

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-362/88-22

Docket No. 50-362

License No. NPF-15

Licensee: Southern California Edison Company
P. O. Box 800
2244 Walnut Grove Avenue
Rosemead, California 91770

Facility Name: San Onofre Nuclear Generating Station Unit 3

Inspection at: San Clemente, California

Inspection Conducted: July 18 - August 5, 1988

Inspector:

G. Clark
G. Clark, Reactor Inspector

8/15/88
Date Signed

Approved by:

S. Richards
S. Richards, Chief
Engineering Section

8/23/88
Date Signed

Inspection Summary:

Inspection During the Period July 18 - August 5, 1988 (Report No. 50-362/88-22)

Areas Inspected: A routine announced inspection of Unit 3 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, 70313 and 92701 were covered.

Results:

General Conclusions and Specific Findings

1. Except for the loss of control of ILRT valve lineups at least twice during the ILRT, and the identification of another incorrect P&ID configuration during initial ILRT valve lineups, the "as left" Type A ILRT appeared to be adequate in the areas reviewed.
2. The loss of control of ILRT valve lineups at least twice during the performance of the ILRT and the uncontrolled release of 250 gallons of water from the Shutdown Cooling System, indicates that management attention in this area is required to correct the deficiencies. See Appendix A for the violation issued and see Appendix B for additional information.

3. A second occurrence in less than a year of not being aware of the actual plant configuration with regard to vent and drain valves, after similar items were identified in 1985 and 1987, is evidence that the licensee initial corrective actions have been apparently incomplete and ineffective in this area. Additional management attention is required in this area, to correct this reoccurring problem. See section 2.a. for additional information.

Significant Safety Matters: None

Summary of Violations: One

Open Items Summary: One item closed, none open.

DETAILS

1. Persons Contacted

a. Licensee

- *J. Shipwash, Compliance Supervisor
- C. Couser, Lead Compliance Engineer
- *R. Baker, Compliance Engineer
- *D. Herbst, ISEG Supervisor
- S. Gosselin, Station Technical Supervisor
- *P. Blakeslee, ILRT Test Director
- *M. Ramsey, QA Engineer
- *J. Winter, Engineer

b. Others

- J. McGregor, Wolf Creek visitor
- D. Jacobs, Wolf Creek visitor

* Denotes those personnel in attendance at an exit meeting on July 22, 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 3 ILRT procedures as described in the licensee's engineering procedure S03-V-3.12, Revision 1, TCN 1-1 of July 18, 1988 (and the Temporary Change Notices issued during this inspection) entitled, "Containment Integrated Leakage Rate Test." This review was to ascertain compliance with plant Technical Specifications, regulatory requirements, and applicable industrial standards as stated in the following documents:

- o San Onofre Nuclear Generating Station, Units No. 2 and 3, Final Safety Analysis Report (FSAR) updated, Sections 6.2.4, "Containment Isolation System," 6.2.6.1, "Containment Integrated Leak Rate Test," and 14.2.12.20, "Containment Leak Rate Test."
- o San Onofre Nuclear Generating Station, Unit No. 3, Technical Specifications, Sections 3/4.6.1.1, "Containment Integrity," and 3/4.6.1.2, "Containment Leakage."
- o Appendix J to 10 CFR 50, "Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors."
- o American National Standard, "Leakage-Rate Testing of Containment Structures for Nuclear Reactors," ANSI N45.4-1972.

- Topical Report BN-TOP-1, Revision 1, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants," Bechtel Corporation.
- American National Standard, "Containment System Leakage Testing Requirements," ANSI/ANS-56.8-1981.
- IE Information Notice No. 85-71, "Containment Integrated Leak Rate Tests."
- USNRC letter (R. Dudley to K. Baskin) to SCE, dated July 2, 1987, which provided authorization to utilize BN-TOP-1, Revision 1, 1972 for a Type A test.

During this procedure review and the following ILRT, the inspector identified the following discrepancies.

