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PSEG
Nuclear LLC

Order EA-12-049

LR-N15-0223

OCT 23 2015

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

Salem Generating Station Unit 2
Renewed Facility Operating License No. DPR-75
NRC Docket No. 50-311

Subject: PSEG Nuclear LLC's Request for Relaxation from Schedule Requirements of NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" – Salem Generating Station Unit 2

References:

1. NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Effective Immediately)," dated March 12, 2012

2. PSEG Letter LR-N13-0034, "PSEG Nuclear LLC's Overall Integrated Plan for the Salem Generating Station in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated February 28, 2013

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA-12-049 (Reference 1) to PSEG Nuclear LLC (PSEG). NRC Order EA-12-049 requires the Salem Generating Station (SGS) to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event. The SGS Overall Integrated Plan for the diverse and flexible (FLEX) strategies to comply with NRC Order EA-12-049 was provided in Reference 2.

SGS Unit 2 is currently required to comply with NRC Order EA-12-049 prior to startup from the fall 2015 refueling outage. PSEG has encountered challenges to implementing

the activities supporting SGS Unit 2 mitigation strategies prior to startup from the fall 2015 refueling outage and requests schedule relaxation to allow for completion of the activities required for compliance with NRC Order EA-12-049 within 90 days following startup from the fall 2015 refueling outage. Attachment 1 contains details of the request for schedule relaxation.

In accordance with Section IV of NRC Order EA-12-049, PSEG requests the Director, Office of Nuclear Reactor Regulation to relax the schedule requirement for full implementation prescribed by Condition IV.A.2 of the Order for the reasons provided in Attachment 1 to this letter.

PSEG considers that the requested relaxation would constitute a change in the implementation schedule requirements of NRC Order EA-12-049 for SGS Unit 2. There are no regulatory commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact Mr. Brian Thomas at 856-339-2022.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 10/23/2015
(Date)

Sincerely,

John F. Perry
Site Vice President
Salem Generating Station

Attachment 1: Salem Generating Station Unit 2 Request for Relaxation from NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events"

cc: Mr. Daniel Dorman, Administrator, Region I, NRC
Mr. John Boska, Project Manager, NRC/NRR/JLD
Mr. Thomas Wengert, Project Manager, NRC/NRR/DORL
NRC Senior Resident Inspector, Salem
Mr. Patrick Mulligan, Chief, NJBNE
Mr. Thomas Cachaza, Salem Commitment Tracking Coordinator
Mr. Lee Marabella, PSEG Commitment Coordinator – Corporate

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Attachment 1

Salem Generating Station Unit 2 Request for Relaxation from NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events"

1 Order Requirement from Which Relaxation is Requested

Condition IV.A.2 of NRC Order EA-12-049 (Reference 1) requires full implementation of the Order requirements by no later than two refueling cycles after submittal of the Overall Integrated Plan required by Condition C.1.a, or December 31, 2016, whichever comes first.

2 Relaxation Request

In accordance with Section IV of NRC Order EA-12-049, PSEG requests relaxation of the Order requirement for Salem Generating Station (SGS) Unit 2 to complete full implementation by no later than two refueling cycles after submittal of the Overall Integrated Plan required by Condition C.1.a of the Order, or December 31, 2016, whichever comes first. As described in the SGS Overall Integrated Plan for diverse and flexible (FLEX) strategies (Reference 2), the original milestone for full compliance with NRC Order EA-12-049 is prior to startup from the SGS Unit 2 fall 2015 refueling outage (S2R21). The requested schedule relaxation would allow SGS Unit 2 to complete full implementation of NRC Order EA-12-049 within 90 days of startup from S2R21.

3 Justification for Relaxation Request

PSEG has encountered challenges to implementation of FLEX design changes such that the current schedule for completion of activities necessary for full compliance would significantly affect the refueling outage schedule in the absence of the requested relief. Implementation challenges with significant schedule impact include the following:

1. The SGS FLEX strategy includes pre-staging and deploying FLEX diesel generators in a sheltered area (canyon) between the safety-related SGS Unit 2 auxiliary building and Unit 2 fuel handling building. The use of the canyon for this purpose requires consideration of the potential for FLEX equipment to impact safety-related structures, systems, and components, including underground service water piping. As part of the design change process, PSEG performed analyses of service water piping capacity and effects of increased loading from FLEX equipment, and performed analyses to determine the impact of a temporary flooding barrier on adjacent safety-related structures. These design analyses resulted in late changes to the canyon design and impacted the installation schedule.

