

Public Service
Electric and Gas
Company

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Vice President and Chief Nuclear Officer

JUL 27 1994

NLR-N94106
LCR 94-08
LCR 94-11
LCR 94-12

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

**LICENSE AMENDMENT APPLICATION
SSWS/SACS/EDG AOT EXTENSIONS
AND EDG ONLINE MAINTENANCE
FACILITY OPERATING LICENSE NPF-57
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354**

This letter submits an application for amendment to Appendix A of Facility Operating License NPF-57 for the Hope Creek Generating Station, and is being filed in accordance with 10CFR50.90. The amendment request proposes to revise the Allowed Out-of-service Times (AOTs) for inoperable Station Service Water System (SSWS) pumps, for inoperable Safety Auxiliaries Cooling System (SACS) pumps, and inoperable Emergency Diesel Generators (EDGs). In addition, this request is also proposing to allow online maintenance of the EDGs.

A description of the requested amendment, supporting information and analyses for the change, and the basis for a no significant hazards consideration determination are provided in Attachment 1. The Technical Specification pages affected by the proposed change are marked-up in Attachment 2.

Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

Upon NRC approval of this proposed change, PSE&G requests that the amendment be made effective on the date of issuance, but implemented within 60 days to provide sufficient time for associated administrative activities.

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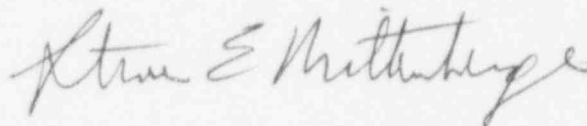
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NLR-N94106

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Should you have any questions regarding this request, we will be pleased to discuss them with you.

Sincerely,



Affidavit
Attachments (3)

C Mr. T. T. Martin, Administrator - Region I
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USNRC Senior Resident Inspector

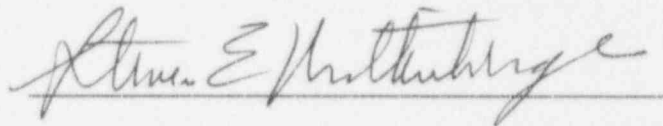
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REF: NLR-N94106
LCR 94-08
LCR 94-11
LCR 94-12


STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

S. E. Miltenberger, being duly sworn according to law deposes and says:

I am Vice President & Chief Nuclear Officer of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter, concerning the Hope Creek Generating Station, are true to the best of my knowledge, information and belief.



Subscribed and Sworn to before me
this 26th day of July, 1994


Notary Public of New Jersey

My Commission expires on _____
KIMBERLY JO BROWN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires April 21, 1998

ATTACHMENT 1
PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS

LICENSE AMENDMENT APPLICATION
SSWS/SACS/EDG AOT EXTENSIONS AND EDG ONLINE MAINTENANCE
FACILITY OPERATING LICENSE NPF-57
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

NLR-N94106
LCR 94-08, 94-11, 94-12

I. DESCRIPTION OF THE PROPOSED CHANGES

As indicated on the marked-up pages in Attachment 2, PSE&G requests that:

LCR 94-08

- 1) Technical Specification 3.7.1.1 be revised to establish the following ACTION and Allowed Out-of-service Times (AOTs) for inoperable Safety Auxiliaries Cooling System (SACS) pumps:
 - a. 30 days for one SACS pump;
 - b. With one entire SACS subsystem inoperable, realign **at least one** (instead of both as currently required) of the affected diesel generators to the OPERABLE SACS subsystem. (Note: The 72 hour time period to restore the inoperable subsystem to OPERABLE status with at least one OPERABLE pump and heat exchanger will remain the same); and
 - c. 72 hours for one SACS pump in each subsystem inoperable.
- 2) Technical Specification 3.7.1.1 be revised to delete a reference to Specification 3.4.9.1.
- 3) Technical Specification 3.7.1.1, ACTION Statements b., c. and d. be revised to specify that two inoperable SACS pumps in the SACS subsystem make the associated RHR loop or associated safety related equipment inoperable.
- 4) Technical Specification 3.7.1.2 be revised to establish a 30 day AOT for one inoperable Station Service Water System (SSWS) pump.

LCR 94-11

- 1) Technical Specification 3.8.1.1 be revised to establish the following AOTs for inoperable onsite AC electrical power sources:

- a. 30 days for one EDG inoperable; and
- b. 72 hours for two EDGs inoperable

LCR 94-12

- 1) Technical Specification Surveillance Requirement 4.8.1.1.2.h be revised to permit online maintenance and inspection of the EDGs.

