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SUBJECT: Application for amend to license NPF-51,revising TS 3/4/9.6 to temporarily allow use of hoist instead of refueling machine for movement of fuel assembly at core location A-07.

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10 CFR 50.90
10 CFR 50.91

Arizona Public Service

PALO VERDE NUCLEAR GENERATING STATION
P.O. BOX 52034 PHOENIX, ARIZONA 85072-2034

WILLIAM L. STEWART
EXECUTIVE VICE PRESIDENT
NUCLEAR

102-03642-WLS/SAB
April 1, 1996

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

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Unit 2
Docket No. STN 50-529
Proposed Amendment to Technical Specification (TS)
Section 3/4.9.6, "Refueling Machine,"
Under Emergency Circumstances

Pursuant to 10 CFR 50.90 and 10 CFR 50.91(a)(5), Arizona Public Service Company (APS) submits herewith a request to amend Facility Operating License NPF-51 for Unit 2 of the PVNGS under emergency circumstances. The proposed amendment would revise TS 3/4.9.6 to temporarily allow the use of a hoist instead of the refueling machine for the movement of the fuel assembly at core location A-07. This amendment would expire when the fuel assembly at core location A-07 has been moved into a storage location in the spent fuel pool.

Provided in the enclosure to this letter are the following sections which support the proposed TS amendment:

A. Explanation of the Emergency Circumstances
B. Description of the Proposed TS Amendment
C. Purpose of the TS
D Safety Analysis of the Proposed TS Amendment
E No Significant Hazards Consideration Determination
F. Environmental Impact Determination
G. Marked-up TS Page

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It is requested that this TS change be issued on April 1, 1996, in order to allow completion of Unit 2 core offload. Should issuance of this change not be possible by April 1, 1996, it is requested that consideration be given to issuance of a Notice of Enforcement Discretion in accordance with Section VII.C of Appendix C, General Statement of Policy and Procedure for NRC Enforcement Actions, to 10 CFR Part 2, Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders.

In accordance with TS Section 6.5, the Plant Review Board and Offsite Safety Review Committee have reviewed and concurred with this proposed amendment. By copy of this letter this request is being forwarded to the Arizona Radiation Regulatory Agency (ARRA) pursuant to 10 CFR 50.91(b)(1).

Should you have any questions, please contact Scott A. Bauer at (602) 393-5978.

Sincerely,

WLS/SAB/rjr

Enclosure

cc: L. J. Callan (all with enclosure)
K. E. Perkins
C. R. Thomas
K. E. Johnston
A. V. Godwin (ARRA)

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, W. L. Stewart, represent that I am Executive Vice President - Nuclear, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.

W. L. Stewart

Sworn To Before Me This 1 Day Of April, 1996.

Notary Public

My Commission Expires

OFFICIAL SEAL
Lori A. Hernandez-Patterson
Notary Public-State of Arizona
MARICOPA COUNTY
My Comm. Exp. Apr. 1, 1998

ENCLOSURE

PROPOSED AMENDMENT TO TECHNICAL SPECIFICATION

SECTION 3/4.9.6 "REFUELING MACHINE"

UNDER EMERGENCY CIRCUMSTANCES

A. EXPLANATION OF THE EMERGENCY CIRCUMSTANCES

Palo Verde Nuclear Generating Station (PVNGS) Unit 2 is currently in its sixth refueling outage, performing the Cycle 6 core offload. The fuel assemblies in core locations A-06 and A-07 were discovered to be stuck on March 22, 1996, at approximately 1430 MST, and March 24, 1996, at approximately 1500 MST, respectively. The NRC issued TS amendment 95 on March 26, 1996, to allow the refueling machine overload cutoff limit to be increased from 1600 pounds to as much as 2000 pounds to withdraw the assembly in location A-06. The assembly in location A-06 was withdrawn without exceeding 1600 pounds and moved to the spent fuel pool. The fuel assembly in core location A-07 continues to be stuck, and it's structural integrity is questionable due to the assembly being compressed following the last (fifth) reload. Fission product activity in the reactor coolant indicates that no fuel pins in the assembly are breached. The fuel assembly in location A-07 is the only one in the reactor vessel, and its lower end fitting feet appear to be splayed and bound against the core locating pins.

Possible damage to the fuel assembly includes potential separation of the control element assembly (CEA) guide tube(s) from the lower end fitting. In light of this, to ensure structural integrity of the assembly during movement, retaining reinforcement will be put in place on the outside of the assembly. Since the reinforcement would be on the outside of the fuel assembly, there would not be sufficient clearance to withdraw the reinforced assembly into the refueling machine mast. Therefore, it is requested that TS 3/4.9.6 be revised to allow the use of a manually controlled hoist to withdraw the fuel assembly at location A-07.

