

June 25, 1990

Mr. William F. Conway
Executive Vice President
Arizona Public Service Company
Post Office Box 52034
Phoenix, Arizona 85072-2034

Dear Mr. Conway:

SUBJECT: ISSUANCE OF AMENDMENT NO.50 TO FACILITY OPERATING LICENSE
NO. NPF-41 AND AMENDMENT NO.36 TO FACILITY OPERATING LICENSE NO.
NPF-51 FOR THE PALO VERDE NUCLEAR GENERATING STATION, UNITS 1 AND 2
(TAC NOS. 73589 AND 73590)

The Commission has issued the subject Amendments, which are enclosed, to the Facility Operating Licenses for Palo Verde Nuclear Generating Station, Units 1 and 2. The Amendments consist of changes to the Technical Specifications (Appendix A to each license) in response to your application transmitted by letters dated June 20, 1989 and August 30, 1989.

The Amendments revise Technical Specifications (TS) 3/4.1.3: Limiting Conditions for Operation (LCO) 3.1.3.1, 3.1.3.2, 3.1.3.5, 3.1.3.6, 3.1.3.7; Surveillance Requirements (SR) 4.1.3.5, 4.1.3.6, 4.1.3.7, TS 3.4.3.1; LCO 3.3.1; TS 3/4.10.4; LCO 3/10.4, and SR 4.10.4.1 and 4.10.4.2. These revisions are primarily format and administrative changes to clarify operation when one or two Control Element Assembly Calculators (CEACs) are out of service.

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,

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Sheri Peterson, Project Manager
Project Directorate V
Division of Reactor Projects III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 50 to NPF-41
2. Amendment No. 36 to NPF-51
3. Safety Evaluation

cc: See next page

DISTRIBUTION

Docket File	NRC & Local PDRs	PDV Reading	JLarkins
JZwolinski	LA	SPeterson	TChan
OGC	DHagan	GHill (12)	WJones
JCalvo	ACRS (10)	GPA/PA	OC/LFMB
EJordan	PD5 Plant File	Region V (4)	

*See previous concurrence

DRSP/PDV/PA LLuther 6/14/90	DRSP/PDV/PM* SPeterson:sg 5/29/90	DRSP/PDV/PM* TChan 5/29/90	OGC K Bachmann 6/16/90	(A) DRSP/D:PDV JLarkins 6/15/90
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Mr. William F. Conway
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(10)



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

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. 50
License No. NPF-41

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment, dated June 20, 1989, as revised August 30, 1989, by the Arizona Public Service Company (APS) 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 (licensees), 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 Act, and the 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;
 - 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 enclosure 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.50 , 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.

3. This license amendment is effective 45 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John T. Larkins, Acting Director
Project Directorate V
Division of Reactor Projects III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
Changes to the Technical
Specifications

Date of Issuance: June 25, 1990

ENCLOSURE TO LICENSE AMENDMENT

AMENDMENT NO. 50 TO FACILITY OPERATING LICENSE NO. NPF-41

DOCKET NO. STN 50-528

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Remove Pages

Insert Pages

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REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

CEA POSITION

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full-length (shutdown and regulating) CEAs, and all part-length CEAs which are inserted in the core, shall be OPERABLE with each CEA of a given group positioned within 6.6 inches (indicated position) of all other CEAs in its group.

APPLICABILITY: MODES 1* and 2*.

ACTION:

- a. With one or more full-length CEAs inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.2 is satisfied within 1 hour and be in at least HOT STANDBY within 6 hours.
- b. With more than one full-length or part-length CEA inoperable or misaligned from any other CEA in its group by more than 19 inches (indicated position), be in at least HOT STANDBY within 6 hours.
- c. With one or more full-length or part-length CEAs misaligned from any other CEAs in its group by more than 6.6 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with Figure 3.1-2A and that within 1 hour the misaligned CEA(s) is either:
 1. Restored to OPERABLE status within its above specified alignment requirements, or
 2. Declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.2 is satisfied. After declaring the CEA(s) inoperable, operation in MODES 1 and 2 may continue pursuant to the requirements of Specifications 3.1.3.6 and 3.1.3.7 provided:
 - a) Within 1 hour the remainder of the CEAs in the group with the inoperable CEA(s) shall be aligned to within 6.6 inches of the inoperable CEA(s) while maintaining the allowable CEA sequence and insertion limits and the THERMAL POWER level restrictions of Specifications 3.1.3.6 and 3.1.3.7 during subsequent operation.

*See Special Test Exceptions 3.10.2 and 3.10.4.

REACTIVITY CONTROL SYSTEMS

POSITION INDICATOR CHANNELS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.3.2 At least two of the following three CEA position indicator channels shall be OPERABLE for each CEA:

- a. CEA Reed Switch Position Transmitter (RSPT 1) with the capability of determining the absolute CEA positions within 5.2 inches,
- b. CEA Reed Switch Position Transmitter (RSPT 2) with the capability of determining the absolute CEA positions within 5.2 inches, and
- c. The CEA pulse counting position indicator channel.

