U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-529/88-18

Docket No. 50-529

License No. NPF-51

Licensee: Arizona Public Service Company
P. O. Box 21666
Phoenix, Arizona 85036

Facility Name: Palo Verde Nuclear Generating Station Unit 2

Inspection at: Palo Verde Site, Wintersburg, Arizona

Inspection Conducted: May 23-June 10, 1988

Inspector: _____ 6/27/88
C. Clark, Reactor Inspector — Date Signed

Approved by: _____ 6/29/88
S. Richards, Chief — Date Signed

Inspection Summary:

Inspection during the period of May 23-June 10, 1988 (Report No. 50-529/88-18)

Areas Inspected: A routine announced inspection of Unit 2 activities relating to a "as left" Type A containment integrated leak rate test (ILRT). The ILRT inspection included review of procedures and records, interviews with personnel, witnessing portions of the ILRT, inspection of the containment building, associated penetrations and piping systems. During this inspection, inspection procedures 30703, 70307 and 70313 were covered.

Results:

General Conclusions and Specific Findings:

1. The ILRT "as left" Type A Test appeared to be adequate in the areas reviewed.

2. It appears that the "as found" Type A test leakage evaluation for this outage, is a failure. The February 27, 1988 "as found" local leak rate testing (LLRT) of penetration number 42 B did not identify the actual minimum pathway leakage, since the leakage was greater than the installed 2000 SCFM flow measuring equipment. The reported minimum pathway leakage through the two 3/8 inch diameter pressurizer steam space sample valves, is greater than 2000 SCFM.

Significant Safety Matters: None

Summary of Violations: None

Open Items Summary: None

DETAILS

1. Persons Contacted

S. Karami, Compliance Engineer
*W. Roman, Operation Engineering
J. Cantrell, Operation Engineering
R. Klock, Operation Engineering
T. Weber, Operation Engineering

*Denotes those personnel in attendance at an exit meeting on May 27, 1988.

The inspector also held discussions with other licensee and contractor personnel involved with the ILRT.

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

The inspector reviewed the Unit 2 ILRT test procedure as described in the Palo Verde Nuclear Generating Station (PVNGS) Manual Procedure No. 73ST-9CL02, Revision 3, of April 6, 1988 (and the temporary change notices issued during this inspection), 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. 2, 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. The procedure did not include or reference the information contained in NRC IE Information Notice No. 85-71 of August 22, 1985, which provided some of the latest information on ILRTs. The licensee stated they had reviewed the Information Notice, provided a separate reply to it, and did not consider that it needed to be included or referenced in this procedure. Paragraph 8.3.5 of the procedure did

not clearly identify that only the total-time or point-to-point methods are acceptable for ILRT computation, at the time of this test, for both short and full duration tests. The inspector discussed this with the ILRT Director, who identified that the licensee had not requested an exemption to use only the mass-point method, and therefore would use only the total time method for the ILRT acceptance criteria. The licensee committed to change the procedure to clarify that only the total time or point-to-point methods will be used for the ILRT acceptance criteria, unless a mass-point exemption is requested and approved by the NRC.

b. Some of the procedure/work improvement comments identified in Inspection Report No. 50-530/86-23, during the last ILRT performed on Unit 3, were included in this latest procedure.

c. The procedure did not define where the containment pretest temperature survey readings would be taken for each subvolume, the conditions under which they would be taken (e.g. fans operating or secured and heat loads in the area) and establishment of an acceptance criteria for the final location of the senors in each subvolume (e.g. placed where the temperature is within 2°F of the subvolume average). This temperature survey is performed to permit the accurate measurement of containment temperatures and thermal variations, in order to improve the accuracy of the overall weighted containment temperature. Informal temperature surveys were performed prior to the ILRT. Since the temperature survey information can be significant, it should be documented. The licensee stated they would review this concern and make revisions, as necessary, in the next ILRT procedure issued for Unit 3.

d. The procedure did not identity or document when the installed temporary circulation fans were scheduled to be turned on and off. Although some of this information was recorded in the ILRT test log, it would be more appropriate to document this information in the ILRT procedure. The licensee will review this concern for addition to the next ILRT procedure for Unit 3.

e. 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. 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 discussion, documentation, and/or direction in this procedure on the subject. The licensee will consider this observation for addition to the next ILRT procedure for Unit 3.

