

Lew W. Myers
Senior Vice President

724-682-5234
Fax: 724-643-8069

November 10, 2000
L-00-133

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412 License No. NPF-73
LER 2000-002-00

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 2000-002-00, 10 CFR 50.73(a)(2)(i), "Failure to Verify Spent Fuel Pool Boron Concentration Prior to Fuel Movement."


Lew W. Myers

Attachment

FE22

LER 2000-002-00

L-00-133

Page 2

cc: Mr. H. J. Miller, Regional Administrator
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

Mr. L. J. Burkhart
BVPS Project Manager
United States Nuclear Regulatory Commission
Washington, DC 20555

Mr. David M. Kern
BVPS Senior Resident Inspector
United States Nuclear Regulatory Commission

Mr. J. A. Hultz
Ohio Edison Company
76 S. Main Street
Akron, OH 44308

INPO Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Mr. L. E. Ryan
Bureau of Radiation Protection
Department of Environmental Protection
RCSOB-13th Floor
P.O. Box 8469
Harrisburg, PA 17105-8469

Manager, Nuclear Licensing and
Operations Support
Virginia Electric & Power Company
5000 Dominion Blvd.
Innsbrook Tech. Center
Glen Allen, VA 23060

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the 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. If an 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) Beaver Valley Power Station Unit 2	DOCKET NUMBER (2) 05000412	PAGE (3) 1 OF 5
--	--------------------------------------	---------------------------

TITLE (4)
Failure to Verify Spent Fuel Pool Boron Concentration Prior to 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	DOCKET NUMBER
10	15	2000	2000	-- 002	-- 00	11	10	2000	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) 6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)					
POWER LEVEL (10) 0 %	20.2203(a)(1)	20.2203(a)(3)(i)		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)						
	20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)	
NAME Thomas S. Cosgrove	TELEPHONE NUMBER (Include Area Code) 724-682-5203

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

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)
On October 15, 2000, a spent fuel assembly in the Beaver Valley Power Station (BVPS) Unit 2 Spent Fuel Pool (SFP) was moved to perform ultrasonic testing of the fuel assembly. Later that day it was determined that the SFP soluble Boron concentration was not verified in accordance with Technical Specification Surveillance Requirement (SR) 4.9.14.2.a, which requires verifying the SFP soluble Boron concentration to be greater than or equal to 1050 PPM soluble Boron within 8 hours prior to and at least once per 24 hours during movement of fuel in the SFP. This condition was found to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

Inadequate communication between the Refueling Engineer and Nuclear Shift Supervisor (NSS) caused the NSS to believe that work in the fuel building involved the movement of ultrasonic testing equipment, but not fuel. Also, the procedure used for fuel movement was inadequate in that it did not contain an NSS signoff that would have alerted him that fuel was to be moved. Subsequently, the NSS verified all of the requirements for the movement of loads above the SFP, but not the soluble Boron concentration required for fuel movement. Upon discovery of the event the SFP was sampled and the soluble Boron concentration was determined to be 2096 PPM, well above the required 1050 PPM.

An Operations procedure containing prerequisites for using the SFP Bridge Crane was written and Refueling procedures were revised to require the performance of this new procedure as a prerequisite. There were no adverse safety consequences from this event, and the event did not affect the health and safety of the public.

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

FACILITY NAME (1)	DOCKET (2) NUMBER	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Beaver Valley Power Station Unit 2	05000412	2000	-- 002	-- 00	2 OF 5

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse-Pressurized Water Reactor System (PWR)

Fuel Building {ND}*

Spent Fuel Pool Bridge Crane 2MHF-CRN-227 {DF/CRN}*

* Energy Industry Identification System (EIIS) system and component function identifier codes appear in the text as {SS/CCCC}

CONDITIONS PRIOR TO OCCURRENCE

Unit 2: Mode 6 at 0 % power

There were no systems, structures, or components that were inoperable that contributed to the event.