APPLICABILITY: MODES 1 and 2.

ACTION:

With a maximum of one CEA per CEA group having only one of the above required CEA position indicator channels OPERABLE, within 6 hours either:

- a. Restore the inoperable position indicator channel to OPERABLE status, or
- b. Be in at least HOT STANDBY, or
- c. Position the CEA group(s) with the inoperable position indicator(s) at its fully withdrawn position while maintaining the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6 and 3.1.3.7. Operation may then continue provided the CEA group(s) with the inoperable position indicator(s) is maintained fully withdrawn, except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2, and each CEA in the group(s) is verified fully withdrawn at least once per 12 hours thereafter by its "Full Out" limit*.

SURVEILLANCE REQUIREMENTS

4.1.3.2 Each of the above required position indicator channels shall be determined to be OPERABLE by verifying that for the same CEA, the position indicator channels agree within 5.2 inches of each other at least once per 12 hours.

*CEAs are fully withdrawn (Full Out) when withdrawn to at least 144.75 inches.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN CEA INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown CEAs shall be withdrawn to at least 144.75 inches.

APPLICABILITY: MODES 1 and 2*#.

ACTION:

With a maximum of one shutdown CEA withdrawn to less than 144.75 inches, except for surveillance testing pursuant to Specification 4.1.3.1.2, within 1 hour either:

- a. Withdraw the CEA to at least 144.75 inches, or
- b. Declare the CEA inoperable and comply with Specification 3.1.3.1.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown CEA shall be determined to be withdrawn to at least 144.75 inches:

- a. Within 15 minutes prior to withdrawal of any CEAs in regulating groups during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter except during time intervals when both CEAC's are inoperable, then verify the individual CEA positions at least once per 4 hours.

* See Special Test Exception 3.10.2.

#With K_{eff} greater than or equal to 1.

REGULATING CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The regulating CEA groups shall be maintained within the following limits:

a. One or more CEAC's OPERABLE

1. The regulating CEA groups shall be limited to the withdrawal sequence, and to the insertion limits## shown on Figure 3.1-3 when the COLSS is in service or shown on Figure 3.1-4 when the COLSS is not in service. The CEA insertion between the Long Term Steady State Insertion Limits and the Transient Insertion Limits is restricted to:

- a) Less than or equal to 5 Effective Full Power Days per 30 Effective Full Power Day interval, and
- b) Less than or equal to 14 Effective Full Power Days per 18 Effective Full Power Months.

2. CEA insertion between the Short Term Steady State Insertion Limits and the Transient Insertion Limits shall be restricted to ≤ 4 hours per 24 hour interval.

b. Both CEAC's INOPERABLE (with or without COLSS in service)

Regulating CEA group 5 may be inserted no further than 127.5 inches withdrawn which is the Transient Insertion Limit when both CEAC's are inoperable.

Regulating CEA groups which are excluded by these insertion limits must be maintained fully withdrawn ≥ 144.75 inches, which is the Transient Insertion Limit except for surveillance testing pursuant to Specification 4.1.3.1.2.

APPLICABILITY: MODES 1* and 2*#.

ACTION:

- a. With the regulating CEA groups inserted beyond the Transient Insertion Limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, within 2 hours either:

*See Special Test Exceptions 3.10.2 and 3.10.4.

#With K_{eff} greater than or equal to 1.

##A reactor power cutback will cause either (Case 1) Regulating Group 5 or Regulating Group 4 and 5 to be dropped with no sequential insertion of additional Regulating Groups (Groups 1, 2, 3, and 4) or (Case 2) Regulating Group 5 or Regulating Group 4 and 5 to be dropped with all or part of the remaining Regulating Groups (Groups 1, 2, 3, and 4) being sequentially inserted. In either case, the Transient Insertion Limit and the withdrawal sequence of Figure 3.1-3 or Figure 3.1-4 can be exceeded for up to 2 hours.

