

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9111210148 DOC. DATE: 91/11/15 NOTARIZED: NO DOCKET #
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315
 AUTH. NAME AUTHOR AFFILIATION
 WOJCIK, J.T. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 BLIND, A.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-010-00: on 911016, sampled but unmonitored liquid
 release occurred when liquid radwaste effluent header sample
 gamma radiation detector went into alarm. Caused by poor
 human factors. Enhancements made to procedure. W/911115 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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	AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
	NRR/DET/ECMB 9H	1 1	NRR/DET/EMEB 7E	1 1
	NRR/DLPQ/LHFB10	1 1	NRR/DLPQ/LPEB10	1 1
	NRR/DOEA/OEAB	1 1	NRR/DREP/PRPB11	2 2
	NRR/DST/SELB 8D	1 1	NRR/DST/SICB8H3	1 1
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	REG FILE 02	1 1	RES/DSIR/EIB	1 1
	RGN3 FILE 01	1 1		
EXTERNAL:	EG&G BRYCE, J.H	3 3	L ST LOBBY WARD	1 1
	NRC PDR	1 1	NSIC MURPHY, G.A	1 1
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Power Company
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One Cook Place
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616 465 5901



November 15, 1991

United States Nuclear Regulatory Commission
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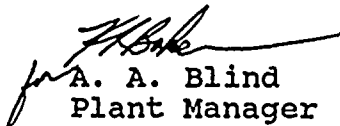
Operating Licenses DPR-58
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by
10 CFR 50.59 entitled Licensee Event Report System, the
following report is being submitted:

91-010-00

Sincerely,


A. A. Blind
Plant Manager

AAB:sb

Attachment

c: D. H. Williams, Jr.
A. B. Davis, Region III
E. E. Fitzpatrick
P. A. Barrett
B. F. Henderson
R. F. Kroeger
B. Walters - Ft. Wayne
NRC Resident Inspector
T. Colburn - NRC
J. G. Keppler
M. R. Padgett
G. Charnoff, Esq.
D. Hahn
INPO
S. J. Brewer/B. P. Lauzau
B. A. Svensson

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Donald C. Cook Nuclear Plant - Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 1 5										PAGE (3) 1 OF 0 4		
TITLE (4) Liquid Release to Unrestricted Area in Violation of Technical Specification Due to Poor Human Factors in the Design and Operation of the Release Monitor																						
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						DOCKET NUMBER(S)							
1	0	1	6	9	1	9	1	0	1	0	1	1	1	5	9	1	D. C. Cook Plant Unit 2 0 5 0 0 0 3 1 6					
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(c)(1)				50.73(a)(2)(v)				73.71(c)							
			20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
			20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)											
			20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)											
			20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)											
LICENSEE CONTACT FOR THIS LER (12)																						
NAME J. T. Wojcik - Technical Physical Sciences Department Superintendent												TELEPHONE NUMBER										
AREA CODE												6 1 6 4 6 5 - 5 9 0 1										
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												
X	I L	M O N	E O 7 0	N																		
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR						
X YES (If yes, complete EXPECTED SUBMISSION DATE)												NO		0	5	1	5	9	2			

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

On October 16, 1991 approximately 1310 hours, a sampled but unmonitored liquid release occurred when the liquid radwaste effluent header sample gamma radiation detector RRS-1000 went into an external fail status change alarm. At that time the alarm was acknowledged by depressing the acknowledge button. This action also bypasses the trip functions which allows opening of the waste release isolation valve to initiate sample flow to above the low flow trip setpoint of 3.1 gpm. To re-arm the trip function the sample flow must be increased to 5.5 gpm. During the 6 minutes of release prior to detecting the monitor's inoperable status, the re-arming flowrate had not been reached, and only 598 gallons of the 16,134 gallon tank had been released.

The event was caused by poor human factors in the design and operation of the system which made it difficult for the operators to determine they had bypassed the trip function when the alarm acknowledge button was depressed.

Enhancements were made to the liquid waste release procedure to require increasing the sample flow rate to the level required for arming the trip setpoint. In addition, to aid the operators in identifying the alarm condition the duration of the audible alarm will be increased from seven to fifteen seconds. Further, noise suppression was installed to prevent radio frequency field from causing spurious alarms and design changes will be pursued to decrease the potential for personnel error.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) D. C. Cook Nuclear Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 1 5	LER NUMBER (6)			PAGE (3)		
		YEAR 9 1	SEQUENTIAL NUMBER 0 1 0	REVISION NUMBER 0 0	0 2 OF 0 4		

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

Conditions Prior to Occurrence

Unit 1 and Unit 2 in Mode 1 (Power Operation) at 100% power.

