FENOC

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February 4, 2003
L-03-005

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

Subject: Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
License Amendment Request No. 180

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) hereby requests an amendment to the above license in the form of changes to Technical Specification 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation." Specifically the proposed change will extend the slave relay surveillance test interval from 92 days to 12 months. The proposed change is based on the methodology described in WCAP-15887, "Probabilistic Risk Analysis of the Slave-Relay Surveillance Test Interval Extension for Beaver Valley Power Station, Unit 2," Revision 2, dated December 2002.

The approach used in WCAP-15887 is consistent with the NRC's method for using probabilistic risk assessment in risk-informed decisions on plant-specific changes to the current licensing basis as discussed in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis" and Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications." The approach addresses the impact on defense-in-depth and the impact on safety margins, as well as an evaluation of the impact on risk; i.e., impact on core damage frequency and large early release frequency.

FENOC's evaluation of the proposed change is provided in the Enclosure to this transmittal. Attachment A contains the proposed Technical Specification changes. Attachment B contains the proposed Technical Specification Bases changes. Attachment C lists the commitments contained in this transmittal. This letter also transmits Westinghouse Non-Proprietary Class 3 Topical Report, WCAP-15887, for NRC review.

FENOC requests approval of the proposed amendment by September 2003. Once approved, the amendment shall be implemented within 60 days.

A001

If there are any questions concerning this matter, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement at 724-682-5284.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 4, 2003.

Sincerely,

Mark B. Bezilla

Enclosures:

FENOC Evaluation of the Proposed Change.
WCAP-15887, "Probabilistic Risk Analysis of the Slave-Relay Surveillance Test Interval Extension for Beaver Valley Power Station, Unit 2," Revision 1.

Attachments:

A. Proposed Technical Specification Changes
B. Proposed Technical Specification Bases Changes
C. Commitment Summary

c: Mr. D. S. Collins, NRR Project Manager
Mr. D. M. Kern, NRC Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator
Mr. D. A. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

ENCLOSURE

FENOC Evaluation of the Proposed Change

Beaver Valley Power Station, Unit 2

License Amendment Request No. 180

Subject: Application to extend the slave relay surveillance test interval from 92 days to 12 months at Beaver Valley Power Station, Unit 2.

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Attachments

1.0 DESCRIPTION

This is a request to amend Operating License NPF-73 for Beaver Valley Power Station Unit 2.

The proposed change will revise the Technical Specifications to extend the slave relay test interval from 92 days to 12 months. The justification for extending the slave relay test interval to 12 months is documented in Reference 1, WCAP-15887, Revision 2, "Probabilistic Risk Analysis of the Slave-Relay Surveillance Test Interval Extension for Beaver Valley Power Station, Unit 2" dated December 2002.

2.0 PROPOSED CHANGES

The proposed Technical Specification change, which is submitted for NRC review and approval, is provided in Attachment A. The change proposed to the Technical Specification Bases is provided in Attachment B. There are no changes proposed to the Licensing Requirements Manual (LRM). The proposed Technical Specification Bases change does not require NRC approval. The Beaver Valley Power Station (BVPS) Technical Specification Bases Control Program controls the review, approval and implementation of Technical Specification Bases changes. The Technical Specification Bases change is provided for information only.

The proposed change to the Technical Specifications and Technical Specification Bases has been prepared electronically. Deletions are shown with a strike-through and insertions are shown double-underlined. This presentation allows the reviewer to readily identify the information that has been deleted and added.

To meet format requirements the Technical Specifications and Technical Specification Bases pages will be revised and repaginated as necessary to reflect the change being proposed by this License Amendment Request (LAR).

A change to Technical Specification (TS) 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation", is being proposed to extend the slave relay test interval from 92 days to 12 months. The following provides a description and basis for the proposed change.

<u>Change Description</u>

The 92-day slave relay test interval in Surveillance Requirement 4.3.2.1.1 is being extended to 12 months.

Basis for Change

Reference 1 provides the technical justification for extending the slave relay test interval from 92 days to 12 months. The approach used in Reference 1 is consistent with the NRC's method for using probabilistic risk assessment in risk-informed decisions on plant-specific changes to the current licensing basis as discussed in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis," (Reference 2) and Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications," (Reference 3). The approach addresses the impact on defense-in-depth and the impact on safety margins, as well as an evaluation of the impact on risk. With regard to risk, the impact of the slave relay interval extension on core damage frequency (CDF) and large early release frequency (LERF) are both considered.

