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June 2, 2004
L-04-077

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

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
License Amendment Request Nos. 309 and 181

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) hereby requests an amendment to the above licenses in the form of changes to Technical Specification 3/4.3.1, "Reactor Trip System Instrumentation" and 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation." Specifically the proposed changes will increase the surveillance test interval from monthly to quarterly for certain reactor trip system and engineered safety feature actuation system channel functional tests. The proposed changes are based on the methodology described in WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and supplements thereto.

The FENOC evaluation of the proposed changes are presented in the Enclosure. The proposed Technical Specification changes are presented in Attachments A-1 and A-2 for BVPS Unit Nos. 1 and 2, respectively. There are no new regulatory commitments made in this letter.

The Beaver Valley Power Station review committees have reviewed the changes. The changes were determined to be safe and do not involve a significant hazard consideration as defined in 10 CFR 50.92 based on the attached safety analysis and no significant hazard evaluation.


FENOC requests approval of the proposed amendment by March 2005. Once approved, the amendment shall be implemented within 60 days.

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

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I declare under penalty of perjury that the foregoing is true and correct. Executed on
June 2, 2004.

Sincerely,



L. William Pearce

Enclosure:

FENOC Evaluation of the Proposed Changes

Attachments:

- A-1 Proposed BVPS Unit No. 1 Technical Specification Changes
- A-2 Proposed BVPS Unit No. 2 Technical Specification Changes

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. P. C. Cataldo, 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 Changes

Beaver Valley Power Station
License Amendment Requests
309 (Unit 1) And 181 (Unit 2)

Subject: Extension of Selected RTS and ESFAS Surveillance Intervals

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Attachments

| <u>Number</u> | <u>Title</u> |
|---------------|---|
| A-1 | Proposed Unit 1 Technical Specification Changes |
| A-2 | Proposed Unit 2 Technical Specification Changes |

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1.0 DESCRIPTION

This is a request to amend Operating Licenses DPR-66 (Beaver Valley Power Station Unit 1) and NPF-73 (Beaver Valley Power Station Unit 2).

The proposed changes will revise the Technical Specifications to permit an increase in surveillance testing intervals (STIs), from monthly to quarterly, for certain reactor trip system (RTS) and engineered safety feature actuation system (ESFAS) channel functional tests in accordance with the methodology presented in the NRC approved WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System", and supplements thereto.

The specific affected Technical Specification surveillances are:

Unit 1

TS 3/4.3.1, Reactor Trip System Instrumentation, Table 4.3-1

Functional Unit 16- Undervoltage- Reactor Coolant Pumps

Functional Unit 17- Underfrequency- Reactor Coolant Pumps

TS 3/4.3.2, Engineered Safety Feature Actuation Sys. Instrumentation, Table 4.3-2

Functional Unit 1.1.c- Refueling Water Storage Tank (RWST) Level -Low

Functional Unit 6.a- 4.16kv Emergency Bus Undervoltage (Loss of Voltage)
Trip Feed and Start Diesel

Functional Unit 6.b- 4.16kv and 480v Emergency Bus Undervoltage
(Degraded Voltage)

Functional Unit 7.b- Undervoltage -Reactor Coolant Pump

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Unit 2

TS 3/4.3.1, Reactor Trip System Instrumentation, Table 4.3-1

Functional Unit 16- Undervoltage -Reactor Coolant Pumps (Above P-7)

Functional Unit 17- Underfrequency -Reactor Coolant Pumps (Above P-7)

TS 3/4.3.2, Engineered Safety Feature Actuation Sys. Instrumentation, Table 4.3-2

Functional Unit 1.1.b- RWST Level- Extreme Low

Functional Unit 6.a.1- 4.16kv Emergency Bus Undervoltage (Trip Feed)

Functional Unit 6.a.2- 4.16kv Emergency Bus Undervoltage (Start Diesel)

Functional Unit 6.b- 4.16kv Emergency Bus (Degraded Voltage)

Functional Unit 6.c- 480v Emergency Bus (Degraded Voltage)

Functional Unit 7.c- Undervoltage- Reactor Coolant Pump
(Start Turbine Driven Pump)

2.0 PROPOSED CHANGES

The proposed Technical Specification changes, which are submitted for NRC review and approval, are provided in Attachments A-1 and A-2 for Unit Nos. 1 and 2 respectively.

