

September 1, 2015

City of Ocala

Re: Enzian Substation

Alstom Grid Reference: FL-USC-15486/1

Thank you for your interest in Alstom Grid for your Power Circuit Breaker needs. We have received your inquiry and are pleased to submit the following proposal in accordance with your specification and noted comments & clarifications.

Alstom Grid is an industry leading manufacturer of high voltage circuit breakers with R&D and manufacturing facilities located in Charleroi, Pennsylvania. Our facility is an Alstom Grid Center of Excellence for research and development, testing, and manufacturing of dead tank circuit breakers for worldwide distribution and is certified to ISO 9001-2008 and ISO 14001-2004.

ALSTOM Grid is extremely interested in continuing a successful business relationship with City Of Ocala. ALSTOM is proposing similar breakers that were provided under City Of Ocala PO's 73718, 73945, 74020, 74086, 74099, 74100 and ALSTOM Order's No CX06916-CX07771-CX07885-CX08107-CX08162-CX08163 respectively. To further demonstrate our commitment, ALSTOM will provide (1) complementary trip coil, (1) close coil and (1) motor with receipt of an order. These coils and motors can be used for any of the circuit breakers that were purchased in the past.

Our Charleroi, PA campus includes a fully functional research & development facility with a staff of over 20 engineers and technicians dedicated to product development. This local development team ensures that new products are designed to meet the rigorous demands of the US power system. The Alstom Grid R&D team also includes worldwide development with R&D centers in Kassel, Germany and Villeurbanne, France. We have currently delivered over 20,500 circuit breakers from this factory since 1995.

The Alstom Grid line of circuit breakers is developed with a family approach. Common components such as mechanisms and interrupters are shared between the dead tank and live tank products providing a reduction in cost of ownership. Furthermore, our breakers are tested to ensure significant Close-Open mechanical operations without maintenance.

Our uniquely qualified team includes industry leaders with decades of experience in the T&D world as well as the high voltage circuit breaker industry. The members of the Alstom Grid team are available at any time and are dedicated together with our Charleroi staff of nearly 200 employees to providing you best in industry service and support.

We do hope our offer will be of interest to you and look forward to hearing from you in the near future.

Best Regards,

George Muchesko
Regional Sales Specialist
george.muchesko@alstom.com
(724) 483-7874

Item #1

Four (4) 72.5 kV Dead Tank Circuit Breakers according to ANSI/IEEE standards for outdoor installation with mechanical spring operating mechanisms including support structures.

▪ Type	DT1-72.5 FK F1
▪ Rated nominal Voltage	69 kV
▪ Rated maximum Voltage	72.5 kV
▪ Frequency	60 Hz
▪ Rated continuous current	1200 A
▪ Rated short-circuit current	40 kA
▪ Interrupting time	3 cycles
▪ BIL	350 kV
▪ Creep Distance/ Material / Color	74" / Porcelain / Gray
▪ Insulating medium	SF ₆
▪ Current transformers	(12) 1200:5 MR C400, TRF 2.0
▪ Cabinet Enclosure Rating / Material	NEMA 3R / Painted Steel
▪ Ambient temperature	-40°C to +40°C without tank heaters
▪ Seismic Rating	Per IEEE 693-2005/ Low
▪ Altitude	≤ 3,300' ASL
▪ Control Voltage	48VDC
▪ Motor Voltage	48 VDC
▪ Alternate current circuit (lighting/heating):	120 / 240 VAC

Unit Price: **\$34,825. – USD, FOB Jobsite, FL**

Extended Price: **\$139,300. – USD, FOB Jobsite, FL**

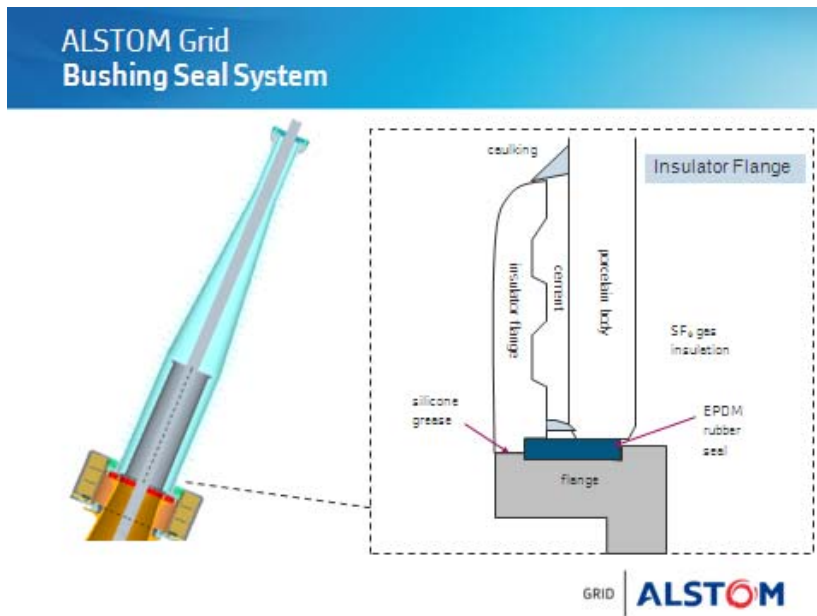
Price Adder (6) 2000:5 MR C400 CTs (one per bushing) **\$2,520.- USD, per breaker**

Features and Benefits

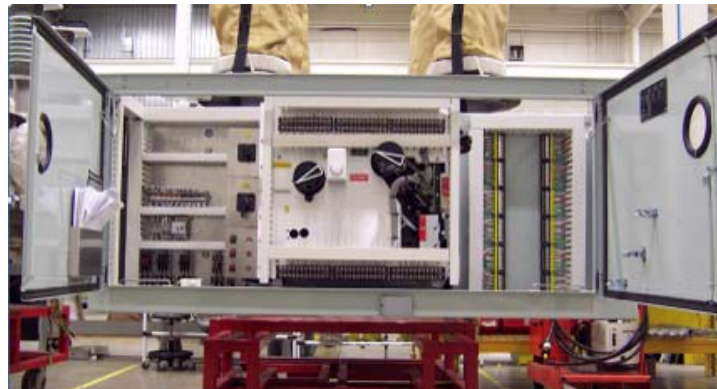
- The DT1-72.5 FK F1 is qualified to M2 class for mechanical endurance in accordance with IEC 62271-100. This rating qualifies the DT1-72.5 FK F1 mechanically for 10,000 Close-Open operations without maintenance.
- The DT1-72.5 FK F1 is qualified to C2 class for capacitor switching in accordance with IEC 62271-100. This rating qualifies the DT1-72.5 FK F1 for switching of capacitive loads with very low probability of re-strike.
- The DT1-72.5 FK F1 shares the same operating mechanism platform as the DT1-38 FK F1, DT1-123/145/170 FK F1 and DT1-245 P F1. This allows for common components between the various voltage levels and increases familiarity for operations and maintenance personnel.

Features and Benefits (Cont'd)

- Proprietary bushing sealing system improves SF6 gas tightness, guaranteeing SF₆ loss is <0.5% per year.



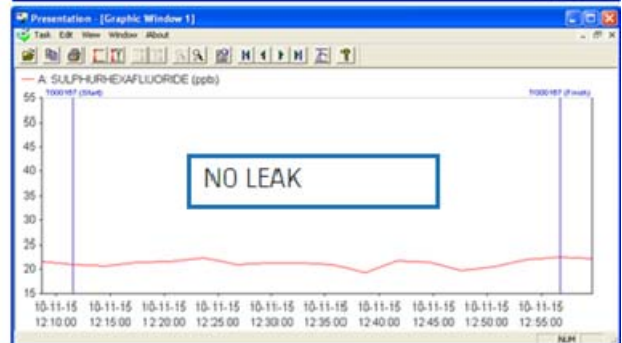
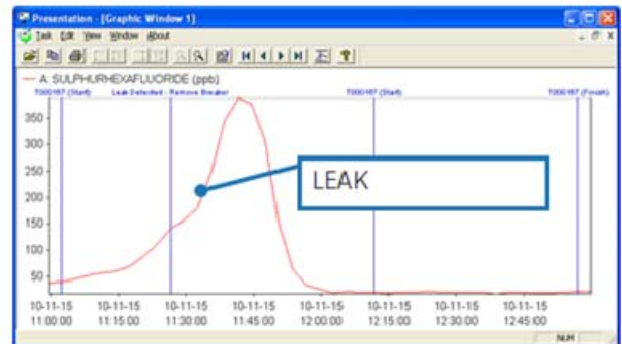
- Common mechanism and cabinet layout for all 38kV, 72.5kV, 145kV, 170 kV, and 245 kV circuit breakers.



Features and Benefits (Cont'd)

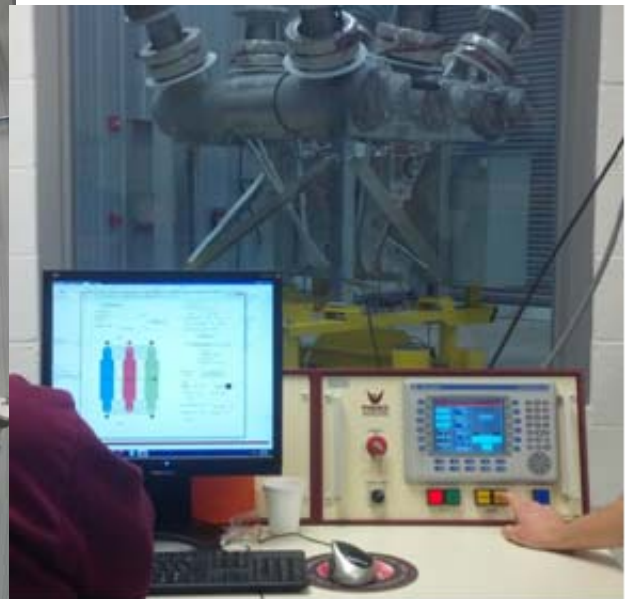
Volumetric SF6 Gas Chamber

The Alstom Grid automated testing process provides quantifiable data demonstrating a gas tight breaker further guaranteeing a leak-free circuit breaker. All circuit breakers will be tested in the chamber providing the customer with circuit breakers qualified using state-of-the-art industry leading technology. Alstom Grid is the ONLY manufacturer testing fully assembled breakers with this industry-leading technology.



Features and Benefits (Cont'd)

- **State-of-the-Art Hi-pot testing of fully assembled circuit breakers**
- **Automated high voltage testing**



Spare Parts

We do not recommend any spare parts for start up; however, for the purpose of comparison, we are giving the prices for the following spares:

Item #	Parts Description	DT1-72.5 Fk F1
		Price per Unit in USD
a	Trip Coil or Close Coil	\$105.-
b	Spring Charging Motor	\$525.-

We maintain all necessary spare parts in our stock. For emergency spares, we recommend a spare coil and spring charging motor. Prices of spare parts are valid only when they are ordered and delivered together with the circuit breaker. Spares ordered separately will be subject to shipping charges.

Special Tools

No special tools are necessary for installation or maintenance of the breakers. We do recommend, however, having one (1) of each of the following tools on site:

- Handheld leak detector \$500.- USD
- Gas regulator and fill hose set One (1) included per order

The cost of these special tools, unless otherwise stated, is not included in the breaker pricing.

A slow close device was required for oil type breakers with interrupters with adjustable contact wipe. On SF₆ interrupters, the contacts never need adjusted during the life of the breaker. Therefore, the slow closing device does not add any functionality to the breaker.

Field Service

A field service representative is not included in the base price of the circuit breakers. If service is required, pricing information is listed below.

- Initial Trip (Travel time) \$1,950.- USD
- Eight (8) hour day (time, lodging, meals & local transportation) \$1,500.- USD

Comments, Clarifications, and Exceptions

- * This offer is subject to the attached ALSTOM Grid, Inc. Terms & Conditions. When uploading to the City of Ocala website there is no option to not agree with the City of Ocala Terms & Conditions and still be able to upload documents as required. There for the Terms and Conditions attached will take precedence over the City of Ocala Terms and Conditions.

Scope of Work:

- * Delivery of February 1, 2016 can be met with a PO by September 10, 2015.
- * Liquidated damages will be \$125.00 USD per day capped at five percent (5%) of the delayed portion of the contract.

Exhibit A:

- 4.A.1.g Control drawings will be submitted electronically or if hard copy required on 11"x 17" paper.
- 4.B Standard Alstom Grid instruction book will be provided.
- 6.A The warranty will be twenty four (24) months from installation or thirty (30) months from delivery date, whichever comes first.
- 8. Alstom Grid painting practices and procedures will be followed.

Exhibit B:

- 4.B.8 Not applicable.
- 4.B.15 An external mechanical trip is not recommended, because it will not prevent operation of the circuit breaker during a low gas situation, which could severely damage the circuit breaker. AREVA would propose to provide an external electrical trip with permissive control.
- 4.D.1.C A latch check switch is not applicable to the proposed gas breakers since they do not incorporate a "collapsing" linkage and the trip latch restores itself fast enough to accomplish even a zero-time delay re-close. Therefore, it will not be provided.
- 4.D.1.E Windows for circuit breaker open/closed and charged/discharge indication will be plexiglass.
- 4.D.1.F Two stainless steel ground pads will be provided.
- 4.E.10. Lapse time meter not applicable.
- 6. Delivery of February 1, 2016 can be met with a PO by September 10, 2015.

General Conditions

- Validity:** Thirty (30) days after bid date.
- Delivery:** Standard delivery is sixteen (16) to twenty (20) weeks after receipt of order. All orders are subject to prior factory loading and material availability.
- Delivery Note:** Delivery is based upon customer return of approved drawings in two (2) weeks. Drawings will be submitted for approval four (4) to six (6) weeks after receipt of order.
- Shipping Point:** Charleroi, PA.
- Terms of Delivery:** Pricing is firm in USD, FOB FL jobsite. Truck shipment to destination is limited to sites that are accessible by the vehicle in which the unit is shipped from the factory. Unloading of the circuit breakers is to be provided by others.
- Payment Conditions:** 100% NET 30 days upon receipt of breaker
All payments by wire transfer.
- Instruction Manuals:** One instruction book is shipped inside the control cabinet of the breaker.
- Warranty:** Twenty four (24) months after installation, not to exceed thirty (30) months after delivery. Warranties exclude wear and tear associated with normal circuit breaker operation, circuit breakers used in special applications not covered by ANSI C37.06, and circuit breakers that have exceeded the maximum allowable cumulated current. Warranties are based on strict accordance with the maintenance instructions found in the breaker manual.
- Sales Tax:** This offer does not include any sales tax (state, federal or local).
- Liquidated Damages:** \$125.-USD per day capped at 5% of delayed portion of the contract.

Delays: In case of delay a progress payment will be due		Cancellation:	
Schedule (based on EXW factory)	Additional Milestone Payment (% of contract value)	Schedule (based on EXW factory)	Cancellation Charge (% of contract value)
16+ weeks before shipment	0.0%	0 – 2 weeks after receipt of order	5%
14 – 16 weeks before shipment	10.0%	2 – 4 weeks after receipt of order	10%
8 – 14 weeks before shipment	25.0%	8 – 14 weeks before shipment	40%
4 – 8 weeks before shipment	70.0%	4 – 8 weeks before shipment	60%
0 – 4 weeks before shipment	100% plus Storage Fees. Short term storage of up to 4 weeks is \$450 per breaker per week. Any storage fees in excess of 4 weeks will be quoted at the time of request.	0 – 2 weeks before shipment	100%

The manufacturer shall not be liable for consequential or indirect damages such as loss of use, loss of profit, loss of contract, loss of production or any financial loss. In addition, the total liability is limited to a maximum of the contract value. The right for technical modifications is reserved.

General Comments

The circuit breakers offered belong to a family of switchgear highlighted by the following features:

- Third generation SF₆ interrupter with advanced thermal effect interrupter.
- Mechanical spring/spring operating mechanism.
- More than 30,000 circuit breakers/switchers on order or in service since 1989, worldwide.

A spring type operating mechanism is used to operate the circuit breakers. The stored energy in the springs is sufficient to perform one (1) O-CO operation without recharging. The tripping springs are automatically recharged after every C operation. Duty cycle is O-0.3s-CO-10s-CO as standard.

The breakers have NEMA four (4) hole bushing terminals, made of aluminum and arranged in a horizontal plane and NEMA two (2) hole, stainless steel, grounding pads located on opposite legs of the support structure. Anchor bolts, terminal connectors and ground clamps are to be provided by others.

The circuit breakers will be supplied with a minimum of 10 'a' and 10 'b' spare auxiliary contacts available for customer use. These contacts are factory set and are not field inter-interchangeable or adjustable.

The circuit breakers have one (1) common gas density monitoring system for the three (3) poles, located outside of the control housing, subject to ambient conditions. This pressure sensitive, temperature compensated SF₆ gas density monitor has two (2) contact settings for the following functions for falling density: (1) alarm, (2) functional lockout. The contact settings are adjusted at the factory; therefore, they require no calibration and should not be adjusted in the field.

The circuit breakers have a common gas piping system with a common fill valve located outside of the control cabinet, and self-sealing type isolation valves are provided on each tank to facilitate the removal of gas from a single tank.

In the event of a loss of supply to the motor, a hand crank is included with each breaker to manually charge the spring.

The breakers will be shipped on a low step-deck or flatbed truck with bushings assembled and partially gas filled, thereby eliminating the need for a vacuum pump on site. On-site assembly consists of topping off with SF₆ gas and mounting the lower legs of the support structure.

The proposed circuit breakers have been tested according to applicable ANSI/IEEE standards. Type tests have been performed previously on a similar unit. A set of routine tests, also according to ANSI/IEEE standards, will be conducted on the circuit breakers prior to shipment from our factory in Charleroi, PA. A repetition of any of these tests or the inclusion of a test or testing procedure not covered in these standards or on our Routine Testing Report is not included in the price of the circuit breakers.

The cost of routine equipment testing at our facility is included in the breaker pricing. All other costs (i.e. travel, lodging, and meal expenses) associated with witness testing are not included.

Key Features of the Circuit Breakers

Circuit Breaker

- Interrupter tanks are high strength, single piece cast aluminum
- Suitable for three (3) phase auto-reclosing
- SF₆ gas for the first filling is included in this item
- SF₆ density monitor with color scale
- SF₆ loss <0.5 % per year

Operating Mechanism

- Anti-pumping device
- Anti-condensation heater
- Two (2) independent trip coils, one (1) closing coil
- Local mechanical C/O-operation
- Aluminum access plate for conduit entrance
- Removable door of housing with provisions for padlocks
- Breaker position and spring charge indicators included

Bushing Current Transformers (BCT's)

- Each core of each single-phase current transformer is magnetically independent.
- Costs associated with the type testing of the BCT's are not included in the breaker pricing.
- Actual tap arrangements are to be re-confirmed by the user at time of order placement.
- Thermal Rating factor ≥ 2.0

Exhibit C

RATINGS AND PROPOSED DELIVERY DATE

69KV - 1200AMP

Description of Operating Mechanism

Description of Stored Energy

Current Transformer Manufacturer

Number of Current Transformers /Accuracy Class

Maximum CT Quantity for Space Available

Bushing Manufacturer

Bushing Type /Designation (Composite bushings, if proposed, must be identified as an exception and shall not be included in the base bid.

External Creepage Distance, Phase to Ground (in)

External Striking Distance, Phase to Ground (in)

Phase Spacing (in)

Net Weight of Complete Circuit Breaker (lbs)

RECOMMENDED SPARE PARTS:
(USE AN ADDITIONAL SHEET IF NEEDED)

Description

Part Number

EQUIPMENT DELIVERY SCHEDULE

The City of Ocala requires Delivery of equipment, as defined in **Exhibit B – Technical Specifications** within the date listed below. The Bidder proposes to complete Delivery of Items, as listed below, including an allowance for review of shop drawings as stated in Exhibit B, section 5, (Submittals and Review). The bidder understands proposed delivery times longer than stated above may be grounds for rejection of bid.

<u>Item No.</u>	<u>Description</u>	<u>Delivery Required Not Later Than</u>	<u>Proposed Delivery Date</u>
1.	Circuit Breaker, 69 KV, 1200 Amp	<u>February 1, 2016</u>	_____
2.	Current Transformers (CT's) for 69 KV, C.B. (shall fit awarded breaker)	<u>February 1, 2016</u>	_____
3.	<i>Spare parts (Optional)</i>	<u>February 1, 2016</u>	_____

SECTION 00-430
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, Alstom Grid, Inc.
as Principal, and American Home Assurance Company as Surety, are hereby held and firmly bound
unto City of Ocala, Florida as Owner in the penal sum of Five percent of bid amount (5%)
for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors,
administrators, successors and assigns. Signed this 20th day of August, 2015.

The condition of the above obligation is such that whereas the Principal has submitted to City of Ocala, Florida
a certain Bid, attached hereto and hereby made a part hereof to enter into
a contract in writing, for the Enzian Substation - Five DTI-72.5FK F1 Breakers

NOW, THEREFORE,

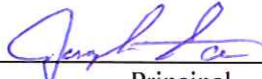
- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the form of the Construction Agreement attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

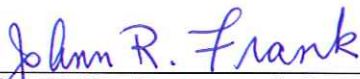
Alstom Grid, Inc.



Principal (L.S.)
JOSEPH SCE
VICE PRESIDENT - TAX

American Home Assurance Company

Surety

By 

John R. Frank, attorney in fact
FL Non Resident License No.: P046340

SEAL

END OF SECTION

Individual Acknowledgment

State of _____
County of _____

On the _____ day of _____, 20_____, before me personally appeared _____
to me known and known to me to be the person described in and who executed the foregoing instrument
and ___he___ thereupon acknowledged to me that ___he___ executed the same.

Notary Public

Partnership/L.L.C. Acknowledgment

State of _____
County of _____

On the _____ day of _____, 20_____, before me personally appeared _____
to me known and known to me to be one of the firm of _____
described in and who executed the foregoing instrument and _____he_____ thereupon acknowledged
to me that ___he___ executed the same as and for the act and deed of said firm.

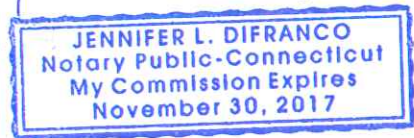
Notary Public

Corporate Acknowledgment

State of CONNECTICUT
County of HARTFORD

On the 21 day of AUGUST, 2015, before me personally appeared
JOSEPH SCE
to me known, who being by me duly sworn, did depose and say the he is the
VICE PRESIDENT-TAX of the _____
the corporation described in and which executed the foregoing instrument that he knows
the seal of said corporation, that the seal affixed to said instrument is such corporate seal, that it was so
affixed by order of the board of directors of said corporation, and that he signed his
name thereto by like order.

Notary Public



American Home Assurance Company

Executive Offices
175 Water Street
New York, NY 10038

STATUTORY
FINANCIAL STATEMENT

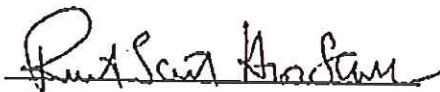
as of DECEMBER 31, 2014

Assets		Liabilities	
Bonds	\$ 18,100,939,973	Reserve for Losses and Loss Expense..	\$ 13,429,560,886
Stocks.....	125,423,073	Reserve for Unearned Premiums.....	2,969,132,808
Cash & Short-Term Investments.....	727,070,672	Reserve for Expenses, Taxes, Licenses and Fees.....	247,429,692
Other Invested Assets	2,861,426,797	Provision for Reinsurance.....	60,702,228
Agents' Balances or Uncollected Premiums....	1,689,847,583	Funds Held Under Reinsurance	
Funds Held by Ceding Reinsurers.....	190,687,972	Treaties	1,050,863,713
Reinsurance Recoverable on Loss Payments..	404,789,380	Other Liabilities	1,371,351,073
Equities & Deposits in Pools & Associations..	117,991,205	TOTAL LIABILITIES.....	19,129,040,400
Other Admitted Assets.....	<u>2,158,767,176</u>	Capital Stock	28,815,918
		Surplus.....	<u>7,219,087,513</u>
TOTAL ASSETS\$=====26,376,943,831	TOTAL POLICYHOLDERS' SURPLUS	7,247,903,431
		TOTAL LIABILITIES AND POLICYHOLDERS' SURPLUS	\$ 26,376,943,831

Bonds and stocks are valued in accordance with the basis adopted by the National Association of Insurance Commissioners. Securities carried at \$890,664,467 in the above statement are deposited as required by law or otherwise pledged.

CERTIFICATE

Robert Scott Higgins Schimek, President, and Joseph Daniel Cook, Chief Financial Officer, of American Home Assurance Company being duly sworn, each for himself deposes and says that they are the above described officers of the said Company and that on the 31st day of December, 2014, the Company actually possessed the assets set forth in the foregoing statement and that such assets were available for the payment of losses and claims and held for the protection of its policyholders and creditors, except as hereinbefore indicated, and that the foregoing statement is a correct exhibit of such assets and liabilities of said Company on the 31st day of December, 2014, according to the best of their information, knowledge and belief respectively.