3.0 BACKGROUND

Existing Design Basis

The Engineered Safety Feature Actuation System (ESFAS) initiates necessary safety systems, based on the values of selected plant parameters, to protect against violating core design limits, the reactor coolant system pressure boundary and the containment boundary, and to mitigate accidents.

The ESFAS instrumentation is segmented into three distinct, but interconnected modules as identified and described below.

Field transmitters or process sensors and instrumentation.

This module provides a measurable electronic signal based on the physical characteristics of the parameter being measured. To meet the design demands for redundancy and reliability, more than one, and often as many as four, field transmitters or sensors are used to measure plant parameters. In many cases, field transmitters or sensors that input to the ESFAS are shared with the reactor trip system. In some cases, the same channels also provide control system inputs.

Signal processing equipment.

This module, which includes the analog protection system, field contacts, and protection channel sets, provides signal conditioning, bistable setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system devices, and control board/control room/miscellaneous

indications. This module's equipment provides signal conditioning, comparable output signals for instruments located on the main control board, and comparison of measured input signals with setpoints established by safety analyses. If the measured value of a plant parameter exceeds the predetermined setpoint, an output from a bistable is forwarded to the Solid State Protection System (SSPS) for decision evaluation. Channel separation is maintained up to and through the input bays. Some plant parameters provide input only to the SSPS, while others provide input to the SSPS, the main control board, the plant computer, and one or more control systems.

Solid State Protection System (SSPS).

This module, which includes the input, logic, and output bays, initiates the proper plant shutdown or engineered safety feature (ESF) actuation in accordance with the defined logic and based on the bistable outputs from the signal process control and protection system. The SSPS equipment is used for the decision logic processing of outputs from the signal processing equipment bistables. To meet the redundancy requirements, two trains of SSPS, each performing the same functions, are provided. If one train is taken out of service for maintenance or test purposes, the second train will provide ESF actuation for the unit. If both trains are taken out of service or placed in test, a reactor trip will result. Each train is contained in its own cabinet for physical and electrical separation to satisfy separation and independence requirements. The SSPS performs the decision logic for most ESF equipment actuation; generates the electrical output signals that initiate the required actuation; and provides the status, permissive, and annunciator output signals to the main control room of the unit.

The bistable outputs from the signal processing equipment are sensed by the SSPS equipment and combined into logic matrices that represent combinations indicative of various transients. If a required logic matrix combination is completed, the system will send actuation signals via master and slave relays to those components whose aggregate function best serves to alleviate the condition and restore the plant to a safe condition.

Each SSPS train has a built in testing device that can automatically test the decision logic matrix functions and the actuation devices while the unit is at power. When any one train is taken out of service for testing, the other train is capable of providing plant monitoring and protection until the testing has

been completed. The testing device is semiautomatic to minimize testing time.

The actuation of ESF components is accomplished through master and slave relays. Some signals also require the use of interposing relays for final component actuation. The SSPS energizes the master relays appropriate for the condition of the plant. Each master relay then energizes one or more slave relays, and slave relays actuate either end devices or interposing relays which actuate end devices.

The master and slave relays are routinely tested to ensure operation. The test of the master relays energizes the relay, which then operates the contacts and applies a low voltage to the associated slave relays. The low voltage is not sufficient to actuate the slave relays but only demonstrates signal path continuity.

The slave relay test actuates the devices if their operation will not interfere with continued plant operation. For the situation when device actuation will interfere with plant operation, the slave relay test circuit prevents actual component operation, and slave relay contact operation is verified by a continuity check of the circuit containing the slave relay. The slave relay test required by Surveillance Requirement 4.3.2.1.1 is currently performed every 92 days.

The slave relay test involves testing some of the slave relays at power, with the attendant risk of inadvertent actuation of the ESFAS equipment, and associated plant transient. On-line testing of slave relays requires significant plant manipulation, operator attention, abnormal configurations, and removes some equipment from service, making it unavailable to perform its intended safety function.

Generic Letter 93-05, "Line Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation," was approved in September 1993 (Reference 4). This Generic Letter was a result of the recommendations of a 1983 NRC task group formed to investigate problems with surveillance testing required by Technical Specifications. The objectives of the NRC task group were:

(1) to review the basis for test frequencies;

(2) to ensure that the tests promote safety and do not degrade equipment; and

(3) to review surveillance tests for unnecessary burden on plant personnel.

