



Kewaunee Nuclear Power Plant  
N490, State Highway 42  
Kewaunee, WI 54216-9511  
920-388-2560

Operated by  
Nuclear Management Company, LLC



February 20, 2001

10CFR 50.73

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

Ladies/Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Reportable Occurrence 2001-001-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report (LER) for reportable occurrence 2001-001-00 is being submitted. This report contains a commitment to complete a root cause evaluation of the event and submit a supplemental LER.

Sincerely,

<sup>for</sup>  
Kyle A. Hoops  
Manager-Kewaunee Plant

GIH

Attach.

cc - INPO Records Center  
US NRC Senior Resident Inspector  
US NRC, Region III

IE22

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to: bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOF-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1)

Kewaunee Nuclear Power Plant

DOCKET NUMBER (2)

05000305

PAGE (3)

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TITLE (4)

Single Barrier Appendix R Fire Door Failed to Close – Door Had Not Been Part of a Periodic Test Program

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	18	2001	2001	001	00	02	20	2001	FACILITY NAME	DOCKET NUMBER
										05000
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR .: (Check all that apply) (11)							
POWER LEVEL (10)		097	20.2201(b)			20.2203(a)(3)(ii)		X	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
			20.2201(d)			20.2203(a)(4)			50.73(a)(2)(iii)	50.73(a)(2)(x)
			20.2203(a)(1)			50.36(c)(1)(i)(A)			50.73(a)(2)(iv)(A)	73.71(a)(4)
			20.2203(a)(2)(i)			50.36(c)(1)(ii)(A)			50.73(a)(2)(v)(A)	73.71(a)(5)
			20.2203(a)(2)(ii)			50.36(c)(2)			50.73(a)(2)(v)(B)	OTHER
			20.2203(a)(2)(iii)			50.46(a)(3)(ii)			50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)			50.73(a)(2)(i)(A)			50.73(a)(2)(v)(D)	
			20.2203(a)(2)(v)			50.73(a)(2)(i)(B)			50.73(a)(2)(vii)	
			20.2203(a)(2)(vi)			50.73(a)(2)(i)(C)			50.73(a)(2)(viii)(A)	
			20.2203(a)(3)(i)			50.73(a)(2)(ii)(A)			50.73(a)(2)(viii)(B)	

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Gary I Harrington – Plant Licensing Leader

TELEPHONE NUMBER (Include Area Code)

(920) 388-8559

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANU-FACTORER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTORER	REPORTABLE TO EPIX

## SUPPLEMENTAL REPORT EXPECTED (14)

X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
				05	01	2001

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 18, 2001, with the reactor at 97 percent power, an Appendix R fire barrier door failed to close completely. The door separates A and B trains of the service water (SW) system equipment. The door failed during the performance of a maintenance procedure (PMP 08-19). Immediate actions were taken to close the door. This event is being reported because an Appendix R required door failed to close and no documentation exists to demonstrate past door performance. Consequently, there is no evidence to indicate that the door was capable of fulfilling its design function since a test last performed in 1993. A protective feature of the door is that when a fusible link melts, the door automatically closes to assure separation of the SW trains in the event of a fire.

The root cause determination of why the door failed to close and why no periodic testing was performed continues. Based on the investigative efforts to date, lack of door operation and maintenance has contributed to the failure as well as a lack of procedure guidance to implement and prescribe testing activities. Because the root cause investigation continues, a supplemental report will be filed.

**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

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

**DESCRIPTION OF EVENT**

On January 18, 2001, while the plant was operating at 97% power, an Appendix R fire barrier door [DR] failed to close completely. The door separates A and B trains of the service water (SW)[BI] system equipment. The door failed during performance of a maintenance procedure (PMP 08-19). This event is being reported because an Appendix R required door failed to close and no documentation exists to demonstrate past door performance. Consequently, there is no evidence to indicate that the door was continually capable of fulfilling its design function since a test last performed in 1993.

The door, #281, is a flexible, steel, roll-up style door. The door is normally open to allow personnel and equipment movement between the North and South sections of the screen-house [MK] structure. The door is held open by a series of small gauge chains with mechanical linkage that engage the door actuator to hold it in an open position. A number of fusible links are used to hold tension on the chains and actuator linkage. The weight of the door is used to hold a ratcheted actuator mechanism in place to keep the door open. The door closes automatically when a fusible link melts. Melting the link releases the tension on the chains, and the door free-falls to the closed position. The speed of closure is controlled by spring tension internal to the actuator assembly.

The door provides a single Appendix R design barrier that separates redundant trains of SW system equipment. Without the door closing fully, there is no assurance that a fire on one side of the door would not disable opposite train equipment needed to shutdown the plant in the event of a fire. There is no redundant fire protection barrier to the door.

