

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/89-45, 50-529/89-45, 50-530/89-45

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

License Nos. NPF-41, NPF-51, NPF-74

Licensee: Arizona Nuclear Power Project
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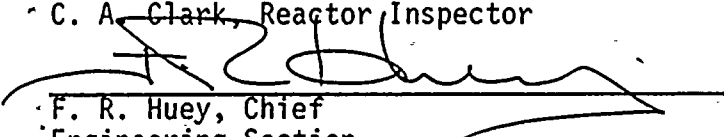
Facility Name: Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2 and 3

Inspection at: Palo Verde Site, Wintersburg, Arizona

Inspection Conducted: September 11 - October 23, 1989

Inspector: C. A. Clark, Reactor Inspector

Approved by:


F. R. Huey, Chief
Engineering Section

11/6/89
Date Signed

Inspection Summary:

Inspection During the Period September 11 - October 23, 1989 (Report Nos. 50-528/89-45, 50-529/89-45, 50-530/89-45)

Areas Inspected: A routine unannounced inspection by one regional inspector of the licensee performance on closing out NRC open items, the Unit 1 Inservice Inspection (ISI) activities and the Unit 1 Integrated Leak Rate Test (ILRT). Inspection Procedure Nos. 30703, 37828, 70307, 70313, 73051, 73052, 73753, 73755, and 92701 were used as guidance for the inspection.

Results:

General Conclusions and Specific Findings:

- ° The licensee followup actions for identification of the root cause of the failure of the fuel pool level low switch 1J-PCN-LSHL-003 was found to have been incomplete.
- ° It appears the licensee lost control of plant configuration, test control and corrective action, for fuel pool level switch 1J-PCN-LSHL-003.
- ° The Unit 1 ISI activities observed, appeared to be handled in an acceptable manner.



The licensee has acknowledged the above identified fuel pool level switch problems.

The licensee stated they would review this area and identify additional corrective actions to ensure that identified fuel pool level switch concerns were addressed in an efficient and timely manner. The corrective actions taken by the licensee to resolve these identified problems, will be the subject of future inspections.

Significant Safety Matters: None

Summary of Violations: None

Open Items Summary: During this inspection no open items were closed, and one unresolved item (50-528/89-45-1) was opened.



DETAILS

1. Persons Contacted

- J. Cantrell, ILRT Engineer
- N. Hallos, Senior Engineer
- D. Hansen, Lead Material and NDE Engineer
- D. Larkin, Compliance Engineer
- *D. Kanitz, Quality Assurance Supervisor
- A. Morrow, Senior Mechanical Engineer (ISI)
- *J. Reilly, Manager, Plant Standards Technical Support
- R. Rouse, Compliance Engineer
- **T. Shriver, Compliance Manager
- B. Strickler, Senior Mechanical Engineer (ISI)

The inspector also held discussions with other licensee and contractor personnel during the course of the inspection.

*Attended the exit meeting on September 29, 1989.

**Attended the exit meetings on September 15 and 29, 1989, and participated in followup telecon discussions held from October 2 through 23, 1989.

2. Installation and Testing of Modifications (37828) and Followup (92701)

A previous NRC Inspection Report 50-528/89-36, identified that:

- o On August 2, 1989, Unit 1 inadvertently transferred 15,000 gallons of spent fuel pool (SFP) water into the transfer canal during a routine system realignment. Minimum SFP level during this event was 136 feet 8 inches, which is four inches below the minimum allowed by the technical specification LCO (3.9.11).
- o The operators were not alerted to the SFP level decrease until the lo-lo level alarm activated at the technical specification minimum level of 137 feet. The licensee identified that the low alarm (at 137 feet 6 inches) was not operating due to a wiring problem which they had identified in 1985. The licensee had issued a design change package (DCP) No. 10E-PC-023 on April 4, 1985 to correct this wiring problem, but this DCP had not been performed in Unit 1 at the time of the August 2, 1989 event.
- o Earlier this year (1989) the system engineer had identified that this DCP had not been performed in Unit 1, and initiated a work order to complete the DCP during the present outage. Units 2 and 3 had installed the subject DCP during construction or startup. The licensee could not explain why the unit 1 DCP had not been scheduled until it was identified by the system engineer this year. The DCP was subsequently completed in Unit 1.