The studies found that, while some testing at power is essential to verify equipment and system operability, safety can be improved, equipment degradation decreased, and unnecessary personnel burden relaxed by reducing the amount of testing at power. The slave relay test interval extension being proposed is consistent with the objectives of the NRC task group.

Proposed Change to Design Basis

The proposed change to extend the slave relay test interval from 92 days to 12 months does not impact the design basis. The ESFAS instrumentation will remain available to protect against violating core design limits and the reactor coolant system pressure boundary, and to mitigate accidents. The same signals will still be available to mitigate events and the reliability of these signals will remain high. Backup and redundant signals will remain available. The proposed change does not impact the acceptance limits that protect against violating the core design, the reactor coolant system pressure boundary limits and the containment boundary, nor are the offsite dose and control room dose acceptance limits impacted. In addition, the limiting safety system settings and instrumentation response times are not impacted by the change.

4.0 TECHNICAL ANALYSIS

4.1 Impact on Defense-in-Depth and Safety Margins

In addition to discussing the impact of the change on plant risk, the traditional engineering considerations need to be addressed. These include defense-in-depth and safety margins. The fundamental safety principles on which the plant design is based cannot be compromised. Design basis accidents are used to develop the plant design. These are a combination of postulated challenges and failure events that are used in the plant design to demonstrate safe plant response. Defense-in-depth and adequate safety margins may be impacted by the proposed change and consideration needs to be given to these elements.

Impact on Defense-in-Depth

The proposed change must satisfy the defense-in-depth principle that consists of a number of elements. These elements and the impact of the proposed change on these elements are discussed below.

- A reasonable balance among preventing core damage, preventing containment failure, and consequence mitigation is preserved.

  The proposed change has only a small-calculated impact on CDF and LERF. The change does not affect containment integrity. The change does not degrade core damage prevention at the expense of containment integrity, nor does it degrade containment integrity at the expense of core damage prevention. The balance between preventing core damage and preventing containment failure is the same. Consequence mitigation remains unaffected by the proposed change. Furthermore, no new accident or transient is introduced with the requested change, and the likelihood of an accident or transient is not adversely impacted. No new activities on the SSPS will be performed at-power that could lead to a new transient event. Additionally, the extended slave relay test interval may reduce the likelihood of a test-induced transient or accident. This last item remains an unquantified benefit of the change.

- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided.

  The plant design will not be changed to accommodate this slave relay test interval extension. All safety systems, including the SSPS, will still function in the same manner with the same signals available to trip the reactor and initiate ESF functions, and there will be no additional reliance on additional systems, procedures, or operator actions. The calculated risk increase for the change is very small, and additional control processes are not required to compensate for any risk increase.

- System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system.

  There is no impact on the redundancy, independence, or diversity of the SSPS or of the ability of the plant to respond to events with

diverse systems. The SSPS is a diverse and redundant sub-system and will remain so. There will be no change to the signals available to trip the reactor or initiate ESFAS.

- Defenses against potential common-cause-failures are maintained and the potential for the introduction of new common-cause-failure mechanisms is assessed.

  Defenses against common cause failures are maintained. The slave relay test interval extension is not sufficiently long to expect a new common-cause mechanism to occur. In addition, the operating environment for these components remains the same, therefore no new common-cause-failure modes are expected. In addition, backup systems and operator actions are not impacted by the change; and there are no common cause links between the SSPS and these backup options.

- Independence of barriers is not degraded.

  The barriers protecting the public and the independence of these barriers are maintained. It is not expected that multiple systems will be out-of-service simultaneously that could lead to degradation of these barriers and an increase in risk to the public with implementation of the extended slave relay test interval.

- Defenses against human errors are maintained.

  No new operator actions related to the slave relay test interval extension are required. No additional operation or maintenance procedures have been introduced nor are existing procedures required to be revised due to the change. No new at-power test or maintenance activities are expected to occur as a result of the change. Fewer surveillance tests will be performed at-power, which will reduce the potential for test induced reactor trips and safety system actuations. This represents a risk benefit, i.e., a reduction in risk.

Impact on Safety Margins

The safety analysis acceptance criteria as stated in the Updated Final Safety Analysis Report (UFSAR) are not impacted by the proposed change. Diversity with regard to the signals, which provide a reactor trip and actuation of engineered safety features, will also be maintained. The proposed change will not result in operation of the unit in a configuration

outside of the design basis. All signals credited as primary or secondary and all operator actions credited in the accident analysis will remain the same. Therefore, there is no impact on the safety margins.