REGULATING CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

1. Restore the regulating CEA groups to within the limits, or
2. Reduce THERMAL POWER as follows:
 - a) One or more CEAC's OPERABLE
 - 1) Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the CEA group position using Figures 3.1-3 or 3.1-4, or
 - 2) Be in at least HOT STANDBY within 6 hours.
 - b) Both CEAC's INOPERABLE
Be in at least HOT STANDBY within 6 hours.
- b. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals greater than 5 EFPD per 30 EFPD interval or greater than 14 EFPD per 18 Effective Full Power Months, either;
 1. Restore the regulating groups to within the Long Term Steady State Insertion Limits within 2 hours, or
 2. Be in at least HOT STANDBY within 6 hours.
- c. With the regulating CEA groups inserted between the Short Term Steady State Insertion Limits and the Transient Insertion Limits for intervals > 4 hours per 24 hour interval, operation may proceed provided any subsequent increase in THERMAL POWER is restricted to $\leq 5\%$ of RATED THERMAL POWER per hour.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each regulating CEA group shall be determined to be within the Transient Insertion Limits at least once per 12 hours except during time intervals when the PDIL Auctioneer Alarm Circuit is inoperable, or both CEAC's are inoperable, then verify the CEA group positions at least once per 4 hours. The accumulated times during which the regulating CEA groups are inserted beyond the Long Term Steady State Insertion Limits but within the Transient Insertion Limits shall be determined at least once per 24 hours.

REACTIVITY CONTROL SYSTEMS

PART LENGTH CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.7 The part length CEA groups shall be maintained within the following limits with COLSS in service or out of service:

a. One or more CEACs OPERABLE

The part length CEA groups shall be limited to the insertion limits shown on Figure 3.1-5 with PLCEA insertion between the Long Term Steady State Insertion Limit and the Transient Insertion Limit restricted to:

1. ≤ 7 EFPD per 30 EFPD interval, and
2. ≤ 14 EFPD per calendar year.

b. Both CEACs INOPERABLE

The part length CEA groups must be maintained fully withdrawn (> 144.75 inches) which is the Transient Insertion Limit when both CEACs are inoperable.

APPLICABILITY: MODES 1* and 2*

ACTION:

a. With the part length CEA groups inserted beyond the Transient Insertion Limit, except for surveillance testing pursuant to Specification 4.1.3.1.2, within two hours, either:

1. Restore the part length CEA groups to within the limits, or
2. Reduce THERMAL POWER as follows:

a) One or more CEACs OPERABLE

- 1) Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the PLCEA group position using Figure 3.1-5, or
- 2) Be in at least HOT STANDBY within 6 hours.

b) Both CEACs INOPERABLE

Be in at least HOT STANDBY within 6 hours.

*See Special Test Exceptions 3.10.2 and 3.10.4.

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

- b. With the part length CEA groups inserted between the Long Term Steady State Insertion Limit and the Transient Insertion Limit for intervals > 7 EFPD per 30 EFPD interval or > 14 EFPD per calendar year, either:
 1. Restore the part length groups within the Long Term Steady State Insertion Limit within two hours, or
 2. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.7 The positions of the part length CEA groups shall be determined to be within the Transient Insertion Limit at least once per 12 hours except during time intervals when both CEACs are inoperable, then verify the part length CEA group positions at least once per 4 hours.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

- | | | |
|----|--|---|
| 3. | Steam Generator Pressure - Low | Steam Generator Pressure - Low
Steam Generator Level 1-Low (ESF)
Steam Generator Level 2-Low (ESF) |
| 4. | Steam Generator Level - Low (Wide Range) | Steam Generator Level - Low (RPS)
Steam Generator Level 1-Low (ESF)
Steam Generator Level 2-Low (ESF) |
| 5. | Core Protection Calculator | Local Power Density - High (RPS)
DNBR - Low (RPS) |

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 2 are satisfied.

- ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes.
- ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, STARTUP and/or POWER OPERATION may continue provided the reactor trip breaker of the inoperable channel is placed in the tripped condition within 1 hour, otherwise, be in at least HOT STANDBY within 6 hours; however, the trip breaker associated with the inoperable channel may be closed for up to 1 hour for surveillance testing per Specification 4.3.1.1.
- ACTION 6 -
- a. With one CEAC inoperable, operation may continue for up to 7 days provided that the requirements of Specification 4.1.3.1.1 are met. After 7 days, operation may continue provided that the conditions of Action Item 6.b are met.
 - b. With both CEACs inoperable, operation may continue provided that:
 1. Within 1 hour the DNBR margin required by Specification 3.2.4.b (COLSS in service) or 3.2.4.d (COLSS out of service) is satisfied and the Reactor Power Cutback System is disabled, and

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

2. Within 4 hours:

- a) All full-length and part-length CEA groups must be withdrawn within the limits of Specifications 3.1.3.5, 3.1.3.6b, and 3.1.3.7b except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2. Specification 3.1.3.6b allows CEA group 5 insertion to no further than 127.5 inches withdrawn.
- b) The "RSPT/CEAC Inoperable" addressable constant in the CPCs is set to be indicated that both CEAC's are inoperable.
- c) The Control Element Drive Mechanism Control System (CEDMCS) is placed in and subsequently maintained in the "Standby" mode except during CEA motion permitted by Specifications 3.1.3.5, 3.1.3.6b, and 3.1.3.7b when the CEDMCS may be operated in either the "Manual Group" or "Manual Individual" mode.

