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102-01264-WFC/TDS/JJN
May 19, 1989

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Reference: Letter from R. P. Zimmerman, Acting Director, Division of Reactor Safety and Projects, U. S. Nuclear Regulatory Commission to Arizona Nuclear Power Project, Attn. D. B. Karner, Executive Vice President, dated April 19, 1989.

Dear Sir:

Subject: Palo Verde Nuclear Generating Station
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 a Notice of Violations - 529/89-06-01, 529/89-06-03, 530/89-06-01
File: 89-070-026

This letter is provided in response to the inspection conducted by Messrs. T. Polich, D. Coe and G. Fiorelli on January 28 through March 19, 1989. Based upon the results of this inspection a violation of NRC requirements was identified. The violation is discussed in Appendix A of the referenced letter. A restatement of the violations and PVNGS's responses are provided in Appendix A and Attachments 1, 2, and 3, respectively, to this letter.

Very truly yours,

W. F. Conway
Executive Vice President
Nuclear

WFC/TDS/JJN/kj

Attachment

cc: J. B. Martin
M. J. Davis
T. L. Chan
T. J. Polich
A. C. Gehr

IE01
1/1

APPENDIX A

NOTICE OF VIOLATION

Arizona Nuclear Power Project
Palo Verde Unit 2

During an NRC inspection conducted on January 28, through March 19, 1989, two 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 (1987), the violations are listed below:

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..."

Regulatory Guide 1.33, Revision 2, February, 1978, requires "Power Operation and Process Monitoring" procedures under paragraph 2 "General Plant Operating Procedures."

Regulatory Guide 1.33, Revision 2, February, 1978 is implemented, in part, by ANPP procedure 420P-2ZZ05, Revision 5, "Power Operations", which states in Appendix G, "Guidelines for Feedwater Control Failures," that "If it is deemed necessary to take manual control of an individual station the operator must be aware that automatic actions will not occur if the unit trips and if a trip occurs the controller should be returned to auto and the operator must verify the economizer goes closed."

Contrary to the above, on February 16, 1989, a Unit 2 licensed Control Room Operator placed No. 1 steam generator economizer flow control in manual during a Feedwater Control System (FWCS) failure, and following the subsequent reactor trip failed to return the controller to automatic and to ensure the economizer feedwater control valve went closed.

This is a Severity Level IV Violation.

2. Regulatory Guide 1.33, Revision 2, February, 1978, recommends "Radiation Protection Procedures" for "Contamination Control".

Regulatory Guide 1.33, Revision 2, February, 1978, is implemented, in part, by ANPP procedure 75RP-0ZZ01 Revision 4, "Radiological Posting", which states in paragraph 6.13 that "Areas identified as having radioactive contamination in excess of defined limits shall be posted with standard radiation warning signs with the words "CAUTION" or "DANGER" and "CONTAMINATED AREA" or "HIGH CONTAMINATION AREA" as applicable."

Contrary to the above, on February 15, 1989, the Unit 2 Boric Acid Makeup Pump foundation skids were found to have radioactive contamination levels in excess of the defined limits. The area was not posted with "CONTAMINATED AREA" warning signs.

This is a Severity Level IV Violation.

3. Regulatory Guide 1.33, Revision 2, February, 1978, recommends in Section 9e, "General procedures for the control of maintenance, repair, replacement, and modification work..."

Regulatory Guide 1.33, Revision 2, February, 1978 is implemented, in part, by ANPP procedure 30DP-9WP02, "Work Planning," Revision 1, which states in paragraph 3.6.3 "Nonscope/nonintent changes, additional work instructions, to quality-related work activities recommended by field personnel may be approved by the WGS [Work Group Supervisor] or Planner and shall receive a quality control review for inspection points insertion. All changes of this type shall be documented in the work package."

Contrary to the above, on March 19, 1989, nonscope/nonintent additional work instructions to a quality related work activity implemented under Work Order 335034 were performed without having received a quality control review for inspection point insertion and without documentation in the work package.

This is a Severity Level IV Violation.