4.2 Assessment of Impact on Risk

The impact of the proposed change on plant safety, as measured by the change in core damage frequency (CDF) and the change in large early release frequency (LERF) was evaluated against the Regulatory Guide 1.174 acceptance criteria of less than 1.0E-06 per year for ΔCDF and less than 1.0E-07 per year for ΔLERF.

This evaluation was done by comparing the Base Case CDF and LERF values with the CDF and LERF values associated with the change in the slave relay test interval from 92 days to 12 months. The Base Case and 12 month test interval case CDF and LERF values, as well as the ΔCDF and ΔLERF values are shown in the Table below.

	Base Case (92 days)	12 month interval
CDF (/year)	1.56E-05	1.62E-05
LERF (/year)	5.55E-07	6.35E-07
ΔCDF (/year)		6.0E-07
ΔLERF (/year)		8.0E-08

The calculated ΔCDF value of 6.0E-07 and ΔLERF value of 8.0E-08 meet the Regulatory Guide 1.174 acceptance criteria of less than 1.0E-06 per year for ΔCDF and less than 1.0E-07 per year for ΔLERF, therefore the proposed change in the slave relay test interval of 12 months is acceptable.

4.3 Significant Programs in Progress.

There are two programs currently in progress at BVPS Unit 2 that could have an impact on the acceptability of the results of the slave relay test interval extension to 12 months. These programs are the conversion to an atmospheric containment and the Extended Power Uprate (EPU). The impact of these two programs is discussed in the following sections.

The slave and interposing relays are part of the ESFAS that develops signals to actuate safety systems for event mitigation. The slave and interposing relays are the final step in signal development and are used for equipment

actuation. These signals are backed-up by operator actions. That is, if the actuation signal fails, then an operator can manually start or align components from the control room. In assessing the impact of the atmospheric containment conversion on the slave relay test interval extension to 12 months, the following needs to be considered:

- Availability of signals for mitigation system actuation
- Reliability of actuation signals
- Human error probabilities for backup operator actions

4.3.1 Impact of Containment Conversion.

A LAR to permit containment operation at atmospheric conditions was submitted for NRC review by FENOC letter L-02-069 (Reference 5). The impact of this submittal, referred to as the containment conversion, on the proposed slave relay test interval extension is discussed in the following paragraphs.

The atmospheric containment conversion will not impact the availability of signals or the reliability of the actuation signals. The same signals will still be available to mitigate events and the reliability of these signals will not be impacted. How often a surveillance test is conducted is independent of the type of containment.

However, the human error probabilities for backup operator actions may potentially be impacted by the atmospheric containment conversion due to the setpoint changes for the following functions:

- Safety Injection and Feedwater Isolation on Containment Pressure High
- Safety Injection- Transfer From Injection to the Recirculation Mode on RWST Level Extreme Low
- Containment Spray Actuation on Containment Pressure High-High
- Containment Isolation Phase B on Containment Pressure High-High
- Steam Line Isolation on Containment Pressure Intermediate- High-High

These setpoint changes may impact the time available for operator actions following the failure of these actuation signals. Therefore a qualitative assessment of the expected change to the time available for operator actions was conducted.

The Probabilistic Risk Assessment (PRA) model categorizes operator action errors based upon a number of conditions, including the time available to perform the required actions and if the actions are proceduralized. The operator actions will remain the same following the change to a 12 month surveillance test interval and the conversion to an atmospheric containment. The actions are presently proceduralized and will remain so after the containment conversion. Conversion to an atmospheric containment is not expected to significantly change the time available for operator actions. Therefore, there should not be a significant impact on the operator action errors associated with a failed ESFAS actuation signal. Thus, extending the surveillance test interval to 12 months with an atmospheric containment is not expected to result in a change to ΔCDF or ΔLERF such that the acceptance criteria of Regulatory Guide 1.174 would be exceeded.

The impact of containment conversion related setpoint changes on the 12 month test interval will be re-evaluated, as stated in Attachment C, following the PRA model update that incorporates the conversion to an atmospheric containment.