The emergency circumstances exist because the fuel assembly cannot be withdrawn using the refueling machine, as required by TS 3/4.9.6, once the temporary external reinforcement is put in place. This prevents completion of fuel movement and resumption of power operations. The suspension of fuel movement has left the core partially unloaded.

The emergency circumstances could not be avoided because the stuck fuel assembly condition in Unit 2 and the need to use temporary external reinforcement was unexpected.

The limiting condition for operation (LCO) of Technical Specification (TS) 3/4.9.6 currently specifies that the refueling machine shall be used for movement of fuel assemblies and shall be operable with a minimum capacity of 3590 pounds and an overload cut off limit of less than or equal to 1600 pounds. This request, under emergency circumstances, provides the justification to allow PVNGS Unit 2 to continue fuel movement by allowing the use of a hoist to withdraw and move the fuel assembly at core location A-07. The hoist has a minimum rated capacity of 3000 pounds. The TS 3.9.6 limit of 1600 pounds lifting force from the hoist will be imposed by the use of a calibrated load cell which will be continuously

monitored while the hoist load is being operated. This would prevent the manually controlled hoist and the fuel assembly from being overloaded during the fuel movement.

B. DESCRIPTION OF THE PROPOSED TS AMENDMENT REQUEST

Arizona Public Service Company (APS) proposes to revise TS 3/4.9.6 to temporarily allow the use of a hoist instead of the refueling machine for movement of the fuel assembly at core location A-07. The following footnote would be added to the TS 3/4.9.6 Limiting Condition for Operation and Surveillance Requirement:

> "A hoist may be used for movement of the fuel assembly at core location A-07 during core offload of Unit 2, sixth refueling outage. The hoist shall have a minimum capacity of 2400 pounds. A load cut off limit of 1600 pounds will be applied administratively using a load cell. The hoist shall be demonstrated operable within 72 hours prior to the start of fuel movement by performing a load test of at least 2400 pounds."

This amendment would expire when the fuel assembly at core location A-07 has been moved into a storage location in the spent fuel pool.

This change would replace the expired footnote for TS 3/4.9.6 related to the temporary increase in the refueling machine overload limit with a new footnote.

C. PURPOSE OF THE TECHNICAL SPECIFICATION

The operability requirements for the refueling machine ensure that: (1) the machine will be used for movement of fuel assemblies, (2) the machine has sufficient load capacity to lift a fuel assembly, and (3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

The purpose of the TS requirement to specifically use the refueling machine for fuel assembly movement is to prevent damage to or dropping of fuel assemblies and prevent withdrawal of an assembly above an elevation which would result in less than the minimum shielding water coverage. The refueling machine contains mechanical and electrical interlocks to accomplish these functions.

D. SAFETY ANALYSIS OF THE PROPOSED TECHNICAL SPECIFICATION AMENDMENT

The proposed amendment would revise TS 3/4.9.6 to temporarily allow the use of a manually controlled hoist instead of the refueling machine for movement of the fuel assembly at core location A-07. This amendment would expire when the fuel assembly at core location A-07 has been moved into a storage location in the spent fuel pool.

The temporary use of a manually controlled hoist to withdraw and move the fuel assembly from core location A-07 would result in the loss of the built-in electrical and mechanical protective functions provided by the refueling machine. Therefore, mechanical and procedural controls will be implemented to compensate for those functions. These compensatory actions will prevent damage or dropping of the fuel assembly and prevent undue exposure of personnel.

The following identifies and describes the functions of the interlocks provided in the refueling machine, as described in CESSAR Section 9.1.4.2.1.1, and the associated compensatory actions.

1. Overload Cut Off Limit Interlock

   The overload cut off limit interlock interrupts hoisting of a fuel assembly if the load increases above the overload set point specified in TS 3/4.9.6. The hoisting load is visually displayed so that the operator can manually terminate the withdrawal operation if an overload occurs and the hoist continues to operate. The hoist motor stall torque is limited such that the cable load is less than the allowable fuel assembly tensile load.

   Compensatory Action:

   The hoist will be procedurally controlled to limit the load placed on the hoist. A calibrated load cell will be used to continuously monitor the load while the hoist is being operated to ensure that the load is limited to less than or equal to 1600 pounds as required by TS 3/4.9.6.

2. Vertical Elevation Interlock

   The vertical elevation interlock interrupts hoisting of a fuel assembly when the correct (full up) vertical elevation is reached. A mechanical up-stop physically

restrains the hoisting of a fuel assembly above the elevation which would result in less than the minimum shielding water coverage.

