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 STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529  
 AUTH.NAME AUTHOR AFFILIATION  
 VAN BRUNT,E.E. Arizona Nuclear Power Project (formerly Arizona Public Serv  
 RECIP.NAME RECIPIENT AFFILIATION  
 MURLEY,T.E. Ofc of Enforcement (Post 870413)

88-02

SUBJECT: Responds to NRC 880413 notice of violation & proposed  
 imposition of civil penalties in amount of \$100,000.

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 Standardized plant.

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## Arizona Nuclear Power Project

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102-00765-EEVB/TDS/RJR

May 13, 1988

Dr. Thomas E. Murley  
Director, Office of Enforcement  
U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Subject: Palo Verde Nuclear Generating Station  
Units 1 and 2  
Docket No. STN 50-528 (License NPF-41)  
STN 50-529 (License NPF-51)  
Reply to a Notice of Violation  
File: 88-056-026

- Reference: (a) Letter, dated April 13, 1988, from John B. Martin, Regional Administrator, Region V, U. S. Nuclear Regulatory Commission, to Arizona Nuclear Power Project, attn. E. E. Van Brunt, Jr., Executive Vice President.
- (b) Notice of Violation and Proposed Imposition of Civil Penalties (NRC Inspection Report Nos. 50-528/88-02, 50-528/88-07, 50-529/88-02, and 50-529/88-07), dated April 13, 1988.

Dear Sir:

In accordance with the direction in Reference (b), Arizona Public Service Company (APS) submits the attached Reply to a Notice of Violation. Such Reply consists of Attachments A, B, C, and D which are responsive to Sections I.A., I.B., I.C., and I.D., respectively of Reference (b) and Attachments E, F, and G which are responsive to Sections 2.A., 2.B., and 2.C. of Reference (b). Also, in accordance with Reference (b), a check in the amount of \$100,000 is enclosed in payment of the proposed civil penalties.

As discussed in the responses to the specific violations, ANPP admits the violations described in Reference (b). Extensive corrective actions to prevent recurrence were initiated prior to the receipt of the notice and are described in the attached Reply. Additionally, other steps have been or will be taken to address the generic problems cited in Reference (a). Such steps include the following actions.

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Senior executive management has conducted meetings with both the Palo Verde and the ANPP management staffs to discuss the specific violations and recent performance indicator trends identified by ANPP. The purpose of these meetings was to identify a common root cause, if it existed, and to develop a long-range plan to enhance the project's overall performance. As a result, a list of recommended corrective actions has been drafted for review and approval by executive level management and the development of appropriate action plans and schedules. We will keep NRC apprised of our progress with respect to these plans.

These recommended actions are specifically designed to:

- a. Upgrade personnel qualifications.
- b. Increase involvement of supervisors and management.
- c. Reemphasize the need for professionalism, formality, and attention to detail.
- d. Assess and integrate the role of the oversight groups.
- e. Improve the work environment to promote high standards.

As an interim measure, to ensure prompt and effective implementation of the actions that are approved and to increase direct executive level management overview and input, the Vice President of Nuclear Production has relocated his permanent office to the project site.

As previously discussed with you and your staff, ANPP has focused extensive management attention in the engineering area. The development and implementation of detailed enhancement programs in both the Technology Transfer Program and the System Engineer Program specifically address some of the concerns identified in Reference (a). These actions include:

#### SYSTEM ENGINEER

- Clearly defining and expanding the responsibilities of the system engineer.
- Defining the specific system engineer job/performance requirements.
- Evaluation of each system engineer's knowledge and abilities versus his job/performance requirements will be conducted for current work assignments.
- Individualized training plans will be developed for each system engineer based upon the results of the analysis conducted.



- Evaluation and revision of procedures and department instructions to implement the applicable job/performance requirements. This will include information systems and other resources required by the system engineer.
- An evaluation will be conducted upon full implementation to assess the effectiveness of the actions taken and additional actions will be taken as appropriate.

#### TECHNOLOGY TRANSFER

- The engineers were provided formal training in selected design analyses and their application.
- The initial development of a Design Basis Manual has been implemented. This document will include or reference applicable criteria, calculations, Final Safety Analysis Reviews, applicable NRC Bulletins and Notices, specifications and vendor manuals. Additionally, a Combustion Engineering (CE) design basis reference manual is being prepared through the CE Owners Group.
- The majority of the engineers have received on-the-job training which included the actual design of new modifications in conjunction with experienced AE engineers.
- Assuming control and maintenance of design records.
- Providing the engineers formal NSSS vendor training in reactor coolant and safety systems.
- An assessment of current training needs has been conducted, and contract negotiations are currently in progress to provide additional training for the design engineers including the establishment of additional courses not previously taught.
- A Configuration Management Policy has been prepared and will be issued defining the design basis and identifying organizational responsibilities for its maintenance.
- The engineers have been instructed to accurately evaluate and reconstruct, if necessary, the design basis calculations and analyses prior to their use in future modifications. The training necessary to ensure the proper implementation of this direction has been accomplished.

