



**Entergy
Operations**

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Neil S. "Buzz" Carns
Vice President
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January 16, 1991

ØCANØ191Ø3

Mr. James Lieberman
Director, Office of Enforcement
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Subject: Arkansas Nuclear One, Units One and Two
License Nos. 50-313/50-368
Docket Nos. DPR-51 and NPF-6
Reply to Notice of Violation and Proposed
Imposition of Civil Penalty - Response to
Inspection Report 50-313/90-38; 50-368/90-38
EA 90-175

Dear Mr. Lieberman:

This letter is in response to your letter dated December 17, 1990. In that letter the NRC transmitted to Entergy Operations, Inc., Arkansas Nuclear One (ANO) a Notice of Violation and Proposed Imposition of Civil Penalty based on Inspection Report 90-38. In the enforcement action, the NRC staff cited a Severity Level III violation and proposed a civil penalty based on an inaccurate statement in our March 7, 1989, response to Generic Letter 88-14 and the failure to test check valves in our instrument air system. Pursuant to 10CFR2.201 and the terms of the Notice, attached is ANO's reply to the violation.

Upon careful review of the Notice and the facts (cited therein) regarding the violation, ANO elected to pay the proposed civil penalty. Accordingly, payment of the civil penalty is attached.

We believe it appropriate to reiterate ANO's response to some of the broad concerns articulated by the NRC. As discussed at the Enforcement Conference on October 30, 1990, ANO has pursued the specific deficiencies and resolution of the potential broader concerns. In regard to the specific discrepancies ANO has conducted a thorough analysis of the conditions, identified the cause of the inaccurate statement to be the failure to follow the applicable procedure concerning verification of information supplied to the licensing department; and the failure to test check valves in the ANO-1 instrument air system was caused by deficiencies related to requirements for post modification testing in the design process in-place when the system was modified in 1978. ANO has undertaken comprehensive corrective actions to correct these deficiencies and we appreciate the Staff's recognition of these efforts as reflected in the 50% mitigation of the civil penalty.

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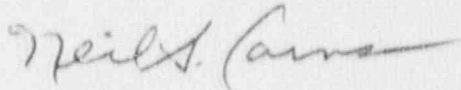
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Mr. James Lieberman
OCAN019103
January 16, 1991

In summary, ANO's philosophy is to provide accurate communications to the NRC. I am confident that our corrective actions should prevent the recurrence of a violation of this type.

Should you or your staff have any questions concerning this matter, do not hesitate to call.

Very truly yours,



NSC/mmg

Enclosures

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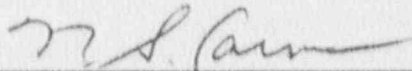
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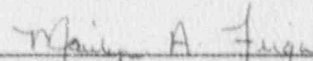
STATE OF ARKANSAS)
)
COUNTY OF POPE) SS

I, N. S. Carns, being duly sworn, subscribe to and say that I am Vice President, Operations ANO for Entergy Operations, Inc.; that I have full authority to execute this oath; that I have read the document numbered 0CAN019103 and know the contents thereof; and that to the best of my knowledge, information and belief, the statements in it are true.



N. S. Carns

SUBSCRIBED AND SWORN TO before me, a Notary Public in and for the County and State above named, this 16th day of JANUARY, 1991.



Notary Public 291

My Commission Expires:
11-27-99

REPLY
TO
NOTICE OF VIOLATION
AND
CIVIL PENALTY

Entergy Operations, Inc.

Arkansas Nuclear One (ANO), Units 1 and 2

Notice of Violation

During an NRC Inspection on October 1-5, 1990, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1990), the Nuclear Regulatory Commission proposes to impose a civil penalty pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (Act), 42 U.S.C. 2282, and 10 CFR 2.205. The particular violations and associated civil penalty are set forth below:

- A. 10 CFR Section 50.9 requires, in part, that information provided to the Commission by a licensee shall be complete and accurate in all material respects.