3. CEA position surveillance must meet the requirements of Specifications 4.1.3.1.1, 4.1.3.5, 4.1.3.6, and 4.1.3.7 except during surveillance testing pursuant to Specification 4.1.3.1.2.

- ACTION 7 - With three or more auto restarts, excluding periodic auto restarts (Code 30 and Code 33), of one non-bypassed calculator during a 12-hour interval, demonstrate calculator OPERABILITY by performing a CHANNEL FUNCTIONAL TEST within the next 24 hours.
- ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore an inoperable channel to OPERABLE status within 48 hours or open an affected reactor trip breaker within the next hour.
- ACTION 9 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

SPECIAL TEST EXCEPTIONS

3/4.10.4 CEA POSITION, REGULATING CEA INSERTION LIMITS AND REACTOR COOLANT COLD LEG TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.10.4 The requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and 3.2.6 may be suspended during the performance of PHYSICS TESTS to determine the isothermal temperature coefficient, moderator temperature coefficient, and power coefficient provided the limits of Specification 3.2.1 are maintained and determined as specified in Specification 4.10.4.2 below.

APPLICABILITY: MODES 1 and 2.

ACTION:

With any of the limits of Specification 3.2.1 being exceeded while the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and 3.2.6 are suspended, either:

- a. Reduce THERMAL POWER sufficiently to satisfy the requirements of Specification 3.2.1, or
- b. Be in HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.10.4.1 The THERMAL POWER shall be determined at least once per hour during PHYSICS TESTS in which the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and/or 3.2.6 are suspended and shall be verified to be within the test power plateau.

4.10.4.2 The linear heat rate shall be determined to be within the limits of Specification 3.2.1 by monitoring it continuously with the Incore Detector Monitoring System pursuant to the requirements of Specification 3.3.3.2 during PHYSICS TESTS above 20% of RATED THERMAL POWER in which the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and/or 3.2.6 are suspended.



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

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-529

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 36
License No. NPF-51

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment, dated June 20, 1989, as amended August 30, 1989, by the Arizona Public Service Company (APS) 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 (licensees), 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 Part I;
 - B. The facility will operate in conformity with the application, the provisions of Act, and the 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;
 - 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 enclosure to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-51 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 36, 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.

3. This license amendment is effective 45 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John T. Larkins, Acting Director
Project Directorate V
Division of Reactor Projects III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
Changes to the Technical
Specifications

Date of Issuance: June 25, 1990

ENCLOSURE TO LICENSE AMENDMENT

AMENDMENT NO. 36 TO FACILITY OPERATING LICENSE NO. NPF-51

DOCKET NO. STN 50-529

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

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3/4 10-4

3/4 10-4

REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

CEA POSITION

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full-length (shutdown and regulating) CEAs, and all part-length CEAs which are inserted in the core, shall be OPERABLE with each CEA of a given group positioned within 6.6 inches (indicated position) of all other CEAs in its group.

APPLICABILITY: MODES 1* and 2*.

ACTION:

- a. With one or more full-length CEAs inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.2 is satisfied within 1 hour and be in at least HOT STANDBY within 6 hours.
- b. With more than one full-length or part-length CEA inoperable or misaligned from any other CEA in its group by more than 19 inches (indicated position), be in at least HOT STANDBY within 6 hours.
- c. With one or more full-length or part-length CEAs misaligned from any other CEAs in its group by more than 6.6 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with Figure 3.1-2A and that within 1 hour the misaligned CEA(s) is either:
 1. Restored to OPERABLE status within its above specified alignment requirements, or
 2. Declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.2 is satisfied. After declaring the CEA(s) inoperable, operation in MODES 1 and 2 may continue pursuant to the requirements of Specifications 3.1.3.6 and 3.1.3.7 provided:
 - a) Within 1 hour the remainder of the CEAs in the group with the inoperable CEA(s) shall be aligned to within 6.6 inches of the inoperable CEA(s) while maintaining the allowable CEA sequence and insertion limits and the THERMAL POWER level restrictions of Specifications 3.1.3.6 and 3.1.3.7 during subsequent operation.

*See Special Test Exceptions 3.10.2 and 3.10.4.

REACTIVITY CONTROL SYSTEMS

POSITION INDICATOR CHANNELS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.3.2 At least two of the following three CEA position indicator channels shall be OPERABLE for each CEA:

- a. CEA Reed Switch Position Transmitter (RSPT 1) with the capability of determining the absolute CEA positions within 5.2 inches,
- b. CEA Reed Switch Position Transmitter (RSPT 2) with the capability of determining the absolute CEA positions within 5.2 inches, and
- c. The CEA pulse counting position indicator channel.

APPLICABILITY: MODES 1 and 2.

