

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8909050145 DOC.DATE: 89/08/28 NOTARIZED: NO DOCKET #
 FACIL:50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
 AUTH.NAME AUTHOR AFFILIATION
 MOWRY,C. Florida Power & Light Co.
 WOODY,C.O. Florida Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: Proprietary LER 88-011-01:on 880816,notification of damage
 of property in excess of \$2000 due to spent fuel pool
 leakage.Caused by equipment failure.Floor drain sys cleaned.
 Pump & oiler repaired & inspected.W/890828 ltr.Withheld.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 4
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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	EDISON,G		1	1					
INTERNAL:	ACRS MICHELSON		1	1		ACRS MOELLER		2	2
	ACRS WYLIE		1	1		AEOD/DOA		1	1
	AEOD/DSP/TPAB		1	1		AEOD/ROAB/DSP		2	2
	DEDRO		1	1		IRM/DCTS/DAB		1	1
	NRR/DEST/CEB 8H		1	1		NRR/DEST/ESB 8D		1	1
	NRR/DEST/ICSB 7		1	1		NRR/DEST/MEB 9H		1	1
	NRR/DEST/MTB 9H		1	1		NRR/DEST/PSB 8D		1	1
	NRR/DEST/RSB 8E		1	1		NRR/DEST/SGB 8D		1	1
	NRR/DLPQ/HFB 10		1	1		NRR/DLPQ/PEB 10		1	1
	NRR/DOEA/EAB 11		1	1		NRR/DREP/RPB 10		2	2
	NUDOCS-ABSTRACT		1	1		REG-FILE 02		1	1
	RES/DSIR/EIB		1	1		RGN2 FILE 01		1	1
EXTERNAL:	EG&G WILLIAMS,S		4	4		L ST LOBBY WARD		1	1
	LPDR		1	1		NRC PDR		1	1
	NSIC MAYS,G		1	1		NSIC MURPHY,G.A		1	1
	NUDOCS FULL TXT		1	1					

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Please change availability
from Prop to PDR
Jim McKnight

AUGUST 28 1989

L-89-313
10 CFR 20.405

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 251-88-11 Revision 1
Date of Event: August 16, 1988
Notification of Damage to Property in Excess of \$2000
Due to Spent Fuel Pool Leakage Caused by Equipment Failure

The attached Licensee Event Report Revision is being submitted to provide an update on the subject event.

Very truly yours,

R. F. Acosta

C. O. Woody
Acting Senior Vice President - Nuclear

COW/JRH/cm

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

(8909050145) XA

an FPL Group company

*2nd Dist
Per PM
1522
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Previously processed
under Dist Code IX15*

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 4										DOCKET NUMBER (2) 0 5 0 0 0 2 5 1 1										PAGE (3) 1 OF 0 1 3			
TITLE (4) Notification of Damage to Property in Excess of \$2000 Due to Spent Fuel Pool Leakage Caused by Equipment Failure																							
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 N/A					
0 8		1 6		8 8		8 8		0 1 1		0 1		0 8		2 8		8 9		DOCKET NUMBER(S) 0 5 0 0 0					
OPERATING MODE (9) 3		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																					
POWER LEVEL (10) 9 0 0		20.402(b)						20.406(e)						50.73(a)(2)(iv)						73.71(b)			
		20.406(a)(1)(i)						50.36(a)(1)						50.73(a)(2)(v)						73.71(c)			
		20.406(a)(1)(ii)						50.36(a)(2)						50.73(a)(2)(vi)						OTHER (Specify in Abstract below and in Text, NRC Form 366A)			
		20.406(a)(1)(iii)						50.73(a)(2)(i)						50.73(a)(2)(vii)(A)									
		20.406(a)(1)(iv)						50.73(a)(2)(ii)						50.73(a)(2)(vii)(B)									
		20.406(a)(1)(v)						50.73(a)(2)(iii)						50.73(a)(2)(viii)									
		20.406(a)(1)(vi)						50.73(a)(2)(iv)						50.73(a)(2)(ix)									
LICENSEE CONTACT FOR THIS LER (12)																							
NAME Craig Mowry, Compliance Engineer x2220																TELEPHONE NUMBER 3 0 5 2 4 6 - 1 3 0 0							
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																							
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS													
B	DIA	P	I	0 7 5	N																		
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)

