March 20, 2001

Mr. Gregg R. Overbeck
Senior Vice President, Nuclear
Arizona Public Service Company
P. O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION (PVNGS), UNITS 1, 2, AND 3 - ISSUANCE OF AMENDMENTS ON CASMO-4/SIMULATE-3 (TAC NOS. MA9279, MA9280, AND MA9281)

Dear Mr. Overbeck:

The Commission has issued the enclosed Amendment No. 132 to Facility Operating License No. NPF-41, Amendment No. 132 to Facility Operating License No. NPF-51, and Amendment No. 132 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 June 8, 2000 (102-04455), as supplemented by your letter dated January 3 (102-04518) and March 13 (102-04545), 2001.

The amendments revise TS 5.6.5, "Core Operating Limits Report," to add a methodology using the CASMO-4 and SIMULATE-3 Codes to the list of analytical methods used to determine core operating limits contained in TS 5.6.5.b. The amendments allow the use of the CASMO-4 and SIMULATE-3 methodology to perform nuclear design calculations; however, as stated in the supplemental letter of January 3, 2001, you agreed that the introduction of significantly different or new fuel designs will require further validation of the physics methods in CASMO-4/SIMULATE-3 for application to PVNGS, Units 1, 2, and 3, and will require review by the NRC staff. The amendments shall be implemented within 45 days of the date of issuance.

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/
Jack N. Donohew, Senior Project Manager, Section 2
Project Directorate IV and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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

Enclosures:
1. Amendment No. 132 to NPF-41
2. Amendment No. 132 to NPF-51
3. Amendment No. 132 to NPF-74
4. Safety Evaluation

cc w/encls: See next page

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*SRXB memorandum dated 01/12/2001 ** See previous concurrence
Letter withholding proprietary information in the application dated March 13, 2001.
ACCESSION NO: ML01

OFFICE	PDIV-2/PM	PDIV-D/LA	SRXB/SC	OGC	PDIV-2/SC
NAME	JDonohew	MMcAllister	FAkstulewicz*	RWeisman**	SDembek
DATE	3/19/2001	3/19/01	01/12/01	03/06/01	3/19/01

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NRR-058

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

March 20, 2001

Mr. Gregg R. Overbeck
Senior Vice President, Nuclear
Arizona Public Service Company
P. O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION (PVNGS), UNITS 1, 2, AND 3 - ISSUANCE OF AMENDMENTS ON CASMO-4/SIMULATE-3 (TAC NOS. MA9279, MA9280, AND MA9281)

Dear Mr. Overbeck:

The Commission has issued the enclosed Amendment No. 132 to Facility Operating License No. NPF-41, Amendment No. 132 to Facility Operating License No. NPF-51, and Amendment No. 132 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 June 8, 2000 (102-04455), as supplemented by your letters dated January 3 (102-04518) and March 13 (102-04545), 2001.

The amendments revise TS 5.6.5, "Core Operating Limits Report," to add a methodology using the CASMO-4 and SIMULATE-3 Codes to the list of analytical methods used to determine core operating limits contained in TS 5.6.5.b. The amendments allow the use of the CASMO-4 and SIMULATE-3 methodology to perform nuclear design calculations; however, as stated in the supplemental letter of January 3, 2001, you agreed that the introduction of significantly different or new fuel designs will require further validation of the physics methods in CASMO-4/SIMULATE-3 for application to PVNGS, Units 1, 2, and 3, and will require review by the NRC staff. The amendments shall be implemented within 45 days of the date of issuance.

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,

Jack N. Donohew

Jack N. Donohew, Senior Project Manager, Section 2
Project Directorate IV and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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

Enclosures:
1. Amendment No. 132 to NPF-41
2. Amendment No. 132 to NPF-51
3. Amendment No. 132 to NPF-74
4. Safety Evaluation

cc w/encls: See next page

Palo Verde Generating Station, Units 1, 2, and 3

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 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 132
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 June 8, 2000, as supplemented January 3 and March 13, 2001, 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:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 132 , 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 shall be implemented within 45 days of the date of issuance. Implementation shall include the licensee describing in the Updated Final Safety Analysis Report the range of fuel configurations and core design parameters identified in the licensee's application dated June 8, 2000, as supplemented by letter dated January 3, 2001, and reviewed in the Staff's Safety Evaluation dated March 20, 2001, to which CASMO-4/SIMULATE-3 may be applied.