ACTION:

With a maximum of one CEA per CEA group having only one of the above required CEA position indicator channels OPERABLE, within 6 hours either:

- a. Restore the inoperable position indicator channel to OPERABLE status, or
- b. Be in at least HOT STANDBY, or
- c. Position the CEA group(s) with the inoperable position indicator(s) at its fully withdrawn position while maintaining the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6 and 3.1.3.7. Operation may then continue provided the CEA group(s) with the inoperable position indicator(s) is maintained fully withdrawn, except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2, and each CEA in the group(s) is verified fully withdrawn at least once per 12 hours thereafter by its "Full Out" limit.*

SURVEILLANCE REQUIREMENTS

4.1.3.2 Each of the above required position indicator channels shall be determined to be OPERABLE by verifying that for the same CEA, the position indicator channels agree within 5.2 inches of each other at least once per 12 hours.

*CEAs are fully withdrawn (Full Out) when withdrawn to at least 144.75 inches.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN CEA INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown CEAs shall be withdrawn to at least 144.75 inches.

APPLICABILITY: MODES 1 and 2*#.

ACTION:

With a maximum of one shutdown CEA withdrawn to less than 144.75 inches, except for surveillance testing pursuant to Specification 4.1.3.1.2, within 1 hour either:

- a. Withdraw the CEA to at least 144.75 inches, or
- b. Declare the CEA inoperable and comply with Specification 3.1.3.1.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown CEA shall be determined to be withdrawn to at least 144.75 inches:

- a. Within 15 minutes prior to withdrawal of any CEAs in regulating groups during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter except during time intervals when both CEAC's are inoperable, then verify the individual CEA positions at least once per 4 hours.

* See Special Test Exception 3.10.2.

#With K_{eff} greater than or equal to 1.

REGULATING CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The regulating CEA groups shall be maintained within the following limits:

- a. One or more CEAC's OPERABLE
 1. The regulating CEA groups shall be limited to the withdrawal sequence, and to the insertion limits## shown on Figure 3.1-3 when the COLSS is in service or shown on Figure 3.1-4 when the COLSS is not in service. The CEA Insertion between the Long Term Steady State insertion Limits and the Transient Insertion Limits is restricted to:
 - a) Less than or equal to 5 Effective Full Power Days per 30 Effective Full Power Day interval, and
 - b) Less than or equal to 14 Effective Full Power Days per 18 Effective Full Power Months.
 2. CEA insertion between the Short Term Steady State Insertion Limits and the Transient Insertion Limits shall be restricted to ≤ 4 hours per 24 hour interval.
- b. Both CEAC's INOPERABLE (With or without COLSS in service)

Regulating CEA group 5 may be inserted no further than 127.5 inches withdrawn which is the Transient Insertion Limit when both CEAC's are inoperable.

Regulating CEA groups which are excluded by these insertion limits must be maintained fully withdrawn ≥ 144.75 inches, which is the Transient Insertion Limit except for surveillance testing pursuant to Specification 4.1.3.1.2.

APPLICABILITY: MODES 1* and 2*#.

ACTION:

- a. With the regulating CEA groups inserted beyond the Transient Insertion Limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, within 2 hour either:
 1. Restore the regulating CEA groups to within the limits, or

*See Special Test Exceptions 3.10.2 and 3.10.4.

#With K_{eff} greater than or equal to 1.

##A reactor power cutback will cause either (Case 1) Regulating Group 5 or Regulating Group 4 and 5 to be dropped with no sequential insertion of additional Regulating Groups (Groups 1, 2, 3, and 4) or (Case 2) Regulating Group 5 or Regulating Group 4 and 5 to be dropped with all or part of the remaining Regulating Groups (Groups 1, 2, 3, and 4) being sequentially inserted. In either case, the Transient Insertion Limit and the withdrawal sequence of Figure 3.1-3 or Figure 3.1-4 can be exceeded for up to 2 hours.

REGULATING CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

2. Reduce THERMAL POWER as follows:
 - a) One or more CEAC's OPERABLE
 - 1) Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the CEA group position using Figures 3.1-3 or 3.1-4, or
 - 2) Be in at least HOT STANDBY within 6 hours.
 - b) Both CEAC's INOPERABLE
Be in at least HOT STANDBY within 6 hours.
- b. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals greater than 5 EFPD per 30 EFPD interval or greater than 14 EFPD per 18 Effective full Power Months, either:
 1. Restore the regulating groups to within the Long Term Steady State Insertion Limits within 2 hours, or
 2. Be in at least HOT STANDBY within 6 hours.
- c. With the regulating CEA groups inserted between the Short Term Steady State Insertion Limits and the Transient Insertion Limits for intervals > 4 hours per 24 hour interval, operation may proceed provided any subsequent increase in THERMAL POWER is restricted to $\leq 5\%$ of RATED THERMAL POWER per hour.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each regulating CEA group shall be determined to be within the Transient Insertion Limits at least once per 12 hours except during time intervals when the PDIL Auctioneer Alarm Circuit is inoperable, or both CEAC's are inoperable, then verify the CEA group positions at least once per 4 hours. The accumulated times during which the regulating CEA groups are inserted beyond the Long Term Steady State Insertion Limits but within the Transient Insertion Limits shall be determined at least once per 24 hours.

