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PSEG
Nuclear LLC

10 CFR 50.90

LR-N08-0168

JUL 3 0 2008

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

Hope Creek Generating Station
Facility Operating License No. NPF-57
NRC Docket No. 50-354

Subject: License Amendment Request - Action for Inoperable Inverters

Pursuant to 10 CFR 50.90, PSEG Nuclear LLC (PSEG), hereby requests an amendment to Facility Operating License No. NPF-57 for Hope Creek Generating Station (HCGS). The proposed license amendment would revise TS 3.8.3.1, "Distribution - Operating," to establish a separate TS Action statement for inoperable inverters in Operational Conditions 1, 2 and 3.

The proposed change would add an Action statement consistent with NUREG-1433, Rev. 3.0, "Standard Technical Specifications, General Electric Plants, BWR/4" for one or two inoperable inverters in one AC power distribution channel. The proposed 24 hour allowed outage time (AOT) reduces the risk of an immediate plant shutdown with an inoperable inverter, along with the potential challenges to safety systems that such a shutdown might entail.

Attachment 1 to this letter describes the proposed changes and provides justification for the changes. PSEG has concluded that the proposed changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92. Attachment 2 provides the marked up Technical Specification pages. Attachment 3 provides the marked up Technical Specifications Bases pages. These Bases pages are being submitted for information only and do not require issuance by the NRC.

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NRR

There are no regulatory commitments in this letter or attachments.

This license amendment request is not being submitted as a risk informed licensing action as discussed in Regulatory Guide 1.174.

PSEG requests approval of the proposed amendment by October 28, 2008 with implementation to be completed within 30 days. Approval of this amendment application is requested on an expedited basis to reduce the potential for unnecessary forced plant shutdowns due to the short existing AOT for inverters.

These proposed TS changes have been reviewed by the Plant Operations Review Committee, and the Nuclear Safety Review Board in accordance with PSEG procedures. We are notifying the State of New Jersey of this application for changes to the TS by transmitting a copy of this letter and its attachments to the designated State Official.

If you have any questions or require additional information, please contact Mr. Paul Duke at 856-339-1466.

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

Executed on July 30, 2008
(date)

Sincerely,

George P. Barnes

George P. Barnes
Site Vice President
Hope Creek Generating Station

Attachments (3)
1. Description of Proposed Changes, Technical Analysis, and Regulatory Analysis
2. Markup of Technical Specification pages
3. Markup of Technical Specification Bases pages

cc: S. Collins, Regional Administrator – NRC Region I
R. Ennis, Project Manager - USNRC
NRC Senior Resident Inspector - Hope Creek
P. Mulligan, Manager IV, NJBNE

ATTACHMENT 1

License Amendment Request

Hope Creek Generating Station

NRC Docket No. 50-354

Description of Proposed Changes, Technical Analysis, and Regulatory Analysis

Subject: Action for Inoperable Inverters

DESCRIPTION OF PROPOSED CHANGES, TECHNICAL ANALYSIS, AND REGULATORY ANALYSIS

1.0 DESCRIPTION

In accordance with 10 CFR 50.90, PSEG Nuclear LLC (PSEG) requests the following amendment to Appendix A, Technical Specifications (TS), of Facility Operating License NPF-57 for Hope Creek Generating Station (HCGS). The proposed license amendment would revise TS 3.8.3.1, "Distribution - Operating," to establish a separate TS Action statement for inoperable inverters in Operational Conditions 1, 2 and 3.

The proposed changes are consistent with NUREG-1433, Rev. 3.0, "Standard Technical Specifications, General Electric Plants, BWR/4."

2.0 PROPOSED CHANGE

TS Limiting Condition for Operation (LCO) 3.8.3.1 would be revised to include the inverters associated with the 120 VAC distribution panels currently required to be energized during Operational Conditions 1, 2 and 3.

TS Action 3.8.3.1.d would be added for one or two inoperable inverters in one AC power distribution channel. This new Action states:

> With one or both inverters in one channel inoperable, energize the associated 120 volt A.C. distribution panel(s) within 8 hours, and restore the inverter(s) to OPERABLE status within 24 hours; or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Marked up TS pages are provided in Attachment 2. Marked up TS Bases pages are provided in Attachment 3. These Bases pages are being submitted for information only and do not require issuance by the NRC. PSEG will implement the TS Bases changes in accordance with the HCGS TS Bases Control Program.