FOR THE NUCLEAR REGULATORY COMMISSION

Stephen Dembek, Chief, Section 2
Project Directorate IV and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 20, 2001

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. 132
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 June 8, 2000, as supplemented January 3 and March 13, 2001, 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-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. 132 , 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 shall be implemented within 45 days of the date of issuance. Implementation shall include the licensee describing in the Updated Final Safety Analysis Report the range of fuel configurations and core design parameters identified in the licensee's application dated June 8, 2000, as supplemented by letter dated January 3, 2001, and reviewed in the Staff's Safety Evaluation dated March 20, 2001, to which CASMO-4/SIMULATE-3 may be applied.

FOR THE NUCLEAR REGULATORY COMMISSION

Stephen Dembek, Chief, Section 2
Project Directorate IV and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 20, 2001

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

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. 132
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 June 8, 2000, as supplemented January 3 and March 13, 2001, 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-74 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. 132, 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 shall be implemented within 45 days of the date of issuance. Implementation shall include the licensee describing in the Updated Final Safety Analysis Report the range of fuel configurations and core design parameters identified in the licensee's application dated June 8, 2000, as supplemented by letter dated January 3, 2001, and reviewed in the Staff's Safety Evaluation dated March 20, 2001, to which CASMO-4/SIMULATE-3 may be applied.

FOR THE NUCLEAR REGULATORY COMMISSION

Stephen Dembek, Chief, Section 2
Project Directorate IV and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 20, 2001

ATTACHMENT TO LICENSE AMENDMENT NOS. 132, 132, , AND 132

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 page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
5.6-5	5.6-5

5.6 Reporting Requirements (continued)

5.6.5 Core Operating Limits Report (COLR) (continued)

8. Letter: O.D. Parr (NRC) to F. M. Stern (CE), dated June 13, 1975 (NRC Staff Review of the Combustion Engineering ECCS Evaluation Model). NRC approval for: 5.6.5.b.6.

9. Letter: K. Kniel (NRC) to A. E. Scherer (CE), dated September 27, 1977 (Evaluation of Topical Reports CENPD-133, Supplement 3-P and CENPD-137, Supplement 1-P). NRC approval for 5.6.5.b.7.

10. "Fuel Rod Maximum Allowable Pressure," CEN-372-P-A, May 1990 (Methodology for Specification 3.2.1, Linear Heat Rate).

11. Letter: A. C. Thadani (NRC) to A. E. Scherer (CE), dated April 10, 1990, ("Acceptance for Reference CE Topical Report CEN-372-P"). NRC approval for 5.6.5.b.10.

12. "Arizona Public Service Company PWR Reactor Physics Methodology Using CASMO-4/SIMULATE-3," September 1999 [Methodology for Specifications 3.1.1, Shutdown Margin - Reactor Trip Breakers Open; 3.1.2, Shutdown Margin - Reactor Trip Breakers Closed; 3.1.4, Moderator Temperature Coefficient; 3.1.7, Regulating CEA Insertion Limits and 3.9.1, Boron Concentration (Mode 6)].

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any mid cycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 PAM Report

When a report is required by Condition B or G of LCO 3.3.10, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

(continued)

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 132 TO FACILITY OPERATING LICENSE NO. NPF-41,

AMENDMENT NO. 132 TO FACILITY OPERATING LICENSE NO. NPF-51,

AND AMENDMENT NO. 132 TO 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 June 8, 2000 (Reference 1), the Arizona Public Service Company (the licensee) requested changes to the Technical Specifications for the Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 . 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 changes would revise TS 5.6.5, "Core Operating Limits Report (COLR), to add a methodology using the CASMO-4/SIMULATE-3 codes to the list of analytical methods used to determine core operating limits contained in TS 5.6.5.b. The amendments allow the use of the CASMO-4/SIMULATE-3 methodology to perform nuclear design calculations.

In its application, the licensee submitted a request to review the report "Arizona Public Service Company PWR Reactor Physics Methodology using CASMO-4/SIMULATE-3, September 1999," and to amend TS 5.6.5. The report describes the PVNGS qualification of new physics methods, based on CASMO-4/SIMULATE-3, for application to operations and reload safety evaluations at PVNGS Units 1, 2, and 3. The licensee intends to replace the ABB Combustion Engineering Nuclear Power DIT and ROCS/MC computer codes with the Studsvik CMS system of codes (i.e., CASMO-4/SIMULATE-3), while retaining the ability to use DIT/ROCS/MC.

The application documents the capability of the licensee to implement and apply new methods, based on CASMO-4/SIMULATE-3 methodology, to Pressurized Water Reactors (PWRs) reload physics design activities for the PVNGS Units 1, 2, and 3.

The application addresses the reactor model description, qualification, quantification and applications to operations and reload safety evaluations at PVNGS Units 1, 2, and 3. The licensee's application also contains validation and benchmarking of the CASMO-4/SIMULATE-3 predictions against operating conditions from the PVNGS power reactors and the Rensseler Polytechnic Institute and Babcock and Wilcox critical experiments, as discussed in Reference 2.

