thread of the grounding terminal shall be 254 mm \pm 3 mm. On smaller KVAR capacitor(s) where the bracket may extend below the bottom of the case or where a bracket adapter is required, Contractor may propose alternate mounting configurations which are subject to approval by BPA Contracting Officer.

3-4.2 FUSES

Each capacitor shall be protected against rupture due to internal faults by an indicating, renewable type lead-tin fuse. Fuses shall be coordinated to always blow within the safe zone of the case rupture curves as furnished by the Contractor and shall be capable of removing the failed unit from service without damage to adjacent capacitors or fuses. The fuse holder and link shall be coordinated so that the holder does not rupture at maximum energy. Current limiting devices (CLDs), if provided, on fuses shall be subject to approval by the Contracting Officer.

3-4.2.1 The fuses and CLDs shall be bus mounted. They shall be installed so that an observer on the ground may readily detect blown fuses and CLDs while the capacitor bank is energized.

3-4.2.2 The fuses, and CLDs, shall be designed to prevent objectionable arcing, excessive leakage current or flashover after failure of the fuse element. They shall not deteriorate or change electrical characteristics due to weathering or currents approaching the melting value. Fuse holders shall have sufficient resistance to water and ultraviolet deterioration to insure proper fuse operation for a 20-year life expectancy. CLDs shall be good for the same 20-year life expectancy unless called upon to interrupt fault currents. Stainless steel flipper springs shall be supplied with their limited horizontal motion to minimize the involvement of other adjacent non-failed capacitor units or fuses.

3-4.2.3 The fuses shall be capable of repeatedly withstanding the relatively high charge currents during switching transients and the maximum continuous current capability of the capacitor including harmonics with no significant change in melting characteristics.

3-4.3 BPA PROTECTIVE SCHEMES

See Drawing 253821 in the Appendix Section, 3-7, on BPA's basic protective relaying schemes for grounded and ungrounded shunt capacitor banks.

3-4.4 BANK CONFIGURATION

Capacitor equipment shall be assembled as follows:

- a. *69, 115, 230 and 525 kV Equipment:* Each bank shall consist of three single-phase racks or series of racks connected in wye with the neutral solidly grounded. The bank insulation may be graded to a minimum of 15 kV (110 kV BIL) at the bank neutral. Depending on the protection scheme selected, provisions shall be made to connect an instrument transformer across one or more of the lower racks and to ground.
- b. *34.5 kV Equipment:* Each bank shall consist of either a three-phase rack or three single-phase racks. The bank shall be connected in wye with the neutral solidly grounded or ungrounded as required in the SCHEDULE ITEM DESCRIPTION. The bank insulation may be graded to a minimum of 15 kV (110 kV BIL) at the bank neutral.
- c. *14.4 kV Equipment:* Each bank shall consist of a three-phase rack connected to provide a number of neutral points. All neutrals shall be insulated from ground with insulation rated not less than 15 kV (110 kV BIL). The fuse rating shall be coordinated with the intended service. All terminals shall be located near the top and on the same end of the racks.

3-4.5 CAPACITOR RACKS

All capacitor equipment shall be of outdoor, open multi-unit rack type construction. Each rack shall be fabricated from structural steel or aluminum and shall be dimensioned in accordance with NEMA CP 1.

3-4.5.1 Each capacitor shall be mounted so that it can be removed from the side of the rack and replaced without removing other capacitors or disassembling any portion of the rack. The capacitor shall be bolted directly to a reinforced member which is threaded or held in place by a replaceable captive or caged nut on the backside of the supporting member. Tipping of the capacitor will be permitted only if the Contractor furnishes for each bank hoisting facilities which can be attached to the rack for these operations.

3-4.5.2 The assembled multi-unit racks shall be furnished with all capacitors and fuse holders bolted in place and all internal bus and bus insulators installed. To avoid shipping damage, the holders, links and springs may be installed on site.

3-4.5.3 Each supporting insulator stacks shall be suitable for mounting on a concrete footing. The anchor bolt holes on the base insulators shall be at least 254mm (1.00-in.) diameter. Adapters, if required, shall be furnished by the Contractor.

3-4.5.4 Bolts and nuts shall be furnished 5 percent in excess of the required number.

3-4.5.5 All steel rack components shall be hot-dip galvanized after fabrication in accordance with ASTM A123. Bolts, nuts and washers shall be galvanized in accordance with ASTM A153.

3-4.5.6 All structural members shall be electrically connected to the capacitor ground bus to insure adequate grounding of the rack during maintenance. Steel rack components shall not be used as electrical bus.

