Exelon Generation

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RS-15-251

10 CFR 50.90

September 16, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Response to Request for Additional Information Follow-Up Clarification Regarding License Amendment Request for Diesel Generator Load Rejection Surveillance Requirement

References:

1) Letter from David M. Gullott (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission "License Amendment Request for Diesel Generator Load Rejection Surveillance Requirement," dated December 18, 2014

2) Letter from David M. Gullott (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission "Response to Request for Additional Information Regarding License Amendment Request for Diesel Generator Load Rejection Surveillance Requirement," dated June 25, 2015

In Reference 1, Exelon Generation Company, LLC, (EGC) requested an amendment to the Technical Specifications (TS) of Facility Operating License Nos. NPF-72 and NPF-77 for Braidwood Station, Units 1 and 2 and Facility Operating License Nos. NPF-37 and NPF-66 for Byron Station, Units 1 and 2. The proposed amendment would modify TS Surveillance Requirement (SR) 3.8.1.10 to increase the voltage limit for the diesel generator (DG) full load rejection test. Increasing the voltage limit for the full load rejection test resolves an existing non-conservative TS for the voltage that is maintained during a DG full load rejection test.

In Reference 2, EGC responded to the U. S. Nuclear Regulatory Commission (NRC) request for additional information regarding the Reference 1 submittal. The NRC later communicated that additional clarification was needed in response to Reference 2. On July 13, 2015, a teleconference took place between the NRC and EGC to clarify responses provided in the

Reference 2 letter. Attachment 1 documents the NRC question discussed during the July 13, 2015 teleconference along with EGC's response. Attachment 2 includes supporting information.

There are no regulatory commitments contained within this letter.

Should you have any questions concerning this letter, please contact Ms. Jessica Krejcie at (630) 657-2816.

Respectfully,

David M. Gullott
Manager – Licensing
Exelon Generation Company, LLC

Attachment 1: Follow-Up Clarification Regarding License Amendment Request for Diesel Generator Load Rejection Surveillance Requirement
Attachment 2: Westinghouse Product Bulletin 44-210 for Type PC-60 Potential Transformer

cc: NRC Regional Administrator, Region III
NRC Senior Resident Inspector, Braidwood Station
NRC Senior Resident Inspector, Byron Station
NRC Project Manager, NRR – Braidwood and Byron Stations
Illinois Emergency Management Agency – Division of Nuclear Safety

ATTACHMENT 1

Follow-Up Clarification Regarding License Amendment Request for Diesel Generator Load Rejection Surveillance Requirement

Attachment 1: Follow-Up Clarification Regarding License Amendment Request for Diesel Generator Load Rejection Surveillance Requirement

Request

Provide the upper limit on momentary (~ 10 seconds) overvoltage for the Westinghouse Type PC-60 potential transformers (PTs).

Response

Based on discussions with the original manufacturer of the Type PC-60 PTs, Westinghouse Electric Corporation (Westinghouse), there is no published momentary overvoltage rating for these PTs. However, based upon review of the applicable industry standards for high potential testing of PTs, the high potential test voltage bounds the proposed maximum voltage limit for DG full load reject testing (i.e., 5600 Volts); therefore, the PTs would not be damaged by a momentary overvoltage transient during a DG full load reject.

The Type PC-60 PTs used in this application have a primary voltage rating of 4200 Volts and are classified as 5 kV Class PTs per the manufacturer. According to IEEE Standard C57.13-2008, "IEEE Standard Requirements for Instrument Transformers," instrument transformers that are 5 kV Class PTs are capable of withstanding a periodic in-service high potential test voltage of 12 kV for one minute. (Note that the current version of IEEE Standard C57.13 is the 2008 revision.)

This was determined based on review of industry standards. According to Section 8.8.2 of IEEE Standard C57.13-2008, the PTs are capable of withstanding a periodic in-service high potential test at a test voltage equal to 65% of the factory test voltage. Table 2 of IEEE Standard C57.13-2008 states that the factory test voltage is 19 kV for 5.0 kV Class transformers. Therefore, 0.65 x 19 kV = 12 kV for an in-service test. Section 8.8.3 of IEEE Standard C57.13-2008 states that the standard duration for an applied voltage test (i.e., high potential test) is 60 seconds at the maximum test voltage.

The 1968 revision of IEEE Standard C57.13 was also reviewed, since this revision was in effect when Westinghouse Product Bulletin 44-210 was revised and issued in June 1972 (Attachment 2). Based on a review of Table 1 and Sections 6.8.2 and 6.8.3 in IEEE Standard C57.13-1968, it was determined that the voltage and duration criteria for periodic in-service high potential tests of PTs are the same in both the 1968 and the 2008 revisions of IEEE Standard C57.13. The PTs at Byron and Braidwood Stations were purchased in the late 1970s. Therefore, a comparison of the 1968 and 2008 revisions of IEEE Standard C57.13 bounds the manufacturing dates for the Byron and Braidwood PTs, and the specific revision of IEEE Standard C57.13 that was in effect when the PTs were manufactured is not critical with respect to the capability of the PT to withstand a voltage transient.