President



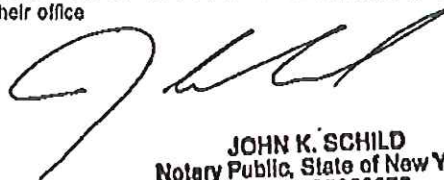
Chief Financial Officer

STATE OF NEW YORK
COUNTY OF NEW YORK

} SS.:

On this 2 day of March 2015, before me came the above named officers of American Home Assurance Company to me known to be the individuals and officers described herein, and acknowledged that they executed the foregoing instrument and affixed the seal of said corporation thereto by authority of their office

31078 (3/03)



JOHN K. SCHILD
Notary Public, State of New York
No. 015C5053075
Qualified in Kings County
Commission Expires December 11, 2017

POWER OF ATTORNEY

American Home Assurance Company
National Union Fire Insurance Company of Pittsburgh, PA.

Power No. 31925

Principal Bond Office: 175 Water Street, New York, NY 10038

No. 22-B-08032

KNOW ALL MEN BY THESE PRESENTS:

That American Home Assurance Company, a New York corporation, and National Union Fire Insurance Company of Pittsburgh, PA., a Pennsylvania corporation, does each hereby appoint

---Pamela A. Beelman, Cynthia L. Choren, Heidi A. Notheisen, JoAnn R. Frank,
Karen L. Roider, Debra C. Schneider, Sandra L. Ham of St. Louis, Missouri---

its true and lawful Attorney(s)-in-Fact, with full authority to execute on its behalf bonds, undertakings, recognizances and other contracts of indemnity and writings obligatory in the nature thereof, issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, American Home Assurance Company and National Union Fire Insurance Company of Pittsburgh, PA. have each executed these presents

this 6th day of August, 2015



Michael Yang

Michael Yang, Vice President

STATE OF NEW YORK }
COUNTY OF NEW YORK } ss.

On this 6th day of August, 2015 before me came the above named officer of American Home Assurance Company and National Union Fire Insurance Company of Pittsburgh, PA., to me personally known to be the individual and officer described herein, and acknowledged that he executed the foregoing instrument and affixed the seals of said corporations thereto by authority of his office.

Juliana Hallenbeck

JULIANA HALLENBECK
Notary Public - State of New York
No. 01HA6125671
Qualified in Bronx County
My Commission Expires April 18, 2017

CERTIFICATE

Exerpts of Resolutions adopted by the Boards of Directors of American Home Assurance Company and National Union Fire Insurance Company of Pittsburgh, PA. on May 18, 1976:

"RESOLVED, that the Chairman of the Board, the President, or any Vice President be, and hereby is, authorized to appoint Attorneys-in-Fact to represent and act for and on behalf of the Company to execute bonds, undertakings, recognizances and other contracts of indemnity and writings obligatory in the nature thereof, and to attach thereto the corporate seal of the Company, in the transaction of its surety business;

"RESOLVED, that the signatures and attestations of such officers and the seal of the Company may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company when so affixed with respect to any bond, undertaking, recognizance and other contract of indemnity and writing obligatory in the nature thereof.

"RESOLVED, that any such Attorney-in-Fact delivering a secretarial certification that the foregoing resolutions still be in effect may insert in such certification the date thereof, said date to be not later than the date of delivery thereof by such Attorney-in-Fact."

I, Denis Butkovic, Secretary of American Home Assurance Company and of National Union Fire Insurance Company of Pittsburgh, PA. do hereby certify that the foregoing exerpts of Resolutions adopted by the Boards of Directors of these corporations, and the Powers of Attorney issued pursuant thereto, are true and correct, and that both the Resolutions and the Powers of Attorney are in full force and effect.

IN WITNESS WHIEROF, I have hercunto set my hand and affixed the facsimile seal of each corporation

this 20 day of August 2015



Denis Butkovic

Denis Butkovic, Secretary



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
04/14/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Marsh USA Inc. 20 Church Street, 8th Floor Hartford, CT 06103	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
E-MAIL ADDRESS:		
355900-15-16-WINDR-15-16 3487 460000 CDEAN 12S	INSURER(S) AFFORDING COVERAGE	
INSURED ALSTOM Grid Inc. c/o ALSTOM Inc. One Power Lane Charleroi, PA 15022	INSURER A: New Hampshire Ins Company NAIC # 23841	
	INSURER B: N/A N/A	
	INSURER C: Allianz Global Risks US Insurance Company 35300	
	INSURER D: National Union Fire Ins. Co. of Pittsburgh, PA 19445	
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** NYC-008962951-04 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSR	SUBR YVVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
C	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC			CGL 2005737	04/01/2015	04/01/2016	EACH OCCURRENCE	\$ 2,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 1,000,000
							MED EXP (Any one person)	\$ 10,000
							PERSONAL & ADV INJURY	\$ 2,000,000
							GENERAL AGGREGATE	\$ 2,000,000
							PRODUCTS - COM/POP AGG	\$ 2,000,000
								\$
D	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS <input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION \$			CA 5260801 (AOS) CA 5260799 (MA) CA 5260800 (VA)	04/01/2015 04/01/2015 04/01/2015	04/01/2016 04/01/2016 04/01/2016	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
								\$
							EACH OCCURRENCE	\$
							AGGREGATE	\$
								\$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		Y/N	021460017 (CA) 021460018 (FL) 021460020 (MA, ND, OH, WA, WI, WY) 021460016 (OS) 021460022 (PA, NJ) 021460021 (AK, AZ, GA, VA)	04/01/2015 04/01/2015 04/01/2015 04/01/2015	04/01/2016 04/01/2016 04/01/2016 04/01/2016	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER	
			N/A				E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000
A				021460019 (IL, KY, NC, NH, UT, VT)	04/01/2015	04/01/2016		
A				021460023 (ME)	04/01/2015	04/01/2016		

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
 RE: AGREEMENT #4600005653 RAVENSWOOD U30 NORTH REPLACEMENT GSU TRANSFORMER. GENERAL LIABILITY INSURANCE INCLUDES BLANKET ADDITIONAL INSURED COVERAGE WHEN REQUIRED BY WRITTEN CONTRACT UNDER FORM CG 20 10 04 13. FORM CG 20 37 04 13 ATTACHED. AUTOMOBILE LIABILITY INSURANCE INCLUDES BLANKET ADDITIONAL INSURED COVERAGE BUT ONLY WHEN CONTRACTUALLY BOUND TO PROVIDE AND ONLY TO THE EXTENT OF SUCH PERSON OR ORGANIZATION'S LIABILITY ARISING OUT OF THE USE OF A COVERED AUTO. COMMERCIAL GENERAL LIABILITY INSURANCE SHALL APPLY ON A PRIMARY AND NONCONTRIBUTORY BASIS AS PER CG 20 01 04 13 TO THE EXTENT REQUIRED BY WRITTEN CONTRACT OR AGREEMENT WITH THE NAMED INSURED, IN ACCORDANCE WITH THE BLANKET ENDORSEMENT COPY ATTACHED TO THE CERTIFICATE.

CERTIFICATE HOLDER TC RAVENSWOOD, LLC ATTN: ANDREW BISSON 110 TURNPIKE ROAD, SUITE 300 WESTBOROUGH, MA 01581	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE of Marsh USA Inc. James T. Haggerty <i>James T. Haggerty</i>
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Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return) ALSTOM Grid Inc.	
	Business name/disregarded entity name, if different from above	
	Check appropriate box for federal tax classification: <input type="checkbox"/> Individual/sole proprietor <input checked="" type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <input type="checkbox"/> Other (see Instructions) ▶ _____	Exemptions (see instructions): Exempt payee code (if any) <u>5</u> Exemption from FATCA reporting code (if any) _____
	Address (number, street, and apt. or suite no.) One Power Lane City, state, and ZIP code Charleroi, PA 15022	Requester's name and address (optional)
List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I Instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number										
			-				-			

Employer identification number										
3	4		-	1	2	5	8	8	6	8

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- I am a U.S. citizen or other U.S. person (defined below), and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here	Signature of U.S. person ▶	Date ▶ <u>1/15/14</u>
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. The IRS has created a page on IRS.gov for information about Form W-9, at www.irs.gov/w9. Information about any future developments affecting Form W-9 (such as legislation enacted after we release it) will be posted on that page.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, payments made to you in settlement of payment card and third party network transactions, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct.

Note. If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

DT1-72.5

Dead tank circuit breaker for 72.5 kV

One of the keys to safety in your substation is the circuit breaker. Safety can be ensured by using the DT1 circuit breaker, a product based on state-of-the-art technology and manufactured in the modern production facilities of a company that you can trust - Alstom Grid.

Alstom Grid's advanced thermal-assisted interrupters, leak resistant cast aluminum enclosures and durable low energy spring-operated mechanisms characterize the DT series.

More than 80,000 circuit breakers with thermal-assisted interrupters and FK spring-operated mechanisms have been in service since 1989.

Unique performance

The DT1-72.5 is suitable for applications up to nameplate ratings, including definite purpose ratings and is uniquely qualified under the latest ANSI IEC standards as C2 class for capacitor switching (very low restrike probability) and reactor switching applications. Extensive mechanical operation design testing ensures trouble-free operation for the lifetime of the circuit breaker. Intensive production leak testing ensures superior in-service SF₆ performance.



Flexibility for new and retrofit applications

The compact DT1-72.5 design can be used in new or retrofit applications. The 3-pole circuit breaker forms a complete, fully assembled, factory-tested, transportable unit. The on-site installation requires only a few simple steps.

For installations where truck shipment is impossible, the DT1-72.5 can be readied for standard container shipment as a fully assembled unit.

A rugged performer

Thanks to its robust design, the DT1-72.5 is a highly reliable circuit breaker even under the most severe operating conditions and is tested to meet or exceed ANSI and IEC standards, including the more difficult aspects of the ANSI/IEEE 1979 and 2000 standards.



Quality

Alstom Grid designs, manufactures, tests and delivers its circuit breakers in accordance with ANSI and IEC standards, maintaining a quality assurance system according to ISO-9001 and ISO-14001.

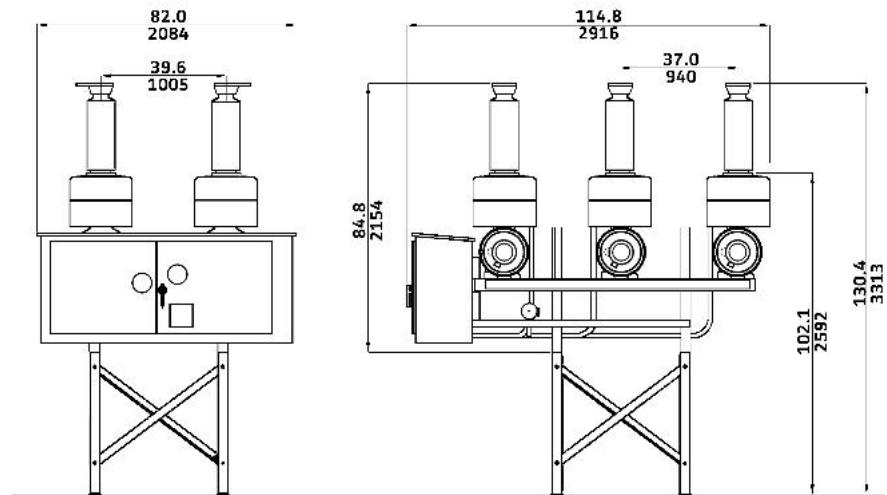
Customer benefits

- Proven reliability
- High performance
- Flexibility
- ISO quality systems
- Near zero maintenance
- Easy to install

Technical data

	Value	Units
SF ₆ pressure	67/0.46	psig/Mpa
Motor	1600	Watt
Close coil/Trip coil	440/440	Watt
Ambient temperature range*	-50 to +50	degree C
Seismic capability*	0.5	g
Creepage distance	72/1830	inches/
	89/2260	mm
Weight (without current transformers)	2700/1227	lb/kg
Weight of SF ₆	29/13	lb/kg

* Optional values available



Installation and maintenance

The DT1-72.5 is factory tested and adjusted. It does not need any "special tools" for installation. With a self-contained adjustable support structure, it is recognized worldwide as an easy to install circuit breaker. Thanks to the low-energy mechanism and lifetime lubricants, the DT series is virtually maintenance-free.

Ratings

ANSI	IEC	Value	Units
Rated maximum voltage	Rated voltage	72.5	kV
Rated power frequency	Rated frequency	50/60	Hz
Rated dielectric withstand capability:	Rated insulation level		
	- dry withstand	160	kV
- wet withstand	- at power frequency, wet	140	kV
Rated lightning impulse withstand voltage	- at lightning impulse	350	kV
Rated chopped wave impulse voltage 2us/3us		452/402	kV
Rated continuous current	Rated normal current	1200/2000/3000	A
Rated short-circuit current	Rated short-circuit breaking current	40	kA
Rated closing, latching and short time carrying current		108	kA
	Rated short-circuit making current	100	kA
Rated capacitance switching		630	A
	Rated single capacitor bank breaking current	1200	A
Rated interrupting time		3	cycles
	Rated break time	50	ms
Rated standard operating duty	Rated operating sequence	0-CO-15s-CO	
		0-0.3s-CO-180s-CO	

* Standard values: further data is available on request.

Alstom Grid Worldwide Contact Centre
www.alstom.com/grid/contactcentre/
 Tel: +44 (0) 1785 250 070
www.alstom.com






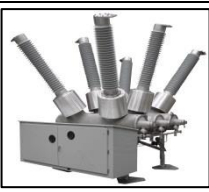





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HVCB Line Card

High Voltage Circuit Breakers

ALSTOM Grid Inc. offers a comprehensive portfolio of high voltage circuit breakers designed and tested to meet the rigorous demands of the North American power system

Product	Ratings	Features
DT1-38FK F1 	<ul style="list-style-type: none"> Up to 38kV 1200A to 3000A 40kA, 3 cycles 	<ul style="list-style-type: none"> FK3-1 SPRING/SPRING mechanism Gang Operated
DT1-72.5FK F1 	<ul style="list-style-type: none"> 72.5kV 1200A to 3000A 40kA, 3 cycles 	<ul style="list-style-type: none"> FK3-1 SPRING/SPRING mechanism Gang Operated
DT1-72.5FK F1 	<ul style="list-style-type: none"> 72.5kV 1200A to 3000A 40kA, 3 cycles 	<ul style="list-style-type: none"> FK3-1 SPRING/SPRING mechanisms Independent Pole Operation (IPO) Optional Synchronous Control for Point-on-Wave Switching
DT1-123FK F1 DT1-145FK F1 DT1-170FK F1 	<ul style="list-style-type: none"> 123kV, 145kV, 170kV 1200A to 3000A 40kA, 3 cycles 	<ul style="list-style-type: none"> FK3-1 SPRING/SPRING mechanism Gang Operated
DT1-123FK F3 DT1-145FK F3 DT1-170FK F3 	<ul style="list-style-type: none"> 123kV, 145kV, 170kV 1200A to 3000A 40kA, 3 cycles 	<ul style="list-style-type: none"> FK3-1 SPRING/SPRING mechanisms Independent Pole Operation (IPO) Optional Synchronous Control for Point-on-Wave Switching
DT1-145 63 	<ul style="list-style-type: none"> 123kV, 145kV 1200A to 4000A 63kA, 3 cycles 	<ul style="list-style-type: none"> FK3-4 SPRING/SPRING mechanism Gang Operated
DT1-245P F1 	<ul style="list-style-type: none"> Up to 253kV 1200A to 4000A 40kA, 3 cycles 	<ul style="list-style-type: none"> FK3-4 SPRING/SPRING mechanism Gang Operated Optional 2 cycle performance
DT1-245P F3 	<ul style="list-style-type: none"> Up to 253kV 1200A to 4000A 40kA, 3 cycles 	<ul style="list-style-type: none"> FK3-1 SPRING/SPRING mechanisms Independent Pole Operation (IPO) Optional Synchronous Control for Point-on-Wave Switching
DT1-245 F3 	<ul style="list-style-type: none"> Up to 253kV 1200A to 5000A 63kA, 3 cycles 	<ul style="list-style-type: none"> SPRING/SPRING mechanisms Independent Pole Operation (IPO) Optional Synchronous Control for Point-on-Wave Switching

HVCB Line Card

Product	Ratings	Overview
DT1-362 F3 	<ul style="list-style-type: none"> 362kV 1200A to 5000A 63kA, 2 cycles 	<ul style="list-style-type: none"> FK3-6 SPRING/SPRING mechanisms Independent Pole Operation (IPO) Optional Synchronous Control for Point-on-Wave Switching
DT2-550 H3 DT2-550 F3 	<ul style="list-style-type: none"> 550kV 1200A to 5000A 63kA, 2 cycles 	<ul style="list-style-type: none"> Hydraulic Mechanisms Independent Pole Operation (IPO) Optional Point-on-Wave Switching Optional Closing Resistors Optional Spring/Spring Mechanisms
GL3 Series Live Tank 	<ul style="list-style-type: none"> 72.5kV to 800kV 1200A to 4000A Up to 63kA, 3 cycles 	<ul style="list-style-type: none"> Circuit switcher performance with superior circuit breaker ratings FK3-x SPRING/SPRING mechanism Independent Pole Operation (IPO) Or Gang Operated (voltage dependent)
CABA 	<ul style="list-style-type: none"> 72.5kV to 800kV 1200A to 4000A Up to 63kA, 3 cycles Circuit Breaker performance in a Circuit Switcher footprint 	<ul style="list-style-type: none"> FK3-x SPRING/SPRING mechanism Independent Pole Operation (IPO) Or Gang Operated (voltage dependent) Optional Disconnect Switch
GL314 BPS Bypass Switch 	<ul style="list-style-type: none"> Up to 800kV system voltage Up to 170kV across the gap Making Current 120kAp Insertion Current 5000A Insertion Voltage 300kVp 	<ul style="list-style-type: none"> Series Capacitor Bypass Protection FK3-2 SPRING/SPRING mechanism Independent Pole Operation
HYpact 	<ul style="list-style-type: none"> 123kV, 145kV, 170kV 1200A to 3000A 40kA, 3 cycles Hybrid compact switchgear assembly 	<ul style="list-style-type: none"> FK3-1 SPRING/SPRING mechanism Gang Operated Endless configurations –breakers, disconnect switches, CTs, VTs, cable connections.
g ³ 	<ul style="list-style-type: none"> Ratings are product and customer specific. 	<ul style="list-style-type: none"> SF6 Free Global Warming Potential 98% lower than SF6 gas Circuit Breaker, GIL/GIB, GIS, Instrument Transformer applications
CBWatch-3 	<ul style="list-style-type: none"> Circuit Breaker Monitoring IEC 61850 8.1 (DNP3 option) 	<ul style="list-style-type: none"> Permanent real time monitoring of operational parameters of CB Synthetic condition assessment of critical equipment.
SynchroTeq Plus by Vizimax 	<ul style="list-style-type: none"> Cabinet mounted or Rack Mounted 	<ul style="list-style-type: none"> Point-on-wave trip/close capacitors, reactors, transformers

SF₆ Gas Integrity

Production Testing for SF₆ Gas Tightness (38kV to 362kV)

Alstom Grid has perfected an industry best testing system which not only confirms SF₆ gas tightness but also quantifies the exact emission rate, with accuracy of 0.2 grams per year, for every dead tank circuit breaker produced in our Charleroi, Pennsylvania factory.



SAFETY | QUALITY | COST | DELIVERY

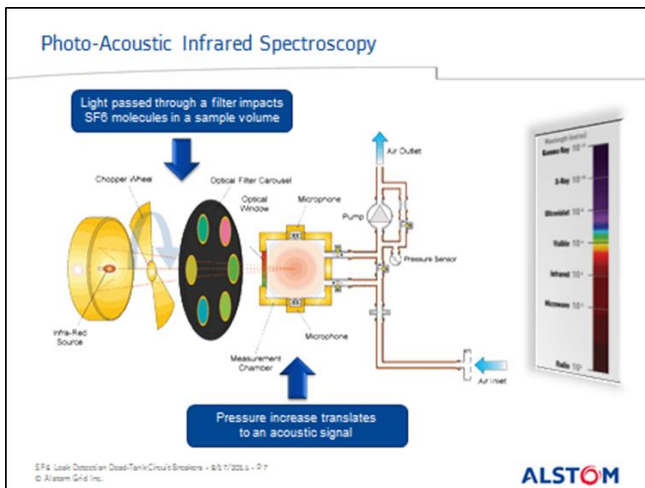
Production Test Lab with Dedicated Mechanical Bays and SF₆ Volumetric Tightness Chambers

We are shaping the future.

ALSTOM

Alstom Grid's proprietary technology utilizes photo-acoustic infrared spectroscopy which is the highest possible sensitivity method for leak detection. Our technology provides:

- Sensitivity 5,000 times greater than "bubble" test or infrared camera.
- **Sensitivity 10 ten times greater** than helium mass spectrometer method with accuracy of 0.2 grams per year compared to 2 grams per year.
- Every breaker produced is **tested fully assembled with bushings installed** (as-delivered condition for domestic delivery) while helium mass spectrometer only tests smaller components such as castings.
- **High accuracy measurement** of under 0.5% per year leakage rate in a production environment.



SF₆ Leak Detection Methods

CIGRE Technical Brochure, No. 430

Comparison of detection methods

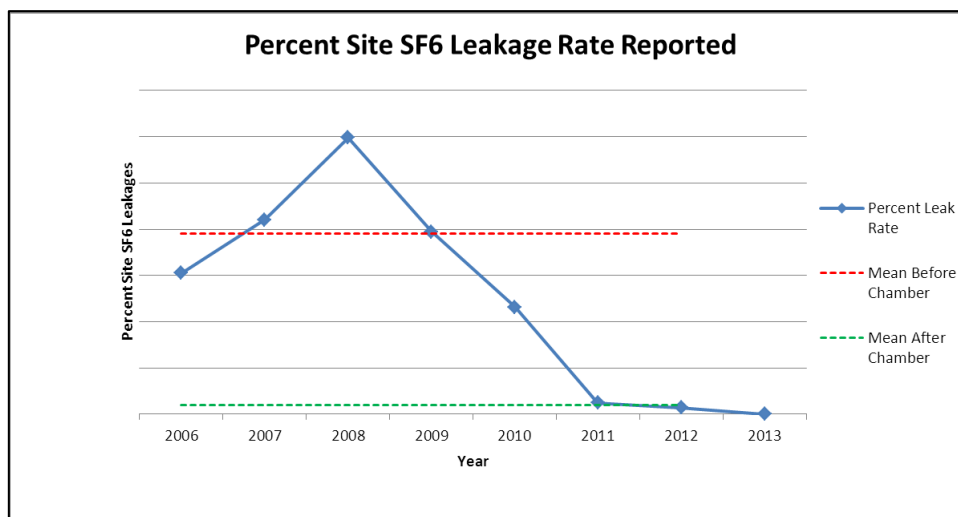
Method	Sensitivity (kg/year)	Ratio vs. bubble test
Vacuum increase	10	10
Infrared camera	1	1
Bubble test	1	1
Density monitor	0.6	1.7
Infrared absorption spectroscopy	0.06	16.7
Negative ion detector	0.02	50.0
Electron capture detector	0.002	500.0
Helium mass spectrometer	0.002	500.0
Photo-acoustic infrared spectroscopy	0.0002	5000.0

• **Greatest Sensitivity and Accuracy**

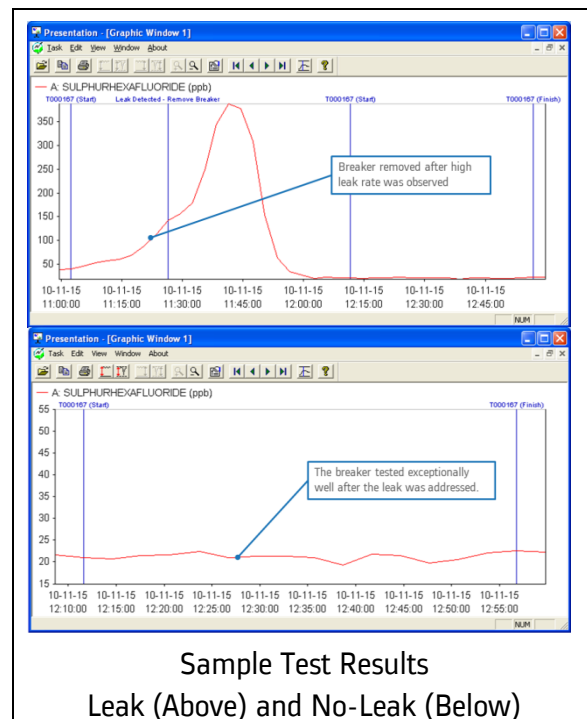
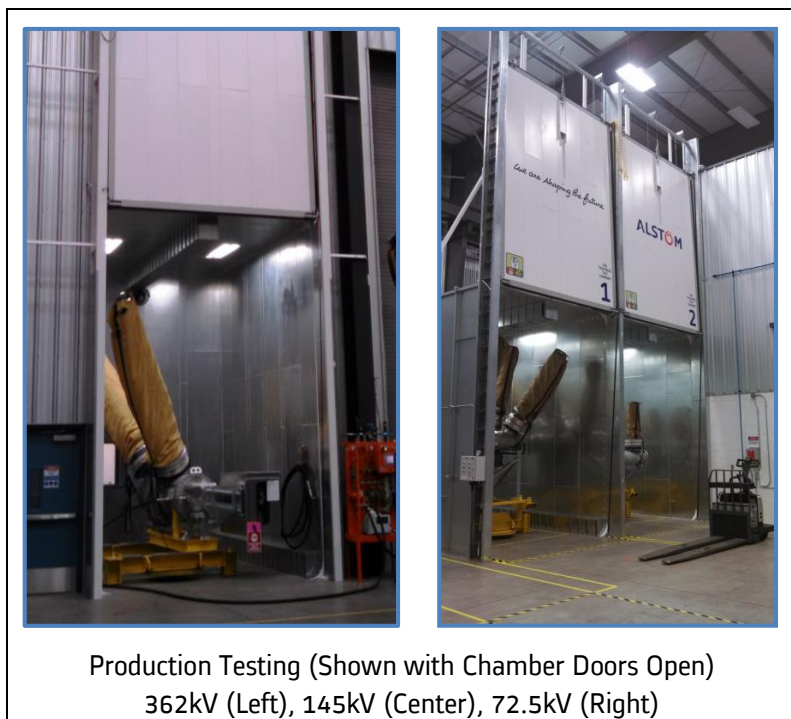
➤ Method used by ALSTOM Grid for Type Tests and Production

SF₆ Gas Integrity

Every dead tank circuit breaker produced in the Charleroi, Pennsylvania factory from 38kV to 362kV is tested with Alstom Grid proprietary technology in use since 2010 at this site. The graph shown below illustrates the dramatic improvement realized after implementation of 72.5kV production testing.