ANPP concurs with your conclusion that the safety significance of the violations was low and is confident that the corrective actions described in

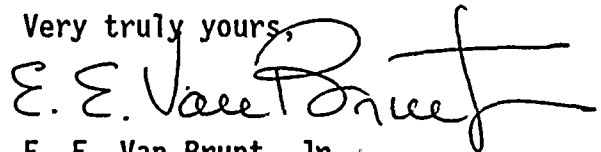


102-00765-EEVB/TDS/RJR  
May 13, 1988

this letter and the attached Reply to a Notice of Violation in conjunction with those actions briefly reiterated in this letter and documented in letters E. E. Van Brunt, Jr. to J. B. Martin, dated March 10, 1988, and E. E. Van Brunt, Jr. to NRC Document Control Desk, dated April 25, 1988, will not only address the specific violations and the concerns described in the cover letter transmitting the Notices of Violation but will result in an overall enhancement of Palo Verde's performance in operations, maintenance and engineering. Specifically these actions are designed to ensure that: (1) management effectively communicates their desire for a high standard of performance and attention to detail, (2) each employee understands that any deviation from those standards is unacceptable and (3) management provides the necessary support to achieve those standards.

If you have any questions, please contact me at (602) 371-4001.

Very truly yours,



E. E. Van Brunt, Jr.  
Executive Vice President  
Project Director

EEVB/TDS/RJR/kj

Attachments

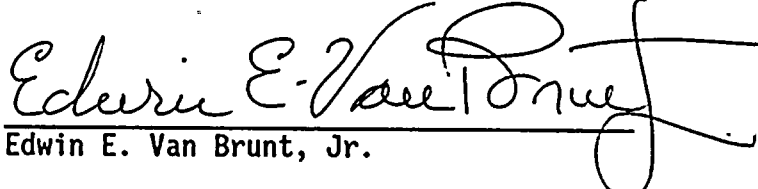
cc: O. M. DeMichele (all w/a)  
J. G. Haynes  
J. B. Martin  
T. J. Polich  
E. A. Licitra  
A. C. Gehr





STATE OF ARIZONA     )  
                                  ) ss.  
COUNTY OF MARICOPA )

I, Edwin E. Van Brunt, Jr., represent that I am Executive Vice President, Arizona Nuclear Power Project, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.

  
Edwin E. Van Brunt, Jr.

Sworn to before me this 13th day of May, 1988.

  
Notary Public

My Commission Expires:

Apr. 4, 1991



REPLY TO A NOTICE OF VIOLATION

ATTACHMENT A - RESPONSE TO SECTION I.A.

ATTACHMENT B - RESPONSE TO SECTION I.B.

ATTACHMENT C - RESPONSE TO SECTION I.C.

ATTACHMENT D - RESPONSE TO SECTION I.D.

ATTACHMENT E - RESPONSE TO SECTION II.A.

ATTACHMENT F - RESPONSE TO SECTION II.B.

ATTACHMENT G - RESPONSE TO SECTION II.C.



ATTACHMENT A

VIOLATION

I.A. Technical Specification 3.7.1.2, applicable to both Units 1 and 2, requires that at least three independent steam generator auxiliary feedwater pumps shall be operable in modes 1, 2, and 3; in mode 4 the pumps shall be operable until the steam generators are no longer required for heat removal. The action statement of technical specification 3.7.1.2 further requires that with one auxiliary feedwater pump inoperable, the inoperable pump shall be restored to an operable status within 72 hours or the unit shall be placed in hot standby within the next 6 hours and in hot shutdown within the following 6 hours.

Contrary to the above, both Units 1 and 2 operated with only two operable independent steam generator auxiliary feedwater pumps without meeting the technical specification action requirements in that:

1. With the turbine driven auxiliary feedwater pump inoperable, Unit 1 operated in modes 1, 2, 3, and 4 from September 23, 1987 until October 5, 1987.
2. With the turbine driven auxiliary feedwater pump inoperable, Unit 2 operated in mode 1 from October 14, 1987 until November 29, 1987.

ATTACHMENT A (CONTINUED)

1. ADMISSION OR DENIAL OF THE ALLEGED VIOLATION

1.1 This violation was identified by ANPP on November 7, 1988, and subsequently reported to the NRC in Licensee Event Report (87-025-00).

1.2 ANPP admits the violation occurred as stated.

2. REASON FOR VIOLATION

2.1 Description of Events Unit 1

2.1.1 On June 24, 1987, during MOVATS testing of valves SGAUV-134 and SGAUV-138, it was found that the valves were striking against the backseat when opened. An Engineering Evaluation Request (EER 87-SG-117) was initiated by an individual from the the Electrical Maintenance Support Group who was providing support for the MOVATS Test Group, to evaluate this condition. The EER subsequently was assigned to the Steam Generator (SG) System Engineer by the EER Coordinator, who performs as an administrative processor.