3-4.6 BUS WORK AND TERMINALS

All bus works with fittings, including line, instrument transformer tap, and neutral terminals for each phase, shall be furnished by the Contractor. BPA will furnish all bus and mating terminals for making connections to the line terminals and the neutral terminals. Where three separate single-phase racks are provided, BPA will also furnish the interphase neutral bus.

3-4.6.1 All line and neutral terminal pad surfaces shall be flat and shall accommodate single-tang, flat pad type power connectors which are drilled in accordance with NEMA CC 1. Terminals rated above 600 A shall have four-hole pads. Terminals rated 600 A and below shall have either four-hole or two-hole pads. All pads shall be at least 6 mm thick. If the bus furnished is aluminum, the associated terminals shall be aluminum. If the bus furnished is copper, the associated terminals shall be of copper or high conductivity copper alloy and the flat-pad surface shall be completely tinned with commercially pure tin. The copper-connecting surface of all internal aluminum to copper connections shall be tinned with commercially pure tin.

3-4.6.2 Bolts, nuts, washer, and pins used in the assembly of all nonferrous parts shall be tin-plated silicon bronze conforming to ASTM B98, Alloy B or stainless steel. Bolts and pins shall have a minimum tensile strength of 75,000 pounds per square inch. Bolts for mounting the fuses to the fuse bus shall be the Contractor's standard.

3-4.6.3 All single-phase capacitor racks shall have a line terminal at one end and a neutral terminal at the opposite end. The line terminal shall be located near the top of the rack.

3-4.6.4 Three-phase capacitor racks shall have the line terminals located near the top of one end and the three-phase neutral terminals located at the opposite end of the rack. The mounting pads on the insulators for the neutral bus shall have holes arranged in square pattern (not diamond pattern) in accordance with NEMA. The line terminals shall be aligned at a 45° angle to the rack centerline to allow bus connections from either the end or the side of the rack.

3-4.6.5 If applicable contractor shall provide the voltage transformer terminal pads in accordance with NEMA for mounting BPA-furnished voltage transformers at the rear (end opposite line end) of the capacitor racks.

3-4.7 INSULATORS

All rack and bus insulators shall be post type in accordance with ANSI C29.9. The minimum nominal voltage rating shall be 15 kV.

3-4.7.1 All rack and bus insulators shall be ANSI Z55.1 No. 70, light gray.

3-4.7.2 The low frequency, wet withstand voltage rating of all insulators used to insulate within or between the capacitor racks of a stack shall not be less than three times the actual voltage stress across the insulators. The calculation of this stress shall be based on the system maximum operating voltage in accordance with ANSI C84.1, Table 1, Voltage Range A.

3-4.7.3 If the capacitor bank is furnished with insulation graded to a minimum of 15 kV at the neutral, the nominal voltage rating of the insulators used to insulate each stack of capacitor racks from ground (including insulators between racks) shall meet the above requirement and sum to not less than the BIL's tabulated below. This calculation is based on the actual stress, using the maximum system voltage provided in ANSI C84.1. Where multiple stacks are provided, the insulation level is based on the maximum voltage within the stack and to ground. Whenever possible, standard insulators (TR) and ANSI Standard insulation level shall be selected for use on rack to rack and rack to ground. The capacitor unit bushing insulation requirement is summarized in IEEE Std. 18-1992, Table 1, and may be modified in the SPECIFIC TECHNICAL SPECIFICATION.

System Voltages (Continuous)		
Nominal	Maximum	BIL
kV rms L-L	kV rms L-G	kV crest
14.4	8.36	110
34.5	20.92	200
69	41.86	350
115	69.86	550
230	139.72	900
525	317.54	1550

3-4.8 PAINTING

After assembly, all exterior metal surfaces of all capacitor units shall have a finish coat of paint colored ANSI Z55.1 No. 70, light gray. The paint shall be non-chalking and rust inhibiting. Total dry film thickness shall be at least 0.05 mm.

3-5 TESTS

3-5.1 GENERAL

Capacitors and other equipment provided on this contract shall be tested in accordance with the following requirements and procedures. Capacitors shall be tested in accordance with recognized national and international standards, except where noted below. Specific procedures for in-process tests, equipment inspections, including submittal of test reports and data, shall be to the extent indicated in the REFERENCED DOCUMENTS, herein, and in the QUALITY ASSURANCE PROVISIONS. The Contractor shall assure that the equipment meets the test requirements specified below. The Contractor shall assure that all capacitors, fuses, and insulators shall have

been design-tested within the past 12 years. All equipment shall be routinely tested by the Contractor or his Subcontractor.

