

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Callaway Plant Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 4 8 3										PAGE (3) 1 OF 0 5					
TITLE (4) Containment High Range Radiation Monitors Declared Inoperable as a Result of Missing Heat Shrink Moisture Seals																									
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 Wolf Creek Generating Station					DOCKET NUMBER (5) 0 5 0 0 0 4 8 2					
0	2	0	2	8	8	8	8	-	0	0	3	-	0	0	0	3	0	3	8	8	0 5 0 0 0 4 8 2				
OPERATING MODE (9) 1					THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																				
POWER LEVEL (10) 1 0 0					20.402(b)					20.405(c)					50.73(a)(2)(iv)					73.71(b)					
					20.405(a)(1)(i)					50.36(a)(1)					50.73(a)(2)(v)					73.71(c)					
					20.405(a)(1)(ii)					50.36(a)(2)					50.73(a)(2)(vi)					OTHER (Specify in Abstract below and in Text, NRC Form 365A)					
					20.405(a)(1)(iii)					X 50.73(a)(2)(i)					50.73(a)(2)(vii)(A)										
					20.405(a)(1)(iv)					50.73(a)(2)(ii)					50.73(a)(2)(vii)(B)										
					20.405(a)(1)(v)					50.73(a)(2)(iii)					50.73(a)(2)(ix)										
LICENSEE CONTACT FOR THIS LER (12)																									
NAME John M. Price - Superintendent Design Control															TELEPHONE NUMBER AREA CODE 3 1 4 6 7 6 - 8 1 5 3										
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																
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 fifteen single-space typewritten lines) (16)																									

At 1840 CST on 2/2/88, it was determined that the electrical penetration assemblies connected via coax cabling to the containment high range radiation monitors, GT-RE-59 and GT-RE-60, were not installed with protective heat shrink moisture seals, a configuration that would not ensure post accident operability. This resulted in two inoperable containment high range radiation monitors, a condition prohibited by Technical Specification 3.3.3.6 for accident monitoring instrumentation.

The root cause of the event is the failure of the plant's architectural engineer to identify the need for moisture seals on an electrical penetration assembly coax connector due to an inadequate vendor manual. The vendor manual provided a basis for the development of an electrical termination list, the reference document used during construction of the plant. The electrical termination list did not require heat shrink moisture seals on the containment penetration assembly coax connectors.

Corrective action taken included restoring high range monitor operability by installing heat shrink moisture seals, revising inadequate design documentation, and reviewing coax cabling connections for similar conditions.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/98

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Callaway Plant Unit 1	05000483	88	003	00	02	OF 05

TEXT (If more space is required, use additional NRC Form 365A's) (17)

PLANT CONDITIONS AT TIME OF EVENT

Mode 1 - Power Operation, 100% Reactor Power

BASIS FOR REPORTABILITY

At 1840 CST on 2/2/88, it was determined that a condition prohibited by Technical Specification 3.3.3.6, which requires that certain accident monitoring instrumentation channels be operable in Mode 1, Power Operation, through Mode 3, Hot Standby, had occurred. The detector cables for the containment High Range Radiation Monitors GT-RE-59 and GT-RE-60⁽¹⁾ were not installed in a configuration that would ensure post accident operability. This requirement for operability has not been met since initial entry into Mode 3, Hot Standby, on 8/19/84. This condition is prohibited by the plant's T/S's and the event is reportable in accordance with 10CFR50.73(a)(2)(1)(B).

DESCRIPTION OF EVENT

On 2/2/88, a copy of Wolf Creek Licensee Event Report (LER) 87-058-00, dated 1/22/88, was reviewed for its applicability to the Callaway Plant. The LER documented missing heat shrink moisture seals⁽²⁾ on electrical penetration cables⁽³⁾ within containment.⁽⁴⁾ These cables are connected between the high range radiation monitor detectors⁽⁵⁾ and their containment penetrations.⁽⁶⁾ On 2/2/88, a visual inspection verified missing heat shrink moisture seals on electrical penetration assembly connectors for high range radiation monitor coaxial cables ISPIO1LC, ISPIO1LD, 4SPIO1MC, and 4SPIO1MD. The containment high range radiation monitors GT-RE-59 and GT-RE-60 were declared inoperable and T/S 3.3.3.6 Action (c) was entered. This action statement requires initiation of the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours and either restoration of the inoperable channel to OPERABLE status within 7 days, or preparation and submittal of a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days that provides actions taken, cause of the inoperability and plans and schedules for restoring the channels to OPERABLE status. On 2/8/88 the containment high range radiation monitors were restored to operable status following installation of heat shrink moisture seals.