Multiple chambers allow for high efficiency testing of every fully assembled dead tank circuit breaker from 38kV to 362kV.



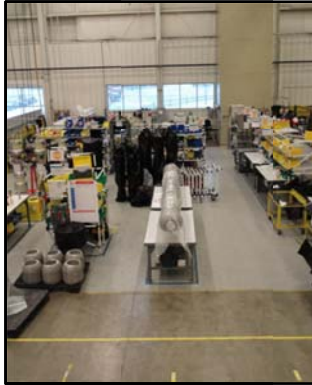
Alstom Grid's commitment to reducing SF₆ emissions extends from our robust designs with high grade gaskets to testing and certification. Our continuing efforts provide for quantifiable reduction in SF₆ emissions for our customers resulting in industry leading reliability and lower cost of maintenance.

HIGH VOLTAGE CIRCUIT BREAKER FACTORY AND DEAD TANK COMPETENCE CENTER IN CHARLEROI PENNSYLVANIA

*Domestic Interrupter Assembly –
“The Heart of the Breaker”*

Climate Controlled Clean Assembly

Accredited High Voltage R&D Lab



In House Panel Assembly & Wiring



*State-of-the-Art Proprietary SF6
tightness testing for all breakers*



Local R&D and Product Development

ALSTOM GRID TRAINING

Dead Tank Circuit Breaker *Model DT1 – from 72.5kV to 245kV*

Who Should Attend: Operation, maintenance and technical personnel.

What Will You Learn: At the end of the training session, the participants will:

- Understand the basics of SF6 Dead Tank Circuit breaker technology including theory and operation interrupters and spring mechanisms
- Understand the maintenance procedures related to the Dead Tank Circuit Breakers and its control;
- Be able to safely perform basic maintenance tasks



Duration & cost: 2 days - \$625 person/day
*Price is for 5 or more participants

Location: ALSTOM Grid Dead Tank Circuit Breaker Center of Excellence: Charleroi, PA, USA

Training can also be given at your location, please contact us for details

Training Type: 60% Practical, 40 % Theoretical
With multimedia support

Information:

To schedule training please contact the Alstom Grid Technical Institute at:

- By email : technical.institute@alstom.com
- By phone : 865-719-0844

ALSTOM GRID TRAINING

Dead Tank Circuit Breaker *DT1 from 72.5kV to 245kV*

TRAINING CONTENT

The 2-day program is dedicated to operation, maintenance and technical personnel; with hands on exercises on actual circuit breaker elements. The training program can be customized to the participants own requirements with advance notice.

PART 1

- Welcome
 - ✓ Introductions and overview of agenda and objectives
- Circuit breaker technology
 - ✓ Design and advantages;
 - ✓ Range of application.
- SF₆
 - ✓ Properties and cautions;
 - ✓ Video
- SF₆ Interruption
 - ✓ Puffer technology;
 - ✓ Operating principles.
- SF₆ Gas system
 - ✓ SF6 Filling;
 - ✓ SF6 monitoring;
 - ✓ Application work.
 - ✓ Mechanism work shop.

PART 2

- Spring mechanism
 - ✓ Technology;
 - ✓ Operation Principles;
 - ✓ Operation linkage;
 - ✓ Periodic inspections;
- CTs and Controls
 - ✓ Characteristics;
 - ✓ Relaying;
 - ✓ Trouble shooting.

PART 3

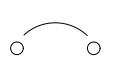
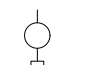
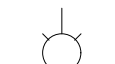

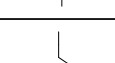
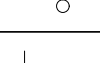
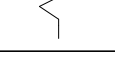

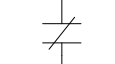
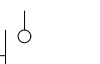

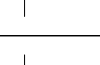


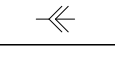
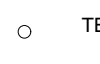
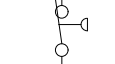
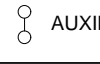
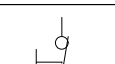

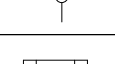
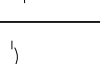
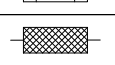
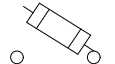

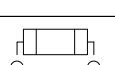
- Maintenance & servicing
 - ✓ Installation / Maintenance;
 - ✓ Scheduling Maintenance;
 - ✓ Instruction manual overview;
 - ✓ Workshop.
- Spare Parts
 - ✓ Strategic components & Wearing parts;
 - ✓ Parts ordering.
- Conclusion
 - ✓ Time dedicated to answer specific questions.

A

B

C

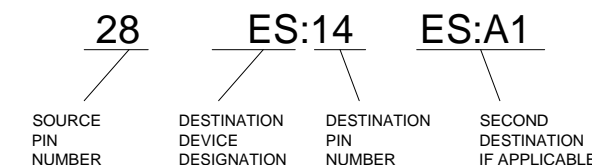
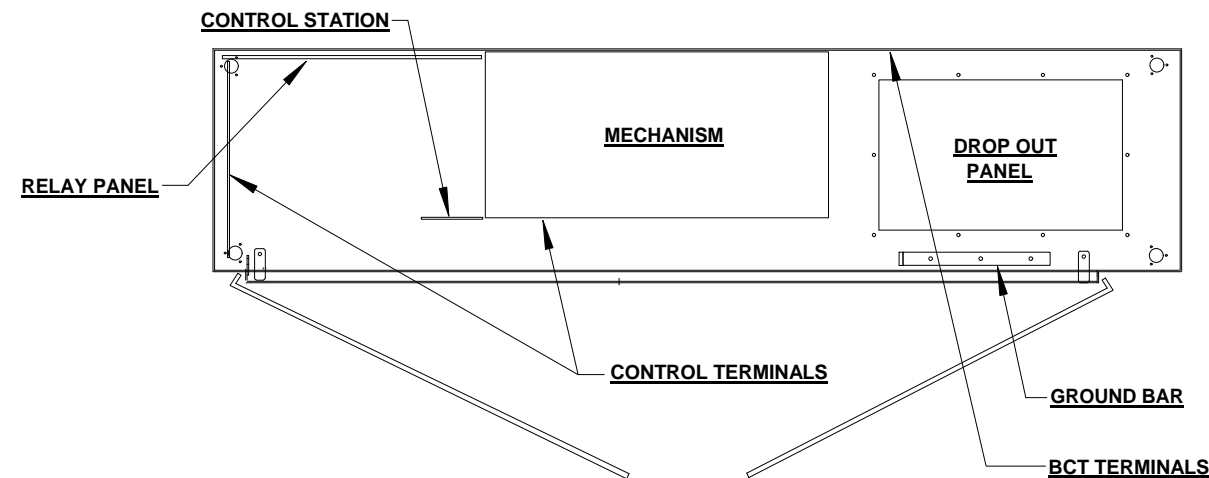
D

 CIRCUIT BREAKER	 INDICATOR LIGHT
 CABINET LIGHT	 KNIFE SWITCH
 COIL	 CHARGING MOTOR
 CONTACT, NORMALLY CLOSED	 PUSHBUTTON
 CONTACT, NORMALLY OPEN	 RESISTOR/ HEATER
 CONNECTOR	 TERMINAL BLOCK
 DENSITY MÓNITOR	 AUXILIARY TERMINAL BLOCK
 DOOR SWITCH	 THERMOSTAT
 FUSE BLOCK	 THERMAL OVERLOAD
 FUSE BLOCK, SLUGGED	 TOGGLE SWITCH
 FUSED DISCONNECT	 TRANSFORMER
 FUSED DISCONNECT, SLUGGED	
 FUSE PULLOUT	
 FUSE PULLOUT, SLUGGED	
 SLUG	

STANDARD ANSI DESIGNATIONS

- 01CS BREAKER CONTROL SWITCH
- 23 THERMOSTAT
- 23X HEATER CONTACTOR
- 27X LOSS OF POWER RELAY
- 30 ANNUNCIATOR
- 37 UNDERCURRENT ALARM
- 43L/R LOCAL / REMOTE TRANSFER SWITCH
- 49 MOTOR THERMAL OVERLOAD
- 52a,b BREAKER AUXILIARY SWITCH
- 52C CLOSE PUSHBUTTON
- 52CC BREAKER CLOSE COIL
- 52T TRIP PUSHBUTTON
- 52TC BREAKER TRIP COIL
- 52X CLOSING RELAY
- 52Y ANTIPUMP RELAY
- 52-MON BREAKER CONDITION MONITOR
- 63G SF6 PRESSURE / DENSITY GAUGE
- 63GX SF6 PRESSURE / DENSITY RELAY
- 69 PERMISSIVE CONTROL SWITCH
- 69-KI KEY INTERLOCK
- 74CC CLOSE COIL MONITOR
- 74TC TRIP COIL MONITOR
- 79X RECLOSE DELAY RELAY
- 83X MOTOR TRANSFER CONTACTOR
- 88 MOTOR
- 88F MOTOR FAILURE ALARM
- 88LS MOTOR LIMIT SWITCH
- AIL AMBER INDICATOR LIGHT
- GIL GREEN INDICATOR LIGHT
- RIL RED INDICATOR LIGHT
- HTR HEATER

TOP VIEW OF CONTROL CABINET



INFORMATION ONLY

WIRING KEY

				CUSTOMER: CITY OF OCALA, FL CUSTOMER ORDER No.: US-74100 SUBSTATION: SPARE SUBSTATION BREAKERS SERIAL No.: 167567-010-A, 167567-010-B		ALSTOM MATERIAL ID: CCDT1-72.5FK-001	
				CUSTOMER EQ. No.: 69kV BREAKERS		ALSTOM ORDER # 167567	
LEGEND				W.Holt DRAWN	A.Izvorean CHECKED	04/23/14 DATE	SHT 1 OF 13
				W.Holt DRAWN	A.Izvorean CHECKED	04/22/14 DATE	
				ALSTOM ALSTOM GRID Inc. One Power Lane Charleroi, PA 15022		DRAWING No.: E167567010	

A

B

C

D

1

1

2

2

3

3

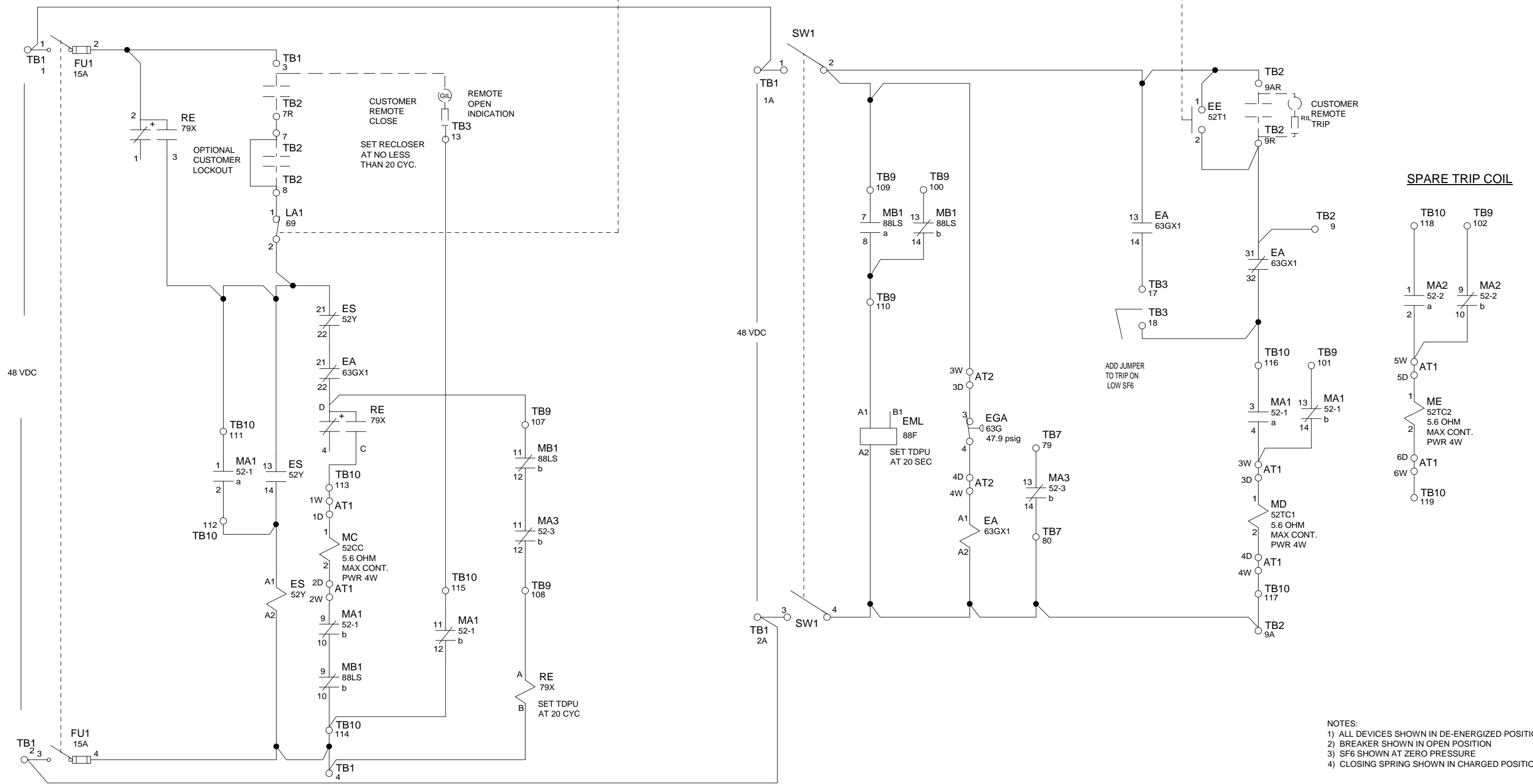
4

4

CLOSE CIRCUIT

EXTERNAL TRIP

TRIP CIRCUIT



- NOTES:
 1) ALL DEVICES SHOWN IN DE-ENERGIZED POSITION
 2) BREAKER SHOWN IN OPEN POSITION
 3) SF6 SHOWN AT ZERO PRESSURE
 4) CLOSING SPRING SHOWN IN CHARGED POSITION

CUSTOMER: CITY OF OCALA, FL
 CUSTOMER ORDER No.: US-74100
 SUBSTATION: SPARE SUBSTATION BREAKERS
 SERIAL No.: 167567-010-A, 167567-010-B

ALSTOM MATERIAL ID:
 CCDT1-72.5FK-001

1	Revised BCT wiring schematic/notes on sheet 10	W.Holt	A.Izvorean	04/23/14
REV.	DESCRIPTION	DRAWN	CHECKED	DATE
		W.Holt	A.Izvorean	04/22/14
		DRAWN	CHECKED	DATE

CUSTOMER EQ. No.: 69kV BREAKERS
ALSTOM ALSTOM GRID Inc.
 One Power Lane
 Charleroi, PA 15022

DRAWING No.: E167567010

ALSTOM ORDER #
 167567
 SHT 2 OF 13

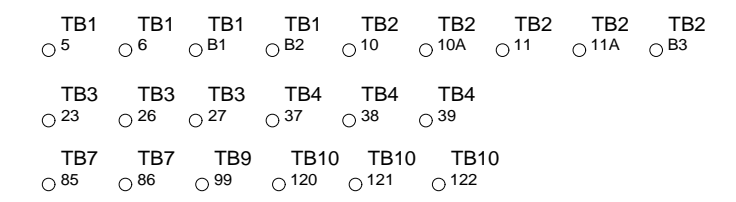
A

B

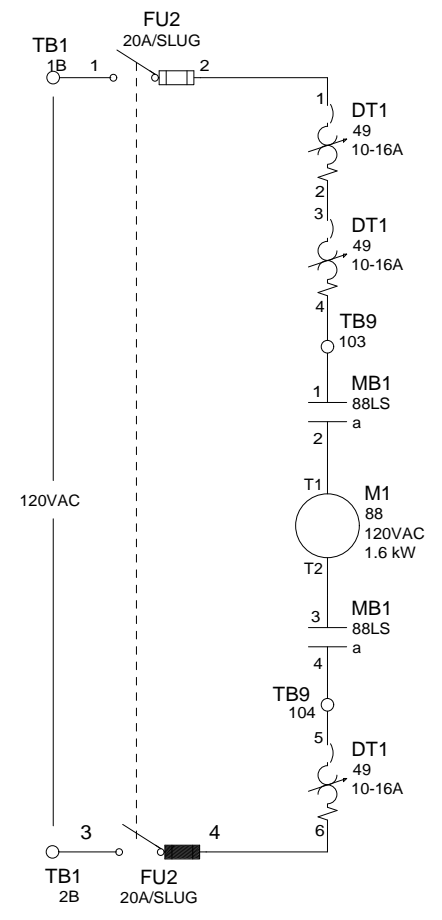
C

D

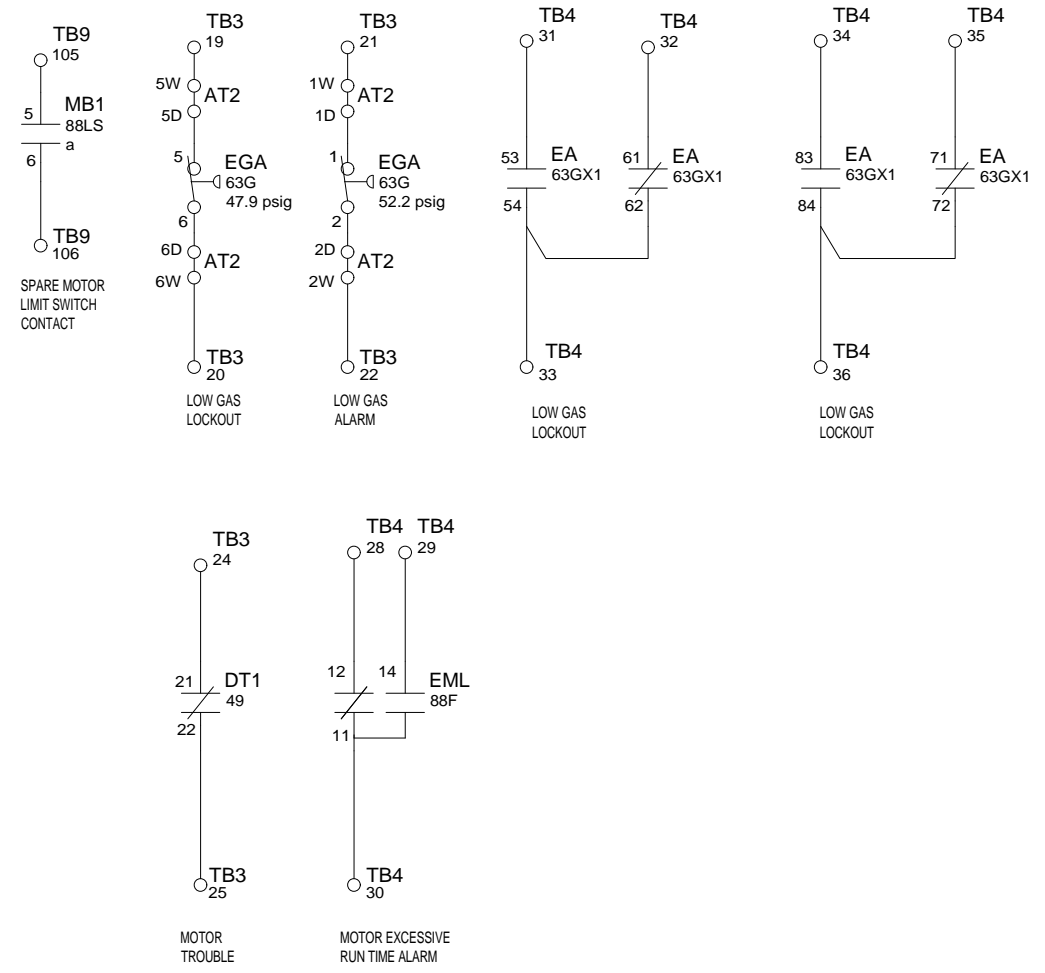
SPARE TERMINAL BLOCKS FOR CUSTOMER USE



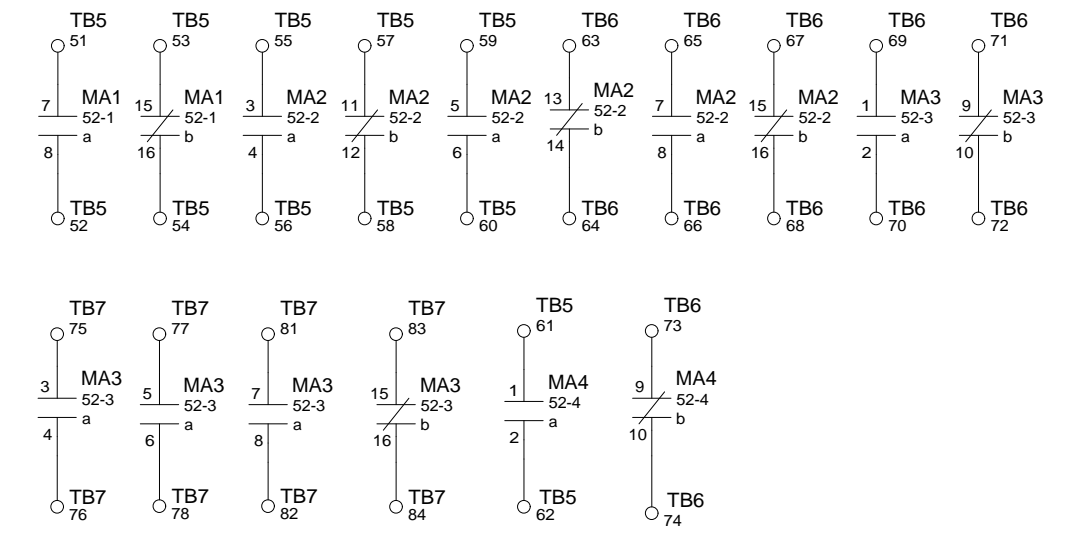
MOTOR CIRCUIT



CUSTOMER ALARMS



SPARE AUXILIARY SWITCHES FOR CUSTOMER USE



- NOTES:
 1) ALL DEVICES SHOWN IN DE-ENERGIZED POSITION
 2) BREAKER SHOWN IN OPEN POSITION
 3) SF6 SHOWN AT ZERO PRESSURE
 4) CLOSING SPRING SHOWN IN CHARGED POSITION

				CUSTOMER: CITY OF OCALA, FL CUSTOMER ORDER No.: US-74100 SUBSTATION: SPARE SUBSTATION BREAKERS SERIAL No.: 167567-010-A, 167567-010-B		ALSTOM MATERIAL ID: CCDT1-72.5FK-001	
				CUSTOMER EQ. No.: 69kV BREAKERS		ALSTOM ORDER # 167567	
CONTROL SCHEMATICS				W.Holt DRAWN	A.Izvorean CHECKED	04/23/14 DATE	SHT 3 OF 13
				W.Holt DRAWN	A.Izvorean CHECKED	04/22/14 DATE	
				ALSTOM ALSTOM GRID Inc. One Power Lane Charleroi, PA 15022		DRAWING No.: E167567010	

