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U. S. Nuclear Regulatory Commission
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Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Licensee Event Report 50-368/97-007-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B), enclosed is the subject report concerning fuel handling area ventilation flow rate.

Very truly yours,

Dwight C. Mims

Dwight C. Mims
Director, Nuclear Safety

DCM/tfs

enclosure

IE22

050045

cc: Mr. Ellis W. Merschoff
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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Arkansas Nuclear One - Unit 2	05000368	1 OF 5

TITLE (4) Fuel Handling Area Ventilation Flow Rate Less Than Technical Specification Requirement During Crane Operation With A Load Over The Storage Pool Due To Personnel Error Regarding Verification Of Equipment Condition Before Evolution Authorization

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 NAME	DOCKET NUMBER
06	26	97	97	007	00	07	28	97	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)					
		20.402(b)		20.405(c)		50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	100	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)(vii)	OTHER
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	Specify in Abstract Below
		20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	and in Text
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Thomas F. Scott, Nuclear Safety and Licensing Specialist	501-858-4623

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 15 single-spaced typewritten lines) (16)

Crane operation with a load over the spent fuel storage pool occurred while the fuel handling area ventilation system flow rate was less than required by Technical Specifications. The load, a filtration/vacuum assembly weighing 465 pounds wet, was moved from the pool to the cask loading pit in approximately ten minutes. The ventilation system flow controller had been calibrated but post-maintenance testing to establish acceptable flow rate had not been completed when the move occurred. The radiation monitoring instrumentation normally used to verify flow rate was in an abnormal configuration for routine testing. The ventilation fan had been started on a previous shift for an activity that did not require the flow rate to meet the Technical Specifications value. The root cause of the event has been attributed to personnel (work practices) error by not adequately verifying that Technical Specification requirements were being met before authorizing use of the crane. The actual ventilation system flow rate was approximately eighty-five percent of the required value during the activity. No abnormal releases of radiation occurred as a result of this event. Corrective actions include a "lessons learned" for Operations personnel and additional guidance in crane hold card instructions requiring verification of acceptable flow before placing it in service.

A. Plant Status

At the time of this event, Arkansas Nuclear One Unit 2 was operating in normal steady state conditions at 100 percent power.

B. Event Description

On June 26, 1997, crane operation with a load over the spent fuel storage pool occurred with fuel handling area ventilation [VF] flow rate less than required by Technical Specifications.

Ventilation from the fuel handling area is exhausted to a containment vent through a multi-filter unit consisting of a roughing filter, a HEPA filter, a charcoal adsorber, and two vane-axial type fans with equipment tag numbers 2VEF-14A and 2VEF-14B, one of which serves as a standby. Technical Specification 3.9.11 requires the fuel handling area ventilation system to be operating and discharging through the HEPA filter and charcoal adsorber whenever irradiated fuel is being moved in the storage pool and during crane operations with loads over the storage pool.

In early May of 1997, the flow controller for 2VEF-14A/B was adjusted to the maximum flow condition in order to achieve an acceptable flow rate from fan 2VEF-14B. On June 23, 1997, neither of the fans was in operation when the flow controller was identified to be out of tolerance during periodic instrumentation calibration testing. Instrumentation and Control (I&C) Maintenance technicians calibrated the controller to the specified tolerance and performed a string check of the instrumentation on June 24 but deferred post-maintenance testing, in accordance with the procedure, until all other system calibrations within the scope of the procedure were completed. The post-maintenance testing is used to adjust the fan flow rate to within requirements. The technicians were not aware that the controller was out of tolerance as a result of the adjustment in May and that the calibration may have restored the operation of 2VEF-14B to a low flow condition.

On June 25, 1997, other I&C Maintenance personnel began surveillance testing of the radiation monitoring instrumentation for the 2VEF-14A/B flow path (SPING-7) that required removing that instrumentation from service but did not directly affect the flow channel operability. An initial condition for the calibration requires the manual input of a "zero" value of flow for that flow path to prevent generating false alarms from the two and ten minute average values; however, the "live" instantaneous flow rate value remained available.

At approximately 0455 on June 26, 1997, 2VEF-14B was started to assist in maintaining a negative pressure in the Auxiliary Building during a planned outage of the Auxiliary Building exhaust fans. The Technical Specification action requirement for SPING-7 radiation monitoring capability being out of service was appropriately entered. This required installation of temporary sample equipment and obtaining grab samples but not estimation of flow because SPING-7 flow channel remained available for use by Chemistry personnel in release calculations. When 2VEF-14B was started, the Operator verified that indicated flow on the flow recorder was increasing and that the low flow alarm had cleared. He indicated that the procedure requirement to check the SPING-7 flow indication against the corresponding log limits was not applicable because the SPING monitor had been removed from service for calibration. Also, because there were no plans for spent fuel movement or crane operations in the fuel handling area, Technical Specification 3.9.11 requirements were not applicable when the fan was started.