ATTACHMENT 1

Reply to NOV 529/89-06-01

I. REASON FOR VIOLATION

On March 18, 1989, APS submitted LER 529/89-03-00 which described the events discussed in the Notice of Violation (NOV) 529/89-06-01. The following discussion provides a description of the events relating to the NOV. Further information on aspects not addressed by the NOV is described in the LER. On February 16, 1989 at approximately 0345 MST, the Control Room received several alarms including the Feedwater Control System (FWCS) Trouble alarms. The Secondary Operator, Shift Supervisor, and Primary Operator positioned themselves at the appropriate Main Control Boards to evaluate the situation. The Secondary Operator, Shift Supervisor, and Primary Operator observed both Steam Generator (S/G) levels decreasing rapidly with level in S/G Number 1 decreasing below Narrow Range (NR) indication. Both master controller outputs were observed to be cycling full scale at one to two second intervals. The main feedwater pumps and S/G number 2 economizer control valve followed the oscillations of the S/G Number 1 FWCS but at a slower rate due to FWCS lead/lag circuits and the physical abilities of the valve's mechanical devices to respond to electronic signals.

Control Room personnel observed that S/G Number 1 levels continued to decrease, the S/G Number 1 economizer valve was fully closed, and the S/G Number 2 economizer valve was 10 percent open. The Secondary

Operator observed that the S/G Number 1 economizer control valve manual/auto controller demand signal was zero and prepared to open the number 1 S/G economizer control valve manually in an attempt to restore S/G number 1 level. The Secondary Operator took manual control of the S/G number 1 economizer control valve and opened the valve to mitigate the underfeed situation that was in progress.

While the Secondary Operator was attempting to manually open the S/G Number 1 economizer control valve, the reactor tripped at approximately 0345 MST. This occurred 27 seconds after the initial secondary disturbance occurred and alarms were received in the Control Room. At the time of the trip, the Secondary Operator had manually inserted an approximately seventeen (17) percent open demand signal to the S/G Number 1 economizer control valve. Three seconds after the trip, the Temporary Data Acquisition System (TDAS) indicated that the S/G Number 1 economizer control valve was seventeen (17) percent open.

Approximately 14 seconds after the reactor trip, an Auxiliary Feedwater Actuation Signal (AFAS) was generated due to "low-low" S/G Number 1 level. The AFAS 1 was a result of S/G level "shrink" from the reactor trip and from excessive main feedwater flow through the economizer control valve and downcomer control valve. The AFAS signal was generated per design and the Auxiliary Feedwater System performed its intended design function.

The Control Room Supervisor directed the Control Room Operators to monitor their plant safety functions. The Secondary Operator began his post trip safety function monitoring actions as required. The Secondary Operator verified proper response of the Auxiliary Feedwater System.

During the monitoring of plant safety functions, the Secondary Operator did not take actions to either restore the economizer control valve controller to auto or to manually close the valve to prevent a Reactor Coolant System (RCS) cooldown. The Shift Supervisor noted that the level in S/G Number 1 was increasing but was unaware that the S/G Number 1 economizer control valve was not closed. When S/G Number 1 level was at approximately 65 percent Wide Range (WR), the Shift Supervisor directed the Secondary Operator to throttle auxiliary feedwater flow to decrease flow to the steam generators.

S/G Number 1 level continued to increase due to the S/G Number 1 economizer control valve being seventeen (17) percent open. The number 1 economizer control valve being in manual defeated the Reactor Trip Override (RTO) automatic controls for the S/G Number 1 economizer control valve and the valve remained open. Normally following a reactor trip, an RTO of the FWCS occurs to provide initial control of the S/G level and limit the RCS cooldown. The RTO logic (which is a non-safety related system) is designed to close the economizer valves, set the Main Feedwater Pump Turbines (MFWPT's) to minimum speed, and control downcomer valves to maintain S/G level. When S/G level

increases above the RTO reset level, FWCS control is transferred to single element control for maintaining S/G level.

As a result of the economizer control valve being in manual, the RTO logic was defeated and excessive feedwater flow to the S/G's occurred. The S/G overfeeding caused a rapid RCS cooldown. At approximately 0345 MST, a Safety Injection Actuation Signal/Containment Isolation Actuation Signal (SIAS/CIAS) was generated due to RCS overcooling.

With the S/G Number 1 economizer control valve still in manual overriding the RTO trip logic, the S/G continued to fill. At approximately 0347 MST, a Main Steam Isolation Signal (MSIS) was received at 91 percent NR in S/G number 1. The MSIS isolated main feedwater flow which terminated the RCS cooldown.

II. CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

Following the reactor trip and SIAS/CIAS, the Secondary Operator realized the overcooling was a result of the economizer control valve being open. Immediately prior to the MSIS, the Secondary Operator placed the economizer control valve in automatic.

With the economizer control valve in automatic, the valve closed as designed. The closed economizer control valve and the MSIS, which isolated main feedwater flow to the S/G, terminated the RCS cooldown.

