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102-01527-WFC/TDS/TRB

November 21, 1989

WILLIAM F. CONWAY
EXECUTIVE VICE PRESIDENT
NUCLEAR

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Reference: Letter from A. E. Chaffee, Deputy Director, Division of Reactor Safety and Projects, NRC to W. F. Conway, Executive Vice President Nuclear, Arizona Public Service, dated October 25, 1989

Dear Sir:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket No. STN 50-528 (License No. NPF-41)
STN 50-529 (License No. NPF-51)
STN 50-530 (License No. NPF-74)
Reply to Notice of Violation - 50-528/89-36-01, 530/89-36-03,
529/89-36-01, and 530/89-36-01
File: 89-070-026

This letter is provided in response to the inspection conducted by Messrs. D. Coe, T. Polich, J. Ringwald, P. Qualls and C. Myers from August 7 through September 10, 1989. Based upon the results of the inspection, four (4) violations of NRC requirements were identified. The violations are discussed in Appendix A of the referenced letter. A restatement of the violations and PVNGS's responses are provided in Appendix A and Attachment 1 respectively, to this letter.

The referenced letter expresses concerns with regard to alignment of Emergency Diesel Generator air start system valves, review of NRC Information Notices, and misalignment of valves associated with the spent fuel pool at Unit 1. These concerns, along with the status of Licensee Event Report supplemental reports discussed in paragraph 23 of the inspection report, are addressed in Attachment 2 to this letter. Should you have any questions regarding this response, please contact me.

Very truly yours,



WFC/TDS/TRB/kj

Attachments

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Page 2

102-01527-WFC/TDS/TRB
November 21, 1989

cc: J. B. Martin
T. J. Polich
T. L. Chan
M. J. Davis
E. E. Van Brunt
A. C. Gehr
J. R. Newman

APPENDIX A

NOTICE OF VIOLATION

Arizona Nuclear Power Project
Palo Verde Units 1, 2, and 3

Document Numbers 50-528, 50-529, and 50-530
License Numbers NPF-41, NPF-51 and NPF-74

During an NRC inspection conducted on August 7 through September 10, 1989, four violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR 2, Appendix C (1989), the violations are listed below:

- A. Technical Specification 6.8.1 states in part: "Written procedures shall be established, implemented, and maintained covering ... the recommendations in Appendix A of Regulatory Guide 1.33, Revision 2, February, 1978 ..." (RG 1.33)

1. RG 1.33 recommends administrative procedures for "Authorities and Responsibilities for Safe Operation and Shutdown". RG 1.33 is implemented, in part, by ANPP Night Orders, which on May 25, 1989, in Unit 1 read, in part: "When any evolution is planned, sufficient valves which encompass the desired flow path must be actually verified to ensure that the water flows only from/through/to the desired portions of the system." This Night Order was written as corrective action for a Spent Fuel Pool valve misalignment event which occurred at Unit 3 on May 22, 1989.

Contrary to the above, on August 2, 1989, in Unit 1 during a planned evolution, valve PCN-V004, which encompassed the desired flow path, was not verified shut, thereby causing an unintended flow path which resulted in lowering Spent Fuel Pool level to less than the Technical Specification minimum required level.

2. RG 1.33 recommends administrative procedures for "Authorities and Responsibilities for Safe Operation and Shutdown". RG 1.33 is implemented, in part, by ANPP procedure 40AC-90P02, "Conduct of Shift Operations", Section 3.3.2.2.1 which states, in part, "... A step may be resequenced if it is independent of a step which is being delayed ...".

Contrary to the above, on August 19, 1989, in Unit 3, procedure 430P-3SI02 Step 6.3.6 was resequenced prior to Step 6.3.4, and was not independent of Step 6.3.4 in that it resulted in a temporary loss of control of Reactor Coolant System (RCS) level including spillage of RCS into the refueling cavity.

APPENDIX A

(CONTINUED)

- B. 10 CFR Part 50, Appendix B, Criterion III, Design Control, states in part: "Measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in 50.2 and as specified in the licensee application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions."