NRC Generic Letter 88-14, "Instrument Air Supply System Problems Affecting Safety-Related Equipment", issued on August 8, 1988, requested licensees to perform a design and operations verification of the entire instrument air system, including verification by test that air-operated safety-related components will perform as expected in accordance with all design-basis events, including a loss of the normal instrument air system. In accordance with 10 CFR 50.54(f), a response confirming that the above verification was performed, including identification of any components that cannot accomplish their safety-related function, and stating the corrective actions taken or to be taken, was required to be submitted under oath or affirmation within 180 days of the letter.

Contrary to the above, Arkansas Power and Light Company (AP&L), Arkansas Nuclear One's then licensee of record, provided information to the Commission that was not accurate in all material respects. AP&L stated in its March 7, 1989, response to Generic Letter 88-14 that "Each "Q" component has an associated surveillance which is conducted on a regular basis to verify the operability of that component," and that "The current surveillances conducted at ANO on "Q" components, we believe, adequately verifies [sic] the operability of air-operated IAS components and simulates a complete loss of instrument air for the component being tested." In fact, AP&L had never tested certain "Q" components, specifically the safety-related reserve air accumulators and associated check valves (IA-43A, IA-43B, IA-44A and IA-44B), to ensure that these components were functional under normal conditions or upon a complete loss of instrument air. Tests performed on

September 21, 1990, by the successor licensee, Entergy Operations, Inc. (Entergy) revealed that the safety-related reserve air accumulators would not have performed as expected in the event of a loss of the normal air supply due to air leakage past system check valves, and thus that the air operated isolation dampers to the Control Room Emergency Ventilation System (CREVS) may not have been able to perform their intended safety function of isolating the control room in the event of design basis accident. The inaccurate information was material because had the NRC known of the the air-operated isolation damper problem, the issue would have been reviewed for further regulatory action.

- B. 10 CFR Part 50, Appendix B, Criterion XVI requires, in part, that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies and deviations are promptly identified and corrected.

NRC Generic Letter 88-14, "Instrument Air Supply System Problems Affecting Safety-Related Equipment", issued on August 8, 1988, requested licensees to perform a design and operations verification of the entire instrument air system, including verification by test that air-operated safety-related components will perform as expected in accordance with all design-basis events, including a loss of the normal instrument air system. In accordance with 10 CFR 50.54(f), a response confirming that the above verification was performed, including identification of any components that cannot accomplish their safety-related function, and stating the corrective actions taken or to be taken, was required to be submitted under oath or affirmation within 180 days of the letter.

Contrary to the above, as of March 7, 1989, when AP&L responded to Generic Letter 88-14, and continuing until September 21, 1990, both AP&L and Entergy Operations had failed to identify or to correct a significant condition adverse to quality concerning the air-operated components of the CREVS. Specifically, safety-related reserve air accumulators might not have performed as expected in the event of a loss of the normal air supply because of air leakage past system check valves. AP&L failed to identify this significant condition adverse to quality in preparing its response to GL 88-14, which requested that the licensee perform a design and operations verification of the instrument air system. As a consequence, the CREVS air-operated dampers may not have been able to isolate the control room in the event of certain design basis accidents.

These two violations are classified in the aggregate as a Severity Level III problem (Supplement I).

Civil Penalty - \$50,000 (assessed equally between the two violations).

ANO response

Response to Violation 313/368: 90-38A

Reply to Notice of Violation

1. Admission or denial of the alleged violation

Entergy Operations, Inc. admits the violation occurred as stated.

2. The reason for the violation:

Our letter of October 26, 1990 (OCAN109013), discussed our review of the ANO response to Generic Letter 88-14 (GL 88-14). As stated in the letter, a review team was formed to conduct an investigation into the cause of the inclusion of an inaccurate statement in the generic letter response. The investigation consisted of reviews of related documentation supporting the response and interviews with individuals involved with the response.