The crew was removed from shift and completed a self-critique of their actions under the guidance of the Shift Supervisor and Operations Manager. The self-critique involved recreating the event on the simulator and demonstrating acceptable proficiency on the simulator in the following areas:

1) Communication,
2) Team Work,
3) Plant Awareness, and
4) Procedural Compliance.

III. CORRECTIVE ACTIONS TO VOID FURTHER VIOLATIONS

An Operations Plant Guideline has been issued to provide direction for when manual operation of automatic systems is acceptable, desirable, and necessary. This guideline has been integrated into existing simulator exercises to enhance the operator skills under similar conditions.

IV. DATE WHEN FULL COMPLIANCE WAS ACHIEVED

As discussed in Section II, full compliance was achieved on February 16, 1989 when the economizer control valve was placed in automatic and the valve closed.

ATTACHMENT I-I

Reply to NOV 529/89-06-03

I. REASON FOR VIOLATION

On February 9, 1989, Unit 2 personnel commenced a decontamination effort of the Boric Acid Make Up Pump (BAMP) room and pump skids on the 70 foot level in the Auxiliary Building. On February 10, 1989, a Senior Radiation Protection (RP) Technician instructed a Junior RP Technician to perform a post decontamination survey. On February 10, 1989 at approximately 1030 MST, a Junior RP Technician completed a post decontamination survey of the area. The survey of the general floor area of the BAMP room was performed and the RP Technician determined that the area was "clean" (i.e., no contamination greater than 1000 DPM/100 cm^2). The "A" and "B" BAMPs and skid area were not specifically surveyed and were assumed to be still contaminated.

At approximately 1450 MST on February 10, 1989, the Unit 2 Senior Radiation Protection Technician authorized the release of the BAMP room as a "clean" area except for the BAMP's and immediate skid area. The boundary rope and contamination area signs which enclosed the floor area and BAMP's were removed by the Junior RP Technician. However, additional contamination area signs (which were inside the boundary contamination area signs being removed and specifically for the BAMP's and skid area) were improperly removed. Radiological barrier tape did remain on the "A" and "B" BAMP skid.

On February 15, 1989 during a tour of the Unit Auxiliary Building, an NRC Resident Inspector noted that the BAMP skids were enclosed with radiation warning tape, but no specific radiation warning signs were posted to identify the radiological hazard within the taped area. This condition was brought to the attention of the Unit 2 Radiation Protection Manager.

The Unit 2 RP Manager instructed that a survey be immediately performed. On February 15, 1989 at approximately 1230 MST a survey was performed which indicated that contamination areas of 1,000 and 5,000 DPM/100CM^2 existed on BAMP skids "A" and "B" respectively. The BAMP skids were immediately posted properly.

II. CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

As stated above in Section I, a RP Technician performed a survey of the "A" and "B" BAMP's on February 15, 1989 at approximately 1230 MST. The survey determined that these areas required posting as a contamination area. The RP Technician immediately posted the area.

The Unit 2 RP Manager instructed the responsible RP technicians and RP Lead to immediately review the radiological posting procedure.

The Unit 2 RP Manager immediately initiated an RP Night Order requiring that all Unit 2 RP personnel reread the Radiological Posting procedure, read the Radiological Problem Report for this event as a

lessons-learned, and document this accomplishment of these activities fact via a sign-off.

The Unit 2 RP Manager notified the RP Managers for both the Units 1 and 3 of the occurrence and the corrective actions taken.

III. CORRECTIVE ACTION TAKEN TO AVOID FURTHER VIOLATIONS

To ensure that the performance of these individuals continues to be acceptable and in compliance with procedures, the RP Lead will appraise and document their performance. For a four (4) month period, all posting changes (i.e., upgrades, downgrades, and releases of RP postings) will be documented in the RP Shift Log. An RP Lead will visually verify all posting changes within approximately twenty-four (24) hours after the posting change and document by signing a verification statement to that effect in the RP Shift Log. No further posting violations have been identified to date following the implementation of these actions.

APS management is expending considerable management effort to oversee the Health Physics program implementation. As part of the oversight effort, APS will be evaluating the RP posting program. Currently, APS is evaluating improvements in the control of Locked High Radiation Areas. A finalized schedule for the evaluation of the entire RP posting program will be developed by June, 1989.

IV. DATE WHEN FULL COMPLIANCE WAS ACHIEVED

As discussed in Section II, full compliance was achieved on February 15, 1989 when the BAMP's and skid areas were properly posted as a contamination area.