Contrary to the above, licensee design calculation 13-MC-ZZ-704, sheet 7, dated February 18, 1987, required that Emergency Diesel Generator (EDG) Excess Flow Check Valve (XCV) isolation valves be kept normally closed. On June 1, 1989, XCV isolation valves were open in all three units due to the licensee's failure to include the requirement in the applicable procedure.

This is a Severity Level IV Violation applicable to Units 1, 2, and 3 (Supplement I).

- C. 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, states in part: "In the case of significant conditions adverse to quality, the (corrective) measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

Interim corrective action contained in Engineering Evaluation Report (EER) 86-XM-046, and dated July 27, 1989, regarding a discrepancy with the alignment of Emergency Diesel Generator (EDG) starting air valves, as cited in paragraph B above, required that EDG excess flow check valve (XCV) isolation valves be kept normally closed.

Contrary to the above, on September 6, 1989, the Unit 3 EDG XCV isolation valves were open on both operable EDGs.

This is a Severity Level IV Violation applicable to Unit 3 (Supplement I).

ATTACHMENT 1

REPLY TO NOTICE OF VIOLATION 50-528/89-36-01

AND 50-530/89-36-03

A.1.I. APS denies the violation.

REASON FOR DENIAL OF VIOLATION

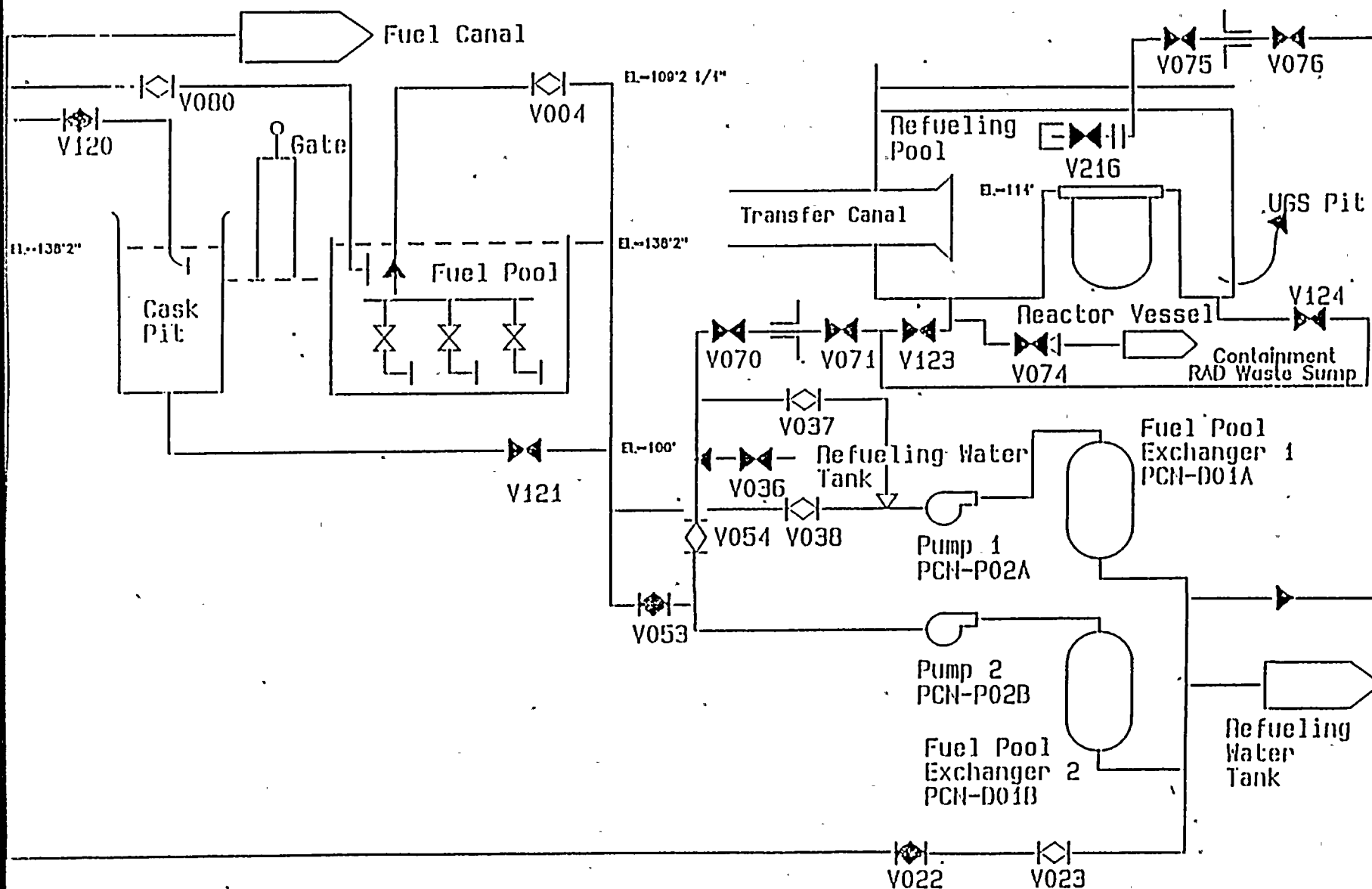
On August 2, 1989, Unit 1 operations personnel received a request to raise level in the Refueling Pool Transfer Canal (RPTC) to accommodate cleanup operations. The normal source of water to accomplish this task is the Refueling Water Tank (RWT) however, this source of water was unavailable due to corrective maintenance. The Shift Supervisor made the decision to gravity drain water from the Cask Pit to the RPTC, an evolution for which a procedure did not exist.

