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Power Company
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March 28, 2003

AEP:NRC:3692

Docket No: 50-315

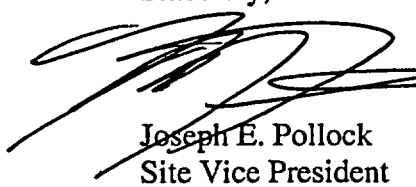
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 1
TECHNICAL SPECIFICATION 3.3.3.1 REQUIRES SPECIAL REPORT FOR
INOPERABLE RADIATION MONITOR 1-MRA-1701

In accordance with Donald C. Cook Nuclear Plant (CNP) Technical Specifications 3.3.3.1 and 6.9.2, a special report is being provided to inform the Nuclear Regulatory Commission of the inoperability of Radiation Monitor 1-MRA-1701.

There are no new commitments in this submittal. Should you have any questions, please contact Mr. Brian A. McIntyre, Manager of Regulatory Affairs, at (269) 697-5806.

Sincerely,

 (M.J. Finissi)
for Joe Pollock
Joseph E. Pollock
Site Vice President

DB/jen

Attachment

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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 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE08-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Donald C. Cook Nuclear Plant Unit 1	2. DOCKET NUMBER 05000-315	3. PAGE 1 of 4
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4. TITLE
Technical Specification 3.3.3.1 Required Special Report For Inoperable Radiation Monitor 1-MRA-1701

5. EVENT DATE			6. LER NUMBER				7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
03	23	2003	2003	-- 002 --	00	03	28	2003	FACILITY NAME	DOCKET NUMBER	

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
10. POWER LEVEL 100	20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)						
	20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)						
	20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)						
	20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)						
	20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	<input checked="" type="checkbox"/> OTHER Specify in Abstract below or in NRC Form 366A						
	20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)							
	20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)							
	20.2203(a)(2)(v)	50.73(a)(2)(i)(B)	50.73(a)(2)(vii)							
20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)								
20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)								

12. LICENSEE CONTACT FOR THIS LER

NAME Danielle Burgoyne, Regulatory Affairs	TELEPHONE NUMBER (Include Area Code) (269) 697-5078
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

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

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE		
YES (If Yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

This special report is provided in accordance with the special reporting requirements specified in Donald C. Cook Nuclear Plant (CNP), Technical Specifications (TS) 3.3.3.1, Action 22B. Radiation Monitor 1-MRA-1701, "Steam Generator #2 Power Operated Relief Valve (PORV) 1-MRV-223 outlet radiation detector," has been inoperable since March 16, 2003, therefore exceeding the allowed 7 days specified in TS 3.3.3.1, Action 22B.

On Sunday, March 16, 2003, at 1119 hours, 1-MRA-1701, Unit 1 Steam Generator #2 PORV, 1-MRV-223 radiation monitor, went into a high alarm during source check operation. The high alarm cleared after 15 minutes with no action taken. Based on this condition of unreliable indication, the control room shift declared 1-MRA-1701 inoperable.

Subsequently, on Saturday, March 22, 2003, at 0243, 1-MRA-1702, Unit 1 Steam Generator #3 PORV was declared inoperable, in accordance with TS 3.3.3.1, to allow de-energization of 1-MRA-1700, "Steam Generator safety relief PORV Loops 2 and 3 monitor," for Data Acquisition Module (DAM) card replacement in support of 1-MRA-1701 troubleshooting.

Corrective actions have been performed, 1-MRA-1701 and 1-MRA-1702 were both returned to operable status at 1300, Friday, March 28, 2003.

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17. TEXT (If more space is required, use additional copies of NRC Form (366A))

Conditions Prior to Event

Unit 1 = MODE 1 - 100% reactor power
Unit 2 = MODE 1 - 100% reactor power

Description of Event

This special report is being issued in accordance with the special reporting requirements specified in CNP, TS 3.3.3.1, Action 22B. Radiation Monitor 1-MRA-1701, "Steam Generator #2 power operated relief valve (PORV) 1-MRV-223 outlet radiation detector," has been inoperable since March 16, 2003, therefore exceeding the allowed 7 days specified in TS 3.3.3.1, Action 22B.

TS 3.3.3.1 requires radiation monitor 1-MRA-1701 to be operable when the unit is in MODE 1, 2, 3, or 4. Action statement 22B requires the monitor to be restored to an operable status within 7 days of the event, or a special report to be written and issued within 14 days of the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring operability.

On Sunday, March 16, 2003, at 1119 hours, 1-MRA-1701, the Unit 1 steam generator #2 PORV, 1-MRV-223 radiation monitor, went into a high alarm during source check operation. The high alarm cleared after 15 minutes with no action taken. Based on this condition of unreliable indication, the control room shift declared 1-MRA-1701 inoperable.