II. REASON FOR THE PROPOSED CHANGES

LCR 94-08

The existing AOTs for inoperable SSWS/SACS pumps are being extended to reflect engineering evaluations demonstrating increased SSWS/SACS performance capabilities. These evaluations form the basis of the fault tree models in the Hope Creek Probabilistic Safety Assessment (PSA) analyses of the SSWS/SACS (See Attachment 3). Previously, the success criteria established for long term cooling in a post LOCA/Loss of Offsite Power (LOP) scenario required two operable SSWS/SACS pumps and SACS heat exchangers in one loop, however, the new SSWS/SACS success criteria established for the PSA model requires **either** two SSWS/SACS pumps and SACS heat exchangers in one SSWS/SACS loop, **or** one SSWS/SACS pump and two SACS heat exchangers in each SSWS/SACS loop with operator action (isolate accessible unnecessary equipment). The results of this PSA are now being used to establish appropriate AOTs for the SSWS/SACS components.

Establishment of the appropriate AOTs for inoperable SSWS/SACS pumps (as reflected in the marked up pages of Attachment 2) provides increased operational flexibility required for completion of corrective maintenance activities and could prevent the initiation of shutdown procedures currently required by the shorter AOTs for the SSWS/SACS.

The establishment of longer AOTs for the SACS components also requires that changes to Technical Specification 3.7.1.1, ACTION Statements b., c. and d. be made as well. These ACTION Statements specify (by reference to other Specifications) the number of SACS subsystems that are required to be OPERABLE in OPERATIONAL CONDITIONS 3, 4 and 5 in order to provide sufficient heat removal capability for RHR and associated safety related equipment. However, as mentioned previously, one SACS pump and two heat exchangers (with at least one OPERABLE pump and two heat exchangers in the other SACS loop) can provide this required heat removal capability, and therefore should still be considered as a

100% functional SACS loop. For this reason, Technical Specification 3.7.1.1, ACTION Statements b., c. and d. are being changed to specify that two SACS pumps must be inoperable in order to declare the associated RHR loop or associated safety related equipment inoperable.

In addition, ACTION Statement a.2 of Specification 3.7.1.1 is being revised to incorporate an existing Technical Specification interpretation. This interpretation clarifies the ACTION Statement in the situation when one of the affected EDGs (an EDG cooled by the inoperable SACS loop) cannot be realigned to the operable SACS loop within two hours. Under such conditions several interpretations can be made, which could lead to the determination that failure to realign both of the affected EDGs within two hours would require that the plant be placed in at least hot shutdown within the next 12 hours and cold shutdown within the following 24 hours.

PSE&G believes that the above is an improper interpretation which could potentially result in an unnecessary plant shutdown and subsequent plant restart transient. Instead, PSE&G believes that this situation is equivalent to having one EDG (which cannot be realigned) declared inoperable in accordance with Technical Specification 3.8.1.1. The existing Technical Specification interpretation precludes overly conservative and improper interpretations of ACTION Statement a.2 of Technical Specification 3.7.1.1. This amendment request is now being submitted to incorporate this interpretation into the Hope Creek Generating Station Technical Specifications.

The second subparagraph b. of Technical Specification 3.7.1.1 defines how many SACS subsystems are required to be OPERABLE during OPERATIONAL CONDITION 4, 5 and **. The current reference to Technical Specification 3.4.9.1 in this subparagraph is inappropriate and will be deleted since Technical Specification 3.4.9.1 is only applicable in Operational Condition 3.

LCR 94-11

PSE&G is also proposing that the existing AOTs for inoperable EDGs be extended to reflect the results of the aforementioned PSA analyses. Improved success criteria established for the post LOCA/LOP heat removal capability of Hope Creek also enable the establishment of longer AOTs for the EDGs. Similar to the extension of SSWS/SACS AOTs in LCR 94-08, the establishment of appropriate EDG AOTs provides increased operational flexibility required for completion of corrective maintenance activities (including online EDG maintenance) and prevents potential unnecessary initiation of shutdown procedures currently required

by the shorter AOTs.

LCR 94-12

Existing Technical Specification Surveillance Requirement 4.8.1.1.2.h stipulates that the EDGs must have an inspection in accordance with manufacturer's recommendations every 18 months during shutdown conditions. The proposed changes to the Technical Specifications to allow diesel generator maintenance inspections (18 month teardown) while at power are being made in order to avoid the time constrained type maintenance inspections presently allowed only during outages while the unit is shutdown. This change would decrease outage time used for maintenance teardown and allow time for a more detailed inspection. In addition, the proposed changes could enable the preplanning of teardown inspections such that the EDGs are inspected (one at a time) on a staggered basis over the 18 month fuel cycle. This change is analogous to that approved by the NRC in an SER dated September 28, 1989, for the PECO Energy Company's Limerick Generating Station.

