

December 19, 1994

Mr. William L. Stewart
Executive Vice President, Nuclear
Arizona Public Service Company
Post Office Box 53999
Phoenix, Arizona 85072-3999

SUBJECT: ISSUANCE OF AMENDMENT FOR THE PALO VERDE NUCLEAR GENERATING STATION,
UNIT 1 (TAC NO. M90976)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 87 to Facility Operating License No. NPF-41, for the Palo Verde Nuclear Generating Station, Unit 1, The amendment consists of changes to the Technical Specifications (TS) in response to your application dated November 22, 1994.

The amendment adds a note to TS Table 3.7-2. The note allows continued operation of Unit 1 during Cycle 5 at 100-percent maximum steady state power with one main steam safety valve (MSSV) inoperable per steam generator (SG). This note applies only during the current fuel cycle (Cycle 5) for Unit 1.

This amendment was requested on an exigent basis to return Unit 1 to 100-percent power because the current condition (one inoperable MSSV per SG) limits Unit 1 to 98.2-percent power until the next refueling outage, Cycle 6 (scheduled for April 1995).

A copy of the related Safety Evaluation is also enclosed. A notice of issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,
Original signed by:
Brian E. Holian for
Linh N. Tran, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. STN 50-528

Enclosures: 1. Amendment No. 87 to NPF-41
2. Safety Evaluation

DISTRIBUTION

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PDIV-2/RF
OGC, 015B18
ACRS (10), T2E26
BHolian

cc w/encls: See next page

DOCUMENT NAME: PV90976.AMD

OFC	PDIV-2/LA <i>AC</i>	PDIV-2/PM	PDIV-2/PM	OGC <i>gfb</i>
NAME	DFoster-Curseen	LTran: <i>pk</i>	BHolian <i>pk</i>	<i>EHollian</i>
DATE	<i>12/12/94</i>	<i>12/12/94</i>	<i>12/14/94</i>	<i>12/16/94</i>

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Original signed by:
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Linh N. Tran, Project Manager
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OFC	PDIV-2/LA <i>DF</i>	PDIV-2/PM	PDIV-2/PM	OGC <i>EB</i>
NAME	DFoster-Curseen	LTran: <i>pk</i>	BHolian <i>pk</i>	<i>ERHOLIAN</i>
DATE	<i>12/12/94</i>	<i>12/12/94</i>	<i>12/14/94</i>	<i>12/16/94</i>

*TRC
12/19/94*

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 19, 1994

Mr. William L. Stewart
Executive Vice President, Nuclear
Arizona Public Service Company
Post Office Box 53999
Phoenix, Arizona 85072-3999

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This amendment was requested on an exigent basis to return Unit 1 to 100-percent power because the current condition (one inoperable MSSV per SG) limits Unit 1 to 98.2-percent power until the next refueling outage, Cycle 6 (scheduled for April 1995).

A copy of the related Safety Evaluation is also enclosed. A notice of issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Linh N. Tran".

Linh N. Tran, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. STN 50-528

Enclosures: 1. Amendment No. 87 to NPF-41
2. Safety Evaluation

cc w/encls: See next page

Mr. William L. Stewart
Arizona Public Service Company

Palo Verde

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-528

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 87
License No. NPF-41

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Arizona Public Service Company (APS or the licensee) on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority dated November 22, 1994, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-41 is hereby amended to read as follows:

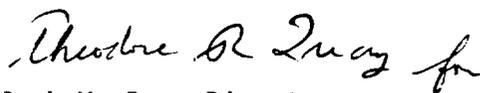
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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 87, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of the date of issuance and must be fully implemented no later than 45 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Jack W. Roe, Director
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 19, 1994

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 87 TO FACILITY OPERATING LICENSE NO. NPF-41

DOCKET NO. STN 50-528

Replace the following page of the Appendix A Technical Specifications with the enclosed page. The revised page is identified by amendment number and contain vertical lines indicating the areas of change.