Subsequently, on Saturday, March 22, 2003, at 0243, 1-MRA-1702, Unit 1 Steam Generator #3 PORV was declared inoperable, in accordance with TS 3.3.3.1, to allow de-energization of 1-MRA-1700, "Steam Generator safety relief PORV Loops 2 and 3 monitor," for Data Acquisition Module (DAM) card replacement in support of 1-MRA-1701 troubleshooting.

An Eberline SRM-100 portable G-M tube detector was installed near the piping location of 1-MRA-1701 and a separate Eberline SRM-100 portable G-M tube detector was installed near the piping location of 1-MRA-1702 as a compensatory measure. Radiation Protection personnel monitored radiation levels at these locations once per 12 hours and logged indicated radiation level in the TS Radiation Protection logs.

Corrective actions have been taken during the troubleshooting process. Inspections have been performed on 1-MRA-1701 detector, and source check mechanism. Cabling and discrete electronic components associated with the source check mechanism were also inspected. Minor wiring discrepancies were identified and corrected. Based on data acquired during the detector and source troubleshooting while monitoring Eberline DAM and control room radiation monitor control terminal indications, the Eberline circuit card (ESBC) was replaced and post installation testing indicated that the original high alarm on check source problem was not corrected by the card replacement. The 1-MRA-1701 detector and source check mechanism were replaced with spare units. Mini-pulsers were installed at various points in the detector cabling to the DAM in conjunction with digital strip chart recorders in an effort to localize the problem. Characterization (AC/DC impedance, insulation resistance, time domain reflectometry) testing of the detector and check source cabling identified a potential check source signal cable discrepancy on the steam generator #3 PORV, 1-MRA-1702, radiation monitor. The 1702 monitor detector and check source cabling shares conduit runs with the 1701 monitor. Additional supporting and refuting analysis indicated that the combined effect of the problems found in the 1701 and 1702 cabling necessitated replacement of both detector and check source cabling of both monitors with proper impedance.

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17. TEXT (If more space is required, use additional copies of NRC Form (366A))

Cause of Event

CNP assembled a troubleshooting team that conducted a supporting and refuting analysis regarding the unreliable indication. This analysis was supported by the vendor.

Troubleshooting identified three contributing factors to the identified problem.

- The detector signal cables (coax) between the interface box and the detector, for both 1-MRA-1701 and 1-MRA-1702 were found to be nonconforming due to incorrect impedance.
- Characterization testing of the associated cables identified that a ground loop existed on the signal cable for 1-MRA-1701.
- Characterization testing of the associated cables identified that the check source signal cable for 1-MRA-1702 was degraded, including the field suppression diode for the check source (located near the detector)

The cable between the detector and interface box was found to be RG-62 coax (93 Ohm impedance) when the drawings indicate it should be RG-118 coax (50 Ohm impedance) to match the cable out of the detector. The difference in the types of cabling resulted in an impedance mismatch, which decreased the signal to noise ratio, making the system more susceptible to induced noise. With the sensor of 1-MRA-1701 inadvertently grounded at the detector housing, a ground loop was established, as the shield of the detector signal cable is grounded at the interface box by design. This ground loop also increased the susceptibility of the system to induced noise.

All of the cables for both 1-MRA-1701 and 1-MRA-1702 are run in a common conduit between the West Main Steam Stop Enclosure into the Normal Blowdown Flashtank Room. The failed field suppression diode for the check source allowed the signal cable to induce noise in the adjacent sensor cable.

The combination of increased noise in the check source cable and the noise susceptibility of the sensor circuit apparently caused false counts to be generated during check source operation. The resulting high counts caused the unit to go into alarm status during check source operation.

The sensor cabling was replaced with the proper impedance rating and a minor modification was implemented to move the interface box closer to the sensor. This eliminated the need for the suppression diode. The sensor grounding has been repaired. This will address the combination of conditions that were identified as the apparent cause for this condition. In addition, moving the interface box closer to the sensor will enhance the overall performance of the monitor.

Corrective Actions

Corrective Actions Taken:

- Inspections have been performed on 1-MRA-1701 detector, and source check mechanism.
- Cabling and discrete electronic components associated with the source check mechanism were inspected.
- Minor wiring discrepancies were identified and corrected.
- The ESBC was replaced and post installation testing indicated that the original high alarm on check source problem was not corrected by the card replacement.
- The 1-MRA-1701 detector and source check mechanism were replaced with spare units.
- Mini-pulsers were installed at various points in the detector cabling to the DAM in conjunction with digital strip chart recorders in an effort to localize the problem.

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17. TEXT (If more space is required, use additional copies of NRC Form (366A))

- Replaced detector signal and check source cabling of both monitors with proper impedance cabling which shields grounding per design requirements.

Scheduled Return To Operability:

1-MRA-1701 and 1-MRA-1702 Steam Generator PORV radiation monitors were both returned to operable status at 1300, Friday, March 28, 2003.