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SUBJECT: Application for amends to Licenses NPF-41,NPF-51 & NPF-74, revising Surveillance Requirement 4.5.2.h re LPSI subsystem.

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Docket Nos. STN 50-528/529/530

March 16, 1988
161-00890-EEVB/BJA

U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

ATTN: Document Control Desk

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Proposed Technical Specification Change -
LPSI Flow Requirements
File: 88-A-056-026; 88-F-005-419.05

The purpose of this letter is to request a change to the PVNGS Units 1, 2 and 3 Technical Specifications. Specifically, the proposed change will revise Surveillance Requirement 4.5.2.h concerning the Low Pressure Safety Injection (LPSI) subsystem. This section specifies flow requirements that the LPSI subsystem must meet during flow balance testing. Technical Specification Surveillance Requirement 4.5.2.h currently states that each LPSI injection loop must be capable of delivering a total flow equal to 4900 ± 100 gpm and that each injection leg shall be within 100 gpm of each other. This proposed amendment will change the total injection loop flow to 4800 ± 200 gpm and the injection leg maximum deviation to 200 gpm. The increased flow tolerances allowed by this amendment will better accommodate the normal variability in LPSI throttle valve position during the performance of the LPSI flow balance test and will not adversely impact plant safety. The justification for this proposed change is provided in the attachment to this letter along with the following information:

A. Description of the Proposed Change.
B. Purpose of the Technical Specification.
C. Need for the Technical Specification Amendment.
D. Basis for No Significant Hazards Consideration Determination.
E. Safety Evaluation for the Proposed Change.
F. Environmental Impact Consideration Determination.
G. Marked-up Technical Specification Change Pages.

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Pursuant to the requirements of 10CFR50.91(b)(1), and by copy of this letter, we have notified the Arizona Radiation Regulatory Agency of this request for a Technical Specification change. In accordance with the requirements of 10CFR170.12(c), the license amendment application fee of $150.00 has been forwarded to the USNRC Licensee Fee Management Coordinator.

Very truly yours,

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

EEVB/BJA/ls
Attachment

cc: G. W. Knighton (all w/a)
E. A. Licitra
T. J. Polich
J. B. Martin
Director, ARRA
A. C. Gehr
R. M. Diggs (with WFD $150)

ATTACHMENT

A. DESCRIPTION OF THE PROPOSED CHANGE

This proposed Technical Specification amendment involves revising the LPSI flow requirements of Surveillance Requirement 4.5.2.h. This section of the Technical Specifications delineates flowrates that must be attained during performance of the Emergency Core Cooling System (ECCS) flow balance testing. The proposed amendment will incorporate the following changes to Surveillance Requirement 4.5.2.h for the LPSI subsystem:

i) The total injection flow for each injection loop is changed from 4900 $\pm$ 100 gpm to 4800 $\pm$ 200 gpm. The change lowers the nominal flowrate by 100 gpm and increases the flow tolerance to $\pm$ 200 gpm.

ii) The tolerance for the individual injection leg flow balances is changed from 100 gpm to 200 gpm (i.e., the flowrate for each injection leg of an injection loop shall be within 200 gpm of each other).

B. PURPOSE OF THE TECHNICAL SPECIFICATION

The LPSI pumps are described in CESSAR section 6.3.2.2.2. Two functions for the LPSI pumps are described in this section. The first function is to inject large quantities of borated water into the Reactor Coolant System (RCS) in the event of a large pipe rupture. The second function is to provide shutdown cooling flow though the reactor core and the shutdown cooling heat exchangers for normal plant shutdown cooling operation or as required for long term core cooling.

The purpose of Surveillance Requirement 4.5.2.h is best described in Technical Specification bases section 3/4.5.2. This section states that, "The surveillance requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses." These bases requirements are satisfied at PVNGS by adjustment of the LPSI throttle valve limit switches to ensure that: (1) there is enough resistance in the injection system to preclude pump runout conditions, (2) the flow is properly balanced between the two injection legs associated with each LPSI pump, and (3) a sufficient amount of total LPSI flow is delivered to the RCS.

