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SUBJECT: LER 89-001-00:on 890222,water in duckwork results in inoperability of fuel handling bldg cross tie.

W/8 ltr.

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NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
St. Lucie Plant, Unit 2	0 5 0 0 0 3 8 9	1 OF 0 4

TITLE (4)
WATER IN DUCTWORK RESULTS IN INOPERABILITY OF FUEL HANDLING BUILDING CROSS TIE TO SHIELD BUILDING VENTILATION DUE TO PERSONNEL ERROR

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)
										0 5 0 0 0
0 2	2 2	8 9	8 9	0 0 1	0 0	0 3	2 4	8 9		0 5 0 0 0

OPERATING MODE (9)	6
POWER LEVEL (10)	0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

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)	X 50.73(a)(2)(vii)	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	TELEPHONE NUMBER
Michael J. Snyder, Shift Technical Advisor	AREA CODE 4 0 7 4 6 5 3 5 5 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

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)

Water level in the Spent Fuel Pool (SFP) was raised high enough to flood intake ventilation ducts which line the perimeter of the pool. The overflow of water into the Spent Fuel Pool Ventilation ducting rendered the safety related portion of the Fuel Handling Building (FHB) ventilation system inoperable. This condition was discovered during an operability check of the safety related portion of the FHB ventilation system (Shield Building Ventilation System, SBVS). Unit 2 was in mode 6 when the event was identified.

The immediate corrective actions taken were to prohibit operations in the SFP, pump the ductwork dry, and conduct a system operability check.

The root cause of this event was utility personnel operator errors. Operators should have been more vigilant in monitoring level when filling the SFP, and should have insisted on expeditious repair of control room annunciation for the SFP when both annunciators were simultaneously out of service.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
St. Lucie Plant Unit 2	0 5 0 0 0 3 8 9	8 9	— 0 0 1	— 0 0	0 2 OF 0 4

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

DESCRIPTION OF EVENT:

Unit 2 had been shutdown, in Mode 6 for three weeks for the end of the cycle 4 refueling outage.

The function of the Shield Building Ventilation System (SBVS) (EIIS:,VC,BH) cross tie to the Fuel Handling Building (FHB) (EIIS:ND) is to remove and purify air from the FHB in the event of a fuel handling accident. Part of the ventilation system employs suction intakes which line the perimeter of the Spent Fuel Pool (SFP) to minimize the amount of airborne radionuclides escaping from the pool to the FHB. These intakes are located in the SFP liner, and are fourteen inches above normal pool level. Normal spent fuel pool level is at the 60' elevation. The high pool level alarm is 60'6", the low alarm is 59'6", and the height required to overflow into the pool surface ventilation ductwork is 61'2". A spillway in the gate from the pool area to the adjoining fuel transfer canal has an elevation of 60' 8". The spillway can function to provide a means of SFP overflow protection during unit power operations, when the transfer canal is normally empty of water.

On 22 February, 1989, utility operations personnel attempted an operability check of the SBVS cross tie to the FHB. When a SBVS fan was started and aligned to the FHB outside ventilation system (EIIS:VG), control room indications for FHB differential pressure remained unchanged. The SBVS cross tie was declared inoperable at 0700 and operations in the FHB were prohibited. Troubleshooting and a visual inspection of the ventilation cross tie between the FHB and the SBVS revealed that this subterranean ductwork was filled with water. This loop seal was preventing air flow. A sample of the water was taken and Chemistry Department personnel determined that it was borated water from the spent fuel pool.

The most probable time for SFP overfill was before 15 February 1989, when a Reactor Engineer noted water had contacted electrical components located just above the normal SFP water line. To water soak these components, SFP water level must have risen to a level that would have flooded the ventilation intakes. The SFP's Transfer Canal was filled to facilitate refueling, and could not offer overflow protection.

CAUSE OF THE EVENT

The root cause of this event was the failure of utility operations personnel to closely monitor level when filling the SFP. During the period of 11 to 15 February, 1989, both channels of control room annunciators for high SFP level were simultaneously out of service due to operations personnel failing to insist upon timely repair of these monitors. It was during this period that the SFP was most likely overfilled because: 1) Both channels of annunciators were out of service, 2) the SFP was filled during this period, and 3) utility personnel noted on 15 February that the SFP level had risen high enough to flood some electrical components located above the normal pool level.

ANALYSIS OF THE EVENT

This event is deemed reportable to the NRC under 10CFR50.73(a)(2)(vii), as an event where a single cause or condition caused two independent trains to become inoperable in a system designed to control the release of radioactive material. Both trains of SBVS which cross tie to the FHB via a single subterranean duct were inoperable during this event.

The normal FHB ventilation and filtration system is not safety related. Normal FHB ventilation was operable during this event. During a postulated fuel handling accident, high radiation levels would cause the FHB ventilation system to swap over to the safety related SBVS and filtration. During a postulated loss of coolant accident inside of containment, the SBVS would be automatically isolated from the FHB.

The safety function of the SBVS to mitigate the consequences of a loss of coolant accident inside of containment is independent of the FHB cross tie and was not affected by this event.

The possibility of a fuel handling accident is remote because of the many interlocks, administrative controls and physical limitations imposed on the fuel handling operations. The only plausible fuel handling accident would be a dropped spent fuel assembly. A cask drop accident is a more limiting event, but is not considered because St. Lucie Plant has never employed the use of a spent fuel cask.

Passive mechanisms for control of radioactive releases from the FHB which were always available include greater than 23' of water above the spent fuel assemblies (which helps scrub any Iodine release), and closure of all FHB doors. The non-safety related FHB ventilation and filtration system was available during this event. Thus, even with the SBVS cross tie to the FHB inoperable, the safety function of controlling the release of radioactive materials was never fully compromised.

There was no known or detected leakage of SFP water from the cross tie ductwork.

The health and safety of the public were not affected by this event.

CORRECTIVE ACTIONS

1) Fuel pool operations were immediately prohibited upon event discovery.

2) The SBVS ductwork was drained.

3) Both control room annunciators for high SFP level were returned to service.

4) The operations department will ensure that alternate real time SFP level measurement is in place if both high level annunciators are out of service and SFP level changes are ongoing. Procedures will be upgraded to provide explicit guidance on SFP filling operations for both Units.

5) The SBVS - FHB surveillance will be required prior to fuel movement.

ADDITIONAL INFORMATION

SIMILAR EVENTS

There are no previously submitted LERs similar to this event.

COMPONENT FAILURES

There were no component failures during this event.

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

MARCH 2 4 1989

L-89-112
10 CFR 50.73

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

Gentlemen:

Re: St. Lucie Unit 2
Docket No. 50-389
Reportable Event: 89-01
Date of Event: February 22, 1989
WATER IN DUCTWORK RESULTS IN INOPERABILITY OF FUEL HANDLING BUILDING CROSS TIE TO SHIELD BUILDING VENTILATION DUE TO PERSONNEL ERROR

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

W. F. Conway
Senior Vice President - Nuclear

WFC/JRH/re

Enclosure

cc: Stewart D. Ebneter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

JRH89-01.LER

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