Shortly after Operations crew turnover on the morning of June 26, a Health Physics technician requested permission to move a filtration/vacuum assembly from the spent fuel pool to the cask loading pit. This operation requires use of the spent fuel area crane. The crane is under administrative control with the power supply disconnect for the crane hold carded and locked in the open position. The Operations Control Room Supervisor (CRS) verified that the ventilation system was in operation and concluded that the evolution could be performed because Chemistry was monitoring ventilation system flow and activity. The CRS knew that the 2VEF-14A/B flow controller had been recently calibrated but was not aware that post-maintenance testing had not been completed to verify adequate flow rate. He granted permission for the move, authorized clearing the hold card, and informed the Shift Superintendent that conditions had been met for issuing the key for the disconnect lock. At approximately 0850, the key to the spent fuel area crane was issued to Health Physics personnel. After the move of the assembly was accomplished, the power supply disconnect was opened, locked, and hold carded. The key was returned to the Operations Shift Superintendent at approximately 1100. During performance of routine log taking, at approximately 1400, Operations personnel discovered that the indication of ventilation flow rate on a flow recorder had been less than the required value while the filter assembly was being moved. A check with Chemistry personnel revealed that they had been recording the actual flow rate from SPING-7 of approximately 30,500 cubic feet per minute (cfm). This agreed with the flow rate indicated on the flow recorder. The minimum value required to satisfy the Technical Specification requirement for operability during spent fuel area crane operation with a load over the pool is 35,730 cfm. At 1430, 2VEF-14B was stopped after Auxiliary Building ventilation was returned to service. At 1527, after restarting 2VEF-14B, the flow rate was adjusted to an acceptable value as part of the post-maintenance testing for the instrument calibration procedure.

C. Root Cause

The root cause of this event was a personnel (work practices) error since the CRS did not adequately verify that the Technical Specification requirement for ventilation flow rate was being met prior to entering a condition when the specification was applicable. The CRS is a licensed operator. The error involved an incorrect assumption that Chemistry was actively monitoring system flow rate for Technical Specification 3.9.11 compliance since SPING-7 was out of service and would notify Operations if the value was not within limits. Chemistry was monitoring flow rate for compliance with Technical Specification 3.3.3.9, but this specification does not require maintaining flow within ten percent of 39,700 cfm.

D. Corrective Actions

Calibration procedure post-maintenance testing requirements were completed to restore the fuel handling area ventilation system flow rate to an acceptable value.

A requirement was added to the standing hold card for the fuel handling crane power supply disconnect to verify adequate ventilation flow rate prior to release of the hold card.

A 'Lessons Learned" associated with this event was completed and added to the ANO-2 Operations "Lessons Learned" data base.

Correction of fuel handling area ventilation system deficiencies is being completed as part of a comprehensive long-term corrective action plan.

E. Safety Significance

The limitations on fuel handling area ventilation system flow rate are established to ensure that all radioactive materials released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorbers prior to discharge to the atmosphere in the event of a fuel handling accident. The limits ensure that the iodine removal capacity is consistent with the assumptions of the accident analysis. The duration of the load over the pool was estimated to have been approximateiy ten minutes. No spent fuel was being moved. The top of the spent fuel storage rack extends ten inches above the tops of the stored fuel assemblies. The filtration/vacuum assembly size is 24 X 24 X 70 inches and its weight full of water is 465 pounds. If the filter assembly had been dropped during movement, fuel assembly damage would not be anticipated due to the weight and dimensions of the load combined with the protection

provided by the storage racks. The existing fuel handling accident analysis of a dropped fuel assembly is bounding for the condition that would have existed if the filter assembly had been dropped. The actual ventilation flow rate was approximately eighty-five percent of the required value. The ANO-1 fuel handling area ventilation system was in operation while the crane was being operated. If an event resulting in a radioactive material release had occurred during this time, the ANO-1 system would have assisted in mitigation of the release because the fuel storage pools are adjacent with no separating wall. A review of grab sample results from the ventilation system during the period when the load was being moved revealed no abnormal radiation levels. Furthermore, in 1985 ANO submitted a Technical Specification change request via letter 2CAN028505 to reduce the flow requirement to 30,000 cfm plus or minus ten percent. The basis for the change was that the minimum system flow requirement was 21,085 cfm, and the requirement of 39,700 cfm plus or minus ten percent was overly conservative and based on fan capacity, not system requirements. Although the change request was subsequently withdrawn, its basis provides additional justification for concluding that this event had minimal actual safety significance.

F. Basis for Reportability

Technical Specification 3.9.11 requires the ventilation system to be "operating"; however, ANO considers that the intent is that the system be "operable" during conditions of applicability. Movement of a load over the spent fuel storage pool with less than the flow rate required for operability constituted operation prohibited by Technical Specifications. This condition is being reported in accordance with 10CFR50.73(a)(2)(i)(B).

G. Additional Information

There have been no similar events reported by ANO as Licensee Event Reports.

The filtration/vacuum assembly that was moved over the storage pool is a model UFV-26D manufactured by Tri Nuclear Corporation.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].