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L-00-041

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U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

**Subject: Beaver Valley Power Station, Unit No. 1  
Docket No. 50-334, License No. DPR-66  
Notification of Steam Generator Cycle Leakage Criteria**

Beaver Valley Power Station (BVPS) Unit No. 1 is nearing the completion of its thirteenth refueling. This letter notifies the NRC that the projected end-of-cycle (EOC) accident-induced steam generator leakage for Cycle 14 will exceed the voltage-based steam generator repair criteria, based on the projected EOC voltage distribution using initial data obtained during this refueling. This notification is being made pursuant to BVPS Unit No. 1 Technical Specification 4.4.5.5.d.1 which requires notification prior to returning the steam generators to service (Mode 4).

The number, characteristics and voltages obtained from the BVPS Unit 1 steam generator testing completed during the thirteenth refueling are not significantly different from those measured during the previous (twelfth) refueling. The maximum voltage reading obtained during the thirteenth refueling decreased from the twelfth refueling measurements. There were very few voltage readings that exceeded 2.0 volts and no steam generator indications which exceeded 2.5 volts. See Attachment 1 which provides preliminary thirteenth refueling data compared with the twelfth refueling data.

The projected EOC accident-induced steam generator leakage for Cycle 13, using the Steam Generator Degradation Specific Management (SGDSM) Database in effect during the twelfth refueling in 1997, was 1.0 gallon per minute (GPM). This was less than the permissible accident-induced leakage limit (determined from the licensing basis dose calculation for a postulated steam line break at BVPS Unit 1) of 3.0 gpm. Using actual data obtained during the thirteenth refueling and the 1997 SGDSM Database, the EOC accident-induced steam generator leakage for Cycle 13 has been calculated to be 0.5 gpm. This shows that the projected EOC calculation at the beginning of the thirteenth cycle was conservative. Using the 1997 SGDSM Database information but with the data obtained during the thirteenth refueling, the projected EOC accident-induced steam generator leakage for the fourteenth cycle would be 1.5 gpm.

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However, Addendum 2 and 3 to SGDSM Database, adopted after the BVPS Unit 1 twelfth refueling, have altered the SGDSM Database correlation. Using the data obtained during the thirteenth refueling and the current SGDSM Database correlation, the projected EOC accident-induced steam generator leakage for the fourteenth cycle will be 4.5 gpm. This is greater than the permissible accident-induced leakage limit of 3.0 gpm.

Addendum 2 & 3 to the SGDSM Database included data from French reactors which included very high voltage readings. These high voltage readings cause statistical skewing of data at the low voltage range of data. The inclusion of the additional French data artificially elevated leakage contribution from small (< 1.0) volt indications. For BVPS Unit 1 where the steam generator data is entirely composed of low voltage readings, the Probability of Leakage (POL) from the SGDSM Database increased following Addendum 2 & 3 for low voltages based on the addition of the higher French voltage readings. Thus, although the steam generator conditions are not significantly different from those measured during the previous (twelfth) refueling, their projected EOC accident-induced steam generator leakage became significantly higher primarily due to a revised method of calculating POL.

The BVPS Unit No. 1 projected EOC accident-induced steam generator leakage is calculated to exceed the permissible accident-induced leakage limit after approximately 60 EFPD of operation. There are no safety-related issues with BVPS Unit No. 1 operation prior to this time period since design and licensing basis for operation are met. FirstEnergy Nuclear Operating Company is pursuing methods to resolve this operating limitation to continue operation beyond the approximate 60 EFPD's during this cycle which will include a request to change the SGDSM Database statistical methodology. A follow-up transmittal will be provided to propose actions to address this operating limitation for BVPS Unit No. 1.

There were no other conditions identified during the steam generator tube eddy current examinations in the BVPS Unit No. 1 thirteenth refueling that required NRC notification pursuant to Technical Specification 4.4.5.5.d.2 through 4.4.5.5.d.5.

If there are any questions concerning this matter, please contact Mr. Mark S. Ackerman, Manager, Licensing at 412-393-5203.

Sincerely,



Lew W. Myers

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- c: Mr. D. S. Collins, Project Manager  
Mr. D. M. Kern, Sr. Resident Inspector  
Mr. H. J. Miller, NRC Region I Administrator  
Mr. D. A. Allard, Director BRP/DEP  
Mr. L. E. Ryan (BRP/DEP)  
Ms. Mary E. O'Reilly (FirstEnergy Legal Department)

**Attachment  
Beaver Valley Power Station Unit No. 1  
Pertinent Voltage Based Repair Data**

Steam Generator 'A' End-of-Cycle Distorted Support Plate Indications (DSI):

	<b>EOC – 12 (as found)</b>	<b>EOC – 13 (as found)</b>	<b>BOC - 14</b>
No. of Indications	1241	1271	1361*
Maximum Voltage	2.5	2.2	1.9
No. Indications > 2 Volts	3	7	0
No. Indications > 1 Volt	121	208	207
Average Voltage	0.6	0.7	< 0.7
% of Leakage from < 1 Volt Indications	25%	50%	

\*Includes 103 indications returned to service by unplugging

Using SGDSM Database Valid During 12 Refueling:

EOC-Cycle 13 projected leak rate (during 12 refueling) = 1.0 gpm  
 EOC-Cycle 13 condition monitoring leak rate (during 13 refueling) = 0.5 to 0.6 gpm (est.)  
 EOC-Cycle 14 projected leak rate (during 13 refueling) = 1.5 to 1.6 gpm (est.)

Using SGDSM Database Valid During 13 Refueling:

EOC-Cycle 13 projected leak rate (during 12 refueling) = 2.9 gpm  
 EOC-Cycle 13 condition monitoring leak rate (during 13 refueling) = 1.7 gpm  
 EOC-Cycle 14 projected leak rate (during 13 refueling) = 4.5 gpm

Current permissible accident-induced leakage limit (determined from the licensing basis dose calculation for a postulated steam line break at BVPS Unit 1) = 3.0 gpm