The proposed changes to the Technical Specifications have 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 pages will be revised and repaginated as necessary to reflect the changes being proposed by this License Amendment Request (LAR).

The following provides a description of the proposed changes and a basis for the changes.

Change

The changes increase the Technical Specification surveillance interval channel functional tests from once per month to once per quarter for the surveillances listed in Section 1.

Basis for Change

The proposed changes are consistent with the Topical Report WCAP-10271 safety evaluation report (SER) conditions, as described below, and reflect the application of methodologies recognized by the NRC and the industry as providing a sufficient margin of safety. Therefore, the proposed changes are considered to be safe and will not reduce the safety of the plant. The reduction in surveillance testing due to the proposed changes provides the following benefits: a reduction in the number of unnecessary plant transients and challenges to the protection systems, a reduction in the amount of time the safety instrumentation is partially operable, more effective use of the operating staff, and a reduction in distractions to the control room operators during testing.

3.0 BACKGROUND

In February 1985, the NRC issued the approving SER for WCAP-10271 and Supplement 1. This SER approved extending the surveillance testing frequency from monthly to quarterly for selected analog channels of the RTS.

In February 1989, the NRC issued the SER for WCAP-10271 Supplement 2 and Supplement 2, Revision 1. This SER approved quarterly testing for selected analog channels of the ESFAS. The ESFAS functions approved are those included in the Westinghouse Standard Technical Specifications (STS).

In April 30, 1990, the NRC issued a Supplemental SER (SSER) for WCAP-10271, Supplement 2 and Supplement 2, Revision 1. The SSER approved quarterly testing for selected analog channels for ESFAS functions not contained in the STS.

The NRC approved extending a number of the Beaver Valley Power Station (BVPS) RTS and ESFAS instrumentation surveillances from monthly to quarterly in 1994 (License Amendment 181 for BVPS Unit 1 and License Amendment 61 for BVPS Unit 2) based on application of the WCAP-10271 program. However, the WCAP- 10271 program did not address all of the RTS and ESFAS channel functional tests specific to each Westinghouse plant. The NRC permits application of the generic WCAP-10271 program methodology to other site specific instrumentation provided that specific conditions contained in the approving SERs and SSER are met. The FirstEnergy Nuclear Operating Company (FENOC) has performed analyses of the applicability of the WCAP-10271 SER and SSER conditions to the additional changes proposed by this LAR.

4.0 TECHNICAL ANALYSIS

SER Conditions:

The NRC initially imposed five conditions on utilities seeking to implement the Technical Specification changes approved generically for RTS surveillance extensions as a result of their review of WCAP-10271 and WCAP-10271 Supplement 1. Two of the original conditions (i.e. staggered test plan and channels that input to both the RTS and ESFAS) no longer apply. The requirement for a staggered test plan was determined to be unnecessary by the NRC and the condition was removed in the SER dated February 1989 which approved WCAP-10271 Supplement 2 and Supplement 2, Revision 1. This SER, which addressed ESFAS functions, also eliminated concerns related to channels that input to both the RTS and ESFAS. The remaining three conditions applicable to RTS surveillance extensions are identification of common cause failures, installed hardware capability for bypass testing, and setpoint drift. The NRC imposed one additional condition on utilities extending ESFAS surveillances as a result of their review of WCAP-10271 Supplement 2 and Supplement 2, Revision 1. This condition was that the utilities confirm the applicability of the generic analysis to the plant.

SER Condition- Identification of Common Cause Failures

This condition requires that plant procedures require a common cause evaluation for failure in the RTS channels changed to the quarterly test frequency and additional testing for plausible common cause failures. In accordance with the Westinghouse Owners Group (WOG) guidance, this condition is also applied to the ESFAS functions.

Response- BVPS maintenance procedures address common cause failure and additional testing of RTS and ESFAS channels.

SER Condition- Installed Hardware Capability for Testing in the Bypass Mode

This condition requires that testing of RTS channels in a bypassed condition be performed without the use of temporary jumpers or by lifting leads. In accordance with WOG guidance, this condition is also applied to the ESFAS functions.

Response- BVPS testing procedures do not require the use of temporary jumpers (other than the routine connection of test equipment) or lifted leads for instrument channels that are tested in bypass.

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SER Condition- Setpoint Drift

This condition requires that the instrument drift methodology include sufficient adjustments to offset the drift anticipated as a result of less frequent surveillance.

