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PROPOSED RULE PR 50
(59FR52707)

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Attention: Docketing and Service Branch

**COMMENTS TO PROPOSED AMENDMENTS TO 10 CFR 50
SHUTDOWN AND LOW-POWER OPERATIONS FOR NUCLEAR POWER PLANTS
SALEM AND HOPE CREEK GENERATING STATIONS
DOCKET NOS. 50-272, 50-311, AND 50-354**

Gentlemen:

This letter is to provide Public Service Electric & Gas Company's (PSE&G's) comments on the proposed amendments to 10 CFR 50 pertaining to Shutdown and Low-Power Operations as detailed in 59 Federal Register 52707 dated October 19, 1994.

PSE&G recognizes that core safety is of primary importance to the health and safety of the public, including during shutdown and low power conditions. PSE&G also agrees that reducing the number of events that occur while shutdown is paramount to the success of ensuring safe, efficient plant operation. Because of this fundamental understanding, Salem and Hope Creek Generating Stations have dedicated significant resources and implemented various improvements in outage planning, shutdown operations, work control practices, and the performance of maintenance activities.

Salem and Hope Creek have joined with the industry in aggressively developing and implementing the guidelines established in NUMARC document 91-06, "Guidelines for Industry Actions to Assess Shutdown Management." We are pleased that the NRC has recognized this extensive industry effort focused on improving decay heat removal system reliability in the Federal Register and in Information Notice 93-72, "Observations from Recent Shutdown Risk and Outage Management Pilot Team Inspections." Yet, it is disappointing that these improvements were not included in the basis document for the proposed rule. The self-improvements incorporated into PSE&G's processes have, in fact, added significant measures for reducing risks associated with shutdown and low power operations. PSE&G remains committed to operating Salem and Hope Creek safely and does not believe

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that additional rules are necessary to ensure added safety benefits for shutdown and low power operation.

The staff points out that NUMARC 91-06 is a significant and constructive step in outage planning and control, but goes on to cite an insufficient scope and inconsistent implementation among utilities as the basis for the proposed rule. These concerns, however, should be alleviated by the staff's own established framework under the Maintenance Rule which was not addressed in the justification of the proposed rule. The Maintenance Rule, (10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants"), requires utilities to maintain the safety functions of structures, systems, and components (SSCs) during all operating conditions including shutdown and low power operations. This deliberated rule provides the vehicle for the staff to ensure that the safety objective of the proposed rule is not only implemented, but also maintained by utilities.

NUREG-1449 and the NRC pilot inspections of shutdown risk and outage management described in Information Notice 93-72 may not have reflected the programs and policies incorporated under the Maintenance Rule, since implementation of the rule has not been completed for all utilities. It is PSE&G's belief, however, that when fully implemented, the Maintenance Rule will provide sufficient regulatory control over shutdown operations and will also provide the NRC a bases for taking enforcement actions against any licensee that fails to implement appropriate outage controls over SSCs that results in a safety significant event. Because of the overlap between the Maintenance Rule and the proposed rule, the benefits of a having second rule should be reconsidered.

In addition to the improvements made under NUMARC 91-06 and the Maintenance Rule, the NRC has also set forth numerous recommendations in Generic Letter 88-17, "Loss of Decay Heat Removal." Actions taken as a result of this document such as training, procedure upgrades, independent temperature indications, independent level indications, backup water injection systems and other administrative controls have also resulted in increased reliability of the decay heat removal system. Based on the extensive actions that PSE&G and the industry have taken as a result of NUMARC 91-06, the Maintenance Rule and Generic Letter 88-17, the technical justification for the proposed rule on shutdown and low power operations appears to be redundant.

PSE&G would like to express a second concern with the proposed rule pertaining to the staff's 10 CFR 50.109 (backfit) Regulatory Analysis. This analysis does not appear to provide an accurate reflection of the net safety benefit, the costs associated with

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the proposed rule, or assumption that outage length would not be impacted.

The plant events cited in the Federal Register Notice and in the Regulatory Analysis occurred prior to initiatives taken as a result of NUMARC 91-06. In addition, not a single event that is discussed in the analysis involved a fire which stemmed from activities conducted during cold shutdown or refueling conditions, which then affected decay heat removal capability. The apparent lack of such recent or actual fire-related events renders suspect, the assertion that implementing the proposed rule would result in "substantial safety improvements."

PSE&G is concerned about the restrictions that the proposed rule would have on the ability manage shutdown operations and the associated costs that PSE&G would incur to meet the requirements of the rule, much of which was not included in the backfit justification. For a Salem plant, the following costs should be included in the backfit analysis: an increase in refueling outage duration by seven days, an RHR suction modification, fire protection program additions, a higher than estimated cost of implementing a redundant reactor vessel level modification, and operator training and procedure changes (administrative and/or Technical Specifications). We encourage the NRC to reevaluate the Regulatory Analyses in light of these higher costs which are detailed further in Attachment 1.