- a. The ILRT valve lineup (Attachment 5) contained main steam vent valve S3101 MR 019, which is shown on P&ID 40141AS03 Revision 8 (issued June 6, 1988), and required its position to be verified. This valve could not be located on steam generator E088 piping during the initial performance of the ILRT valve lineups. The licensee identified that this valve did not exist in the plant, and that an Interim Design Change Notice (IDCN) No. AB-1205M was issued April 28, 1988 to delete this valve and valves S31301 MR661 and S31301 MR662 from P&ID 40141AS03 Revision 5. It appears this IDCN may have also been incorrectly prepared and issued.

This is another example of where the licensee used their P&ID's to write a valve lineup issued June 16, 1988, and were not aware of a IDCN issued April 28, 1988 against these P&ID's. A similar problem was identified during the Unit 2 ILRT, as reported in inspection report no. 50-361/87-29. In response to the Unit 2 identified P&ID weakness, the licensee had stated they would reinstruct their personnel to ensure they had obtained all the latest associated IDCN's for each P&ID used to identify actual plant configuration.

This second occurrence in less than a year of not being aware of the actual plant configuration, indicates that the licensee's latest corrective actions were apparently incomplete and ineffective, and that additional management attention is required to correct this reoccurring problem. The licensee stated they would investigate this failure to identify actual plant configuration, and take appropriate corrective actions. Since this valve was not installed in the plant, it did not affect the ILRT and was not a safety concern.

- b. Section 2.0, "Tagging Requirements," of Attachment 5, "Schedule of Containment Equipment and Valve Initial Conditions and Restoration," did not provide detailed information/instructions in the following areas:
 - (1) Where and how many ILRT caution tags should be installed for solenoid valves and any other valves that do not have any

normal means of operating the valves locally. Since the ILRT valve lineup is not a normal valve lineup that the operations personnel are familiar with, it appears local ILRT caution tags should be installed on all ILRT valves and their remote operating stations to prevent the loss of ILRT valve alignment control.

- (2) Where and how many ILRT caution tags should be installed for valves that have both a valve selector switch and a valve controller switch.
- (3) What actual information is required to be entered on the ILRT caution tags, such as valve identification, valve ILRT position during testing, and any other important information.

This additional information could help ensure the applicable ILRT positioned valves are not worked on or operated during the ILRT, as occurred during this ILRT. The licensee stated they would review their ILRT valve tagging practice, and take appropriate action.

No violations or deviations were identified in the areas reviewed.

3. Containment Integrated Leak Rate Test Surveillance (70313)

Prior to the ILRT, the Inspector performed area surveys of the containment 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 2,305,000 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. 1 operability was identified as questionable. During the ILRT, dewpoint temperature sensors no. 1 and 2 operability was identified as questionable and their weighting factors were set to zero and their original weighting factors reassigned to other nearby sensors for the ILRT.

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

- o Initial pressurization to 58.4 PSIG. Approximately 13 hours.
- o ILRT data acquisition.
- o ILRT stabilization. Approximately 8 hours.
- o Performance of ILRT. Approximately 24 hours.

- ° Establishment and stabilization of verification leak rate. Approximately 1 hour.
- ° Leak rate verification test, with an imposed leak rate of approximately 8.03 standard cubic feet per minute (SCFM). Approximately 4 hours.
- ° Containment Building Depressurization. Approximately 7 hours.

The licensee's "as left" 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 0.0616 wt % per day with a 95% Upper Confidence Limit (UCL) of 0.0652 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 0.0607 wt. % per day, with a 95% UCL of 0.0623 wt. % per day. The approximately 4 hour verification test produced a total time calculated leakage rate of 0.1538 wt. % per day, which was within the licensee acceptance criteria of 0.1376067 to 0.1876067 wt. % per day, with a UCL of 0.2248 wt % per day. For information only, the mass point analysis of the verification test provided a calculated leak rate of 0.1614 wt. % per day, which was within the acceptance criteria of 0.1366871 to 0.1866871 wt % per day, with a UCL of 0.1686 wt. % per day. The "as left" preliminary ILRT results were within the licensee "as left" acceptance criteria.

