



May 13, 2005

SERIAL: BSEP 05-0059

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

Subject: Brunswick Steam Electric Plant, Unit No. 1 50-325
Docket No. ~~50-525~~/License No. DPR-71
Request for Notice of Enforcement Discretion
Technical Specification 3.4.5, "RCS Leakage Detection Instrumentation"

Ladies and Gentlemen:

On May 12, 2005, Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., (PEC) verbally requested a Notice of Enforcement Discretion (NOED) associated with Technical Specification (TS) 3.4.5, "RCS Leakage Detection Instrumentation," for the Brunswick Steam Electric Plant (BSEP), Unit No. 1. The need for the NOED arose when Emergency Bus E1 tripped unexpectedly, ultimately resulting in inoperability of the Reactor Coolant System (RCS) leakage detection systems. The requested NOED was to waive compliance with Required Action D of TS 3.4.5. In lieu of the requirements of TS 3.4.5, Action D, PEC proposed that Unit 1 continue to adhere to the requirements of TS 3.8.7, "Distribution Systems - Operating," which required Unit 1 to be in Mode 3 at 0011 Eastern Daylight Time (EDT) on May 13, 2005. At 1740 EDT on May 12, 2005, Unit 1 restored operability to the RCS leakage detection systems and exited TS 3.4.5.

The requested NOED was verbally granted by the NRC at 1050 EDT on May 12, 2005. In accordance with the guidance provided in Regulatory Information Summary 2005-01, "Changes to Notice of Enforcement Discretion (NOED) Process and Staff Guidance," and NRC Inspection Manual Part 9900, "Operations - Notices of Enforcement Discretion," the enclosure to this letter provides PEC's written NOED request.

Please refer any questions regarding this submittal to Mr. Leonard R. Beller, Supervisor - Licensing/Regulatory Programs, at (910) 457-2073.

Sincerely,

A handwritten signature in black ink, appearing to read "David H. Hinds".

David H. Hinds
Plant General Manager
Brunswick Steam Electric Plant

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Enclosure:

Request for Notice of Enforcement Discretion
Technical Specification 3.4.5, "RCS Leakage Detection Instrumentation"

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**Request for Notice of Enforcement Discretion
Technical Specification 3.4.5, "RCS Leakage Detection Instrumentation"**

Background

On May 12, 2005, Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., (PEC) verbally requested a Notice of Enforcement Discretion (NOED) associated with Technical Specification (TS) 3.4.5, "RCS Leakage Detection Instrumentation," for the Brunswick Steam Electric Plant (BSEP), Unit No. 1. The need for the NOED arose when Emergency Bus E1 tripped unexpectedly, ultimately resulting in inoperability of the Reactor Coolant System (RCS) leakage detection systems. The requested NOED was to waive compliance with Required Action D of TS 3.4.5. In lieu of the requirements of TS 3.4.5, PEC proposed that Action D, Unit 1 continue to adhere to the requirements of TS 3.8.7, "Distribution Systems - Operating," which required Unit 1 to be in Mode 3 at 0011 Eastern Daylight Time (EDT) on May 13, 2005. The requested NOED was verbally granted by the NRC at 1050 EDT on May 12, 2005. At 1740 EDT on May 12, 2005, Unit 1 restored operability to the RCS leakage detection systems and exited TS 3.4.5.

The following provides PEC's bases for the requested NOED. Each item of NRC Inspection Manual Part 9900, "Operations - Notices of Enforcement Discretion," is addressed.

1. TS or other license conditions that will be violated.

TS 3.4.5, Condition D states:

Condition	Required Action	Completion Time
D. All required leakage detection systems inoperable.	D.1 Enter LCO 3.0.3.	Immediately

Due to loss of Emergency Bus E1, all required leakage detection systems became inoperable. The requested NOED waives compliance with Required Action D.1 of TS 3.4.5.

2. The circumstances surrounding the situation.

At 0411 EDT on May 12, 2005, Emergency Bus E1 tripped. There was no loss of either offsite source (i.e., offsite power is available up to the bus via either the Startup Auxiliary Transformer or the Unit Auxiliary Transformer). Additionally, Emergency Diesel Generator (EDG) 1 had been taken out of service on May 9, 2005, for routine maintenance and surveillance testing. As a result, there was no power to bus E1. Without bus E1, the drywell floor drain sump flow

monitoring system, and the primary containment atmosphere particulate and the primary containment atmosphere gaseous RCS leakage monitoring systems were rendered inoperable. This was primarily the result of closure of the containment isolation valves associated with the systems and the inability to re-open the valves due to the inoperable bus E1.

With all required leakage detection systems inoperable, Unit 1 entered Condition D of TS 3.4.5 at 0411 EDT on May 12, 2005. Condition D required immediate entry into Limiting Condition for Operation (LCO) 3.0.3. Compliance with TS 3.4.5, Condition D required Unit 1 to be in Mode 2 by 1111 EDT on May 12, 2005.

