

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (F-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1) Cook Nuclear Plant Unit 1		DOCKET NUMBER (2) 05000-315	PAGE (3) 1 of 4
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TITLE (4)
Radiation Monitoring System Not Tested in Accordance with Technical Specification Surveillance Requirements

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 NAME	DOCKET NUMBER	
04	08	1999	1999	-- 015 --	00	07	01	1999	D.C. Cook - Unit 2	05000-316	
OPERATING MODE (9)		5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)		000	20.2201 (b)		20.2203(a)(2)(v)		<input checked="" type="checkbox"/>		50.73(a)(2)(i)	50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(i)				50.73(a)(2)(ii)	50.73(a)(2)(x)	
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)				50.73(a)(2)(iii)	73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)				50.73(a)(2)(iv)	OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)				50.73(a)(2)(v)	Specify in Abstract below or on NRC Form 366A	
			20.2203(a)(2)(iv)		50.36(c)(2)				50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME Ms. Brenda W. O'Rourke, Compliance Engineer	TELEPHONE NUMBER (Include Area Code) (616) 465-5901 x2604
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES	<input checked="" type="checkbox"/>		NO					
(If Yes, complete EXPECTED SUBMISSION DATE).								

Abstract (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 8, 1999, during performance of the Expanded System Readiness Review for the Radiation Monitoring System (RMS), it was identified that the Eberline RMS radiation monitor channel functional test methodology does not meet the intent of Technical Specification (TS) 4.3.3.1, 4.3.2.1.1 and 4.4.6.1.a and Offsite Dose Calculation Manual (ODCM) surveillance requirements. Channel functional testing was determined to be in non-compliance with the TS and ODCM. Subsequent evaluation also identified the RMS calibration procedures to be inadequate. As a result, concerns arose regarding the RMS radiation monitors ability to perform their design function. These conditions have existed since the Eberline radiation monitors were installed in 1982 and are applicable to both units. On April 9, 1999, at 1715 hours, the radiation monitors were declared inoperable. It is recognized that this condition should have been identified as reportable on April 9, 1999, in accordance with 10 CFR 50.73(a)(2)(i)(B) and that this is a late LER submittal. A condition report has been written to address this deficiency.

The cause was inadequate implementation of Technical Specification surveillance requirements into plant surveillance procedures. Confidence exists that the monitors would function as designed, since sufficient overlap is provided in existing test procedures which ensures that the entire monitor circuit is tested. In addition, a source check of each monitor channel is routinely performed. Also, offsite dose calculations for routine releases are made using "grab" samples of the process effluents. Based upon this information, this condition has minimal safety implication to the health and safety of the public. On May 9, 1999, channel functional testing of the RMS unit vent effluent radiation monitors (1-VRS-1500 and 2-VRS-2500) was successfully completed and the monitors were declared operable. An extent of condition review is being performed to evaluate the adequacy of channel functional testing for other plant TS instrumentation. Based on the completed evaluation, additional corrective and preventive actions may be developed and included in a supplement to this LER, if required.

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Conditions Prior to Event

Unit 1 was in Mode 5, Cold Shutdown
Unit 2 was in Mode 5, Cold Shutdown

Description of Event

On April 8, 1999, during performance of the Expanded System Readiness Review for the Radiation Monitoring System (RMS), it was identified that the Eberline RMS radiation monitor channel functional test methodology does not meet the intent of Technical Specification (TS) 4.3.3.1, 4.3.2.1.1 and 4.4.6.1.a and Offsite Dose Calculation Manual (ODCM) surveillance requirements. Specifically, the TS requires channel functional testing of the lower containment radiation monitors (1-ERS-1301/1305, 2-ERS-2301/2305, 1-ERS-1401/1405 and 2-ERS-2401/2405), the upper containment radiation monitors (1-VRS-1101/1201 and 2-VRS-2101/2201), the steam generator Power Operated Relief Valve (PORV) monitors (1-MRA-1601/1701 and 2-MRA-2601/2701), the steam jet air ejector (SJAE) vent effluent monitors (1-SRA-1905/1907/1909 and 2-SRA-2905/2907/2909), and the gland seal leak-off monitors (1-SRA-1805, 2-SRA-2805) by injection of a simulated radiation signal, into the channel being tested to verify the channel's alarm and/or trip functions. However, the surveillance test procedures inject a signal into the radiation monitor's spare channel, which contains no actual radiation detector, to verify the channel trip and/or alarm functions. In addition, it was identified that the channel functional test procedures for the unit vent effluent radiation monitors (1-VRS-1505/1507/1509 and 2-VRS-2505/2507/2509) did not test the channel's alarm function.

Subsequent evaluation also identified that the RMS calibration procedures did not require documentation of the calibration equipment's low voltage power supply voltage to ensure initial laboratory conditions are equivalent to that found in the field. Use of an out of tolerance power supply could impact the radiation monitor's efficiency. As a result, concerns arose regarding the RMS radiation monitors ability to perform their indication, actuation and isolation function. These conditions have existed since the Eberline radiation monitors were installed in 1982 and are applicable to both units.

Based on the preliminary results, on April 9, 1999, the subject radiation monitors were declared inoperable at 1715 hours. It is recognized that this condition should have been identified as reportable on April 9, 1999, and that this is a late Licensee Event Report submittal.

Cause of Event

The cause was inadequate implementation of Technical Specification surveillance requirements into plant surveillance procedures.