No violations or deviations were identified in the areas reviewed.

3. Containment Integrated Leak Rate Test Surveillance (70313)

Prior to the ILRT, the Regional Inspector performed area surveys of the containment area to verify no evidence of structural deterioration, removal of pressurized components (such as portable tanks, fire extinguishers, etc.), valve lineups and ILRT sensor (absolute pressure, dewpoint and temperature) location assignments within the containment. This inspection revealed that the sensors were located within the tolerances of the installation procedure. The inspector reviewed calibration records for the instrumentation used in the ILRT, and observed in-situ testing performed on some sensors. All instrumentation had been calibrated with NBS traceability. The procedure divided the containment net free air volume of 2,600,000 cu. ft. into five subvolumes, and installed two absolute pressure sensors, twenty-four dry bulb temperature sensors and six dewpoint temperature sensors to measure containment air mass. Prior to the start of the ILRT, dewpoint temperature sensor No. 3 operability was identified as questionable. Its weighting factor was set to zero and its original weighting factor reassigned to other nearby sensors for the ILRT.

A temperature survey was performed. In the future, additional procedure instructions and formal documentation of the survey results will ensure repeatability/verification for future tests. This observation was discussed in paragraph 2 of this report.

The inspector witnessed selected portions of the following ILRT activities listed below and noted the time expended to perform each:

°Initial pressurization to 49.5 PSIG +1.0/-0 PSIG. Approximately 17 hours.

°ILRT data acquisition.

°ILRT stabilitation. Approximately 9 hours.

°Performance of ILRT. Approximately 24 hours.

°Leak rate verification test stabilization. Approximately 2 hours.

°Leak rate verification test, with an imposed leak rate of approximately 7.88 standard cubic feet per minute (SCFM). Approximately 11 hours .

The licensee's preliminary results for the twenty-four hour type A test, which did not include type B or C additions, was a total time calculated leakage rate of 0.0463 wt % per day with a 95% Upper Confidence Limit (UCL) of 0.0599 wt. % per day. The licensee's maximum allowable leak rate for this test was 0.075 wt. % per day. For information only, a mass-point analysis provided a calculated leakage rate of 0.0619 wt. % per day, with a 95% UCL of 0.0645 wt. % per day. The approximately 11 hour verification test produced a total time calculated leakage rate of 0.132 wt. % per day, with a UCL of 0.141 wt % per day. For information only, the mass point analysis of the verification test provided a calculated leak rate of 0.134 wt. % per day, with a UCL of 0.139 wt. %

per day. The licensee considered these as left preliminary results within the allowable as left acceptance criteria.

The inspector reviewed the latest copy of the Unit 2 local leak rate testing results, and identified the following concern. It appears the "as is"/"as found" condition of the containment discussed in paragraph III. A. 1 (a) of Appendix J to 10 CFR 50 was unacceptable. When the LLRT of penetration number 42 B was performed, both the 3/8 inch diameter inboard and outboard isolation valves had unacceptable seat leakage. These two pressurizer steam space sample line valves, SSB-UV-202 and SSB-UV-205, had a recorded minimum pathway leakage greater than 2000 SCFM. The licensee test equipment could only measure minimum pathway leakage up to 2000 SCFM, so the LLRT did not identify the actual minimum pathway leakage. Since the licensee failed to measure the actual leakage though these two valves, the "as is" containment integrated leakage rate is indeterminable.

During this inspection, the licensee identified that they had obtained larger capacity flowmeters, to minimize this problem during future testing.

The failure of the latest "as is"/"as found" leakage evaluation of the containment may increase the frequency of Type "A" testing, if two consecutive "as found" containment leakage evaluations are indeterminable and/or unacceptable.

No violations or deviations were identified in the area reviewed.

4. Exit Meeting (30703)

The inspector held a meeting with the licensee representative denoted in paragraph 1, on May 27, 1988. The scope of the inspection and the inspector's findings up to the time of the meeting, were discussed. At this meeting the inspector requested the licensee to provide some additional information for review later. The requested information was received later, reviewed and the findings included in this report.