Thus, the high potential ac test voltage of 12 kV (12,000 Volts) for one minute bounds the maximum transient voltage of 5600 Volts that could occur during a DG full load reject and also the duration of the DG full load reject voltage transient, which would only last approximately one second. Therefore, the PTs would not be damaged by a peak voltage of 5600 Volts during a DG full load rejection.

ATTACHMENT 2

Westinghouse Product Bulletin 44-210 for Type PC-60 Potential Transformer

Westinghouse

Calculation: 19-AD-2
Revision: 001
Appendix B
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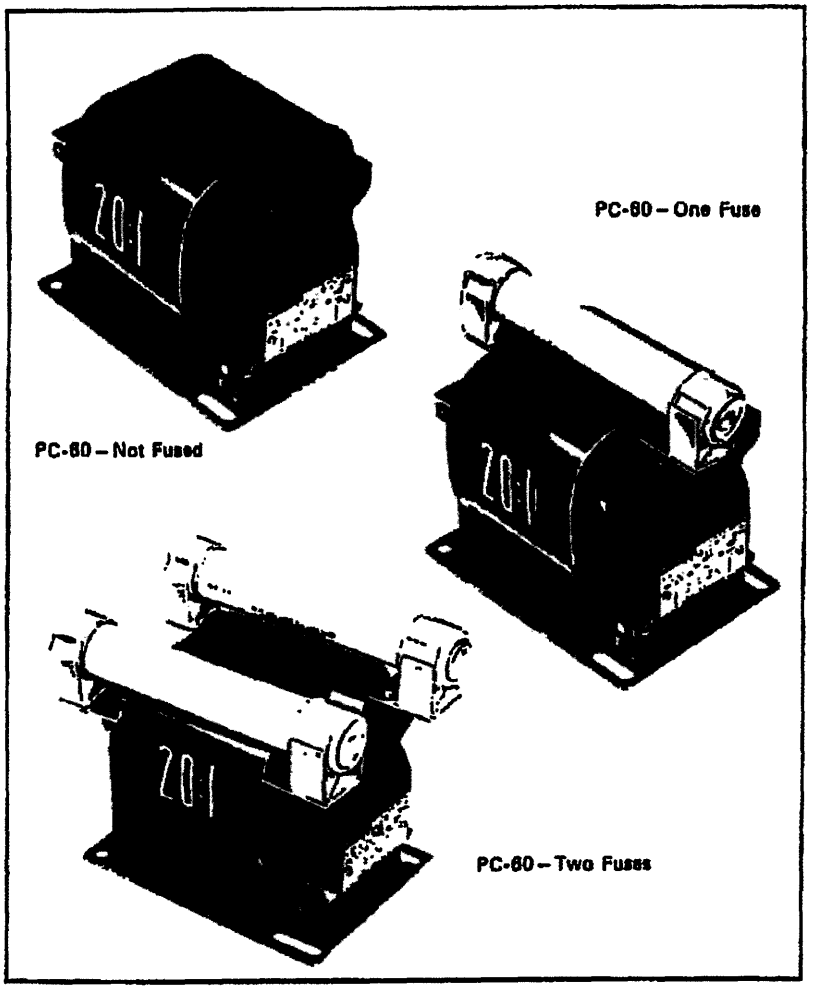
Type PC-60 Potential Transformer

2400 Volts Through 4800 Volts, Indoor
60 KV BIL, 60 Hertz



Application
The Type PC-60 is an indoor potential transformer cast in epoxy and designed for metering and relaying applications.

Ratings
ANSI metering accuracy (60 Hertz)
0.3 W, X, Y and 1.2 Z burdens at 120 volts.
0.3 W, X burdens at 69.3 volts.

Construction Features
Primary Terminals
Primary leads terminate with epoxy encased ⅛ inch deep ¼-20 tapped holes. Connections are secured by means of a cup and bolt washer. On fused units, a clamp type terminal designed to accommodate No. 14 to No. 4 wire is provided on the line and of each fuse.

Core and Coil Assembly
Features progressive winding with the high voltage coil wound directly over the low voltage coil. A new octagonal WESCORE design permits an overall size reduction to provide the smallest 5 KV Class unit available yet provide the highest thermal capacity 5 KV Class unit available.

Removable Base
The base is grounded to the core and coil assembly and is easily removed by loosening two ¼-20, ⅝ inch long screws.

Secondary Terminals and Cover
Secondary brass terminal inserts are ⅜ inches deep with a 190-32 tapped hole. Secondary connections are screw type.

Nameplate
The aluminum nameplate incorporates lanced loops and a space for customer identification is provided.

Selector Guide

Type	KV BIL	Ratio	Primary Voltage	Thermal Rating (Va) 30°C	Thermal Rating (Va) 55°C	Style Number (Not Fused)	Style Number (Two Fuses)	Primary① Voltage	Thermal Rating (Va) 30°C	Thermal Rating (Va) 55°C	Style Number (One Fuse On Centerline)
PC-60	60	20:1	2400/4160Y	1000	700	2780A85G01	2780A86G01	2400/4160GY	1000	700	2780A87G01
		35:1	4200/4200Y	1000	700	2780A85G02	2780A86G02	4200/4200GY②	1000	700	2780A87G02
		40:1	4800/4800Y	1000	700	2780A85G03	2780A86G03	4800/4800GY②	1000	700	2780A97G03

① Standard secondary voltage at rated primary voltage is 120 volts except as specified for footnote ②. All thermal ratings at 120 volt secondary.