2.1.2 In August, 1987, in conjunction with the vendor's recommendation, the assigned SG System Engineer determined that the limit switch Rotor #1 on the steam supply valve

ATTACHMENT A (CONTINUED)

operator should be adjusted to prevent the valves from striking the backseat when opened. The EER, which did not procedurally require a cross discipline review, was dispositioned by the assigned SG System Engineer and approved by his lead and the Engineering Manager, authorizing the adjustment of the #1 switch rotors. Therefore, the disposition did not provide direction to review and/or adjust other limit switches in the valve operators which interfaced with the turbine ramp up circuitry. Work requests were then written for all three units to adjust only limit switch rotor #1 in accordance with the instructions contained in the EER.

- 2.1.3 In September, 1987, valve SGAUV-138 limit switch Rotor #1 (Stop) was adjusted with the "as left" position set at 88.2% open. Rotor #3 (Auxiliary Feedwater Ramp) which was not considered in the dispositioning of the EER, which had been set at 97.2% open, was not changed. The ASME Section XI valve retests were completed satisfactorily to verify that the valve would not strike the backseat when opened. However, no retest was performed to verify operability of the Auxiliary Feedwater Pump. ANPP believes that had the design change process rather than the EER process been used, the appropriate system retest would have been specified. This belief is based upon the fact that the design change process

ATTACHMENT A (CONTINUED)

requires a cross discipline review; whereas the EER process does not. The cross discipline review would have led to the recognition of the need to conduct a pump operability test. Subsequent investigation identified the use of an EER instead of the design change process as a concern as discussed in section 2.3(a).

- 2.1.4 In November, 1987, valve SGAUV-134 Rotor #1 was adjusted with the "as left" position set at 90% open utilizing the same EER instructions which were provided to adjust the limit switch settings in valve SGAUV-138. Rotor #3, which was again not considered in the dispositioning of the EER, which had been set at 93% open, was not changed. The ASME Section XI valve retests were completed satisfactorily to verify the valve would not strike the backseat when opened. However, again there were no tests conducted to verify the operability of the Auxiliary Feedwater pump as discussed in section 2.1.3.
- 2.1.5 On November 27, 1987, Unit 1 was apprised by the Unit 2 Shift Supervisor of the potential problem with the valve limit switch rotor #3 based upon the results of the surveillance test conducted in Unit 2 as discussed in section 2.2.4.
- 2.1.6 On November 29, 1987, Unit 1 initiated work requests to adjust the setting on the limit switch rotor #3 based upon



ATTACHMENT A (CONTINUED)

the disposition of EER 87-SG-200 (see Section 2.2.5) which was issued to address the problem identified in Unit 2.

2.1.7 On December 2, 1987, valves SGAUV-134 and SGAUV-138 were adjusted in accordance with EER 87-SG-200 (see Section 2.2.5), and retesting was completed on January 6, 1988, which included verification of the operability of the pump.

2.2 Description of Events Unit 2

2.2.1 Based upon the disposition of the EER discussed in Section 2.1.1, Unit 2 valve SGAUV-138 Rotor #1 was adjusted on October 14, 1987, with the "as left" position set at 78% open. Rotor #3, which had been set at 88.6% open, was not changed. As in Unit 1, the #3 Rotor was not adjusted because no direction to adjust the #3 rotor was provided in EER 87-SG-117. The ASME Section XI valve retests were completed satisfactorily to verify the valve would not strike the backseat when opened. No testing of the operability of the Auxiliary Feedwater Pump was conducted.

2.2.2 On October 15, 1987, valve SGAUV-134 Rotor #1 was adjusted with the "as left" position set at 65% open. Rotor #3, which was set at 80% open, was not adjusted as discussed in section 2.2.1. The ASME Section XI valve retests were completed satisfactorily to verify the valve would not strike the

ATTACHMENT A (CONTINUED)

backseat when opened. No testing of the operability of the Auxiliary Feedwater Pump was conducted.

2.2.3 On October 31, 1987, the regularly scheduled turbine driven auxiliary feedwater pump monthly operability test was successfully completed using valve SGAUV-138.

2.2.4 On November 27, 1987, the Turbine Driven Auxiliary Feedwater Pump did not achieve its rated speed during the regularly scheduled performance of the monthly operability test utilizing valve SGAUV-134. The operability test was then reperformed utilizing valve SGAUV-138, to reaffirm the results of the pump operability test conducted on October 31, 1987. The pump achieved its rated speed during the first retest, however, the pump failed to achieve its rated speed during the second retest that was conducted. Subsequent investigation as discussed in section 2.2.6 identified the cause of the pumps inconsistent performance. Based upon the results of the surveillance tests, Technical Specification 3.7.1.2 Limiting Condition for Operation action statement was entered. Work orders to troubleshoot both valves were written. It was found that the #3 rotor was set higher than the #1 rotor which had been adjusted in accordance with the original EER disposition, therefore, the Turbine Driven Auxiliary Feedwater Pump ramp up circuitry was not actuated;



ATTACHMENT A (CONTINUED)

thus, the pump failed to achieve its rated speed. Based upon the results of the troubleshooting the Shift Supervisor, after consultation with the system engineer, requested that the #3 rotors be adjusted to less than or equal to the #1 rotor setting. The #3 rotor settings were adjusted. After the adjustments were made, the operability of the auxiliary feedwater pump was tested satisfactorily using each steam supply valve.