- o Based on the inspector observations during his review of this event, the inspector concluded that the licensee's control of DCPs was inadequate in that:
 - 1) A 1985 DCP to correct a wiring deficiency had not been completed in Unit 1.
 - 2) The 1985 DCP work was not scheduled for work until four years later, when this discrepancy was discovered in early 1989 by a system engineer.

During this inspection the inspector reviewed the following documents, and identified the following information:

- o Licensee letter ID#097-00665-DB/RSM dated September 1, 1989, from D. Burns/S. McKinney to J. Scott, File 89-105-419, Subject: Inadvertent Lowering of Spent Fuel Pool on August 2, 1989. This letter identified the following:
 - 1) The operators were not alerted to the level decrease due to the failure of spent fuel pool level switch 1-J-PCN-LSHL-003 to alarm as designed to, at 137 feet 6 inches.
 - 2) Spent fuel pool level switch 1-J-PCN-LSHL-003 had been previously identified as a problem. Attempts to correct the problem by calibrating the level switch were not effective and PCP #85-01-PC-011 (DCP No. 10E-PC-023) was implemented to correct wiring problems. After the August 2, 1989 event the PCP was completed in Unit 1 and retested satisfactorily on August 17, 1989.
- o Startup Field Report No. 1PC-026, initiated June 13, 1984. This report identified that the labeling of terminal boards within level switch 1J-PCN-LSHL-003, did not conform to the EE-580 cards or the elementary drawing. The recommended resolution was to revise the EE580 cards and elementary drawing to agree with as built conditions in the field.
- o Preventative Maintenance (PM) Work Order Package No. 73511, Task No. 029208, issued 1/24/85. This PM package calibrated level switch 1J-PCN-LSHL-003 and was signed off acceptable on November 11, 1985.
- o Corrective Maintenance (CM) Work Order Package No. 277355, work request no. 266988, dated February 4, 1988. This CM identified that when the fuel pool level dropped below 137 ft - 6 inches, the alarm annunciated at the local panel, but failed to annunciate in the control room. This system failure is similar to the August 2, 1989 event. Repair work was performed and retesting was signed off February 24, 1988 and April 15, 1988. The documentation of actual work and retesting performed, indicated there was some confusion on the part of the personnel working this CM.
- o Corrective Maintenance Work Order Package No. 00302067, Work Request No. 232187, dated June 1, 1988 (priority 4, due June 20, 1988).

This CM requested visual inspection of the termination of cable 1 EPC 01NC3RD2 at level switch 1J-PCN-LSHL-003, to verify it was in accordance with the EE-580 card. On March 19, 1989, approximately nine months after the June 20, 1988 due date, this CM procedure was performed. It was identified that the actual terminations were not in accordance with the EE-580 card supplied. On August 12, 1989, a new continuation sheet to this CM identified that the terminations of this cable had been verified per a new EE-580 card.

- Preventative Maintenance Work Order Package No. 00340659, Task No. 029208, issue date of February 8, 1989. This PM calibrated level switch 1J-PCN-LSHL-003 and was signed off acceptable on March 23, 1989.
- PVNGS Work Request (WR) No. 0330798, dated April 24, 1989. This WR was issued to implement PCP-85-01-PC-011-0 (DCP No. 10E-PC-023) in Unit 1, when the system engineer could not locate any licensee documentation that showed this DCP work had been accomplished. This work was performed after the August 2, 1989 event, and signed off acceptable August 17, 1989.

After reviewing the above information, on September 15, 1989, the inspector notified the licensee that it appeared they had not investigated deeply enough, to identify the actual root cause of the failure of the subject switch, considering the several acceptable retests.

On October 10, 1989, the licensee reported per telecon that on October 5, 1989, the licensee found switch 1J-PCN-LSHL-003 had alarmed at the local panel and was locked in, but an alarm was not received in the control room.

