Power Reactor Event # 40159

Site: SEABROOK		**Notification Date / Time:** 09/15/2003	16:40 (EDT)
Unit: 1 **Region:** 1 **State :** NH		**Event Date / Time:** 09/15/2003	(EDT)
Reactor Type: [1] W-4-LP		**Last Modification:** 09/15/2003	
Containment Type: DRY AMB			
NRC Notified by: JAMES PESCHEL		**Notifications:** CORNELIUS HOLDEN	NRR
HQ Ops Officer: RICH LAURA		HAROLD GRAY	R1
Emergency Class: NON EMERGENCY			
10 CFR Section:			
21.21 UNSPECIFIED PARAGRAPH			

Unit	Scram Code	RX Crit	Init Power	Initial RX Mode	Curr Power	Current RX Mode
1	N	Yes	100	Power Operation	100	Power Operation

PART 21 ISSUE AT SEABROOK ON SPENT FUEL POOL TEST COUPONS

The licensee reported an apparent abnormality involving Boral spent fuel pool test coupons. Westinghouse built the spent fuel pool racks using Boral material manufactured by ARR Inc. Specifically, inspection of test coupons revealed bulging or blistering of the aluminum cladding. The information provided by the licensee does not include any other affected plants.

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IE19

[Jim Event date + time (2018 yrs)]

Licensee	FPLE Seabrook
Site	Seabrook Station
Docket	50-443
Reactor Type	Westinghouse PWR
Date	September 15, 2003

10CFR 21 Notification

FPLE Seabrook has identified an apparent abnormality of a Boral coupon that was removed from the Spent Fuel Pool for inspection. Boral test coupons (Boron carbide & Aluminum Composite Material) have been located in the Spent Fuel Pool as monitoring specimens to assess the performance of similar Boral neutron poison material incorporated into the spent fuel pool racks. Westinghouse Electric Corporation built the spent fuel pool racks using Boral material manufactured by ARR Inc. of Livornia, MI. Visual inspection of one Boral Coupon indicated bulging of the Boral aluminum cladding that normally encapsulates, and is adhered to, the internal Boron carbide & Aluminum Composite layer. The structural integrity of the clad material has been affected but there as been no evidence of loss or redistribution of the boron carbide in the active poison layer of the Boral Material at this time. A number of bulges were observed on the periphery of the coupon. The inspection yielded no apparent loss of neutron absorbing material. Two additional coupons were inspected. The inspection of these coupons resulted in similar bulges being observed.

All sixteen irradiated Boral coupons were inspected and characterized after all coupons had been removed from their stainless steel jackets. These inspections indicated a range in coupon condition from blisters approximately equivalent to those previously inspected too slightly blistered and one coupon with no outward indication of blisters.

The boron-10 areal density in the Boral has been measured via neutron attenuation testing. This testing determined that areal density was within specification and no loss of control material existed. Furthermore, the impact of the blistering on the flux trap has been determine to be small and within bounds of the criticality analysis. Thus, the Boral is presently performing its design function.

However, the rate of blister formation and the long-term effects of these blisters on the criticality analysis is not known. Analysis performed to date suggests that this blistering will continue. Thus over a period of time, this condition could worsen which may result in operation of the spent fuel pool outside the bounds of the criticality analysis. FPLE Seabrook considers the above condition to be reportable pursuant to 10 CFR 21.21.

Because of the uncertainty in the future state of the Boral, Seabrook is planning to implement a Boral Monitoring program and to add a blistering allowance in the Spent Fuel Pool criticality curves.

The six Boral racks constitute 576 of the 1236 storage cells in spent fuel pool. All the spent fuel storage racks are freestanding self-supporting modules.