3-5.2 DESIGN TESTS

The Contractor shall assure that the equipment being furnished meets each of the test requirements specified below by either:

- a. Furnishing certified test reports of previously performed tests or calculations on equipment of the same basic design and rating or,
- b. Actually performing the tests or calculations on the equipment on this contract.

The design tests shall be performed in accordance with ANSI/IEEE Std. 18, Section 7.1.2, unless otherwise indicated below.

3-5.2.1 ENDURANCE TEST: Performed in accordance with IEC 871-2 with the following modifications:

- a. Section 3 - A complete report detailing the test performed and performance of the capacitors including measurements taken shall be supplied.
- b. Section 4.1 - The test shall be performed with a DC test voltage of 4.3 times the capacitor unit RMS rating.
- c. Section 4.4 - Unless otherwise identified in the SPECIFIC TECHNICAL SPECIFICATION, the minimum temperature is -40°C. The total number of overvoltage periods need not exceed 850.
- d. Section 4.5 - Once the capacitor unit has stabilized at 60°C, apply an AC voltage of 1.4 x Rated for 96 hrs.
- e. Section 4.7 - Acceptance criteria is based on two units passing (each unit with a KVAR rating of not less than 33% of that being proposed) or one failure is allowed when three units have been tested.
- f. Section 4.8.1 - Comparable designs shall always include an evaluation of the roll voltage, v/mil, roll/pak to case insulation and enclosed KVAR's. That is, for a design to be equivalent, the roll voltage applied during the test and v/mil test stress, not including space factor, shall be greater than or equal to the proposed design. Dielectric capability of the roll/pak to case insulation proposed shall be greater than or equal to that tested, and KVARs of the test unit shall not be less than 33% of that proposed.
- g. There shall be no evidence of oil leaks as a result from these tests.

3-5.2.2 DISCHARGE TEST: Performed in accordance with IEC 871-1, Section 17.

3-5.2.3 FUSE TEST: For externally fused capacitors only. The Contractor shall make a fuse coordination study to assure that the fuse can isolate a failed capacitor unit and protect against a case rupture without affecting the normal operation of the adjacent capacitor units or fuses. The fuse element shall not operate during bank energization, power system swings, restrikes or during specified overloads. If CLDs are used, they shall not degrade the performance of the fuse elements and shall be suitable for 20 years of continuous service, unless called upon to isolate a shorted capacitor.

3-5.2.4 SEISMIC AND WIND LOAD ANALYSIS:

3-5.2.4.1 Seismic qualification shall be in accordance with IEEE Standard 693, Annex O.

3-5.2.4.2 WIND LOAD ANALYSIS: Ability of the equipment to perform to the level specified in WIND LOAD REQUIREMENT section (Sec. 3-3.4.3) shall be demonstrated by calculation.

3-5.3 PRODUCTION TESTS

3-5.3.1 Each capacitor shall be given the production tests in accordance with ANSI/IEEE Std. 18, Section 7.1.1, unless otherwise indicated below.

3-5.3.2 Short Time Overvoltage Test: In accordance with ANSI/IEEE Std 18, Section 7.2, the test shall be performed with an AC voltage of two times the capacitor unit rating.

3-5.3.3 Loss Determination Test: Perform in accordance with ANSI/IEEE Std 18, Section 7.6, except: The loss per kVAR shall not exceed 0.3 watt/kVAR corrected to 25°C. Capacitors whose losses exceed this value will be rejected unless the manufacturer elects to demonstrate by actual individual unit tests that the capacitors in question will not have losses in excess of 0.2 watt/kVAR at 25°C after adequate conditioning.

3-6 QUALITY ASSURANCE

Quality assurance shall be per BPA specification 96-01, Quality Assurance and Documentation Requirements

3-7 PREPARATION FOR DELIVERY

3-7.1 The Contractor shall prepare the equipment, accessories, and spare parts for shipment in such a manner as to protect them from damages in transit.

3-7.2 Where the handling of heavy parts will be facilitated, the parts shall be securely mounted on skids. All articles, parts or accessories subject to loss or damage shall be boxed, crated or similarly protected.

3-7.3 Capacitor units not required to be assembled on the multi-unit racks (spares and replacement units) shall be fastened to skids, unboxed, but adequately braced to protect the units from damage in transit.

