



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II

245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

March 9, 2016

William R. Gideon  
Site Vice President  
Brunswick Steam Electric Plant  
8470 River Rd. SE (M/C BNP001)  
Southport, NC 28461

**SUBJECT: NOTICE OF ENFORCEMENT DISCRETION (NOED) FOR BRUNSWICK STEAM  
ELECTRIC PLANT UNIT 2 (CAC NO. MF7427, NOED NO. 16-2-001)**

Dear Mr. Gideon:

By letter dated March 7, 2016, you requested that the NRC exercise discretion to not enforce compliance with the actions required in Brunswick Steam Electric Plant (BSEP) Unit 2 Technical Specification (TS) Limiting Condition for Operation (LCO) 3.0.3 as directed by TS 3.8.1, AC Sources – Operating, for the BSEP, Unit No. 2. Your letter documented information previously discussed with the NRC in a telephone conference on March 4, 2016, at 1:45 p.m. Eastern Standard Time (EST). The principal NRC staff members who participated in the telephone conference are listed in the Enclosure. The staff determined that the information in your letter requesting the NOED was consistent with your oral request. The NRC first became aware of the potential for this NOED request on March 4, 2016.

You stated that, on March 4, 2016, at 12:35 p.m. EST, Unit 2 entered TS 3.8.1, Condition I (i.e., one or more offsite circuits and two or more Diesel Generators (DGs) inoperable). This was a result of ongoing planned maintenance impacting operability of Emergency Diesel Generator 1 (EDG 1), emergency bus E1, and balance of plant (BOP) bus 1D combined with unplanned inoperability of EDG 3 due to a broken fuse block connection on the auto-start circuitry for EDG 3. Required Action I.1 directed immediate entry into TS LCO 3.0.3. This required that action must be initiated within 1 hour to place Unit 2 in Mode 2 within 7 hours (i.e., by March 4, 2016, at 7:35 p.m. EST), Mode 3 within 13 hours, and Mode 4 within 37 hours. You subsequently requested that a NOED be granted pursuant to the NRC's policy regarding exercise of discretion for an operating facility, set out in Section 3.8 of the "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), and that the NOED be effective for an additional 17 hours (until 12:35 p.m. EST on March 5, 2016 for entering Mode 2) with subsequent entries into Mode 3 and Mode 4 extended by 17 hours as well. This letter documents our telephone conversation of March 4, 2016, when we orally granted this NOED request. We understand that the condition causing the need for this NOED was corrected, allowing BSEP to exit from TS LCO 3.0.3 and from this NOED at 6:34 p.m. EST on March 4, 2016.

### Summary

On March 2, 2016, at 2:58 p.m. EST, EDG 1 was declared inoperable in support of modifications, maintenance activities and testing. Emergency bus E1 and BOP bus 1D were de-energized in support of this work. Due to the shared electrical distribution system at BSEP, Unit 2 entered TS 3.8.1, Condition B (i.e., two Unit 1 offsite circuits inoperable due to one Unit 1 balance of plant circuit path to the downstream 4.16 kV emergency bus inoperable for planned maintenance and the EDG associated with the affected downstream 4.16 kV emergency bus inoperable for planned maintenance). The completion time to restore both Unit 1 offsite circuits and EDG to operable status was 7 days. On March 3, 2016, work was ongoing to restore power to BOP bus 1D when an error in the restoration sequence resulted in an invalid auto-start of EDGs 2 and 4. The invalid signal mimicked undervoltage on the startup auxiliary transformer, which is not a TS required start and, per design, would have started EDGs 1, 2, 3, and 4. EDG 1 was still under clearance and, as such, did not start. However, EDG 3 should have started. Thorough modification (EDG 1 modification) review and troubleshooting activities were initiated and on March 4, 2016, at 12:35 p.m. EST, you determined that a fuse block connection on the auto-start circuitry for EDG 3 had failed. Failure of this connection prevented TS required auto-actuation of EDG 3. Therefore, EDG 3 was declared inoperable. Unit 2 entered TS 3.8.1, Condition I, one or more offsite circuits and two or more DGs inoperable. Required Action I.1 directed immediate entry into TS LCO 3.0.3.

Your request estimated that repairs would be completed and EDG 3 would be restored to operable status by 12:35 a.m. EST on March 5, 2016. Without enforcement discretion, action would have had to be initiated within 1 hour to place Unit 2 in Mode 2 within 7 hours (i.e., by March 4, 2016, at 7:35 p.m. EST). Duke Energy requested enforcement discretion of TS LCO 3.0.3 to extend the time required to be in Mode 2 by an additional 17 hours and that subsequent Mode 3 and Mode 4 entries be extended by 17 hours as well. This was to ensure adequate time for testing and an orderly and controlled return of EDG 3 to operable status. Enforcement discretion was requested to avoid an unnecessary Unit 2 shutdown without a commensurate benefit in nuclear safety.