4.3.2 Impact of Extended Power Uprate.

Currently, an Extended Power Uprate LAR submittal is being developed for submittal to the NRC for approval. The Extended Power Uprate will not impact the availability of signals or the reliability of the actuation signals. The same signals will still be available to mitigate events and the reliability of these signals will not be impacted. How often a surveillance test is conducted is independent of the operating power level of the plant.

However, the human error probabilities for backup operator actions may be impacted by the Extended Power Uprate due to the additional energy in the core which may impact the time available for operators to take actions if actuation signals fail.

The impact of Extended Power Uprate related changes on the 12 month test interval will be qualitatively evaluated, as stated in Attachment C, as part of the Extended Power Uprate submittal.

5.0 REGULATORY SAFETY ANALYSIS

The proposed change will revise the Engineered Safety Feature Actuation System (ESFAS) slave relay test interval from 92 days to 12 months.

5.1 No Significant Hazards Consideration

FirstEnergy Nuclear Operating Company (FENOC) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10CFR50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No. The proposed change to the slave relay test interval reduces the potential for spurious actuation of equipment, and therefore does not increase the probability of any accident previously analyzed. The proposed change to the slave relay test interval does not change the response of the unit to any accidents and has an insignificant impact on the reliability of the engineered safety feature actuation system (ESFAS) signals. The ESFAS will remain highly reliable and the proposed change will not result in a significant increase in the risk of plant operation. This is demonstrated by showing that the impact on plant safety as measured by the change in core damage frequency (CDF) is less than 1.0E-06 per year and the change in large early release frequency (LERF) is less than 1.0E-07 per year. The change meets the acceptance criteria in Regulatory Guide 1.174. Therefore, since the ESFAS will continue to perform its function with high reliability as originally assumed, and the increase in risk as measured by the change in CDF and LERF is within the acceptance criteria of existing regulatory guidance, there will not be a significant increase in the consequences of any accidents.

The proposed change does not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility or the manner in which the unit is operated and maintained. The proposed change does not alter or prevent the ability of structures, systems, and components (SSCs) from performing their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The

proposed change does not affect the source term, containment isolation, or radiological release assumptions used in evaluating the radiological consequences of an accident previously evaluated. Further, the proposed change does not increase the types or amounts of radioactive effluent that may be released offsite, nor significantly increase individual or cumulative occupational/public radiation exposures. The proposed change is consistent with the safety analysis assumptions and resultant consequences.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No. The proposed change does not result in a change in the manner in which the ESFAS provides unit protection. The ESFAS will continue to have the same setpoints after the proposed change is implemented. There are no design changes associated with the proposed change. The change to the slave relay test interval does not change any existing accident scenarios, nor create any new or different accident scenarios.

The change does not involve a physical alteration to the unit (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. In addition, the change does not impose any new or different requirements or eliminate any existing requirements. The change does not alter assumptions made in the safety analysis. The proposed change is consistent with the safety analysis assumptions and current unit operating practice.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No. The proposed change does not alter the manner in which safety limits, limiting safety system settings or limiting

conditions for operation are determined. The safety analysis acceptance criteria are not impacted by this change. Redundant ESFAS trains are maintained, and diversity with regard to the signals that provide engineered safety features actuation is also maintained. All signals credited as primary or secondary, and all operator actions credited in the accident analyses will remain the same. The proposed change will not result in unit operation in a configuration outside the design basis. The calculated impact on risk is insignificant and meets the acceptance criteria contained in Regulatory Guide 1.174. The proposed slave relay test interval change will result in a reduced potential for spurious equipment actuations associated with testing.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, FENOC concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10CFR50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

A review of 10CFR50, Appendix A, "General Design Criteria for Nuclear Power Plants" (Reference 6), was conducted to assess the potential impact associated with the proposed change. The following table lists the criterion potentially impacted, and an assessment of the need for a modification to the UFSAR description of BVPS design conformance to the criterion.

General Design Criteria		Impact
20	Protection System Functions	No
21	Protection System Reliability and Testing	No

5.2.1 Discussion of Impacts

No changes are being proposed to the ESFAS design that impact the Regulatory Requirements/Criteria identified above. The evaluation performed by FENOC in Section 4.0 concludes that BVPS Unit 2 will continue to comply with the General Design Criteria identified above.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10CFR20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10CFR51.22(c)(9). Therefore, pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. WCAP-15887, Revision 2, "Probabilistic Risk Analysis of the Slave-Relay Surveillance Test Interval Extension for Beaver Valley Power Station, Unit 2", dated December 2002.
2. Regulatory Guide 1.174 "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis."
3. Regulatory Guide 1.177 "An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications."
4. Generic Letter 93-05, "Line Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation".
5. FENOC Letter L-02-069, License Amendment Requests 300 and 172, dated June 5, 2002.
6. 10CFR50, Appendix A, "General Design Criteria for Nuclear Power Plants."