In accordance with 40AC-90P02, "Conduct of Shift Operations" and Departmental Instruction (DI)-17, "Systems Status Control" a temporary valve lineup was developed, and then reviewed and approved by the Assistant Shift Supervisor. The evolution was discussed in a tailboard meeting with a licensed reactor operator (assigned to coordinate the evolution) and two (2) Auxiliary Operators (AOs). One (1) AO was assigned to the Containment Building and one (1) AO was assigned to the Fuel Building.

The flow path specified by the temporary valve lineup was from the Cask Pit through valves V121 (the controlling valve), V053, V054, V070, V071 and V123 into the Refueling Pool Transfer Canal (see attached simplified drawing). Note that valve V004 was not a part of the temporary lineup or the intended flow path.

The AOs were directed to position their respective valves in the required configuration with explicit instructions that valve V121 (the controlling valve) would be opened only when the containment valve lineup had been verified complete. At the completion of the valve lineup (with the exception of V121), the AO in the Fuel Building proceeded to the 100' level to await direction to open V121. The operators were unaware at this point that due to differences in elevation, an inadvertent gravity flow path had been established between the SFP and RPTC via the normally open SFP suction valve, V004.

Upon receipt of a "Fuel Pool and Refueling Pool Status Trouble" alarm and confirmation of an actual "LO-LO" level alarm locally in the Fuel Building, the AO was directed to shut valves V053 and V004. Upon closure of V053, the gravity drain flow was stopped. The level in the SFP was raised to the Technical Specification minimum level and the event was terminated.



Simplified FUEL POOL CLEANUP SYSTEM

An investigation into the event was conducted by Operations and a Special Investigation was conducted by the Independent Safety Engineering Department (ISE). The results of the investigations show the following.

Each valve within the planned flow path for the temporary valve lineup for the gravity drain evolution was actually verified in its correct position as required by the Night Order issued on May 25, 1989. As noted, valve V004 was intentionally not part of the valve lineup nor was it part of the desired flow path and was intentionally left open. Accordingly, the event did not involve violation of the Night Order which is the basis for the Notice of Violation. Nevertheless, the event should not have occurred and is of concern to APS management. The contributory causes to this event have been determined to be:

1. The failure by the Shift Supervisor to adequately consider all the potential gravity drain paths when planning the temporary lineup, specifically, path V004 through V053.
2. The independent review by the Assistant Shift Supervisor also failed to identify valve V004 as a potential gravity drain path.
3. The failure by the operators to monitor Spent Fuel Pool level

remotely prior to initiating the valve lineup.

