

July 25, 2007

Mr. Randall K. Edington
Senior Vice President, Nuclear
Mail Station 7602
Arizona Public Service Company
P. O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 -
ISSUANCE OF AMENDMENTS RE: SHUTDOWN CONTROL ELEMENT
ASSEMBLY INSERTION LIMITS (TAC NOS. MD2650, MD2651, AND MD2652)

Dear Mr. Edington:

The Commission has issued the enclosed Amendment No. 168 to Facility Operating License No. NPF-41, Amendment No. 168 to Facility Operating License No. NPF-51, and Amendment No. 168 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated July 20, 2006, as supplemented by letter dated May 3, 2007.

The amendments revise TS 3.1.6, "Shutdown Control Element Assembly (CEA) Insertion Limits," to modify the TS Limiting Condition for Operation (LCO) 3.1.6 and Surveillance Requirements (SRs) 3.1.6.1 to require shutdown CEAs to be withdrawn to ≥ 147.75 inches, instead of the current limit of ≥ 144.75 inches.

R. K. Edington

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A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

Michael T. Markley, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-528, STN 50-529,
and STN 50-530

Enclosures: 1. Amendment No. 168 to NPF-41
 2. Amendment No. 168 to NPF-51
 3. Amendment No. 168 to NPF-74
 4. Safety Evaluation

cc w/encls: See next page

R. K. Edington

-2-

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

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cc w/encls: See next page

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ADAMS Accession Nos.: Pkg ML071940113 (Amdt./License ML071940118, TS Pgs ML071940120) *SE input memo

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Palo Verde Nuclear Generating Station

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January 2007

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-528

PALO VERDE NUCLEAR GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 168
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 July 20, 2006, as supplemented by letter dated May 3, 2007, 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 and paragraph 2.C(2) of Facility Operating License No. NPF-41 as indicated in the attachment to this license amendment.

3. This license amendment is effective as of the date of issuance and shall be implemented within 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA Michael Markley for Thomas G. Hiltz/

Thomas G. Hiltz, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: July 25, 2007

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-529

PALO VERDE NUCLEAR GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 168
License No. NPF-51

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 July 20, 2006, as supplemented by letter dated May 3, 2007, 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 and paragraph 2.C(2) of Facility Operating License No. NPF-51 as indicated in the attachment to this license amendment.

3. This license amendment is effective as of the date of issuance and shall be implemented within 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA Michael Markley for Thomas G. Hiltz/

Thomas G. Hiltz, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: July 25, 2007

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-530

PALO VERDE NUCLEAR GENERATING STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 168
License No. NPF-74

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 July 20, 2006, as supplemented by letter dated May 3, 2007, 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 and paragraph 2.C(2) of Facility Operating License No. NPF-74 as indicated in the attachment to this license amendment.

3. This license amendment is effective as of the date of issuance and shall be implemented within 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA Michael Markley for Thomas G. Hiltz/

Thomas G. Hiltz, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: July 25, 2007

ATTACHMENT TO LICENSE AMENDMENT NOS. 168, 168, AND 168

FACILITY OPERATING LICENSE NOS. NPF-41, NPF-51, AND NPF-74

DOCKET NOS. STN 50-528, STN 50-529, AND STN 50-530

Replace the following pages of the Facility Operating Licenses Nos. NPF-41, NPF-51, and NPF-74, and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Operating Licenses

Replace Page 5 of Facility Operating License No. NPF-41 with the attached Page 5.

Replace Page 6 of Facility Operating License No. NPF-51 with the attached Page 6.

Replace Page 4 of Facility Operating License No. NPF-74 with the attached Page 4.

Technical Specifications

REMOVE

3.1.6-1
3.1.6-2

INSERT

3.1.6-1
3.1.6-2

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 168, 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) Antitrust Conditions

This license is subject to the antitrust conditions delineated in Appendix C to this license.

(4) Operating Staff Experience Requirements

Deleted

(5) Post-Fuel-Loading Initial Test Program (Section 14, SER and SSER 2)*

Deleted

(6) Environmental Qualification

Deleted

(7) Fire Protection Program

APS shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, as supplemented and amended, and as approved in the SER through Supplement 11, subject to the following provision:

APS may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

(8) Emergency Preparedness

Deleted

*The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 168, 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) Antitrust Conditions

This license is subject to the antitrust conditions delineated in Appendix C to this license.