III. JUSTIFICATION FOR THE PROPOSED CHANGES

LCR 94-08

A. Station Service Water System Changes:

The Hope Creek SSWS consists of two separate and redundant piping loops, with each loop containing two pumps powered from a separate channel of Class-1E power supply. As stated in the Hope Creek SER (NUREG-1048, dated October 1984), the design of the SSWS ensures that system function is not lost assuming a single active component failure coincident with a loss of offsite power and therefore meets the requirements of GDC 44.

The current Limiting Condition for Operation (LCO) for the SSWS requires that two loops be operable during OPERATIONAL CONDITIONS 1, 2 and 3. With one of the SSWS pumps inoperable, an AOT of 7 days is permitted before shutdown procedures are initiated. PSE&G believes, however, that this AOT duration is too conservative in light of the Hope Creek SSWS design capabilities. Therefore, based upon the following discussion of the SSWS design and PSA analysis, PSE&G is proposing to establish a more appropriate 30 day AOT for one inoperable SSWS pump.

Justification for the establishment of a 30 day AOT for one inoperable SSWS pump is based, in part, on the ability of the SSWS to accommodate active failures of components in the SSWS.

While in ACTION Statement a.1 of Technical Specification 3.7.1.2 (one SSWS pump inoperable), the Hope Creek SSWS is still capable of providing sufficient cooling required in the DBA LOCA/LOP scenario. Although single failure analysis does not require that additional single failures in the SSWS be postulated while in this condition, the Hope Creek SSWS is still capable of accommodating another single active failure.

Engineering evaluations of the SSWS/SACS demonstrate that adequate heat removal capability is maintained in the post LOCA/LOP period with either two SSWS/SACS pumps in one loop or with one SSWS/SACS pump in each independent loop. Since this analysis demonstrates that an additional active failure in the Hope Creek SSWS can be accommodated while in the current 7 day AOT permitted by ACTION Statement a.1 of Technical Specification 3.7.1.2, an extension of this AOT can be justified. A 30 day AOT is being proposed to make the Hope Creek Technical Specifications consistent with the 30 day AOT established for one inoperable SSWS pump in the GE BWR/4 Standard Technical Specifications.

The overall impact (risk assessment) of establishing a 30 day AOT for one inoperable SSWS pump is reflected in the PSA analysis (contained in Attachment 3). This PSA analysis concludes that the extension of the 7 day SSWS pump AOT to a 30 day SSWS pump AOT does not significantly increase Hope Creek's Core Damage Frequency (CDF). This result is expected due to the aforementioned ability of SSWS to accommodate additional active failures. The insignificant risk increase of 4.40 E-8 for the worst case SSWS pump is justified in light of the increased operational flexibility provided for completion of corrective maintenance activities and the prevention of shutdown and restart transients required by the shorter 7 day AOT for the SSWS pumps.

In addition, Sensitivity Analyses were conducted in order to determine the effect of additional inoperable components coincident with the extended SSWS pump AOT. As a result of these analyses, additional restrictions are being placed on plant operation to prevent large risk increases. Note ** for Technical Specification 3.7.1.2, ACTION Statements a.1, a.2 and a.3 requires that at least two diesel generators and SACS pumps associated with the required OPERABLE service water pumps must be OPERABLE. This restriction ensures that at least two SSWS/SACS/EDGs will be available to provide adequate heat removal in the post LOCA/LOP scenario.

B. Safety Auxiliaries Cooling System Changes:

B.1 30 DAY AOT FOR ONE INOPERABLE SACS PUMP

The Hope Creek SACS consists of two separate and redundant piping loops, with each loop containing two heat exchangers and two pumps powered from a separate channel of Class-1E power supply. As stated in the Hope Creek SER (NUREG-1048), in terms of transferring the required heat loads, the design of the SACS meets the requirements of GDC 44.

The current Limiting Condition for Operation (LCO) for the SACS requires that two loops be operable during OPERATIONAL CONDITIONS 1, 2 and 3. With one of the SACS pumps inoperable, an AOT of 72 hours is permitted before shutdown procedures are initiated. PSE&G believes, however, that this AOT duration is too conservative in light of the Hope Creek SACS design capabilities. Therefore, based upon the following discussion of the SACS design and PSA analysis, PSE&G is proposing to establish a 30 day AOT for one inoperable SACS pump.