2.2.5 On November 29, 1987, EER 87-SG-200 was initiated by an STA to clarify the guidance in EER SG-117 and to require that the #3 rotor setting be adjusted to a setting slightly lower than the rotor #1 setting. The Shift Supervisor assumed that the rotors had already been adjusted to satisfy the disposition of this additional Engineering Evaluation Request (EER)(87-SG-200) based upon his direction provided on November 27, 1987. However, to ensure system operability, he directed the Turbine Driven Auxiliary Feedwater Pump operability test be performed again. The test was satisfactorily conducted and the system was declared operable thereby exiting the action statement.

2.2.6 On December 16, 1987, while investigating the original event, it was discovered that valves SGAUV-134 and SGAUV-138 #3

ATTACHMENT A (CONTINUED)

Rotors although having been adjusted on November 27, 1988, were still set higher than Rotor #1. Therefore, the requirements of the EER 87-SG-200 had not been implemented. Although the #3 rotors were not adjusted in accordance with the EER, it had been verified, through previous testing, that the Turbine Driven Auxiliary Feedwater Pump would operate satisfactorily and had been operable since November 29, 1987, when the corrective adjustments were first made. Although the #3 rotor was set slightly above the setting of the #1 rotor the inherent drift or overshoot of the valve after the actuation of the #1 rotor circuitry (stop circuit) was sufficient to initiate the #3 rotor circuitry. A work document was issued to adjust the rotors in accordance with Engineering Evaluation Request 87-SG-200, and the Turbine Driven Auxiliary Feedwater Pump operability test was satisfactorily reperformed using both valves.

2.3 Causes of Violations

Investigation into the event, as described in the sequence of events in sections 2.1 and 2.2, by ANPP and the NRC identified the following causes:

- a. The Engineering Evaluation Request (EER) process was not intended to perform modifications that could change the design

ATTACHMENT A (CONTINUED)

basis such as the use described in section 2.2.1. The EER was intended to be used as a means to request a technical clarification or evaluation from the Engineering Evaluations Department and to provide for "minor" design changes which would not require a change to a design drawing. Therefore, the EER process did not include controls such as cross-discipline reviews or approval by the Plant Manager to ensure proper maintenance of the design basis. Because (a) the Limitorque limit switch settings were not considered by the assigned SG System Engineer to be a design basis parameter and were not specified as such in documents available to the system engineer, and (b) procedure 73PR-9ZZ04, "Valve Motor Operator Monitoring and Test Program" did specifically require the use of an EER to authorize changes in Limitorque limit switch settings, the assigned SG System Engineer did not believe the instructions he provided for resetting the switches constituted a design change. Furthermore, the SG System Engineer was unaware of the additional limit switches on SG-134 and SG-138 and believed he was adjusting only the stroke of the valves with the original EER. This issue is further addressed in item 2.3(c).

- b. The retests discussed in sections 2.1.3, 2.1.4, 2.2.1, and 2.2.2 verified the operation of the valve and did not consider the potential impact the switch setting adjustments may have had on

ATTACHMENT A (CONTINUED)

the system operation. Had the limit switch settings been considered a design basis parameter the appropriate design change process would have been used and the specified retest should have undergone a cross discipline review by an electrical engineer which should have ensured that a pump operability test would be conducted.

- c. The EER and associated work document authorizing the limit switch adjustment received numerous reviews as discussed in section 2.1.2. However, the error which subsequently led to the inoperability of the auxiliary feedwater pump was not identified. As noted by the ANPP and NRC from the personnel interviews that were conducted, the various individuals who reviewed and signed the document had different views concerning the purpose of their review of the document and what their signatures meant. It must be understood, however, that not all reviews are technical reviews to the extent that they would have revealed this error. However, it is not unreasonable to assume that the error should have been detected during the review process.
- d. The methodology utilized for establishing QC holdpoints and acceptance criteria at the time of this event relied on the inherent knowledge and training of the QC inspector. Although it is believed that sufficient information was provided to satisfactorily conduct the QC inspection, the results of this

ATTACHMENT A (CONTINUED)

event indicate a need to strengthen the overall program.

3. CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED

3.1 Immediate action was taken by Unit 2, as discussed in section 2.2.4, to reestablish operability of the steam driven auxiliary feedwater pump and to notify Units 1 and 3 of the potential impact of the Engineering Evaluation. Unit 1, which was shutdown at the time of discovery, immediately initiated action to preclude entry into mode 4 prior to correct adjustment of the limit switches. The Unit 3 evaluation determined the appropriate limit switches had been adjusted such that the operability of the pump was not effected. An Engineering Evaluation (87-SG-200) was dispositioned to identify the proper settings for the limit switches as discussed in section 2.2.5. Verification and adjustments were made in all three units to assure that the settings met the requirements of the new Engineering Evaluation and pump operability tests were successfully completed.