C. NEED FOR THE TECHNICAL SPECIFICATION AMENDMENT

The injection flowrates for the LPSI system are set by adjusting the limit switch settings for the LPSI throttle valves. The existing Technical Specifications require the flowrate to be set within ± 100 gpm of the nominal flowrate. This flow tolerance is difficult to obtain due to the normal electrical and mechanical variations with the 12 inch, motor operated, LPSI throttle valves. The proposed Technical Specification amendment will increase the flow tolerance to ± 200 gpm which will better accommodate variability in throttle valve position during flow balance testing.

D. BASIS FOR NO SIGNIFICANT HAZARDS CONSIDERATION

1. The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility in accordance with a proposed amendment would not: (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or (3)Involve a significant reduction in a margin of safety. A discussion of these standards as they relate to the amendment request follows:

   Standard 1--Involve a significant increase in the probability or consequences of an accident previously evaluated.

   Bases - The proposed amendment involves revising the acceptance criteria for the LPSI flow balance test of Surveillance Requirement 4.5.2.h. The LPSI subsystem is used, in conjunction with the other ECCS subsystems and the Safety Injection Tanks (SITs), to provide sufficient core cooling flow during postulated Loss of Coolant Accidents (LOCAs). This change to the LPSI flowrates has no impact on the probability of occurrence of a LOCA event or any other design basis accident. Additionally, the proposed Technical Specification change will not increase the consequences of any accident previously evaluated in the FSAR. The design basis accident most impacted by the revised LPSI flowrates is the large break LOCA. The most limiting large break LOCA is the double ended guillotine break of a Reactor Coolant Pump (RCP) discharge line. An evaluation was performed to determine the effects of the LPSI flowrate changes on this limiting event. It was determined that the flowrate changes would not impact the event consequences since the reduced flow is still sufficient to keep the reactor vessel downcomer annulus full following discharge of the SITs. Therefore, This proposed Technical Specification amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   Standard 2--Create the possibility of a new or different kind of accident from any accident previously analyzed.

Bases - This proposed Technical Specification amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed. The change only allows for a slightly larger variation in LPSI flowrate to account for the variability of throttle valve positions. The LPSI pumps are the only equipment impacted by this proposed amendment. With the change, the LPSI pumps will still be operated within their design envelope. Therefore, the change will not create the possibility of a new or different kind of accident.

Standard 3--Involve a significant reduction in a margin of safety.

Bases - This proposed Technical Specification amendment will not involve a significant reduction in a margin of safety. Technical Specification bases section 3/4.5.2 states that, "Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses." These bases requirements are satisfied for the proposed amendment as follows: (1) pump runout conditions are prevented by maintaining the maximum LPSI flowrate, allowed by Technical Specifications, at 5000 gpm, (2 and 3) the proposed amendment was evaluated against the existing ECCS-LOCA analyses and it was determined that the LPSI flowrate change will not adversely impact the analysis results.

2. The Commission has provided guidance concerning the application of the standards for determining whether a significant hazards consideration exists by providing certain examples (51 FR 7751) of amendments that are considered least likely to involve a significant hazards consideration. This proposed amendment does not match any of the examples provided by the Commission. However, this proposed change can be described as an amendment where the results of the change are clearly within all acceptable criteria for the system as specified in the Standard Review Plan. Standard Review Plan section 15.6.5 specifies acceptance criteria for ECCS response to a LOCA. Although this change reduces the LPSI flowrate, the results of the ECCS-LOCA analysis remain within the acceptance criteria of 10CFR50.46. As an example, 10CFR50.46(b)(1) specifies that the calculated maximum fuel element cladding temperature shall not exceed 2200 ^{o}F. The PVNGS cycle 1 analysis results for the limiting large break LOCA reports a peak clad temperature of 2091 ^{o}F (refer to ANPP-33650 dated October 3, 1985). The PVNGS Unit 1 Cycle 2 analysis results for the limiting large break LOCA reports a peak clad temperature of 1925 ^{o}F (refer to 161-00321 dated June 29, 1987). Neither of these two peak clad temperature results are affected by the revised LPSI flowrates.