On August 16, 1988, Turkey Point Unit 4 was in Hot Standby when a leak was identified coming from the A spent fuel pool cooling pump. The leak caused fuel pool water to be discharged onto the floor of the spent fuel pool heat exchanger room. Due to a clogged floor drain, the contaminated water leaked to outside areas near the room, contaminating the soil and asphalt in the area. Approximately 6 to 7 gallons leaked into storm drains in the area and were discharged into the onsite cooling canal system. No significant personnel exposures occurred during this event. An unusual event was conservatively declared due to the discharge to the onsite canal system. No significant radiation or contamination levels were detected in samples of the canal water. The root cause of the leakage was pump failure, causing the vent valve to vibrate open. The leakage and contamination of outside areas was caused by the clogged floor drain system. Corrective actions included cleaning of the floor drain system and an evaluation of the adequacy of the drain system to mitigate similar events. The pump and its oiler were repaired, and similar configurations were inspected. Contaminated soil and asphalt were removed from the affected yard area.

FACILITY NAME (1) Turkey Point Unit 4	DOCKET NUMBER (2) 0 5 0 0 0 2 5 1	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 8	0 1 1	0 1	0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Event Description

On August 16, 1988 Turkey Point Unit 4 was in mode 3, Hot Standby, when a discharge vent valve (EIS component code VTV) on the A spent fuel pool cooling pump (EIS system code DA, component code P) was found open. At the time of discovery, the pump motor was running; however the pump shaft was not rotating, apparently due to a sheared shaft. The A pump had been in service, and approximately 3166 gallons of spent fuel pool water leaked into the spent fuel pool heat exchanger room (EIS code NF). Due to clogged floor drains in the room, approximately 1466 gallons of water leaked from the room to adjacent yard areas within the Radiation Controlled Area. A small amount of the water, estimated at 6 to 7 gallons, entered the plant intake canal via storm drains located in the area.

Activity of the water in the spent fuel pool was measured as follows:

Isotope	Specific Activity
*****	*****
Co-60	2.2 E-2 micro Curies per Centimeter Cubed (uCi/cc)
Cs-137	2.5 E-4 uCi/cc
H-3	2.5 E-3 uCi/cc

At approximately 0055 hours an unusual event was conservatively declared due to the release of the radioactive water to the onsite closed loop canal cooling system. The NRC Operations Center and appropriate state and local officials were notified in accordance with the emergency plan. The duration of the spill was estimated to be twenty minutes. Measurement of radiation and contamination levels in the onsite canal system did not identify any significant levels.

During the response to the event, 14 clothing and 5 skin contamination incidents occurred. The levels of radiation and concentration of the effluent did not constitute a radiological hazard to the individuals involved. None of the individuals required estimates of dose received to be performed in accordance with 10 CFR 20.405(a)(2)(i) or plant procedures. Any dose received will be tracked as a part of the normal exposure records for the individuals involved.

This event is being reported in accordance with the requirements of 10 CFR 20.405(a)(1)(iv) as an event reported in accordance with 10 CFR 20.403. The expenses associated with the decontamination and cleanup following the spill have exceeded \$2000.

Cause of Event

The root cause for the leakage was identified as an improperly installed bearing oiler. This improper installation led to bearing and then pump failure, during which time a resonant frequency was established on the vent line, causing the vent valve to vibrate open. The open vent valve allowed an estimated flow of 62 gpm, and the failed pump allowed a flow of approximately 2 gpm. The 64 gpm total postulated flow is within the design capacity of the building floor drain

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 4	0 5 0 0 0 2 5 1	8 8	— 0 1 1	— 0 1	0 3	OF	0 3

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

system, but inadequate preventive maintenance had allowed a clog to remain in the drains. Therefore the water filled and overflowed the pump/heat exchanger room, running out of the building.

Analysis of Event

The spent fuel pool cooling system consists of two normally available fuel pool cooling pumps and a separate emergency fuel pool cooling pump. The design of the fuel pool cooling system is such that any single pump can provide adequate flow to maintain the fuel pool temperature. Following loss of a pump, an extended period is available prior to the fuel pool temperature increasing from its normal 127 degrees to the established limit of 180 degrees. An emergency pump was placed in service prior to the pool temperature reaching the 180 degree limit. This event did not cause a loss of cooling flow of sufficient length to impact the health and safety of the public.