The NRC determined that the requested NOED was appropriate to avoid an unnecessary transient as a result of compliance with TS LCO 3.0.3 and, thus, minimize potential safety consequences and operational risks (Inspection Manual Chapter (IMC) 0410, Section 03.03, Criterion a). The NRC's basis for the exercise of discretion was as follows:

- The cause of the failure was determined to be a broken fuse box connection on the auto-start circuitry for EDG 3. The replacement fuse block was onsite and a detailed work plan had been developed to return the EDG 3 to operable status including post maintenance testing which consisted of continuity checks.
- The repair activities and testing would not result in any transient or change in status of other plant systems.
- The following compensatory measures remained in place during the period of enforcement discretion:
  - The supplemental diesel generator (SUPP-DG) was being protected, as defense-in depth, during the duration of the NOED.

- Component testing or maintenance of safety systems in the available off-site power systems and important non-safety equipment in the available off-site power systems which can increase the likelihood of a plant transient or Loss of Offsite Power (LOOP) were being avoided during the duration of the NOED.
- No discretionary switchyard maintenance was allowed during the duration of the NOED.
- Weather conditions were evaluated. Personnel monitored weather forecasts each shift during the duration of the NOED.
- The High Pressure Coolant Injection pump, Reactor Core Isolation Cooling pump, Core Spray Pumps, and the Residual Heat Removal pumps associated with the operable EDGs were protected and were not removed from service for elective maintenance activities during the requested NOED. No redundant required features supported by TS 3.8.1 would be taken out of service during the NOED period.
- The SUPP-DG was available. SUPP-DG availability requires that:
  - The load test has been performed within 30 days of entry into the extended Completion Time.
  - The SUPP-DG fuel tank test was verified locally to be greater than or equal to a 24-hour supply; and SUPP-DG supporting system parameters for starting and operating were verified to be within required limits for functional availability (e.g., battery state of charge, starting air system pressure).

The NRC staff performed an independent qualitative assessment of the risk and a review of your protection strategy. You indicated that the calculated increase in Conditional Core Damage Probability (CCDP) from the 17-hour extension was 4.0 E-7, and the increase in Conditional Large Early Release Probability (LERP) was 4.0 E-8, which were within the threshold guidance in IMC 0410 for NOED approval. NRC risk analysts performed an analysis of this condition with the best available information, including common cause assumptions, and concluded that the impact of a 24-hour increase in unavailability of the EDG 3 resulted in an increase in risk that was lower than 1E-7 CCDP for the internal risk. This was based on an independent confirmatory analysis that was performed using the BSEP Standardized Plant Analysis internal events model. NRC risk analysts reviewed the fire and LERP sequences you provided for insights. The NRC calculated risk value, added to your fire risk, was below the threshold guidance in IMC 0410. NRC staff also considered your compensatory actions to reduce risk and as a result of these actions, the actual risk would be lower than the calculated risk.

NRC staff also considered the additional risk that would be represented by a TS required shutdown if enforcement discretion was not granted. Our qualitative analysis indicated that the guidance in IMC 0410 for consideration of risk was met.

On the basis of the NRC staff's evaluation of your request, we concluded that granting this NOED was consistent with the Enforcement Policy and staff guidance and has no adverse impact on public health and safety or the environment. Therefore, as we informed you at 3:35 p.m. EST on March 4, 2016, we exercised discretion not to enforce compliance with TS LCO 3.0.3, requirements that Unit 2 be in Mode 2 by 7:35 p.m. EST on March 4, 2016. Unit 2 Mode 2 entry was extended by 17 hours, as were subsequent mode changes required by TS LCO 3.0.3. As stated during the conference call and in your letter, you have determined that a follow-up license amendment is not necessary. The NRC staff agrees with this determination.

W. Gideon

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As stated in the Enforcement Policy, action may be taken, to the extent that violations were involved, for the root cause that led to the noncompliance for which this NOED was necessary.

Sincerely,

*/RA/*

Mark E. Franke, Acting Director  
Division of Reactor Projects

Docket No.: 50-324  
License No.: DPR-62

Enclosure:  
List of Participants

cc distribution via Listserv

W. Gideon

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As stated in the Enforcement Policy, action will be taken, to the extent that violations were involved, for the root cause that led to the noncompliance for which this NOED was necessary.

Sincerely,

*/RA/*

Mark E. Franke, Acting Director  
Division of Reactor Projects

Docket No.: 50-324  
License No.: DPR-62

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PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE  
ADAMS:  Yes      ACCESSION NUMBER: ML16069A341       SUNSI REVIEW COMPLETE       FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRP	NRR/DORL			
SIGNATURE	JSD via email	GTH	MEF1	PGK1 /RA for/			
NAME	J. Dodson	G. Hopper	M. Franke	A. Boland			
DATE	3/9/2016	3/9/2016	3/9/2016	3/9/2016			
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO			

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRP\IRPB4\BRUNSWICK\NOED 16-2-001.DOCX

## LIST OF PARTICIPANTS

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Enclosure