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Subject: Arkansas Nuclear One - Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6
Response To Inspection Report
50-313/96-06; 50-368/96-06

Gentlemen:

Pursuant to the provisions of 10CFR2.201, attached is the response to the notice of violations identified during the inspection activities associated with a Reactor Coolant System level perturbation and a hydrogen burn during welding activities.

Should you have any questions or comments, please call me at 501-858-4601.

Very truly yours,

Dwight C. Mims
Director, Licensing

DCM/ajs

Attachments

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IE01

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# NOTICE OF VIOLATION

During an NRC inspection conducted on August 18 through September 28, 1996, two violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violations are listed below:

A. Technical Specification 6.8.1.a states, in part, that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, November 1972.

Paragraph H.2.a.1 of Regulatory Guide 1.33, November 1972, states that specific procedures should be written for containment leak rate tests. Procedure 1305.018, Revision 9, "Local Leak Rate Testing - C," is the procedure for testing containment penetrations. Step 10.2.5 of Procedure 1305.018 states to "vent and drain the system inside the local leak rate test (LLRT) boundaries in accordance with radiological work permit requirements." Penetration 14 is the letdown line penetration through containment and the LLRT boundary is between the first outside valve CV-1221 and the two parallel inside valves CV-1214 and CV-1216.

Contrary to the above, Penetration 14 was not vented and drained within the LLRT boundaries, but was vented and drained into the Reactor Coolant System, which resulted in the introduction of air into the Reactor Coolant System during reduced inventory and caused a level indication change.

This is a Severity Level IV violation (Supplement I) (Violation 50-313/9606-01).

B. Unit 1 Technical Specification 6.8.1.f states, in part, that written procedures shall be established, implemented, and maintained covering fire protection program implementation.

Appendix 9A.4 of the Unit 1 Safety Analysis Report describes that the ANO Fire Protection Program is controlled and maintained by various plant procedures that include, but are not limited to, maintenance procedures for control of ignition sources.

Step 5.1.1 of Procedure 1003.006, Revision 3, "Control of Ignition Sources," states that it is the responsibility of the cognizant supervisor for maintenance activities to determine the fire and explosion precautions necessary for the performance of safe work.

Contrary to the above, on September 21, 1996, the licensee did not determine the fire and explosion precautions necessary for safe work in that welding was performed on a pressurizer relief valve tailpipe without having sampled and purged the line of hydrogen. As a result, a hydrogen burn occurred.

This is a Severity Level IV violation (Supplement I) (Violation 50-313/9606-02).

Response to Notice Of Violation 313/9606-01

(1) Reason for the violation:

Following a hot spot flush of the letdown coolers on September 18, 1996 Unit 1 operations personnel were draining the letdown line in preparation for a local leak rate test. During this evolution, Unit 1 was in reduced inventory with Reactor Coolant System (RCS) level steady at 371.5 feet and about 80% complete with the draining of the RCS cold legs. The core side of the RCS was no longer hydraulically coupled to the cold legs and, therefore, no longer hydraulically coupled to the reactor building drain header. The same drain was being used to remove water from the primary side of the Once Through Steam Generator (OTSG) and to remove water used in performing the previous hot spot flush of the letdown coolers. (See attached drawing 1)

In order to ensure complete venting and draining of the letdown penetration, pressurized service air was used as a motive force. During the evolution, control room operators observed an unexpected RCS level increase of approximately 0.7 feet. When the operations personnel draining the letdown line became aware of the RCS level increase, they immediately secured service air and informed the control room. The RCS level rise stopped when the service air was secured and quickly returned to its previous value. The elapsed time from the start of the RCS level rise to RCS level stable at its previous value of 371.5 feet was approximately ten minutes.

Air introduced into the cold leg from the letdown line collected in the air volume between the top of the water level and the Reactor Coolant Pump (RCP) seal. Water in the cold leg between the RCP and the reactor vessel acted as a seal between the RCP and the head vents. This allowed for venting of the introduced air to occur only from the RCP seal vent. The volume of air that this vent path could pass was insufficient in comparison to the amount of air being introduced into the system; therefore, the buildup of air pressure below the RCP seal vent displaced a small amount of water from the cold leg into the reactor vessel. This displaced water caused the reactor vessel level indication to increase approximately 0.7 feet. (See attached drawing 2)

The cause of this event was that an adequate assessment of the vent capabilities of the RCS cold legs in association with the high volumes of service air being introduced into the RCS via the letdown system was not performed. Additionally, the lack of a procedure for draining systems connected to the RCS contributed to this event.