Description of Event

On October 16, 1991 at 1300 hours while preparing to release L91-136, a liquid radwaste release from Monitor Tank 3, RRS-1001, the radioactive liquid waste effluent header sample gamma radiation detector (EIIS/IL-MON) had an external fail status change alarm. At the same time the local area monitor associated with the liquid waste area monitor, RRS-1003, had a high fail status change alarm. At 1305 hours, the external fail status change alarm was cleared by pressing the alarm acknowledge button. The alarm acknowledgement also bypasses the trip functions to allow opening of the waste release isolation valve to initiate sample flow to clear the low flow trip setpoint of 3.1 gpm. However, to re-arm the trip function the sample flow must be increased to 5.5 gpm. During this release the re-arming flowrate was never reached.

When the external fail status change alarm cleared RRS-1001 exhibited a high fail status change alarm. The high fail status change alarm had probably been present since 1310 hours but was masked by the external failure. At 1309 hours RRS-1003 went into a low fail status. Also, at 1313 hours a channel check was performed in accordance with the operations procedure to ensure operability during the release. The release was manually terminated at this time.

Cause of Event

The event was caused by poor human factors in the design and operation of the system which made it difficult for the operators to determine they had bypassed the trip function when the alarm acknowledge button was depressed.

Factors contributing to this event include the following:

1. Audible alarms are short in duration and are not discernable from one channel to another or from one status to another with the exception of a high alarm.
2. Procedure guidance did not require the sample flow rate be increased to re-arm the trip function following an alarm acknowledge.
3. The radiation monitor microprocessor locks up due to generation of a radio frequency (RF) noise created by the trip relays during rapid status changes.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) D. C. Cook Nuclear Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 1 5	LER NUMBER (6)			PAGE (3)	
		YEAR 9 1	SEQUENTIAL NUMBER 0 1 0	REVISION NUMBER 0 0	OF	0 4

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

Analysis of Event

This event is considered reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the Technical Specification. Technical Specification 3/4.3.3 LCO 3.3.3.9 requires that with a required channel inoperable, releases may continue up to thirty days provided at least two independent samples are analyzed in accordance with Specification 4.11.1.1.1 and; at least two technically qualified members of the facility staff independently verify discharge valving prior to initiating the release otherwise, suspend releases via this pathway. Contrary to Technical Specification 3/4.3.3 Release L91-136 was not monitored for 6 minutes (598 gallons of the 16,134 gallons planned) via RRS-1001 nor was the dual sampling and independent discharge valving verification completed.

Reviews of the radiation monitoring system data, release flow rate, dilution water flow rate and the radioanalytical results indicated that at no time did the concentration of radioactive material discharged to Lake Michigan exceed the concentration limits listed in 10 CFR 20 Appendix B, Table 2. Therefore, this event did not have an impact on the health and safety of the public.

Corrective Action

Extensive troubleshooting was performed on RRS-1000. It was found that if the signal to the sample flow switch was rapidly increased and decreased it created an RF noise which caused the microprocessor to lockup. The lockups cause RRS-1000 to become unresponsive. To correct this situation a modification was completed to install metal oxide varistors. The varistors prevent the RF field from developing.

In addition, enhancements were made to the operations liquid waste release procedure to require increasing the sample flow rate to the level required for arming the trip setpoint.

To raise the operator awareness of the radiation monitoring system status changes, the duration of the audible alarm will be increased from seven to fifteen seconds. Design changes will also be pursued to remove the potential personnel error in the future.

Failed Component Identification

Liquid Waste Discharge Monitor
Plant Designation: RRS-1000
Manufacturer: Eberline
Installed Design: American Electric Power
Service Corporation (AEPSC)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

D. C. Cook Nuclear Plant Unit 1

0 5 0 0 0 3 1 5

YEAR SEQUENTIAL
NUMBERREVISION
NUMBER

9 1 — 0 1 0 — 0 0

0 4 OF 0 4

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

Previous Similar Events

LER 50-315/91-003