Corrective Actions

- 1) The A spent fuel pool cooling pump and its bearing oiler were repaired and returned to service.
- 2) Bearing oiler arrangements and configurations on similar pumps have been inspected. Discrepancies have been corrected. This included a review of pumps on plant systems other than fuel pool cooling.
- 3) The spent fuel pool pump discharge vent valve was tested to determine the cause for its opening. It was determined that the valve would open, on a shaker table, at approximately 250 hertz (very close to the resonant frequency of the vent piping). This occurs with or without hydraulic pressure on the valve and independent of the valve jam nut positions. The valve has since been lockwired shut.
- 4) The floor drains which were clogged were routed and flow-tested.
- 5) The drain system has been evaluated to determine its design adequacy to mitigate leaks and spills such as that which occurred in this event. The review showed that the system should handle any leak less than 70 gpm.
- 6) Over 2000 cubic feet of slightly contaminated soil and asphalt were removed from the yard area affected.

Additional Information

The unit 4 A spent fuel pool cooling pump was manufactured by Ingersoll-Rand, model number 6X13LP.

No similar events have been reported.

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8909050145 . DOC.DATE: 89/08/28 NOTARIZED: NO DOCKET #
FACIL:50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
AUTH.NAME AUTHOR AFFILIATION
MOWRY,C. Florida Power & Light Co.
WOODY,C.O. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-011-01:on 880816,notification of damage to property
in excess of \$2000 due to spent fuel pool leakage.
W/8 1tr.

DISTRIBUTION CODE: IX15D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 4
TITLE: 20.405 Overexposure Report (Docket 50)

NOTES:

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PD2-2 LA			PD2-2 PD		
EDISON,G					
INTERNAL: AEOD/DSP/TPAB			IRM TECH ADV		
IRM/DCTS/DAB			NRR/DREP/RPB 10		
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<u>REG FILE 01</u>			RES BROOKS,B		
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FPL

P.O. Box 14000, Juno Beach, FL 33408-0420

AUGUST 28 1989

L-89-313
10 CFR 20.405

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 251-88-11 Revision 1
Date of Event: August 16, 1988
Notification of Damage to Property in Excess of \$2000
Due to Spent Fuel Pool Leakage Caused by Equipment Failure

The attached Licensee Event Report Revision is being submitted to provide an update on the subject event.

Very truly yours,

C. O. Woody
Acting Senior Vice President - Nuclear

COW/JRH/cm

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

8909050145 890828
CF ADOCK 05000251
CDC

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 4										DOCKET NUMBER (2) 0 5 0 0 0 2 5 1 1					PAGE (3) 1 OF 0 3	
TITLE (4) Notification of Damage to Property in Excess of \$2000 Due to Spent Fuel Pool Leakage Caused by Equipment Failure																
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 N/A				DOCKET NUMBER(S) 0 5 0 0 0			
0 8	1 6	8 8	8 8	0 1 1	0 1	0 8	2 8	8 9					0 5 0 0 0			
OPERATING MODE (9) 3		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)														
POWER LEVEL (10) 0 0 0		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)		
		20.405(a)(1)(i)				50.38(c)(1)				50.73(a)(2)(v)				73.71(c)		
		20.405(a)(1)(ii)				50.38(c)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
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LICENSEE CONTACT FOR THIS LER (12)																
NAME Craig Mowry, Compliance Engineer x2220										TELEPHONE NUMBER AREA CODE 3 0 5 2 4 6 - 1 3 0 0						
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						
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SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR		
YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO <input type="checkbox"/>																

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

On August 16, 1988, Turkey Point Unit 4 was in Hot Standby when a leak was identified coming from the A spent fuel pool cooling pump. The leak caused fuel pool water to be discharged onto the floor of the spent fuel pool heat exchanger room. Due to a clogged floor drain, the contaminated water leaked to outside areas near the room, contaminating the soil and asphalt in the area. Approximately 6 to 7 gallons leaked into storm drains in the area and were discharged into the onsite cooling canal system. No significant personnel exposures occurred during this event. An unusual event was conservatively declared due to the discharge to the onsite canal system. No significant radiation or contamination levels were detected in samples of the canal water. The root cause of the leakage was pump failure, causing the vent valve to vibrate open. The leakage and contamination of outside areas was caused by the clogged floor drain system. Corrective actions included cleaning of the floor drain system and an evaluation of the adequacy of the drain system to mitigate similar events. The pump and its oiler were repaired, and similar configurations were inspected. Contaminated soil and asphalt were removed from the affected yard area.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 4	0 5 0 0 0 2 5 1	8 8	0 1 1	0 1	0 2	OF	0 3