3.0 BACKGROUND

The Class 1E AC power system is divided into four independent power supply channels. Each of these four channels supplies loads in its own load group. All the Class 1E loads are assigned to these channels so that any combination of three out of four load groups has the capability to supply the minimum required safety loads to safely shut down the unit and mitigate the consequences of an accident. No provisions exist for interconnecting redundant Class 1E buses either manually or automatically or for automatic or manual transfer of loads in one group to a redundant load group.

Each channel has two 120 V AC uninterruptible power supplies (UPSs) associated with it. UPS panels feed loads such as diesel generator control panels, remote shutdown

panel, 4.16 kV switchgear, and the instrumentation and controls for the Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling (RCIC) system initiation in their corresponding channel loads. The HCGS 120 VAC instrument distribution system is shown in Updated Final Safety Analysis Report (UFSAR) Figure 8.3-11.

There are eight Class 1E UPSs, two per channel. Each UPS is comprised of a static rectifier, a static inverter, a static switch assembly, and a regulated power supply. The static rectifier provides regulated DC power to the inverter. The normal AC supply from a Class 1E 480 VAC motor control center (MCC) is rectified and auctioneered with the alternate DC supply. The static inverter converts the DC input from the static rectifier to 120 VAC for application to system loads via the static switch assembly. The output of the static inverter is a single phase, 60 Hz, 120 Volts AC. The static switch monitors the output of the static inverter, and it shifts to the backup AC power supply (Class 1E 480 VAC MCC powered from an MCC different than the one powering the UPS static rectifier), if a loss of inverter output is indicated.

LCO 3.8.3.1, applicable during Operational Conditions 1, 2 and 3 (Power Operation, Startup and Hot Shutdown), requires each of the four channels to be energized. As noted in Reference 2, for the purposes of defining Operability of the 120 VAC distribution panels, "energized" is interpreted as "capable of carrying loads, including the automatic supply of power from an operable DC bus through the inverter in the event of a Loss of Power (LOP) or loss of AC feed to the inverter." With an inverter inoperable, the associated 120 VAC distribution panel is currently not considered to be energized. With LCO 3.8.3.1 not met, the required action is to re-energize the associated distribution panel (i.e., restore the inverter to Operable status) within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. The 8-hour allowed outage time for an inoperable inverter does not provide sufficient time to perform troubleshooting, corrective maintenance and post-maintenance testing and creates an operational risk associated with an unnecessary forced plant shutdown.

4.0 TECHNICAL ANALYSIS

There is minimal safety consequence associated with increasing the inverter AOT to 24 hours. The proposed change is consistent with the Allowed Out of Service Time for a single inverter in Improved Standard TS, NUREG-1433, Rev. 3, TS 3.8.7, Condition A. Note that HCGS has two inverters per load group, with a total of eight inverters. In comparison, ITS 3.8.7 Condition A is based on a plant configuration of one inverter per vital instrument bus, with a total of four inverters. The design of the 120 VAC instrument distribution system provides the required redundancy and separation to ensure that, with one or both inverters inoperable in a single channel, sufficient capacity and capability remains to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of

anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The proposed change does not increase the number of inverters permitted to be inoperable at one time. The addition of a requirement to re-energize the 120 volt A.C. distribution panel associated with an inoperable inverter ensures the distribution panel is re-energized from a Class 1E source within 8 hours, consistent with the current TS requirements.

While this license amendment request is not being submitted as a risk informed licensing action as discussed in Regulatory Guide 1.174, the effect of the 24 hour inverter AOT was also evaluated from a Probabilistic Risk Analysis (PRA) perspective based on the Hope Creek full power internal events PRA model of record. The internal events results for the divisional inverter incremental conditional core damage probability (ICCDP) and incremental conditional large early release probability (ICLERP) values are within the Regulatory Guide 1.177 guidelines. In addition, Regulatory Guide 1.174 acceptance guidelines (Region III: very small risk changes) are met.

The proposed 24 hour AOT is a reasonable period of time, based upon engineering judgment, which takes into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability, compared to the risk of an immediate shutdown, along with the potential challenges to safety systems that such a shutdown might entail.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

PSEG has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The inverters and associated 120 VAC distribution panels, are not initiators to any accident sequence analyzed in the Updated Final Safety Analysis Report (UFSAR).