The process used by Licensing to prepare NRC correspondence such as a generic letter response includes issuance of a Licensing Information Request (LIR) to the department responsible for providing the technical input required. The LIR response, by procedure, is to be verified, approved by a department head, and returned to Licensing for preparation of the submittal.

The root cause of the inaccurate statement was determined to be the failure to follow the applicable procedure concerning verification of information contained in the LIR. The verification process in the LIR procedure was determined to be adequate to ensure the accuracy of information submitted to the NRC; however, enhancements to the procedure were identified which would clarify responsibilities and improve the quality of NRC submittals. Lack of specific procedural guidance was identified as a contributing factor as was a lack of management involvement and leadership.

3. The corrective steps that have been taken and the results achieved:

A memorandum dated September 24, 1990 (LIC-090-055), was sent to ANO managers emphasizing the importance of the LIR process used to provide information to Licensing for preparation of NRC submittals.

The LIR procedure has been revised to clarify the responsibilities of the LIR respondent and to enhance the LIR process. This revision was approved December 21, 1990, and became effective January 2, 1991. A new Station Directive has been issued, also effective January 2, 1991, entitled "Accuracy of Communications." This directive provides an improved process for ANO to document that complete and accurate information is submitted to the NRC. The requirement for a verification process has been removed from the LIR procedure, which is a Licensing procedure, and included in this Station Directive. Information verification/certification in accordance with this directive is to be provided to the Licensing department for NRC-related responses or input. Response verification guidelines are included in the directive.

The issuance of the Station Directive served to increase awareness among station personnel of the importance of adequately verifying information to be used to prepare NRC correspondence. A memorandum was sent December 19, 1990, to all department heads notifying them of the issuance of this directive.

The Licensing procedure changes and the new Station Directive on Accuracy of Communications will improve the process of verifying information provided to the NRC and will help ensure that future submittals are factual and complete.

Training sessions will be conducted by the Licensing department for at least the Managers involved with the approval of information accuracy. This training will occur during the first quarter of 1991 on the application of the LIR and verification processes and on the regulatory basis (10CFR50.9) for information completeness and accuracy.

Other NRC submittals were selected to be reviewed for adequate documentation to support the information contained in the letter. This review is being done in three phases.

- a. Submittals prepared based on input from the same group that provided the information for GL 88-14.

One NRC Bulletin response (NRCB 88-03) was identified as satisfying this criteria. The response has been reviewed for technical accuracy and found to be satisfactory. This review was completed on November 6, 1990. (Our letter of October 26, 1990, committed to complete this review before March 31, 1991.)

b. Responses to 1988 and 1989 generic letters and bulletins.

These submittals were screened against certain criteria (e.g., LIR response prepared and verified by the same person, issue requiring cross-discipline input) to determine if a more in-depth review was warranted. Responses to four generic letters and six bulletins were identified as warranting such review. These have been reviewed to ensure that the statements in each letter are adequately supported by the documentation in the letter's file. This review was completed as committed in our letter of October 26, 1990. The results of this review indicate that for these responses the supporting documentation may be incomplete. These findings are being evaluated to determine if a technical review of the submittal is warranted to verify its accuracy. This will be completed by March 31, 1991. If so, schedules for the technical reviews will be developed. If technical reviews are conducted and inaccurate information is found to have been submitted to the NRC, this will be evaluated to determine if reviewing an additional sample of correspondence is necessary. The NRC will then be notified if any further inaccurate statements are identified as a result of this review.

c. NRC submittals from November 1988 to March 1989 other than responses to generic letters or bulletins.

A review is being conducted of other NRC correspondence prepared during the same time frame as the response to GL 88-14. A list of this correspondence was reviewed and certain submittals were eliminated from further consideration (e.g., routine reports, previously reviewed, non-technical, etc.). The remaining letters were divided into three categories (Inspection Report submittals, Licensee Event Reports, and other) and a random sampling of approximately 20 percent from each category was selected for in-depth review. As stated in our letter of October 26, 1990, verification of these letters against their supporting documentation is expected to be completed by January 31, 1991. Technical reviews of these submittals will be conducted if deemed necessary to verify accuracy (i.e., the supporting documentation is found inadequate). Schedules for completing the technical reviews will be developed as required. Should technical reviews determine that inaccurate information was submitted to the NRC, this will be evaluated to determine if reviewing an additional sample of correspondence is necessary. The NRC will then be notified if any further inaccurate statements are identified as a result of this review.