These corrective actions were effective in restoring the steam driven auxiliary feedwater pump to operable status and compliance with Technical Specification 3.7.1.2. In Unit 2 the pump was restored to operable status as discussed in section 2.2.5. In Unit 1 the pump was restored to operable status prior to entering the mode for which the Technical Specification is applicable. No action was required with respect to Unit 3 because of the methodology used during the initial rotor adjustments.



ATTACHMENT A (CONTINUED)

4. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

a. As a result of the problems addressed in Section 2.3(a), the following actions are planned:

- The current Limitorque switch settings have been evaluated by the Engineering Department and included in the design basis.
- The Engineering Department is conducting an evaluation to ensure that there are no other necessary parameters which are not being maintained in the design basis.

Schedule: To be completed in December, 1988.

- The EER procedure has been evaluated and modified, as appropriate, to consider the potential effects on interfacing systems outside the scope of the cognizant system engineer responsible for processing any EER.
- Instructions have been given to both the System and Design engineers on the revised EER procedure, the site modification procedure, and the design change process to ensure they understand the differences in the processes and when each should be used. The instructions also accentuated the need to consider the potential effects on interfacing systems outside the scope of the cognizant system engineer responsible for processing any EER.

ATTACHMENT A (CONTINUED)

- A QA audit has been conducted to determine if other design basis changes have been made using the EER process. The results have been turned over to EED for evaluation. Upon completion of the EED evaluation, the results will be turned over to Engineering for an independent assessment. The results of these reviews will be used to determine if corrective actions are warranted.
  - The appropriate procedure has been revised to require that all modifications to Limitorque switch settings be processed in accordance with the site modification procedure which requires a cross discipline review.
- b. As a result of the retest issue raised in paragraph 2.3(b), the following actions are planned:
- As an interim measure to address the specific issues concerning the motor operated valves, the retest instructions have been modified to ensure the motor operated valve data base is utilized for work orders involving Limitorque operators.
  - As an interim step to address the generic retest issue, a retest guideline will be developed and implemented as an aid in specifying appropriate retests. Longer term corrective action will consist of developing a retest manual detailing generic post maintenance test requirements for components.
- Schedule: The interim retest guideline is scheduled to be

ATTACHMENT A (CONTINUED)

completed in July, 1988. The retest manual is scheduled for completion in December, 1989.

- Shift Supervisors (SS) or Work Control Shift Supervisors will continue to concur with post maintenance retests to the extent that the retest is sufficient to satisfy Technical Specification requirements for operability. This constitutes a clarification of the scope for the Shift Supervisor and/or Work Control Shift Supervisor, thus, the necessary change to "Work Control" (30AC-9ZZ01) will be promulgated to clarify both the Planner Coordinators' and Shift Supervisors' responsibilities.

Schedule: To be completed in July, 1988.

- A procedure change to the Administrative Controls for design changes has been made to emphasize the assigned system engineer's responsibility to specify the retests necessary to assure the design basis and operability of affected systems or equipment are maintained following a design change. Instruction has been provided to the responsible organizations for this change.

- c. To address the issue raised in paragraph 2.3(c) that personnel do not understand what their signatures mean, the following actions have been initiated:

ATTACHMENT A (CONTINUED)

- The EER procedure has been revised to ensure each review is clearly defined as to its intended scope and that the approval level is appropriate for the activity. The procedure specifically identifies the responsibilities of the lead manager and supervisor during the review process.
- Administrative Control procedures governing surveillances, work control, and design changes will be reviewed and revised as necessary to ensure each review is clearly defined as to its intended scope and that the approval level is appropriate for the activity.

Schedule: To be completed September, 1988.

- Other procedures will be reviewed as above during the normal periodic review process required by ANSI N18.7 - 1976.
- d. To address the QA/QC problems identified in paragraph 2.3(d), actions will be taken as follows:
- Instructions for work order review have been revised to ensure that quantitative/qualitative acceptance criteria are either provided in the work step or clearly referenced in the work step.

This event has been reviewed with the Quality Engineers performing work order reviews, the Mechanical Quality Engineering Supervisor,

ATTACHMENT A (CONTINUED)

and the Manager, Quality Systems and Engineering. The need for clearly identified and documented acceptance criteria was emphasized during this review.

Revised instruction QA01.00.03, "Conduct of Quality Control Department Activities", describes the day to day activities and responsibilities of QC department personnel. This instruction includes management guidance that states:

- 1) "Quality Control Inspectors shall accept only that work which is included in the work document."
  - 2) "Quality Control Inspectors shall base the results of an inspection only on the work that is directly observed and verified."
- Discussions have been held with QC inspectors to emphasize that they are to review the manner in which holdpoint acceptance criteria are specified for the work they are inspecting and, if not satisfactory, to pursue resolution of their concerns with appropriate personnel.
  - An evaluation will be conducted to determine if the existing training program is satisfactory.