During the performance of the ILRT, the following problems were identified.

- a. A lost of control of valve position for valve 3 LV-0110A in the ILRT valve lineup and a subsequent uncontrolled loss of approximately 250 gallons of water from the Shutdown Cooling system during the performance of the 24 hour ILRT.

Per Operational Divisional Investigation Report (ODIR) Number 3-88-014 dated July 22, 1988, NRC inspector observations, and ILRT documents, the following actions and responses were identified:

July 18, 1988

- ° WAR 3-8803319 was approved and submitted to the control room to clear valves 3 LV-0110A and B, to replace valve air actuators.
- ° The ILRT alignment for penetration #2 was completed. A ILRT caution tag was placed on controller 3 LIC-0110, however, no tags were placed locally at closed valves 3 LV-0110 A and B. This is an apparent violation (362/88-22-01), since step 2.1 of attachment 5 of Engineering Procedure S03-V-3.12, TCN 1-1 required caution tags be completed and placed on valves in the ILRT valve lineup.

The licensee stated that no tags were placed locally at air operated valves 3 LV-0110 A and B, as there was no normal means of operating these valves locally. This licensee statement

does not appear to agree with the fact that the inspector identified solenoid control valves in the ILRT valve alignment, that had ILRT caution tags placed on them. Solenoid valves cannot normally be operated locally. It appears that to maintain the ILRT valve alignment, that the installation of ILRT caution tags on all applicable valves and controller, switches, breakers, etc. is required.

July 19, 1988

- ° At 0800 a work authorization (WAR 3-8803319) was issued to implement DCP 3-0875.0, revision 2, which replaced the valve actuators on letdown system pressurizer level control valves 3 LV-0110 A and B. The ODIR also identified that the actuators were actually replaced earlier in the outage and only the positioners were being changed at this time. The valve positioner work would not have been started, if ILRT caution tags had been found on the valves, by the I&C personnel.
- ° At 1830 the Operations Division provided approval to commence pressurization of the Unit 3 containment for the ILRT.

July 20, 1988

- ° At 1400 WAR 3-8803319 was changed from a clearance to an approval to place the air supply to valves 3 LV-0110 A and B, back in service to allow calibration of the new actuators/positioners. Valve 3 LV-0110 A was operated locally by I&C, using a temporary installed jumper between the air supply system and the valve actuator. Since there were no ILRT caution tags installed locally on the valves, when the positioners were changed, I&C was not aware that these valves were in the ILRT valve alignment.

July 21, 1988

- ° At 0800, I&C came to the control room and reviewed with the control operator the stroking activities they intended to perform that day, which involved stroking of valve 3 LV-0110A. The control operator went to the control board to verify that no ILRT caution tag was installed on letdown control valve selector switch 3 HS-0110F and not finding one, told the I&C personnel to proceed. The ILRT caution tag was found later that day, on controller 3 LIC-0110, at approximately 1400, when the control operator noticed pressurizer level decreasing. The operator did not check the ILRT procedure for valve 3LV-0110A, depending instead on the ILRT caution tags installed on the control board to identify applicable ILRT valves.
- ° At 1000, I&C began calibration of the valve 3 LV-0110A positioners, which involved stroking of the valve in the 0-10% open range.