4. Operating procedures did not provide guidance for the path selected by operations personnel or an alternate makeup path to the RPTC when the primary source, the Refueling Water Tank, is unavailable.

Based on the above, APS has determined the root cause of this event was that management did not ensure adequate proceduralized guidance in place to control the multiple flow paths in the Spent Fuel Pool Cleanup System for various types of evolutions.

A.1.II

CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

The Operations report of this event was provided to each Unit 1 Shift Supervisor and to the Unit 2 and 3 Operations Managers for dissemination to their shift supervisors.

A briefing plan which addresses the contributory causes has been developed for presentation by the Shift Supervisor of each Unit Operating crew which includes the following:

1. A description of the relative elevations between the spent fuel pool normal level, piping which extends below the spent fuel pool normal level, and their isolation valves illustrating where gravity flow is possible.

2. A summary description of this event:
3. An outline methodology for the sequence of conducting system alignments which emphasizes:
 - a. Identification of key parameters to be monitored during the alignment which would provide indications of undesired consequences and successful results.
 - b. Identification of expected conditions which could cause undesirable effects while changing the position of valves to the desired alignment.
 - c. Verification of desired position of all valves in branch paths as well as the desired flow path.

As a result of the Unit 3 event on May 22, 1989, referenced in the Notice of Violation, Palo Verde management committed to review our system status control requirements from a broad perspective. The review has been completed and the results are discussed in Attachment 2.

A.1.III CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

Operations Procedure 4xOP-xPC01, "Fuel Pool Cooling and Cleanup" is

being revised as separate procedures, each addressing a different mode of operation of the system which is normally used during refueling and power operation. These changes will provide better system control and more easily understood directions.

A.1.IV DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

The briefing plan has been presented to each operating crew in Unit 1. Each operating crew in Units 2 and 3 are scheduled to be briefed by January 15, 1990.

Operations Procedure 4xOP-xPC01 is scheduled to be approved by January 10, 1990.

ATTACHMENT 1

(CONTINUED)

REPLY TO NOTICE OF VIOLATION 50-530/89-36-03

A.2.I REASON FOR VIOLATION

In preparation for the pending Reactor Coolant System (RCS) fill and vent, direction was given by the Shift Supervisor to the Control Room staff to remove the containment spray pumps from the shutdown cooling (SDC) lineup and to realign them in their containment spray mode. Procedure 430P-3S102, Section 6.0, was the controlling document which addresses the required manipulations.

The Reactor Operator (RO), assigned to the task, understood what needed to be done and initiated the task. The valve manipulations required both manual and remote valve operations. The RO prepared and gave a DI-17, System Status Control, valve alignment sheet to the area Auxiliary Operator (AO) with instructions to relock the valves per 40AC-00P06. The RO believed adequate instructions were given to the AO. The procedure, however, was not discussed with the AO who also was not aware of the required sequence of valve operation. The AO proceeded to open the containment spray pump suction from the Refueling Water Tank (RWT) prior to closing the SDC suction valves which resulted in a gravity flow path from the RWT to the RCS via the hot legs.

Investigation into this event has determined that the cause was a failure to follow procedure due to inadequate communications between the RO and AO.

A.2.II CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The following actions have been taken in Unit 3 for each shift crew and the specific operators involved:

1. Restressed the importance of precise communications between the operating staff.
2. Counseled the operators involved on communication practices.
3. Discussed the need to identify the valve operating sequence during evolutions.
4. Submitted an Instruction Change Request to add a valve manipulation sequence column to DI-17 alignment sheets.
5. A night order specifying the importance of discussing any sequence requirements associated with all plant evolutions has been issued.