Justification for the establishment of a 30 day AOT for one inoperable SACS pump is based, in part, on the ability of the SACS to accommodate active failures of components in the SACS. While in ACTION Statement a.1 of Technical Specification 3.7.1.1 (one SACS pump inoperable), the Hope Creek SACS is still capable of providing sufficient cooling required in the DBA LOCA/LOP scenario. Engineering evaluations of the SSWS/SACS demonstrate that adequate heat removal capability is maintained in the post LOCA/LOP period with either two SSWS/SACS pumps and SACS heat exchangers in one loop or with one SSWS/SACS pump and two SACS heat exchangers in each independent loop. Since an additional active failure in the Hope Creek SACS can be accommodated while in the current 72 hour AOT permitted by ACTION Statement a.1 of Technical Specification 3.7.1.1, an extension of this AOT can be justified. A 30 day AOT is being proposed to make the Technical Specification 3.7.1.1 consistent with the 30 day AOT proposed for one inoperable SSWS pump in Technical Specification 3.7.1.2.

The Hope Creek SER (NUREG-1048) states that both loops of SACS (one pump and heat exchanger in each loop) are required in the short term following a DBA LOCA/LOP to provide adequate cooling to the EDGs. However, in this scenario, loss of an entire SACS loop (and its associated EDGs) requires two single active failures in the same SACS loop. As previously mentioned, if this situation were to occur, adequate post LOCA/LOP cooling requirements would be satisfied by the other SACS loop (with two operating SACS pumps). Although establishing a 30 day AOT for one inoperable SACS pump increases the probability of losing an

entire SACS loop, the increase in risk (in terms of CDF) is negligible as described below.

The overall impact (risk assessment) of establishing a 30 day AOT for one inoperable SACS pump is reflected in the PSA analysis (contained in Attachment 3). This PSA analysis concludes that the extension of the 72 hour SACS pump AOT to a 30 day AOT does not significantly increase Hope Creek's CDF. This result is expected due to the aforementioned ability of SACS to accommodate additional active failures. The insignificant risk increase of $2.47 \text{ E-}8$ for the worst case SACS pump is justified in light of the increased operational flexibility provided for completion of corrective maintenance activities and the prevention of shutdown and restart transients required by the shorter 72 hour AOT for the SACS pumps.

In addition, Sensitivity Analyses were conducted in order to determine the effect of additional inoperable components coincident with the extended SACS pump AOT. As a result of these analyses, additional restrictions are being placed on plant operation to prevent large risk increases. Note *** for Technical Specification 3.7.1.1, ACTION Statements a.1, a.2 and a.3 requires that at least two diesel generators and SSWS pumps associated with the required OPERABLE SACS pumps must be OPERABLE. This restriction ensures that at least two SSWS/SACS/EDGs will be available to provide adequate heat removal in the post LOCA/LOP scenario.

B.2 REVISIONS TO SPECIFICATION 3.7.1.1, ACTION A.2

ACTION Statement a.2 of Specification 3.7.1.1 is being revised to incorporate an existing Technical Specification interpretation. This interpretation was developed to provide the appropriate action that should be taken in the situation in which one of the affected EDGs (an EDG cooled by the inoperable SACS loop) is not realigned to the OPERABLE SACS loop. PSE&G's interpretation of this situation is that it is equivalent to having one EDG (which is not realigned) declared inoperable in accordance with Technical Specification 3.8.1.1.

NUREG-1048 states that if one SACS loop is not available, two EDGs will not be cooled until an operator realigns local, manually operated valves to the operating SACS loop. During any event that starts the EDGs, all of the temperature trips are bypassed, and without cooling, the EDGs will run until destruction in approximately five minutes. Therefore, a two hour time limit to realign the EDG cooling was established to minimize the time period in which the EDGs could start and run until destruction due to lack of cooling.

Although PSE&G acknowledges the risk in the above situation, the intent of the interpretation and the proposed change is to avoid unnecessary plant shutdown. In the event that one EDG's cooling is not transferred due to the fact that the EDG was inoperable prior to loss of the SACS loop, the above risk is not applicable. In the situation where a second OPERABLE EDG cannot be realigned within the 2 hours, procedures will direct the operator to disable the EDG so that it will not start until an adequate source of EDG cooling is provided. This situation would be equivalent to declaring the EDG inoperable in accordance with Technical Specification 3.8.1.1.