Response:

Undervoltage and Underfrequency RTS Relays/Undervoltage and Degraded Voltage ESFAS Relays (Unit 1-Table 4.3-1 Functional Units 16, 17, Table 4.3-2 Functional Units 6.a, 6.b, 7.b; Unit 2-Table 4.3-1 Functional Units 16, 17, Table 4.3-2 Functional Units 6.a.1, 6.a.2, 6.b, 6.c, 7.c)

A study was performed in the year 2000 to evaluate drift for these relays using data from past calibrations and surveillances. The evaluation was performed at a 95% confidence level. The study concluded that any additional drift experienced as a result of the extended surveillance is adequately accounted for in the instrument setpoint calculations.

Unit 1 RWST Level Low (Table 4.3-2 Functional Unit 1.1.c)

The instrument modules for these channels were replaced in the year 2003 with upgraded modules from an alternate vendor; therefore, limited plant specific historical data exists for these instruments. However, the vendor performed a study of internal drift data measured over a 36-month period. The study, completed in 2001, concluded within a 95% confidence level that setpoint drift would remain within the vendor specification for these instruments. The vendor specification envelops the BVPS drift requirement for these instruments.

Unit 2 RWST Level- Extreme Low (Table 4.3-2 Functional Unit 1.1.b)

In 1993 drift data from surveillances performed in the year 1992 was analyzed for instruments of the same design in similar applications as part of the original submittal for extending surveillance test intervals (License Amendment 181 for BVPS Unit 1 and License Amendment 61 for BVPS Unit 2). The original analysis concluded, within a 95% confidence level, that there would not be any significant increase in out-of-tolerance conditions due to drift. The study found that less than 1.0% of the surveillances had setpoints outside of the established tolerance and required recalibration. In support of this LAR, the BVPS Corrective Action Program was used to search for out-of-tolerance conditions for instruments of the same design with STIs that had been increased from monthly to quarterly. The

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search period was approximately 2-1/2 years (2001-2003). Consistent with the original analysis in 1993 less than 1% of these instruments had out-of-tolerance-conditions that required recalibration. Based on the original analysis and the recent review it is concluded that extension of the STIs to quarterly intervals will not result in any significant out-of-tolerance conditions due to drift.

SER Condition- Applicability of the Generic Analysis to the Plant

This condition requires that the plant specific applications must confirm the applicability of the generic analysis to the plant.

Response- The WCAP methodology addresses two-loop, three-loop, and four-loop Westinghouse plants with relay or solid state systems. WCAP-10271 and supplements addressed changes to the STIs for TS 3/4.3.1 Functional Unit 16 and 17 (Undervoltage/Underfrequency RCPs) at both units and for TS 3/4.3.2 Functional Unit 7.b (Undervoltage- RCP) for Unit 1 and TS 3/4.3.2 Functional Unit 7.c (Undervoltage RCP) for Unit 2.

The remaining changes have been analyzed by Westinghouse using the methodology employed by the WCAP.

The RWST Level channels (Unit 1 -TS 3/4.3.2 Functional Unit 1.1.c; Unit 2- TS 3/4.3.2 Functional Unit 1.1.b) were evaluated by comparing the BVPS signal logic and components with those of a similar case analyzed in WCAP-10271.

The Emergency Bus Undervoltage and Degraded Voltage channels (Unit 1- Functional Unit 6.a, 6.b; Unit 2- Functional Unit 6.a.1, 6.a.2, 6.b, 6.c) were evaluated by individual fault tree analysis.

The evaluations determined that the WCAP-10271 changes, based on a plant specific evaluation, are applicable to the following BVPS signals: Unit 1 TS 3/4.3.2 Functional Unit 1.1.c (RWST Level Low), Functional Unit 6.a (4.16kv Emergency Bus Undervoltage-Loss of Voltage), Functional Unit 6.b (4.16kv and 480v Emergency Bus Undervoltage-Degraded), and Unit 2 TS 3/4.3.2 Functional Unit 1.1.b (RWST Level- Extreme Low), Functional Unit 6.a.1 /6.a.2 (4.16kv Emergency Bus Undervoltage-Loss of Voltage), Functional Unit 6.b (4.16kv Emergency Bus Undervoltage-Degraded), and Functional Unit 6.c (480v Emergency Bus Undervoltage-Degraded). The evaluation concluded that the

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increase in signal unavailability is very small and that the proposed changes to the STIs are acceptable.

