NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104

EXPIRES 04/30/98

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 (T-6 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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Millstone Nuclear Power Station Unit 2	05000336	1 OF 3

TITLE (4)

Instrument Channels of Containment Air Radiation Monitors Do Not Meet Acceptable Isolation Requirements Between QA and Non-QA Components

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
12	18	96	96	-- 042 --	00	01	17	97	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
		20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)	000	20.2203(a)(1)	20.2203(a)(3)(i)	X	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 in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
R. T. Laudenat, MP2 Nuclear Licensing Manager	(860) 444-5248

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

On December 18, 1996, an Engineering review revealed that safety grade (1E) electrical isolation requirements were not satisfied. It was discovered that there was inadequate isolation between non-QA (non-safety grade) and QA Category 1 (safety grade) components in the instrument loops of the Containment Air Radiation Monitors RM-8123A/B and RM-8262A/B. The instrument channels contain a non-QA recorder, a non-QA local indicator, and a non-QA local alarm. These non-QA components did not have adequate electrical isolation from QA Category 1 components within the channel as required by IEEE Standard 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Systems." Therefore, the RM-8123A/B and RM-8262A/B instrument loops were considered inoperable.

The cause of the event was inadequate design control and configuration management regarding installation and control of QA and non-QA components.

Upon identification of this event a temporary modification was implemented to disconnect the non-QA components from the instrument channels. Engineering will implement corrective actions to either upgrade the non-QA components to QA or install permanent electrical isolation devices within the RM-8123A/B and RM-8262A/B instrument loops.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

I. Description of Event

On December 18, 1996, an Engineering review revealed that safety grade (1E) electrical isolation requirements were not satisfied. It was discovered that there was inadequate isolation between Non-QA (non-safety grade) and QA Category 1 (safety grade) components in the instrument loops of the Containment Air Radiation Monitors [RE] RM-8123A/B and RM-8262A/B, which monitor the containment atmosphere for particulate and gaseous activity. The instrument channels contain a non-QA recorder [RR], a non-QA local indicator [RI], and a non-QA local alarm [RA]. These non-QA components do not have adequate electrical isolation from QA Category 1 components within the channel as required by IEEE Standard 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Systems." Therefore, the instrument loops were considered inoperable and not able to perform their safety function. At the time of discovery of this event, the unit was in Mode 6 at 0 percent power.

A high radiation condition (gaseous or particulate) inside containment would cause any of the radiation monitors to transmit a signal to cause the Engineered Safety Feature Actuation System (ESFAS) [JE] to initiate a Containment Purge Valve Isolation signal (CPVIS). This would cause the four air-operated containment isolation valves [ISV] to automatically close. A failure in the indicator, recorder or alarm had the potential to compromise the function of the radiation monitors. This failure may have prevented the initiation of the CPVIS, thereby preventing the safety function of containing the release of radioactive material.

The RM-8123A/B and RM-8262A/B channels were originally specified as QA Category 1 and the components were classified on the equipment parts list as QA, with the exception of the recorder. The original circuit design contained isolation devices (current-to-current converters) between the recorder and the radiation monitors. A plant design change in 1982 incorrectly removed these devices in each of the radiation monitor instrument loops and they were not replaced. A review of the equipment parts list in 1989 listed the recorder with a non-QA designation and incorrectly listed the indicator as non-QA. A subsequent parts list reclassified the indicator to its original QA Category 1 status as a corrective action to a previous event. The recorder continues to have a non-QA classification.

The Containment Air Radiation Monitors are listed in the Technical Specifications (TS) and are required to be operable per TS 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation," for Modes 5 and 6, TS 3.4.6.1, "Reactor Coolant System Leakage, Leakage Detection Systems," for Modes 1, 2, 3, and 4, and TS 3.9.9, "Containment Radiation Monitoring," for Mode 6.

The channels were inoperable since 1982 and therefore, this event is reportable under 10 CFR 50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's Technical Specifications; and 10 CFR 50.73(a)(2)(ii)(B), a condition which was outside the design basis of the plant.

II. Cause of Event

The cause of the event was inadequate design control and configuration management regarding installation and control of QA and Non-QA components.

III. Analysis of Event

The functional requirements of the ESFAS is to detect accident conditions and initiate safeguard systems. The containment purge system is designed to provide a method of providing fresh air to the containment. During unit operation (Modes 1, 2, 3, and 4), the containment purge system containment isolation valves are closed and electrically deactivated. In Modes 5 and 6 (cold shutdown and refueling), the containment purge isolation valves will receive an automatic closure signal if the monitored containment radiation level reaches a preset level. Two redundant particulate and gaseous monitoring systems are used to continuously monitor the containment atmosphere. A high radiation signal from any one of the four monitored channels (2 gaseous and 2 particulate)

will initiate a containment isolation actuation signal which will automatically close the containment purge system containment isolation valves.

The inadequate isolation of the non-QA recorder resulted in the determination that the radiation monitor loops were inoperable. Although there was inadequate electrical isolation between the recorder and the radiation monitors, the non-QA components were industrial grade and seismically mounted. Therefore, the ESFAS would have been expected to perform its safety function.

Based on the above, this event is not safety significant.

IV. Corrective Action

As a result of this event, the following corrective actions have been, or will be, performed.

1. Upon identification of this event a temporary modification was implemented to disconnect the non-QA components from the instrument channels.

2. Engineering will implement corrective actions to either upgrade the non-QA components to QA or install permanent electrical isolation devices within the RM-8123A/B and RM-8262A/B instrument loops.

3. In 1993, the Unit No. 2 design authority was consolidated and responsibility assigned to the Design Engineering department to address design and configuration management issues. Older (historical) electrical isolation problems may be identified and resolved as part of an on-going Configuration Management Project on Unit No. 2.

V. Additional Information

Previous LERs that involve inadequate electrical isolation include:

LER 95-011-00: EHC Pressure Switches Not Isolated from RPS Circuitry

The cause of this event was inadequate design control which resulted in incorrectly downgrading the QA classification of components without consideration to isolation requirements. The event was reported under 10 CFR 50.73(a)(2)(ii)(B), a condition which was outside the design basis of the plant. Corrective action concerning this event were not definitive. The LER listed potential options for corrective action under review that would be completed prior to plant startup. The options were limited to the RPS trip circuitry and would not have prevented the present event concerning inadequate isolation in the Containment Air Radiation Monitor instrument loops.

LER 94-002-02: Failure to Meet Acceptable Isolation for Class 1E Protection Instrument Channels

The cause of this event was design change process errors involving the interpretation of adequate isolation within the pressurizer pressure control loops. The event was reported under 10 CFR 50.73(a)(2)(ii)(B), a condition which was outside the design basis of the plant. Corrective actions for this event were limited to the pressurizer pressure channels and would not have prevented the present event concerning inadequate isolation in the Containment Air Radiation Monitor channels.

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