   The proposed change does not increase the number of inverters permitted to be inoperable at one time. With one or both inverters inoperable in a single channel, sufficient capacity and capability remains to assure required safety functions can be performed. The proposed changes do not involve any physical change to structures, systems, or components (SSCs) and do not alter the method of

operation or control of SSCs. The current assumptions in the safety analysis regarding accident initiators and mitigation of accidents are unaffected by these proposed changes. The likelihood of previously analyzed failures remains unchanged.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   No physical changes will be made to the plant or how the plant is operated. As such, no new or different kind of accident due to a credible new failure mechanism, malfunction, or accident initiator will be created as a result of this proposed change. Any alteration in procedures will continue to ensure that the plant remains within analyzed limits, and no change is required to the procedures relied upon to respond to an off-normal event as described in the UFSAR.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No.

   The proposed change would extend the allowed outage time for one or two inoperable inverters in a single channel. The proposed change does not increase the number of inverters permitted to be inoperable at one time. There is no change to any design basis or safety limits. Operation in accordance with the proposed TS ensures that the 120 VAC instrument distribution system is capable of performing its functions as described in the UFSAR.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, PSEG concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

10 CFR 50.36 requires that the TSs include items in five specific categories, including (1) safety limits, limiting safety system settings and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls and states also that the Commission may include additional TSs as it finds to be appropriate. However, the regulation does not specify the particular TSs to be included in a plant's license.

The regulation sets forth four criteria to be used in determining whether a limiting condition for operation (LCO) is required to be included in the TS, as follows:

(1) installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary;

(2) a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier;

(3) a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; or

(4) a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. The inverters are a part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36(d)(2)(ii).

10 CFR 50 Appendix A, General Design Criterion (GDC) 17, "Electric Power Systems," requires the onsite electric power supplies, including the batteries, and the onsite electric distribution system, to have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure. Since no physical changes are being made, and current design bases are not being affected, there is no impact on compliance with GDC 17.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the

Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4."

2. PSEG letter NLR-N91214, "Response to Generic Letter 91-11," dated January 28, 1992

ATTACHMENT 2

Hope Creek Generating Station

Facility Operating License No. NPF-57
NRC Docket No. 50-354

Action for Inoperable Inverters

Markup of Proposed Technical Specification Page Changes

TS Pages

3/4 8-18
3/4 8-19
3/4 8-20

ELECTRICAL POWER SYSTEMS

3/4.8.3 ONSITE POWER DISTRIBUTION SYSTEMS

DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.3.1 The following power distribution system channels shall be energized:

a. A.C. power distribution:

1.	Channel A, consisting of:	
	a) 4160 volt A.C. switchgear bus	10A401
	b) 480 volt A.C. load centers	10B410
		10B450
	c) 480 volt A.C. MCCs	10B212
		10B411
		10B451
		10B553
	d) 208/120 volt A.C. distribution panels	10Y401(source:10B411)
		10Y411(source:10B451)
		10Y501(source:10B553)
	e) 120 volt A.C. distribution panels	1AJ481 and inverter AD481
		1YF401(source: 1AJ481)
		1AJ482 and inverter AD482
2.	Channel B, consisting of:	
	a) 4160 volt A.C. switchgear bus	10A402
	b) 480 volt A.C. load centers	10B420
		10B460
	c) 480 volt A.C. MCCs	10B222
		10B421
		10B461
		10B563
	d) 208/120 volt A.C. distribution panels	10Y402(source:10B421)
		10Y412(source:10B461)
		10Y502(source:10B563)
	e) 120 volt A.C. distribution panels	1BJ481 and inverter BD481
		1YF402(source:1BJ481)
		1BJ482 and inverter BD482
3.	Channel C, consisting of:	
	a) 4160 volt A.C. switchgear bus	10A403
	b) 480 volt A.C. load centers	10B430
		10B470
	c) 480 volt A.C. MCCs	10B232
		10B431
		10B471
		10B573
	d) 208/120 volt A.C. distribution panels	10Y403(source:10B431)
		10Y413(source:10B471)
		10Y503(source:10B573)

LIMITING CONDITION FOR OPERATION (Continued)

e) 120 volt A.C. distribution panels	1CJ481 and inverter CD481	
	1YF403 (source:1CJ481)	
	1CJ482 and inverter CD482	

