

General Information or Other (PAR)

Event # 45236

Rep Org: AREVA NP INC	Notification Date / Time: 07/29/2009 17:06 (EDT)
Supplier: AREVA NP INC	Event Date / Time: 02/16/2009 (PDT)
	Last Modification: 07/29/2009
Region: 4	Docket #:
City: RICHLAND	Agreement State: Yes
County:	License #:
State: WA	
NRC Notified by: ALAN MEGINNIS	Notifications: JAMES MOORMAN R2DO
HQ Ops Officer: BILL HUFFMAN	ROBERT DALEY R3DO
Emergency Class: NON EMERGENCY	PART 21 COORD NRR
10 CFR Section:	
21.21 UNSPECIFIED PARAGRAPH	

PART 21 REPORT - THERMO-HYDRAULIC LIMITS BASED ON INCORRECT FUEL LIFTOFF ASSUMPTIONS

Measurements obtained from LaSalle spent fuel indicates that the thickness of liftoff [corrosion film and coolant system crud deposits] on LaSalle fuel may be greater than assumed in thermal-hydraulic calculations for MCPR (Minimum Critical Power Ratio) and LHGR (Linear Heat Generation Rate). Thickness measurements of liftoff on ATRIUM-10 fuel at LaSalle are as high a 93 micrometers whereas the maximum values observed for other facilities is less than 60 micrometers. The greater than expected liftoff present on LaSalle fuel has been attributed to the operation of zinc levels that exceeded EPRI guidelines for reactor water chemistry. AREVA thermal-hydraulic analyses for LaSalle did not account for the higher liftoff.

AREVA supplied an operability assessment to Exelon that identified limitations on the operating limit MCPR and rod average exposure. Revised operating limits are being provided to Exelon based on liftoff values that are lower than used in the original operability assessments. These limits are scheduled to be provided by July 31, 2009. Actions have been identified that AREVA obtains information from the licensees on the anticipated water chemistry environment to be implemented for the next operating cycle, in advance of AREVA core design efforts supporting that cycle. This will assure that AREVA can adequately project the impact of this chemistry environment on liftoff, and to account for it during the design activities.

AREVA states that this defect affects only LaSalle Units 1 and 2. Data from other plants currently operating with fuel licensed using AREVA methods indicate that the liftoff is low and within historical levels.

IE19
NRR



AREVA NP Inc.

FAX

To: NRC Operations Center	Date: 7/29/2009	Time in: 2:04 PM
Company: U. S. NRC	Pages to follow: 2	
	From: Alan B. Meginnis	
	Telephone: 509-375-8266	MB: 36
	<input type="checkbox"/> Original to be mailed	<input type="checkbox"/> Via fax only
Receiving fax: 301-816-5151	Sending fax: 434-382-5541	
Telephone: 301-816-5100	Fax verification: 509-375-8266	
Extra Distribution to:		

Message:

Please see attached notice of defect.

This facsimile transmission is intended only the individual(s) named above. It may contain information which is legally privileged, confidential, or otherwise protected from disclosure by law. Any use of this transmission by individuals other than those named above is strictly prohibited. If you receive this transmission in error, please call the fax verification number above immediately, and mail the original transmission to us at the address set forth below. Thank you.

AREVA NP Inc. An AREVA and Siemens Company
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Operator: _____
 Log No.: _____ Time Sent: _____

Reportable Defect

- (i) *Name and address of the individual informing the Commission.*

Alan B. Meginnis, AREVA NP Inc., 2101 Horn Rapids Road, Richland, WA 99354

- (ii) *Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.*

The power dependent MCPR and LHGR operating limits used to monitor LaSalle Units 1 and 2.

- (iii) *Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.*

AREVA NP Inc.

- (iv) *Nature of the defect or failure to comply and the safety hazard which is created or could be created by such a defect or failure to comply.*

Measurements obtained during poolside exams at the two LaSalle units show high total liftoff on fuel rod surfaces. Liftoff is the sum of the thicknesses of the zirconium oxide corrosion film and coolant system deposits (crud), and is typically measured using eddy current and/or profilometry techniques. Typical past and recent BWR measurements of oxide at other plants have been low – with maximum values of less than 60 μm and with low amounts of crud. Based on the use of profilometry, measurements on ATRIUM-10 fuel at the LaSalle units are as high as 93 μm . AREVA's fuel rod thermal-mechanical methodology requires an explicit account for the maximum amount of oxidation along with an additional consideration for the effect of crud. The fuel rod analyses for the LaSalle fuel do not sufficiently account for the high liftoff measurements since it was assumed that the oxidation and crud would be consistent with prior AREVA experience. In addition, the AREVA thermal-hydraulics analyses for the LaSalle units did not account for the higher liftoff. The greater than expected liftoff present on LaSalle fuel has been attributed to operation with zinc levels that exceeded EPRI guidelines for reactor water chemistry.

- (v) *The date on which the information of such a defect or failure to comply was obtained.*

The issue was determined to be a deviation on February 16, 2009.

- (vi) *In the case of a basic component which fails to comply, the number and the location of all such components in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.*

LaSalle Units 1 and 2.

Data from other plants currently operating with fuel licensed using AREVA methods indicate that the liftoff is low and within historical levels. Note that recent higher than

expected liftoff measurements at Columbia Generating Station were evaluated by AREVA in a separate Condition Report it was concluded that the condition was not a defect.

- (vii) *The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for this action; and the length of time that has been or will be taken to complete the action.*

Following the discovery of the deviation, AREVA supplied an operability assessment to Exelon that identified limitations on the operating limit MCPR and rod average exposure. These limitations also were provided to the NRC as part of an interim report (Letter, R. L. Garner to Document Control Desk, U.S. NRC, "Interim Report of an Evaluation of a Deviation Pursuant to 10 CFR 21.21(a)(2), April 16, 2009).

Revised operating limits are being provided to Exelon based on liftoff values that are lower than used in the original operability assessments. These limits are scheduled to be provided by July 31, 2009.

Responsible organization: AREVA NP Inc.

- (viii) *Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.*

Actions have been identified in the AREVA CR to assure that AREVA obtains information from the licensees on the anticipated water chemistry environment to be implemented for the next operating cycle, in advance of AREVA core design efforts supporting that cycle. This will assure that AREVA can adequately project the impact of this chemistry environment on liftoff, and to account for it during the design activities.