



Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

November 26, 1997
LIC-97-0178

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, DC 20555

Reference: Docket No. 50-285

Subject: Licensee Event Report 97-016 Revision 0 for the Fort Calhoun
Station

Please find attached Licensee Event Report 97-016 Revision 0 dated
November 26, 1997. This report is being submitted pursuant to
10CFR50.73(a)(2)(ii). If you should have any questions, please contact
me.

Sincerely,

JW Chase
J. W. Chase
Manager - Fort Calhoun Station

EPM/epm

Attachment

c: Winston and Strawn
E. W. Merschoff, NRC Regional Administrator, Region IV
L. R. Wharton, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector
INPO Records Center

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PDR ADOCK 05000285
S PDR

030035



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: 50.0 HRS. REPORTED LESSONS LEARNED
ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO THE
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.

FACILITY NAME (1)

Fort Calhoun Station Unit No. 1

DOCKET NUMBER (2)

05000285

PAGE (3)

1 OF 4

TITLE (4)

Nuclear Fuel Potentially Outside of the Manufacturer's Fuel Design Criteria

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
10	29	97	97	-- 016	-- 00	11	26	97	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	100	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§ (Check one or more) (11)			
POWER LEVEL (10)	1	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	X 50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Erick P. Matzke, Station Licensing Engineer	402-533-6855

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)

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

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

On October 28, 1997, Westinghouse informed Fort Calhoun Station (FCS) of issues regarding fuel rod internal pressure, the status of the PAD code (a Westinghouse fuel performance code), and concerns with the fuel rod design criteria. When initially notified, FCS was advised that Westinghouse could not preclude the possibility of plants with Integral Fuel Burnable Absorber (IFBA) fuel being outside their fuel design criteria due to fuel clad gap reopening, and that the 17 percent maximum cladding oxidation limit, as delineated in 10CFR50.46, may be exceeded.

Since that time, and based on the LOCA analyses which have been performed to date by Westinghouse, an initial pre-transient 12 percent oxidation has been established as a screening criteria to permit assessment of plants regarding compliance with the 17 percent maximum cladding oxidation criterion of 10CFR50.46.

OPPD was informed by Westinghouse that FCS will not exceed the 12 percent oxidation criteria prior to the end of the current operating cycle. FCS had previously planned on replacing Westinghouse Zirc-4 fuel with either Westinghouse ZIRLO fuel or non-Westinghouse fuel during the 1998 refueling outage. This fuel replacement will help resolve this issue.

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

BACKGROUND

The current Fort Calhoun Station (FCS) fuel load includes Westinghouse Integral Fuel Burnable Absorber (IFBA) fuel. The fuel that is in its first cycle of operation has ZIRLO cladding. The rest of the fuel, in its second, third and fourth operating cycle, has Zirc-4 cladding. FCS is in the second half of the current operating cycle (17) and plans to begin the next refueling outage on April 1, 1998.

EVENT DESCRIPTION

On October 28, 1997 the FCS fuel supplier, Westinghouse, informed Omaha Public Power District (OPPD) of issues regarding fuel rod internal pressure (RIP), the status of the PAD code (a Westinghouse fuel performance code), and concerns with fuel rod design criteria. When initially notified, OPPD was advised that Westinghouse could not preclude the possibility of plants with IFBA fuel being outside the Westinghouse fuel design criteria due to potential pellet clad gap reopening, and that the 17 percent maximum cladding oxidation limit, as delineated in 10CFR50.46, may be exceeded. OPPD was notified by Westinghouse that when the effects of increased Zirc-4 corrosion are incorporated into the current licensed version of Westinghouse fuel performance code (PAD), gap reopening may be predicted for high duty (determined by power histories and coolant temperatures) IFBA rods as early as the second half of their second duty cycle. One of the fuel design criteria for Westinghouse fuel is that pellet-clad gap reopening will not occur. After evaluation, on October 29, 1997, at 1418 Central Standard Time (CST), FCS conservatively determined that the plant may be in a condition outside the design basis of the plant. With the plant at 100 percent power, a one hour non-emergency report to the NRC Operations Center was made at 1500 CST pursuant to 10CFR50.72(b)(1)(ii). This report is being made pursuant to 10CFR50.73 (a)(2)(ii) since FCS potentially operated in a condition outside the fuel rod design criteria. Westinghouse has determined that these problems are not an issue for IFBA fuel with ZIRLO cladding.

Since initial notification, and based on the LOCA analyses which have been performed to date by Westinghouse, an initial pre-transient 12 percent oxidation limit has been established as a screening criteria to permit assessment of plants regarding compliance with the 17 percent maximum cladding oxidation criterion of 10CFR50.46. FCS was informed by letter from Westinghouse to the NRC dated November 13, 1997, that FCS is not expected to exceed the 12 percent oxidation criteria prior to the end of the current operating cycle. A long term plan has been presented to the NRC by Westinghouse to resolve the PAD code concerns and implement code improvements.

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SAFETY SIGNIFICANCE

Westinghouse has performed a generic safety assessment which evaluates the consequences of the gap reopening concern and has had ongoing discussions with the NRC on this condition. They have assessed the implications of this pre-condition for the analyzed events and concluded that plant safety is maintained at the same levels as considered in the original design basis evaluation. Furthermore, it was concluded that no new accident scenarios were created by gap reopening conditions.

The results of this assessment have shown that the plant safety analyses remain bounding in all areas (LOCA transient, non-LOCA transient, thermal-hydraulic analyses, core neutronic analyses, and fuel rod performance assessments), except for the potential to exceed the no-gap reopening design criteria. Since gap reopening does not lead to fuel rod failures and since previously analyzed design basis accident scenarios remain bounding, Westinghouse concluded that gap reopening is of low safety significance.

In addition, Westinghouse has determined that the 12 percent oxidation limit ensures that the sum of pre-transient and post LOCA oxidation will not exceed 17 percent and that FCS will not exceed 12 percent pre-transient fuel oxidation prior to the end of the current operating cycle.

CONCLUSIONS

When the effects of the new corrosion model, as developed by Westinghouse, are incorporated into the current licensed PAD code, gap reopening may be predicted for high duty IFBA rods, but the 17 percent maximum cladding oxidation criterion delineated in 10 CFR 50.46 will not be exceeded.

CORRECTIVE ACTIONS

Westinghouse has informed OPPD that, based on the bounding analysis and absent revised plant specific analyses, gap reopening may be predicted for FCS since FCS is in the second half of its fuel cycle and has second duty cycle Zirc-4 IFBA fuel. An evaluation by Westinghouse indicates that pre-transient fuel oxidation will not exceed 12 percent before the end of the current operating cycle. Westinghouse has also determined that the 12 percent oxidation limit ensures that the sum of pre-transient and post LOCA oxidation will not exceed 17 percent.

FCS had previously planned on replacing Westinghouse Zirc-4 fuel with either Westinghouse ZIRLO fuel or non-Westinghouse fuel during the 1998 refueling

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outage. The Zirc-4 fuel replacement will help resolve this issue.

PREVIOUS SIMILAR EVENTS

There have not been any previous similar events of this nature.