4. Channel D, consisting of:

a) 4160 volt A.C. switchgear bus	10A404
b) 480 volt A.C. load centers	10B440
	10B480
c) 480 volt A.C. MCCs	10B242
	10B441
	10B481
	10B583
d) 208/120 volt A.C. distribution panels	10Y404 (source:10B441)
	10Y414 (source:10B481)
	10Y504 (source:10B583)
e) 120 volt A.C. distribution panels	1DJ481 and inverter DD481
	1YF404 (source:1DJ481)
	1DJ482 and inverter DD482

b. D.C. power distribution:

1. Channel A, consisting of:

a) 125 volt D.C. switchgear	10D410
b) 125 volt D.C. fuse box	1AD412
c) 125 volt D.C. distribution panel	1AD417
d) 250 volt D.C. switchgear	10D450
e) 250 volt D.C. fuse box	10D422
f) 250 volt D.C. MCC	10D251

2. Channel B, consisting of:

a) 125 volt D.C. switchgear	10D420
b) 125 volt D.C. fuse box	1BD412
c) 125 volt D.C. distribution panel	1BD417
d) 250 volt D.C. switchgear	10D460
e) 250 volt D.C. fuse boxes	10D432
f) 250 volt D.C. MCC	10D261

3. Channel C, consisting of:

a) 125 volt D.C. switchgear	10D430
	10D436
b) 125 volt D.C. fuse box	1CD412
	1CD448
c) 125 volt D.C. distribution panel	1CD417

4. Channel D, consisting of:

a) 125 volt D.C. switchgear	10D440
	10D446
b) 125 volt D.C. fuse boxes	1DD412
	1DD448
c) 125 volt D.C. distribution panel	1DD417

LIMITING CONDITION FOR OPERATION (Continued)

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

a. With one of the above required A.C. distribution system channels not energized, re-energize the channel within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. With one of the above required 125 volt D.C. distribution system channels not energized, re-energize the division within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

c. With any one of the above required 250 volt D.C. distribution systems not energized, declare the associated HPCI or RCIC system inoperable and apply the appropriate ACTION required by the applicable Specifications.

d. With one or both inverters in one channel inoperable, energize the associated 120 volt A.C. distribution panel(s) within 8 hours, and restore the inverter(s) to OPERABLE status within 24 hours; or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.8.3.1 Each of the above required power distribution system channels shall be determined energized at least once per 7 days by verifying correct breaker/switch alignment and voltage on the busses/MCCs/panels.

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ATTACHMENT 3

Hope Creek Generating Station

Facility Operating License No. NPF-57
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Action for Inoperable Inverters

Markup of Technical Specification Bases Page Changes
(for information only)

TS Bases Pages

B 3/4 8-3

A.C. SOURCES, D.C. SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8.2.1-1 is permitted for up to 31 days. During this 31 day period: (1) the allowable values for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than .020 below the manufacturer's recommended full charge specific gravity ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than .040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function; (5) the TABLE 4.8.2.1-1 NOTATION 31 day ACTION time was derived taking into consideration that while battery capacity is degraded, sufficient capacity exists to perform the intended function while providing a time period adequate to permit full restoration of the battery cell parameters to normal limits.

"Energized" 120 VAC distribution panels [A-D]J48[1/2] require the panels to be energized to their proper voltage from the associated inverter via inverted DC voltage, inverter using the normal AC source, or Class 1E backup AC source via voltage regulator. OPERABLE inverters require the associated 120 VAC distribution panels ([A-D]J48[1/2]) to be powered by the inverter with output voltage within tolerances, and power input to the inverter from the associated station battery. Alternatively, the power supply may be from an internal AC source via rectifier as long as the OPERABLE station battery is available as the uninterruptible power supply.

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Primary containment electrical penetrations and penetration conductors are protected by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers by periodic surveillance.

The surveillance requirements applicable to lower voltage circuit breakers provides assurance of breaker reliability by testing one representative sample of each manufacturers brand of circuit breaker. Each manufacturer's molded case and metal case circuit breakers are grouped into representative samples which are than tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers, it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes.

The OPERABILITY or bypassing of the motor operated valves thermal overload protection continuously or during accident conditions by integral bypass devices ensures that the thermal overload protection during accident conditions will not prevent safety related valves from performing their function. The Surveillance Requirements for demonstrating the OPERABILITY or bypassing of the thermal overload protection continuously or during accident conditions are in accordance with Regulatory Guide 1.106 "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977. The list of MOVs required to have thermal overload bypass circuitry is contained in UFSAR Table 8.3-11.