(4) Operating Staff Experience Requirements (Section 13.1.2, SSER 9)*

Deleted

(5) Initial Test Program (Section 14, SER and SSER 2)

Deleted

(6) Fire Protection Program

APS shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, as supplemented and amended, and as approved in the SER through Supplement 11, subject to the following provision:

APS may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

(7) Inservice Inspection Program (Sections 5.2.4 and 6.6, SER and SSER 9)

Deleted

(8) Supplement No. 1 to NUREG-0737 Requirements

Deleted

*The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

(1) Maximum Power Level

Arizona Public Service Company (APS) is authorized to operate the facility at reactor core power levels not in excess of 3876 megawatts thermal (100% power) through operating cycle 13, and 3990 megawatts thermal (100% power) after operating cycle 13, in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 168, 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) Antitrust Conditions

This license is subject to the antitrust conditions delineated in Appendix C to this license.

(4) Initial Test Program (Section 14, SER and SSER 2)

Deleted

(5) Additional Conditions

Deleted

- D. APS has previously been granted an exemption from Paragraph III.D.2(b)(ii) of Appendix J to 10 CFR Part 50. This exemption was previously granted in Facility Operating License NPF-65 pursuant to 10 CFR 50.12.

With the granting of this exemption, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

- E. The licensees shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Palo

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 168 FACILITY OPERATING LICENSE NO. NPF-41,
AMENDMENT NO. 168 FACILITY OPERATING LICENSE NO. NPF-51,
AND AMENDMENT NO. 168 FACILITY OPERATING LICENSE NO. NPF-74
ARIZONA PUBLIC SERVICE COMPANY, ET AL.
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3
DOCKET NOS. STN 50-528, STN 50-529, AND STN 50-530

1.0 INTRODUCTION

By application dated July 20, 2006 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML062090070), as supplemented by letter dated May 3, 2007 (ADAMS Accession No. ML071360081), Arizona Public Service Company (the licensee) requested changes to the Technical Specifications (TS) for Palo Verde Nuclear Generating Station (Palo Verde), Units 1, 2, and 3. The supplement dated May 3, 2007, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on September 26, 2006 (71 FR 56191).

The amendments revise TS 3.1.6, "Shutdown Control Element Assembly (CEA) Insertion Limits," to modify the TS Limiting Condition for Operation (LCO) 3.1.6 and Surveillance Requirements (SRs) 3.1.6.1 to require shutdown CEAs to be withdrawn to ≥ 147.75 inches, instead of the current limit of ≥ 144.75 inches, for Modes 1 and 2 with any CEA not fully inserted. The licensee determined that the current limit of ≥ 144.75 inches withdrawn is non-conservative because positioning the shutdown CEAs below 147.75 inches withdrawn would result in the shutdown CEAs exceeding the amount of insertion assumed in the safety analysis contained in the bias and uncertainty in the rod worth.

The proposed change would revise the Palo Verde operating licenses NPF-41, NPF-51, and NPF-74 and associated TS LCO and SRs.

LCO 3.1.6 for Palo Verde currently states:

All shutdown CEAs shall be withdrawn to ≥ 144.75 inches.

The revised LCO 3.1.6 will state:

All shutdown CEAs shall be withdrawn to ≥ 147.75 inches.

SR 3.1.6.1 currently states:

Verify each shutdown CEA is withdrawn ≥ 144.75 inches.

The revised SR 3.1.6.1 will state:

Verify each shutdown CEA is withdrawn ≥ 147.75 inches.

Additionally, two editorial changes will be made to LCO 3.1.6. The "(s)" is deleted from the word "CEA(s)" in Required Action A.1. This allows the Required Action statement to be consistent with the associated Condition statement for a single shutdown CEA not within limit. The other change adds the letter "s" to the "2 hour" limit currently listed for the Completion Time of LCO 3.1.6, Condition A.

2.0 REGULATORY EVALUATION

In Section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Technical Specifications," the Commission established its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings, (2) LCOs, (3) SRs, (4) design features, and (5) administrative controls. The rule does not specify the particular requirements to be included in a plant's TSs. As stated in 10 CFR 50.36(c)(2)(i), the "[l]imiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility." The regulations in 10 CFR 50.36(c)(3), state that "[s]urveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components will be maintained within safety limits, and that the limiting conditions for operation will be met."

In the July 20, 2006, submittal, the licensee appropriately identified the applicable regulatory requirements related to reactor design and reactivity control systems as provided in 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants." General Design Criterion 10, *Reactor designs*, requires "[t]he reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences."