Analysis of Event

This LER is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(i)(B) for a condition prohibited by plant Technical Specifications (TS), since the actuation and isolation function of the RMS was not verified as required by plant TS.

UFSAR Section 11.3, states that the Radiation Monitoring System (RMS) is designed to perform two basic functions: 1) Warn of any radiation hazards which might develop, and 2) Give early warning which might lead to a radiation hazard or plant damage. The RMS instruments are located at selected release points in and around the plant to detect, compute, and record radiation levels. The components of the RMS are designed to operate during all expected environmental conditions for normal operation, and specific components are designed to operate during adverse or accident conditions. In the event radiation levels should rise above a desired setpoint, alarms are initiated in the control room to provide

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continued safe operation of the plant and assure that personnel exposure does not exceed 10 CFR 20 limits. In addition, certain RMS radiation monitors provide indication of offsite radiation releases during post-accident conditions to ensure public exposure does not exceed 10CFR Part 100 guidelines.

The subject radiation monitor channels include: the lower containment radiation monitors (1-ERS-1301/1305, 2-ERS-2301/2305, 1-ERS-1401/1405 and 2-ERS-2401/2405), the upper containment radiation monitors (1-VRS-1101/1201 and 2-VRS-2101/2201), the SJAE vent effluent monitors (1-SRA-1905/1907/1909 and 2-SRA-2905/2907/2909), the gland seal leak-off monitors (1-SRA-1805, 2-SRA-2805), the steam generator PORV monitors (1-MRA-1601/1701 and 2-MRA-2601/2701), and the unit vent effluent radiation monitors (1-VRS-1505/1507/1509 and 2-VRS-2505/2507/2509). A typical monitor consists of several channel functions: 1-Beta Particulate, 2-Spare, 3-Iodine, 4-Iodine background subtract, 5-Low range noble gas, 6-Local area radiation, 7-Mid range noble gas, and 9-High range noble gas. These radiation monitors provide alarm, indication and control functions and automatic actuations for isolating liquid and gas releases to the environment.

Calibration of the radiation monitors is performed by removing the detectors from the field and calibrating them in a laboratory. While removal of the detectors from the field for calibration is an acceptable calibration method used throughout the industry, the possibility of additional errors in the calibration process can be created if the calibration equipment characteristics are not verified/documentated before each detector is calibrated. If the laboratory conditions are not representative of actual field conditions, detector efficiency could be impacted, resulting in non-conservative detection of actual radiation levels, and prevent the monitors from performing their actuation/isolation function.

The TS requires the channel functional test to be conducted by injecting a simulated signal into the channel, as close to the detector as practical, to verify the channel's alarm and/or trip function. The actual RMS channel functional test was performed using the monitor's spare channel, which contains no actual radiation detector. The spare channel was used to facilitate ease of testing and limit wear on the monitors components. Although this test methodology does activate the actual process automatic actuation functions, such as process isolation, containment isolation, and other attendant functions, it does not meet the TS definition of a channel functional test.

While the RMS channel functional testing was not performed in accordance with TS requirements, confidence now exists that the monitors would have functioned as designed. The existing surveillance test procedures do test all portions of the individual circuits, and provide sufficient overlap. This provides assurance that the monitor circuit (from input signal to detector) is functioning. In addition to channel functional testing, a source check is routinely performed. Also, offsite dose calculations for routine releases are made using "grab" samples of the process effluents. Based upon this information, this condition has minimal safety implication to the health and safety of the public.

Corrective Actions

On May 9, 1999, channel functional testing of the RMS unit vent effluent radiation monitors (1-VRS-1500 and 2-VRS-2500) was successfully completed and the monitors were declared operable.

Channel functional testing for the lower containment radiation monitors (1-ERS-1300/1400 and 2-ERS-2300/2400), and the upper containment radiation monitors (1-VRS-1100/1200 and 2-VRS-2100/2200) will be performed prior to entering Mode 6 operation. The SJAE radiation monitors (1-SRA-1900 and 2-SRA-2900), the gland seal leak-off monitors (1-SRA-1800 and 2-SRA-2800), and the steam generator PORV monitors (1-MRA-1600/1700 and 2-MRA-2600/2700) will be tested prior to restart of each unit.

The appropriate RMS radiation monitor channel functional test procedures will be revised to require testing of the actual functional channels to ensure the monitor will be capable of performing its design function. In addition, the appropriate

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RMS radiation monitor channel calibration procedures will be revised to include recording the as-found/as-left low voltage power supply voltage values.

A condition report was written to address the untimely submittal of this Licensee Event Report. Corrective actions will be determined as part of the corrective action process.

An extent of condition review is being performed to evaluate the adequacy of channel functional testing for other plant TS instrumentation. Based on the results of the completed evaluation, additional corrective and preventive actions may be developed and included in a supplement to this LER, if required.

As previously stated in correspondence AEP:NRC:1260GH, dated March 19, 1999, "Enforcement Actions 98-150, 98-151, 98-152 and 98-186, Reply to Notice of Violation Dated October 13, 1998," a comprehensive review of the adequacy of TS surveillance test procedures will be performed. This review will also include the creation of a detailed TS surveillance database to ensure TS surveillance test procedures align with TS surveillance test requirements.

This LER will be evaluated as part of DC Cook's supplemental response to Generic Letter 96-01, "Testing of Safety-Related Logic Circuits," as documented in correspondence AEP:NRC:1246B, dated January 30, 1999.

Previous Similar Events

LER 315/99-003-00
LER 316/99-002-00