At 0948 hours on May 12, 2005, a Unit 1 power reduction, in accordance with LCO 3.0.3 was initiated. However, loss of bus E1 also affected the ability to reduce power using the 1A Reactor Recirculation (RCR) pump. The 1A Motor Generator (MG) Set Fluid Drive Scoop Tube Positioner is powered from 120 V emergency distribution panel 1E5, which is powered from bus E1. As such, loss of bus E1 resulted in the 1A MG Set Scoop Tube being locked. In order to achieve Mode 2 by 1111 EDT, power needed to be reduced via the 1B RCR pump until limited by RCR pump mismatch requirements of TS 3.4.1, "Recirculation Loops Operating," at which time power reduction via control rod insertion continued. Operation of the 1A Scoop Tube Positioner is possible locally. However, the time required to pre-brief and safely perform the evolution did not support entry into Mode 2 by 1111 EDT. As such, reaching Mode 2, via control rod insertion alone, by 1111 EDT in this manner was not achievable. Operations intended to insert a manual scram at 1100 EDT to comply with TS 3.4.5, Action D. It was estimated that Unit 1 would be at approximately 60 percent of rated thermal power at the time the manual scram was required.

Upon the loss of bus E1, Units 1 and 2 also entered Condition B of TS 3.8.7, "Distribution Systems - Operating." Required Action B.1 provided 8 hours to restore the inoperable bus. If this was not accomplished, Required Action D.1 specified that the unit be placed in Mode 3 within 12 hours. If bus E1 was not restored, both Units 1 and 2 were required to be in Mode 3 by 0011 EDT on May 13, 2003. The Required Actions associated with TS 3.8.7 provided the required time for implementing a more controlled/planned shutdown than the LCO 3.0.3 shutdown required by TS 3.4.5, Required Action D.1.

The requested NOED waived compliance with Required Action D.1 of TS 3.4.5 for Unit 1; thereby allowing shutdown of Unit 1 to be pursued in accordance with the completion times associated with TS 3.8.7. This allowed for necessary planning and precautions to be implemented, as appropriate, given the degraded condition of the electrical distribution system.

3. Information regarding the cause and proposed path to resolve the situation.

The drywell floor drain sump flow monitoring system, the primary containment atmosphere particulate and the primary containment atmosphere gaseous RCS leakage monitoring systems were rendered inoperable due to the loss of bus E1. This was primarily the result of closure of

the containment isolation valves associated with the systems and the inability to re-open the valves due to the inoperable bus E1.

The proposed NOED request waived compliance with Required Action D.1 of TS 3.4.5, for Unit 1; thereby allowing shutdown of Unit 1 to be pursued in accordance with the completion times associated with TS 3.8.7 versus LCO 3.0.3.

During this time, Operations evaluated options for reducing the potential impact of a required shutdown of Unit 1. As discussed above, loss of bus E1 resulted in the 1A MG Set Scoop Tube being locked. In order to achieve Mode 2 by 1111 EDT a manual scram from approximately 60 percent of rated thermal power would have been required. With shutdown delayed until 0011 EDT on May 13, 2005, additional time for planning, shift briefing, and evaluating other proceduralized methods of reducing reactor power was available. Other actions to better deal with the scram were pursued. For example, the plant simulator was used to replicate a scram from the conditions expected should a manual scram have become necessary. Lessons learned from this activity would have been provided to the control room Operators prior to inserting a manual scram.

Additionally, Operations evaluated the ability to manually reposition the locked 1A MG Set Scoop Tube. This, along with continued control rod insertion, could have allowed Unit 1 to be brought to a lower power level prior to inserting the scram.

Finally, parallel efforts were pursued to restore bus E1. These efforts proved successful and at 1740 EDT on May 12, 2005, Unit 1 restored operability to the RCS leakage detection systems and exited TS 3.4.5.

4. The safety bases for the request.

PEC has determined that the proposed NOED does not adversely impact overall plant safety.

Essentially, the proposed NOED required Unit 1 to achieve Mode 3 within 20 hours of inoperability of all required RCS leak detection systems versus 7 hours to reach Mode 2, with Mode 3 within 13 hours. Given the limitations associated with plant shutdown, a manual scram was required within 20 hours versus 7 hours (i.e., a 13 hour extension). Granting of the NOED provided additional time to plan an orderly shutdown and was consistent with the existing shutdown requirements of TS 3.8.7 for an inoperable distribution subsystem. There was no net increase in radiological risk to the public by avoiding the unnecessary transient imposed through compliance with LCO 3.0.3 and safety continued to be assured by the existing LCO requirements of TS 3.8.7 which included more appropriate completion times when dealing with a degraded electrical distribution system.

