



August 21, 2000

United States Nuclear Regulatory Commission  
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Washington, DC 20555

Operating License DPR-74  
Docket No. 50-316

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Report System, the following report is submitted:

LER 316/2000-011-00, "Spent Fuel Pool Exhaust Ventilation System Inoperable During Fuel Movement."

The following commitments were identified in this submittal:

- An operations procedure is being developed to provide instructions necessary to ensure all required system and equipment are available and/or operable prior to and during operations involving movement of fuel within the storage pool or crane operations with loads over the storage pool. In addition, training on this new procedure will be provided to the appropriate operations personnel. This action will be completed by Unit 1, Mode 6 operation.
- Lessons learned from this event will be included in the upcoming reactor operator continuing training cycle. This training will include the importance of clear, concise communication and the need for all individuals involved with a task to participate in pre-job briefs. This action will be completed by October 30, 2000.

Should you have any questions regarding this correspondence, please contact Mr. Wayne J. Kropp, Director, Regulatory Affairs, at (616) 697-5056.

Sincerely,

A handwritten signature in black ink, appearing to read "A. C. Bakken III".

A. C. Bakken III  
Site Vice President

/bwo

Attachment

IE22

c: J. E. Dyer, Region III  
B. A. McIntyre  
D. Hahn  
T. P. Noonan  
R. P. Powers  
R. Whale  
Records Center, INPO  
NRC Resident Inspector

NRC Form 366 (6-1998)				U.S. NUCLEAR REGULATORY COMMISSION  <b>LICENSEE EVENT REPORT (LER)</b>  (See reverse for required number of digits/characters for each block)				APPROVED BY OMB NO. 3150-0104    EXPIRES 06/30/2001  <small>ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), 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</small>						
FACILITY NAME (1)  Donald C. Cook Nuclear Plant Unit 2						DOCKET NUMBER (2)  05000-316		PAGE (3)  1 of 4						
TITLE (4)  Spent Fuel Pool Exhaust Ventilation System Inoperable During Fuel Movement														
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 D.C. Cook, Unit 1		DOCKET NUMBER 05000-315			
07	20	2000	2000	-- 011 --	00	08	21	2000	FACILITY NAME		DOCKET NUMBER			
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)										
POWER LEVEL (10)		100		20.2201 (b)		20.2203(a)(2)(v)		<input checked="" type="checkbox"/>		50.73(a)(2)(i)	50.73(a)(2)(viii)			
20.2203(a)(1)		20.2203(a)(3)(i)		20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)		50.73(a)(2)(x)				
20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		50.73(a)(2)(v)		50.73(a)(2)(vii)		OTHER				
20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		50.73(a)(2)(vii)		Specify in Abstract below or in NRC Form 366A		50.73(a)(2)(vii)				
20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		50.73(a)(2)(vii)		50.73(a)(2)(vii)		50.73(a)(2)(vii)				
LICENSEE CONTACT FOR THIS LER (12)														
NAME  Brenda W. O'Rourke, Compliance Engineer								TELEPHONE NUMBER (Include Area Code)  (616) 465-5901, x2604						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)														
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
SUPPLEMENTAL REPORT EXPECTED (14)														
YES (If Yes, complete EXPECTED SUBMISSION DATE).						X NO		EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR		
<b>Abstract</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16) On July 20, 2000, it was identified that the Spent Fuel Pool (SFP) exhaust ventilation system was inoperable with fuel inspections in progress. Auxiliary building crane inspections were also in progress, which require the ventilation system to be operable. Because the ventilation system is not capable of responding to a fuel handling accident quickly enough to prevent an unfiltered release to the atmosphere, a compensatory action was put in place to ensure that the SFP ventilation system is in the charcoal filter mode of operation during fuel handling operations. Investigation identified that crane inspections had been completed; however, the ventilation system was removed from the charcoal filter mode of operation for approximately 1-1/2 hours with fuel movement still in progress. This condition represents a violation of Technical Specification (TS) 3.9.12, and this LER is submitted per 10CFR50.73(a)(2)(i)(B) as a condition prohibited by TS. The cause for this condition was inadequate communication between the two work groups involved in the Auxiliary Building crane and fuel top nozzle inspections and control room personnel. In addition, no pre-job brief was conducted for the auxiliary building crane inspections, nor were control room personnel involved in the pre-job brief for the fuel top nozzle inspections. Upon discovery of this condition, control room personnel suspended all operations involving movement of fuel and the crane within the SFP area. Lessons learned from this event will be included in the upcoming reactor operator continuing training cycle. A procedure is being developed to provide instructions necessary to ensure all required system and equipment are available and/or operable prior to and during operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool. An extent of condition evaluation identified no other instances where systems requiring compensatory actions to maintain system operability were not being met. Based on the low spent fuel source term in the SFP at the time this condition was identified, potential dose consequences would have remained within 10CFR guidelines if a fuel handling accident had occurred. Therefore, this condition has minimal safety significance.														