Remove

3/4 7-3

Insert

3/4 7-3

TABLE 3.7-2

MAXIMUM ALLOWABLE STEADY STATE POWER LEVEL AND MAXIMUM VARIABLE OVERPOWER TRIP SETPOINT WITH INOPERABLE STEAM LINE SAFETY VALVES

<u>MAXIMUM NUMBER OF INOPERABLE SAFETY VALVES ON ANY OPERATING STEAM GENERATOR</u>	<u>MAXIMUM VARIABLE OVERPOWER TRIP SETPOINT (% OF RATED THERMAL POWER)</u>	<u>MAXIMUM ALLOWABLE STEADY STATE POWER LEVEL (% OF RATED THERMAL POWER)</u>
1	108.0	98.2*
2	97.1	87.3
3	86.2	76.4
4	75.3	65.5

*For Unit 1 cycle 5, operation may continue at 100% Allowable Steady State Power Level with one main steam safety valve inoperable per steam generator.

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

- a. Two feedwater pumps, each capable of being powered from separate OPERABLE emergency busses, and
- b. One feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2, 3, and 4*.

ACTION:

- a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With two auxiliary feedwater pumps inoperable be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days:
 1. Verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
 2. Verifying that all manual valves in the suction lines from the primary AFW supply tank (condensate storage tank CTE-T01) to each essential AFW pump, and the manual discharge line valve of each AFW pump are locked, sealed or otherwise secured in the open position.
- b. At least once per 92 days on a STAGGERED TEST BASIS by:
 1. Testing the turbine-driven pump and both motor-driven pumps pursuant to Specification 4.0.5. The provisions of Specification 4.0.4 are not applicable for the turbine-driven pump for entry into MODE 3.

*Until the steam generators are no longer required for heat removal.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 87 TO FACILITY OPERATING LICENSE NO. NPF-41
ARIZONA PUBLIC SERVICE COMPANY, ET AL.
PALO VERDE NUCLEAR GENERATING STATION, UNIT 1
DOCKET NO. STN 50-528

1.0 INTRODUCTION

By letter dated November 22, 1994, the Arizona Public Service Company (APS or the licensee) submitted a request for changes to the Technical Specifications (TS) for the Palo Verde Nuclear Generating Station (PVNGS), Unit 1 (Appendix A to Facility Operating License No. NPF-41). The Arizona Public Service Company submitted this request on behalf of itself, the Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority. The proposed amendment would add a note to TS Table 3.7-2. The note would allow continuous operation of Unit 1 during Cycle 5 at 100% maximum steady state power with one MSSV inoperable per steam generator.

2.0 DISCUSSION

TS Table 3.7-2 specifies maximum allowable steady state power level versus the number of inoperable main steam safety valves (MSSVs) on any steam generator. The purpose of this TS is to ensure plant operation with sufficient pressure-relieving capacity to maintain the reactor coolant system (RCS) pressure below the staff acceptance criteria (120% of design pressure for large feedwater line breaks and control element assembly (CEA) ejection and 110% of design pressure for all other design basis overpressurization events) and maintain the peak main steam system pressure below 110% of design pressure during all design basis overpressurization events.

TS Table 3.7-2 currently limits Unit 1 to a maximum allowable steady state power level of 98.2% of rated thermal power because one MSSV in each steam generator is inoperable.

The licensee proposed to amend this TS by adding a note to TS Table 3.7-2. The note will allow continuous operation of Unit 1 during Cycle 5 at 100% maximum steady state power with one MSSV inoperable per steam generator. The licensee provided the results of an evaluation to support the proposed TS change. The licensee uses a negative moderator temperature coefficient (MTC) of $-1.0E-4 \Delta\rho/^\circ\text{F}$ in its evaluation to offset the reduced capacity of the

MSSVs. This assumed negative MTC is bounded by the recent actual measured MTC of $-2.039E-4 \Delta p/^{\circ}F$ at Unit 1.