Attachment 1 provides additional comments that are specific to verbiage of the proposed rule as written in the Federal Register and provide some additional insight into the cost and schedule impacts referenced above.

We appreciate the opportunity to provide PSE&G's comments and believe that once the technical, safety and cost bases of the issue are reevaluated by the NRC, it will be concluded that additional rules on shutdown and low power operations are not necessary or justified. PSE&G strongly supports continued open discussion between ourselves, the industry, and the staff on this issue.

Sincerely,



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Attachment 1

50.67 Shutdown and Low-Power Operations

(a) Applicability

No Comments

(b) Definitions

This section of the proposed rule provides definitions to some of the terms used, but is not inclusive. Terms such as containment integrity, reduced inventory, availability, realistic, and timely manner should be delineated. Also, some definitions given are not consistent with present Technical Specifications or those provided in NUMARC 91-06. For example:

Cold Shutdown should be reworded to include average reactor coolant system temperature to be consistent with generic and Salem and Hope Creek Technical Specifications.

Low Power Conditions - The basis for including low power operations in the scope of this rule is unclear.

The present Salem Technical Specifications define Power Operation (Mode 1) as thermal power >5%. The scope of the proposed rule as stated would include from Mode 6, Refueling, up into Mode 1 to 25% power, (the maximum power at which the turbine is connected to the grid). This overlap in Mode applicability will cause conflicts with existing Technical Specifications and make compliance to the proposed rule difficult.

The proposed definition could be interpreted as applying to the main feedwater system and to the auxiliary feedwater system as well as to the residual heat removal since these systems can be considered the decay heat removal systems in higher modes. These systems were not included in the Regulatory Analysis and should not be included in the scope of the proposed rule.

Outage Plan - The definition of this term should be revised, since outage plans are not applicable in all cases with the plant operating in low power conditions and the only section that refers to this term is paragraph (c)(4) which pertains to instances when entering cold shutdown or a refueling condition.

(c)(1) Changes to Reactivity and RCS Inventory

The proposed rule does not address change magnitudes. Changes in the parameters listed which have minimal safety significance should not be subject to possible enforcement actions.

(c)(2) Containment Integrity

Salem's Technical Specifications currently require Containment Integrity in Modes 1-4 and is considered established when: 1) all penetrations required to be closed can be closed by automatic valves or are closed, 2) equipment hatches are closed and sealed, 3) each air lock is operable, 4) containment leakrates are within limits, and 5) the sealing mechanisms associated with each penetration is operable. Generic Letter 88-07 required that administrative controls be implemented during shutdown cooling conditions to reasonably assure that containment closure will be assured prior to the time at which core uncover could result. NUMARC 91-06 also addresses containment closure and redundancy of safety functions.

The requirements for containment closure are less restrictive than that of containment integrity, but are considered reasonable and prudent, since containment integrity is based on energy release due to a design basis LOCA from full power. Justification has not been adequately provided on the safety benefits of requiring more restrictive requirements than those of the Generic Letter.

Due to the large magnitude of containment leakrate testing and system maintenance performed during refueling outages, it is expected that outage length would be increased as a result of the containment integrity requirement of the proposed rule. The rule would restrict a significant amount of valve related work until the cavity is flooded or on an individual sequential basis at other times. Credit should be allowed for redundant support measures and for non-safety related equipment.

PSE&G recommends deletion of this paragraph.

(c)(3) General Requirements

Parameters needed to ensure the reactor remains subcritical are currently contained in the Technical Specifications. Additional equipment specific requirements would not benefit safety. There does not appear to be a basis for including systems and equipment used for criticality management in the scope of the rule, except for crediting these systems as a means of maintaining the core in a subcritical condition if cooling is lost.

Reactor vessel level monitoring should be changed to reactor coolant level monitoring to be consistent with (c)(4)(d).

Salem Technical Specifications require two RHR loops to be operable in Modes 5 and 6, but allows the normal or emergency power source to be inoperable, (Salem Stations have three vital buses with dedicated emergency diesel generators and two trains of RHR). The proposed rule assumes offsite power is not available which would require that the diesel generator associated with particular vital buses be available at all times in Modes 5 and 6 when the refueling cavity is not flooded. This would not only limit the ability to work on certain vital buses when the refueling cavity is not flooded, but could also impact the ability to comply with Technical Specifications during forced shutdowns.

