

# PSEG Pre-Submittal Meeting with NRC, February 1, 2018

Salem and Hope Creek Inverter Allowed Outage Time Extension



## Meeting Purpose

- Describe future license amendment requests
- Establish common understanding of scope of requests
- Establish a common understanding of schedule
- Obtain NRC feedback

## Current Licensing Basis

- Salem
  - With one inverter inoperable,
    - Energize associated vital instrument bus within 8 hours
    - Restore inoperable A, B, or C inverter within 24 hours
    - Restore inoperable D inverter within 72 hours
- Hope Creek
  - With one or both inverters in one channel inoperable
    - Energize associated 120 volt AC distribution panel(s) within 8 hours
    - Restore inverter(s) within 24 hours

## Proposed Change

- Salem
  - With one inverter inoperable,
    - Energize associated vital instrument bus within 8 hours
    - Restore inverter within 7 days
- Hope Creek
  - With one or both inverters in one channel inoperable
    - Energize associated 120 volt AC distribution panel(s) within 8 hours
    - Restore inverter(s) within 7 days

## Background

### ■ Salem

- Four 115 Vac vital instrument buses supplied from individual Uninterruptible Power Supplies (UPS) for each unit
- UPS power sources
  - Normal 230 Vac
  - Backup 125 Vdc battery
  - Alternate 230 Vac (line regulator and static switch)

	Norm AC Supply	DC Supply	Alt AC Supply
'A'	'A' 230V vital	'A' 125V	'A' 230V vital
'B'	'B' 230V vital	'B' 125V	'B' 230V vital
'C'	'C' 230V vital	'C' 125V	'C' 230V vital
'D'	'B' 230V vital	'B' 125V	'B' 230V vital

## Background

- Hope Creek
  - Four independent Class 1E power system channels
  - Two 120 Vac vital instrument buses per channel each supplied by UPS
  - UPS power sources
    - Normal 480 Vac
    - Backup 125 Vdc battery
    - Backup 480 Vac (voltage regulator and static switch)

## Need for proposed changes

- On-line corrective maintenance and post-maintenance testing has challenged current AOTs
- Proposed AOT extensions
  - Allow more rigorous troubleshooting and application of human performance tools for emergent issues
  - Can reduce risk associated with shutting down to respond to emergent issues without significant change in at-power risk

## License Amendment Request Scope

- Traditional Engineering Assessment
  - Adequate defense-in-depth maintained
    - Each defense-in-depth consideration to be addressed
  - Required inverters maintained OPERABLE
  - Operator response to LOOP with inverter(s) out of service
  - Procedures to start and load EDGs if required
  - Safety margins not affected – within current design basis
  - Continued monitoring under the M-rule program and PSEG performance and predictive monitoring programs



## License Amendment Request Scope

- Probabilistic analysis
  - Applicable guidance and criteria
    - RG 1.174, Rev. 3
    - RG 1.200, Rev. 2
    - RG 1.177, Rev. 1
  - Salem
    - Quantitative analyses for internal events and flood
    - Qualitative analyses for fire and external events
  - Hope Creek
    - Quantitative analyses for internal events, fire and internal flood
    - Qualitative analyses for external events
  - Uncertainty addressed using NUREG-1855, Rev. 1 and supporting EPRI documents

## Precedent

- Palo Verde Nuclear Generating Station, ML10270352
- Clinton Power Station, ML061160181

## Schedule

- Submit by March 30, 2018
- Request review per normal NRC timeline