REACTIVITY CONTROL SYSTEMS

PART LENGTH CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.7 The part length CEA groups shall be maintained within the following limits with COLSS in service or out of service:

a. One or more CEACs OPERABLE

The part length CEA groups shall be limited to the insertion limits shown on Figure 3.1-5 with PLCEA insertion between the Long Term Steady State Insertion Limit and the Transient Insertion Limit restricted to:

1. ≤ 7 EFPD per 30 EFPD interval, and
2. ≤ 14 EFPD per calendar year.

b. Both CEACs INOPERABLE

The part length CEA groups must be maintained fully withdrawn (> 144.75 inches) which is the Transient Insertion Limit when both CEACs are inoperable.

APPLICABILITY: MODES 1* and 2*

ACTION:

- a. With the part length CEA groups inserted beyond the Transient Insertion Limit, except for surveillance testing pursuant to Specification 4.1.3.1.2, within two hours, either;
1. Restore the part length CEA groups to within the limits, or
 2. Reduce THERMAL POWER as follows:
 - a) One or more CEACs OPERABLE
 - 1) Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the PLCEA group position using Figure 3.1-5, or
 - 2) Be in at least HOT STANDBY within 6 hours.
 - b) Both CEACs INOPERABLE
Be in at least HOT STANDBY within 6 hours.

*See Special Test Exceptions 3.10.2 and 3.10.4.

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

- b. With the part length CEA groups inserted between the Long Term Steady State Insertion Limit and the Transient Insertion Limit for intervals > 7 EFPD per 30 EFPD interval or > 14 EFPD per calendar year, either:
 1. Restore the part length group within the Long Term Steady State Insertion Limit within two hours, or
 2. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.7 The positions of the part length CEA groups shall be determined to be within the Transient Insertion Limit at least once per 12 hours except during time intervals when both CEACs are inoperable then verify the part length CEA group positions at least once per 4 hours.

TABLE 3.3-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION

ACTION STATEMENTS

- | | | |
|----|--|---|
| 3. | Steam Generator Pressure - Low | Steam Generator Pressure - Low
Steam Generator Level 1-Low (ESF)
Steam Generator Level 2-Low (ESF) |
| 4. | Steam Generator Level - Low (Wide Range) | Steam Generator Level - Low (RPS)
Steam Generator Level 1-Low (ESF)
Steam Generator Level 2-Low (ESF) |
| 5. | Core Protection Calculator | Local Power Density - High (RPS)
DNBR - Low (RPS) |

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 2 are satisfied.

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, STARTUP and/or POWER OPERATION may continue provided the reactor trip breaker of the inoperable channel is placed in the tripped condition within 1 hour, otherwise, be in at least HOT STANDBY within 6 hours; however, the trip breaker associated with the inoperable channel may be closed for up to 1 hour for surveillance testing per Specification 4.3.1.1.

- ACTION 6 -
- a. With one CEAC inoperable, operation may continue for up to 7 days provided that the requirements of Specification 4.1.3.1.1 are met. After 7 days, operation may continue provided that the conditions of Action Item 6.b are met.
 - b. With both CEACs inoperable, operation may continue provided that:
 - 1. Within 1 hour the DNBR margin required by Specification 3.2.4.b (COLSS in service) or 3.2.4.d (COLSS out of service) is satisfied and the Reactor Power Cutback System is disabled, and

TABLE 3.3-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION

ACTION STATEMENTS

2. Within 4 hours:
 - a) All full-length and part-length CEA groups must be withdrawn within the limits of Specifications 3.1.3.5, 3.1.3.6b, and 3.1.3.7b, except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2. Specification 3.1.3.6b allows CEA group 5 insertion to no further than 127.5 inches withdrawn.
 - b) The "RSPT/CEAC Inoperable" addressable constant in the CPCs is set to indicate that both CEACs are inoperable.
 - c) The Control Element Drive Mechanism Control System (CEMCS) is placed in and subsequently maintained in the "Standby" mode except during CEA motion permitted by Specifications 3.1.3.5, 3.1.3.6b and 3.1.3.7b when the CEMCS may be operated in either the "Manual Group" or "Manual Individual" mode.
 3. CEA position surveillance must meet the requirements of Specifications 4.1.3.1.1, 4.1.3.5, 4.1.3.6, and 4.1.3.7 except during surveillance testing pursuant to Specification 4.1.3.1.2.
- ACTION 7 - With three or more auto restarts, excluding periodic auto restarts (Code 30 and Code 33), of one non-bypassed calculator during a 12-hour interval, demonstrate calculator OPERABILITY by performing a CHANNEL FUNCTIONAL TEST within the next 24 hours.
- ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore an inoperable channel to OPERABLE status within 48 hours or open an affected reactor trip breaker within the next hour.
- ACTION 9 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