- ° At approximately 1045, during the NRC inspector tour of the ILRT valve alignment, unidentified standing water was identified in room 209-3 of the penetration building. As a result of the size of the spill, the inspector was not able to gain direct access to identify the source of leakage. The NRC inspector requested the ILRT crew and the Operation Division to attempt to identify the source of water and if there had been any change in the ILRT valve alignment since the start of the ILRT on July 20, 1988 at 1615. It appears this water was the result of the 1000 stroking of valve 3 LV-0110A, in the 0-10% open range. At this time there was no identified increase in the ILRT leak rate.
- ° At 1100 the ILRT crew informed the control operator of the leakage and an operator was dispatched to investigate. The operator was not able to gain access to the leak source. This leakage was discussed with the control room supervisor (CRS), and since the water was draining to the penetration sump, no radioactive gas problems were evident (no increase on radmonitoring instrumentation). It would take several hours for the licensee to gain access to the area, so the Operation Division decided to delay further investigation until the ILRT was completed and normal access to the penetration room could be restored. It appears there were no other licensee actions taken to attempt to identify this leakage at this time.
- ° At 1300, I&C returned from lunch and began calibration of valve 3 LV-0110A in the 90-100% open range, and the pressurizer level started a slow steady decrease. Since shutdown purification was in service, water flowed backwards through open valve 3 LV-0110A in the radwaste area of the auxiliary building toward penetration no. 2 and out open vent valve S 31208MU086 in room 209-3 of the penetration building, to the floor.
- ° At 1400, the control operator noticed pressurizer level decreasing (with valve 3LV-0110A open in the 90-100% range), the control board indications were reviewed and valve 3 LV-0110A was noted to be open. I&C was contacted and directed to close valve 3 LV-0110A, disconnect test equipment and secure all work. From 1300 to 1400, pressurizer level decreased from 33% to 29%, or approximately 250 gallons. Since the pressurizer was vented to containment, this increase in void area in the pressurizer was measured as air mass loss from the containment during the ILRT.

The ODIR identified the root cause for this occurrence as procedural error and operator performance. The licensee is still reviewing the ODIR, and stated they will change applicable procedures as required and reinstruct personnel to prevent a recurrence of this problem.

It should be noted that the work authorizations approved and submitted July 18, 1988, issued July 19, 1988 and returned to the Operation Division on July 20 and 21, 1988 for valve 3LV-0110A, per Operation Division Procedure S0123-0-21 "Equipment Status Control",

Revision 1 of July 12, 1988, provided several opportunities for the licensee to evaluate and review the operational impact of these work authorizations. It appears that when the licensee issued and changed WAR 3-8803319, they did not fully implement all the required actions of equipment procedure S0123-0-21.

- b. During the check of the control board at 1400 on July 21, 1988, to locate the reason for the 3% pressurizer level decrease, it was identified that two safety injection tank nitrogen bleed valves (HV-9355 and HV-9365) positioned open July 18, 1988 for the ILRT were closed.

The Operation Division stated that they believed that the two valves were accidentally closed July 19, 1988 during an emergency evacuation drill. The two push buttons for the subject valves are located approximately 12 inches to the right of two similar push buttons used for the emergency evacuation horns/sirens. It appears a control operator closed that the two valves when he intended to secure the horns/sirens. A licensee representative identified that a control operator stated that the emergency evacuation horns/sirens push buttons had to be depressed a couple of times during the drill to secure them. Since the two safety injection tanks were drained and the outlet valves were closed, the closure of these two valves did not compromise the ILRT results. This was the second loss of control of ILRT valve alignment during this test, which indicates additional management attention is required in this area. The licensee stated they would investigate this occurrence and reinstruct personnel.

Within the area inspected, one violation was identified.

4. (Closed) IE Information Notice No. 85-71: Containment Integrated Leak Rate Tests (90701)

This Notice provided additional NRC information on containment ILRTs. The inspector reviewed the following documents:

- ° Engineering Procedure S03-V-3.12, "Containment Integrated Leakage Rate Test."
- ° Engineering Procedure S023-V-3.13, "Containment Penetration Leak Rate Testing."

Based on the review of the above documents and discussions held with the licensee personnel, it appears that the licensee has taken actions to address this new information.

This item is closed.

5. Exit Meeting (30703)

The inspector held a meeting with the licensee representatives denoted in paragraph 1, on July 22, 1988. The scope of the inspection and the inspector's findings up to the time of the meeting, were discussed. One

of the items discussed was the loss of control of valve 3LV-0110A, for which the licensee was preparing Operations Divisional Investigation Report (ODIR) No. 3-88-014. A copy of this ODIR was requested by the inspector. This ODIR was received August 1, 1988, reviewed and the findings included in this report.