3-7.4 Fuses shall not be installed in the holders, but shall be separately packaged to avoid loss and damage in shipment.

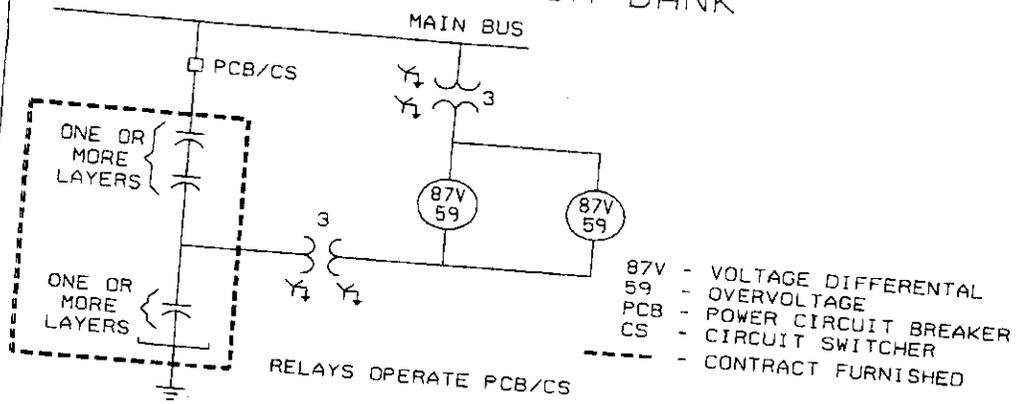
3-7.5 Each capacitor unit, when shipped, shall have the terminals shorted across to prevent electrical shock from a latent charge.

3-8 APPENDIX DRAWINGS

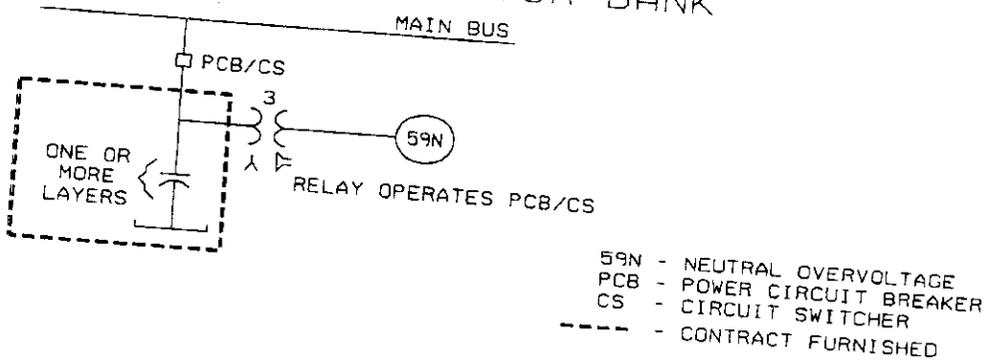
BPA Drawing 253821 - Shunt Capacitor Bank, Relay Scheme, Three Phase, Grounded & Ungrounded.

Seismic Tag Sample Drawing

THREE PHASE GROUNDED SHUNT CAPACITOR BANK



THREE PHASE UNGROUNDED SHUNT CAPACITOR BANK



NO. PL-6 C96502	COMPUTER REVISION ONLY	BY	DATE	APPROVED
DESIGN JMS	UNITED STATES DEPARTMENT OF ENERGY BONNEVILLE POWER ADMINISTRATION HEADQUARTERS, PORTLAND, OREGON			
DRAWN JH	SHUNT CAPACITOR BANK RELAY SCHEME			
CHECKED				
SUB	SERIAL	SOURCE	SIZE	SHEET
REC J. SCHAFMAN	253821	SCP	A4	1
APPR SLW				REV
DATE 3/25/97				0

**TAG
EXAMPLE**

VENDOR NAME

**BPA SEISMIC/WIND LOAD CERTIFICATION
FOR 119.51 KV SHUNT CAPACITOR EQUIPMENT
MAXIMUM KVAR: 60,000
CATALOG # 36F3726-1**

ZPA: 0.4g horizontal, 0.32g vertical.

METHOD: Dynamic Analysis

MAX. WIND LOAD: 100 MPH

ORDER DATE: 6/16/95

DELIVERY ORDER #: 97AD54321

ITEM #: 1

Note: This equipment is to be installed in accordance with
equipment drawing(s) per contract.

**Note: One noncorrosive metal tag per phase shall be supplied and mounted
on the rack by the manufacturer.**