Compensatory Action:

The minimum design water coverage is identified in CESSAR Section 9.1.4.3.4d. as 9 feet over the active portion of the fuel assembly to limit the radiation level to 2.5 mr/hr or less at the surface of the water when the additional shielding of the handling tool is taken into account. The hoist will be physically restricted by a mechanical stop from raising the fuel assembly above a depth that will maintain to a minimum of 9 feet of water above the active portion of the fuel. Radiation dose rates will be continuously monitored while the fuel assembly is being moved to ensure that dose limits are not exceeded.

3. Load Decrease Interlock

The load decrease interlock interrupts insertion of a fuel assembly if the load decreases below the underload setpoint prior to properly seating the assembly. This prevents the assembly from being rested or unloaded in an unseated position. The load is visually displayed so that the operator can manually terminate the insertion operation if an underload occurs and the hoist continues to operate.

Compensatory Action:

Procedural controls and the use of an underwater camera will assist the operator in preventing an underload condition due to incorrect placement or interference. The fuel assembly will be visually monitored while being moved.

4. No-load Interlock

The no-load interlock interrupts lowering of the hoist under a no-load condition. The weighing system interlock is backed up by an independent slack cable switch which also terminates lowering under a no-load condition.

Compensatory Action:

The load cell will be continuously monitored while the hoist is being operated, and the operator will terminate lowering the hoist when a no-load condition is reached.

5. Translation Interlock

The translation interlock denies translation of the bridge and trolley while the fuel hoist is operating. An additional circuit is provided which, after initiation of a hoisting operation, requires that a separate switch be actuated before normal operation of the translation drives is possible.

In addition, the translation interlock denies hoisting during translation of the bridge and/or trolley.

Compensatory Action:

Procedural controls will be used to prohibit the movement of the bridge and trolley while the fuel assembly is being manually raised or lowered. The hoist will be hung on a beam fixed to the refueling machine such that the hoist will not be capable of lateral movement independent of the refueling machine. Procedural controls will also be used to prohibit raising or lowering the fuel assembly while the bridge or trolley are in motion.

6. Grapple/Translation Interlock

The grapple/translation interlock denies translation of the bridge and/or trolley with the spreader or grapple extended or when the grappled fuel assembly is still in the core. The underwater TV system can be used by the operator to determine whether the spreader or grapple has been raised, and lights on the control console indicate whether they are withdrawn or extended.

Compensatory Action:

Administrative controls will be in place to prohibit movement of the bridge or trolley unless the hoist grapple is clear of the fuel assembly or the grappled and lifted assembly has been raised to the proper vertical position for lateral movement. The position of the assembly and/or grapple will be monitored visually from the refueling bridge and with an underwater camera.

7. Anti-collision Interlock

The anti-collision interlock stops translation of the bridge and/or trolley when the collision ring on the mast is contacted and deflected. Redundant switches are provided to minimize the possibility of this interlock becoming inoperative. Slow

bridge speeds are provided for movement of the refueling machine in areas other than its normal travel route which might contain obstructions. Travel limits are also provided to prevent machine contact with obstructions within the pool area.

Compensatory Action:

Bridge/trolley speeds will be restricted by procedure to the minimum speeds available. Additionally, spotters will be used to monitor the fuel assembly as it is moved through the refueling pool. Normal refueling machine travel limit stops will continue to prevent machine contact with obstructions within the pool area.

8. Hoist Speed Interlock

The hoist speed interlock provides restriction on maximum hoisting speed when the fuel is within the core. During insertion and withdrawal the change in hoist speed can be monitored by observation of the hoist vertical position indicator. A change in the sound of the hoist will accompany the change in hoist speed.

Compensatory Action:

Hoisting speed of the hoist will be controlled by the operator to ensure careful raising and lowering of the assembly. Also, there are no other fuel assemblies in the core that could cause potential interface.

In addition, since the fuel assembly will not be drawn into the protective shroud of the refueling machine mast prior to lateral movement, the lateral movement will of the assembly be procedurally controlled to ensure that the moving assembly is not damaged.

The hoist design will not allow the assembly free-fall while it is being suspended.

Prior to actual fuel loading, the hoist would be cycled through its operation using a dummy fuel assembly (CESSAR 9.1.4.3.4). Also, within 72 hours of using it for fuel movement, the hoist and load cell would be load tested with a load of 2400 pounds.

E. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

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 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 this amendment request follows:

Standard 1 -- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed amendment would revise TS 3/4.9.6 to temporarily allow the use of a hoist instead of the refueling machine for movement of the fuel assembly at core location A-07. The only possible accident that could be associated with this change would be the fuel handling accident. The temporary use of a hoist to withdraw and move the fuel assembly from core location A-07 would not involve a significant increase in the probability of dropping or damaging a fuel assembly because controls will be in place to compensate for the protective functions of the refueling machine. The intent of the requirement of TS 3.9.6. to ensure the refueling machine has a minimum capacity of 3590 pounds is to ensure the lifting device is capable of sustaining the intended load without failure. That would be met since the hoist will be load tested to 2400 pounds, which is 150% of the actual load limit of 1600 pounds. The temporary structure on the refueling machine to support the hoist was designed to support the load limit of 1600 pounds plus the weight of the hoist, load cell, and attachments. The intent of the requirement of TS 3.9.6 that the refueling machine have an overload cutoff limit of 1600 pounds is to ensure the fuel assembly, core internals and pressure vessel are not damaged by the lifting device. That will be met by continuous monitoring of a load cell while the hoist is being operated and communication with the hoist operator to ensure that the hoist tension is stopped prior to exceeding 1600 pounds. This limit is based on engineering analysis of the structural strength of fuel assembly A-07 with the external structural reinforcement installed.

This change would not involve a significant increase in the consequences of a fuel assembly drop accident previously analyzed since any fuel assembly drop would be bounded by the previous analysis. The previous analysis assumed the failure of all 236 fuel rods in an assembly, enriched to 4.30 w/o U-235, 100 hours after shutdown. The analyzed assembly was simulated to experience an irradiation history of 3 full-power years with an assumed plant capacity factor of 80%. These modeling assumptions were consistent with NRC Regulatory Guide 1.25. The results of the fuel handling accident analysis were within the requirements of Standard Review Plan 15.7.4. The characteristics of the fuel assembly at location A-07 are within the assumptions of the fuel handling accident analysis.

This change would not affect the probability or consequences of any other previously evaluated accident since the only possible accident involving the use of a hoist to move the fuel assembly at core location A-07 would be a fuel handling accident. Cooling and reactivity of the fuel would not be affected by the change.

The hoist will be physically restricted from raising the fuel assembly above a depth that will maintain a minimum of 9 feet of water above the active portion of the fuel. Radiation dose rates will be continuously monitored while the fuel assembly is being moved to ensure that dose limits are not exceeded.

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

Standard 2 --Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change to temporarily allow the use of a hoist for movement of the fuel assembly at core location A-07 does not create the possibility of a new or different kind of accident from any accident previously evaluated. The only possible accident involving the use of a hoist to move the fuel assembly at core location A-07 would be a fuel handling accident. Cooling and reactivity of the fuel would not be affected by the change. The consequences of a fuel handling accident as previously analyzed bound any possible malfunction during fuel movement. Controls will be in place to prevent the fuel assembly from being withdrawn above nine feet below the water to ensure the minimum necessary shielding water coverage.

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

Standard 3 -- Does the proposed change involve a significant reduction in a margin of safety.

The proposed change to temporarily allow the use of a hoist for movement of the fuel assembly at core location A-07 does not significantly reduce any margin of safety. Controls will be in place to compensate for the protective functions of the refueling machine. The intent of the requirement of TS 3.9.6. to ensure the refueling machine has a minimum capacity of 3590 pounds is to ensure the lifting device is capable of sustaining the intended load without failure. That would be met since the hoist will be load tested to 2400 pounds, which is 150% of the actual load limit of 1600 pounds. The hoist has a rated capacity of

3000 pounds. The temporary structure on the refueling machine is designed to support the load limit of 1600 pounds plus the weight of the hoist, load cell, and attachments. The intent of the requirement of TS 3.9.6 that the refueling machine have an overload cutoff limit of 1600 pounds, is to ensure the fuel assembly, core internals, and pressure vessel are not damaged by the lifting device. That will be met by continuous monitoring of a load cell while the hoist is being operated and communication with the hoist operator to ensure that the hoist tension is stopped prior to exceeding 1600 pounds. This limit is based on engineering analysis of the structural strength of fuel assembly A-07 with the external structural reinforcement installed. The hoist will be physically restricted from raising the fuel assembly above a depth that will maintain a minimum of 9 feet of water above the active portion of the fuel. Radiation dose rates will be continuously monitored while the fuel assembly is being moved to ensure that dose limits are not exceeded.

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

F. ENVIRONMENTAL IMPACT DETERMINATION

The proposed amendment would revise TS 3/4.9.6 to temporarily allow the use of a hoist instead of the refueling machine for movement of the fuel assembly at core location A-07. APS has determined that the proposed amendment involves no changes in the amount or type of effluent that may be released offsite, and that there is no increase in individual or cumulative occupational radiation exposure. As such, operation of PVNGS Unit 2, in accordance with the proposed amendment, does not involve an unreviewed environmental safety question.

G. MARKED-UP TECHNICAL SPECIFICATION PAGE

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