A

B

C

D

1

1

2

2

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3

4

4

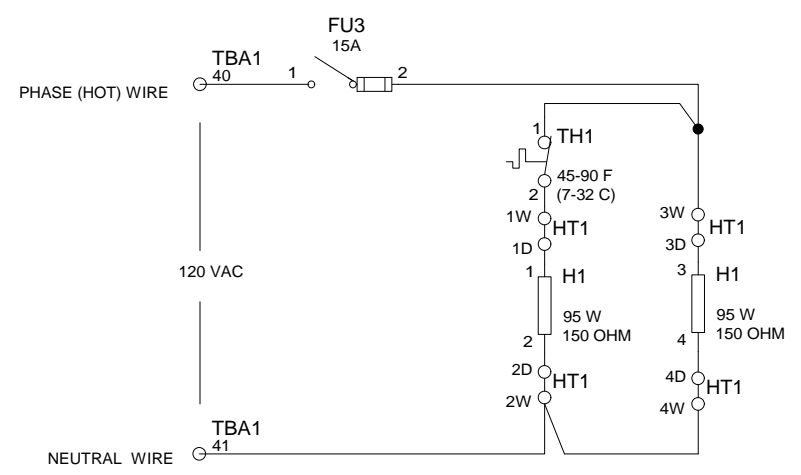
A

B

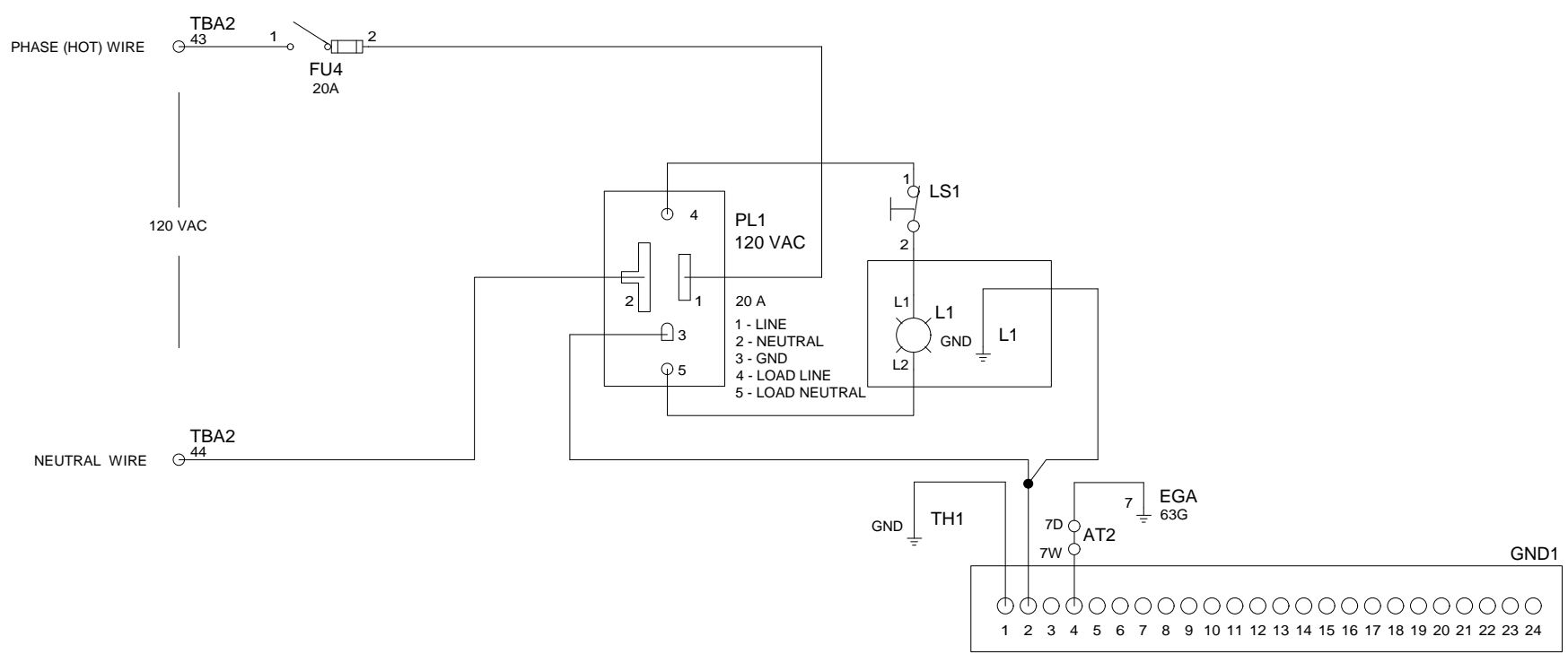
C

D

CABINET HEATERS



AUX CIRCUIT



- NOTES:
 1) ALL DEVICES SHOWN IN DE-ENERGIZED POSITION
 2) BREAKER SHOWN IN OPEN POSITION
 3) SF6 SHOWN AT ZERO PRESSURE
 4) CLOSING SPRING SHOWN IN CHARGED POSITION

1	Revised BCT wiring schematic/notes on sheet 10	W.Holt	A.Izvorean	04/23/14
REV.	DESCRIPTION	DRAWN	CHECKED	DATE
		W.Holt	A.Izvorean	04/22/14
		DRAWN	CHECKED	DATE

CUSTOMER: CITY OF OCALA, FL
 CUSTOMER ORDER No.: US-74100
 SUBSTATION: SPARE SUBSTATION BREAKERS
 SERIAL No.: 167567-010-A, 167567-010-B

ALSTOM MATERIAL ID:
 CCDT1-72.5FK-001

ALSTOM ORDER #
 167567

CUSTOMER EQ. No.: 69kV BREAKERS

ALSTOM ALSTOM GRID Inc.
 One Power Lane
 Charleroi, PA 15022

DRAWING No.: E167567010

SHT 4 OF 13

A

B

C

D

1

1

2

2

3

3

4

4

A

B

C

D

TB1

TB1:1A,FU1:1	1
TB1:2A,FU1:3	2
SW1:1,TB1:1	1A
SW1:3,TB1:2	2A
FU2:1	1B
FU2:3	2B
FU1:2	3
TB10:114,RE:B	4
	5
	6
B1	
B2	

TB4

	28	EML:12
	29	EML:14
	30	EML:11
	31	EA:53
	32	EA:61
	33	EA:54
	34	EA:83
	35	EA:71
	36	EA:84
	37	
	38	
	39	

TERMINAL BLOCK WIRING

TB10

	122
	121
	120
	119
	118
	117
	116
	115
	114
	113
	112
	111

TB9

	110	EML:A1
	109	SW1:2,AT2:3W
	108	REA
	107	RE:D
	106	
	105	
	104	DT1:5
	103	DT1:4
	102	
	101	
	100	
	99	

TB2

TB2:7R	7	TB2:8
TB2:7	7R	
LA1:1	8	TB2:7
EA:31	9	
EA:31,EE:2	9R	
TB10:117,TB7:80	9A	
EA:13,EE:1	9AR	
	10	
	10A	
	11	
	11A	
	B3	

TB3

TB10:115	13
EA:14	17
EA:32	18
AT2:5W	19
AT2:6W	20
AT2:1W	21
AT2:2W	22
	23
DT1:21	24
DT1:22	25
	26
	27

TBA1

	40	FU3:1
	41	HT1:2W
	42	

TBA2

	43	FU4:1
	44	PL1:2
	45	

TB7

	86	
	85	
	84	MA3:16
	83	MA3:15
	82	MA3:8
	81	MA3:7
	80	MA3:14
	79	MA3:13
	78	MA3:6
	77	MA3:5
	76	MA3:4
	75	MA3:3

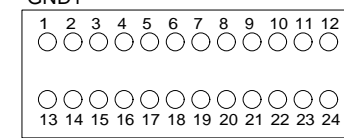
TB6

	74	MA4:10
	73	MA4:9
	72	MA3:10
	71	MA3:9
	70	MA3:2
	69	MA3:1
	68	MA2:16
	67	MA2:15
	66	MA2:8
	65	MA2:7
	64	MA2:14
	63	MA2:13

TB5

	62	MA4:2
	61	MA4:1
	60	MA2:6
	59	MA2:5
	58	MA2:12
	57	MA2:11
	56	MA2:4
	55	MA2:3
	54	MA1:16
	53	MA1:15
	52	MA1:8
	51	MA1:7

GND1



- 1 TH1:GND
- 2 PL1:3,L1:GND
- 4 AT2:7W

- NOTES:
- 1) ALL WIRING TO BE 12GA GRAY SIS VW1
 - 2) ALL GROUND WIRING TO BE 12GA GREEN SIS VW1
 - 3) WIRE MARKERS TO BE SHRINK-TYPE AND TO SHOW SAME-END/OPPOSITE-END DESIGNATION
 - 4) WIRE LUGS ARE TO BE BURNDY TYPE NON-INSULATED "YAV" (EXCEPT FOR DEVICES THAT DO NOT ACCEPT RING-TYPE TERMINALS)

				CUSTOMER: CITY OF OCALA, FL CUSTOMER ORDER No.: US-74100 SUBSTATION: SPARE SUBSTATION BREAKERS SERIAL No.: 167567-010-A, 167567-010-B		ALSTOM MATERIAL ID: CCDT1-72.5FK-001	
				CUSTOMER EQ. No.: 69kV BREAKERS		ALSTOM ORDER # 167567	
1 Revised BCT wiring schematic/notes on sheet 10				W.Holt	A.Izvorean	04/23/14	
REV.	DESCRIPTION			DRAWN	CHECKED	DATE	
WIRING DIAGRAM				W.Holt	A.Izvorean	04/22/14	
				DRAWN	CHECKED	DATE	
				ALSTOM ALSTOM GRID Inc. One Power Lane Charleroi, PA 15022		DRAWING No.: E167567010	
						SHT 5 OF 13	

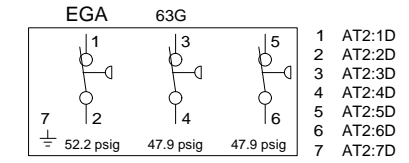
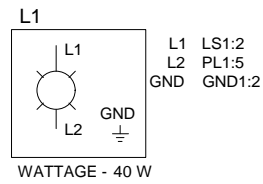
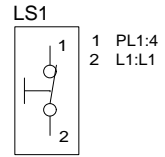
A

B

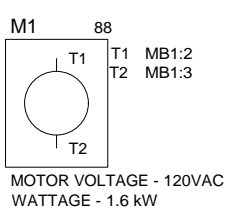
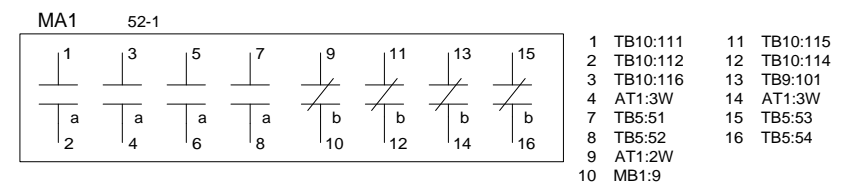
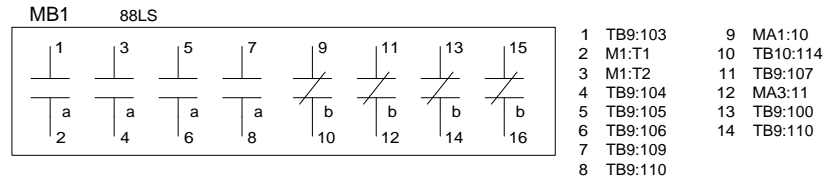
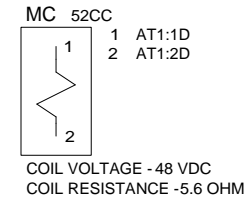
C

D

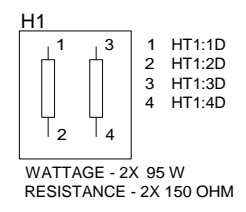
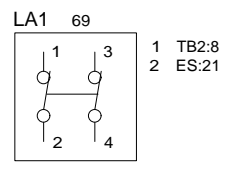
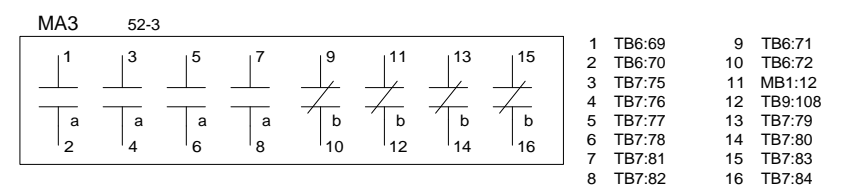
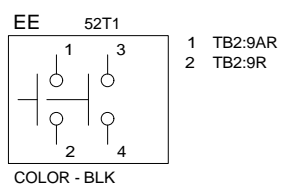
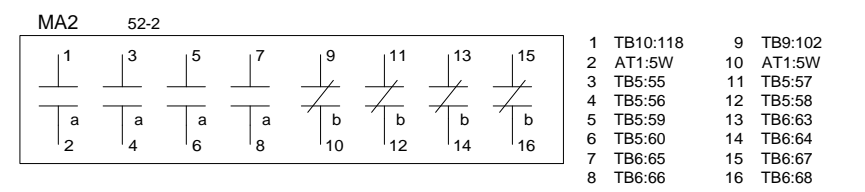
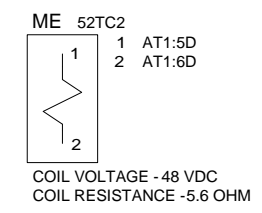
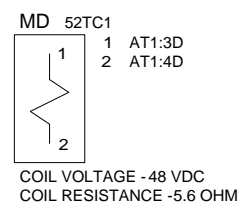
MECHANISM PANEL WIRING



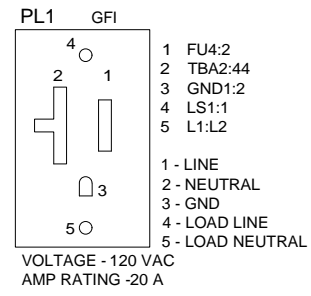
STANDARD CABLE COLORS
 1 - BLK 4 - ORA 7 - GRN
 2 - RED 5 - WHT
 3 - BLU 6 - WHT/BLK or BRN



AT1			
MC:1	1D	1W	TB10:113
MC:2	2D	2W	MA1:9
MD:1	3D	3W	MA1:4,MA1:14
MD:2	4D	4W	TB10:117
ME:1	5D	5W	MA2:2,MA2:10
ME:2	6D	6W	TB10:119



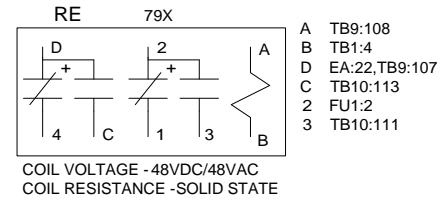
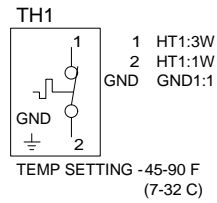
HT1			
H1:1	1D	1W	TH1:2
H1:2	2D	2W	HT1:4W,TBA1:41
H1:3	3D	3W	TH1:1,FU3:2
H1:4	4D	4W	HT1:2W
	5D	5W	
	6D	6W	



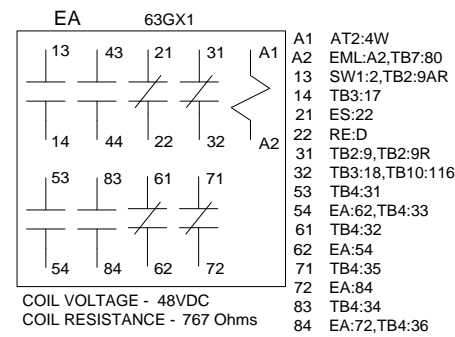
- NOTES:
 1) ALL WIRING TO BE 12GA GRAY SIS VW1
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				CUSTOMER: CITY OF OCALA, FL CUSTOMER ORDER No.: US-74100 SUBSTATION: SPARE SUBSTATION BREAKERS SERIAL No.: 167567-010-A, 167567-010-B		ALSTOM MATERIAL ID: CCDT1-72.5FK-001	
				CUSTOMER EQ. No.: 69kV BREAKERS		ALSTOM ORDER # 167567	
1 Revised BCT wiring schematic/notes on sheet 10				W.Holt	A.Izvorean	04/23/14	
REV. DESCRIPTION				DRAWN	CHECKED	DATE	
WIRING DIAGRAM				W.Holt	A.Izvorean	04/22/14	
				DRAWN	CHECKED	DATE	
				ALSTOM ALSTOM GRID Inc. One Power Lane Charleroi, PA 15022		DRAWING No.: E167567010	
						SHT 6 OF 13	

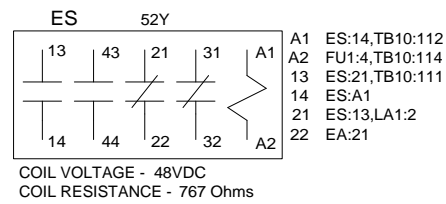
RELAY PANEL WIRING



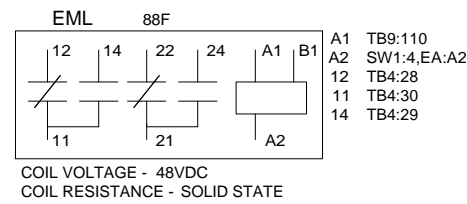
- A TB9:108
- B TB1:4
- D EA:22,TB9:107
- C TB10:113
- 2 FU1:2
- 3 TB10:111



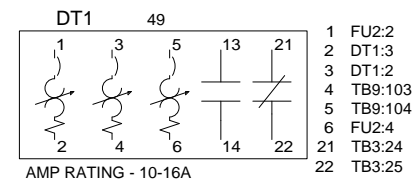
- A1 AT2:4W
- A2 EML:A2,TB7:80
- 13 SW1:2,TB2:9AR
- 14 TB3:17
- 21 ES:22
- 22 RE:D
- 31 TB2:9,TB2:9R
- 32 TB3:18,TB10:116
- 53 TB4:31
- 54 EA:62,TB4:33
- 61 TB4:32
- 62 EA:54
- 71 TB4:35
- 72 EA:84
- 83 TB4:34
- 84 EA:72,TB4:36



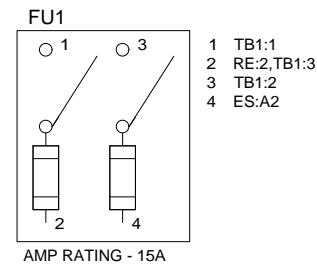
- A1 ES:14,TB10:112
- A2 FU1:4,TB10:114
- 13 ES:21,TB10:111
- 14 ES:A1
- 21 ES:13,LA1:2
- 22 EA:21



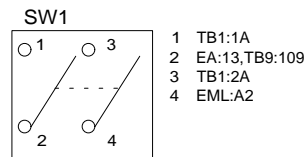
- A1 TB9:110
- A2 SW1:4,EA:A2
- 12 TB4:28
- 11 TB4:30
- 14 TB4:29



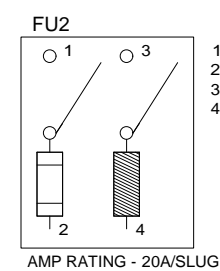
- 1 FU2:2
- 2 DT1:3
- 3 DT1:2
- 4 TB9:103
- 5 TB9:104
- 6 FU2:4
- 21 TB3:24
- 22 TB3:25



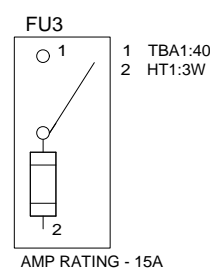
- 1 TB1:1
- 2 RE:2,TB1:3
- 3 TB1:2
- 4 ES:A2



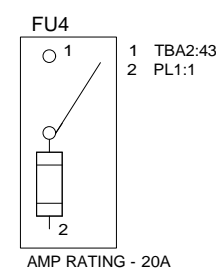
- 1 TB1:1A
- 2 EA:13,TB9:109
- 3 TB1:2A
- 4 EML:A2



- 1 TB1:1B
- 2 DT1:1
- 3 TB1:2B
- 4 DT1:6



- 1 TBA1:40
- 2 HT1:3W



- 1 TBA2:43
- 2 PL1:1

AT2			
TB3:21	1W	1D	EGA:1
TB3:22	2W	2D	EGA:2
TB9:109	3W	3D	EGA:3
EA:A1	4W	4D	EGA:4
TB3:19	5W	5D	EGA:5
TB3:20	6W	6D	EGA:6
GND1:4	7W	7D	EGA:7

- NOTES:
- 1) ALL WIRING TO BE 12GA GRAY SIS VW1
 - 2) ALL GROUND WIRING TO BE 12GA GREEN SIS VW1
 - 3) WIRE MARKERS TO BE SHRINK-TYPE AND TO SHOW SAME-END/OPPOSITE-END DESIGNATION
 - 4) WIRE LUGS ARE TO BE BURNDY TYPE NON-INSULATED "YAV" (EXCEPT FOR DEVICES THAT DO NOT ACCEPT RING-TYPE TERMINALS)

CUSTOMER: CITY OF OCALA, FL
 CUSTOMER ORDER No.: US-74100
 SUBSTATION: SPARE SUBSTATION BREAKERS
 SERIAL No.: 167567-010-A, 167567-010-B

ALSTOM MATERIAL ID:
 CCDT1-72.5FK-001

REV.	DESCRIPTION	W.Holt	A.Izvorean	04/23/14
1	Revised BCT wiring schematic/notes on sheet 10	W.Holt	A.Izvorean	04/23/14