The proposed change precludes overly conservative and improper operator action (initiation of plant shutdown procedures) to comply with ACTION Statement a.2 of Technical Specification 3.7.1.1. Currently, Hope Creek can simultaneously be in ACTION Statement for Technical Specifications 3.7.1.1 and 3.8.1.1. Simultaneous entry into these ACTION Statements bounds the conditions of the plant when the proposed requirements of Technical Specification 3.7.1.1, ACTION Statement a.2 are met. For this reason, the proposed changes are justified.

B.3 REVISIONS TO SPECIFICATION 3.7.1.1, ACTION A.3

The current Limiting Condition for Operation (LCO) for the SACS requires that two loops be operable during OPERATIONAL CONDITIONS 1, 2 and 3. With one SACS pump in each SACS loop inoperable, immediate initiation of measures to place the unit in at least HOT SHUTDOWN within the next 12 hours must take place. This action is usually required when a system is in such a degraded condition that safe shutdown is not possible following a DBA, and therefore the risk of continued operation is not acceptable. However, PSE&G believes that this current AOT duration is too conservative in light of the Hope Creek SACS design capabilities. Therefore, based upon the following discussion of the SACS design and PSA analysis, PSE&G is proposing to establish a 72 hour AOT for one inoperable SACS pump in each loop of SACS.

Justification for the establishment of a 72 hour AOT for one inoperable SACS pump in each SACS loop is based, in part, on the ability of the SACS in this condition to safely mitigate the consequences of a DBA LOCA/LOP and maintain safe shutdown conditions. Engineering analyses demonstrate the capability of the SACS, with one pump in each loop and limited operator action, to provide sufficient cooling required for the DBA LOCA/LOP scenario. Although additional failures affecting the SACS can not be accommodated in this situation, a period of continued plant operation, of sufficiently conservative duration, should be provided in order to complete SACS corrective measures and

thereby avoid a plant shutdown transient.

The overall impact (risk assessment) of establishing a 72 hour AOT for this situation is reflected in PSA analyses (contained in Attachment 3). The PSA analyses indicate that the overall increase in risk of core damage for this 72 hour AOT period is $6.64 \text{ E-}7$. The CDF demonstrates that the probability of another failure affecting the SACS in this 72 hour period, and thereby affect the ability of the plant to safely complete shutdown following a DBA LOCA/LOP, is sufficiently low to warrant continued plant operation for 72 hours in order to complete corrective measures and restore SACS operability.

B.4 CHANGES TO SPECIFICATION 3.7.1.1 REFERENCES

The second subparagraph b. of Technical Specification 3.7.1.1 defines how many SACS subsystems are required to be OPERABLE during OPERATIONAL CONDITION 4, 5 and **. The current reference to Technical Specification 3.4.9.1 in this subparagraph is inappropriate and will be deleted since Technical Specification 3.4.9.1 is only applicable in Operational Condition 3. The current requirements of subparagraph a., which applies to OPERATIONAL CONDITION 1, 2 and 3, bound the operability requirements of Technical Specification 3.4.9.1, and therefore no reference to this Specification is required.

B.5 CHANGES TO SPECIFICATION 3.7.1.1, ACTIONS B., C. AND D.

Technical Specification 3.7.1.1, ACTION Statements b., c. and d. specify (by reference to other Specifications) the number of SACS subsystems that are required to be OPERABLE in OPERATIONAL CONDITIONS 3, 4 and 5. SACS operability is required in order to provide sufficient heat removal capability for RHR and associated safety related equipment. As indicated in Attachment 2 of this letter, the above Specifications are being revised to require that the RHR loop or safety related equipment must be declared inoperable when two SACS pumps in the associated SACS loop are inoperable. This change permits one SACS pump to be inoperable without affecting the operability of the associated RHR loop or safety related equipment.

As mentioned previously, engineering evaluations demonstrate that two SACS loops with one pump and two heat exchangers in each loop can provide the required heat removal capability in the post DBA LOCA/LOP scenario and maintain safe shutdown conditions. Therefore, a SACS loop with one OPERABLE SACS pump should still be considered as a 100% functional SACS loop, capable of supplying sufficient cooling for RHR and safety related equipment required by Specifications 3.4.9.1, 3.4.9.2, 3.5.2, 3.9.11.1 and

3.9.11.2. For this reason, Technical Specification 3.7.1.1, ACTION Statements b., c. and d. are being changed to allow two SACS pumps in one SACS loop to become inoperable before declaring the associated RHR loop or associated safety related equipment inoperable.