BACKGROUND INFORMATION

The notes and references which specify the requirements in the electrical termination list were prepared by examining the appropriate reference material. This action was performed by the architect engineer, Bechtel Power Corporation. The General Atomic Company (GAC) vendor manual for the

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

containment high range radiation monitors contains a drawing that shows the detectors and interconnecting coaxial cabling through the containment penetration assembly to the readout instrument. This drawing shows "heat shrinkable sleeves" protecting the connectors at the detectors, but does not show anything protecting the connectors at the containment penetration assembly. GAC considered the specifications for the penetration assembly to be outside of the scope of their manual. Additionally, the containment penetration assembly manual (Installation and Maintenance Manual for Feedthrough/Adapter Module Assemblies, IPS-655) provided by the CONAX Corporation contains a parts list which does not show the heat shrink moisture seals. The electrical termination instructions in the CONAX manual do not require heat shrink moisture seals over the completed connections. The CONAX manual does specifically require the heat shrink seals for bolted NEMA spade lugs used for other than the coaxial connections. A Part 21 report is not required since the only other plant which uses CONAX Manual IPS-655 is the Wolf Creek Nuclear Power Plant. They have reported this condition. However, a CONAX Corporation letter dated 1/8/88 concurred that the penetration assembly electrical connections shall be environmentally sealed by installing Raychem heat shrink seals.

ROOT CAUSE

The incident was the result of an inadequate CONAX Corporation vendor manual (Installation and Maintenance Manual for Feedthrough/Adapter Module Assemblies, IPS-655) which resulted in an incomplete electrical termination list prepared by the architectural engineer (Bechtel). The electrical termination list did not require heat shrink moisture seals on the containment penetration assembly coax connectors, therefore none were installed.

CORRECTIVE ACTIONS AND ACTIONS TO PREVENT RECURRENCE

- (1) On 2/8/88 a plant modification was developed and implemented to install nuclear grade heat shrink moisture seals for coaxial cables ISPI01LC, ISPI01LD, 4SPI01MC, and 4SPI01MD.
- (2) A document review of the remaining containment coax type connections for electrical penetration assemblies were found to be non-safety related and did not require heat shrink moisture seals.
- (3) Information was added to the electrical termination list. The CONAX vendor specification and GAC manual will be modified accordingly to specify heat shrink moisture seals over the coax connections.

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SAFETY SIGNIFICANCE

The containment high range radiation monitors, GT-RE-59/60, function to provide indication of the containment radiation level following a Loss of Coolant Accident (LOCA) in a post accident environment. Sustained high containment humidity with the subsequent moisture on the unsealed containment penetration assembly connections would most probably result in a lowered resistance between the coax center conductor and its shield. The lowered resistance could cause the radiation detectors to indicate values outside of the acceptable accuracy limits. Post accident operability of these radiation monitors could not be ensured.

Although GT-RE-59/60 are not the primary radiation monitors utilized for dose assessment, inaccurate containment radiation values provided by the Balance of Plant computer could cause an inaccurate dose calculation to be made by utility Health Physics personnel. However, Health Physics personnel use other radiation monitors (i.e. unit vent, steam system PORV's, auxiliary feedwater pump turbine exhaust) for dose calculations. Any significant deviation would cause them to reverify the information and confirm which data was correct. The re-verification would require the use of the backup procedure for verifying the containment radiation levels, EIP-ZZ-01211, 'Backup Methods for Initial Dose Assessment'.

GT-RE-59/60 do not provide any automatic safety actuations. However, if actual containment radiation levels are greater than 100 R/hr following an accident, emergency procedures CSF-1, 'Critical Safety Functions' and FR-Z.3, 'Response to High Containment Radiation Level' could require action to place the containment atmosphere control system in service to reduce the containment airborne concentrations of radioiodine and particulates to acceptable levels for containment occupancy or prior to a containment purge. In the event of LOCA accident, an automatic Containment Purge Isolation Signal (CPIS) would be present. The containment purge radiation monitors would act to initiate a CPIS to prevent any containment purge attempted with high containment radiation levels present.

GT-RE-59/60 indication is one of numerous indications available for declaring an emergency action level. Failure of these two radiator monitors would not prevent timely determination of an emergency action level. Inaccurate high readings could cause event classification at a higher level than necessary, while low readings would not be considered for event classifications since the redundant monitors would be higher and thus used for event evaluations.

For these reasons, loss of the containment high range radiation monitors during a LOCA would not pose a threat to the health and safety of the public.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

PREVIOUS OCCURRENCES

None

FOOTNOTES

The system and component codes listed below are from IEEE Standards 805-1983 and 803A-1983 respectively.

- (1) System - IK
Component - MON
Manufacturer - General Atomic Company
- (2) System - IK
Component - SEAL
- (3) System - IK
Component - CBL
- (4) System - NH
Component - N/A
- (5) System - IK
Component - DET
- (6) System - NH
Component - PEN
Manufacturer - Conax Corporation
- (7) System - BP
Component - N/A



Callaway Plant

March 3, 1988

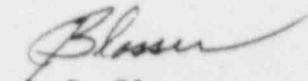
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ULNRC-1738

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 88-003-00
CONTAINMENT HIGH RANGE RADIATION MONITORS DECLARED
INOPERABLE AS A RESULT OF MISSING HEAT SHRINK MOISTURE SEALS

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) concerning missing heat shrink moisture seals on electrical penetration assemblies for containment high range radiation monitors. This resulted in the plant operating in a condition prohibited by Technical Specification 3.3.3.6.


J. D. Blosser
Manager, Callaway Plant

PSP:jlh

Enclosure

cc: Distribution attached

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cc distribution for ULNRC-1738

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