CUSTOMER EQ. No.: 69kV BREAKERS

ALSTOM ORDER #
 167567

WIRING DIAGRAM

W.Holt	A.Izvorean	04/22/14
DRAWN	CHECKED	DATE

ALSTOM ALSTOM GRID Inc.
 One Power Lane
 Charleroi, PA 15022

DRAWING No.: E167567010

SHT 7 OF 13

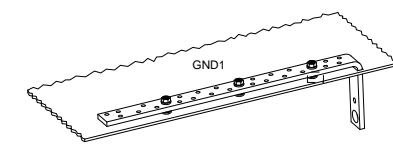
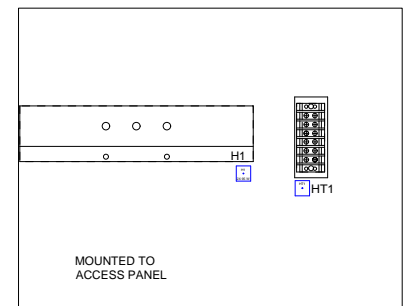
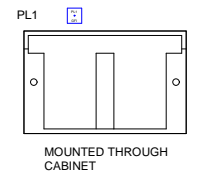
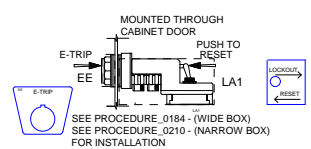
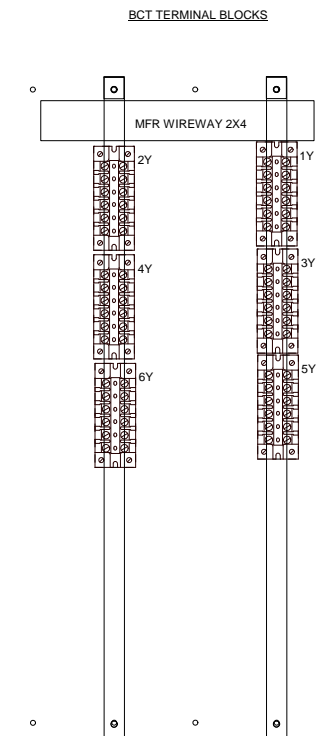
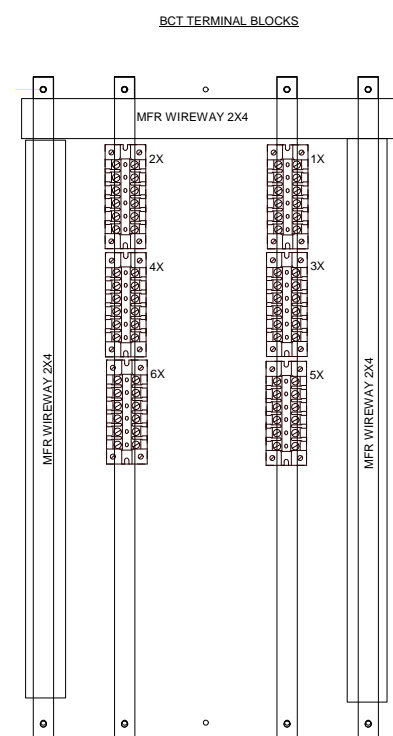
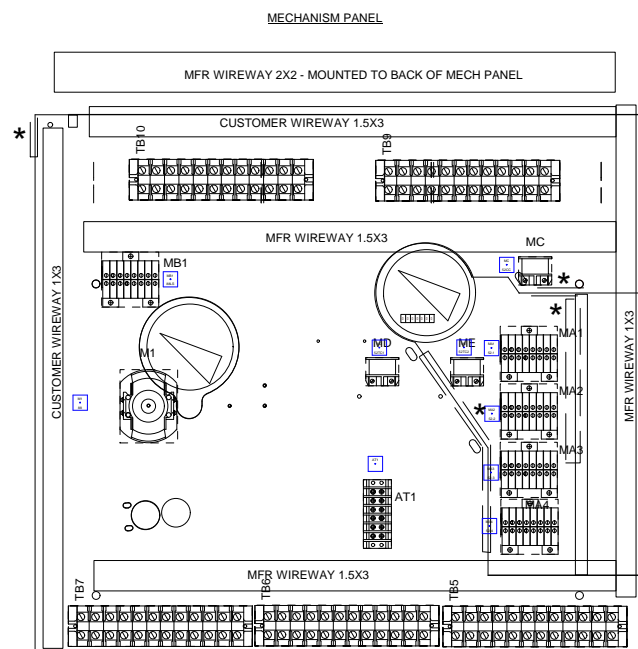
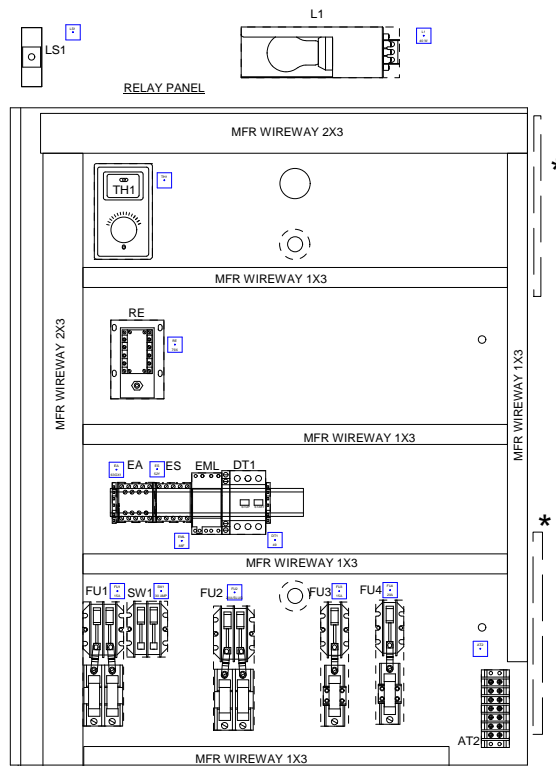
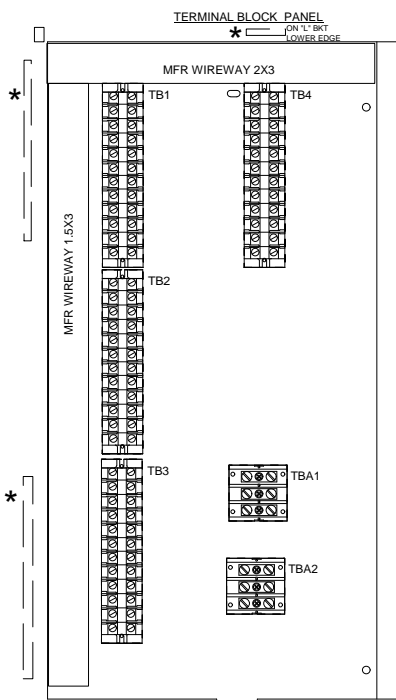
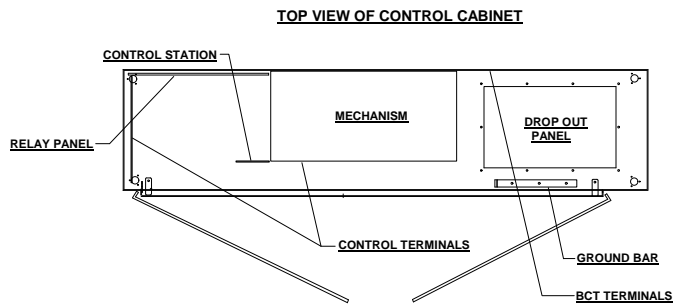
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MANUFACTURING NOTES:
 1) DEVICES TO BE MARKED WITH ENGRAVED PLASTIC TAGS.
 2) DIN RAIL TO BE PER ALSTOM SPEC 1_415_881.
 3) POSITION INDICATOR TAGS ATTACHED w/SCREWS
 4) EDGE GUARD TO BE USED IN 9 PLACES AS SHOWN * AS WELL AS OTHER POINTS WHERE THE WIRE COMES IN CONTACT WITH A METAL EDGE



1	Revised BCT wiring schematic/notes on sheet 10	W.Holt	A.Izvorean	04/23/14
REV.	DESCRIPTION	DRAWN	CHECKED	DATE
		W.Holt	A.Izvorean	04/22/14
		DRAWN	CHECKED	DATE

CUSTOMER: CITY OF OCALA, FL CUSTOMER ORDER No.: US-74100 SUBSTATION: SPARE SUBSTATION BREAKERS SERIAL No.: 167567-010-A, 167567-010-B		ALSTOM MATERIAL ID: CCDT1-72.5FK-001
CUSTOMER EQ. No.: 69kV BREAKERS		ALSTOM ORDER # 167567
ALSTOM ALSTOM GRID Inc. One Power Lane Charleroi, PA 15022		DRAWING No.: E167567010
PANEL LAYOUT		SHT 8 OF 13

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ITEM	QTY	ALSTOM #	MFR #	MFR	DESCRIPTION	DEVICE ID
001	001	CC410508-006	CR104	GENERAL ELECTRIC	CONTACT BLOCK	EE
002	001	CC410632-019	1-410-632-P19	ALSTOM	CABINET LIGHT	L1
003	001	CC417123-001	E69-30A	CHERRY	DOOR SWITCH, 10A, 125/250VAC	LS1
004	001	CC410634-009	TSA901	ELECTROMODE	ADJUSTABLE THERMOSTAT 45-90F (7-32C)	TH1
005	002	CC410635-010	201-J	STATES	KNIFE SWITCH 1 POLE	FU3, FU4
006	003	CC410635-009	202-AW	STATES	KNIFE SWITCH 2 POLE	FU1, FU2, SW1
007	001	CC410636-002	7360K8	CUTLER HAMMER	PERMISSIVE CONTROL SWITCH	LA1
008	002	CC410640-019	IH3-1	THOMAS & BETTS / RED DOT	RECEPTACLE, ENCLOSURE	PL1, TH1
009	001	CC410640-031	BWFFG-1BCV	HUBBELL	RECEPTACLE, WEATHERPROOF COVER	PL1
010	001	CC410640-005	GF5352A	HUBBELL	RECEPTACLE, GFI, 120VAC, 20A, NEMA 5-20R	PL1
011	002	CC410641-073	CLIPFIX35-5	PHOENIX	END CLAMP	END5, END6
012	003	CC410650-006	1-410-650-P6	ALSTOM	FUSE, 15A, CLASS RK5	FU1, FU1, FU3
013	002	CC410650-007	1-410-650-P7	ALSTOM	FUSE, 20A, CLASS RK5	FU2, FU4
014	002	CC410748-010	1423123	MARATHON	TERMINAL BLOCK 3PT 200A	TBA1, TBA2
015	002	CC410748-011	CC1423	MARATHON	TERMINAL BLOCK COVER	TBA1, TBA2
016	001	CC410749-200	CS8C-22Z-48D	SPRECHER + SCHUH	CONTROL RELAY 2NO 2NC (48 VDC)	ES
017	001	CC410749-200	CS8C-22Z-48D	SPRECHER + SCHUH	CONTROL RELAY 4NO 4NC (48 VDC)	EA
018	001	CC410749-208	CS8-P22	SPRECHER + SCHUH	AUXILIARY CONTACT	EA
019	001	CC410906	1_410_906	ALSTOM	E-TRIP / 69 BLOCK	LA1
020	001	CC412934-005	1-412-934-P5	ALSTOM	SLUG	FU2
021	003	CC413318-010	6012	Penn-Union	TERMINAL BLOCK 12PT	TB1, TB2, TB3
022	001	CC413318-010	6012	Penn-Union	TERMINAL BLOCK 12PT	TB4
023	036		SCP-1	PENN UNION	SHORTING SCREW	2X, 2X, 2X, 2Y, 2Y, 1X, 2Y, 3X, 3X, 3X, 3Y, 3Y 1X, 3Y, 4X, 4X, 4X, 4Y, 4Y, 1X, 4Y, 5X, 5X, 5X 5Y, 5Y, 5Y, 6X, 6X, 6X, 6Y, 6Y, 6Y, 1Y, 1Y, 1Y 1Y, 2X, 2Y, 3X, 3Y, 4X, 4Y, 5X, 1X, 5Y, 6X, 6Y
024	012	CC413318-003	6006-SCS	PENN UNION	TERMINAL BLOCK 6PT, SHORTING	
025	001	CC413652-001	1017SP7-A-4-B	KANSON	TIME DELAY RELAY, 2 FORM "C", 48V, 1.5-120 CYC	RE
026	001	CC413653-008G	700-HT1	ALLEN-BRADLEY	TIME DELAY RELAY, 2 FORM "C", 48VDC	EML
027	001	CC413999-004	CIR409NYXX 120VAC	CHROMALOX	ANTICONDENSATION HEATER ASSY 120VAC	H1
028	006	CC416091	1-416-091	ALSTOM	COPPER STRAP	FU1, FU1, FU2, FU2, FU3, FU4
029	001	CC416206-004	1-416-206-P4	ALSTOM	TERMINAL BLOCK COVER AUX 6PT	25
030	001	CC417056-001	1-417-056-P1	ALSTOM	SWITCH BRACKET	LS1
031	001	CC417125-001	GEL 40A15/120V 15199	GE	LIGHT BULB 40W 120VAC	L1
032	001	CC990024-002	2-990-024-P2	WIKA	DENSITY MONITOR (67,52,48) PSIG-BAR SCALE-PURE SF6	EGA
033	001	CC990035-001	2-990-035-P1	ALSTOM	MECHANISM PANEL	PAN28
034	001	CC990156-003	2-990-156-P3	ALSTOM	DT72.5 RELAY PANEL, VERSION 3	PAN29
035	006	CC991268-001	2-991-268-P1	ALSTOM	6PT TB MOUNTING STRIP-NEW	PAN25, PAN27, PAN30, PAN31, PAN32, PAN33
036	001	CC410508-001	CR104PBG10B1	GENERAL ELECTRIC	PUSHBUTTON, BLACK, 2NO	EE
037	001	CC410748-001	TB206	BUSSMANN	AUX. TERMINAL BLOCK, 6 PT	AT1
038	001	CC410748-001	TB206	BUSSMANN	AUX. TERMINAL BLOCK, 6 PT	HT1
039	001	CC410748-003	TB207	BUSSMANN	AUX. TERMINAL BLOCK, 7 PT	AT2
040	001	CC49.105.100-01	49.105.100-01	ALSTOM	AUXILIARY SWITCH FK3-X	MA4
041	001	CC410651-003	RF30A1SP1	MARATHON	FUSED KNIFE SWITCH 1 POLE, 15A	FU3
042	001	CC410651-002	RF30A2SP1	MARATHON	FUSED KNIFE SWITCH 2 POLE, 15A	FU1
043	001	CC410651-003	RF30A1SP1	MARATHON	FUSED KNIFE SWITCH 1 POLE, 20A	FU4
044	001	CC410651-002	RF30A2SP1	MARATHON	FUSED KNIFE SWITCH 2 POLE, 20A/SLUG	FU2
045	001		GROUND_BAR	ALSTOM	GROUND BAR, 24PT	GND1
046	003	CC413318-010	6012	Penn-Union	TERMINAL BLOCK 12PT	TB5, TB6, TB7
047	002	CC413318-010	6012	Penn-Union	TERMINAL BLOCK 12PT	TB10, TB9
048	001	CC417294-008	1-417-294-G8	ALSTOM	SPRING CHARGE MOTOR FOR FK3-1/131	M1
049	001	CC966957	910-201-210	AEG	MBS 25 THERMAL OVERLOAD 10-16A	DT1
050	003	CC49.102.110-16	49.102.110-16	ALSTOM	COIL (48 VDC)	MC, MD, ME
051	004	CC49.105.100-01	49.105.100-01	ALSTOM	AUXILIARY SWITCH FK3-X	MA1, MA2, MA3, MB1

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				CUSTOMER: CITY OF OCALA, FL CUSTOMER ORDER No.: US-74100 SUBSTATION: SPARE SUBSTATION BREAKERS SERIAL No.: 167567-010-A, 167567-010-B			ALSTOM MATERIAL ID: CCDT1-72.5FK-001	
1	Revised BCT wiring schematic/notes on sheet 10			W.Holt	A.Izvorean	04/23/14	ALSTOM ORDER # 167567	
REV.	DESCRIPTION			DRAWN	CHECKED	DATE	CUSTOMER EQ. No.: 69kV BREAKERS	
BILL OF MATERIAL				W.Holt	A.Izvorean	04/22/14	ALSTOM GRID Inc. One Power Lane Charleroi, PA 15022	
				DRAWN	CHECKED	DATE	DRAWING No.: E167567010	
								SHT 9 OF 13

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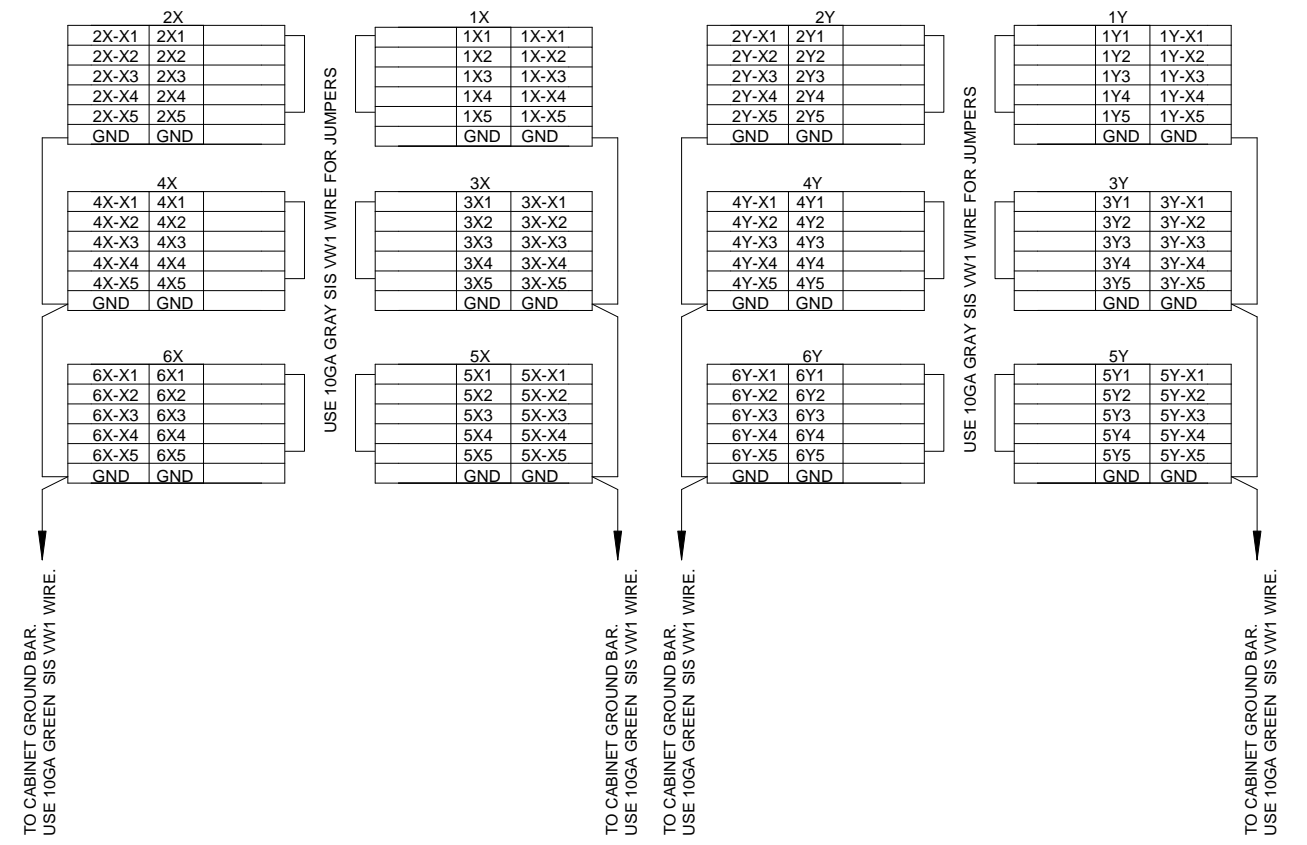
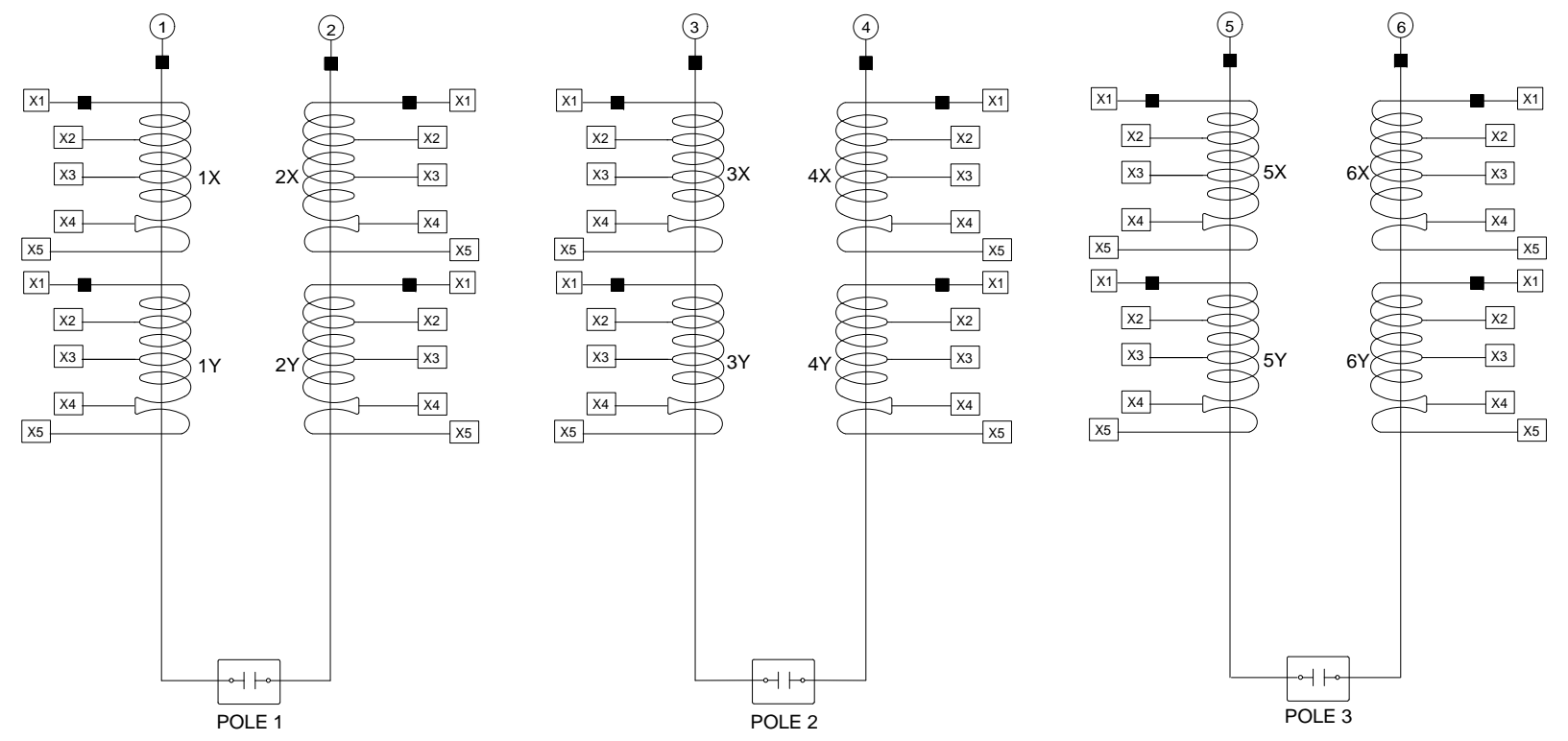
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BCT WIRING



BCT NAMEPLATE

X1 X2 X3 X4 X5
 RATIO: 1200:5 MR
 ACC: C400
 FREQ: 60 Hz
 RF: 2.0
 PART No.: CC417048-10014N
 POS: 1X-6X, 1Y-6Y

X2-X3	100:5
X1-X2	200:5
X1-X3	300:5
X4-X5	400:5
X3-X4	500:5
X2-X4	600:5
X1-X4	800:5
X3-X5	900:5
X2-X5	1000:5
X1-X5	1200:5

BUSHING	1	2	3	4	5	6
UPPER	X	X	X	X	X	X
LOWER	Y	Y	Y	Y	Y	Y

CT MFG: NARAYAN

BCT NAMEPLATE NOTES:
 1) NAMEPLATE MATERIAL: ALUMINUM
 2) NAMEPLATE LOCATION: INTERNAL
 3) NAMEPLATE DIMENSIONS AS SHOWN ON ALSTOM DRAWING 1_416_218_P3/4

CT WIRING NOTES:

- LEADS TO BE TERMINATED WITH BURNDY TYPE NON-INSULATED "YAV" LUGS.
- ALL CT LEADS ARE TO BE SHORTED BEFORE SHIPMENT.
SEE SCHEMATIC ABOVE FOR GROUNDING AND SHORTING JUMPERS.
- IN ADDITION TO JUMPERS INSTALL TERMINAL BLOCK SHORTING BARS WITH SHORTING PINS INSTALLED ON X1, X5 AND GRD POINTS OF EACH BLOCK.
- ALL BCT LEADS ARE 10GA WIRE.
- ALL GROUND WIRES ARE 10GA GREEN SIS WIRE.