DESCRIPTION OF EVENT

On October 6, 2000, with no fuel in the reactor vessel, ultrasonic testing (UT) equipment was placed in the spent fuel pool (SFP) per vendor procedure MRS-GEN 1031, "Generic Fuel Procedure Fail Fuel Rod Inspections for Westinghouse Fuel" in preparation for inspections of three suspected failed fuel assemblies. UT examinations are performed by using the SFP bridge crane, 2MHF-CRN-227 {DF/CRN} to move a fuel assembly into the UT fixture which is set on the top of the SFP storage racks. UT probes within the test fixture are then automatically inserted between the rodlets to provide indication of failed rods. During this examination fuel assemblies remain latched to the spent fuel handling tool suspended from 2MHF-CRN-227 and may be raised, lowered, or rotated as part of the examination.

On October 15, 2000, Unit 2 was in Mode 6, Refueling. Refueling personnel (utility non-licensed and contractor) were preparing to perform UT of three spent fuel assemblies in the SFP. The fuel movement sequences were located in procedure 2RP-3.21, "Insert Changeouts, Reposition Fuel Assemblies and Assembly Verification in Spent Fuel Pit." The non-licensed, utility, Refueling Engineer in charge of the testing requested the Unit 2 Control Room Nuclear Shift Supervisor (NSS) to review the Technical Specifications in accordance with refueling procedure 2RP-3.10, "Spent Fuel Bridge Crane", to permit UT examinations. Use of 2MHF-CRN-227 for performing activities over irradiated fuel in the SFP requires the approval of the NSS per Procedure 2RP-3.10, which contains a listing of associated Technical Specifications.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET (2) NUMBER	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Beaver Valley Power Station Unit 2	05000412	2000	-- 002	-- 00	3 OF 5

DESCRIPTION OF EVENT (continued)

The Refueling Engineer informed the NSS that UT of three spent fuel assemblies was to be performed in the SFP. The NSS believed that this task involved the movement of 2MHF-CRN-227 and the movement of the UT equipment. The physical movement of fuel assemblies was neither communicated nor received in this verbal exchange. Therefore, based on the information understood by the NSS, only the Technical Specifications applicable to the movement of 2MHF-CRN-227 were reviewed and verified in procedure 2RP-3.10.

After obtaining authorization by the NSS, the Refueling Engineer recognized that 2RP-3.21 did not require an authorization signature by the NSS. This prompted him to call the Refueling office to have a peer check performed. The peer check confirmed that there were no NSS approvals within 2RP-3.21. However, this lack of an NSS signoff did not prompt the refueling crew to question if the SFP soluble Boron had been verified.

On October 15, 2000, at 1054 hours, fuel handlers (contractor) moved fuel assembly H33 from SFP location F9 to perform the UT examination. No verification of the SFP soluble Boron concentration in accordance with SR 4.9.14.2.a was performed prior to the movement of the fuel assembly. During the UT examination mechanical problems with the UT equipment were encountered, and assembly H33 was returned to its original storage location at 1407 hours. UT examinations were suspended until repair of the UT equipment was performed.

UT equipment repairs were completed just prior to the end of the work shift that same day, and UT examinations were scheduled to continue through the following shift. On October 15, 2000, at approximately 1800 hours, the oncoming Refueling Engineer (non-licensed utility) questioned when the most recent SFP soluble Boron sample was obtained and analyzed. A review of the Chemistry log revealed that the last sample was obtained on October 13, 2000, at 1055 hours and was 2096 PPM. Fuel movement was suspended until a thorough investigation of the event was performed and immediate corrective actions completed. The SFP was subsequently sampled at 1830 hours on October 15, 2000, and the soluble Boron concentration was determined to be 2100 PPM which is above the Technical Specification limit of 1050 PPM.