LCR 94-11

Emergency Diesel Generator AOT Extensions:

Similar to changes approved by the NRC in SERs dated March 27, 1987, for the Carolina Power & Light Company's Brunswick Steam Electric Plant and October 4, 1989, for the Pacific Gas & Electric Company's Diablo Canyon Nuclear Power Plant, PSE&G is providing the following justification for extending EDG AOTs. Specifically, PSE&G proposes to extend the current 72 hour AOT for one inoperable EDG to 30 days and the current 2 hour AOT for two inoperable EDGs to 72 hours.

At Hope Creek, electric loads important to safety are served by an electric power system that conforms to GDC 17. The Class-1E AC power supply 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 shutdown the unit and mitigate the consequences of an accident. The four electrical channels support two mechanical divisions.

As previously stated, with one of the EDGs not available, the onsite AC power system retains full capability to effect a safe shutdown and to mitigate the effects of a design basis accident. Operation of the plant in this manner could therefore safely continue, however, since the system would be degraded below the LCO and would not retain its ability to perform its specified function with an additional failure, a time limit on continued operation is warranted. Currently, Technical Specification 3.8.1.1, ACTION Statement b., requires that when the plant is in this condition during OPERATIONAL CONDITIONS 1, 2 or 3, the inoperable EDG must be restored to OPERABLE status within 72 hours or initiation of shutdown procedures must take place. PSE&G believes, however, that this action is too conservative in light of the Hope Creek onsite Class-1E electrical design and the results of PSA analyses. The results of the PSA analyses in Attachment 3 provide the basis to revise the Technical Specifications and extend the EDG AOTs. In these analyses, risk is defined as the probability of core damage resulting from not having AC power available for decay heat removal or for a LOCA.

The results of these analyses indicate that establishing a 30 day AOT for one inoperable EDG and 72 hours for two inoperable EDGs respectively yield an overall risk increase of 7.23 E-7 and 4.32 E-7 for the worst case EDG(s). Although the level of risk introduced by the extended AOTs is acceptable, it does represent an increase in risk compared to the present EDG AOTs. This increase, however, can be justified in light of the following benefits:

- 1) Operational flexibility and reduced chances of plant shutdown by extending the AOT; and
- 2) Improved maintenance quality through alleviation of the constraints of completing the required work in a short time interval.

The 30 day AOT would provide the Hope Creek staff with increased flexibility in the performance of maintenance activities. Under the current Technical Specification requirements, this maintenance can only be scheduled during periods of extended plant shutdown, such as a refueling outage. Additionally, an increase in the AOT will provide more flexibility in performing repairs and would, in turn, increase the thoroughness and quality of the maintenance process.

Similarly, a 30 day AOT would allow more efficient use of manpower for maintenance. Critical activities could be performed on day shifts when a greater number of skilled support personnel are available. This would also allow the same maintenance personnel to perform all of the repair work, thus providing continuity of work by minimizing turnovers. Also, the increased AOT would provide more time to perform post-maintenance testing.

LCR 94-12

EDG ONLINE MAINTENANCE:

Similar to changes approved by the NRC in an SER dated September 28, 1989, for the PECO Energy Company's Limerick Generating Station, PSE&G is providing the following justification for performing online maintenance of the EDGs. The proposed revision to Technical Specification 4.8.1.1.2.h is contained in Attachment 2 of this letter.

Existing Technical Specification 4.8.1.1.2.h stipulates that the EDG must have an inspection in accordance with the manufacturer's recommendations every 18 months "during shutdown." Preplanning the teardown inspection so that the EDGs can be inspected one at

a time would avoid the time constrained type maintenance inspection presently allowed only during outages while the unit is shutdown. The less time constrained tear down/inspection would allow opportunity for a more detailed tear down and inspection. In addition, online maintenance of the EDGs could enable the scheduling of EDG tear down/inspection on a staggered basis over the 18 month fuel cycle.

The existing Technical Specifications were based upon the GE BWR/4 Standard Technical Specifications (STS). The STS and, as stated in the Limerick submittal, the Generic Letter 84-15 plant reflect a typical BWR with only two EDGs for one unit. Similar to Limerick, Hope Creek has four dedicated EDGs and four channels of Class-1E power. Chapter 8 of the Hope Creek UFSAR evaluated the loading requirements for each EDG during a design basis accident. The evaluation concludes that having one EDG out of service will not significantly impact the operation of the onsite emergency electrical system.

In addition, the requirement "during shutdown" is not necessary because the operational condition is governed by the operability of equipment already prescribed as necessary in Technical Specification 3.8.1.1. It is inappropriate to delineate the specific operational condition the plant must be placed into within the body of the Technical Specification surveillance test requirements. If a specific surveillance test requires that the plant enter a Limiting Condition for Operation (LCO), then the plant response is already defined in the Action Statements associated with that LCO.