These reviews of other NRC submittals will determine the scope of the identified problem and provide confidence that other similar submittals have been accurate.

A team comprised of Design Engineering and System Engineering personnel was established to reevaluate Generic Letter 88-14. Based on an initial assessment of the generic letter, a thorough review for ANO will be completed prior to the beginning of the upcoming ANO-2 refueling outage 2R8. This outage is currently scheduled to commence on February 22, 1991.

Assessments of instrument air applications involving the use of accumulators have been completed for ANO-1 and ANO-2. These reviews assessed the ability of the accumulators to perform their design function, including consideration of testing that verifies air operated safety-related components will perform as expected. No safety significant discrepancies were identified relative to air-operated safety-related components. However, a number of specific recommendations were made based upon these reviews which were extended to address several non-safety related components as well. These recommendations will be dispositioned through the use of Engineering Action Requests, Condition Reports, Job Requests, etc., as appropriate.

As a point of clarification, it is noted that two redundant dampers were identified as having inadequate testing to verify the design function. Subsequent testing, however confirmed the devices operability. This matter was previously identified by ANO at the time of the original inspection and has been discussed with the NRC.

Title 10 Part 50 of the Code of Regulations, Appendix A, General Design Criteria 19, "Control Room", requires that adequate radiation protection be provided to permit access and occupancy of the Control Room under accident conditions. An operator dose assessment impact was performed to determine the safety significance of this condition. The operator dose impact assessment (attached) determined that the estimated operator dose is conservatively calculated to remain within acceptance limits assuming the control room isolation system is degraded after one hour. Therefore, the safety significance is considered minimal.

4. The corrective steps that will be taken to avoid further violations:

The enhancements which have been made to the procedure controlling the LIR process and the issuance of the Station Directive on Accuracy of Communications will help ensure that future submittals to the NRC are complete and accurate. Additional emphasis is being applied to hold personnel accountable for adhering to the requirements of station procedures and the performance of their duties.

5. The date when full compliance will be achieved:

Compliance was achieved when the existence of the inaccurate statement was documented in correspondence to the NRC dated September 18, 1990 (ØCANØ99Ø11), and September 24, 1990 (ØCANØ99Ø12).

The Licensing procedure revision and the Station Directive will enhance the process of ensuring accurate information is submitted to the NRC.

Response to Violation 313/368/90-38B

1. Admission or denial of the alleged violation:

Entergy Operations, Inc. admits the violation occurred as stated.

2. The reasons for the violation:

Entergy Operations, Inc. has reviewed the details supporting the subject violation and has determined the cause of the failure to test the ANO-1 Control Room Emergency Ventilation System (CREVS) check valves was deficiencies related to requirements for post modification testing in the design change process in place when the system was modified in 1978.

A detailed review of the ANO-1 control room isolation system original design and subsequent modifications since initial plant construction has been performed. This review revealed that in 1978 a modification was performed which established the current system configuration using check valves between the non-safety related instrument air (IA) system and the reserve air accumulators. A review of the documentation related to this modification revealed that testing of the functional capability of the check valves to prevent backleakage to a depressurized IA system and testing to verify the integrity (i.e., leak tightness) of other components of the system was not specified as being required and therefore was not performed prior to placing the modified system in service. Additionally, this oversight subsequently resulted in the failure to implement provisions requiring periodic leak testing of the check valves and other portions of the isolation system to verify system integrity did not degrade over time.