ATTACHMENT III

Reply to Notice of Violation

I. REASON FOR VIOLATION

On day shift, March 19, 1989, Unit 3 management was evaluating midloop operations and discovered that the existing train "B" Reactor Coolant System (RCS) level indicator installation was deficient in that the level would drop below scale if "B" pump was operating. The Work Control Manager and the Operations Supervisor requested that Work Control modify the train "B" RCS refueling water level indication in the tygon tubing to provide an accurate measurement of RCS level when "B" pump was running or idle.

The Shift Supervisor contacted the System Engineer to obtain guidance for enhancing the location of train "B" level tygon tubing. Maintenance personnel had been instructed by Work Control to install a vertical board behind the level indicating tube with level markings from the 100 foot elevation to the 116 foot elevation. The System Engineer advised maintenance personnel that it would be better to install the level indicating backboard from the 100 foot elevation floor to a cable tray at the 109 foot elevation then slant the tubing to the biological shield at the 110 foot elevation. Since the tubing remained connected at both taps and was merely moved horizontally with its level indicating backboard, the System Engineer believed that

enhancing the tygon tubing location was not "work" in accordance with the procedural definition of that term.

The level indicating backboard was moved to support the relocation of the tygon tubing and the Containment Coordinator reported the completion of the task to the Work Control Planning and Scheduling Supervisor. This information was then relayed to the night shift Containment Coordinator at shift turnover.

During shift turnover, the day shift System Engineer informed the night shift System Engineer that the train "B" level tubing needed to be relocated. The System Engineer reviewed the new level indicating backboard installation and determined that the new backboard vertical location was correct. Unit 3 Work Control personnel informed the night shift System Engineer that day shift Work Control personnel had turned over the task of enhancing the train "B" level tubing location and that this was a System Engineer action item to resolve.

At approximately 2300 hours, the night shift System Engineer discussed this matter with the Operations Assistant Shift Supervisor. The location of the backboard and enhancement of the tubing location were also discussed and the Operations Assistant Shift Supervisor concurred with the enhanced location. The Operations Assistant Shift Supervisor informed the System Engineer that the drain down of the RCS had stopped until the train "B" level indication was enhanced.

After leaving the Control Room, the System Engineer met with the Containment Coordinator to relocate the train "B" tygon tubing. The System Engineer notified the Operations Assistant Shift Supervisor of the plans to change the position of the tygon tubing to enhance the indication and requested permission to move the tygon tubing. The Assistant Shift Supervisor gave permission to move the train "B" tygon tubing. The tygon tubing was relocated.

The System Engineer and Containment Coordinator added herculite with 1 foot increments (2 inch subdivisions) to the level indicating backboard and attached the tygon tubing to the board. The System Engineer and the Containment Coordinator verified that the tygon tubing was properly relocated and secured. This verification included a visual examination for proper placement such that no sharp radius bends existed, no entrapped air was visible, and no other adverse conditions existed that would prevent proper RCS level indication.

The enhanced tubing setup was also checked by an Auxiliary Operator and found to be satisfactory. The TV monitor camera was repositioned to cover the area of tubing that was relocated. The System Engineer then left the Containment and went to the Control Room. The System Engineer discussed in detail with the Operations Shift Supervisor what changes had been done to enhance the train "B" level tygon tubing routing. The Operations Shift Supervisor was satisfied with the changes.

On March 20, 1989, after the tygon tubing had been moved, an NRC Resident Inspector identified that the change in the tygon tubing

position had not received a Quality Control review as had been specified by the work order which originally provided instructions for installing the tubing.

The cause of this event was an improper interpretation of activities which constitute work.

II. CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

As a result of the Resident Inspector's concern, Quality Control personnel inspected the location of the tygon tubing and described the configuration to Engineering. Engineering reviewed the final configuration and determined that the position and mounting of the tygon tubing was acceptable.

III. CORRECTIVE ACTIONS TO VOID FURTHER VIOLATIONS

A model work order will be written to provide specific instructions for the installation of RCS level indication tygon tubing. The model work order will contain pre-approved Quality Control inspection points.

The work control procedure will be modified to clarify the definition of what constitutes work/rework with regard to maintaining the validity of QC inspections of a process.

The event will be reviewed by System Engineers, Work Control Planning and Operations personnel (Senior Licensed) for lessons learned.

IV. DATE WHEN FULL COMPLIANCE WAS ACHIEVED

As discussed in Section II, full compliance was achieved on March 20, 1989 when Quality Control personnel inspected the relocation of the tygon tubing.

The model work order for the installation of the tygon tubing will be written prior to any subsequent installations of the RCS level indicating tygon tubing. The modification to the work control procedure discussed above is expected to be completed by July 1, 1989.