As stated in the NRC SER for the Limerick submittal, some EDG surveillances (i.e., cold LOP test [SR 4.8.1.1.2.h.6]) should not be performed while at power. Hope Creek surveillance test procedures will ensure that surveillances that have the capability to affect additional safety related equipment will not be performed during power operation.

EDG online maintenance will provide significant operational benefits and will be performed in a manner that does not degrade net safety. The 18 month teardown and inspection can be performed online within system configurations and administrative guidelines, can be completed within a single LCO entry (expected duration of diesel generator inoperability is seven days), and will improve the reliability of the diesel generators. Using the data in Attachment 3, the increase in risk for the "worst" case EDG (EDG A/G400) for a seven day period of inoperability would be $1.69 \text{ E-}7$. For all four EDGs, the total average risk increase per

year due to the 18 month teardown inspection would be 3.17 E-7 .

Based on the existing Limiting Condition for Operation, the presence of four EDGs for the unit in lieu of the typical BWR arrangement of two EDGs per unit and the operational condition being governed by the proposed Technical Specification 3.8.1.1, the proposed change would not significantly affect the ability of the onsite emergency power system to shutdown the plant safely.

IV. SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

PSE&G has, pursuant to 10 CFR 50.92, reviewed the proposed amendment to determine whether our request involves a significant hazards consideration. We have determined that operation of the Hope Creek Generating Station in accordance with the proposed changes:

1. Will not involve a significant increase in the probability or consequences of an accident previously evaluated.

LCR 94-08

Station Service Water System (SSWS) Changes

Engineering evaluations of the SSWS/Safety Auxiliaries Cooling System (SACS) demonstrate that adequate heat removal capability is maintained in the post LOCA/LOP period with either two SSWS/SACS pumps in one loop or with one SSWS/SACS pump in each independent loop. The risk evaluations contained in the Probabilistic Safety Assessment analyses of the SSWS determined that the probability of an accident previously evaluated does not significantly change by increasing the SSWS pump AOT from 7 days to 30 days. The evaluations demonstrated that the relative risk remained low with an increased (and more appropriate) AOT due to capabilities of the Hope Creek SSWS to accommodate active failures.

Increasing the SSWS pump AOT does not involve physical alteration of any plant equipment and does not affect analysis assumptions regarding functioning of required equipment designed to mitigate the consequences of accidents. Further, the severity of postulated accidents and resulting radiological effluent releases will not be affected by the increased AOT.

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

Safety Auxiliaries Cooling System Changes

Engineering evaluations of the SSWS/SACS demonstrate that adequate heat removal capability is maintained in the post LOCA/LOP period with either two SSWS/SACS pumps in one loop or with one SSWS/SACS pump in each independent loop. The risk evaluations contained in the Probabilistic Safety Assessment analyses of the SACS determined that the probability of an accident previously evaluated does not significantly change by increasing the SACS pump AOT from 72 hours to 30 days. Similarly, the provision of a 72 hour AOT for one SACS pump inoperable in each SACS loop does not significantly change the probability of an accident previously evaluated. The evaluations demonstrated that the relative risk remained low with an increased (and more appropriate) AOTs due to capabilities of the Hope Creek SACS to accommodate active failures.

Increasing the SACS pump AOTs does not involve physical alteration of any plant equipment and does not affect analysis assumptions regarding functioning of required equipment designed to mitigate the consequences of accidents. Further, the severity of postulated accidents and resulting radiological effluent releases will not be affected by the increased AOTs.

The proposed changes to ACTION Statement a.2 of Technical Specification 3.7.1.1 precludes overly conservative and improper operator action (initiation of plant shutdown procedures) to comply with the requirements in the situation in which one of the affected EDGs (an EDG cooled by the inoperable SACS loop) is not realigned to OPERABLE SACS loop. Currently, Hope Creek can simultaneously be in the ACTION Statement for Technical Specifications 3.7.1.1 and 3.8.1.1. Simultaneous entry into these ACTION Statements bounds the conditions of the plant when the proposed requirements of Technical Specification 3.7.1.1, ACTION Statement a.2 are met. For this reason, the proposed changes will not increase the probabilities or consequences of an accident previously evaluated.