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**Conditions Prior to Event**

Unit 1 was defueled

Unit 2 was in Mode 1, at 100 percent Rated Thermal Power

**Description of Event**

On July 20, 2000, control room personnel discovered that fuel movement was in progress with the Spent Fuel Pool (SFP) exhaust ventilation system inoperable. This is contrary to Technical Specification (TS) 3.9.12 which requires the SFP exhaust ventilation system to be operable whenever irradiated fuel is in the fuel storage pool. TS action statement 3.9.12.a states that with no SFP exhaust ventilation system operable, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one spent fuel storage exhaust ventilation system is restored to operable status. Because the SFP exhaust ventilation system was removed from the charcoal filter mode of operation for approximately 1-1/2 hours with fuel movement in progress, this condition represents a violation of TS 3.9.12.

On June 28, 1999, the SFP exhaust ventilation system was determined to be in an operable but degraded condition. Investigation determined that the system was not capable of responding to a high radiation signal by closing the charcoal filter bypass dampers fast enough to prevent the radioactive gases from a fuel handling accident from being released to the atmosphere without passing through the charcoal filters. Because these system actions are taken credit for in the current Donald C. Cook Nuclear Plant (CNP) offsite dose analysis, compensatory actions were required to maintain the system in an operable status. These compensatory actions require the placement of the SFP exhaust ventilation system in the charcoal filter mode of operation, prior to movement of fuel or any load within or over the SFP. In addition, several fuel handling and Auxiliary Building ventilation procedures were revised to require placement of the SFP exhaust ventilation system in the charcoal filter mode of operation prior to movement of fuel or any load within or over the SFP. These requirements ensure that, in the event of a fuel handling accident, no unfiltered fission products will be released to the environment through the SFP ventilation exhaust system.

On July 19, 2000, at 0900 hours, the SFP exhaust ventilation system was placed in the charcoal filter mode to support the start of the fuel top nozzle hold down spring inspections. At that time, a pre-job brief was conducted, which included the refueling supervisor, radiation protection personnel and others directly involved in the fuel top nozzle inspections. Prior to commencement of the fuel top nozzle inspections, the refueling supervisor contacted the control room to verify that the SFP exhaust ventilation system was operating in the charcoal filter mode, as required by the compensatory actions. Fuel inspections were stopped for the day at 1815 hours, and the SFP exhaust ventilation system was removed from the charcoal filter mode of operation.

On July 20, 2000, the SFP exhaust ventilation system was placed in the charcoal filter mode of operation at 0710 hours to support the continuation of the fuel top nozzle inspections. In addition, at approximately 1100 hours, the annual East Auxiliary Building crane and main hoist inspections began. No pre-job brief was conducted for this work activity. In preparation for the crane inspections, the crane clearance, which maintained the main load block de-energized, was removed. TS 3.9.12.a footnote "+" states the SFP exhaust ventilation system must be operable whenever the crane is moved over the SFP with the main load block energized. Otherwise, the main load block is considered a crane load, and the load cannot move over the SFP without the SFP exhaust ventilation system operable. The refueling supervisor emphasized to the work control center that the SFP exhaust ventilation system could not be removed from the charcoal filter mode of operation until after the crane clearance was restored.

Upon completion of the East Auxiliary Building crane inspection at 1130 hours, the refueling supervisor contacted the work control center to ensure that the crane clearance would be rehung prior to removing the SFP ventilation system from the charcoal filter mode of operation. However, work control personnel misinterpreted this information and mistakenly concluded that the fuel top nozzle inspections were also complete. As a result of this misinterpretation, work control

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personnel notified control room personnel that all work was complete and that the clearance for the crane needed to be rehung. Based on this information, at 1445 hours, control room personnel rehung the clearance and then removed the SFP exhaust ventilation system from the charcoal filter mode of operation. Removing the charcoal filters from operation resulted in the system being inoperable since the compensatory actions were no longer in place. At 1625 hours, control room personnel discovered that fuel movement was still in progress with the SFP exhaust ventilation system charcoal filters bypassed. Upon discovery, all fuel movement activities were suspended.

This LER is submitted in accordance with 10CFR50.73(a)(2)(i)(B) for a condition prohibited by TS.

**Cause of Event**

The cause for this condition was inadequate communication between the two groups of personnel involved in the Auxiliary Building crane and fuel top nozzle inspections and control room personnel. In addition, no pre-job brief was conducted for the Auxiliary Building crane inspections, nor were control room personnel involved in the pre-job brief for the fuel top nozzle inspections. Because control room personnel were not involved in the pre-job briefs for either work activity, control room personnel did not question work control personnel when contacted to remove of the SFP exhaust ventilation system from the charcoal filter mode of operation.