A summary of the event has also been transmitted to the Unit 1 and 2 Operations Managers for dissemination to their operators.

A.2.III CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

APS believes the actions taken above are adequate to prevent recurrence.

A.2.IV DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on August 19, 1989, when the correct valve lineup was implemented.

ATTACHMENT 1

(CONTINUED)

REPLY TO NOTICE OF VIOLATION 50-529/89-36-01

B.I REASON FOR VIOLATION

APS has performed a review of the circumstances surrounding design calculation 13-MC-ZZ-704 and Engineering Evaluation Request (EER) 86-XM-046 and concluded that a mistake did occur although, not specifically the error cited in the violation.

Table 2 on sheet 7 of the calculation presents the time available to an operator to physically inspect each of the excess flow check valve (XCV) installations in each system following an SSE and system actuation, to identify any failed instrument connections and to terminate leakage flows by closing appropriate block valves. The time intervals identified are based on a maximum calculated leak rate and two other assumed leak rates to compare time intervals.

Testing of XCVs in Unit 1 and 2 showed that the highest measured flow rate was 4.5 SCFM for Unit 2 valve DGB-XCV-030A. Based on the actual measured leak rates and the calculation information, APS then translated the results into the applicable procedures (4XAL-XRK7C, Appendix A, Seismic Occurrence) to require the operator to isolate the XCVs within 30 minutes.

However, even though the results of the testing and calculation were included in applicable procedures, a misinterpretation of the design criteria had occurred. The design criteria within the Final Safety Analysis Report (FSAR) states that each air receiver provides enough capacity for five (5) Emergency Diesel Generator (EDG) starts. Two (2) receivers are provided for each EDG however, engineering incorrectly assumed that credit could be taken for the combined capacity of two air receivers to meet the five (5) start design criteria. Based on this assumption, incorrect information was included within the procedure.

Based on the above, the reason for the violation was a misinterpretation of the design requirement.

B.II CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The Nuclear Engineering Manager and Engineering Evaluation Manager have issued memoranda to their engineers emphasizing the necessity of ensuring that:

1. Design criteria are fully understood in dispositioning applicable documents; and
2. Disposition information is correctly included within applicable implementing documents.

Nuclear Engineering is currently performing a comprehensive design basis verification review. This review encompasses a reverification of calculations and assumptions used in the development of operating procedures.

B.III CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

APS believes that the actions being taken above are sufficient to preclude further violations.

B.IV DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved by September 6, 1989, when the XCVs were isolated in Unit 3 (Unit 1 and 2 XCVs had been isolated previously).

ATTACHMENT 1

(CONTINUED)

REPLY TO NOTICE OF VIOLATION 50-530/89-36-01

C.1. REASON FOR VIOLATION

As stated in the subject inspection report, the NRC questioned the appropriateness of the alarm response procedure just prior to restart of Unit 2 in June, 1989. Engineering decided that the conservative action to take would be to isolate the XCVs pending a complete review of calculation 13-MC-ZZ-704. Unit 2 Operations was verbally notified and subsequently issued a night order to accomplish this task. A copy of the night order was given to Units 1 and 3 however, the Unit 3 XCVs remained unisolated.

The cause of the violation has been attributed to inadequate communication by engineering to ensure the required actions were properly documented.

C.II. CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

As immediate corrective action, the XCVs in Unit 3 were isolated in accordance with engineering recommendations.

The Engineering Evaluations Manager has issued a memorandum to all system engineers stating that immediate actions required by disposition (interim

or final) of engineering evaluations shall be formally documented and transmitted in writing.

C.III CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

APS believes that the above action, in combination with the corrective actions taken in response to violation 50-529/89-36-01, are sufficient to preclude recurrence.

C.IV. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on September 6, 1989, when the XCVs in Unit 3 were isolated.

ATTACHMENT 2

1. Alignment of Emergency Diesel Generator (EDG) Air Start Valves

As stated in our response to violation 50-530/89-36-01 contained in Attachment 1, the Engineering Evaluations Manager has directed that dispositions (interim or final) of engineering evaluations shall be formally documented and transmitted in writing to the responsible organization(s).

