

RS-15-181

10 CFR 50.90

June 25, 2015

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 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 Regarding License Amendment  
Request for Diesel Generator Load Rejection Surveillance Requirement

- References:
- 1) Letter from D. 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 (ADAMS Accession No. ML14352A204)
  - 2) Email from J. Wiebe (NRC) to J. Krejcie (Exelon Generation Company, LLC) Preliminary RAIs for Braidwood/Byron License Amendment Request for Diesel Generator Load Rejection Surveillance Requirement, dated May 27, 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, the U. S. Nuclear Regulatory Commission (NRC) requested additional information related to its review of Reference 1. The additional information requested is included in Attachment 1.

EGC has reviewed the information supporting a finding of no significant hazards consideration that was previously provided to the NRC in Attachment 1 of Reference 1. The additional information provided in this submittal does not affect the bases for concluding that the proposed license amendments do not involve a significant hazards consideration.

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In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), a copy of this letter and its attachment is being provided to the designated State of Illinois official.

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

I declare under penalty of perjury that the forgoing is true and correct. Executed on the 25th day of June 2015.

Respectfully,

A handwritten signature in black ink, appearing to read 'D. Gullott', followed by a long horizontal line extending to the right.

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

Attachment:

1. Response to Request for Additional Information

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**

**Response to Request for Additional Information**

## **Attachment 1**

### **Response to Request for Additional Information**

By letter dated December 18, 2014, 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 (Reference 1). 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, the U. S. Nuclear Regulatory Commission (NRC) requested additional information (RAI) related to its review of Reference 1. A response to the questions provided in Reference 2 is provided below:

#### **NRC RAI 1:**

On Page 7 of Attachment 1 of the license amendment request, the licensee provided Table 1 containing the "Byron Station and Braidwood Station Maximum Diesel Generator (DG) Voltages during DG Full Load Reject Testing." The maximum DG voltage is expected to depend upon pre-load-reject DG voltage, kilowatt (kW), and power factor values. To allow the NRC staff to evaluate these voltages, provide the pre-load-reject DG voltage, kW, and power factor values corresponding to each of the Maximum DG Voltage provided in Table 1.

#### **EGC Response to NRC RAI 1:**

While the test procedures used to support the DG full load reject testing do not specifically require the operators to record the pre-load-reject DG voltage, power (kW), and power factor values, the power (kW) values just prior to the load rejection are available from the plant process computer and are tabulated below.

Table 1: Pre-Load-Reject Power (kW)

<b>DG</b>	<b>Byron</b>	<b>Braidwood</b>
1A	5463	5435
1B	5443	bad data point*
2A	5138	5280
2B	5362	5404

\*Main Control Room Indication was approximately 5500 kW

Typical ranges for Volts and KVARs are summarized in Table 2 below, "Pre-Load Reject DG Parameters":

**Attachment 1**  
**Response to Request for Additional Information**

Table 2: Pre-Load-Reject DG Parameters

DG Voltage (Volts)	4100 to 4400
DG Reactive Power (kVAR)	2700 to 4125

The full load reject test is performed with the DG synchronized to offsite power. The 4.16 kV ESF bus voltage is usually between 4100 to 4400 Volts when supplied by offsite power and would be expected to be in that range during future testing. The TS required voltage range when operating isolated from the grid is 3950 to 4580 Volts.

The test procedures used to support the DG full load reject test require that the DG is operating at a real power value between 4950 and 5500 kW prior to performing the test. This meets the requirements of Regulatory Guide 1.9, Rev. 3, Section 2.2.8, which states that the DG full-load rejection test should be performed with the DG operating at 90 to 100% of its continuous rating.

The Braidwood Station and Byron Station procedures require that KVAR loading be adjusted to ensure a power factor of 0.8 to 0.9 as required per Regulator Guide 1.9, Rev. 3, Section 2.2.8, when real power loading is in the required range of 4950 to 5500 KW. This will typically be achieved with a KVAR loading in the range of 2700 to 4125 KVAR.

**NRC RAI 2:**

The potential transformers connected to each DG output will also be subjected to the maximum DG voltage. To allow the NRC staff to evaluate the capability of the potential transformers, provide the maximum test voltages to which these potential transformers have been tested and qualified by the vendor.

**EGC Response to NRC RAI 2:**

Each DG has two sets of potential transformers (PTs) connected to the DG output, one set of PTs located in the DG Room and one set of PTs located in the 4.16 kV Switchgear Room.

The PTs located in the DG Rooms for each DG are Basler Model No. BE 13487-001 PTs. These PTs have a Dielectric Test Voltage of 12,000 V, which bounds the proposed maximum post-breaker trip DG voltage value of 5600 V in TS SR 3.8.1.10 for DG full load reject testing.

The PTs located in the 4.16 kV Switchgear Rooms for each DG are Westinghouse Type PC-60 PTs. These PTs have a Basic Impulse Insulation Level (BIL) rating of 60 kV (i.e., 60,000 V), which also bounds the requested maximum post-breaker trip DG voltage value of 5600 V (5.6 kV) in TS SR 3.8.1.10 for DG full load reject testing.

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**NRC RAI 3:**

To allow the NRC staff to evaluate the capability of the recording/indicating instrument to indicate the DG voltage, discuss how Exelon selects the acceptable range of the instrument. For a typical performance of the surveillance, provide the maximum range of voltage recording/indicating instrument used

**EGC Response to NRC RAI 3:**

The chart recorder AC voltage modules are calibrated for a secondary voltage range which will bound the expected maximum voltage. The chart recorder is connected to PTs with a turns ratio of  $4200/120 = 35$ . For the data in the submittal, secondary voltage ranges of 100-150 Volts and 70-160 Volts were used which provide an upper limit on primary voltage of 5250 and 5600 VAC, respectively.

These voltage ranges were selected based on engineering judgment regarding the expected maximum DG voltage following a full load rejection. A smaller range provides higher resolution on the chart recorder. These ranges bound the post-load reject max DG voltages that are listed on Page 7 of Attachment 1 of Reference 1.

Implementation of the approved Reference 1 License Amendment Request will include increasing the upper end of the secondary voltage range to bound the new TS limit of 5600 volts.

**REFERENCES:**

- 1) Letter from D. 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 (ADAMS Accession No. ML14352A204)
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