



Entergy Operations

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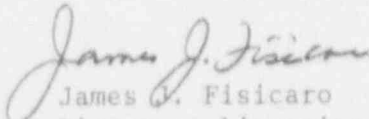
U. S. Nuclear Regulatory Commission
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Washington, D. C. 20555

SUBJECT: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Licensee Event Report 50-368/92-009-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B), enclosed is the subject report concerning excore nuclear instrumentation detector leak testing.

Very truly yours,


James J. Fisicaro
Director, Licensing

JJF/TFS/mmg

Enclosure

cc: Regional Administrator
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U. S. Nuclear Regulatory Commission
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Arkansas Nuclear One, Unit Two

DOCKET NUMBER (2) 050003681 OF 05

PAGE (3) 5

TITLE (4) Leak Test Surveillance Of Excore Nuclear Instrumentation Detectors Not Performed As Required By Technical Specifications Due To Procedural Inadequacies

EVENT DATE (5)			LER NUMBER (6)		REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																				
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names																			
1	0	2	1	9	2	9	2	--	0	0	9	--	0	0	1	1	1	7	9	2	ANO-1	0	5	0	0	3	1	3
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																								
POWER LEVEL	(10)	0	1	9	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vi)	50.73(a)(2)(vii)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	Other (Specify in Abstract below and in Text, NRC Form 366A)		

LICENSEE CONTACT FOR THIS LER (12)

Name: Thomas F. Scott, Nuclear Safety and Licensing Specialist

Telephone Number: 501 964-5000

Area Code: 501

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

Cause	System	Component	Manufacturer	Reportable to NRC	Cause	System	Component	Manufacturer	Reportable to NRC

SUPPLEMENT REPORT EXPECTED (14)

☐ Yes (If yes, complete Expected Submission Date) ☒ No

EXPECTED SUBMISSION DATE (15)

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On October 21, 1992, during a Quality Assurance audit of sealed source leak test records, it was discovered that an excore nuclear instrumentation fission detector had been installed in October 1991 without the Technical Specification required leak test having been performed within 31 days prior to its being exposed to core flux. During investigation of this event it was discovered that a fission detector had also been installed in 1990 and another detector had been shipped from ANO in 1991 without the Technical Specification required leak tests having been performed. The root cause has been determined to be inadequacies in the administrative procedures that provide directions implementing the Technical Specification surveillance requirements. Fission detectors located in the warehouse at the time administrative controls were established to require tags that trigger the test were not backfitted with appropriate markings. Corrective actions include revisions to administrative procedures and correctly marking spare detectors.

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					05000368	92--	009--	

TEXT (If more space is required, use additional NRC Form 366A's) (17)

A. Plant Status

At the time the condition was discovered, Arkansas Nuclear One Unit 2 (ANO-2) was operating at 19 percent power (Mode 1).

B. Event Description

Technical Specification 4.7.9.1.2.c requires a surveillance test of a fission detector for leakage within 31 days prior to its being subjected to core flux. On October 21, 1992, during a Quality Assurance audit of sealed source leak test records, it was discovered that this surveillance had not been performed prior to installation of an excore Nuclear Instrumentation (NI) [IG] detector on October 10, 1991. During the investigation of this event, it was also discovered that another fission detector was installed in January 1990 without the required leak test having been performed. Technical Specification 4.7.9.1.2.b requires a leak test of a fission detector prior to transfer to another licensee. Review of this event also revealed that a fission detector was shipped from ANO in 1991 without the required leak test having been performed.

Excore detectors are part of the NI System which provides:

- continuous monitoring and indication of neutron flux from the source level through 200 percent full power,
- signals to the Reactor Protection System [JC] portion of the Plant Protective System [JC],
- signals to the Reactor Regulation System [JD] for automatic control element assembly manipulation, and
- indication of reactor startup rate

Excore detectors are fission detectors and typically contain approximately 2-3 grams of special nuclear material (SNM), 93 percent enriched Uranium-235. These detectors are installed in wells around the exterior of the reactor vessel.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

C. Root Cause

There are three administrative procedures that provide directions intended to initiate the Technical Specifications (TS) surveillance requirement for leak testing fission detectors. These procedures are: Radioactive Source Accountability (1000.041); Storage, Control, and Accountability of Special Nuclear Material (1022.012); and Leak Test of Sealed Sources (1622.020). Two of these procedures, 1000.041 and 1622.020, were revised in mid-1988 to add requirements for adding tags to fission detectors upon receipt. The purpose of the tags is to act as a mechanism to initiate the event-driven Technical Specification surveillance before the detector is moved.