2. Review of NRC Information Notices

APS acknowledges the importance of the NRC's comments regarding the review and closeout of NRC Information Notices. Actions necessary to address the specific Information Notices discussed in the inspection report will be taken as required by January 30, 1990. On the broader issue of information notice review the following paragraph describes actions which have been or will be taken.

The Manager of Licensing has reviewed the requirements for closing out NRC Information Notices with all Responsible Licensing Engineers (RLE).

Emphasis will be placed on ensuring the RLEs know that not only the immediate concerns of the notice must be addressed but permanent corrective actions must be in place to prevent recurrence of any identified deficiencies. Two contract licensing engineers have been added

to review NRC Notices and Bulletins and reduce the current backlog of items and provide more time for a thorough review of closeout documents. The budget for next year includes one additional Licensing Engineer. The Nuclear Safety and Licensing Division is implementing a new program, 95PR-ONS01 "Operating Experience Review Program", to improve the quality of PVNGS responses to NRC and INPO notices. This program will disseminate NRC Notices and Bulletins to a wider distribution of groups within Arizona Public Service than was previously achieved and will provide an independent review of the responses to notices and bulletins. In addition this program will alert PVNGS groups to INPO sponsored operating experience notifications.

3. Proper Valve Alignments

As stated in our response to Notice of Violation 50-528/89-36-01, Palo Verde management has reviewed its present use of system status prints and has decided to deemphasize the present use of system status prints and reemphasize existing program controls. System configuration will be controlled in a manner more consistent with best industry practice via logs and files maintained in the control room for:

1. Plant Modifications (Temporary Modifications, Site Modifications, etc.);

2. Operating Procedures;
3. Clearances;
4. Technical Specification Component Condition Records (TSCCRs);
5. Material Non Conformance Reports (MNCRs);
6. Locked Valve Controls;
7. Drawings;
8. Special Alignments/Evolutions

This reemphasis of existing formal controls will be accomplished in the short term by changes and integration of parts within the "Conduct of Operations" procedure, "System Status Program" procedure, "System Status Control" procedure, and the "Configuration Management Program" procedure.

In the long term, if necessary, new administrative control procedure(s) will be implemented to define configuration control and replace the present system utilized to maintain system status.

Additionally, the laminated system prints currently used by Operations to maintain status will only be used as a planning tool and to generally indicate clearance information. The status of important components will be determined from control boards utilizing position indications, computer readouts, etc. The status of other components will be determined through system files maintained in the control room or can be determined through field verification.

It is expected that the above actions will result in more positive control of system configuration and status. A schedule is currently being developed to implement the above actions. This schedule will be transmitted to the NRC upon completion.

4. Licensee Event Report (LER) Supplement Submittal

Paragraph 23 of the subject inspection report stated that three (3) LER supplements had not been submitted by the "Expected Submission Date" (block 14 of NRC Form 366). The three (3) LER supplements discussed in paragraph 23 (528/89-02 and 07 and 530/89-01) were submitted on September 19, October 6, and September 21, 1989, respectively.

As stated in our response to Notice of Deviation 50-528/89-32-01, dated October 27, 1989, APS has utilized NUREG 1022 as the basis for interpreting NRC requirements for submittal of LERs. Question 25.8 in NUREG 1022, Supplement 1, addressed the requirement of "Expected Submission Date" however, APS recognized the Region V interpretation of this requirement and now treats dates given for submittal of supplements to LERs in accordance with this interpretation.

Also, paragraph 23 stated that LER 529/89-03 committed to two (2) Human Performance Evaluations (HPES), but subsequently APS determined that HPES would not be required. The inspector considered that this constituted a substantial change to the corrective action and should be reported in

a supplemental LER.

The decision to not perform HPES was not viewed by APS as a substantial change however, a supplemental report will be issued to document this change by December 15, 1989.