In addition, TS 3.4.4, "RCS Operational Leakage," requires verification of RCS leakage on an 8 hour frequency. The last performance of this surveillance took place at approximately

0400 EDT on May 12, 2005. At that time, unidentified leakage was determined to be 0.26 gpm and identified leakage was 2.0 gpm; well within TS requirements of ≤ 5.0 gpm unidentified leakage and ≤ 25.0 gpm total leakage. This indicated very good RCS integrity.

As a comparison to the requirements of TS 3.4.5 for all RCS leak detection systems inoperable, Required Actions of TS 3.4.4 provide 8 hours to reduce RCS leakage to within limits if actual allowable RCS leakage limits are exceeded. If this is not accomplished, the unit must be in Mode 3 within the following 12 hours. The requested NOED was consistent with the TS 3.4.4 Required Action completion times.

As a compensatory measure, Operations performed increased monitoring of the narrow range primary containment pressure instrumentation and the primary containment temperature instrumentation. Data was logged every 30 minutes. The drywell temperature and pressure provided the indirect ability to detect increased RCS leakage. OAOP-14, "Abnormal Primary Containment Conditions," provides guidance in the event that abnormal trends were identified.

The estimated risk impact associated with the period of enforcement discretion (i.e., from 1111 EDT on May 12, 2005 to 0011 EDT on May 13, 2005) was the net risk impact of:

- Continued operation of Unit 1 for an additional 13 hours with bus E1 inoperable and RCS leakage detection inoperable, versus,
- Immediate reactor scram on Unit 1 at approximately 60 percent power, with both inoperabilities stated above

The inoperable RCS leakage detection system had no quantifiable effect on core damage risk because it has no impact on initiating event frequency or mitigating system operation. It affects the control room's ability to detect abnormal RCS leakage in the drywell, and this ability does not directly affect the Probabilistic Safety Analysis (PSA) model. The probability of significant RCS leakage was extremely low, due to the very low estimated frequencies for loss of coolant accidents combined with the limited exposure time of 13 hours. The consequences of minor RCS leakage were considered to be within normal operating controls. The consequences of major RCS leakage, which was highly unlikely, was automatic initiation of mitigating systems due to Emergency Core Cooling System (ECCS) actuations on high drywell pressure and/or low vessel water level. Therefore, there was minimal risk impact for an inoperable drywell leakage detection system and no net adverse impact during the period of enforcement discretion.

While the inoperable bus E1 had a significant impact on the risk of continued operations, it also had a significant impact on the risk of shutting down. Shutdown risk in this case was significant; however, the ability to quantify and compare this risk to on-line risk is not developed. Therefore, the net effect of bus E1 inoperability was qualitatively assessed.

- The effect of bus E1 inoperability on continued operation was a decrease in the reliability of redundant mitigating systems. Unit 1 had High Pressure Coolant Injection

(HPCI), Reactor Core Isolation Cooling (RCIC), Automatic Depressurization (ADS), one low pressure Core Spray (CS) subsystem, and one Residual Heat Removal (RHR) subsystem available. EDGs 2, 3, and 4 were operable. Compensatory actions were in place to prevent any work activities in the plant, and on the Transmission and Distribution system for both Unit 1 and Unit 2 that would challenge the availability and reliability of the offsite and onsite AC power system and other safety functions including the EDGs on both units.

- The effect of bus E1 inoperability on shutting down were significant because it would have required the unit to be manually scrammed from approximately 60 percent power due to loss of power to the RCR Pump Scoop Tube flow control capability. In addition, the Reactor Water Cleanup (RWCU) system was isolated (i.e., Group 3 isolation), thus adding a significant challenge to the control room's ability to bring the unit to a stable shutdown condition.

The net impact of bus E1 inoperability was the ability to continue operation on Unit 1 with an increase in on-line risk for 13 hours, versus a significant increase in shutdown risk, given the need to scram from 60 percent power, and the loss of RWCU for bringing the unit to a stable shutdown condition.

Dominant Risk Contributors

See discussion of net risk impact above.

Compensatory Measures

Measures were implemented to prevent any maintenance activities on systems in the plant that could impact the AC power system on both units. They also contacted the PEC load dispatcher to ensure that there were no operations on the grid that would present a challenge to the offsite power system to the Brunswick site. In the unlikely event of increased RCS leakage during the period of enforcement discretion, operations abnormal operating procedure 0AOP-014, "Abnormal Primary Containment Conditions," would have provided direction to control room Operators regarding response to symptoms such as increased drywell temperature and pressure. As discussed above, the impact of loss of drywell leakage indication is not quantified in the PSA model, and the effects of compensatory actions on shutdown risk are also not quantifiable.