(2) Corrective steps that have been taken and the results achieved:

Service air was secured immediately upon identification of it as the cause of the RCS level increase.

Unit 1 Operations Manager briefed operations personnel on the details and causes of the event during shift turnover meetings following the occurrence.

(3) Corrective steps that will be taken to avoid further violations:

The Unit 1 and Unit 2 Operations Managers will discuss this event with Operations Department personnel prior to the next refueling outages which are currently scheduled for the Spring of 1998 for Unit 1 and the Spring of 1997 for Unit 2. Ensuring proper and adequate venting prior to manipulating RCS level and utilizing caution when performing an evolution on an RCS interconnected system during draindown conditions will be stressed.

A procedure for draining systems that are or may be interconnected to the RCS will be developed by February 28, 1998.

(4) Date when full compliance will be achieved:

Full compliance was achieved on September 18, 1996 when the introduction of service air was secured and the RCS level returned to its previous value.

Response to Notice Of Violation 313/9606-02

(1) Reason for the violation:

On September 21, 1996 while welding a cap on a recently cut one-inch pipe, a loud noise was heard by personnel working in the Unit 1 Reactor Building. The noise is believed to have been caused by a small hydrogen burn in the Pressurizer Code Safety Valve ten-inch discharge line to the Quench Tank. The one-inch line is connected to the top center of a horizontal run of the ten-inch discharge piping making it a potential high point location. It is believed that a small amount of hydrogen, came out of solution from the primary coolant in the Quench Tank, and migrated to the one-inch capped line.

The presence of hydrogen gas was considered during the pre-job brief. However, the decision was made not to sample for combustible gasses prior to welding because it was determined that hydrogen gas should not collect since the RCS had been previously degassed, purged, vented, and was open to the atmosphere. It was also believed that sampling for combustibles after cutting the pipe was unnecessary since hydrogen, if present, would be vented when the pipe was cut.

While completing the Ignition Source Permit, the personnel involved with this job failed to identify that the work being performed involved welding on enclosed equipment. Examples of enclosed equipment, as identified by the Ignition Source Permit, included tanks, containers, ducts, dust collectors, etc. Because piping was not included in the list of examples it was not considered enclosed equipment. Moreover, this section of the form was viewed as being applicable only when work was performed from within enclosed equipment.

The cause of this event was welding operations unknowingly conducted in the presence of a combustible hydrogen level. Knowledge of the hydrogen level present in the tank and the line prior to the start of welding is necessary to determine the exact origin of the hydrogen. It is believed that hydrogen came out of solution in the primary coolant present in the Quench Tank and concentrated at the newly capped vent. A combustible gas sample was not obtained from the Quench Tank prior to performing the welding. However, had the personnel involved with this job recognized that hydrogen may continue to be expelled following depressurization and degassification of the RCS, the need for purging of the Quench Tank and associated piping would have been more apparent.

(2) Corrective steps that have been taken and the results achieved:

Work was stopped in the area and a walkdown was conducted to verify conditions were safe.

The Quench Tank and associated piping were purged with nitrogen and combustible gas samples were obtained. Samples obtained during the purge indicated hydrogen

levels as high as 3.6%. Upon completion of purging the hydrogen level was insignificant.

The incident was discussed with supervisory personnel at shift outage meetings. Supervisors of personnel responsible for welding were directed to more closely scrutinize welding packages for proper identification of work conditions.

Work groups involved in the planning, conduct, approval, supervision, or monitoring of activities involving spark/heat generating evolutions were alerted to the hazards and potential generation of hydrogen in systems associated with the Reactor Coolant System.

Walkdowns of the Quench Tank and affected piping were performed. The rupture disk on the tank was examined and found intact. It was concluded by the evidence of this event that the design limits for the Quench Tank were not exceeded and that the tank's ability to perform its intended function was unaffected by this event.

A walkdown of the pressurizer code safety valve discharge piping, supports, guides, and snubbers was also performed. The results of this evaluation indicated no damage resulted from this event.

(3) Corrective steps that will be taken to avoid further violations:

A warning statement will be added to the Ignition Source Permit (Form 1003.006A) to identify that any spark/heat generating work on any system associated with the RCS or any system where potential for combustible gasses is present requires special attention. Additionally, piping will be identified as an example of enclosed equipment. This procedure revision will be completed by January 15, 1997.