General Design Criterion 26, *Reactivity control system redundancy and capability*, requires "[t]wo independent reactivity control systems of different design principles shall be provided. One of the systems shall use control rods, preferably including a positive means for inserting the rods, and shall be capable of reliably controlling reactivity changes to assure that under conditions of normal operation, including anticipated operational occurrences, and with appropriate margin for malfunctions such as stuck rods, specified acceptable fuel design limits are not exceeded. The second reactivity control system shall be capable of reliably controlling

the rate of reactivity changes resulting from planned, normal power changes (including xenon burnout) to assure acceptable fuel design limits are not exceeded. One of the systems shall be capable of holding the reactor core subcritical under cold conditions."

During plant operations, a set of control rods (shutdown CEAs) are positioned above the reactor core with sufficient neutron poison material in them to stop the nuclear reaction when the rods are inserted positively (gravity) into core. The safety analysis assumes there is enough rod worth above the fuel region before the start of any accident to mitigate the event. The licensee's analysis indicated that the current TS LCO 3.1.6 that requires all shutdown CEAs be withdrawn to ≥ 144.75 inches does not provide adequate rod worth above the fuel region. The licensee determined that a shutdown CEA insertion limit of ≥ 147.75 inches withdrawn will provide sufficient rod worth above the fuel region. The proposed amendment would require that all shutdown CEAs be withdrawn to ≥ 147.75 inches in Modes 1 and 2 with any regulating CEA not fully inserted, instead of the current limit of ≥ 144.75 inches.

3.0 TECHNICAL EVALUATION

3.1 Introduction

The Palo Verde CEAs consist of either four or twelve neutron absorber elements arranged to engage the peripheral guide tubes of fuel assemblies. The neutron absorber elements of a four-element CEA engage the four corner guide tubes in a single fuel assembly. The four-element CEAs are used for power shaping functions and they make up the first control rod group to be inserted at high power. The twelve-element CEAs engage the four corner guide tubes in one assembly and the two nearest corner guide tubes in adjacent fuel assemblies. The twelve-element CEAs make up the balance of the control groups of CEAs and provide a bank of shutdown rods. During full-power steady-state operation, it is expected that the fuel will be essentially unrodded with all CEAs above the fuel region.

Even though insertion was allowed to ≥ 144.75 inches withdrawn by the LCO, the control rod maximum insertion was administratively controlled at ≥ 147.75 inches withdrawn in compliance with the Guide Tube Wear Program (GTWP). The licensee has participated in a GTWP since Cycle 1. The GTWP is designed to assure that the wear is within acceptable limits and is designed to prevent localized flow-induced wear between CEAs and their guide tubes. The GTWP requires CEAs to be repositioned several times during a core operating cycle. The GTWP allowed the CEAs to be inserted up to 2.25 inches (≥ 147.75 inches withdrawn) below the CEA fully withdrawn position of 150 inches withdrawn. This insertion did not exceed the insertion assumed in the safety analysis contained in the bias and uncertainty in the rod worth for the original fuel design.

Starting with Cycle 5, Unit 1 incorporated a Guardian grid into its fuel assemblies to trap debris flowing up the assembly before it reached the fuel pins. To accommodate the Guardian grid design modification, the fuel region was raised by 1.59 inches. The combination of GTWP and the introduction of the Guardian grid design caused the amount of insertion to slightly exceed the amount of insertion assumed in the safety analysis. The licensee's evaluation of the effect of this change on the safety analyses for the previous core cycles shows that there was no impact of this change on the safety analyses.

The licensee evaluated the new configuration in the GTWP justification analysis and determined that plant operation with the shutdown CEAs withdrawn to at least 147.75 inches assures that there is sufficient rod worth above the fuel region. The licensee concluded that the new insertion limit of ≥ 147.75 inches withdrawn will ensure that the plant will operate within its safety analyses.

Safety Analyses

In order to assess the effect the new CEA insertion limit would have on the power distribution of the reactor core, the licensee examined two parameters (axial peak and saddle index) and two particular events (main steamline break and control rod ejection). Axial peak is the axial location where power is the highest in the core. Saddle index compares the relationship between peak powers in the top, middle, and bottom of the core and validates the axial power distribution. The licensee analyzed the main steamline break accident and control rod ejection event because of their sensitivity to rod position.