Reviews and evaluations of the ANO-1 IA system and air operated component designs and the functional testing required by GL 88-14 should have identified the deficiencies associated with the air supply system to the ANO-1 control room isolation dampers. Evaluations conducted by ANO in response to GL 88-14 identified this system as being within the scope of GL 88-14. However, it was inappropriately concluded that current surveillance testing of the system was adequate even though this testing did not include simulating a loss of the IA system and ensuring the dampers would close and remain closed for an acceptable period of time. Based on this information it was concluded that a contributing factor to the duration of this condition was inadequate actions taken by ANO in response to GL 88-14.

3. The corrective steps that have been taken and the results achieved:

Following discovery that the check valves had not been tested, a comprehensive action plan was developed and implemented to address this finding. A special work plan was developed to determine as-found conditions and perform testing to verify the integrity of the check valves and included provisions for checking the leak tightness of each ANO-1 control room isolation damper, both accumulators, and other components of the air supply system to the dampers (e.g., soldered piping joints, threaded fittings, solenoid valves, etc.). On September 21, 1990, performance of part of the work plan revealed several areas of degraded system integrity including check valve leakage. Based on this information the dampers and the ANO-1 control room isolation system were declared to be inoperable. This was reported in ANO License Event Report 90-010-00 (ICAN1009005) dated October 22, 1990. As a compensatory measure the work plan developed for testing the system had required the closing and sealing of fire dampers located in the ANO-1 control room normal heating ventilating and air conditioning system (HVAC) and securing the normal HVAC system supply fans as prerequisites to performance of the testing. Therefore, at the time of discovery of the excessive system leakage, the control room envelope was adequately isolated.

Following discovery on September 21, 1990, that the ANO-1 check valves and other components of the system leaked excessively, immediate corrective actions included repair of piping joints, threaded connections and solenoid valve leakage. The four check valves were removed and replaced with new valves. However, due to the unavailability of a better designed valve, it was necessary to utilize check valves with a similar design. Bench testing of the new valves for leakage prior to installation indicated that due to their design, i.e., bronze seats and disc, little improvement in minimizing leakage was obtained by this replacement. In order to resolve this problem, the system was modified by adding a manual isolation valve in each line directly upstream of the check valves. By maintaining the manual valves in a closed position, positive isolation of each accumulator from the IA system could be achieved. Results of system leak testing with the manual valves closed indicated leakage was significantly reduced. Conservative calculations based on final leakage rates in this configuration indicated the isolation dampers could be closed and maintained in a closed position for a minimum time period of approximately 72 hours under worst case conditions. Routine recharging of the accumulators from the IA system can be accomplished by periodically cycling the manual valves. Appropriate procedure changes were completed requiring maintaining the manual valves normally closed and opening them periodically for recharging of the accumulators. Remote monitoring of air supply system pressure is provided by pressure switches which initiate a control room annunciator alarm if system pressure decreases to approximately 50 psig which allows sufficient time for operator action to recharge the accumulators to assure an adequate supply of air is present.

Additionally, procedure changes were implemented to require closing and sealing of the fire dampers located in the ANO-1 control room normal HVAC system supply and exhaust ductwork within eight (8) hours should a loss of IA occur for any reason. This action will ensure adequate ANO-1 control room isolation is achieved and can be maintained for an acceptable period of time following postulated events.

A permanent plant procedure for ANO-1 concerning the testing of the isolation dampers and associated air supply system was developed and the initial test of the system began on December 27, 1990. This initial test, to date, has been prolonged due to the 1R9 extension and subsequent forced outage. Testing will initially be performed on a quarterly basis and the data obtained will be evaluated to determine if corrective actions are necessary. Changes in the frequency of test performance may be made based on the test results.

A team comprised of Design Engineering and System Engineering personnel was established to reevaluate Generic Letter 88-14. Based on an initial assessment of the generic letter, a thorough review for ANO will be completed prior to the beginning of the upcoming ANO-2 refueling outage 2R8. This outage is currently scheduled to commence on February 22, 1991.