CUSTOMER: CITY OF OCALA, FL
 CUSTOMER ORDER No.: US-74100
 SUBSTATION: SPARE SUBSTATION BREAKERS
 SERIAL No.: 167567-010-A, 167567-010-B

ALSTOM MATERIAL ID:
 CCDT1-72.5FK-001

1	Revised BCT wiring schematic/notes on sheet 10
REV.	DESCRIPTION

W.Holt	A.Izvorean	04/23/14
DRAWN	CHECKED	DATE

CUSTOMER EQ. No.: 69kV BREAKERS

ALSTOM ORDER #
 167567

BCT WIRING

W.Holt	A.Izvorean	04/22/14
DRAWN	CHECKED	DATE

ALSTOM One Power Lane
 Charleroi, PA 15022

DRAWING No.: E167567010

SHT 10 OF 13

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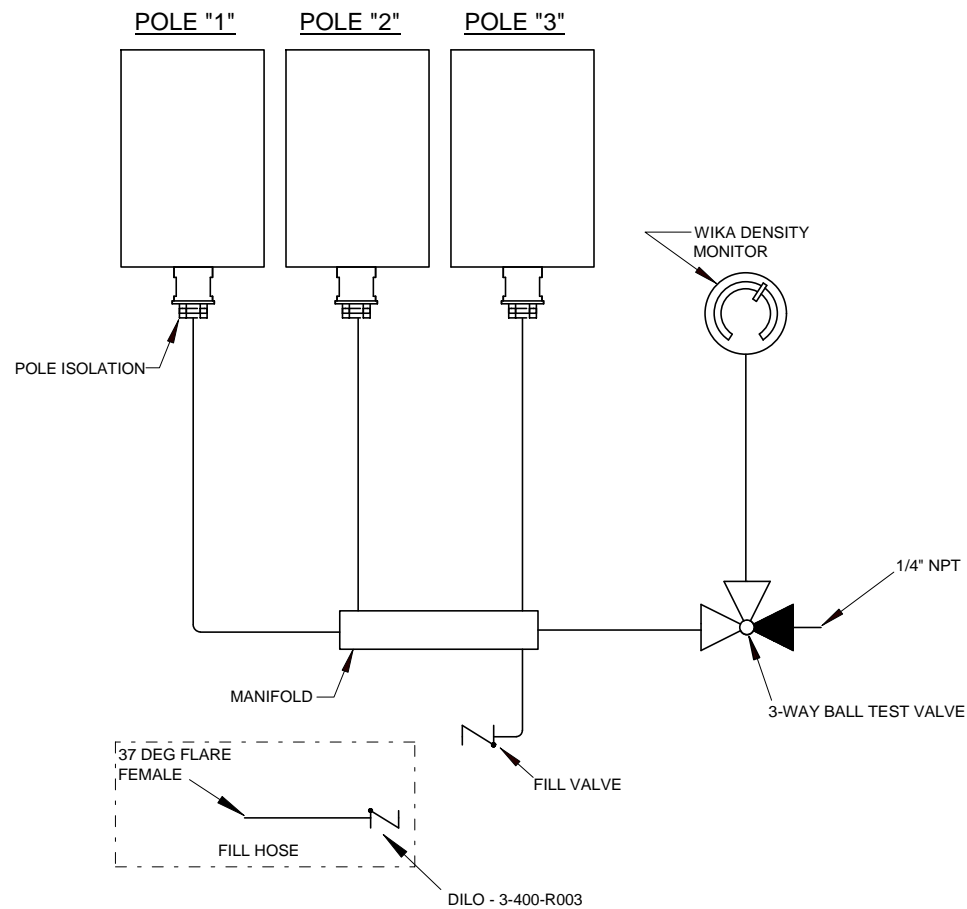
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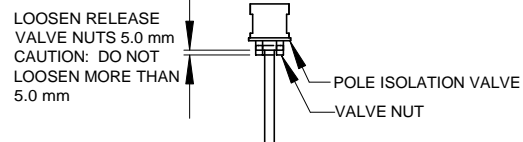
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GAS SCHEMATIC

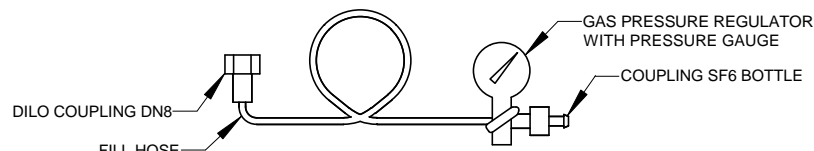


POLE ISOLATION VALVE DETAIL

- 1) WHEN TESTING THE WIKA DENSITY MONITOR, VALVE NUTS FOR ALL 3 POLES MUST BE LOOSENED
- 2) PRESS DILO VALVE TO RELEASE GAS DURING TESTING



FILL HOSE & REGULATOR DETAIL



66.7 psig - NORMAL
 52.2 psig - ALARM
 47.9 psig - LOCKOUT

ALSTOM GAUGE No. CC990024-002

- NOTES:
- 1) ALL TUBING IS 3/8" STAINLESS.
 - 2) GAS SAMPLING CAN BE DONE THROUGH FILL VALVE.
 - 3) POLE ISOLATION VALVES USED TO ISOLATE TANK FROM GAS PIPING.
 - 4) PRESSURE SWITCHES ARE LOCATED INSIDE THE DENSITY GAUGE HOUSING

RATINGS NAMEPLATE

ALSTOM		TYPE: DT1-72.5FK-F1	CUSTOMER P.O.: US-74100
SERIAL NUMBER:		167567	ORDER NUMBER: 167567
MANUFACTURE DATE:			INSTRUCTION BOOK No.: DT09FK-IM
			PARTS LIST No.: 167567-010
			WIRING DIAGRAM: E167567010
RATED MAXIMUM VOLTAGE	72.5 kV	RATED INTERRUPTING TIME	3.0 CYCLES
RATED VOLTAGE RANGE FACTOR (K)	1.0	RATED SHORT CIRCUIT CURRENT	31.5 kA
RATED FREQUENCY	60 Hz	-90% SLF WITH 0nFL_g CAPACITANCE (WITHIN 100m)	31.5 kA
DUTY CYCLE	O-0.3s-CO-15s-CO		
RATED CONTINUOUS CURRENT	1200 A	TEMPERATURE RANGE	-40°C to +50°C
CAPACITANCE CURRENT SWITCHING		SHORT CIRCUIT CURRENT WITHSTAND DURATION	3s
-VOLTAGE FACTOR	1.5	% DC COMPONENT	
-LINE CHARGING	100 A	FULL WAVE IMPULSE WITHSTAND	350 kV
-ISOLATED BANK	630 A	SWITCHING IMPULSE WITHSTAND	
-BACK-TO-BACK	630 A	-TERMINAL-TO-GROUND	N/A
-INRUSH PEAK	25 kA	-TERMINAL-TO-TERMINAL	N/A
-INRUSH FREQUENCY	3360 Hz		
OUT-OF-PHASE SWITCHING	7.875 kA		
		ALSTOM GRID INC., HIGH VOLTAGE SWITCHGEAR ONE POWER LANE - CHARLEROI, PA 15022	
		MADE IN THE USA	

- RATINGS NAMEPLATE NOTES
- 1) NAMEPLATE MATERIAL: ALUMINUM
 - 2) NAMEPLATE MOUNTED: EXTERNALLY
 - 3) NAMEPLATE DIMENSIONS AS SHOWN ON ALSTOM FABRICATION DRAWING 1_416_218_P1/P2
 - 4) MANUFACTURE DATE AND SERIAL NUMBERS TO BE FILLED IN PRIOR TO ENGRAVING

CUSTOMER: CITY OF OCALA, FL
 CUSTOMER ORDER No.: US-74100
 SUBSTATION: SPARE SUBSTATION BREAKERS
 SERIAL No.: 167567-010-A, 167567-010-B

ALSTOM MATERIAL ID:
 CCDT1-72.5FK-001

CUSTOMER EQ. No.: 69kV BREAKERS

ALSTOM ORDER #
 167567

GAS SCHEMATIC/RATING PLATE

ALSTOM ALSTOM GRID Inc.
 One Power Lane
 Charleroi, PA 15022

DRAWING No.: E167567010

SHT 11 OF 13

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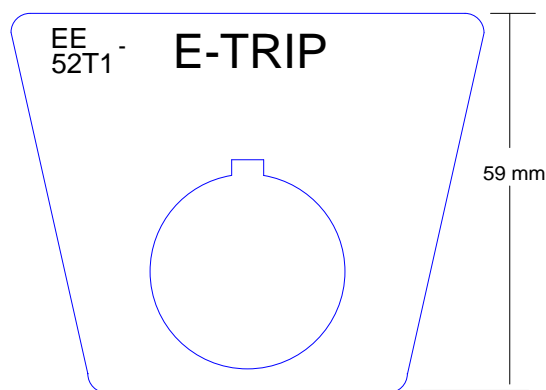
TERMINAL BLOCK MARKER STRIPS

DEVICE TAGS

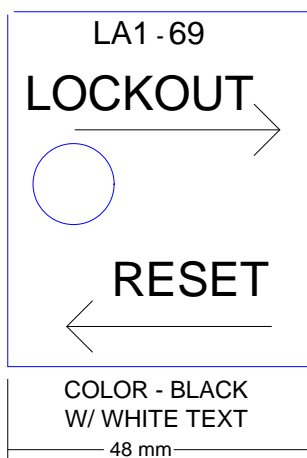
M1 • 88	MB1 • 88LS	MC • 52CC	MD • 52TC1	ME • 52TC2	LS1 •	L1 • 40 W	H1 • 2X95 W	HT1 •
AT1 •	TH1 •	AT2 •	DT1 • 49	EA • 63GX1	ES • 52Y	FU1 • 15A	SW1 • 30 AMP	EML • 88F
FU2 • 20A/SLUG	FU3 • 15A	PL1 • GFI	MA1 • 52-1	MA2 • 52-2	MA3 • 52-3	FU4 • 20A	RE • 79X	MA4 • 52-4

DEVICE TAG NOTES:

- 1) TAG MATERIAL: PLASTIC - YELLOW WITH BLACK LETTERS
- 2) TAG DIMENSIONS AS SHOWN ON ALSTOM FABRICATION DRAWING 1_417_376_P1



COLOR - RED W/ WHITE TEXT



COLOR - BLACK W/ WHITE TEXT

1X	1Y	2X	2Y	3X	3Y	4X	4Y	5X	5Y	6X	6Y
1X1	1Y1	2X1	2Y1	3X1	3Y1	4X1	4Y1	5X1	5Y1	6X1	6Y1
1X2	1Y2	2X2	2Y2	3X2	3Y2	4X2	4Y2	5X2	5Y2	6X2	6Y2
1X3	1Y3	2X3	2Y3	3X3	3Y3	4X3	4Y3	5X3	5Y3	6X3	6Y3
1X4	1Y4	2X4	2Y4	3X4	3Y4	4X4	4Y4	5X4	5Y4	6X4	6Y4
1X5	1Y5	2X5	2Y5	3X5	3Y5	4X5	4Y5	5X5	5Y5	6X5	6Y5
GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND
P12	P12	P12	P12	P12	P12	P12	P12	P12	P12	P12	P12

TERMINAL MARKER STRIP NOTES:

- 1) STRIP MATERIAL: PLASTIC - YELLOW WITH BLACK LETTERS
- 2) STRIP DIMENSIONS AS SHOWN ON ALSTOM FABRICATION DRAWING 1_417_376_P... (SEE P#S FOR EACH STRIP)

TB1 1	TB2 7	TB3 13	TB4 28	TB5 51	TB6 63	TB7 75	TB9 99	TB10 111
2	7R	17	29	52	64	76	100	112
1A	8	18	30	53	65	77	101	113
2A	9	19	31	54	66	78	102	114
1B	9R	20	32	55	67	79	103	115
2B	9A	21	33	56	68	80	104	116
3	9AR	22	34	57	69	81	105	117
4	10	23	35	58	70	82	106	118
5	10A	24	36	59	71	83	107	119
6	11	25	37	60	72	84	108	120
B1	11A	26	38	61	73	85	109	121
B2	B3	27	39	62	74	86	110	122
P11	P11	P11	P11	P11	P11	P11	P11	P11
							TBA1 40	TBA2 43
							41	44
							42	45
							P10	P10

TERMINAL MARKER STRIP NOTES:

- 1) STRIP MATERIAL: PLASTIC - BLACK WITH WHITE LETTERS
- 2) STRIP DIMENSIONS AS SHOWN ON ALSTOM FABRICATION DRAWING 1_417_376_P... (SEE P#S FOR EACH STRIP)

DEVICE TAG NOTES:

- 1) TAG MATERIAL: PLASTIC
- 2) TAG DIMENSIONS AND COLOR AS SHOWN ABOVE

CUSTOMER: CITY OF OCALA, FL
 CUSTOMER ORDER No.: US-74100
 SUBSTATION: SPARE SUBSTATION BREAKERS
 SERIAL No.: 167567-010-A, 167567-010-B

ALSTOM MATERIAL ID:
 CCDT1-72.5FK-001

1	Revised BCT wiring schematic/notes on sheet 10	W.Holt	A.Izvorean	04/23/14
REV.	DESCRIPTION	DRAWN	CHECKED	DATE

CUSTOMER EQ. No.: 69kV BREAKERS

ALSTOM ORDER #
 167567

TAGS

W.Holt	A.Izvorean	04/22/14
DRAWN	CHECKED	DATE

ALSTOM ALSTOM GRID Inc.
 One Power Lane
 Charleroi, PA 15022

DRAWING No.: E167567010

SHT 12 OF 13

A

B

C

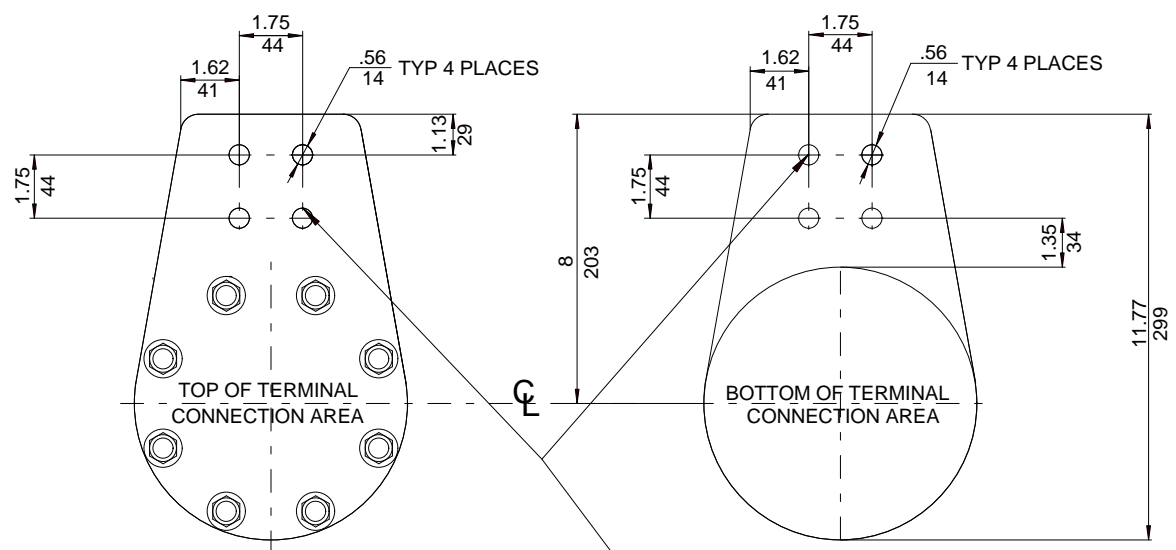
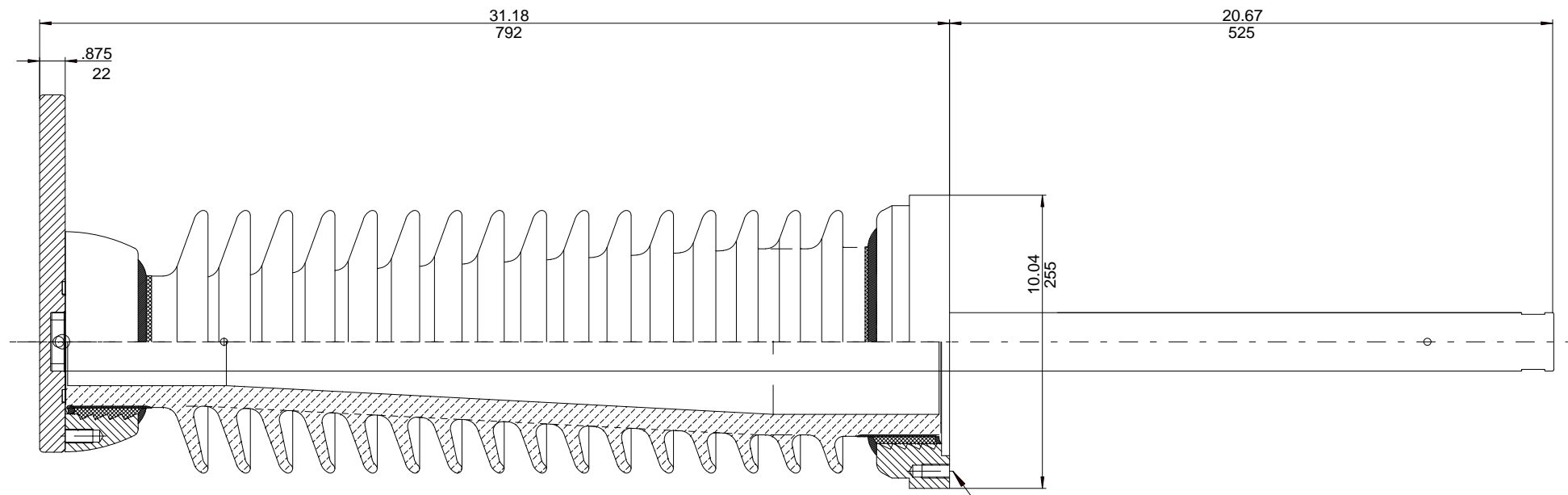
D

A

B

C

D



BOLT CIRCLE
8.86"
225mm DIAMETER

BOTH SURFACES FINISHED FOR
USE AS CONNECTION POINT

BUSHING DATA

MATERIAL: PORCELAIN
 STRIKE DISTANCE: 643 mm / 25.3 in.
 CREEPAGE DISTANCE: 1891 mm / 74. in.
 BIL: 350 kV
 COLOR: GRAY
 HIGH VOLTAGE CONNECTION: ALUMINUM - NEMA 4 - THRU HOLE
 TOP CAP PLATING: NONE

1		Revised BCT wiring schematic/notes on sheet 10	W.Holt	A.Izvorean	04/23/14
REV.	DESCRIPTION		DRAWN	CHECKED	DATE
BUSHING OUTLINE			W.Holt	A.Izvorean	04/22/14
			DRAWN	CHECKED	DATE

CUSTOMER: CITY OF OCALA, FL CUSTOMER ORDER No.: US-74100 SUBSTATION: SPARE SUBSTATION BREAKERS SERIAL No.: 167567-010-A, 167567-010-B		ALSTOM MATERIAL ID: CCDT1-72.5FK-001
CUSTOMER EQ. No.: 69kV BREAKERS		ALSTOM ORDER # 167567
ALSTOM ALSTOM GRID Inc. One Power Lane Charleroi, PA 15022		DRAWING No.: E167567010
		SHT 13 OF 13

A

B

C

D

1

1

2

2

3

3

4

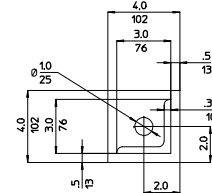
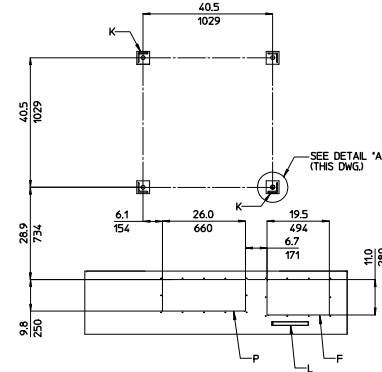
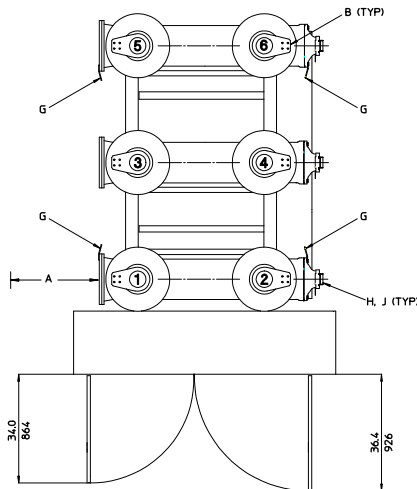
4

A

B

C

D



DETAIL "A"
(BASE PLATE)
(N.T.S.)

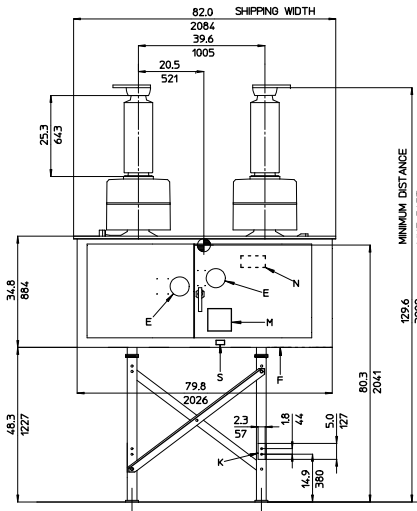
PLAN VIEW

LEGEND

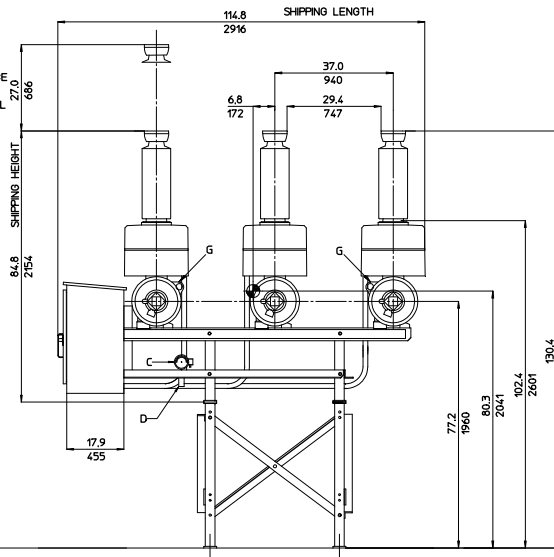
- A -- MINIMUM DISTANCE FOR INTERRUPTER REMOVAL (65 inches 1650 mm)
- B -- NEMA 4-HOLE TERMINAL PAD
- C -- SF6 DENSITY MONITOR
- D -- SF6 FILL VALVE (DILO DN8)
- E -- STORED ENERGY/POSITION INDICATOR/COUNTER
- F -- CABLE ENTRANCE
- G -- LIFTING LUGS
- H -- PRESSURE RELIEF (RUPTURE DISK TYPE)
- J -- MOLECULAR SIEVE
- K -- NEMA 2 GROUND PAD
- L -- CABINET GROUND BAR
- M -- RATINGS NAMEPLATE
- N -- BCT NAMEPLATE (INTERNAL)
- P -- MECHANISM ACCESS PANEL
- S -- EXTERNAL GFI RECEPTACLE

BUSHING CREEP: 74"
BUSHING STRIKE: 25.3"
BUSHING MATERIAL: PORCELAIN
BUSHING COLOR: ANSI 70 GRAY

CABINET RATING: NEMA 3R
CABINET MATERIAL: STEEL
CABINET COLOR: ANSI 70 GRAY



MINIMUM DISTANCE
REQUIRED FOR
BUSHING REMOVAL



TYPE DT1 72.5 F1 FK

IMPULSE WITHSTAND 350 kV

MAXIMUM VOLTAGE 72.5 kV

INTERRUPTER CURRENT RATING xx kA

CURRENT RATING xxxxx A

DIMENSIONS INCHES
mm

2700 lbs (1227 kg) BREAKER WEIGHT
29 lbs (13 kg) SF6 GAS WEIGHT
+ xxxxx lbs (xxxxx kg) CT WEIGHT
= xxxxx lbs (xxxxx kg) TOTAL WEIGHT

NOTES:

- 1) FOUR (4) 0.75" DIA ANCHOR BOLTS REQUIRED.
- 2) 3.0" MINIMUM PROJECTION ABOVE FOUNDATION.
- 3) ANCHORING TO BE SUPPLIED BY OTHERS.
- 4) FOUNDATION TO BE LEVEL WITHIN 0.25" AT FOUR (4) BASEPLATES.
- 5) SHIM AND GROUT AS REQUIRED.
- 6) RATED SEISMIC LEVEL 0.2g OF RSS PER IEEE 693
- 7) OPERATIONAL FORCES IN ANY DIRECTION = 1100N (247 lb)
- 8) HV TERMINAL STATIC HORIZONTAL FORCE (LONGITUDINAL) = 750N (169 lb)
- 9) HV TERMINAL STATIC HORIZONTAL FORCE (TRANSVERSE) = 500N (112 lb)
- 10) HV TERMINAL STATIC VERTICAL FORCE = 750N (169 lb)

CUSTOMER:
CUSTOMER ORDER No.:
SUBSTATION:
SERIAL No.:

INFORMATION ONLY

ALSTOM JOB #
J1xxxx

ALSTOM ORDER #
CX0xxxx

REV.	DESCRIPTION	DRAWN	CHECKED	DATE

CUSTOMER EQ. NO.:

OUTLINE DRAWING

ALSTOM ALSTOM Grid Inc.
One Power Lane
Charleroi, PA 15022

DRAWING No.: **DT09C1xxxx**

SHT **1** OF **1**

A

B

C

D

ALSTOM GRID INC.

TERMS AND CONDITIONS OF SALE

1. APPLICABLE TERMS AND CONDITIONS

The purchase by Customer of any Products and /or Services, (as defined below,) is expressly governed by these Terms and Conditions of Sale. Any additional or different terms and conditions set forth in Customer's requests for quotation or proposal, purchase orders, purchase order acknowledgments, or similar writings, or in Customer's electronic data interchange acknowledgments or e-mail, irrespective of the date of the same, are objected to by ALSTOM GRID and will not be binding upon ALSTOM GRID unless specifically assented to in writing by an authorized representative of ALSTOM GRID.

Furthermore, Customer's purchase order, or any oral or written direction from Customer to ALSTOM GRID to commence Work, shall constitute an acceptance of the quotation or proposal of ALSTOM GRID of which these Terms and Conditions of Sale form a part, even if the purchase order or other writing provides otherwise and/or does not reference the ALSTOM GRID quotation or proposal. To the extent permitted by law, the so-called "knock out" rule, in which differing terms between an offer and acceptance are knocked out and are not deemed part of the resulting contract between the parties, shall not apply to this contract.

2. DEFINITIONS.

"Affiliate" means any company controlled indirectly or directly by the ALSTOM GRID or any subsidiary thereof;

"Confidential Information" means all information, including but not limited to, any trade and other secret processes, data, design, pricing structure, or any technical or financial information, designated as "confidential" or "proprietary" by the Disclosing Party at the time of disclosure or within a reasonable time after such disclosure.