The inspector requested the licensee to provide additional information to answer the following questions:

- How was the 1985 DCP No. 10E-PC-023 lost in the licensee system, and not identified until approximately four years later?
- How could the licensee perform various PM's and CM's on the subject switch, with acceptable retesting, and it still fail to alarm in the control room on August 2, 1989?
- How could the licensee perform inspections, DCP work/verification, corrective work and retesting after the August 2, 1989 switch failure, and have another failure October 5, 1989?
- If the existing switch wiring installation was found to be in accordance with DCP No. 10E-PC-023, as some licensee documentation indicates, how did the Unit 1 work get accomplished on site?

The licensee agreed to perform additional investigation work and to provide the requested information within two weeks.



On October 13, 1989, the licensee reported that when the switch was disassembled during additional trouble shooting inspection, white crystals were found in the switch and the licensee was performing an analysis of the material. Based on this new information, the licensee identified that it could not provide the additional NRC requested information as scheduled.

On October 23, 1989, the licensee issued a formal "Unit 1 L0003 problem resolution action plan" with a scheduled corrective action completion date of December 5, 1989.

This apparent loss of plant configuration, test control, and corrective action is an unresolved item (50-528/89-45-1), pending completion of the licensee evaluation.

3. Inservice Inspection - Review of Program (73051)

a. Program Approval

The latest Inservice Inspection (ISI) program plans for Palo Verde Units 1, 2 and 3, were submitted to NRC/NRR by letters dated August 26, 1985, July 17, 1986, and March 11, 1987 respectively and supplemented by a letter dated August 7, 1987.

The NRR latest response on their review of the ISI programs, is contained in an October 21, 1987, letter from Mr. E. A. Licitra to Mr. E. E. Van Brunt, Jr. The NRR staff determined that the ISI programs for Units 1, 2 and 3 were acceptable and, with one exception, the requested relief from certain ASME code Section XI requirements was granted, since the examinations were identified as impractical.

The Unit 1 ISI plan is described in a document entitled, "Inservice Inspection Program Summary Manual, program no. ISI-1, Revision No. 0."

The Unit 1 ISI program review was documented on a cover sheet which indicated the following: a technical review, Engineering Manager's approval, Authorized Nuclear Inservice Inspector's (ANII) concurrence, and the Plant Review Board's approval. The ANII services were procured from the Kemper Group under the Lumbermens Mutual Casualty Company.



b. Program Organization

Administrative Procedure No. 73AC-OXI01, Revision 0, entitled, "ASME Section XI Inservice Inspection," of November 1, 1988, establishes the methods for preparing, controlling, and implementing the ISI program. This procedure requires the ISI program summaries (plans and schedules) to be submitted to the NRC at least 90 days (or as required by the operating license) prior to the first refueling outage for each specific unit. This procedure also defines the responsibilities of the persons involved with the final evaluation and acceptance of the ISI results. This inspection information is documented in the "ISI Summary Report." Section 3.7.1 requires the following records to be stored and maintained for the life of the plant: ISI Program Summary, ISI Summary Reports, all Examination Data Sheets and associated material, and equipment and personnel certifications.

Administrative Procedure No. 73AC-OEE04, Revision 0, entitled, "Qualification and Certification of NDE Personnel," of November 1, 1988 establishes the qualification, training, certification, and recertification of NDE personnel at all levels. This procedure, for personnel qualification, is consistent with ASME Section XI and SNT-TC-1A (1980 Edition) requirements.

c. Quality Assurance Program

The "Operations Quality Assurance Criteria Manual," Criterion 9, addresses requirements for the control of special processes. The QA program contains provisions to oversee contractor/subcontractor ISI activities. The inspector reviewed audit report no. 89-01, "Control of special processes", which was performed January 9-20, 1989; document 89-004-216, Monitoring Plans for Units 1 and 3 Refueling Outage," and the 1989 auditing and monitoring schedule, and no concerns were identified.