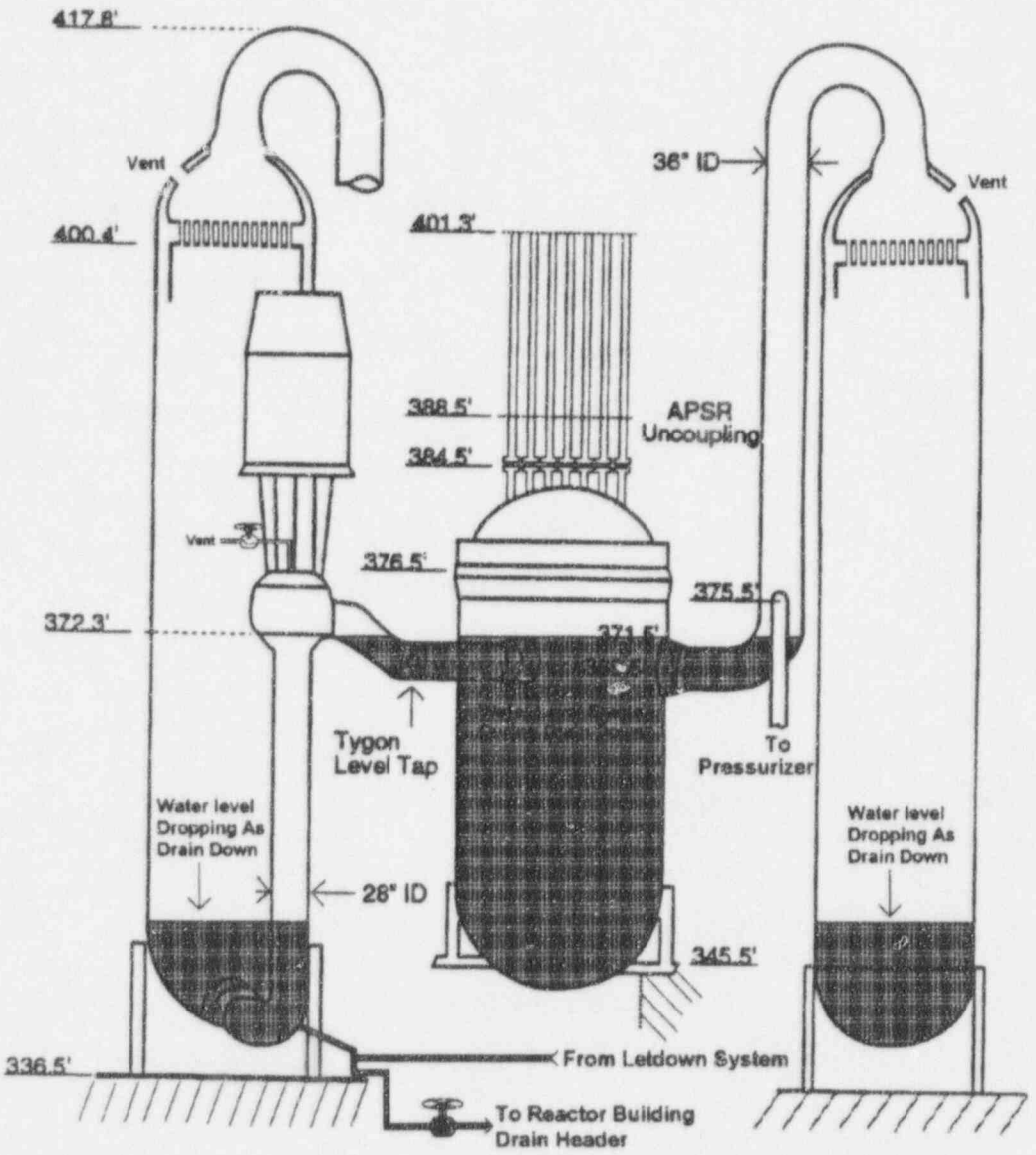
The cause and lessons learned from this event will be reviewed in pre-outage briefings prior to the start of the next refueling outages for both Unit 1 and Unit 2 which are currently scheduled for the Spring of 1998 and 1997, respectively.

The cause and lessons learned from this event will be incorporated into contract welder training presented prior to each refueling outage by April 1, 1997.