"Contract" means the documents that comprise the agreement between Customer and ALSTOM GRID for the sale of Products and/or Services, including these Terms and Conditions of Sale and any other documents incorporated by reference, such as, the final quotation, the agreed scope(s) of work, and ALSTOM GRID's order acknowledgment;

"Customer" means the entity to which ALSTOM GRID is providing Products or Services under the Contract;

"Data" means all ALSTOM GRID provided data in any form including, but not limited to, designs, drawings, plans, Software, User Documentation, specifications, manuals, and transmittals) which may be furnished as a deliverable of the Contract or made available to Customer in connection with the Contract.

"Hazardous Materials" means any material that is now or in the future regulated, listed or controlled pursuant to any international, federal, state or local statute, ordinance, code, regulation or any government agency or judicial body applicable to the Site as a toxic pollutant, hazardous waste, hazardous substance, hazardous material, chemical substance or mixture, pesticide, radioactive material, regulated substance, by-products or any other chemical, substance, emission or material, that potentially could impact safety, health or the environment;

"INCOTERMS" shall mean ICC version 2010;

"NTP" means Notice to Proceed;

"Parties" means collectively Customer and ALSTOM GRID;

"Party" means either Customer or ALSTOM GRID, individually;

"Personal Data" means any information relating to an identifiable natural person or to a legal entity, subject to data protection legislation in the country of incorporation.

"Product" means all material, equipment, components, products, supplies, goods that ALSTOM GRID has agreed to supply to Customer under the Order or Contract;

“Project” means a turnkey solution comprising of Products and Services, provided to Customer by ALSTOM GRID;

“ALSTOM GRID, INC.” or “ALSTOM GRID” means the entity providing Products and/or Services under the Contract;

“Services” shall mean all service activities ALSTOM GRID has agreed to perform for Customer under the Order or Contract;

“Site” means any designated site where Products are delivered or Services are performed, not including ALSTOM GRID’s premises from which it performs remote Services;

“Software” means a machine-readable, object code or machine code, computer program or compilation of data that is fixed in any tangible storage medium and shall include any of ALSTOM GRID’s proprietary software, and any updates, upgrades, derivative works, modifications, or enhancements that ALSTOM GRID provides to Customer as a deliverable under the Contract.

“Terms and Conditions” means these terms and conditions of sale.

“Work” means any and all Products and/or Services, and any other deliverables that ALSTOM GRID has agreed to perform under a purchase order, and as specified in the agreed scope of work for the purchase order.

3. QUOTATIONS

Each quotation is valid for thirty (30) days from its date of submission unless otherwise stated in the proposal/quotation, or revoked prior to the issuance of Customer’s purchase order. ALSTOM GRID may modify or withdraw the quotation at any time prior to the issuance of Customer’s purchase order.

4. PRICES

Unless otherwise specified in ALSTOM GRID’s proposal/quotations to its customer, prices are in US dollars, and are the prices in effect at the time of shipment. Prices are subject to change without notice. In the event of a price change, the effective date of the change will be the date shown on the revised quotation. However, where a price change is made by letter or telegram, the effective date may be given as part of the announcement. In the event that, after a proposal/quotation is accepted, a market fluctuation in material and/or commodity costs negatively impacts ALSTOM GRID, the parties shall agree upon an equitable price measure.

If applicable to the product sale, Customer shall refer to the special user discount sheets for more specific information.

Unless otherwise specified, prices include the costs associated with ALSTOM GRID inspection and factory tests, and freight prepaid to the first destination in the continental United States. Prices do not include the cost of insurance during the time Customer bears risk of loss, or any other costs or expenses other than those expressly set forth herein, unless specifically included in the ALSTOM GRID proposal/quotation.

5. TAXES

Unless ALSTOM GRID’s quotation specifies otherwise, the price quoted by ALSTOM GRID for the Product and/or Services do not include any Federal, state or local property, license, value added, privilege, sales, use, import, excise, gross receipts or other like taxes, or any other associated assessments, deficiencies, penalties, or interest, which may now or hereafter be applicable. Payment by ALSTOM GRID of any such taxes shall be for the account of the Customer and shall be immediately reimbursed by Customer to ALSTOM GRID.

Where Customer is located outside of the United States (i.e. an export sale from ALSTOM GRID), the Customer shall pay all customs duties or taxes, local (non-U.S.) customs broker fees or costs, as well as all other non-U.S. taxes of any type whatsoever.

6. TERMS OF PAYMENT

Unless otherwise agreed by ALSTOM GRID in writing, the following payment terms (under the Terms and Conditions of Sale, including any amendment, change order, or any additional procurement commitments of any kind whatsoever thereof,) without the Customer’s right to set-off, shall apply. For Product sales, payment terms are net thirty (30) days from date of invoice for the full purchase price of the invoiced Product. For Service agreements, payment terms are net thirty (30) days from date of invoice for performed Services. For Project agreements, payment terms shall be net thirty (30) days from the date of invoice for the

milestone payment of the invoiced work. Payment milestones shall be pursuant to the Payment Schedule of Values, included in the quotation/proposal or, if applicable, other agreed payment milestones. An agreed mobility payment shall be paid ten (10) days after the date of execution of the Contract. Any and all milestones shall be contingent on the completion of ALSTOM GRID'S Work or segment thereof, and not contingent on any higher tiered Contract Schedule of Values. ALSTOM GRID does not accept any conditional payment terms.

If any product, service, or project payment is delayed by Customer acts or omissions, and ALSTOM GRID has performed in accordance with the Contract, except for those Customer acts or omissions, ALSTOM GRID shall be entitled to invoice for those payments, as if fully performed, and Customer shall pay the invoices pursuant to the payment terms herein. Any such orders will be subject to the prices in effect at the time of the release of the hold or the reschedule.

Any order may be subject to credit verification of the Customer at any time. If, in the judgment of ALSTOM GRID, the financial condition of Customer is reasonably called into question, then ALSTOM GRID may require payment in advance, or suspension or cancellation without any liability or obligation, of any outstanding order whereupon ALSTOM GRID shall be entitled to receive reasonable cancellation charges. At any time, ALSTOM GRID may require Customer to provide a letter of credit, payable upon demand or other security instrument (at ALSTOM GRID's election), for such amount as ALSTOM GRID determines and with such terms acceptable to ALSTOM GRID, as a precondition of performance under this Contract. In addition to ALSTOM GRID's other rights and remedies upon Customer termination for default, ALSTOM GRID may draw on the letter of credit or other accepted security interest to compensate ALSTOM GRID for any costs and expenses associated with the Customer's termination for default.

In the event that Customer fails to pay invoices when due, in addition to any other available remedies, in law or in equity, to ALSTOM GRID, Customer shall pay from the date the invoice payment is due, in addition to the overdue payment, a late charge equal to the greater of one and one half percent (1.5%) per month or the highest applicable rate allowed by law on all such overdue amounts. Customer shall be responsible for any and all costs and expenses, including reasonable attorney's fees, incurred by ALSTOM GRID's in any jurisdiction in connection with the collection of Customer payments.

ALSTOM GRID retains a security interest in any and all Products until ALSTOM GRID has been paid the full purchase price by the Customer. ALSTOM GRID preserves its rights to file in any jurisdiction financing statements and any associated documents, and to perfect such security interest in the Products. Customer further consents to ALSTOM GRID, that until ALSTOM GRID has been paid the full purchase price by Customer, ALSTOM GRID may remove any Product from the property of Customer or Customer's customer.

7. RISK OF LOSS AND TITLE TRANSFER

ALSTOM GRID's responsibility under this Article is limited to the repair or replacement of the Product or Service provided by ALSTOM GRID to Customer before risk of loss passes to the Customer, except that ALSTOM GRID shall have no responsibility herein if loss or damage is caused by Customer, Customer's third party contractors or other third parties, or in case of uninsurable risks. Risk of loss of any Product shall pass to the Customer upon title transfer, unless otherwise stated in the ALSTOM GRID quotation/proposal. For licensed Software, only the title to the Software license is transferred. All other ownership rights in the Software remain with the Licensor.

For any equipment, special tools or other Customer supplied materials that Customer provides to ALSTOM GRID during the term of the Contract, the risk of loss remains with the Customer at all times. For any repair Services performed at an ALSTOM GRID designated site, the Customer shall be responsible for the risk of loss and all costs associated with the transport of the equipment to and from the designated repair site, unless otherwise specified in the quotation.

For Products shipped from a manufacturer outside the country where the Products will be installed the title transfers to Customer upon the departure of each Product from the territorial land, seas or airspace of the country that the Product is shipped. For Products shipped within the same country as the Products' final destination, title transfers to Customer when Products are made available for shipment from the manufacturer's factory or ALSTOM GRID's designated storage facility.

8. DELIVERY.

All Products shipped by ALSTOM GRID to Customer will be shipped in accordance with the INCOTERMS 2010, as specified in the applicable quotation. ALSTOM GRID will determine the point of origin of shipment, the method of transportation and the routing of shipment. Customers requiring shipment by a method or routing other than that of ALSTOM GRID's selection will be

billed any excess or premium in transportation charges. For example, in the event the Customer requests air shipment, ALSTOM GRID will absorb an amount equal to the charges of the normally selected common carrier. If the actual transportation charges on these shipments are less than such common carrier charges, then no allowance will be made for the difference. In no event will ALSTOM GRID be responsible for demurrage or detention charges. Any charges for special services, including, but not limited to, special train, lighterage, or construction, or repair of transportation facilities will be paid or reimbursed by the Customer. As applicable, shipping dates are approximate and are based on receipt of complete information with the order. If drawing approval is required, drawings must be returned on schedule to maintain shipping date.

Unless established by the operative INCOTERM or in the applicable ALSTOM GRID quotation, ALSTOM GRID will not participate in any settlement of claims for concealed or other shipment damage. To the extent that the operative INCOTERM or the applicable ALSTOM GRID quotation provides for ALSTOM GRID's intervention in this regard, the Customer must unpack immediately and, if damage is discovered, must:

- i) Not move the product from the point of examination.
- ii) Retain shipping container and packing material.
- iii) Notify the carrier of any apparent damage in writing on carrier's delivery receipt and request the carrier to make an inspection.
- iv) Notify the ALSTOM GRID location from which shipment originated within seventy-two (72) hours of delivery.
- v) Send ALSTOM GRID a copy of the carrier's inspection report.

9. DELAY DAMAGES

Delay Damages. Unless the ALSTOM GRID quotation/proposal specifies otherwise, to the extent that ALSTOM GRID is responsible for any delays in its performance under these Terms and Conditions of Sale, with respect to meeting the final delivery date for the Product, its total liability for such performance delay to the Customer shall not exceed an amount equal to 5% of the value of the subject Product order allocable to the Product associated with the performance delay. Compensation for Customer's delay damages (in no event exceeding the 5% cap) will represent the full and final satisfaction of ALSTOM GRID's liability for delay. Unless liquidated damages are agreed during the solicitation for the procurement, but in no event shall the rate be greater than 0.5% (of the value of the subject purchase order allocable to the Product associated with the performance delay) per week of delay, Customer shall be obligated to substantiate through appropriate and reliable documents its damages incurred on account of the late performance of ALSTOM GRID. Customer's performance delay damages shall not be recovered for any intermediate milestones or deliverables by ALSTOM GRID, and covers only the final delivery of the Product. Any amounts payable to Customer by ALSTOM GRID hereunder shall be included as part of the total, aggregate liability cap set forth in Article 16. Customer shall use reasonable efforts to mitigate the effect of any delay caused by ALSTOM GRID.

ALSTOM GRID shall under no circumstances be liable for late delivery damages to Customer where such late delivery has been caused by a force majeure event as defined herein, a suspension of the work, a change order or modification to the Product requested by Customer, or any other act or omission of the Customer or its agents, contractors or subcontractors which has contributed to or resulted in the delay in question.

This Article shall not apply if in the ALSTOM GRID quotation, ALSTOM GRID specifies that the delivery dates are not firm dates. In such case, ALSTOM GRID shall use commercially reasonable efforts to meet the agreed delivery dates. ALSTOM GRID shall not be responsible for any delay damages incurred by customer, nor shall any delays in delivery be considered a material breach of the contract.

Force Majeure. ALSTOM GRID shall not be liable for failure to perform or for delay in performance due to, any cause beyond its reasonable control, including, but not limited to: acts of God; unusually severe or harsh weather conditions; fire; flood; hurricanes; tornadoes; strikes or other labor difficulties; riots; epidemics; quarantine restrictions; war, insurrection or riot; acts of a civil or military authority; title and environmental issues; embargoes; fuel or energy shortage; blockades; transportation delays or accidents; faulty castings or forgings; inability to obtain necessary labor, materials or manufacturing facilities from usual sources; and delays of subcontractors. In the event of delay in performance due to any of the foregoing causes, the date of delivery or time for completion will be extended by a period of time equal to the greater of: (i) the time reasonably necessary to overcome the effect of such delay; or (ii) the time equal to the period of the delay. Either party may terminate the Contract if the force majeure event extends past ninety days.

Excusable Delays. ALSTOM GRID shall not be liable nor in breach or default of 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 (or omissions) of Customer or Customer's other contractors, suppliers, agents, or representatives; delays in the Customer's issuance of the NTP or Purchase order; any act or failure to act or delay in acting on the part of any governmental authorities, including the issuance or failure to issue government permits and/or export or re-export permits/licenses; or changes in laws. In the event of delay in performance due to any of the foregoing causes, ALSTOM GRID shall be entitled to: (1) an extension to the date of delivery or time for completion equal to the greater of: (i) the time reasonably necessary to overcome the effect of such delay; or (ii) the time equal to the period of the delay; and (2) an equitable adjustment of the price based on the cost impact of such delay.

10. PRODUCT NOTICES.

Customer shall provide the user (including its employees) of the Product with all ALSTOM GRID supplied Product and patent notices, warnings, instructions, recommendations and similar materials. Under no circumstances shall Customer or the user of the Product remove any such information which may be affixed to the Product or to the related materials shipped with the Product.

11. TESTING AND ACCEPTANCE OF PRODUCT.

Testing of the Product before shipment is carried out in accordance with ALSTOM GRID's routine factory test procedures and at ALSTOM GRID's cost. In the event that the Customer requires additional tests beyond ALSTOM GRID's standard factory tests, Customer shall bear the cost of the same. As far as circumstances allow, such additional tests shall be carried out in ALSTOM GRID's factory. If it is found from one of the aforementioned tests, that the Product does not meet the specifications of the order, the Customer will allow ALSTOM GRID a reasonable opportunity for ALSTOM GRID to remedy any test related deficiency. Upon the Customer's request, ALSTOM GRID shall provide ANSI/IEEE test reports for the Product, with Customer paying any incidental costs or administrative fees associated with such request.

Customer may witness factory testing, provided (i) there is no delay to the testing schedule; (ii) ALSTOM GRID is not responsible for any costs or expenses that Customer may incur; and (iii) Customer is limited to the test area of the Product and Services while at the site. ALSTOM GRID will proceed with witness testing at the time agreed, irrespective of Customer's delay in attendance. Tests performed during the absence of a witness shall be deemed to meet the witness requirements. Any additional testing requested by Customer may be performed solely at ALSTOM GRID'S election. Customer shall bear all costs associated with any such additional testing. Any additional testing shall be deemed an Excusable Delay pursuant to Article 9.

Unless otherwise specified in the quotation/proposal, after the successful completion of all factory tests and delivery of the Product to Customer, Customer shall, within forty-eight hours of delivery of Product or completion of Services, inspect and reject or accept the Product or Service. If Customer does not reject the Product or Service within the forty-eight hour period, the Product or Service shall be deemed to have been accepted by the Customer.

12. ENVIRONMENTAL, HEALTH AND SAFETY.

Customer shall be responsible, at all times, for the environmental, health and safety conditions at any Customer site. ALSTOM GRID will comply with any Customer environmental, health and safety requirements, including all applicable regulations, laws or codes while at the site, provided Customer gives to ALSTOM GRID in writing such Customer requirements for review, and Customer provide environmental, health and safety training to ALSTOM GRID's on-site employees, including its subcontractors and supplier.

Notwithstanding that the sole responsibility of the Customer to provide safe work conditions remains with the Customer at all times, ALSTOM GRID preserves the right to perform environmental, health and safety audits at any time to ensure safe work conditions for its employees.

Prior to the commencement of any on-site work, Customer will provide to ALSTOM GRID documentation concerning any Hazardous Materials at or near the Site. ALSTOM GRID may perform a Site inspection and may provide such findings to the Customer. Notwithstanding the above, the responsibility for the site condition, (including but not limited to, underground or sub-soil risk; latent conditions; soil contamination; pre-existing, unidentified or buried site services; climatological or ambient conditions; existing or planned environmental hazards, pollutions, or asbestos; and any other conditions that is not solely within ALSTOM GRID's control) remains the responsibility of the Customer. All cost associated with the storing, handling, removal,

transport, clean up and disposal of any and all hazardous materials at the site shall be bore by the Customer. Customer shall indemnify, defend and hold harmless ALSTOM GRID for any third party (including employees of ALSTOM GRID or its subcontractors and suppliers) claims arising out of, in connection with, or related to the presence or alleged presence of Hazardous Material or any other environmental, health, or safety related condition alleged on or near the site.

Under this Article, ALSTOM GRID may, in addition to other rights or remedies available to it, terminate the Contract for Customer's default or suspend performance of all or any part of the Contract, until such time as the condition is remedied. ALSTOM GRID shall be entitled to an equitable adjustment for any and all costs as a result of the suspension and automatic extension of time equivalent to the time to recover the schedule delay. ALSTOM GRID shall not be obligated to commence or continue work until Customer causes the unsafe conditions to be remedied to ALSTOM GRID's satisfaction.

13. WARRANTY

ALSTOM GRID warrants that the Products manufactured will be delivered free of defects in workmanship and material and manufactured in compliance with the Product specifications. Service will be performed competently by qualified persons in accordance with generally accepted industry practices and pursuant to the Contract. Any Software, whether delivered separately or embedded in a Product, shall function in accordance with the Software documentation provided to Customer. Products supplied by ALSTOM GRID but manufactured by others are warranted only to the extent of the original manufacturer's warranty. ALSTOM GRID provides no further warranty than the original manufacturer warranty provides.

The following warranty durations, unless otherwise specified in the applicable quotation, shall apply:

Products: The warranty for Products shall be thirty (30) months from the date of notification of readiness of shipment or twenty four (24) months from the date of first use by Customer or the end user, whichever occurs first.

Services: The warranty for any Services performed under this Contract shall be twelve (12) months from the completion of the performance of the subject Service. For any out of warranty repair service, the warranty period shall be ninety (90) days limited to the repaired portion of the Product and the repair services performed.

Projects: The warranty for Projects shall be respectively twelve (12) months from the completion of each project milestone deliverable, as detailed in the schedule of values or other attachment for deliverables.

In the event that the Product and/or Service fails to comply with the warranty and ALSTOM GRID is notified by Customer promptly, in writing, within the applicable warranty period, ALSTOM GRID will inspect the Product and determine whether the claim is under warranty. If ALSTOM GRID determines that the Product or Service did not comply with the warranty, ALSTOM GRID will correct such non-conformity by repair or, at its option, by making available Ex Works, repaired or replacement parts as Customer's sole remedy. If the original new Product or Service warranty period applicable to the failed Product or Service has not expired, no additional warranty or extension of such warranty period shall be granted. (as applicable, the "Warranty Period"). Any repair or replacement undertaken in accordance with this Article shall not serve to renew or extend the ALSTOM GRID warranty coverage herein.

The foregoing warranty obligation of ALSTOM GRID shall be void in respect to any nonconforming Product resulting from the Product not having been handled, monitored, stored, installed, operated and/or maintained in accordance with ALSTOM GRID's specifications, instructions, recommendations and industry standard practices. ALSTOM GRID's warranty obligations do not extend to normal wear and tear or consumables.

For the installation or commissioning of ALSTOM GRID's Product, the Customer must use the services of ALSTOM GRID or those of ALSTOM GRID's Affiliates, or, alternatively, be factory trained by ALSTOM GRID (or ALSTOM GRID's Affiliates) for such purpose, or have received ALSTOM GRID approved training from a third party; otherwise, the warranty protection herein shall not apply.

Customers purchasing for resale must provide ALSTOM GRID with the name and location of the end user of the Products. Any resale is expressly subject to the export control regulations of the United States.

The ALSTOM GRID warranty obligation shall also be void as it relates to any nonconformity resulting from a defect due to the Customer's design specifications, the operation of the Product under abnormal conditions or contrary to specifications or instructions of ALSTOM GRID and industry standard practices; or where such use results in excessive wear and tear; or where modifications, alterations or repairs have been made by Customer or a third party without the consent of ALSTOM GRID.

ALSTOM GRID's repair or replacement obligations set forth herein are the Customer's exclusive remedy for any failure of ALSTOM GRID to meet the material and workmanship standards set forth in ALSTOM GRID's specifications. As such, correction of any non-conformity in the manner and for the period of time provided herein shall fully insulate ALSTOM GRID from any liability under this Article, whether the claims of the Customer are based in contract, tort (including negligence and strict liability), indemnity or any other legal theory with respect to or arising out of the Product.

In connection with the warranty obligations herein, unless the Customer and ALSTOM GRID agree otherwise, ALSTOM GRID shall not be responsible for gaining access to the Product, nor for disassembly, reassembly and/or transportation of the Product or its parts to or from the place of installation. Accordingly, in and out charges, including, but not limited to the cost of removal of the defective Product from its related system, and the cost of its reinstallation in such system, union or customer labor costs, site and/or ancillary equipment costs, including, as stated above, all transportation costs to and from ALSTOM GRID's plant or repair shop shall be borne exclusively by the Customer. The Customer shall not return or dispose of any Product or part thereof with respect to which it intends to make a claim under the foregoing warranty, without the express prior written authorization of ALSTOM GRID.

THE EXPRESS WARRANTIES SET FORTH IN THIS ARTICLE ARE EXCLUSIVE AND NO OTHER WARRANTIES OF ANY KIND, WHETHER STATUTORY, ORAL, WRITTEN, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OF TRADE, SHALL APPLY. THE CUSTOMER'S EXCLUSIVE REMEDIES AND ALSTOM GRID'S ONLY OBLIGATIONS ARISING OUT OF OR IN CONNECTION WITH THE PRODUCT, SERVICE OR PROJECT, WHETHER BASED ON WARRANTY, CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, SHALL BE THOSE STATED HEREIN.

ALSTOM GRID warrants that the Product supplied hereunder will be delivered free of any and all rightful claims, demands, liens or encumbrances. In the event of a breach of this warranty, Customer shall promptly notify ALSTOM GRID and ALSTOM GRID, at its expense, will defend the title to any affected Product or part thereof and if unsuccessful will promptly provide to Customer, at no cost, replacement parts or equipment which comply with this warranty.

14. INTELLECTUAL PROPERTY.

The sale by ALSTOM GRID of any Product ordered hereunder does not convey to Customer any of ALSTOM GRID's intellectual property, including, but not limited to: patents, copyrights, trademarks, trade secrets, designs, artwork or other proprietary rights, except Customer's non-exclusive right to use such intellectual property solely for the purpose of, and only to the extent necessary for, use of the Product purchased hereunder in accordance with ALSTOM GRID's published specifications or user documentation. Sale by ALSTOM GRID of the Product ordered hereunder does not grant to Customer or to Customer's customers, or anyone claiming under Customer, a license, express or implied, to use such Product in combination with any other machine or device, or in any process, under any patent, copyright, mask work right or other intellectual property right of ALSTOM GRID (or of any third party) covering or relating to such usage. Ownership of all applicable patents, copyrights, trademarks, trade secrets, and other intellectual property rights in the Products sold hereunder, including the associated documentation and specifications shall remain vested solely in ALSTOM GRID or (if applicable) its licensors. Customer agrees not to copy, reverse engineer, in whole or in part, any of ALSTOM GRID's Product for any purpose whatsoever.

With respect to Data, (including Software whether embedded in the Product or provided separately), ALSTOM GRID grants to Customer a limited non-exclusive non-transferable (except with ALSTOM GRID's consent) license (the "License") to use (i) the Data for the Customer's internal business purposes (ii) the embedded Software solely as embedded in, and for execution on the specific Product originally purchased by Customer from ALSTOM GRID; (iii) any Software provided separately in connection with the Product originally purchased by Customer from ALSTOM GRID. Customer may make one (1) copy of separately provided Software for archival, backup or recovery purposes. Any copies must reproduce the copyright notice originally on Software. Product purchase documents, paper or electronic user documentation, and/or particular licenses purchased by Customer may specify additional limits to Customer's use of the Data, including Software. Customer's use of the Embedded Software shall

be subject to all such limitations and purchase of all applicable licenses. This License does not grant any rights in any Software source code.

