



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064
December 21, 1998

EA 98-382

James M. Levine, Senior Vice
President, Nuclear
Arizona Public Service Company
P.O. Box 53999
Phoenix, Arizona 85072-3999

SUBJECT: NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY -
\$55,000 (NRC Inspection Report No. 50-528/98-14; 50-529/98-14;
50-530/98-14)

Dear Mr. Levine:

This refers to the special inspection conducted on May 26 through July 21, 1998, at the Palo Verde Nuclear Generating Station reactor facility operated by Arizona Public Service Company. The inspection was conducted in response to the identification of excessive reverse flow through pump discharge check valves in the high-pressure safety injection (HPSI) systems (10 CFR 50.72 immediate notifications on May 14 and 15, 1998, and Licensee Event Report 50-528/98006 and Supplement 1). NRC Inspection Report 50-528/98-14; 50-529/98-14; 50-530/98-14, issued August 28, 1998, described the results of that inspection and apparent violations of NRC requirements. A predecisional enforcement conference to discuss the apparent violations was held in the NRC's Arlington, Texas office on September 14, 1998.

Based on the information developed during the inspection and the information that you provided during the conference and in letters dated September 29 and October 9, 1998, the NRC has determined that violations of NRC requirements occurred. These violations are cited in the enclosed Notice of Violation and Proposed Imposition of Civil Penalty. The circumstances surrounding the violations were described in detail in the subject inspection report.

In brief, the violations involve three main issues: (1) failures to adhere to technical specification limiting conditions for operation when ECCS subsystems were inoperable; (2) a failure to identify and correct significant conditions adverse to quality despite numerous indicators; and (3) inadequate procedures which caused the problems and prevented timely identification of the significant conditions adverse to quality.

The NRC considers the potential safety consequences associated with these violations to be significant. During a design basis accident where the pump associated with the incorrectly assembled check valve failed to start, the reverse flow through the valve would have significantly reduced safety injection flow to the core. This condition existed for approximately 6 years in Unit 1, 5 years in Unit 2, and 1½ years in Unit 3. In addition, the potential for excessive reverse flow also existed during time periods when the pump associated with the incorrectly assembled check valves was taken out of service for maintenance.

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The degraded performance capability of the HPSI system for certain accident conditions would have resulted in a decrease in flow to the reactor vessel significantly below the flow assumed in the safety analysis. Your staff conducted extensive analyses and concluded that no core damage would have occurred during a loss-of-coolant accident. However, the method used to reach this conclusion had not been reviewed or approved by the NRC, and did not conform to the analysis described in the Final Safety Analysis Report (FSAR), which has been reviewed and approved by the NRC. At the predecisional enforcement conference, your staff acknowledged that, using the method described in the FSAR, peak fuel cladding temperature would have exceeded 2,200°F during a loss-of-cooling accident. This issue was also significant due to the length of time that the condition existed in each unit and because the condition could have resulted in a common-mode failure of the HPSI system.

For the reasons discussed above, these violations are classified in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy) NUREG-1600, as a Severity Level III problem. In accordance with the Enforcement Policy, a base civil penalty in the amount of \$55,000 is considered for a Severity Level III problem. Because your facility has been the subject of escalated enforcement actions within the last 2 years¹, the NRC considered whether credit was warranted for *Identification and Corrective Action* in accordance with the civil penalty assessment process in Section VI.B.2 of the Enforcement Policy. Although the performance of a surveillance test led to the discovery of this problem, the NRC concludes that the problem was identified as a result of an event in which the misassembly of Valve 1PSIA-V404 caused the shutdown cooling heat exchanger outlet relief valve to lift and discharge at a rate of approximately 120 gpm to the equipment drain tank.

In accordance with Enforcement Policy guidance for event-revealed violations, the NRC considered the ease of discovery, whether the event occurred as the result of a self-monitoring effort, the degree of initiative in identifying the problem, and whether prior opportunities existed to identify the problem to determine whether credit was warranted for identification. Any of these considerations may be overriding if particularly noteworthy or particularly egregious.