Based on the above considerations, the proposed changes are consistent with the SER(s) conditions and reflect the application of methodologies recognized by the NRC and the industry as providing a sufficient margin of safety. Therefore, the proposed changes are considered to be safe and will not reduce the safety of the plant.

5.0 REGULATORY SAFETY ANALYSIS

The proposed changes will revise the Operating Licenses to permit an increase in surveillance testing intervals (STIs), from monthly to quarterly, for certain reactor trip system (RTS) and engineered safety feature actuation system (ESFAS) channel functional tests in accordance with the methodology presented in the NRC approved WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System", and supplements thereto.

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 amendments by focusing on the three standards set forth in 10 CFR 50.92, "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.

Operation of the Beaver Valley Power Station in accordance with the proposed license amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change modifies surveillance frequencies. Increases in the surveillance test intervals have been established based on achieving acceptable levels of equipment reliability. Consequently, equipment that is required to operate to mitigate an accident will continue to operate as expected and the probability of the initiation of any accident previously evaluated will not be significantly increased. Implementation of the proposed changes does not alter the manner in which protection is afforded. This equipment will continue to be tested in a manner and at a frequency to give confidence that the equipment can perform its assumed safety function. As a result, the proposed surveillance requirement changes do not significantly affect the consequences of any accident previously evaluated.

Therefore, the proposed changes do 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 involve any physical changes to the plant or the modes of plant operation defined in the Technical Specifications. The proposed change does not involve the addition or modification of plant equipment nor does it alter the design or operation of any plant systems. No new accident scenarios, transient precursors or failure mechanisms are introduced as a result of these changes.

There are no changes in this proposal that would cause the malfunction of safety-related equipment assumed to be operable in accident analyses. No new mode of failure has been created and no new equipment performance requirements are imposed. The proposed change has no effect on any previously evaluated accident.

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

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

Response: No.

The change in surveillance frequencies has been evaluated to ensure that it provides an acceptable level of equipment reliability. Equipment continues to be tested at a frequency that gives confidence that the equipment can perform its assumed safety function when required. The proposed changes do not alter the manner in which safety limits, limiting safety system setpoints or limiting conditions for operations are determined. The impact of reduced testing is to allow a longer time interval over which instrument uncertainties (e.g. drift) may act. Experience has shown that the initial uncertainty assumptions are valid for reduced testing.

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Implementation of the proposed changes is expected to result in an overall improvement in safety since plant transients initiated from inadvertent safety system actuation should be reduced. Less frequent testing will reduce the likelihood for inadvertent reactor trips and inadvertent actuation of Engineered Safety Features Actuation System components.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, FENOC concludes that the proposed amendments present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

5.2 Applicable Regulatory Requirements/Criteria

In the following paragraphs applicable criteria as they are related to the proposed changes are discussed. A summary of the applicable criteria and assessment of the impact to the BVPS design conformance are provided in the following table.

| General Design Criteria | | Impact |
|-------------------------|--|--------|
| 1 | Quality Standards and Records | None |
| 2 | Design Bases for Protection against Natural Phenomena. | None |
| 4 | Environmental and Dynamic Effects Design Bases | None |
| 10 | Reactor Design | None |
| 13 | Instrumentation and Control | None |
| 15 | Reactor Coolant System Design | None |
| 17 | Electric Power Systems | None |
| 18 | Inspection and Testing of Electric Power Systems | None |
| 20 | Protection System Functions | None |
| 21 | Protection System Reliability and Testability | None |

5.2.1 Discussion of Impacts

The proposed changes increase surveillance test intervals from monthly to quarterly. Specific surveillance times are not listed in the UFSAR and no change is being made which alters the functioning of the RTS or the ESFAS. Consequently, the proposed changes do not impact the design or performance characteristics of the RTS or ESFAS.