E. SAFETY EVALUATION FOR THE PROPOSED CHANGE

This proposed Technical Specification amendment will not increase the probability of occurrence or the consequences of an accident previously evaluated in the FSAR. The proposed change revises the surveillance requirements for LPSI flowrates during the performance of ECCS flow balance testing. A change to the surveillance test acceptance criteria has no impact on the probability of occurrence of a large break LOCA or any other analyzed event. The design basis accident most impacted by the proposed change is the large break LOCA. The most limiting large break LOCA for PVNGS is the double ended guillotine break of a RCP discharge line. The LPSI subsystem is assumed to deliver a minimum flow to the RCS for the ECCS-LOCA analysis. The LPSI subsystem, in conjunction with the the other ECCS subsystems and the SITs, must supply sufficient core cooling flow to limit the peak clad temperature to within acceptable limits during a postulated LOCA. The large break LOCA analysis of record for cycle 1 is presented in a letter from ANPP to NRC dated October 3, 1985 (ANPP-33650). This analysis was for the limiting large break LOCA and was a PVNGS specific analysis performed to correct a non-conservatism found in the axial power shape that was previously used. To analyze the effects of this proposed Technical Specification change on the analysis of record, CE performed a re-evaluation to assess the impact of the reduced LPSI flows and the increased tolerances of the individual leg flow balances. The acceptance criteria for the evaluation was that the total safety injection flow must be capable of maintaining a full reactor vessel downcomer annulus following discharge of the SITs. Any flow in excess of that required to maintain a full downcomer annulus is assumed to be spillage and is not required to assure adequate core cooling. The CE evaluation confirmed that there is adequate safety injection flow to maintain a full downcomer with the reduced LPSI flow. Therefore, this proposed Technical Specification change will not alter the consequences of the existing large break LOCA analysis.

This proposed Technical Specification amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed. The change allows for a slightly larger variation in LPSI flowrate to account for the variability in throttle valve positions. Additionally, the change does not alter the upper flow limit of 5000 gpm for the LPSI pumps. This will preclude pump runout conditions and will assure that the pumps function as previously evaluated in the FSAR. The LPSI pumps are the only equipment impacted by the proposed change. With the change, the LPSI pumps will still be operated within their design envelope during a postulated LOCA. Therefore, the change will not create the possibility of a new or different kind of accident.

This proposed amendment does not involve a significant reduction in a margin of safety as defined in the bases for any Technical Specification. Bases section 3/4.5.2 states that, "Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split

between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses." A discussion of how these Technical Specification bases are satisfied follows:

(1) The upper limit on LPSI flowrate of 5000 gpm is not changed by this proposed amendment. This prevents pump flow from exceeding runout conditions.

(2) This proposed amendment was evaluated against the existing ECCS-LOCA analysis. The revised flow tolerance between injection legs of 200 gpm was determined to be acceptable.

(3) The lower limit on LPSI flowrate will be changed from 4700 gpm to 4600 gpm. Evaluation of the proposed amendment against the existing ECCS-LOCA analysis indicates that the total flow provided by the safety injection system will be adequate to meet the ECCS acceptance criteria of 10 CFR 50.46.

F. ENVIRONMENTAL IMPACT CONSIDERATION DETERMINATION

The proposed Technical Specification change request does not involve an unreviewed environmental question because operation of PVNGS Units 1, 2 and 3 in accordance with this change would not:

1. Result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement (FES) as modified by the staff's testimony to the Atomic Safety and Licensing Board, Supplements to the FES, Environmental Impact Appraisal, or in any decisions of the Atomic Safety and Licensing Board; or

2. Result in matters not previously reviewed in the licensing basis for PVNGS which may have a significant environmental impact.

G. MARKED-UP TECHNICAL SPECIFICATION CHANGE PAGES

Enclosed are revised pages 3/4 5-6 and B 3/4 5-3 of the PVNGS Units 1, 2 and 3 Technical Specifications.