3.0 EVALUATION

The adequacy of the pressure relieving capacity and the restriction specified in TS Table 3.7-2 is supported by the results of analyses documented in the updated final safety analysis report (UFSAR). The current safety analyses for limiting pressure transients assume an MTC value of $0.0 \Delta p/^{\circ}F$ at full rated power. This is the maximum upper limit of MTC specified in the core operating limits report for Unit 1, Cycle 5. However, the licensee states that the actual MTC at this point in the cycle for Unit 1, is less adverse than that assumed in the UFSAR. The actual measured MTC for Unit 1, Cycle 5 at 292 effective full power day (EFPD) and 98.2% power (2/3 cycle MTC measured on October 20, 1994) was $-2.039E-4 \Delta p/^{\circ}F$. The predicted MTC at the end of the cycle is approximately $-2.75E-4 \Delta p/^{\circ}F$. When the MTC becomes more negative, the temperature feedback is more negative and therefore has the effect of slowing down a heatup transient. As a result, a lower transient peak RCS pressure is generated.

Because the actual MTC value in PVNGS, Unit 1, Cycle 5 is more negative than that assumed in the existing analyzed pressure transients, the licensee has performed an evaluation which demonstrates that PVNGS, Unit 1, could operate at full power during the rest of Cycle 5 with one inoperable MSSV per steam generator and meet the acceptance criteria regarding allowable peak primary and secondary system pressure.

The licensee has reviewed the UFSAR to determine the design basis events (DBEs) that could be adversely affected by the proposed TS change. Based on a review of these DBEs, the licensee has identified the loss of condenser vacuum (LOCV) and feedwater line break (FLB) as the most limiting transient and accident which require a detailed evaluation. The CEA ejection event was also evaluated to provide an additional comparison of pressure response. The reevaluation of the above events consisted of a sensitivity study that quantified the benefit of the more negative MTC. The sensitivity study involved running a base case which assumes the plant operates at full power with all 10 MSSVs per steam generator operable and an MTC of $0.0 \Delta p/^{\circ}F$. A second case was run which assumes the plant operates at full power with one inoperable MSSV per steam generator and an MTC of $-1.0E-4 \Delta p/^{\circ}F$. The pressure transient results of the two cases were compared. The following conclusions were reached from the licensee's sensitivity study: (1) the peak RCS pressures for all three events analyzed in the second case are less than that in the base case, (2) the peak secondary system pressure for the FLB accident analyzed in the second case is less than that in the base case, and (3) the peak secondary system pressure for the LOCV and CEA ejection accidents analyzed in the second case is slightly higher than that in the base case. However, the results of the second case are still within the maximum allowable limit per the acceptance criteria. The licensee also performed a reanalysis of a postulated small-break LOCA accident and concluded that the proposed TS change will not affect the results of the analysis in UFSAR. The staff

reviewed the proposed changes to TS and the supporting analysis and concluded that the proposed TS change is acceptable.

4.0 EXIGENT CIRCUMSTANCES

The Commission's regulations in 10 CFR 50.91 contain provisions for issuance of amendments with less than a 30-day comment period if either emergency or exigent circumstances are determined to exist.

Emergency situations involve those cases in which failure to act in a timely way results in the derating or shutdown of a nuclear power plant or prevents either resumption of operation or increase in power output up to the plant's licensed power level. Under emergency circumstances, the Commission may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or for public comment. In such a situation, the Commission publishes a notice of issuance under 10 CFR 2.106, providing for opportunity for a hearing and for public comment after issuance.