2. FLEX equipment that is deployed in safety-related plant structures is provided with electrical power from the FLEX diesel generators located in the canyon. The SGS FLEX electrical design approach has the advantage of enabling electrical connections to be readily established during an event. However, electrical conduit and cable routing to support the FLEX strategy included numerous core bores for electric penetrations through reinforced concrete walls and floors. In order to minimize impact on safety-related structures, the need to cut rebar was minimized by performing rebar scans and changing field routing of conduit. This was a time-consuming process that resulted in numerous field changes and, in

some cases, significant re-routing of conduit to avoid cutting rebar in safety-related structures.

In the summer of 2015, PSEG increased the electrical installation resources by adding a second shift in order to improve schedule performance. PSEG will complete installation of FLEX modifications and some of the associated acceptance testing prior to startup from S2R21. The schedule relaxation is requested in order to allow post-startup completion of the remaining testing, verification and validation (V&V) and approval of procedures, and just-in-time training if necessary.

PSEG recently conducted an exercise to support validation of the Hope Creek Generating Station (HCGS) FLEX strategy implementation timelines. Lessons learned from the HCGS exercise suggest that SGS may identify actions to improve execution of the FLEX strategy, e.g., procedure changes to improve coordination, labeling changes, and changes to temporary hoses or cables to improve routing. The requested duration of the schedule relaxation includes time to address any such actions that may be identified during completion of installation, testing, and plant-specific V&V at SGS Unit 2.

Based on current implementation status, completion of the remaining activities needed for full compliance with NRC Order EA-12-049 prior to startup from the fall 2015 refueling outage would significantly increase the outage duration absent the requested relaxation. PSEG considers that the requested relaxation does not adversely affect nuclear safety for the reasons provided below.

Based on current regulatory requirements and plant capabilities, a sequence of events similar to those encountered at the Fukushima Dai-ichi station is considered to be unlikely to occur in the United States. Plant-specific design features to preclude an extended loss of AC power and loss of ultimate heat sink at SGS include three safety-related emergency diesel generators per Salem unit, with safety-related diesel fuel supplies and electrical distribution systems. These safety-related onsite electrical systems and the safety-related SGS service water intake structure are designed to maintain AC power and ultimate heat sink capability during design basis external events.

Additional defense-in-depth to mitigate a beyond-design-basis external event will be available during the time period of the requested relaxation based on FLEX equipment on site and completion of FLEX modification installation. These measures include the following:

1. A modification to provide backup compressed nitrogen to the steam generator power-operated relief valves will improve the operators' ability to control steam generator pressure and reactor coolant system cooldown in response to a loss of AC power.

2. Installation of a flow restricting orifice on each of the reactor coolant pump (RCP) seal leakoff lines will reduce RCP seal leakage during a loss of AC power. This

modification supports a plant-specific time of 17.4 hours to reflux cooling assuming no RCS injection, thereby providing significant time to recover core cooling prior to the onset of core uncovery.

3. FLEX equipment is on site, including diesel generators, diesel-driven ultimate heat sink pumps, and motor-driven pumps for charging and auxiliary feedwater. Debris removal and towing equipment are on site. Installation of mechanical and electrical connections will be completed prior to startup. Hoses and cables to support the FLEX strategy are also on site.

4 Conclusion

In view of the challenges summarized above, PSEG considers that completion of all activities needed for compliance with NRC Order EA-12-049 prior to startup from the fall 2015 refueling outage would constitute undue hardship. The proposed date for full implementation of NRC Order EA-12-049 remains within the December 31, 2016 date in Order Condition IV.A.2. Considering the existing plant capabilities and the extremely low likelihood of having a beyond-design-basis external event during the 90-day period of the requested relaxation, there is no significant safety impact or significant increase in risk associated with this request. Therefore, the proposed schedule relaxation for full compliance with NRC Order EA-12-049 would avoid undue hardship without significantly affecting nuclear safety or resulting in any significant increase in risk.

Therefore, in accordance with Section IV of NRC Order EA-12-049, PSEG requests relaxation of the schedule requirement described in Condition IV.A.2 of NRC Order EA-12-049 for SGS Unit 2, to allow completion of activities that are needed to achieve compliance with NRC Order EA-12-049 within 90 days following startup from the S2R21 refueling outage in fall 2015.

5 References

1. NRC Order Number EA-12-049, “Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,” dated March 12, 2012

2. PSEG Letter LR-N13-0034, “PSEG Nuclear LLC’s Overall Integrated Plan for the Salem Generating Station in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049),” dated February 28, 2013