Kewaunee has two roll-up style doors using this operating principle, door #281 and #279. Both of the doors are single Appendix R barriers. Neither of the doors had been periodically tested as part of a formal testing program since their installation. They have been periodically inspected as part of a routine maintenance schedule. However, the documentation of what the inspection entailed is limited to "satisfactory." Additionally, the procedure used to conduct the door inspection does not specify the extent of door testing.

From personnel interviews, there is only limited recollection as to what exactly may have been inspected for any given performance of the inspection procedure. In 1993 it was identified that personnel may not be properly testing door operation by removing a fusible link and allowing the door to close. At the time, a work request was written to perform a functional door test. However, the inspection procedure was not updated to ensure this was performed during the periodic inspection. Some personnel have indicated that they disconnected a fusible link to ensure the door would close when inspecting doors. However, this action was noted to be inconsistent from one person to the next.

Subsequent to identifying that periodic testing of the door had not been performed, a suitable test methodology was developed and implemented. When the test of door #281 was performed, the door did not close completely. Consequently, the door was found inoperable. Door #279 passed the

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functional test satisfactorily.

**CAUSE OF THE EVENT**

A root cause investigation of the event is continuing. Therefore, the cause(s) described by this report are preliminary. A supplemental Licensee Event Report (LER) will be submitted on or before May 1, 2001.

At this time the door failing to close is suspected to be, in part, from dirt and corrosion product buildup and lack of lubrication in the door channels and operating mechanism. These are suspected to have developed over the years from lack of door operation, maintenance, and functional testing. Preliminary repair efforts lubricated the door channel and a portion of the actuating mechanism with satisfactory results. However, further review of how the actuating mechanism operates is being pursued to ensure a comprehensive understanding of all contributing factors to why the door failed to close.

Factors involved in not performing periodic testing are; 1) no specific guidance had been developed to conduct a functional test, and 2) the procedure guidance for door inspection was lacking detail on what constituted satisfactory inspection results. Why these conditions existed is still indeterminate. It is expected that completion of the root cause determination will provide the reason for not having the doors in a periodic test program.

**ANALYSIS OF THE EVENT**

This report is being submitted in accordance with 10CFR50.73(a)(2)(ii)(B), any event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. The failure of door #281 to close resulted in the plant's failure to meet Appendix R requirements to ensure safe shutdown equipment availability in the event of a fire in the screenhouse structure.

From a review of the effects of the fire hazard for which the door would have to protect, the effects of damage would likely be minimal. By applying the fire induced vulnerability evaluations (FIVE) methodology to capture the effects of a small volume oil fire, the hazard of concern, the impact on opposite train equipment would most likely cause a loss of only one of two available SW pumps [P].

**CORRECTIVE ACTIONS**

Immediate actions were to close door #281 until repairs could be completed. To date, repairs have been limited to lubricating and cycling door #281. This resulted in the door operating freely and going completely closed under its own weight. However, further inspection of the doors and actuators has raised additional questions as to how the door system operates.

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Engineering review efforts continue in order to acquire a better understanding of how the door actuators work. Both doors are currently closed and will remain close until such time as we can assure proper operation.

**ADDITIONAL INFORMATION**

Subsequent to the initial notification made on January 18, 2001, at 1351 eastern standard time (EST), 1251 central (CST), it was noted that some of the information provided was in error. The initial notification noted the event to occur at 1200 CST when in fact the door failed its test approximately 20 minutes earlier. Also, the initial notice indicated that the door only failed to close for the final two to three inches of travel. It was later discovered that the distance may have been somewhat greater, approximately six to eight inches. The two errors in information have been captured in the plants' corrective action identification program. Neither error has any impact on the consequence of the actual failure or the outcome of the analysis.

The timing issue was a result of personnel involved in the testing failing to recognize that the door's failure to close was an immediately reportable event with a one hour time limitation. Consequently, the specific time of the affected door failing the test was not immediately noted and reported.

The gap that remained when the test failure occurred was initially reported based on the recollection of a plant staff member present when the door was tested. There was no measurement taken of the opening. Subsequent to making the call to the Emergency Operations Center (EOC), Kewaunee's resident inspector, who also witnessed the test, stated that the gap was greater than the reported two to three inches. His recollection of the opening was approximately six to eight inches. Regardless of the size of the gap, the consequence remains the same. The door could not provide its design function in either case.

This additional information is being provided to document the error in the original notification and get the correct data on the Docket.

**SIMILAR EVENTS**

None

**EQUIPMENT**

The roll-up doors are manufactured by Cornwell Iron Works. The technical information we have available is contained in vendor technical manual #ES10209.