SPECIAL TEST EXCEPTIONS

3/4.10.4 CEA POSITION, REGULATING CEA INSERTION LIMITS AND REACTOR COOLANT COLD LEG TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.10.4 The requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and 3.2.6 may be suspended during the performance of PHYSICS TESTS to determine the isothermal temperature coefficient, moderator temperature coefficient, and power coefficient provided the limits of Specification 3.2.1 are maintained and determined as specified in Specification 4.10.4.2 below.

APPLICABILITY: MODES 1 and 2.

ACTION:

With any of the limits of Specification 3.2.1 being exceeded while the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and 3.2.6 are suspended, either:

- a. Reduce THERMAL POWER sufficiently to satisfy the requirements of Specification 3.2.1, or
- b. Be in HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.10.4.1 The THERMAL POWER shall be determined at least once per hour during PHYSICS TESTS in which the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and/or 3.2.6 are suspended and shall be verified to be within the test power plateau.

4.10.4.2 The linear heat rate shall be determined to be within the limits of Specification 3.2.1 by monitoring it continuously with the Incore Detector Monitoring System pursuant to the requirements of Specification 3.3.3.2 during PHYSICS TESTS above 20% of RATED THERMAL POWER in which the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, and/or 3.2.6 are suspended.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 50 TO FACILITY OPERATING LICENSE NO. NPF-41 AND
AMENDMENT NO. 36 TO FACILITY OPERATING LICENSE NO. NPF-51
ARIZONA PUBLIC SERVICE COMPANY, ET AL.
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1 AND 2
DOCKET NOS. STN 50-528 AND STN 50-529

1.0 INTRODUCTION

By letters dated June 20, 1989 and August 30, 1989, the Arizona Public Service Company (APS) 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 (licensees), requested changes to the Technical Specifications for the Palo Verde Nuclear Generating Station, Units 1 and 2 (Appendix A to Facility Operating License Nos. NPF-41 and NPF-51, respectively). The proposed changes consist of a number of format and editorial changes to the Technical Specifications (TS) to clarify operation when 1 or 2 Control Element Assembly Calculators (CEACs) are inoperable. Specifically, the amendment modifies TS 3/4.1.3; Limiting Conditions for Operation (LCO) 3.1.3.1, 3.1.3.2, 3.1.3.5, 3.1.3.6, 3.1.3.7; Surveillance Requirements (SR) 4.1.3.5, 4.1.3.6, 4.1.3.7; TS 3/4.3.1; LCO 3.3.1; TS 3/4.10.4; LCO 3/10.4, and SR 4.10.4.1 and 4.10.4.2.

2.0 DISCUSSION

The purpose of Technical Specifications 3.1.3.1, 3.1.3.2, 3/4.1.3.5, 3/4.1.3.6 and 3/4.1.3.7 is to ensure that acceptable power distribution limits are maintained, that the minimum shutdown margin is maintained and the potential effects of CEA misalignments are limited to acceptable levels. The amendment provides clarification to these Technical Specifications with respect to the CEAC's operability. A brief description, justification and acceptability for each TS change is provided in the following.

Technical Specification 3/4.1.3

LCO 3.1.3.1, Action c.2.a, is modified to eliminate specific reference to the figures which specify the full and part length Control Element Assembly (CEA) insertion limits, since the figures are contained within the Technical Specifications already referenced

in this Action Statement. This change will simplify future Technical Specification changes in cases where figure numbers are changed, or figures within the Technical Specifications are added or deleted. The change is a matter of convenience, not substantive and is acceptable.

LCO 3.1.3.2, Action c, is modified to include reference to LCO 3.1.3.5 for shutdown CEA insertion limits for the purpose of clarification and completeness. Therefore, this change is acceptable.

LCO 3.1.3.5, Action b, is modified to change the word "apply" to "comply with," for the purpose of clarification, and is acceptable.

SR 4.1.3.5 b is modified to include the specific requirement when both CEACs are inoperable. This is consistent with the current format of SR 4.1.3.1.1 and 4.1.3.6 for CEA and Regulating Group position and with the proposed format of SR 4.1.3.7 for Part Length Group Position. Also, the specific time interval requirement must be included in this Surveillance Requirement since it is proposed that it be removed from Table 3.3-1, Action 6b.3. These changes provide for consistency and increase the specification's wording clarity. Therefore, they are acceptable.