The procedure for Radioactive Source Accountability (1000.041) contains instructions for tagging and leak testing the fission detectors in both the body of the procedure and in the receipt documentation form. The "scope" section at the first of the procedure contains a statement that sources with greater than one gram of SNM are controlled in accordance with procedure 1022.012. This statement causes the user to fail to locate the requirements for leak testing and tagging contained later in the procedure. These requirements include leak testing in accordance with 1622.020 and application of a tag during receipt inspection to state, "Notify Health Physics Prior To Removing This Source To Ensure That It Has Been Leak Tested Within The Last 31 Days."

The user directed to procedure 1022.012 by procedure 1000.041 would find no directions to tag the detector but a requirement to perform the TS-required leak test upon receipt. The TS does not require a receipt leak test. There is no direction in 1022.012 to perform the leak test within 31 days of installation.

The performance of required leak tests and surveys of radioactive equipment received at ANO is the responsibility of the Radiation Protection organization. The administrative procedure 1622.021, Radioactive Equipment Receipt, Storage, and Accountability, is the procedure to which Health Physics Technicians routinely refer when notified of the need to perform a receipt inspection and survey of radioactive material. Procedure 1622.021 specifically exempts SNM from the requirements of the procedure. It also does not provide instructions regarding how to deal with SNM nor does it refer the user to another procedure for such instructions.

Procedure 1622.020, Leak Test of Sealed Sources, instructs the user to place one or more tags on the detector with the same statement specified in procedure 1000.041 concerning notification prior to removing the source to ensure that it has been leak tested within 31 days. It also instructs the user to perform the leak test within 31 days of installing the detector but does not instruct the user to perform a leak test prior to transfer to another Licensee or following maintenance which are other TS requirements. This procedure is an implementing level procedure. There is not clear direction to this procedure and its requirements in higher level controlling procedures.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Revisions to administrative procedures that added tagging requirements for fission detectors were made in 1988. The detectors that were installed in October 1991 and January 1990 and the detector shipped from ANO in 1991 were received at ANO prior to initiation of the procedure changes. An inspection of fission detectors currently located in the ANO warehouse revealed two detectors received before 1988 with no tags and two detectors received after 1988 that did have tags with the message described in procedure 1622.020. The message on the tags is inconspicuous and could be overlooked. It appears that detectors in stock prior to implementation of the tagging system were not backfitted with tags as intended by the procedure revisions because personnel who initiated the revisions were not aware of there being fission detectors in stock at that time.

The root cause for this condition has been determined to be inadequate procedures implementing the triggering mechanism necessary to ensure that the surveillance was identified prior to installing the detectors. These inadequacies resulted in detectors not being tagged to identify requirements.

D. Corrective Actions

Administrative procedures 1022.012, 1622.020, 1622.021 and 1000.041 will be revised to correct identified deficiencies prior to December 31, 1992. These changes will include a revised statement for tags to include shipment or maintenance as triggers for performing a leak test.

Fission detectors in the ANO warehouse have been tagged to identify leak testing requirements.

As an independent measure of identifying leak testing requirements, the component data base used by Planning personnel to prepare job orders for work involving fission detectors will be revised to add a note referencing the Technical Specification requirements. This is planned to be completed by December 31, 1992.

It has been concluded that this is an isolated event and that no further actions regarding surveillance scheduling or procedure administration are required.

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E. Safety Significance

The Technical Specification limit for removable contamination is established at the level contained in 10CFR70.39(c) for plutonium source leakage. This limit is sufficiently conservative to assure that leakage from the excore detectors will not exceed allowable intake values for personnel. The excore detectors are mounted in holder assemblies and located in instrument wells (thimbles) external to the reactor vessel. The wells remain sealed except when detectors are being replaced. During outage conditions, routine contamination and radiation surveys are performed in the area of the instrument well closures prior to and during personnel access. Special radiation and contamination surveys are also performed whenever maintenance activities require opening the instrument wells and removing the detectors. These surveys and Health Physics job coverage minimize the potential for exceeding any personnel radiation exposure limits if any leakage from the fission detectors were to occur. Failure to perform the surveillance did not affect operability of the detectors. There have been no problems observed with operation of the excore detectors since replacement, calibration, and functional testing. For these reasons, the safety significance of this condition is considered to be minimal.

F. Basis For Reportability

Failure to perform leak tests of the excore fission detectors within 31 days prior to their being subjected to core flux as required by Technical Specification 4.7.9.1.2.c, or prior to shipment as required by Technical Specification 4.7.9.1.2.b, constitute operations prohibited by Technical Specifications reportable pursuant to 10CFR50.73(a)(2)(i)(B).

G. Additional Information

There have been no similar events reported by ANO as Licensee Event Reports.

ANO Unit 1 NI System uses fission detectors similar to those used by ANO-2. The administrative procedures for control of SNM and leak testing of fission detectors are applicable to both units. The corrective actions are also applicable to both units.

Energy Industry Identification System (EIIIS) codes are identified in the text as [XX].