The licensee's application was supplemented by the licensee's letters of January 3 and March 13, 2001. The supplemental letters provided additional clarifying information, did not expand the scope of the application as noticed, and are within the staff's original proposed no significant hazards consideration determination published in the Federal Register on October 4, 2000 (65 FR 59219).

2.0 EVALUATION

2.1 Computer Codes Descriptions and Methodology

Section 2.0 of the application (1) describes the licensee-specific CASMO-4/SIMULATE-3 computer program package methodology, (2) provides references for each of the individual components, and (3) gives a flow chart for the model application. The CASMO-4 computer code is the Studsvik Energiteknik lattice code. The CASMO-4 computer code is used to generate the lattice physics parameters for input to SIMULATE-3 for PWR core performance analyses. CASMO-4 is a multi-group two-dimensional transport theory code for depletion and branch calculations for a single assembly. It calculates the cross sections, nuclide concentrations, pin power distributions and other nuclear data used as input to the SIMULATE-3 program.

New features of CASMO-4 over CASMO-3 are the incorporation of the microscopic depletion of burnable absorbers into the main calculations, and the introduction of a heterogeneous model for the two-dimensional calculation. Also new in CASMO-4 is the use of the characteristics form for solving the transport equation.

SIMULATE-3 was also acquired from Studsvik of America. SIMULATE-3 is a two-group 3-dimensional nodal program based on the NRC approved QPANDA neutronics model. The code is based on modified coarse mesh (nodal) diffusion theory calculational technique, with coupled thermal hydraulic and Doppler feedback. The program explicitly models the baffle/reflector region, eliminating the need to normalize to higher-order fine mesh calculations. The code includes the following modeling capabilities: solution of the two group neutron diffusion equation, fuel assembly homogenization, explicit reflector cross-section model, cross-section depletion and pin power reconstruction. In order to ensure flux continuity at nodal interfaces and perform an accurate determination of pin-wise power distributions, SIMULATE-3 uses assembly discontinuity factors that are pre-calculated by CASMO-4. These factors are related to the ratio of the nodal surface flux in the actual heterogenous geometry to the cell averaged flux in an equivalent homogeneous model, and are determined for each energy group as a function of exposure, moderator density and control-rod-state.

The two group model solves the neutron diffusion equation in three dimensions, and the assembly homogenization employs the flux discontinuity correction factors from CASMO-4 to combine the global (nodal) flux shape and the assembly heterogeneous flux distribution. The flux discontinuity concept is also applied to the baffle/reflector region in both radial and axial directions to eliminate the need for normalization, or other adjustment at the core/reflector interface.

The SIMULATE-3 fuel depletion model uses tabular and functionalized macroscopic or microscopic, or both cross sections to account for fuel exposure without tracking the individual nuclide concentrations. Depletion history effects are calculated by CASMO-4 and then

processed by the TABLES-3 code for generation of the cross-section library used by SIMULATE-3.

SIMULATE-3 can be used to calculate the three dimensional pin-by-pin power distribution in a manner that accounts for individual pin burnup and spectral effects. SIMULATE-3 also calculates control rod worth, and moderator Doppler and xenon feedback effects.

2.2 Benchmarking and Model Validation

In its application, the licensee compares the CASMO-4/SIMULATE-3 predictions of key physics parameters against plant data. In this comparison, the licensee used data from PVNGS Units 1, 2, and 3 and from critical experiments.

The licensee intends to use the CASMO-4/SIMULATE-3 programs in licensing applications, including calculations for startups, generation of physics input for safety analyses, qualification and quantification of reliability factors, and applications to operations and reload safety evaluations of PVNGS Units 1, 2, and 3. The licensee used several cycles of data to benchmark the licensee's CASMO-4/SIMULATE-3 model for each Unit for a total of 23 cycles, including both initial reload cores. These data covered a variety of fuel types, operating conditions, and core loading patterns.

The licensee analyzed the plants over a wide range of conditions from cold (ambient) temperature to hot full power operation. The licensee found good agreement between the measured and the calculated values, as set forth in the attachment to its application.

For each parameter compared, a sample mean and standard deviation of the observed differences were calculated. Based on the agreement between the measured and calculated values, the staff has determined that the licensee has validated its proposed applications of these computer programs for analysis of the PVNGS Units 1, 2, and 3.

During each cycle, measured and calculated parameters are compared in order to validate the model and update the uncertainties associated with the model. Results of the validation and any needed updates for each parameter are documented as part of the reload safety evaluation for the reload in which the updated values will be used. The updates to the CASMO-4/ SIMULATE-3 model will be conducted in accordance with methodology outlined in this submittal (Ref. 1).