The processing of an amendment under exigent circumstances usually applies to those cases in which the licensee and Commission must act promptly, but failure to act promptly does not involve a plant shutdown, derating, or delay in startup. For both emergency and exigent circumstances, the licensee is required to explain the reason for the condition and why it could not be avoided. This requirement is intended to prevent the abuse of the special provisions of 10 CFR 50.91(a)(6). Under exigent circumstances, the Commission notifies the public in one of two ways: by issuing a Federal Register notice providing notice of an opportunity for hearing and allowing at least 2 weeks from the date of the notice for prior public comment; or by using local media to provide reasonable notice to the public in the area surrounding a licensee's facility and providing special instructions for providing comment. For this amendment request, the Commission employed the first approach with a Federal Register notice published on December 2, 1994 (59 FR 61907), which presented the staff's proposed no significant hazards consideration determination and requested public comment within 15 days of the date of publication of the notice.

Palo Verde Nuclear Generating Station (PVNGS) Unit 1 is currently operating at a reduced power level as a result of two inoperable MSSVs (one in each SG). Per Table 3.7-1 of LCO 3.7.1.1, PVNGS Unit 1 is limited to a maximum Allowable Steady State Power Level of 98.2% of rated thermal power due to one inoperable MSSV in each SG. The original basis for this restriction is to avert challenges to the integrity of the RCS and secondary system pressure boundaries during the most severe anticipated overpressurization events by ensuring there is sufficient MSSV relieving capacity.

Consistent with TS 3.1.1.3, "MODERATOR TEMPERATURE COEFFICIENT," the current safety analyses for the most severe overpressurization events use the most adverse Moderator Temperature Coefficient (MTC) at 100% RATED THERMAL POWER. Specifically, the safety analyses for the limiting pressure transients assume an MTC value of $0.0 \Delta k/k/^\circ F$ (i.e., $0.0 \Delta \rho/^\circ F$) at full rated power. For the present time-in-cycle for PVNGS Unit 1, the actual MTC is less adverse than

that assumed in the safety analyses. The MTC for Unit 1, Cycle 5 measured at 43 EFPD and 85% power was $-0.978 \text{ E-4 } \Delta p/^{\circ}\text{F}$ (at 100% power it would be slightly more negative), and 292 EFPD and 98.2% power (2/3 cycle MTC measured on October 20, 1994) was $-2.039 \text{ E-4 } \Delta p/^{\circ}\text{F}$. The predicted end of cycle MTC, based on these actual MTCs, is approximately $-2.75 \text{ E-4 } \Delta p/^{\circ}\text{F}$.

As MTC becomes more negative, there is more negative temperature feedback, less power mismatch primary to secondary, and a lower pressure peak. Since the actual MTC value in PVNGS Unit 1 is less adverse than that assumed in the safety analyses, the reanalysis demonstrates that there is sufficient relieving capacity, without the one inoperable MSSV in each SG, to preclude exceeding the secondary or RCS pressure limit during the most severe anticipated operational transient initiated from 102% rated thermal power. Hence, the current restriction on power is not justified and a return to 100% rated thermal power for the remainder of Unit 1, Cycle 5 is technically supported.

As such, APS is requesting approval of a one time amendment to the Unit 1 TS to allow full power operation with one MSSV inoperable per SG for the remainder of Unit 1, Cycle 5 (the next Unit 1 refueling, Cycle 6, is scheduled for April 1995).

This amendment is being requested on an exigent basis because the current condition (one inoperable MSSV per SG), is limiting Unit 1 to 98.2% power until the next refueling outage. The staff has determined that the licensee and the Commission must act quickly to minimize the delay in returning the plant to operation at its licensed power level and that the licensee has not created this exigency. Therefore, the staff is issuing this amendment on an exigent basis following a 15-day comment period as permitted by 10 CFR 50.91(a)(6).

The two inoperable MSSVs in PVNGS Unit 1 are currently gagged and are not physically able to open. The valve gags are seismically evaluated and will not interfere with the operation of the remaining MSSVs. As a prudent and precautionary measure, APS has reviewed the valve performance test results for the other 18 MSSVs currently installed in Unit 1 and the 40 MSSVs installed in PVNGS Units 2 and 3. Specifically, valve performance during testing was reviewed. Based on the review, no other MSSVs have been declared inoperable.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of the facility in accordance with the amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or a different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety.

Operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability or consequences of an

accident previously evaluated. The licensee stated that the primary pressure peaking events [loss of condenser vacuum (LOCV), feedwater line break (FLB), and control element assembly (CEA) ejection events] were analyzed to provide a comparison of pressure response using a base case with a moderator temperature coefficient (MTC) of $0.0 \Delta\rho/^\circ\text{F}$ and ten operable main steam safety valves (MSSVs) per steam generator (SG) and a second case using an MTC of $-1.0 \text{ E-}4 \Delta\rho/^\circ\text{F}$ and nine operable MSSVs per SG. The analyses performed confirmed that the existing safety analysis (i.e., the analysis of record) for PVNGS Unit 1, Cycle 5 will remain valid for 102% rated thermal power operation with one MSSV inoperable in each SG. That is, the reactor coolant system (RCS) and secondary system design pressure limits will not be exceeded.

The analysis of the pressure peaking events was conservative and included the following:

(1) The actual MTC expected for full power operation for the remainder of PVNGS Unit 1, Cycle 5 is more negative, and thus more beneficial, than the $-1.0 \text{ E-}4 \Delta\rho/^\circ\text{F}$ used in the reanalysis (actual MTC measured on October 20, 1994 was $-2.039 \text{ E-}4 \Delta\rho/^\circ\text{F}$). Thus, the mitigating affect on peak system pressures would be expected to be even greater than those reported herein.

(2) The core parameters used in the reanalysis (other than MTC) are generic and selected in the most adverse direction. Less adverse cycle specific or time-in-cycle specific values were not used in the reanalysis of PVNGS Unit 1, Cycle 5.

(3) The inoperable MSSVs are assumed to be in the first bank of MSSVs which have the lowest lift setpoint pressure (i.e., 1303 psia). In fact, one of the two MSSVs currently inoperable is from the third bank of MSSVs (with a higher lift setpoint of 1370 psia) and the other MSSV is in the first bank. If the actual MSSV lift setpoint pressures had been simulated, the results would be less adverse since there would be more relief capacity near the beginning of the event to reduce the pressure peak.

Operation of the facility in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated. The licensee stated that the analyses performed demonstrates that the current licensing basis analyses results remain valid at 102% rated thermal power with one MSSV inoperable in each SG and that all safety system settings will remain unchanged. The Palo Verde TS currently allows operation at 98.2% Maximum Steady State Power Level (ACTION a. of Limiting Condition for Operation 3.7.1.1) with one inoperable MSSV per SG. The analysis shows that for the current Unit 1 fuel cycle, operation at 102% Maximum Steady State Power Level with one inoperable MSSV per SG is acceptable.

Operation of the facility in accordance with the amendment will not involve a significant reduction in a margin of safety. The licensee stated that there is no reduction in the margin of safety since the analysis performed, crediting the remaining operable MSSVs, shows the results of the analysis of record remain valid. That is, the RCS and secondary system design pressure

limits will not be exceeded at 102% rated thermal power with one MSSV inoperable in each SG. In addition, all other safety limits and safety system settings remain unchanged. The actual MTC expected for full power operation for the remainder of PVNGS Unit 1, Cycle 5 is more negative, and thus more beneficial, than the $-1.0 \text{ E-4 } \Delta p/^{\circ}\text{F}$ used in the reanalysis study (actual MTC measured on October 20, 1994 was $-2.039 \text{ E-4 } \Delta p/^{\circ}\text{F}$).

Based upon the above considerations, the staff concludes that the amendment meets the three criteria of 10 CFR 50.92. Therefore, the staff has made a final determination that the proposed amendment does not involve a significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arizona State official was notified of the proposed issuance of the amendment. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final determination that the amendment involves no significant hazards consideration. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: C. Liang

Date: December 19, 1994