Assessments of instrument air applications involving the use of accumulators have been completed for ANO-1 and ANO-2. These reviews assessed the ability of the accumulators to perform their design function, including consideration of testing that verifies air operated safety-related components will perform as expected. No safety significant discrepancies were identified relative to air-operated safety-related components. However, a number of specific recommendations were made based upon these reviews which were extended to address several non-safety related components as well. These recommendations will be dispositioned through the use of Engineering Action Requests, Condition Reports, Job Requests, etc., as appropriate.

As a point of clarification it is noted that two redundant dampers were identified as having inadequate testing to verify the design function. Subsequent testing however confirmed operability of the devices. This matter was previously identified by ANO at the time of the original inspection and has been discussed with the NRC.

Title 10 Part 50, Code of Federal Regulations, Appendix A, General Design Criteria 19, "Control Room", requires that adequate radiation protection be provided to permit access and occupancy of the control room under accident conditions. An operator dose assessment impact was performed to determine the safety significance of the condition. The operator dose impact assessment (attached) determined that estimated operator dose is conservatively calculated to remain within acceptance limits assuming the control room isolation system is degraded after one hour. Therefore, the safety significance is considered minimal.

An evaluation of an alternate system design including consideration of replacement of the existing isolation dampers with fail safe (i.e., fail closed) components or modifications to enhance the current system design will be completed by May 1, 1991.

4. The corrective steps that will be taken to avoid further violations:

The process used to develop and implement plant modifications at ANO has changed significantly since occurrence of the errors which led to this violation. Improvements have been made in areas such as design change package development, including more detailed reviews of design basis requirements for plant systems and components and incorporation of testing requirements which are consistent with the design basis to ensure functional capabilities are verified prior to placing modified systems in service.

In 1987, ANO revised the existing 10CFR50.59 program with the objective of improving the quality, depth and documentation of reviews conducted per the requirements of 10CFR50.59 for plant design changes and procedure changes. This program requires detailed reviews of design basis documents for each design change. Additionally, ANO has initiated a Design Configuration Documentation (DCD) Project intended to develop accurate and accessible documentation related to the design bases for selected ANO systems. The ANO Business Plan requires the improvement or initiation of several ANO programs, e.g. Surveillance Testing Upgrade Program, System Engineering Program, ANO Check Valve Program, etc. Collectively, these improvements should provide sufficient barriers and cross checks to prevent the recurrence of a condition of this type. Additional emphasis is being applied to hold personnel accountable for adhering to the requirements of station procedures and the performance of their duties.

In addition, the further actions taken as discussed under the response to violation 90-38A will ensure that information being submitted to the NRC is more effectively verified for accuracy.

5. The date when full compliance will be achieved:

Full compliance was achieved on September 27, 1990, when the dampers and isolation system were determined to be operable and the control room HVAC system was returned to a normal alignment.

OPERATOR DOSE IMPACT

	CURRENT DESIGN (REM)	GDC 19 LIMITS	SRP 6.4 GUIDANCE	CASE I	CASE II
WHOLE BODY	1.6	5	5	3.6	.36
THYROID	26.8	(EQUIV)	30 (40)*	3.7	3.7
SKIN (BETA)	32.3	(EQUIV)	7.5	6.4	6.4

CASE I: ESTIMATED DOSE DUE TO DEGRADED ISOLATION SYSTEM ASSUMING (NON-MECHANISTIC)

- 1) ISOLATION LOST AT 1 HOUR
- 2) TID SOURCE TERMS
- 3) 30 CFM UNFILTERED IN-LEAKAGE AFTER 1 HOUR
- 4) ISOLATION RESTORED AT 8 HOURS
- 5) SRP 6.5.2, REV 2 SPRAY EFFICIENCIES

CASE II: ESTIMATED DOSE - REALISTIC ASSUMPTIONS (MECHANISTIC)

- 1) GAP ACTIVITY SOURCE TERM
- 2) OTHER ASSUMPTIONS HELD CONSTANT

* ACCEPTANCE LIMIT FOR ANO PER MEETING WITH NRC