② Fluxed for line-to-line voltage; when connected line-to-ground, normal secondary voltage is 69.3 volts

June, 1972
Supersedes PB 44-210, dated March 1972
E. D. C-2047/D5

Type PC-60 Potential Transformer

2400 Volts Through 4800 Volts, Indoor
60 KV BIL, 60 Hertz

Calculation: 19-AD-2
Revision: 001
Appendix B
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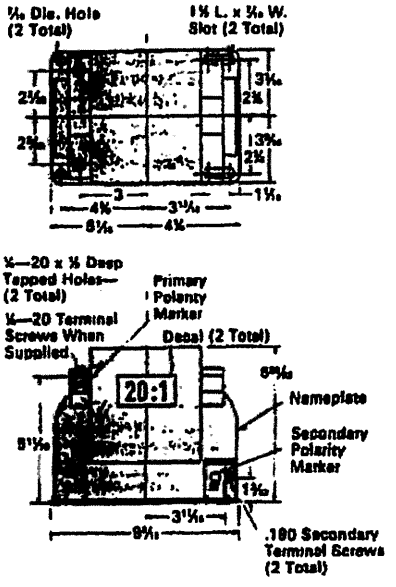
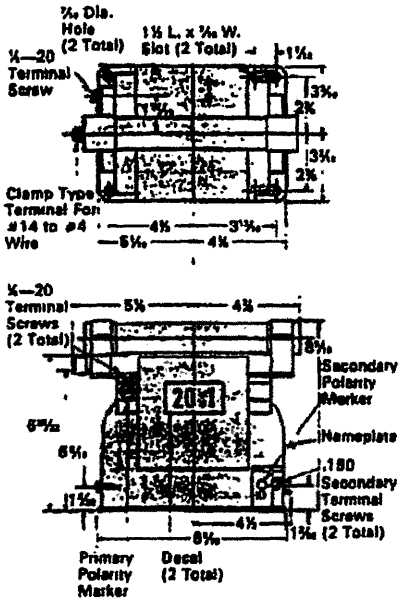
Dimensions in Inches and Weights

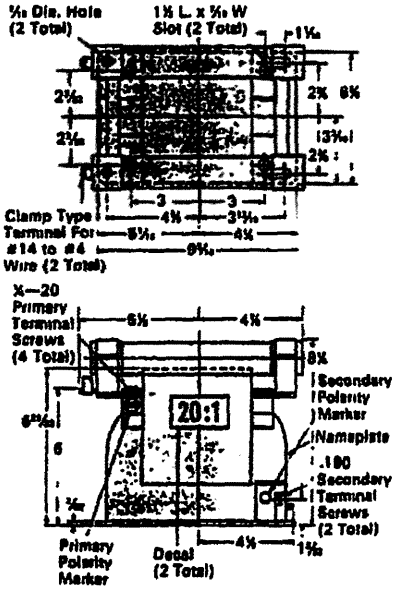
PC-60 – Not Fused
New Weight – 32 lbs.



PC-60 – One Fuse
Net Weight – 34 lbs.

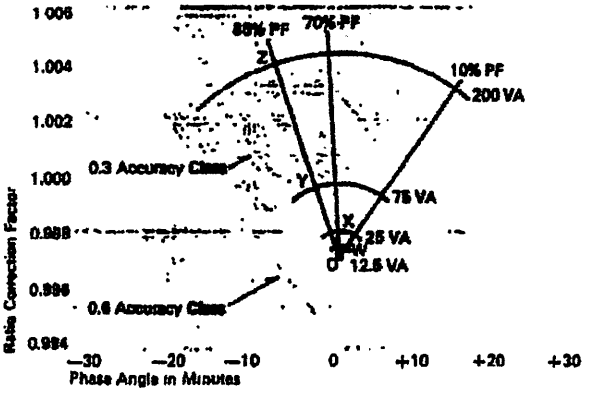


PC-60 – Two Fuses
Net Weight – 36 lbs.



Performance Curve

Typical ratio correction factors and phase angle values plotted for standard burdens, using the Farber Method ("The Analytical and Graphical Determination of Complete Potential Transformer Characteristics" – Settles, Farber, Conner – AIEE Transaction Paper 60-1246, October, 1960).



Fuse for Type PC-60 Transformers

Type	Fuse Type	Fuse Style Number①	Fuse Rating Volts	Interrupting Amperes②	Continuous Amperes	Dimensions (Inches) End Diameter	Overall Length	Distance Between Clip Centers
PC-60	CLE-PT	877C452G02	7200	50000	½	1.606	8½	8½

① See DB 35-651, PL 35-621 for fuse details.
② RMS Symmetrical.

Westinghouse Electric Corporation
Sharon Transformer Division, Sharon, Pa. 16146
Printed in USA