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 10 CFR 20, 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 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

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7.0 REFERENCES

1. 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants."
2. WCAP-10271, Supplement 1-P-A, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System"
3. WCAP-10271, Supplement 1-P-A, Supplement 2, Revision 1, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System"
4. TOP (Technical Specification Optimization Program) Guidelines- August 1990 (Final) "WOG Guidelines for Preparing Submittals Requesting Revision of RPS Technical Specifications based on Generic Approval of WCAP-10271 and Supplements"
5. Westinghouse Letter, dated July 10, 2003 "Transmittal of WCAP-10271 Evaluations for BVPS 1 and 2 Safety Injection- Transfer from Injection to the Recirculation Mode and Loss of Power Signals"
6. Westinghouse Letter, dated April 21, 2004 "RWST Switchover TOP Justification"

Attachment A-1

**Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Changes**

License Amendment Request No. 309

The following is a list of the affected pages:

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| 3/4 3-12 |
| 3/4 3-29a |
| 3/4 3-31 |
| 3/4 3-31a |

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| | <u>Functional Unit</u> | <u>Channel Check</u> | <u>Channel Calibration</u> | <u>Channel Functional Test</u> | <u>Modes in Which Surveillance Required</u> | |
|-----|---|--------------------------|--------------------------------|---|--|--|
| 12. | Loss of Flow - Single Loop | S | R | Q | 1 | |
| 13. | Loss of Flow - Two Loops | S | R | Q | 1 | |
| 14. | Steam/Generator Water Level-Low-Low | S | R | Q | 1, 2 | |
| 15. | DELETED | | | | | |
| 16. | Undervoltage-Reactor Coolant Pumps | N.A. | R | M Q | 1 | |
| 17. | Underfrequency-Reactor Coolant Pumps | N.A. | R | M Q | 1 | |
| 18. | Turbine Trip | | | | | |
| | a. Auto Stop Oil Pressure | N.A. | N.A. | S/U ⁽¹⁾ | 1, 2 | |
| | b. Turbine Stop Valve Closure | N.A. | N.A. | S/U ⁽¹⁾ | 1, 2 | |
| 19. | Safety Injection Input from ESF | N.A. | N.A. | R | 1, 2 | |
| 20. | Reactor Coolant Pump Breaker Position Trip | N.A. | N.A. | R | N.A. | |
| 21. | Reactor Trip Breaker | N.A. | N.A. | M ^(5,11) and S/U ⁽¹⁾ | 1, 2, 3 ⁽¹⁴⁾ , 4 ⁽¹⁴⁾ , 5 ⁽¹⁴⁾ | |

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| <u>FUNCTIONAL UNIT</u> | <u>CHANNEL CHECK</u> | <u>CHANNEL CALIBRATION</u> | <u>CHANNEL FUNCTIONAL TEST</u> | <u>MODES IN WHICH SURVEILLANCE REQUIRED</u> |
|--|--------------------------|--------------------------------|--|---|
| 1.1 SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE | | | | |
| a. Manual Initiation | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Automatic Actuation Logic Coincident with Safety Injection Signal | N.A. | N.A. | M ⁽¹⁾ | 1, 2, 3 |
| c. Refueling Water Storage Tank Level-Low | S | R | M <u>Q</u> | 1, 2, 3 |
| d. Refueling Water Storage Tank Level - Auto QS Flow Reduction | S | R | M | 1, 2, 3 |
| 2. CONTAINMENT SPRAY | | | | |
| a. Manual Initiation | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Automatic Actuation Logic | N.A. | N.A. | M ⁽¹⁾ | 1, 2, 3, 4 |
| c. Containment Pressure- High-High | S | R | Q | 1, 2, 3 |

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| <u>FUNCTIONAL UNIT</u> | <u>CHANNEL CHECK</u> | <u>CHANNEL CALIBRATION</u> | <u>CHANNEL FUNCTIONAL TEST</u> | <u>MODES IN WHICH SURVEILLANCE REQUIRED</u> | |
|---|--------------------------|--------------------------------|--|---|--|
| 4. STEAM LINE ISOLATION | | | | | |
| a. Manual | N.A. | N.A. | R | 1, 2, 3 | |
| b. Automatic Actuation Logic | 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 & FEEDWATER ISOLATION | | | | | |
| a. Steam Generator Water Level-- High-High | S | R | Q | 1, 2, 3 | |
| 6. LOSS OF POWER | | | | | |
| a. 4.16kv Emergency Bus Under- voltage (Loss of Voltage) Trip Feed & Start Diesel | N.A. | R | M <u>Q</u> | 1, 2, 3, 4 | |
| b. 4.16kv and 480v Emergency Bus Undervoltage (Degraded Voltage) | N.A. | R | M <u>Q</u> | 1, 2, 3, 4 | |