For instance, if an inoperable emergency diesel generator (EDG), one which supplies backup power to an RHR pump, requires an extended outage time for repair, the plant must be brought to Cold Shutdown in accordance with the Salem Technical Specifications. Per the proposed rule, a loss of offsite power must be postulated which would mean that the normal power to that RHR pump could not be credited. Also, a single failure, that of the redundant RHR pump, must be postulated. In this scenario under the proposed rule, neither decay heat removal train could be credited, though both are available and fully capable of providing necessary core cooling in Cold Shutdown. These requirements are beyond the present licensing bases for Salem. The proposed rule, therefore, would necessitate either: a) the installation of a swing diesel or a third train of decay heat removal, (neither of which were included in the Regulatory Analysis), or b) an increase in requests for discretionary enforcement since compliance with the Technical Specifications and the rule could not be met.

In paragraph (c)(3), it is not clear whether only single active failures are to be considered or whether all possible single failures must be included. In either case, this requirement could result in a major modification for the Salem plants since the suction to the redundant RHR pumps is via a common header. Should a parallel arrangement be required to comply with the rule, a substantial expenditure would be required to run a 14" safety-related line through the containment bioshield wall with motor-operated valves capable of being controlled from the control room.

In order to comply with paragraph (c)(3) during refueling outages for the Salem Generating Stations, both Service Water headers would be required to remain operable, except when the reactor cavity is flooded. This would increase the outage duration by approximately seven days based on the present work performed to meet Generic Letter 89-13 concerns. The cost associated with this additional time was not accounted for in the backfit analysis.

It is not clear whether the rule allows for crediting any passive means of decay heat removal such as natural circulation using intact steam generators as a heat sink.

(c)(4) Fire Protection

As it relates to fire protection, the proposed rule should be limited to assuring the adequacy of decay heat removal capabilities in the event that a fire disables the normal means of removing decay heat. This concern is adequately addressed by section (c)(3)(ii) and if implemented, the need for additional fire protection considerations should not be required provided that the redundant decay heat removal plan is not vulnerable to a postulated fire that could disable the normal decay heat removal system as well.

The rule, as currently proposed, requires an assessment to consider the potential impact of outage related activities on normal decay heat removal capabilities, regardless of the alternate/redundant systems which may be in place to compensate for the loss of normal decay heat removal capabilities. The requirement to perform evaluations of numerous work activities, (both scheduled and emergent), if alternate decay heat removal capabilities are available, appears redundant. The rule should provide the flexibility to perform (c)(4)(i) along with (c)(4)(i)(A) or (c)(4)(i)(B) alone.

Paragraph (4)(i) uses the term "realistic" for evaluating available fire protection features and for determining whether such fires could prevent accomplishment of normal decay heat removal capability. Though the intent to focus on realistic aspects of fire protection is commendable, the term is not defined in the proposed rule nor the associated draft Regulatory Guide. This could lead to subjective interpretations by both the utility and the NRC, and should be further clarified.

The Federal Register Notice states that permanent hardware fixes need not be employed as an option to reduce the risk of fire during cold shutdown and refueling conditions and; therefore, does not consider these related costs in the Regulatory Analysis. However, if the "realistic" evaluations result in the conclusion that some changes must be made to decrease the risk of fire, costs will be incurred in analyzing the options (e.g., hardware fix versus modification or relocation of activities, temporary barriers, procedure revision, etc.) and also in instituting the selected change. These measures might impact the outage duration and are considered backfits in accordance with 10 CFR 50.109, but were not considered in the Regulatory Analysis.

(d) Mid-Loop Level Indication

Generic Letter 88-17 required that two independent, continuous RCS water level indications be provided whenever the RCS is in a

reduced inventory condition. Though these systems appear to meet the wording of the rule, the Regulatory Analysis and draft Regulatory Guide specify that an additional means of monitoring level is necessary. The rationale provided states that the ability to maintain control of RCS level in PWRs during draindown and steady-state operation has been repeatedly demonstrated to be a problem. Numerous contributors to this were identified: poor procedures, poor training, poor planning, and poor instrumentation. Yet, the rule focuses on only one of these contributors, instrumentation, without providing an adequate assessment of the system problems or the relative contribution of "poor" instrumentation to the problem.

The staff's cost estimate for the additional instrumentation of \$190,000 appears low based on materials, design, installation, testing, procedure upgrades, spare parts, and training. It is estimated that a more accurate estimate would be \$500,000 to \$1,000,000 per unit. It is not clear what the technical justification is for the prescribed level devices (ultrasonic devices and pressure differential across the hot leg) or whether these devices can be permanently installed. A more detailed discussion of this required modification should be included as part of the analysis.

(e) Implementation

For Salem Unit 2, if the rule were to be adopted in early 1996, it would be necessary to incorporate all of the required modifications during the next refueling outage (fall of 1996) in order to meet the compliance date of the rule, (i.e., the subsequent refueling outage). This would not allow sufficient time to procure material and prepare the design changes that are currently required by the proposed rule. Since the magnitude of the system scope, necessary modifications, procedures, Technical Specification changes, and training can be extensive the implementation times should be increased and clarified if this rule is adopted.