The NRC has determined that the facility had numerous prior opportunities to identify the problem. Prior to the event, the facility had opportunities to identify the improperly assembled HPSI check valve in Unit 2 which caused an unexpected level decrease in a safety injection tank during two reactor startups conducted in October 1997. However, the decreases were not thoroughly investigated and the startups continued. On August 31, 1989, NRC Information Notice 89-62 alerted licensees that an essential step for the assembly of the subject valves was missing and if not implemented, could result in the disc assembly being suspended too low inside the body of the valve. And finally, during a review of NRC Information Notice 88-60, "Check Valve Inservice Testing Program Deficiencies," the facility identified that its IST program did not require reverse-flow testing of the HPSI pump discharge check valves, and on July 26, 1992, a reverse-flow requirement was added to facility testing procedures. However, appropriate acceptance criteria were not added to this requirement and thus the magnitude of the leakage and the consequences caused by vertically misaligned check valves in all three

¹ The NRC issued a Severity Level III problem with a \$50,000 civil penalty on July 10, 1998, (EA 98-131) for violations involving falsification of records in 1993.



units was not identified. The NRC concludes that the multiple prior opportunities to identify the problem were overriding and that credit for identification is not warranted.

The NRC has determined that, on the whole, your immediate corrective actions taken were sufficient to restore compliance with the regulations and the long term action taken should prevent recurrence of this issue. Specifically, you corrected the misassembled valves in Units 1 and 2, tested both trains of valves in all three units, revised the maintenance procedures governing the subject valves, revised the surveillance test to add acceptance criteria for reverse flow through the valves, and reviewed the IST check valve program to ensure that this condition did not affect other valves at the facility. Therefore, the NRC has determined that credit for corrective actions is warranted.

Accordingly, to emphasize the importance of ECCS subsystem operability, prompt identification and comprehensive correction of significant conditions adverse to quality, and appropriate acceptance criteria and procedures, I have been authorized, after consultation with the Director, Office of Enforcement, to issue the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice) in the base amount of \$55,000 for the Severity Level III problem described above and in the Notice.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

As the result of the information provided at the September 14, 1998, predecisional enforcement conference and our subsequent deliberations, the following modifications were made to the apparent violations described in the NRC inspection report and discussed at the conference. These apparent violations were also handed out at the conference, and listed in Enclosure 3 to our letter dated September 23, 1998. In addition, some editorial changes were made for clarification:

- (1) Apparent Violations 1 and 2, involving failure to meet the requirements of Technical Specification 3.5.2 to have an operable HPSI system flowpath, have been combined as Violation A in the enclosed Notice. An additional example of the violation was included, as you identified in Licensee Event Report 50-528/98006, Revision 1, for Unit 3.
- (2) Apparent Violation 2.a., involving failure to meet the 1-hour requirement of Technical Specification 3.0.3 to make preparations to perform an orderly shutdown on May 13, 1998, has been withdrawn on the basis of your position that Operations personnel considered Valve 1PSIA-V404 operable because previous surveillance testing data was considered to provide reasonable assurance that the valve would function. The circumstances surrounding this issue revealed communication weaknesses between the operations and engineering organizations and could have, under different circumstances, resulted in a situation in which the requirements of your Technical Specifications would not have been satisfied. However, in this particular situation, we agree with your position that a violation did not occur.
- (3) Apparent Violation 3, involving failure to implement the requirements of Technical Specification 6.8.1 to make an entry in the Control Room Log following abnormal

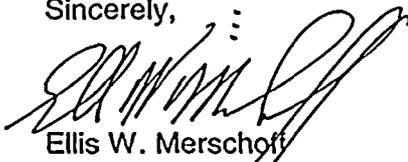


decreases in safety injection tank level on October 10 and 28, 1997, is not being cited. We consider this to be another example of the violation previously cited in NRC Inspection Report 50-528/98-11; 50-529/98-11; 50-530/98-11. As discussed during the predecisional enforcement conference and documented in your presentation materials, you are continuing to implement corrective actions to preclude recurrence of these violations, and your corrective actions should be comprehensive enough to correct the example identified here. Accordingly, no additional violation is cited.

- (4) Apparent Violations 4.d and 4.e have been revised to be cited as examples of inadequate procedures under 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," rather than examples of inadequate corrective actions under Criterion XVI, "Corrective Action."

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be placed in the NRC Public Document Room.

Sincerely,



Ellis W. Merschoff
Regional Administrator

Docket Nos.: 50-528; 50-529; 50-530
License Nos.: NPF-41; NPF-51; NPF-74

Enclosures:

1. Notice of Violation and Proposed Imposition of Civil Penalty
2. NUREG/BR-0254 Payment Methods (Licensee only)

cc w/Enclosures:
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