Customer shall not copy (except as specifically granted above), modify, or disassemble the Software, or permit others to do so. Customer shall not transfer the license granted hereby or possession of the Software except as part of the ALSTOM GRID Product, such transfer being subject to all of the restrictions contained herein. Customer shall not and shall not allow any third party to: (i) decompile, disassemble, reverse engineer or attempt to reconstruct, identify or discover any source code, underlying ideas, or algorithms of the Software by any means whatever, or disclose any of the foregoing; (ii) modify, adapt, translate, incorporate into or with other software, or create a derivative work of any part of the Software; (iii) attempt to circumvent any limits or other license, timing or use restrictions that are built into the Software; (iv) remove any proprietary notices, labels, or marks on or in any copy of the Product in which ALSTOM GRID's Software is embedded; (v) use any 'locked' or 'key-restricted' feature, function, service, application, operation, or capability without first purchasing the applicable license(s) and obtaining a valid key from ALSTOM GRID, even if such feature, function, service, application, operation, or capability is enabled without a key; (vi) use the embedded Software on non-ALSTOM GRID Product; (vii) use the Software in any manner other than as expressly provided herein; (viii) transfer, distribute, resell any rights under this License, (except if ALSTOM GRID specifically consents and grants such rights under a separate license.) ALSTOM GRID may terminate this License upon written notice to Customer for violation of any of the terms of the foregoing License.

Any Data is confidential subject to Article 25 of this Contract and protected by copyright, trade secret, and patent laws of the United States of America (and by applicable international treaties). ALSTOM GRID retains ownership of all right, title and interest (including copyright) in and to the Data, including Software. Nothing in this Contract constitutes a transfer or conveyance of any right, title or interest in the Software, except the limited right to use it as provided herein.

In addition, to the extent portions of the Software are distributed under and are subject to open source licenses obligating ALSTOM GRID to make the source code for such portions publicly available (such as the GNU general public license ("GPL") or the GNU library general public license ("LGPL"), ALSTOM GRID will make such source code portions (including ALSTOM GRID modifications, as appropriate), available upon request for a period of up to three (3) years from the date of distribution. Such requests can be made in writing to ALSTOM GRID, Two International Plaza, Suite 325, Philadelphia, PA 19113, Attn: General Counsel; you may obtain a copy of the GPL at [HGTP:\\www.gnu.org\\license\\gpl.html](http://www.gnu.org/license/gpl.html), and a copy of the LGPL at [HGTP:\\www.gnu.org\\licenses\\lgpl.html](http://www.gnu.org/licenses/lgpl.html).

15. INTELLECTUAL PROPERTY INFRINGEMENT INDEMNIFICATION

ALSTOM GRID shall, at its expense, defend any suit brought against Customer based on a claim that any Product furnished by ALSTOM GRID pursuant to this Contract constitutes an infringement of any United States patent, and ALSTOM GRID shall pay all judgments and costs recovered against Customer in any such suit and shall reimburse Customer for costs or expenses incurred by Customer in the defense of any such suit, provided that Customer gives ALSTOM GRID prompt and timely notice of such suit (sufficient to timely and reasonably prepare and respond to any inquiry, summons, filing, complaint, motion, etc. which could affect ALSTOM GRID's and/or Customer's rights), reasonable assistance in the defense thereof, and full opportunity to control all aspects of the defense thereof, including settlement. In the event such Product is held to constitute infringement, and the use of the Product is enjoined, ALSTOM GRID shall, at its option, procure for Customer the right to continue using the Product (i.e. a license); replace it with non-infringing product; modify it so it becomes non-infringing; or remove the Product and refund the Contract Price applicable thereto. For any third party provided Product or Services, only the indemnity provided by the third Party, if any, shall apply.

ALSTOM GRID's liability for patent infringement shall not apply to:

- (i) Patented processes performed by the Product or another product produced thereby;
- (ii) Products supplied according to a design other than that of ALSTOM GRID and which is required by the Customer; or
- (iii) Modifications of the Product or combinations of the Product with another product not furnished by ALSTOM GRID.

THIS ARTICLE 15 STATES THE ENTIRE LIABILITY OF ALSTOM GRID FOR PATENT INFRINGEMENT BY ANY PRODUCT FURNISHED PURSUANT TO THIS CONTRACT.

16. LIMITATION OF LIABILITY

The liability of ALSTOM GRID, including its Affiliates, parent company, shareholders, subsidiaries, officers, directors, employees, agents, assigns and their respective predecessors and successors, to the Customer, including Customer's customers, its Affiliates, parent company, shareholders, subsidiaries, officers, directors, employees, agents, assigns and their respective predecessors and successors, for any claim, demand, judgment, whether by indemnity, or in contract, guaranty, warranty, tort (including negligence and/or strict liability), by statute, or under any other legal theory, shall not exceed the purchase order amount allocable to the specific Product and/or Service in question under the purchase order. ALSTOM GRID's total liability for all claims shall not exceed the purchase order price.

ALSTOM GRID shall under no circumstances be liable to Customer, including Customer's customers, its affiliates, parent company, shareholders, subsidiaries, officers, directors, employees, agents, assigns and their respective predecessors and successors, whether by indemnity, or in contract, guaranty, warranty, tort (including negligence and/or strict liability), by statute, or under any other legal theory for any special, treble, incidental, indirect or consequential damages or for loss of profit, loss of production, loss of contract, loss of revenue, loss of use, business interruptions, cost of replacement power or temporary equipment (including additional expenses incurred in using existing facilities); claims or damages of Customer's customers; cost of money; loss of investment opportunity; loss of business opportunity; increased operating costs; financing costs; or government fines, penalties or sums due, even if Customer has advised ALSTOM GRID in advance of the possibility of such economic and/or financial damages or losses. Under no circumstances may ALSTOM GRID be liable to Customer for punitive damages, nor may any arbitrator(s) or court of law award punitive damages against ALSTOM GRID. ALSTOM GRID shall not be liable, under any circumstances, for any gratuitous advice, support, or services, not included in the scope of work of the Contract, whether or not Customer solicited, requested, or directed ALSTOM GRID employee or its subcontractors or suppliers, to provide such advice, support or services. ALSTOM GRID shall not be liability for any claim, brought under any legal theory, arising out of the sale of any Product, Service or Project or subject matter of this Contract that accrues after the expiration of the warranty period or the earlier termination of the Contract. ALSTOM GRID shall be entitled to the payment of its attorneys' fees, consultants' fees and costs and expenses in the event that ALSTOM GRID is forced to defend a legal action by Customer which claim(s) is covered and/or precluded by this Article.

The remedies of the Customer set forth in this Article or anywhere in the Contract are exclusive with respect to the Product, Project and/or Services and include anything done in connection with the Product, such as the performance or breach thereof, or from the manufacture, sale, repair or replacement, delivery, resale, or use of the Product. In the event that there are conflicting terms within the Contract and this Article, the terms which further limit ALSTOM GRID's liability shall control.

17. CONTRACT VARIATIONS.

Drawing Approval and Changes. If Customer requires approval of drawings such review, comment and/or approval must be received by ALSTOM GRID no later than ten (10) business days after submittal of drawings by ALSTOM GRID to Customer. Customer's failure to comply with this requirement could result in delays in performance and increased costs. If at drawing approval, ALSTOM GRID has failed to design the Product in accordance with the Customer's specification, ALSTOM GRID will, at its own expense, make the appropriate changes. Where Customer's specifications are not sufficiently detailed or if a change does not affect form, fit or function, ALSTOM GRID reserves the right to design the Product in line with ALSTOM GRID's judgment and good commercial practice. If at any time, the Customer makes changes to the contract design as covered in Customer's specifications, the contract shall be subject to renegotiation of the price terms and delivery dates to reasonably cover any additional costs and commitments occasioned by the change.

Changes to Scope. Either Party may propose changes in scope to the Contract. If both Parties agree to the change in scope, ALSTOM GRID shall in such case provide a proposal, including cost and schedule impact, for negotiation between the Parties. Such change shall be implemented by a written Change Order executed by both Parties. If the Parties are unable to agree to the equitable adjustments, after good faith efforts, either Party may pursue resolution pursuant to the dispute resolution process set forth in Article 26.

Changes in Law. To the extent changes in applicable laws, rules and regulations impact the Order or Contract price, schedule, liabilities or risks, the Contract shall be amended to include such equitable adjustments to compensate ALSTOM GRID for

compliance with the changes. If the Parties are unable to agree to the equitable adjustments in price and/or schedule, after good faith efforts, either Party may pursue resolution pursuant to the dispute resolution process set forth in Article 26.

18. TERMINATION BY CUSTOMER.

This Contract may be terminated by the Customer without cause in whole or in part, only after the Customer provides to ALSTOM GRID sixty (60) days' written notice. Customer shall compensate ALSTOM GRID for all losses, damages, costs and expenses incurred, including, but not limited to, the price for all Products delivered and all work in progress and any services performed up to the date of termination, reasonable and proper termination charges, cancellation fees, overhead and profit and any additional costs resulting from the termination. Twenty percent (20%) of the final net price will be included in the termination charges to compensate for disruptions in scheduling, planned production, and other costs. Payment shall be made by Customer to ALSTOM GRID within thirty (30) days from the date of invoice. Notwithstanding the foregoing, Customer will not be able to terminate or cancel its order if such intended termination or cancellation is within the greater of six weeks of the projected delivery date of the Product or the start of production of the Product. In such case, Customer will be fully bound and obligated to ALSTOM GRID in accordance with these Terms and Conditions of Sale and the agreed upon price terms.

Any Contract may be terminated in whole or in part by the Customer for cause upon an event of default only after: (i) the Customer has provided written notice to ALSTOM GRID; (ii) the notice provides a reasonable cure period to pursue a remedy or provide an agreed plan to remedy, (but in no event less than thirty days after receipt of notice), (iii) the cure period has lapsed without ALSTOM GRID beginning to pursue and continuing to pursue a remedy. In the event the Contract is terminated for cause, Customer, as its exclusive remedy and ALSTOM GRID's sole liability, shall be compensated for the reasonable, verified and direct costs the Customer incurred to complete the remaining Work under the contract, less that portion of the Contract price allocable to the terminated scope. Customer has a duty to mitigate under this Article.

In the event that the Customer suspends the Contract and ALSTOM GRID is not in default, the Customer shall compensate ALSTOM GRID for any costs and expenses reasonably incurred, including but not limited to, demobilization/remobilization costs, additional labor costs, storage costs, and rental fees. ALSTOM GRID shall be entitled to an extension to the schedule for a period reasonably necessary to overcome the effects of any suspension.

19. EVENTS OF DEFAULT.

An event of default occurs if a Party (i) substantially breaches a material obligation (including non-payment, or any excessive or repeated Customer delays or holds), except if such obligation has a remedy specified elsewhere in the Contract; (ii) makes any material representation to the other Party that is substantially false; (iii) becomes insolvent, makes an assignment for the benefit of its creditors, has a receiver or trustee appointed for the benefit of its creditors, or files for protection from creditors under any bankruptcy or insolvency laws.

20. CANCELLATION, SUSPENSION, TERMINATION RIGHTS OF ALSTOM GRID

The Contract may be terminated or suspended by ALSTOM GRID for cause in whole or in part, after ALSTOM GRID provides to Customer ten (10) days written notice and Customer does not remedy the default. Customer shall compensate ALSTOM GRID for all losses, damages, costs and expenses incurred, including, but not limited to, the price for all Products delivered and work in progress and any services performed up to the date of termination, reasonable and proper termination charges, cancellation fees, overhead and profit and any additional costs resulting from the termination and twenty percent (20%) allocable to the terminated portion of the work. In the event of suspension, Customer shall compensate ALSTOM GRID for any and all demobilization and remobilization costs or expenses incurred by ALSTOM GRID during the suspension.

21. NUCLEAR INSURANCE—INDEMNITY

For applications in nuclear projects, the Customer and/or Customer's customer shall have complete and proper insurance protection against liability and property damage resulting from nuclear incidents/accidents and shall fully indemnify, defend and hold harmless ALSTOM GRID, its suppliers and subcontractors, of all tiers, against all claims resulting from a nuclear incident.

22. PRESENCE AND REMEDIATION OF ASBESTOS

The Customer must inform ALSTOM GRID regarding the presence of asbestos containing materials in the areas, on the premises or in the equipment subject to the Services. In case unanticipated asbestos is encountered during the course of the Services, ALSTOM GRID will immediately contact the Customer, stop the Services in progress and remove its personnel from the corresponding area.

ALSTOM GRID shall immediately liaise with the Customer in order to mutually agree on the actions necessary to prevent the risk of exposure to their respective employees and to minimize delay of the Services.

The responsibility and costs for the removal and disposal of asbestos shall remain with the Customer.

Performance of the Services shall be suspended by ALSTOM GRID until the risk of exposure to ALSTOM GRID's employees is abated by Customer.

The time for performance of the Services shall be extended accordingly. If suspension for asbestos continues for more than four (4) weeks or any other period of time specified in the particular terms and conditions, ALSTOM GRID shall be entitled at any time thereafter to terminate the Contract, by written notice, and the provisions for termination for default by the Customer shall apply. If the Contract does not contain a termination for default by Customer clause, then this termination shall be treated in the same manner as a termination for convenience by Customer, entitling ALSTOM GRID to appropriate termination costs; any resulting losses, damages or costs whatsoever (including demobilization and/or mobilization) incurred by ALSTOM GRID shall be reimbursed by the Customer. If ALSTOM GRID does not terminate the Contract, ALSTOM GRID shall be entitled to a day-for-day extension of time for the complete duration of the delay.

23. SITE CONDITIONS

The price and time of performance are solely based upon information provided by Customer prior to the submission of ALSTOM GRID'S quotation. If the costs or time for performance is impacted by site conditions, including but not limited to, civil works, subsoil conditions, local specific permits or licenses, or any other like conditions, which were not disclosed in writing by the Customer prior to the submission of ALSTOM GRID's quotation, the price shall be adjusted to reflect the additional costs and expenses, and the time for performance shall be extended by a period of time sufficient to enable ALSTOM GRID to overcome the existence of such site conditions. In addition to the foregoing, ALSTOM GRID shall not be liable for any damage that is attributable to site conditions (physical or otherwise) or caused by conditions which have not been disclosed in writing prior to the submission of ALSTOM GRID's bid and Customer shall defend, indemnify and hold harmless ALSTOM GRID from and against any claim, demands, losses, judgments, or action arising out of or connected in any way whatsoever to any damages, losses, costs or expenses (including attorney's fees) in connection with, related to, or arising from such condition.

24. EXPORT CONTROL REGULATIONS

The Products and/or Software to be delivered, and/or Services to be performed under the Contract may be subject to export control regulations under international rules and treaties, European Union and/or its member states laws, as well as under any other national laws including but not limited to United States laws.

The Customer agrees and commits to strictly comply with any and all such legal requirements established under these rules, treaties, regulations and laws and cooperate fully with ALSTOM GRID in any inspection connected to export controls.

The Customer shall use the Products, Software, and documentation only in the country where the Contract specified that the Products and/or Software will be delivered and used and Services will be performed. Consequently, the Customer shall not export, re-export, transfer or disclose, directly or indirectly, Products, Software or related documentations, or any part thereof, or technical information delivered pursuant to the Contract to any company or physical person that is a national of any country, which any law or regulation, determines is subject to export control, without obtaining the prior written authorization of ALSTOM GRID and, as the case may be, of the applicable national or international authority.

Should the Customer fail to comply with the obligations as specified above, ALSTOM GRID may, without prejudice to the exercise of any other rights or remedies which may be available to it, terminate the Contract by giving the Customer notice in writing to that effect.

If the delivery of the Products, Software, related documentations, or even the performance of the Services requires ALSTOM GRID to get an authorization as stated here above, the obligation to fulfil the Contract shall be conditional upon such an authorization being granted. If the authorization stated in this Article is granted but then revoked, withdrawn or cancelled at any time, or if sanctions are taken by any governmental, international or regulatory authority, the Contract shall be immediately and automatically suspended, without liability of any of the Parties, until such authorization is delivered, restored, or the sanction withdrawn. If the suspension lasts more than four (4) months, any of the Parties shall have the right to terminate the Contract by giving the other Party notice in writing to that effect. The Customer shall be liable for any costs incurred in obtaining such authorization.

The Customer shall ensure that the bank or financial institution or other entity executing any payments or financial transactions under the Contract on behalf of the Customer (including without limitation the issuance of any payment securities such as a letter of credit) is not subject to any export regulation prohibiting to do business with such bank, financial institution or entity. Should the Customer fail to comply with this obligation, ALSTOM GRID may request, in writing, that the Customer takes the necessary steps to comply. If within fourteen (14) days after receipt of ALSTOM GRID's request, the Customer has not succeeded in engaging a bank or financial institution or other entity which is not caught by an export regulation, ALSTOM GRID may, without prejudice to the exercise of any other rights or remedies which may be available to it, terminate the Contract by giving the Customer notice in writing to that effect.

In case of termination in accordance with the provisions of this Clause, the Customer shall reimburse to ALSTOM GRID, against justification of costs, any and all costs incurred by ALSTOM GRID up to the date of such termination. In the event of termination by ALSTOM GRID due to the Customer's default, the Customer shall in addition pay to ALSTOM GRID a reasonable amount to compensate the administration and general costs and expenses of ALSTOM GRID.

Notwithstanding the above, the Customer shall indemnify and hold harmless ALSTOM GRID, its affiliates, officers, directors, agents, representatives and employees from and against any and all liability, claims, costs and expenses (including, without limitation, legal fees and expenses), loss and/or damage that may arise as a result of or in connection with the Customer's breach of its obligations under this Article 23.

25. CONFIDENTIALITY

The Contract should be deemed as confidential and proprietary between ALSTOM GRID and Customer and only Customer's employees, contractors and/or agents with a "need to know" shall be privy to this Contract. Under no circumstances shall Customer reveal the content of the Contract to a competitor of ALSTOM GRID. During the term of the Contract, ALSTOM GRID and Customer (each a "Disclosing Party") may each provide Confidential Information to the other Party (each a "Receiving Party"). Such information shall be used only in connection with the Contract and shall not be disclosed to any third party, except and to the extent that the Disclosing Party consents. The Receiving Party shall take all necessary steps to ensure controls are in place to prevent disclosure of the Confidential Information. Upon request and at the Disclosing Party's option, the Receiving Party shall promptly deliver or destroy all copies of Confidential Information in its possession.

Confidential information shall not include any information that: (i) is or becomes available to the public through no wrongful act of the Receiving Party; (ii) is already known to the Receiving Party without restrictions at the time of the Disclosure by the Disclosing Party; or (iii) is independently developed by the Receiving Party, without disclosure by the other Party of the Confidential Information. Customer shall indemnify and hold harmless ALSTOM GRID against any claims or damages resulting from improper disclosure by Customer.

If the Receiving Party is required by law, valid legal process, or a government agency to disclose any Confidential Information, the Receiving Party shall first provide prompt written notice to the Disclosing Party and cooperate with the Disclosing Party in any appropriate effort the Disclosing Party may seek in to obtain relief from disclosing such information, or to limit any disclosure to such portions of the Confidential Information that is legally required to be disclosed.

The Disclosing Party in no way under this Article grants the Receiving Party any license in any invention, patent, trademark, copyright or any other intellectual property rights of the Disclosing Party. The restrictions of this Article shall survive the expiration, cancellation or termination of the Contract.

26. PERSONAL DATA PROTECTION

Customer acknowledges and agrees to comply with any applicable personal data protection laws. Customer further agrees that any personal data provided, pursuant to a requirement of this Contract, by ALSTOM GRID, or any of its employees, agents, representatives or any third party under the control of ALSTOM GRID, remain the property of the Party providing the personal data. Customer agrees to put controls in place to ensure that the personal data is not modified or disclosed, and that unauthorized access or use shall be prevented.

27. DISPUTE RESOLUTION AND APPLICABLE LAW

In the event that any dispute arising out of, or in connection with, any Product or Services performed between the Customer and ALSTOM GRID and/or this Contract and/or these Terms and Conditions of Sale, is not resolved within a reasonable period of time through good faith negotiations between the Parties, then such dispute shall be submitted to private, non-binding mediation with the American Arbitration Association (“AAA”) at the AAA regional office closest to ALSTOM GRID’s Philadelphia, Pennsylvania headquarters, or to another mutually agreed upon mediator. In the case of AAA mediation, the mediator shall be selected from the then-current list of approved AAA mediators. Any mediation that takes place pursuant to these Terms and Conditions of Sale shall be conducted according to the then-current AAA mediation procedures, whichever apply, unless some other process or procedure is mutually agreed upon by the Parties.

If the mediation process has not resolved the dispute within sixty (60) calendar days of the submission of the matter to mediation, or within such longer period as the Parties may agree to, the dispute shall be submitted to private, final and binding arbitration with the AAA at the AAA regional office closest to ALSTOM GRID’s Philadelphia, Pennsylvania headquarters. Notice of demand for arbitration must be promptly filed in writing with the other party to this Contract and with the AAA. In no event may the demand for arbitration be made if the institution of legal or equitable proceedings based on such dispute is barred by the applicable statute of limitations, or these Terms and Conditions of Sale.

Any arbitration shall be in accordance with the AAA Construction Industry Arbitration Rules or AAA Commercial Arbitration Rules, as applicable, then in effect. The arbitrator and/or arbitration panel will have no authority to award attorneys’ fees, punitive or treble damages to any party, nor may the arbitrator award any damages or amounts or assess any costs against ALSTOM GRID (including its parent company, shareholders, Affiliates, subsidiaries, directors, officer, employees, successors and/or assigns). The award of the arbitrator shall be specifically enforceable in a court of competent jurisdiction.

If the parties agree, any arbitration may be consolidated with any other arbitration proceedings. If the total dispute, exclusive of interest and arbitration costs, does not equal or exceed one (1) Million U.S. dollars, the arbitration shall be heard by one neutral arbitrator. If the total dispute equals or exceeds one (1) Million U.S. dollars, then the arbitration shall be heard by a panel of three (3) neutral arbitrators.

All statements made and documents provided or exchanged in connection with the dispute resolution process described herein are confidential and neither Party shall disclose the existence or content of the dispute or claim, or the results of any dispute resolution process, to third parties other than outside counsel, except with the prior written consent of the other Party or pursuant to legal process.

The protocol set forth herein for the resolution of disputes involving any Product or Services between ALSTOM GRID and Customer and/or these Terms and Conditions of Sale, shall be the sole and exclusive dispute resolution procedures for the Parties; nevertheless, a Party may seek a preliminary injunction or other preliminary judicial relief if, in its reasonable judgment, such action (related to non-payment, intellectual property rights or confidential information) is necessary to avoid irreparable damage or to preserve the status quo. Despite such action, the Parties will continue to participate in good faith and adhere to the dispute resolution procedures specified herein.

28. MISCELLANEOUS PROVISIONS

Governing Law.

The Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania, excluding its conflict of laws provisions.

No Set off rights.

Under no circumstances shall Customer withhold any monies due ALSTOM GRID for Products, Services or otherwise, for the purpose of offsetting or discharging any obligations which ALSTOM GRID may have to Customer or which the Customer may have to its customers.

Exclusion of the U.N. Convention on Contracts for the International Sale of Goods/Uniform Commercial Code

These Terms and Conditions of Sale expressly exclude the provisions of the U.N. Convention on Contracts for the International Sale of Goods and of the Uniform Commercial Code. The rights and obligations of the Parties shall be governed exclusively by the terms of this Contract.

No Strict Construction Against the Drafter.

In the event of any ambiguity or inconsistency in these Terms and Conditions of Sale, said terms will be given their literal or intended meaning and will not be strictly construed against or to the detriment of the drafter.

Entire Agreement.

The Contract represents the entire agreement between the Parties, and supersedes any representations, promises, warranties or agreements, whether oral or in writing, except as set forth in these Terms and Conditions of Sale. No modification, change, or amendment shall be binding on either Party unless mutually agreed in writing by the Parties.

Severability.

Should any provision of these Terms and Conditions of Sale be found to be in violation of law, the remainder of these Terms and Conditions of Sale shall continue to be in full force and effect.

Waiver.

Any waiver by ALSTOM GRID of strict compliance with these Terms and Conditions of Sale shall only be deemed valid where it is evidenced in writing by an authorized officer of ALSTOM GRID; furthermore, ALSTOM GRID's failure to enforce any provisions of these Terms and Conditions of Sale shall not be construed as a waiver of ALSTOM GRID's right thereafter to enforce each and every such provision.

Survival.

All rights and obligations contained in these Terms and Conditions of Sale, which by their nature or effect are required or intended to be observed, kept or performed after termination, cancellation or expiration of the Contract will survive and remain binding upon and for the benefit of the Parties, their successors (including without limitation successors by merger) and permitted assigns.

Assignment or Sublet.

ALSTOM GRID may assign or sublet the Contract, or any of its rights, interests, or obligations thereof, without any constraints. Customer may not assign the Contract or any rights, interest or benefits of Customer hereunder to any other party without the express prior written consent of ALSTOM GRID.

Third Party Beneficiary.

This Contract is for the sole benefit of the Customer and ALSTOM GRID and does not confer any third party rights of any kind.