Schedule: To be completed in June, 1988.

ATTACHMENT A (CONTINUED)

5. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

- 5.1 Full compliance for Unit 1 was achieved on October 5, 1987 when the unit was no longer in a mode applicable to Technical Specification 3.7.1.2.
- 5.2 Full compliance for Unit 2 was achieved on November 29, 1987 when the limit switches were reset and the appropriate retest was completed satisfactorily.
- 5.3 Corrective action milestones to avoid further violations are delineated in Section 4.

ATTACHMENT B

- B. Technical Specification 6.5.2.3 requires in part that proposed modifications to the unit's nuclear safety-related systems and components be reviewed by an individual/group other than the individual/group which designed the modification, and that the modification be approved by the Plant Manager or by the Manager Technical Support prior to implementation.

Contrary to the above, during September, October and November, 1987, the turbine driven auxiliary feedwater pump steam supply isolation valves (SGAUV0134 and SGAUV0138) at both Units 1 and 2 were modified without the modification being reviewed by an individual/group other than the individual/group which designed the modification, and without prior approval by the Plant Manager or the Manager Technical Support.

1. ADMISSION OR DENIAL OF THE ALLEGED VIOLATION

ANPP admits this violation occurred as stated.

2. REASON FOR VIOLATION

2.1 Refer to Attachment A, Section 2.

ATTACHMENT B (CONTINUED)

3. CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED

Procedures have been revised to include proposed modifications to Limitorque operators as design changes. In addition, the Limitorque switch settings have been incorporated into the design basis.

The corrective actions have been effective in reestablishing the correct review and approval process in accordance with Technical Specification 6.5.3.1.

4. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

Corrective actions are delineated in Attachment A, Section 4.

5. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Compliance was achieved on April 8, 1988 with the new procedure change.



ATTACHMENT C

- C. 10 CFR Part 50, Appendix B, Criterion XI, Test Control, as implemented by the licensee's Quality Assurance Manual, Criterion 11 and the Palo Verde Final Safety Analysis Report, Section 17.2.11, requires in part that the licensee's test program assure that required testing be identified and performed to demonstrate that systems will perform satisfactorily in service following modifications.

Contrary to the above, testing in September, October and November 1987, of the auxiliary feedwater systems for both Units 1 and 2, following modifications made to the turbine driven pump steam supply isolation valves (SGAUV0134 and SGAUV0138), did not include an integrated test of the pumps and their associated steam supply isolation valves.

1. ADMISSION OR DENIAL OF THE ALLEGED VIOLATION

1.1 This violation was identified by ANPP during an investigation initiated in December, 1987 and reported on Special Plant Event Evaluation Report 87-02-019.

1.2 ANPP admits the violation as stated.

2. REASON FOR VIOLATION

2.1 Refer to Attachment A, Section 2.

ATTACHMENT C (CONTINUED)

3. CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED

Upon discovery of the discrepant valves, ANPP initiated actions to correct the limit switch problem including appropriate system retest determination. As restoration of each of the identified valves occurred, appropriate retest was performed to verify operability of the valves and the systems.

The corrective actions taken were effective in demonstrating the auxiliary feedwater system would perform satisfactorily in service and met the requirements of 10CFR50 Appendix B, Criterion XI and the Quality Assurance Manual Criterion II.

4. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

4.1 Refer to Attachment A, Section 4.

5. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

5.1 Full compliance was achieved in Unit 1 on January 6, 1988, upon completion of work and appropriate retest.

5.2 Full compliance was achieved in Unit 2 on November 29, 1987, upon completion of appropriate retest.

ATTACHMENT D

- D. 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, requires in part that instructions and procedures shall include appropriate quantitative acceptance criteria to assure the satisfactory accomplishment of important activities.

Contrary to the above, the instructions contained in the work orders for adjusting the limit switches in the turbine driven auxiliary feedwater pump steam supply isolation valves (SGAUV0134 and SGAUV0138) during September, October, and November, 1987, on both Units 1 and 2, did not contain appropriate quantitative acceptance criteria for verifying the settings of the limit switches.

1. ADMISSION OR DENIAL OF THE ALLEGED VIOLATION

1.1 ANPP admits this violation occurred as stated.

2. REASON FOR VIOLATION

2.1 Refer to Attachment A, Section 2.

3. CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED

Instructions for work order review by Quality Engineering have been revised to ensure that quantitative/qualitative acceptance



ATTACHMENT D

criteria are either provided in the work step or clearly referenced in the work step. In addition, the event has been reviewed with Quality Engineers performing work order reviews reemphasizing the need for clearly identified and documented acceptance criteria.

4. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

4.1 Refer to Attachment A, Section 4.

5. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on March 9, 1988, when a departmental procedure change that ensured quantitative/qualitative acceptance criteria are provided or referenced, was implemented.



ATTACHMENT E

VIOLATION

II.A. Technical Specification 3.5.3 provides that when the unit is in mode 4, there shall be operable a minimum of one Emergency Core Cooling System (ECCS) subsystem comprised of a High Pressure Safety Injection (HPSI) pump and flow path. Technical Specification 3.0.4 requires that the conditions of Limiting Conditions of Operation be met without reliance on the provisions contained in the action requirements when entering into an operational mode.

Contrary to the above, on February 29, 1988, Unit 1 entered mode 4 and operated for approximately one hour and twenty-five minutes without an operable HPSI pump.

1. ADMISSION OR DENIAL OF THE VIOLATION

1.1 ANPP identified this violation on February 29, 1988 and reported it to the NRC in Licensee Event Report (88-004-00).

1.2 ANPP admits the violation occurred as stated.

2. REASON FOR VIOLATION

An investigation into the root cause of the event identified that the HPSI UC control power fuses had been removed to satisfy a procedure step to prevent an inadvertent HPSI actuation during the planned reactor

ATTACHMENT E (CONTINUED)

shutdown and while in Mode 5. A review of the procedures found that placing the HPSI pump breakers in an inoperable status was specifically required, however, restoration was not addressed in the procedure used during startup. An evaluation of the operators' actions prior to and during the event concluded that they adhered to the existing procedural controls. Based upon the results of the investigation it was concluded that the root cause of the event was a deficiency in an approved procedure.

During the course of the investigation the following contributory causes were identified. The deficiency in the applicable procedure had been previously identified and a procedure feedback form was submitted for evaluation and initiation of the appropriate procedure revisions. The request was inappropriately evaluated as not requiring expeditious review/processing and was treated as a routine request until after the investigation.

Additionally, the Technical Specification Component Condition Records (TSCCR) program, which is utilized as an aid to control room personnel in determining equipment status, did not provide sufficient guidance to ensure its consistent application. That is, there were no specific procedural controls established to ensure that TSCCR's were consistently used where necessary. A final contributory cause involves personnel awareness of inoperable safety equipment as statused by the Safety Equipment Status System (SESS). SESS panel and main control board (MCBD)





ATTACHMENT E (CONTINUED)

indications are required to be reviewed during shift turnover. Prior to this event, personnel completed the shift turnover and reviewed the SESS panel and control board to determine equipment status. However, personnel did not maintain an adequate awareness of the status of the SESS equipment prior to changing modes.

3. CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED

As immediate corrective action the High Pressure Safety Injection (HPSI) trains were declared inoperable and the Limiting Condition for Operation (LCO) 3.5.3 was entered. Subsequent investigation by control room personnel identified that the HPSI breaker control power fuses had been removed. The fuses were replaced and the HPSI pumps were declared operable exiting the LCO.

These corrective actions resulted in restoration of the HPSI trains to an operable status in accordance with Technical Specification 3.5.3.

4. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

The following corrective actions are planned or in progress to preclude further violations:

ATTACHMENT E (CONTINUED)

- a) A procedure change has been implemented for 410P-1ZZ01 (Cold Shutdown to Hot Standby Mode 5 to Mode 3) in all three units which specifically requires restoration of the HPSI pumps prior to Mode 4 entry. Additionally, other similar procedures are being reviewed to ensure that equipment disabled during a plant evolution is restored as required, when required.
- b) Procedural controls for the issuance and control of TSCCR's have been developed and implemented.
- c) A review of open procedure feedback forms was conducted to ensure each was properly prioritized.
- d) Procedural controls are being developed and implemented to prescribe the control and use of the procedure feedback forms. These controls will include a formal system for prioritization. As an interim measure, a supervisory review will be required on the procedure feedback forms to verify validity and proper prioritization.
- e) Procedural controls are being established to ensure that control room personnel verify the status of safety equipment monitored by SESS prior to a mode change.



ATTACHMENT E (CONTINUED)

- f) Training on the control and use of the new procedures and procedure changes has and will be conducted to ensure understanding of the new requirements.

5. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance with corrective steps described in section 4 above is expected to be achieved by August 1, 1988. Instructions concerning the procedural changes will be conducted as the revisions are issued.

ATTACHMENT F

VIOLATION

- B. Technical Specification 3.7.1.2, requires that at least three independent steam generator auxiliary feedwater pumps shall be operable in modes 1, 2, and 3; in mode 4 the pumps shall be operable until the steam generators are no longer required for heat removal. The action statement of technical specification 3.7.1.2 further requires that with one auxiliary feedwater pump inoperable, the inoperable pump shall be restored to an operable status within 72 hours or the unit shall be placed in hot standby within the next 6 hours and in hot shutdown within the following 6 hours.