No violations or deviations were identified in the areas reviewed.

4. Inservice Inspection - Review of Procedure (73052)

A sample review of ISI procedures did not identify any new revisions that had been issued since the April 14, 1989 procedure review, for the Unit 3 ISI inspection [covered in inspection report no. 50-530/89-18].

No violations or deviations were identified in the areas reviewed.

5. Inservice Inspection - Observation of Work and Work Activities (73753)

During the inspection, the licensee was conducting the Unit 1 cycle 3 refueling outage, which is the second refueling outage of the first period of the first ten year ISI interval. The ISI examinations performed during this inspection, were performed by the licensee staff.

The inspector reviewed the qualification and certification records for the ISI examiners, and the equipment certifications. Available visual



(VT), ultrasonic (UT), and liquid penetrant (PT) examinations performed on Steam Generator System and Pressurizer System were observed by the inspector.

No violations or deviations were identified in the areas reviewed.

6. Inservice Inspection - Data Review and Evaluation (73755)

The inspector reviewed all the available NDE ISI data sheets generated this outage, prior to and during this inspection.

No violations or deviations were identified in the areas reviewed.

7. Containment Integrated Leak Rate Test Procedure Review (70307)

The inspector reviewed the Unit 1 containment Integrated Leak Rate Test (ILRT) test procedure as described in the Palo Verde Nuclear Generating Station (PVNGS) Manual Procedure No. 73ST-1CL02, Revision 0, dated October 9, 1989, entitled "Integrated Leak Rate Test". This review was to ascertain compliance with regulatory requirements, guidance, and licensee commitments as stated in the following documents:

- Appendix J to 10 CFR 50, "Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors"
- Technical Specifications, Palo Verde Nuclear Generating Station, Unit No. 1, Section 4.6.1, "Primary Containment".
- Palo Verde Nuclear Generating Station Updated FSAR, Section 6.2.6, "Containment Leakage Testing".
- ANSI-N45.4,-1972, "Leakage-Rate Testing of Containment Structures for Nuclear Reactors".
- ANSI/ANS-56.8-1981, "Containment System Leakage Testing Requirements."
- BN-TOP-1, Rev. 1, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants."

During this procedure review, the inspector identified the following observations:

- a. Paragraph 3.1.20 of the procedure identified that a pre-ILRT temperature survey will be performed per procedure 73TI-9ZZ42.
- b. Paragraph 7.25.7 of the procedure identified that containment fans shall not be utilized for the temperature survey or the ILRT type A test.
- c. In performing the periodic Type A Test, the licensee is required to determine both the "As Found" (AF) and "As Left" (AL) conditions of the containment structure. This procedure did not discuss the AF condition of the containment structure. Paragraph 8.3.4.1.6 of the



procedure does discuss total penetration minimum path leakage rate improvements and total minimum path leakage rate of penetrations not aligned in accordance with the ILRT procedure. Since this is the main document that will be used to generate the final licensee summary technical report on this ILRT, and the AL Type A test results have to be adjusted per Local Leak Rate Test (LLRT) penalty factors to find the AF leakage rate, it appears prudent to have a discussion, and/or direction in this procedure on the subject. A licensee representative identified that this concern would be reviewed prior to the issue of the next ILRT procedure for Unit 3.

These observations will be reviewed during any future inspections of ILRT activities.

No violations or deviations were identified in the areas reviewed.

8. Containment Integrated Leak Rate Test Surveillance (70313)

As of June 13, 1989 the Unit 1 containment ILRT was initially scheduled to be performed August 7, 1989. As of September 30, 1989 there has been no major activity in this area. The pressurization skid has been placed in position and some minor preparation work has been accomplished. As of October 24, 1989, the latest scheduled date for the Unit 1 ILRT is in December 1989.

No violations or deviations were identified in the areas reviewed.

9. Exit Meeting (30703)

The inspector met with the licensee management representatives denoted in paragraph 1, on September 15 and 29, 1989. The scope of the inspection and the inspector's findings up to the time of the meetings were discussed.