**Analysis of Event**

The spent fuel pool ventilation system at the CNP consists of four supply fans and two 100% capacity exhaust fans. The two exhaust fans draw air from the spent fuel pool area through a common filter train that contains both HEPA and charcoal filters. Under normal conditions, varying numbers of supply fans and one exhaust fan would be operating. In the event of a high-radiation signal from the spent fuel pool monitor, all supply fans would shut down and the SFP ventilation system would automatically realign and divert all exhaust flow through the system's charcoal filter beds. These actions help to mitigate a fuel-handling accident by minimizing unfiltered leakage out of the spent fuel pool area. Because the system is not capable of detecting a high radiation signal and completing system realignment fast enough to prevent a radioactive puff release to the environment, a compensatory action was established which requires the SFP exhaust ventilation system to be placed in charcoal filter mode of operation prior to movement of fuel or any heavy load within or over the SFP.

To support the July 1999 Unit 1 and 2 fuel core off-load, calculation RD-99-01, "Control Room Dose Resulting from a Fuel Handling Accident for Off-load Specific Conditions," was prepared to evaluate the radiological dose consequences of a fuel handling accident with both Unit 1 and 2 cores resident in the SFP. Results of the calculation showed that, even without the SFP exhaust filtration or the Control Room Pressurization filtration in operation, the potential dose to control room personnel would be well below the General Design Criteria (GDC) 19 limits. This low dose is due to the low spent fuel source term associated with the length of time since both units were shutdown. For this same reason, site boundary doses would also be well below 10 CFR Part 100 exposure guidelines. Since doses from a fuel handling accident in the SFP area would have resulted in sufficiently low radiological doses, charcoal filtration through the SFP ventilation system is not required to meet dose release limits. In this respect, the compensatory action is considered highly conservative.

Although fuel movement took place without the SFP exhaust system in the charcoal filter mode of operation, this condition had minimal safety significance. Based on the low spent fuel source term in the SFP, potential dose consequences would have remained within GDC 19 and 10 CFR Part 100 guidelines if a fuel handling accident had occurred.

**Corrective Actions**

Upon discovery of this condition on July 20, 2000, control room personnel suspended all operations involving movement of fuel within the SFP area. Crane operation with loads over the SFP was also suspended until the SFP exhaust ventilation system was returned to the charcoal filter mode of operation.

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Operations management has issued guidance stating that the control room shift manager will maintain positive control of the keys to all fuel handling and auxiliary building cranes. This will ensure that control room personnel are aware of those activities involving use of the cranes, and the exhaust ventilation system can be placed in the charcoal filter mode of operation.

Operations management counseled those individuals involved in the work activities at the time this condition was identified. Management stressed the importance of clear, concise communication and the need for all individuals involved with a task to participate in pre-job briefings.

Lessons learned from this event will be included in the upcoming reactor operator continuing training cycle. This training will include the importance of clear, concise communication and the need for all individuals involved with a task to participate in pre-job briefs. This action will be completed by October 30, 2000.

An operations procedure is being developed to provide instructions necessary to ensure all required system and equipment are available and/or operable prior to and during operations involving movement of fuel within the storage pool or crane operations with loads over the storage pool. In addition, training on this new operations procedure will be provided to the appropriate personnel. These actions will be completed prior to Unit 1, Mode 6 operation.

A review of existing fuel handling and crane inspection procedures found adequate instruction existed regarding the requirement to operate the SFP exhaust ventilation system in the charcoal filter mode whenever fuel or any load is carried over the SFP. The new operations procedure described above will enhance those controls that are presently in place. Therefore, no interim preventive actions were considered necessary.

An extent of condition evaluation was performed to verify that other plant systems considered operable but degraded have adequate controls in place to ensure required compensatory actions to maintain system operability are being met. Examples identified were found to have adequate controls in place to ensure compensatory actions were met.

The root cause investigation for the identified condition has not been completed. Based on the results of the completed investigation, this LER may be supplemented if additional corrective and/or preventive actions are identified.

**Previous Similar Events**

LER 315/2000-005-00, "Control of Auxiliary Building Crane Main Load Block over Spent Fuel Pool." This LER identified that the Auxiliary Building crane was moved over SFP with the main load block energized and the SFP exhaust ventilation system not in the charcoal filter mode of operation. TS 3.9.12 requires the main load block to be de-energized whenever moving fuel or any load over the SFP. The cause for this event was operator knowledge weakness regarding the Auxiliary Building cranes. Although aware that no loads were to be carried over the SFP, operators were not aware that an energized main block had to be considered a load in accordance with TS 3.9.12. In addition, failure to establish adequate administrative controls for the degraded condition of the SFP ventilation system during the performance of crane interlock inspections resulted in the SFP ventilation exhaust system not being in the charcoal filter mode of operation as required by compensatory actions. While the cause for LER 316/2000-011-00 was contributed to miscommunication, these events are similar in that adequate administrative controls for the degraded condition of the SFP ventilation system did not exist.