Technical Specification 3.7.1.1, ACTION Statements b., c. and d. are being revised to require that the RHR loop or safety related equipment must be declared inoperable when two SACS pumps in the associated SACS loop are inoperable. This change permits one SACS pump to be inoperable without affecting the operability of the associated RHR loop or safety related equipment. Engineering evaluations demonstrate that two SACS loops with one pump and two heat

exchangers per loop can provide the required heat removal capability in the post DBA LOCA/LOP scenario and maintain safe shutdown conditions. Therefore, a SACS loop with one OPERABLE SACS pump should still be considered as a 100% functional SACS loop, capable of supplying sufficient cooling for RHR and safety related equipment required by Specifications 3.4.9.1, 3.4.9.2, 3.5.2, 3.9.11.1 and 3.9.11.2. For this reason, the proposed changes will not increase the probabilities or consequences of an accident previously evaluated.

In conclusion, the above SACS changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

LCR 94-11

Emergency Diesel Generator AOT Extensions.

The Hope Creek offsite and onsite power systems are highly reliable. The risk evaluations contained in the Probabilistic Safety Assessment analyses of the onsite power system determined that the probability of an accident previously evaluated does not significantly change by increasing the diesel generator AOT from 72 hours to 30 days for one inoperable diesel generator or from 2 hours to 72 hours for two inoperable diesel generators. The evaluations demonstrated that the relative risk remained low with an increased (and more appropriate) AOT due to capabilities of the four channel onsite Class-1E electrical system design at Hope Creek.

Increasing the diesel generator AOT does not involve physical alteration of any plant equipment and does not affect analysis assumptions regarding functioning of required equipment designed to mitigate the consequences of accidents. Further, the severity of postulated accidents and resulting radiological effluent releases will not be affected by the increased AOT.

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

LCR 94-12

Emergency Diesel Generator Online Maintenance

The proposed changes would require that the requisite

number of diesel generators be in an operable condition, but would eliminate the restriction that the 18 month maintenance inspection and other surveillance tests be performed only while the unit is shutdown. Because all operational conditions (governed by the operability of the equipment prescribed as necessary in Technical Specification 3.8.1.1) and the associated actions are defined elsewhere in the Technical Specifications, the removal of this restriction would not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Will not create the possibility of a new or different kind of accident from any accident previously evaluated.

LCR 94-08

Station Service Water System (SSWS) Changes

Extending the SSWS pump AOTs does not necessitate physical alteration of the plant or changes in parameters governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated for Hope Creek.

Safety Auxiliaries Cooling System Changes

The changes to the SACS do not necessitate physical alteration of the plant or changes in parameters governing normal plant operation. Thus, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated for Hope Creek.

LCR 94-11

Emergency Diesel Generator AOT Extensions

Extending the diesel generator AOTs does not necessitate physical alteration of the plant or changes in parameters governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated for Hope Creek.

LCR 94-12

Emergency Diesel Generator Online Maintenance

The proposed revisions will not change the method in which

any of the 4.8.1.1.2.h surveillance activities are to be performed, only the prescriptive operational condition is being removed. Since the operational conditions and associated actions are defined elsewhere in the Technical Specifications, the removal of this restriction will not create the possibility of a new and different kind of accident from any accident previously evaluated.

3. Will not involve a significant reduction in a margin of safety.

LCR 94-08

Station Service Water System (SSWS) Changes

As discussed above, the Probabilistic Safety Assessment analyses determined that the change in core damage frequency for extended SSWS pump AOT is insignificant. Therefore, this change does not result in a significant reduction in a margin of safety.

Safety Auxiliaries Cooling System Changes

As discussed above, the Probabilistic Safety Assessment analyses determined that the change in core damage frequency for the SACS changes are insignificant. Therefore, these changes do not result in a significant reduction in a margin of safety.

LCR 94-11

Emergency Diesel Generator AOT Extensions

As discussed above, the Probabilistic Safety Assessment analyses determined that the change in core damage frequency for extended diesel generator AOTs is insignificant. Therefore, this change does not result in a significant reduction in a margin of safety.

LCR 94-12

Emergency Diesel Generator Online Maintenance

The margin of safety for the emergency power system depends on the proven, historical reliability of the diesel generators and the surveillances verifying the power circuits between the offsite and the onsite power systems. The elimination of the restrictions for performance of the maintenance tear down inspection would remain within the

action parameters of Technical Specification 3.8.1.1.
Therefore, the proposed change does not involve a
significant reduction in a margin of safety.

V. CONCLUSION

Based on the preceding discussion, PSE&G has concluded that the proposed changes to the Technical Specifications do not involve a significant hazards consideration insofar as the changes: (i) do not involve a significant increase in the probability or consequences of an accident previously evaluated, (ii) do not create the possibility of a new or different kind of accident from any accident previously evaluated, and (iii) do not involve a significant reduction in the margin of safety.