FENOC™
FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
P.O. Box 4
Shippingport, PA 15077

Eric A. Larson
Site Vice President

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

November 23, 2015
L-15-282

10 CFR 50.59(d)(2)

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

SUBJECT:
Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Report of Facility Changes, Tests, and Experiments

The FirstEnergy Nuclear Operating Company (FENOC) hereby submits the Beaver Valley Power Station, Unit No. 1 Report of Facility Changes, Tests, and Experiments for the Period June 1, 2014 to October 31, 2015.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 315-6810.

Sincerely,

Eric A. Larson

Attachment:
Beaver Valley Power Station, Unit No. 1 Report of Facility Changes, Tests, and Experiments for the Period June 1, 2014 to October 31, 2015.

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager
Director BRP/DEP
Site BRP/DEP Representative

Title:

Replacement of Reactor Coolant Pump Number 1 Seal Inserts with a Modified Design

Activity Description:

The modification replaces the current reactor coolant pump (RCP) number 1 seal inserts with a modified design identified as the Generation III Westinghouse shutdown seal (SDS). This includes replacement of the existing number 1 runner retainer sleeve and retainer sleeve adapter with a shutdown seal sleeve and a shutdown seal sleeve adapter. The modified seal inserts will be installed in each of the three Unit 1 RCPs. Currently, only one of the three RCPs has been upgraded with the modified shutdown seal design. The two remaining pumps will be upgraded at a later date.

With one exception, all potentially impacted Updated Final Safety Analysis Report (UFSAR)-described system, structure, or component (SSC) design function, evaluation methodology, and potential impact caused by a test or experiment questions were screened-out. The RCP design function, which is to provide core cooling flow during normal operating conditions, was screened-in for further evaluation given it could be impacted if the SDS were to inadvertently actuate.

Summary of Evaluation:

The SDS is designed to deploy on a stationary RCP shaft sleeve only after seal cooling is lost and the seal temperature rises to a prescribed temperature. Installation of the SDS, its normal actuation, and its inadvertent actuation on a rotating RCP shaft sleeve have been evaluated and the evaluation has concluded the following.

The SDS cannot cause an electrical failure or a fault in the power supply to the pump.

The SDS cannot cause a mechanical failure of the RCP given its small size and the negligible amount of resistance it can apply against the RCP shaft sleeve. An inadvertent SDS actuation would be incapable of seizing or breaking the RCP shaft. An inadvertent or early SDS actuation cannot lock or break a RCP rotor, nor will it result in any damage to the seals or adversely impact seal leakage. SDS contact on the rotating shaft sleeve would be far less severe than the postulated "impeller rub" condition already described in the USAR. The SDS does not introduce a credible source for seizure nor can it cause a different or more severe result. It cannot stop the revolution of the RCP rotor and prevent the forced flow of reactor primary coolant.

The SDS will have no adverse impact on the core cooling capability of the RCPs. Momentary seal faceplate contact resulting from inadvertent SDS actuation can neither trip the RCP, nor prevent the RCP from providing forced flow for core cooling.

The SDS neither contains nor releases any radioactive material, and in the event of a breach of the pressure boundary, the SDS rings and actuator cannot contribute to the radiological consequences of previously considered events.

Actuation of the SDS will not interfere with natural circulation cooling. The SDS does not adversely impact the seal water injection flow path, seal water return filtration or seal water injection filtration.

Installation, actuation as designed, inadvertent actuation or failure of the SDS to actuate will not exceed or alter any fission product barrier. Potential wear products created by actuation of the SDS on a rotating shaft sleeve will be filtered such that they cannot adversely impact the reactor coolant pressure boundary or damage the fuel.

This evaluation concludes that implementation of the SDS modification does not more than minimally impact the ability of the RCP to provide core cooling flow during normal operating conditions, including coastdown, and does not change the existing Beaver Valley Unit 1 licensing basis. The Beaver Valley Unit 1 UFSAR was reviewed and changes to it will be tracked and implemented after all three RCPs have been upgraded with the modified shutdown seal design.

In conclusion, the partially implemented modification does not meet any of the 10 CFR 50.59(c)(2) criteria; therefore, a license amendment is not required.

Title:
Extended Calibration Frequency for Seismic Monitoring Instruments Identified in the Licensing Requirements Manual

Activity Description:

The calibration frequency of the Engdahl seismic monitoring instruments was changed from 18 months to 36 months. These instruments are the response spectrum and peak shock recorders for the control room, the containment foundation, and the auxiliary building. These instruments and their associated calibration frequencies are identified in the Beaver Valley Unit 1 Licensing Requirements Manual.

Summary of Evaluation:

The instruments under consideration in this evaluation provide a record of the motion in the case of a seismic event. They supplement the instrumentation required by the Beaver Valley Unit 1 commitment to Safety Guide 12. Two triaxial force balance accelerometers meet the primary requirement of the safety guide, to provide strong motion triaxial accelerographs.

The supplemental response spectrum and peak shock recorders have no impact on plant control, no impact on accident response, no impact on the consequences of any accident described in the UFSAR, and no impact on the analyses methodology used in the design of the plant. Therefore, changing the calibration period will not have an adverse effect on any aspect of the plant as described in the Beaver Valley Unit 1 UFSAR.

Extending the calibration interval will slightly increase the probability that the instruments may not be accurate when called upon to function. However, a review of the calibration history shows that the peak shock recorders have been found within tolerance and have not required adjustment in at least 10 years. As a result, there is high confidence that they will remain accurate, despite the longer calibration period.

Additionally, as noted above, these are not the instruments that fulfill the primary requirement of Safety Guide 12. Information provided by the response spectrum and peak shock recorders is used to better understand the station response to an earthquake detected by the primary instruments. Any loss of data on these seismic response and peak shock recorders will have no impact on station earthquake response and would only be used in the post-earthquake analysis to assist in evaluating the plant condition. Loss of the information could increase analysis time, but would have no impact on the ability of the station to withstand the vibration.

Also, Safety Guide 12 allows multiple unit sites to use instruments at the other units to provide additional information on the ground response. The instruments at Beaver Valley Unit 2 are available to provide this additional information. Therefore, additional information on the earthquake would be available even if the response spectrum and peak shock recorders are not available.

In conclusion, the change in calibration frequency does not meet any of the 10 CFR 50.59(c)(2) criteria; therefore, a license amendment is not required.