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

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Activity of the water in the spent fuel pool was measured as follows:

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At approximately 0055 hours an unusual event was conservatively declared due to the release of the radioactive water to the onsite closed loop canal cooling system. The NRC Operations Center and appropriate state and local officials were notified in accordance with the emergency plan. The duration of the spill was estimated to be twenty minutes. Measurement of radiation and contamination levels in the onsite canal system did not identify any significant levels.

During the response to the event, 14 clothing and 5 skin contamination incidents occurred. The levels of radiation and concentration of the effluent did not constitute a radiological hazard to the individuals involved. None of the individuals required estimates of dose received to be performed in accordance with 10 CFR 20.405(a)(2)(i) or plant procedures. Any dose received will be tracked as a part of the normal exposure records for the individuals involved.

This event is being reported in accordance with the requirements of 10 CFR 20.405(a)(1)(iv) as an event reported in accordance with 10 CFR 20.403. The expenses associated with the decontamination and cleanup following the spill have exceeded \$2000.

Cause of Event

The root cause for the leakage was identified as an improperly installed bearing oiler. This improper installation led to bearing and then pump failure, during which time a resonant frequency was established on the vent line, causing the vent valve to vibrate open. The open vent valve allowed an estimated flow of 62 gpm, and the failed pump allowed a flow of approximately 2 gpm. The 64 gpm total postulated flow is within the design capacity of the building floor drain

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 4	05000251	88	011	01	03	OF	03

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

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 WOODY,C.O. Florida Power & Light Co.
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NOTES:

RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
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EDISON,G	1 1		
INTERNAL: AEOD/DSP/TPAB	1 1	IRM TECH ADV	1 1
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NRR/PMAS/TLRB12	1 1	NUDOCS-ABSTRACT	1 1
REG FILE 01	2 2	RES BROOKS,B	1 1
RGN2/DRSS/EPRPB	1 1		

TOTAL NUMBER OF COPIES REQUIRED: LTTR 14 ENCL 13

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Signature: [illegible]



AUGUST 28 1989

L-89-313
10 CFR 20.405

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 251-88-11 Revision 1
Date of Event: August 16, 1988
Notification of Damage to Property in Excess of \$2000
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Very truly yours,

C. O. Woody
C. O. Woody

Acting Senior Vice President - Nuclear

COW/JRH/cm

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

8909050145 890828
CF ADCK 05000251
CDC

IX15
11

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 4										DOCKET NUMBER (2) 0 5 0 0 0 2 5 1										PAGE (3) 1 OF 0 3	
TITLE (4) Notification of Damage to Property in Excess of \$2000 Due to Spent Fuel Pool Leakage Caused by Equipment Failure																					
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POWER LEVEL (10) 9 0 0		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)							
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		20.406(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
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LICENSEE CONTACT FOR THIS LER (12)																					
NAME Craig Mowry, Compliance Engineer x2220										TELEPHONE NUMBER 3 0 5 2 4 6 - 1 3 0 0											
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											
B	D A	P	I 0 7 5	N																	
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR					
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO									

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

On August 16, 1988, Turkey Point Unit 4 was in Hot Standby when a leak was identified coming from the A spent fuel pool cooling pump. The leak caused fuel pool water to be discharged onto the floor of the spent fuel pool heat exchanger room. Due to a clogged floor drain, the contaminated water leaked to outside areas near the room, contaminating the soil and asphalt in the area. Approximately 6 to 7 gallons leaked into storm drains in the area and were discharged into the onsite cooling canal system. No significant personnel exposures occurred during this event. An unusual event was conservatively declared due to the discharge to the onsite canal system. No significant radiation or contamination levels were detected in samples of the canal water. The root cause of the leakage was pump failure, causing the vent valve to vibrate open. The leakage and contamination of outside areas was caused by the clogged floor drain system. Corrective actions included cleaning of the floor drain system and an evaluation of the adequacy of the drain system to mitigate similar events. The pump and its oiler were repaired, and similar configurations were inspected. Contaminated soil and asphalt were removed from the affected yard area.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES: 8/31/88