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| <u>FUNCTIONAL UNIT</u> | <u>CHANNEL CHECK</u> | <u>CHANNEL CALIBRATION</u> | <u>CHANNEL FUNCTIONAL TEST</u> | <u>MODES IN WHICH SURVEILLANCE REQUIRED</u> |
|---|--|--------------------------------|--|---|
| 7. AUXILIARY FEEDWATER | | | | |
| a. Steam Generator Water Level-Low-Low | S | R | Q | 1, 2, 3 |
| b. Undervoltage-RCP | S | R | M Q | 1, 2 |
| c. S.I. | See 1 above (all SI surveillance requirements) | | | |
| d. (Deleted) | | | | |
| e. Trip of Main Feedwater Pumps | N.A. | N.A. | R | 1, 2, 3 |
| 8. ESF INTERLOCKS | | | | |
| a. P-4 | N.A. | N.A. | R | 1, 2, 3 |
| b. P-11 | N.A. | R | Q | 1, 2, 3 |
| c. P-12 | N.A. | R | Q | 1, 2, 3 |

Attachment A-2

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

License Amendment Request No. 181

The following is a list of the affected pages:

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| 3/4 3-11 |
| 3/4 3-33 |
| 3/4 3-36 |
| 3/4 3-37 |

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| <u>Functional Unit</u> | <u>Channel Check</u> | <u>Channel Calibration</u> | <u>Channel Functional Test</u> | <u>Modes in Which Surveillance Required</u> |
|---|--------------------------|--------------------------------|--|---|
| 12. Loss of Flow - Single Loop (Above P-8) | S | R | Q | 1 |
| 13. Loss of Flow - Two Loop (Above P-7 and Below P-8) | S | R | Q | 1 |
| 14. Steam/Generator Water Level- Low-Low | S | R | Q | 1, 2 |
| 15. DELETED. | | | | |
| 16. Undervoltage-Reactor Coolant Pumps (Above P-7) | N.A. | R | M Q | 1 |
| 17. Underfrequency-Reactor Coolant Pumps (Above P-7) | N.A. | R | M Q | 1 |
| 18. Turbine Trip (Above P-9) | | | | |
| A. Emergency Trip Header Low Pressure | N.A. | R | S/U ⁽¹⁾ | 1, 2 |
| B. Turbine Stop Valve Closure | N.A. | R | S/U ⁽¹⁾ | 1, 2 |
| 19. Safety Injection Input from ESF | N.A. | N.A. | R | 1, 2 |
| 20. Reactor Coolant Pump Breaker Position Trip (Above P-7) | N.A. | N.A. | R | N.A. |
| 21. Reactor Trip Breaker | N.A. | N.A. | M ^(5, 11) and S/U ⁽¹⁾ | 1 ⁽¹⁴⁾ , 2, 3 ⁽¹⁴⁾ , 4 ⁽¹⁴⁾ , 5 ⁽¹⁴⁾ |

TABLE 4.3-2

ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| <u>FUNCTIONAL UNIT</u> | | <u>CHANNEL CHECK</u> | <u>CHANNEL CALIBRATION</u> | <u>CHANNEL FUNCTIONAL TEST</u> | <u>MODES IN WHICH SURVEILLANCE REQUIRED</u> |
|------------------------|--|--------------------------|--------------------------------|--|---|
| 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 Q | 1, 2, 3, 4 |

TABLE 4.3-2 (Continued)

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|---|--------------------------|--------------------------------|--|---|--|
| 6. LOSS OF POWER | | | | | |
| a. 4.16kv Emergency Bus | | | | | |
| 1. Undervoltage (Trip Feed) | N.A. | R | M <u>Q</u> | 1, 2, 3, 4 | |
| 2. Undervoltage (Start Diesel) | N.A. | R | M <u>Q</u> | 1, 2, 3, 4 | |
| b. 4.16kv Emergency Bus (Degraded Voltage) | N.A. | R | M <u>Q</u> | 1, 2, 3, 4 | |
| c. 480v Emergency Bus (Degraded Voltage) | N.A. | R | M <u>Q</u> | 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.

TABLE 4.3-2 (Continued)

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|---|--|--------------------------------|--|---|
| 7. AUXILIARY FEEDWATER (continued) | | | | |
| c. Undervoltage - RCP (Start Turbine-Driven Pump) | S | R | M Q | 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 |