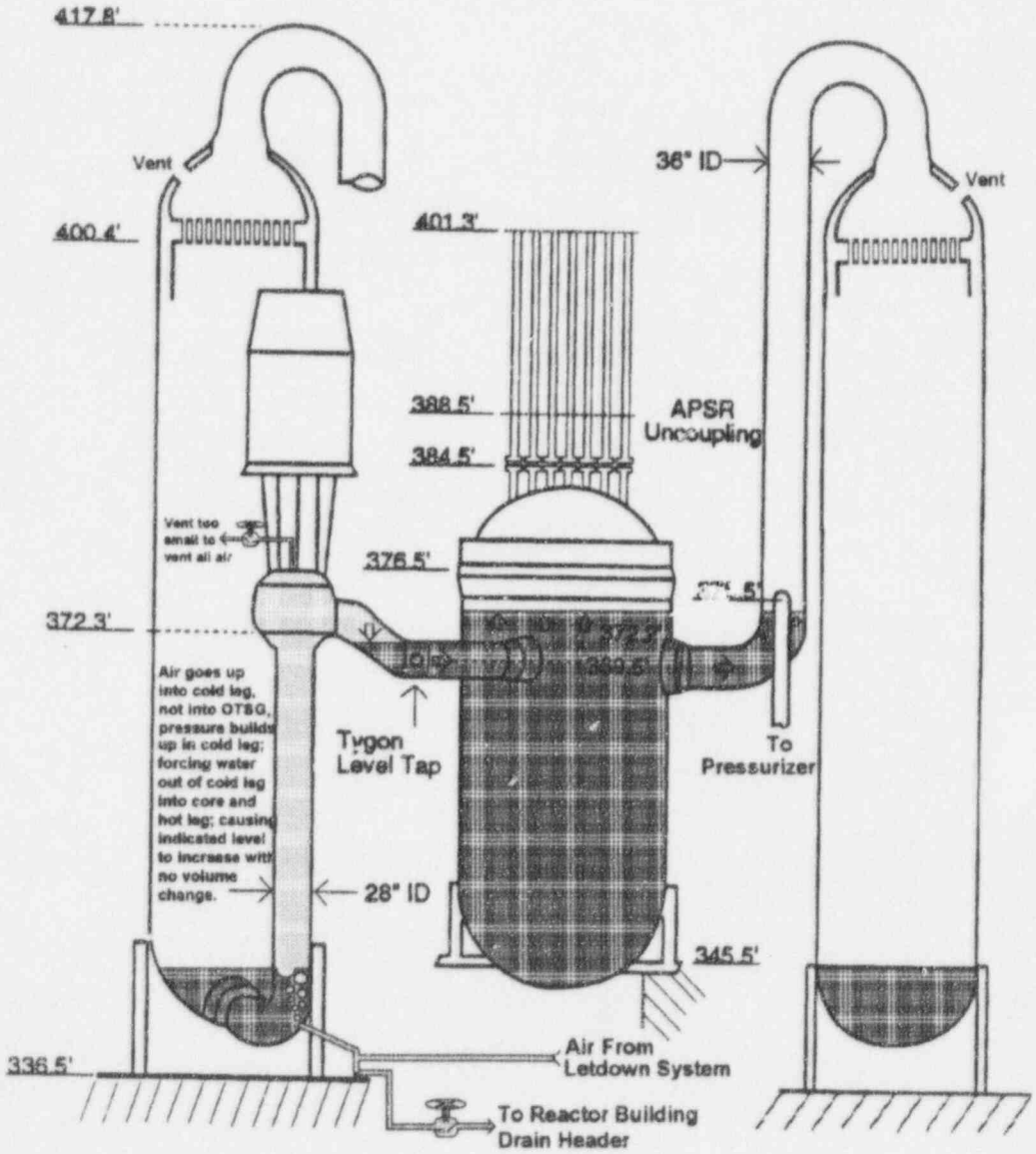
The cause and lessons learned from this event will be reviewed with maintenance personnel qualified to perform welding at ANO by April 1, 1997.

(4) Date when full compliance will be achieved:

Full compliance was achieved on September 22, 1996 when the Quench Tank and associated piping were purged, vented, and sampled.




Drawing 1 Drain down in progress; water level stable in reactor core; cold leg level going down; cold leg drain water and letdown system flush water going to reactor building drain header.




Drawing 2 Drain down in progress; air assisted draining of letdown system in progress; air goes into cold leg RCP area; RCP seal vent can not vent all the air, and pressure builds up in this area; water level rises in reactor core to 372.2'.