REPORTABILITY

The failure to verify the SFP soluble Boron concentration within 8 hours prior to moving irradiated fuel in the SFP violates Technical Specifications Surveillance Requirement (SR) 4.9.14.2.a which requires verifying the SFP soluble Boron concentration to be greater than or equal to 1050 PPM soluble Boron within 8 hours prior to and at least once per 24 hours during movement of fuel in the SFP. This condition was found to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET (2) NUMBER	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Beaver Valley Power Station Unit 2	05000412	2000	-- 002	-- 00	4 OF 5

CAUSE OF EVENT

The cause of the event was determined to be inadequate communication between the Refueling Engineer and NSS. Due to the inadequate communication the NSS believed that work in the fuel building involved the movement of ultrasonic testing equipment, rather than movement of fuel. Subsequently the NSS verified all of the requirements for the movement of loads above the SFP, by approving 2RP-3.10. Since the NSS was not aware that fuel assemblies were to be moved, the SFP soluble Boron concentration was not verified.

Procedure 2RP-3.21, which was used to provide the fuel movement sequences for UT examinations, was inadequate since it did not contain NSS authorization to move fuel. This resulted in the NSS not being alerted, by procedure, that fuel would be moved. Refueling personnel erroneously believed that all Technical Specifications required to move fuel had been verified through authorization of 2RP-3.10. In fact, because the NSS did not realize fuel movement was to be performed, the soluble Boron concentration had not been verified.

SAFETY IMPLICATIONS

The SFP soluble Boron concentration is normally maintained above 2000 PPM and was determined to be 2100 PPM immediately following this event, which is well above the 1050 PPM required by Technical Specifications.

Fuel stored in the SFP is segregated into two areas (Region 1 and Region 2). SFP Region 1 is primarily reserved for unirradiated new fuel assemblies. Fuel in this region is stored in a 3 of 4 cell array. Region 2 is provided for fuel assemblies with burnup dependent enrichment limitations provided in the Technical Specifications and may be stored in a 4 of 4 cell array. The soluble Boron in the SFP provides available negative reactivity to maintain the effective multiplication factor, Keff, less than or equal to 0.95 for postulated accidents that would cause an increase in reactivity, such as loading a fuel assembly in the wrong location or dropping an assembly at the side of the storage racks.

At the time of this event, core reload had been completed and no new unirradiated fuel assemblies remained in the SFP. Fuel assembly H33 was moved from SFP location F9 and was partially inserted into location U35 for UT examinations and then returned to its original storage location. Both of these cells are Region 2 storage locations. Prior to core offload assembly H33 was evaluated to meet the burnup criteria to be stored in Region 2 of the SFP.

Under postulated accident conditions, Keff would have still remained less than or equal to 0.95. Therefore, there was no threat to the health and safety of the public as a result of this event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET (2) NUMBER	LER NUMBER (6)			PAGE (3)
Beaver Valley Power Station Unit 2	05000412	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 5
		2000	-- 002	-- 00	

CORRECTIVE ACTIONS

1. Immediate actions included halting the movement of fuel assemblies in the SFP, placing a clearance on 2MHF-CRN-227 until development of an Operating Manual procedure containing prerequisites for using 2MHF-CRN-227, and verifying the SFP soluble Boron concentration.
2. Operating Manual 2OM-49.4.H, "Movement of Spent Fuel Pool Crane Checklist" was created to provide the steps necessary to verify surveillances are current when moving 2MHF-CRN-227. A separate step in this procedure provides SFP soluble Boron sample verification, including time and date when fuel is to be moved in the SFP.
3. Refueling procedure 2RP-3.28, "Fuel Movement in Spent Fuel Pool" was issued to provide instructions for controlled movement of fuel in the SFP and requires 2OM-49.4.H to be performed in the Initial Conditions section.
4. Procedure 2RP-3.10 was revised to exclude references to Technical Specifications and spent fuel movement instructions.
5. Refueling procedures 2RP-3.21, 2RP-3.16, "Core Unload", and 2RP-3.23, "Core Reload" will be revised to reference 2RP-3.28 for all fuel movement in the spent fuel pool.
6. The Unit 1 refueling procedures will be revised to incorporate similar content as the corresponding Unit 2 procedures.
7. A Unit 1 Operating Manual procedure equivalent to 2OM-49.4.H will be issued.

Corrective action completion is being tracked through the corrective action program.

PREVIOUS SIMILAR EVENTS

A review of the BVPS Unit 1 & 2 Licensee Event Reports found no similar events involving SFP soluble Boron concentration surveillance requirements within the last four years.