Contrary to the above, Unit 2 operated in modes 1, 2 and 3 from February 8 to February 20, 1988, with less than three independent steam generator auxiliary feedwater pumps operable due to the discharge valve on pump AFN-P01 being closed.

1. ADMISSION OR DENIAL OF ALLEGED VIOLATION

- 1.1. ANPP identified this violation on February 20, 1988, and reported in to the NRC in Licensee Event Report (88-004-00).

- 1.2 ANPP admits this violation occurred as stated.

ATTACHMENT F (CONTINUED)

2. REASON FOR VIOLATION

The root cause of this event was determined to be cognitive personnel errors on the part of the operators who did not properly perform and verify the valve lineup in accordance with approved procedures.

The individuals involved were interviewed to determine why the lineup and verification were not properly performed. During this process two contributing factors were identified. The first was the method the individual used to verify the valve position. He attempted to open the valve and was unable to move the handwheel. He then incorrectly assumed that the valve was fully opened. Through discussions with other operators it was verified that this valve's operation is difficult. The second was the configuration of the valve position indicating rod. The rod is attached to the valve stem in such a manner that when the valve is fully open it will extend beyond the housing approximately 12 to 15 inches. When the valve is fully closed it will remain extended approximately 6 to 8 inches. Therefore, when visually verified the extended rod (6 to 8 inches) could provide an incorrect confirmation that the valve was open.

ATTACHMENT F (CONTINUED)

3. CORRECTIVE STEPS WHICH HAVE BEEN TAKEN AND RESULTS ACHIEVED

The immediate corrective action was to properly align the system and restore feedwater flow. This corrective action resulted in satisfying Technical Specification 3.7.1.2.

4. CORRECTIVE ACTION WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

To address the identified root cause, the Unit 2 Operations Manager conducted a meeting with the unit Shift Supervisors to discuss the event and necessary corrective actions. The Shift Supervisors were directed to discuss the details of the event with their individual crews.

Additionally, appropriate disciplinary actions were taken. Actions taken to address the identified contributory causes included the initiation of an Engineering Evaluation Request (EER) to modify the valve position indicator and to conduct an evaluation to determine if other installed indicators could provide incorrect confirmation of a valve's position in all three units. Additionally, the methodology of proper valve position verification will be reemphasized in auxiliary operator training and the event will be reviewed by the operators in each unit.

5. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

ANPP expects full compliance to be achieved by July 1, 1988.



ATTACHMENT G

VIOLATION

- C. Technical Specification 6.8.1 states, in part, that the licensee shall establish, maintain and implement written procedures covering activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2 (February 1978).

Regulatory Guide 1.33, Revision 2, Appendix A, Section 2j, refers to a procedure for changing plant modes from Hot Standby to Cold Shutdown. Procedure 420P-2ZZ10, Revision 2 "Hot Standby to Cold Shutdown Mode 3 to Mode 5", step 4.3.114.2, requires that the licensee bypass all four channels of pressurizer low pressure protection when the reactor coolant system temperature drops below 200 degrees F and that the step be initialed when completed.

10 CFR 50.9(a) requires, in part, that information required to be maintained by licensees be complete and accurate in all respects.

Contrary to the above, on February 21, 1988, with the Unit 2 reactor coolant system temperature below 200 degrees F, only one of the four channels of pressurizer low pressure protection was bypassed, and step 4.3.114.2 was initialed as having been completed.

ATTACHMENT G (CONTINUED)

1. ADMISSION OR DENIAL OF THE ALLEGED VIOLATION

1.1 ANPP identified this violation on February 21, 1988, and reported it to the NRC in Licensee Event Report (88-005-00).

1.2 ANPP admits this violation occurred as stated.

2. REASON FOR VIOLATION

The root cause of this event has been determined to be a personnel error. The personnel error was a result of the pressurizer low pressure trips being documented as being placed in bypass when only channel "C" was in bypass. Investigation revealed that personnel observed the bypass indication for channel "C" and incorrectly concluded that all four low pressurizer trip channels had been bypassed. The requirement for bypassing the four low pressurizer trip channels was then documented as being complete. This failure to properly bypass pressurizer low pressure caused a Safety Injection Actuation Signal (SIAS)/Containment Isolation Actuation Signal (CIAS) during depressurization.

3. CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED

Following the SIAS/CIAS, control room personnel responded to the event in accordance with approved procedural controls and determined that the SIAS/CIAS was inadvertent. The actuated equipment was then restored to normal configuration for Mode 5 operations, and the event was terminated.



ATTACHMENT G (CONTINUED)

4. CORRECTIVE STEPS TO AVOID FURTHER VIOLATIONS

As corrective action to prevent recurrence, appropriate disciplinary measures have been initiated. Also, this event will be reviewed by control room personnel in all three units as additional training. The results of the investigation did not identify any contributory causes, therefore, ANPP believes the corrective actions described should be sufficient to prevent recurrence.

5. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

This event has been reviewed with Operations personnel and is included in the crew cycle upgrade program. Thus full compliance is expected by May 20, 1988.