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

Event Description

On August 16, 1988 Turkey Point Unit 4 was in mode 3, Hot Standby, when a discharge vent valve (EIIS component code VTV) on the A spent fuel pool cooling pump (EIIS system code DA, component code P) was found open. At the time of discovery, the pump motor was running; however the pump shaft was not rotating, apparently due to a sheared shaft. The A pump had been in service, and approximately 3166 gallons of spent fuel pool water leaked into the spent fuel pool heat exchanger room (EIIS code NF). Due to clogged floor drains in the room, approximately 1466 gallons of water leaked from the room to adjacent yard areas within the Radiation Controlled Area. A small amount of the water, estimated at 6 to 7 gallons, entered the plant intake canal via storm drains located in the area.

Activity of the water in the spent fuel pool was measured as follows:

Isotope	Specific Activity
Co-60	2.2 E-2 micro Curies per Centimeter Cubed (uCi/cc)
Cs-137	2.5 E-4 uCi/cc
H-3	2.5 E-3 uCi/cc

At approximately 0055 hours an unusual event was conservatively declared due to the release of the radioactive water to the onsite closed loop canal cooling system. The NRC Operations Center and appropriate state and local officials were notified in accordance with the emergency plan. The duration of the spill was estimated to be twenty minutes. Measurement of radiation and contamination levels in the onsite canal system did not identify any significant levels.

During the response to the event, 14 clothing and 5 skin contamination incidents occurred. The levels of radiation and concentration of the effluent did not constitute a radiological hazard to the individuals involved. None of the individuals required estimates of dose received to be performed in accordance with 10 CFR 20.405(a)(2)(i) or plant procedures. Any dose received will be tracked as a part of the normal exposure records for the individuals involved.

This event is being reported in accordance with the requirements of 10 CFR 20.405(a)(1)(iv) as an event reported in accordance with 10 CFR 20.403. The expenses associated with the decontamination and cleanup following the spill have exceeded \$2000.

Cause of Event

The root cause for the leakage was identified as an improperly installed bearing oiler. This improper installation led to bearing and then pump failure, during which time a resonant frequency was established on the vent line, causing the vent valve to vibrate open. The open vent valve allowed an estimated flow of 62 gpm, and the failed pump allowed a flow of approximately 2 gpm. The 64 gpm total postulated flow is within the design capacity of the building floor drain

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

system, but inadequate preventive maintenance had allowed a clog to remain in the drains. Therefore the water filled and overflowed the pump/heat exchanger room, running out of the building.

Analysis of Event

The spent fuel pool cooling system consists of two normally available fuel pool cooling pumps and a separate emergency fuel pool cooling pump. The design of the fuel pool cooling system is such that any single pump can provide adequate flow to maintain the fuel pool temperature. Following loss of a pump, an extended period is available prior to the fuel pool temperature increasing from its normal 127 degrees to the established limit of 180 degrees. An emergency pump was placed in service prior to the pool temperature reaching the 180 degree limit. This event did not cause a loss of cooling flow of sufficient length to impact the health and safety of the public.

Corrective Actions

- 1) The A spent fuel pool cooling pump and its bearing oiler were repaired and returned to service.
- 2) Bearing oiler arrangements and configurations on similar pumps have been inspected. Discrepancies have been corrected. This included a review of pumps on plant systems other than fuel pool cooling.
- 3) The spent fuel pool pump discharge vent valve was tested to determine the cause for its opening. It was determined that the valve would open, on a shaker table, at approximately 250 hertz (very close to the resonant frequency of the vent piping). This occurs with or without hydraulic pressure on the valve and independent of the valve jam nut positions. The valve has since been lockwired shut.
- 4) The floor drains which were clogged were routed and flow-tested.
- 5) The drain system has been evaluated to determine its design adequacy to mitigate leaks and spills such as that which occurred in this event. The review showed that the system should handle any leak less than 70 gpm.
- 6) Over 2000 cubic feet of slightly contaminated soil and asphalt were removed from the yard area affected.

Additional Information

The unit 4-A spent fuel pool cooling pump was manufactured by Ingersoll-Rand, model number 6X13LP.

No similar events have been reported.



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