Attachment A

Beaver Valley Power Station, Unit No. 2
Proposed Technical Specification Changes

License Amendment Request No. 180

The following is a list of the affected pages:

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* Page included for information or readability. No changes are proposed.

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each engineered safety feature actuation system instrumentation channel and interlock and the automatic actuation logic with master and slave relays shall be demonstrated OPERABLE by the performance of the ESFAS Instrumentation Surveillance Requirements[1] during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by interlock operation. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESF function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESF function as shown in the "Total No. Of Channels" Column of Table 3.3-3.

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(1) For the automatic actuation logic, the surveillance requirements shall be the application of various simulated input conditions in conjunction with each possible interlock logic state and verification of the required logic output including, as a minimum, a continuity check of output devices. For the actuation relays, the surveillance requirements shall be the energization of each master and slave relay and verification of OPERABILITY of each relay. The test of master relays shall include a continuity check of each associated slave relay. The test of slave relays (to be performed at least once per 12 months~~92 days~~ in lieu of at least once per 31 days) shall include, as a minimum, a continuity check of associated actuation devices that are not testable.

No changes proposed.
Included for readability.

TABLE 4.3-2

ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. SAFETY INJECTION AND FEEDWATER ISOLATION				
a. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M(1)	1, 2, 3, 4
c. Containment Pressure-High	S	R	Q	1, 2, 3
d. Pressurizer Pressure--Low	S	R	Q	1, 2, 3
e. Steam Line Pressure--Low	S	R	Q	1, 2, 3
1.1 SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE				
a. Automatic Actuation Logic Coincident with Safety Injection Signal	N.A.	N.A.	M(1)	1, 2, 3, 4
b. Refueling Water Storage Tank Level-Extreme Low	S	R	M	1, 2, 3, 4

No changes proposed.
Included for readability.

TABLE 4.3-2 (Continued)

ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
2. CONTAINMENT SPRAY				
a. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
b. Automatic Actuation Logic, and Actuation Relays	N.A.	N.A.	M(1)	1, 2, 3, 4
c. Containment Pressure-High-High	S	R	Q	1, 2, 3
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
2. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M(1)	1, 2, 3, 4
3. Safety Injection	See Functional Unit 1 above for all Safety Injection Surveillance Requirements.			
b. Phase "B" Isolation				
1. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
2. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M(1)	1, 2, 3, 4
3. Containment Pressure--High-High	S	R	Q	1, 2, 3, 4

No changes proposed.
Included for readability.

TABLE 4.3-2 (Continued)

ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. STEAM LINE ISOLATION				
a. Manual Initiation				
1. Individual	N.A.	N.A.	R	1, 2, 3
2. System	N.A.	N.A.	R	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M(1)	1, 2, 3
c. Containment Pressure--Intermediate-High-High	S	R	Q	1, 2, 3
d. Steamline Pressure--Low	S	R	Q	1, 2, 3
e. Steamline Pressure Rate-High Negative	S	R	Q	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M(1)	1, 2, 3
b. Steam Generator Water Level--High-High, P-14	S	R	Q	1, 2, 3
c. Safety Injection	See Functional Unit 1 above for all Safety Injection Surveillance Requirements.			

No changes proposed.
Included for readability.

TABLE 4.3-2 (Continued)

ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
6. LOSS OF POWER				
a. 4.16kv Emergency Bus				
1. Undervoltage (Trip Feed)	N.A.	R	M	1, 2, 3, 4
2. Undervoltage (Start Diesel)	N.A.	R	M	1, 2, 3, 4
b. 4.16kv Emergency Bus (Degraded Voltage)	N.A.	R	M	1, 2, 3, 4
c. 480v Emergency Bus (Degraded Voltage)	N.A.	R	M	1, 2, 3, 4
7. AUXILIARY FEEDWATER(4)				
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M(1)	1, 2, 3
b. Steam Generator Water Level-Low-Low				
1. Start Turbine Driven Pump	S	R	Q	1, 2, 3
2. Start Motor Driven Pumps	S	R	Q	1, 2, 3

(4) Manual initiation is included in Specification 3.7.1.2.