To assess the effect that the new shutdown CEA insertion limit would have on axial peak and saddle index, the unit and the cycle that had the new design fuel assemblies and that had the highest values of these parameters were selected for the assessment. Since the axial peak is highest at the beginning of the core cycle, the shutdown CEAs were inserted at the new limit and the condition was simulated. The licensee reported that there was only a slight increase in the axial peak and that the results were still within the limiting parameter checklist value maintained by the core design group. The saddle index increases over the cycle life and is greatest at the end of cycle life. The control rods were again inserted to the new limit and the condition was simulated. The results indicated little change in the saddle index and that the results were also within the limiting value of the checklist. The licensee concluded that the new insertion limit produces new shapes within the limiting parameters of the checklist.

The licensee simulated the main steamline break accident at the new insertion limit of ≥ 147.75 inches withdrawn. The result was a reduction in rod worth of approximately 1 percent. Four limiting parameters for SCRAM worth at Hot Full Power and Hot Zero Power at beginning of cycle and end of cycle were found to be significantly above the limiting values of rod worth in the plant checklist.

The licensee analyzed the control rod ejection event at the new shutdown CEA insertion limit. Several cases are simulated each cycle. The case having the smallest difference between the calculated value and the limiting value was selected by the licensee for the simulation. The results of the analysis indicated a reduction in margin less than one half of 1 percent. The corresponding change in ejected rod worth was 0.0003 percent $\Delta\rho$ (change in reactivity), which the licensee contends is an insignificant change.

Neither the main steamline break accident nor the control rod ejection event simulation resulted in a significant change in the previously calculated values and the limiting parameters in the plant checklist were not exceeded. The licensee, therefore, concluded that the consequences of these accidents remain unchanged. The main steamline break and rod ejection accidents challenge the limits more than other accidents; the consequences of other accidents also remain unchanged.

Based on the above, the NRC staff concludes that the proposed change is acceptable in maintaining adequate rod worth and that pre-accident power distributions are within established limits.

3.2 CEA Position Indicators

There are two independent CEA position indication systems that provide CEA position information to the operator. The systems are the pulse counting CEA position indication system and the reed switch CEA position indication system. CEA position indication displays are located on the main control boards.

The reed switch position indication system utilizes a series of magnetically actuated reed switch position transmitters (RSPT) to provide signals representing CEA position. Each CEA is equipped with two independent RSPTs: an analog position indicator signal, and three physically separate discrete reed switch position signals. The analog position indication system utilizes a series of magnetically actuated reed switches spaced at 1.5-inch intervals along the RSPT assembly and arranged with precision resistors in a voltage divider network. The three discrete reed switch position signals are contact-closure signals from three separately located reed switches. These signals are an Upper Electrical Limit, a Lower Electrical Limit, and a rod drop contact. CEA position information is provided to the Core Protection Calculators (CPCs) directly and also to the CEA Calculators. In addition to the displays, CEA deviation information is provided by the CEA Calculators to the CPCs and a CEA deviation alarm. The three discrete CEA position switches provide signals to the Control Element Drive Mechanism Control System. The signals are utilized to provide CEA limit indication on the main control board and also to provide input to the CEA control interlocks.

The pulse counting CEA position indication system infers each CEA position by maintaining a record of the "raise" and "lower" control pulses sent to each magnetic jack Control Element Drive Mechanism. The pulse counting CEA position indication system provides position information to CEA related alarm programs and the Core Operating Limit Supervisory System (COLSS) contained in the Plant Monitoring System. Alarms provided by the pulse counting CEA position indication system include: (1) Power Dependent Insertion Limits Alarms, (2) Pre-Power Dependent Insertion Limits Alarm, (3) Out of Sequence Alarm, (4) CEA Deviation Alarm, and (5) COLSS Alarm. The licensee stated that the pulse counting CEA position indication system is very accurate but is not as reliable as the RSPT system.

To ensure the shutdown CEAs are positioned to support assumptions in the safety analysis, each shutdown CEA shall be withdrawn to ≥ 147.75 inches as indicated by the pulse counter. The licensee states that a lower limit is allowed for the RSPT indication due to its instrument inaccuracies (current values are $+3.1/-2.1$ inches). Slipping of an individual CEA is detected by the deviation between its pulse counter indication and its RSPT indication, as well as the deviation between other CEAs within its group.

Based on the above, the NRC staff concludes that the licensee has demonstrated adequate capability to provide CEA position indication to operators at the new shutdown CEA withdrawn position of ≥ 147.75 inches.

4.0 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.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve 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 previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published September 26, 2006 (71 FR 56191). 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 be prepared in connection with the issuance of the amendments.

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

Principal Contributor: M. Panicker

Date: July 25, 2007