The licensee also intends to use these methods for steady-state PWR core physics reload design and licensing applications, including fuel bundle and loading pattern analysis; for generation of core physics parameters such as: rod and boron worth benchmarking, temperature coefficient benchmarking and startup predictions, and reactivity coefficients for transient and safety analyses input.

2.3 Statistics

The calculational uncertainties for any of the physics parameters, such as the total heat flux hot channel factor (F_Q), are defined as a single value, delta F_Q, such that the calculated value of F_Q at any core location plus delta F_Q has a 95 percent probability at a 95 percent confidence level of being conservative with respect to the measured F_Q at that location.

2.4 Conclusion

The licensee submitted the June 8, 2000, application for review by the staff. The licensee performed extensive benchmarking using the CASMO-4/SIMULATE-3 methodology. Its effort consisted of conducting detailed comparisons of calculated key physics parameters with measurements obtained from several operating cycles of the PVNGS plants Units 1, 2, and 3. These results were used to determine the set of 95/95 (probability/confidence) tolerance limits for application to the calculation of the stated physics parameters.

Based on its review of the analyses and results presented in the June 8, 2000 submittal, as discussed above, the staff has concluded that the CASMO-4/SIMULATE-3 methodology, as validated by the licensee, can be applied to PVNGS steady-state physics calculations for reload applications as described in the above technical evaluation. The staff's approval is limited to the range of fuel configurations and core design parameters as stated and referenced by the June 8, 2000, submittal. Introduction of significantly different or new fuel designs will require further validation of the above stated physics methods for application to PVNGS by the licensee and will require review by the NRC staff.

In approving the use of CASMO-4/SIMULATE-3 at PVNGS Units 1, 2, and 3, the staff was concerned that this methodology is not used for significantly different or new fuel designs with prior review by the staff, and discussed this with the licensee on November 8 and 21, 2000. The licensee stated in its letter of January 3, 2001 (Reference 3), that the range of fuel configurations in the benchmarks in the CASMO-4/SIMULATE-3 topical report span several fuel assembly lattice designs and are fairly broad. It is clear that interpolation between or modest extrapolations from cases implicitly analyzed in the topical report are not "significantly different" or "new fuel designs." However, a new fuel design would involve physics components which are not benchmarked in the topical report.

The licensee further stated in the letter of January 3, 2001, that it agreed to limit its application of CASMO-4/SIMULATE-3 to "the range of fuel configurations and core design parameters as stated and referenced by the June 8, 2000, application. Introduction of significantly different or new fuel designs will require further validation of the above stated physics methods for application to PVNGS by the licensee and will require review by the NRC staff." In view of the importance of this commitment by the licensee, the staff requested by phone that the licensee place this commitment in the Updated Final Safety Analysis Report (UFSAR) for Palo Verde, where changes to the commitment would be controlled by the criteria in 10 CFR 50.59, and the licensee accepted this condition in its letter of March 13, 2001. The staff concludes that the criteria in 50.59 is sufficient control on any changes the licensee may want to make to the commitment.

Therefore, on the basis of the staff's acceptance of the application of the physics methods in CASMO-4/STIMULATE-3 to PVNGS and the licensee's commitment, to be placed in the UFSAR as a condition of the amendment, to not apply this methodology to significantly different or new fuel designs, the staff concludes that the proposed amendments are acceptable.

The placement of the licensee's commitment in its letter of March 13, 2001, on the use of the CASMO-4/SIMULATE-3 codes, in the UFSAR for Palo Verde will be submitted to the NRC as an update to the UFSAR in accordance with the schedule in 10 CFR 50.71(e).

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change administrative procedures or requirements. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). 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.

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 (65 FR 59219).

5.0 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.

6.0 REFERENCES

1. Letter from David Mauldin, Vice President Nuclear Engineering and Support, to the U.S. Nuclear Regulatory Commission, entitled "Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3, Request for Amendment to Technical Specification 5.6.5, Core Operating Limits Report (COLR) (CASMO-4/SIMULATE-3)", June 8, 2000.

2. Dave Knott, Bengt H. Forssen, Malte Ednius, CASMO-4, A Fuel Assembly Burnup Program, Methodology, STUDSVIK/SOA-95/2, STUDSVIK of America, Inc., USA, STUDSVIK Core Analysis AB, Sweden, 1995.

3. Letter from David Mauldin, Vice President of Nuclear Engineering and Support to the NRC, "Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3, Docket Nos. STN 50-528/529/530, Safety Evaluation for CASMO-4/SIMULATE-3 Technical Specification Amendment Request, dated January 3, 2001.

Principal Contributor: Anthony Attard

Date: March 20, 2001