Extent of Condition

There was no additional effect of the bus E1 and drywell leakage indication inoperabilities on redundant trains.

External Events and Weather Conditions

The net impact of the period of enforcement discretion on external event risk was negligible. The vulnerabilities to external events are similar to the dominant risk contributors in the level 1 PSA model. Therefore, the compensatory actions and net risk impact discussed above applied to external events risk. The weather forecast for the period of enforcement discretion was for light winds and no rain (i.e., no adverse risk impact is expected from weather conditions).

5. Justification for the duration of the noncompliance.

Granting of the NOED provided an additional 13 hours to plan an orderly shutdown of Unit 1 and was consistent with the existing shutdown requirements of TS 3.8.7 for an inoperable distribution subsystem. There was no net increase in radiological risk to the public by avoiding the unnecessary transient imposed through compliance with LCO 3.0.3 and safety continued to be assured by the existing LCO requirements of TS 3.8.7 which included more appropriate completion times when dealing with a degraded electrical distribution system.

Additionally, as a comparison to the requirements of TS 3.4.5 for all RCS leak detection systems inoperable, Required Actions of TS 3.4.4 provide 8 hours to reduce RCS leakage to within limits if actual allowable RCS leakage limits are exceeded. If this is not accomplished, the unit must be in Mode 3 within the following 12 hours. The requested NOED was consistent with the TS 3.4.4 Required Action completion times.

Compensatory actions were in place to:

- Provide enhanced monitoring and logging of drywell temperature and pressure.
- Prevent any work activities in the plant and on the Transmission and Distribution system for both Unit 1 and Unit 2 that would challenge the availability and reliability of the offsite and onsite AC power system and other safety functions including the EDGs on both units.

Based on the above, PEC determined that the duration of the NOED was acceptable.

6. The condition and operational status of the plant.

During the period of the NOED, Unit 1 was in Mode 1 with bus E1, EDG 1, and the RCS Leakage Detection Systems inoperable. The HPCI, RCIC, and ADS systems were operable. Additionally one loop of CS and one RHR subsystem was operable. EDGs 2, 3, and 4 as well as buses E2, E3, and E4 were operable. The 1A MG Set Scoop Tube was locked, limiting ability to lower reactor power using the RCR pumps.

7. The status and potential challenges to off-site and on-site power sources.

Compensatory measures were in place to prevent any work activities in the plant and on the Transmission and Distribution system for both Unit 1 and Unit 2 that would challenge the availability and reliability of the offsite and onsite AC power system and other safety functions including the EDGs on both units. Severe weather conditions were not projected for the duration of the NOED.

8. The basis for the conclusion that the noncompliance will not be of potential detriment to the public health and safety.

The proposed NOED provided an additional 13 hours to plan and implement, if necessary, a more orderly shutdown of Unit 1. This time was consistent with existing shutdown requirements in TS 3.4.4, for actual RCS leakage conditions in excess of TS requirements, and in TS 3.8.7, for degraded electrical system conditions. There was no net increase in radiological risk to the public by avoiding the unnecessary transient imposed through compliance with LCO 3.0.3 and safety continued to be assured by the existing LCO requirements of TS 3.8.7 which included more appropriate completion times when dealing with a degraded electrical distribution system.

9. The basis for the conclusion that the noncompliance will not involve adverse consequences to the environment.

The proposed NOED did not adversely impact the environment. Operation in accordance with the proposed NOED did not have the potential to result in a change in the types or increase in the amounts of any effluents that may be released offsite; nor did it have the potential to result in an increase in individual or cumulative occupational radiation exposure.

10. Approval by the facility organization that normally reviews safety issues.

The Plant Nuclear Safety Committee reviewed and approved this request in Meeting Number 05-17 on May 12, 2005, at approximately 0950 EDT.

11. Applicable NOED criteria.

The proposed NOED met criteria 1.a by avoiding an unnecessary transient as a result of compliance with TS 3.4.5, Required Action D.1. If compliance with Required Action D.1 was enforced, a relatively high powered manual scram (i.e., approximately 60 percent of rated thermal power), complicated by the inoperable bus E1, would have been required. The requested NOED waived compliance with Required Action D.1 of TS 3.4.5, for Unit 1; thereby allowing shutdown of Unit 1 to be pursued in accordance with the completion times associated with TS 3.8.7. This allowed for necessary planning and precautions to be implemented, as appropriate, given the degraded condition of the electrical distribution system.

12. Written NOED request and follow-up license amendment.

This letter fulfills the requirement to submit a written NOED request within two working days.

PEC will submit a follow-up amendment request, addressing the existing Required Action D.1 of TS 3.4.5, by May 17, 2005 (i.e., within four working days of the NRC verbally granting the NOED).

13. Severe weather related NOED requirements.

The proposed NOED is not related to severe weather.