No changes proposed.
Included for readability.

TABLE 4.3-2 (Continued)

ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
7. AUXILIARY FEEDWATER (continued)				
c. Undervoltage - RCP (Start Turbine-Driven Pump)	S	R	M	1, 2
d. Safety Injection (Start All Auxiliary Feedwater Pumps)	See 1 above (all SI surveillance requirements)			
e Trip of Main Feedwater Pumps (Start Motor-Driven Pumps)	N.A.	N.A.	R	1, 2, 3
8. ENGINEERED SAFETY FEATURE INTERLOCKS				
a. Reactor Trip, P-4	N.A.	N.A.	R	1, 2, 3
b. Pressurizer Pressure, P-11	N.A.	R	Q	1, 2, 3
c. Low-Low T_{avg}, P-12	N.A.	R	Q	1, 2, 3

No changes proposed.
Included for readability.

TABLE 4.3-2 (Continued)

TABLE NOTATION

(1) Each train or logic channel shall be tested at least every other 31 days.

Attachment B

Beaver Valley Power Station, Unit No. 2

Proposed Technical Specification Bases Changes

License Amendment Request No. 180

The following is a list of the affected pages:

Page
B 3/4 3-9

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The frequency is based on operating experience that demonstrates channel failure is rare. Thus, performance of the CHANNEL CHECK ensures that undetected overt channel failure is limited to 12 hours. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

When the control rods are fully inserted and are not capable of withdrawal, inadvertent control rod withdrawal is not a concern and one source range detector can adequately monitor the core.

CHANNEL FUNCTIONAL TEST

The alternate source range detectors are modified by a note to indicate they are not subject to the source range detector surveillance requirements until they have been connected to the applicable circuits and are required to be OPERABLE. This complies with the testing requirements for components that are required to be OPERABLE.

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure the entire channel will perform the intended function. Setpoints must be within the Allowable Values. The frequency of 92 days is justified for certain channels in WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

The test of the slave relays is performed at least once per 12 months. The frequency of 12 months is justified in WCAP-15887-NP, Revision 2, dated December 2002.

This surveillance is modified by a Note that specifies testing when below P-6 and is clarified to address the transition from MODE 2 to MODE 3. A transition into MODE 3 with the reactor trip breakers closed is often made for a short period of time during plant shutdown. During a normal shutdown, the reactor trip breakers are opened shortly after entering MODE 3. The transition time in MODE 3 from when the reactor trip breakers are closed to when they are opened is less than the time required to perform the CHANNEL FUNCTIONAL TEST prior to entering MODE 3. Therefore, an allowance to enter MODE 3 without first performing the source range CHANNEL FUNCTIONAL TEST is warranted.

When performing the CHANNEL FUNCTIONAL TEST for manual initiation functions, the injection of a simulated signal into the channel as close to the primary sensor as practicable is accomplished by manually operating the function's manual switch(es).

Attachment C

Beaver Valley Power Station, Unit No. 2

Commitment Summary

License Amendment Request No 180 (Unit 2)

Commitment List

The following table identifies those actions committed to by FirstEnergy Nuclear Operating Company (FENOC) for Beaver Valley Power Station (BVPS) Unit Nos. 1 and 2 in this document. Any other actions discussed in the submittal represent intended or planned actions by FENOC. They are described only as information and are not regulatory commitments. Please notify Mr. Larry R. Freeland, Manager, Regulatory Affairs/Corrective Actions, at Beaver Valley on (724) 682-5284 of any questions regarding this document or associated regulatory commitments.

COMMITMENT	DUE DATE
The impact of the following containment conversion setpoint changes on the ΔCDF and ΔLERF due to the test interval extension will be evaluated against the acceptance criteria of RG 1.174. • Safety Injection and Feedwater Isolation on Containment Pressure High • Safety Injection- Transfer From Injection to the Recirculation Mode on RWST Level Extreme Low • Containment Spray Actuation on Containment Pressure High-High • Containment Isolation Phase B on Containment Pressure High-High • Steam Line Isolation on Containment Pressure Intermediate- High-High.	Three months following the PRA model update that incorporates the atmospheric containment.
The impact of Extended Power Uprate related changes on the ΔCDF and ΔLERF due to the test interval extension will be evaluated against the acceptance criteria of RG 1.174.	Three months following the PRA model update that incorporates the Extended Power Uprate.