LCO 3.1.3.6 is reformatted to clarify and specify the operation and actions required for one or two CEACs inoperable, operating between the Long Term Steady State Insertion Limits (LTSSIL) and the Transient Insertion Limits (TIL), and operating between the Short Term Steady State Insertion Limits (STSSIL) and the Transient Insertion Limits (TIL). The reformatting is necessary to improve readability, decreasing the potential for human error. We find this change an improvement and, therefore, acceptable.

LCO 3.1.3.6 a.2 is added to specify information previously contained only in the action statement, and clarifies restrictions on operation between the STSSIL and the TIL. This change is, therefore, acceptable.

LCO 3.1.3.6 b is added to clarify the specific insertion limits of CEA Group 5 for the condition of both CEACs inoperable (with or without COLSS in service), since it is appropriate that this insertion limit be specified within this LCO. Prior to this proposed change, the limitations applying to the specific condition of both CEACs inoperable were only contained in Table 3.3-1. This clarification is an editorial enhancement and is, therefore, acceptable.

LCO 3.1.3.6 is revised by adding the last sentence referring to Regulating CEAs excluded by the insertion limits. This sentence clarifies information previously specified in a footnote. This footnote was deleted on page 3/4 1-29. This is a format change and is, therefore, acceptable.

LCO 3.1.3.6, Action a, is modified to clarify operation for the condition of one or both CEACs inoperable and to add the direction to be in HOT STANDBY if the CEA groups cannot be maintained within the limits. This change is a clarification and, therefore is acceptable.

LCO 3.1.3.6, Action c, is a rewrite of what was previously Action b. This change was made for clarification purposes and to explicitly correspond with LCO 3.1.3.6 a.2, and to clearly state the action required for insertion between the STSSIL and the TIL. This change increases the clarity of the specification's wording, and therefore is acceptable.

SR 4.1.3.6 is modified to clarify that the requirement is applicable when both CEACs are inoperable. Additionally, "individual CEA" is changed to read more appropriately "CEA group," because this LCO/SR applies to "group" insertion. Surveillance Requirement 4.1.3.1.1 correctly addresses individual CEA position surveillance requirements. Therefore, the change is acceptable.

LCO 3.1.3.7 is reformatted to clarify and specify the operation and actions required for one or both CEACs inoperable. The reformatting is necessary to improve readability and will decrease the potential for human error. Additions to Actions a.2a.2 and a.2b provide direction to be in HOT STANDBY if the CEA groups cannot be maintained within the limits. This clarification is an editorial enhancement and is, therefore, acceptable.

SR 4.1.3.7 has minor editorial changes and is modified to include the requirement when both CEACs are inoperable. This is consistent with the current format of Surveillance Requirement 4.1.3.1.1 for CEA position and 4.1.3.6 for Regulating CEA Insertion. Also, the specific time interval requirements must be included in this Surveillance Requirement since it is proposed that it be removed from Table 3.3-1, Action 6b.3. These editorial changes provide for consistency and, therefore, are acceptable.

Technical Specification 3/4.3.1

LCO 3.3.1, Table 3.3-1, Action 6a, is modified to eliminate the details of the Surveillance Requirement from the Action Statement and instead, reference the appropriate Surveillance Requirement 4.1.3.1.1. The change will simplify future Technical Specification changes which involve changing the CEA position Surveillance Requirements. The change is a matter of convenience, is not substantive and is acceptable.

LCO 3.3.1, Table 3.3-1 Action 6b.2.a, is modified to reference pertinent Technical Specifications and reference the specification from which the Group 5 limits came. This change is an editorial enhancement and, therefore, is acceptable.

LCO 3.3.1, Table 3.3-1, Action 6b.2.c, is modified to reference appropriate pertinent Technical Specifications for CEA motion/position. This change is also an enhancement and, therefore, is acceptable.

LCO 3.3.1, Table 3.3-1, Action 6.b.3, is modified by removing the details of the specific requirements for individual CEA and group position surveillances, and instead, reference the appropriate Surveillance Requirements. This is a format change and is, therefore, acceptable.

Technical Specification 3/4.10.4

LCO 3.10.4, and SR 4.10.4.1 and 4.10.4.2 are modified to add references to the Shutdown CEAs for completeness and are, therefore, acceptable.

On the basis of its review, the staff finds that the above changes to the TS for Palo Verde Nuclear Generating Station, Units 1 and 2, are acceptable.

3.0 CONTACT WITH STATE OFFICIAL

The Arizona Radiation Regulatory Agency has been advised of the proposed determination of no significant hazards consideration with regard to these changes. No comments were received.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments involve changes in the installation or use of facility components located within the restricted area as defined in 10 CFR 20. The staff has determined that the amendments involve no significant increase in the amount, and no significant change in the type, of any effluent that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued proposed findings that the amendments involve no significant hazard consideration, and there has been no public comment on such finding. Accordingly, the amendments meet 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 to be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The staff 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal contributor: Sheri R. Peterson

Dated: June 25, 1990