



February 16, 2001  
CAW 01-03

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

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**APPLICATION FOR WITHHOLDING PROPRIETARY  
INFORMATION FROM PUBLIC DISCLOSURE**

**Subject:** Caldton ER-157P, "Engineering Report – 157P: Supplement to Topical Report ER-80P: Basis for a Power Uprate With the LEFM✓™ or LEFM CheckPlus™ System", Rev. 3 enclosure – FENOC Letter, L-01-024, "Response to a request for additional information in support of LAR Nos. 289 and 161."

Gentlemen:

This application for withholding is submitted by Caldton, Inc. ("Caldton") pursuant to the provisions of paragraph (b)(1) of Section 2.790 of the Commission's regulations. It contains commercial strategic information proprietary to Caldton and customarily held in confidence.

The proprietary information for which withholding is being requested is identified in the subject submittal. In conformance with 10 CFR Section 2.790, Affidavit CAW-01-03 accompanies this application for withholding setting forth the basis on which the identified proprietary information may be withheld from public disclosure.

Accordingly, it is respectfully requested that the subject information, which is proprietary to Caldton, be withheld from public disclosure in accordance with 10 CFR Section 2.790 of the Commission's regulations.

Correspondence with respect to this application for withholding or the accompanying affidavit should reference CAW-01-03 and should be addressed to the undersigned.

Very truly yours,

Calvin R. Hastings  
President and CEO

Enclosures

February 16, 2001  
CAW-01-03

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Calvin R. Hastings, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Caldon, Inc. ("Caldon") and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:



Calvin R. Hastings,  
President and CEO  
Caldon, Inc.

Sworn to and subscribed before me

this 16<sup>th</sup> day of

February, 2001

Notarial Seal  
Joann S. Thomas, Notary Public  
Pittsburgh, Allegheny County  
My Commission Expires July 28, 2003

Member, Pennsylvania Association of Notaries

1. I am the President and CEO of Caldon, Inc. and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rulemaking proceedings, and am authorized to apply for its withholding on behalf of Caldon.
2. I am making this Affidavit in conformance with the provisions of 10CFR Section 2.790 of the Commission's regulations and in conjunction with the Caldon application for withholding accompanying this Affidavit.
3. I have personal knowledge of the criteria and procedures utilized by Caldon in designating information as a trade secret, privileged or as confidential commercial or financial information.
4. Pursuant to the provisions of paragraph (b) (4) of Section 2.790 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
  - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Caldon.
  - (ii) The information is of a type customarily held in confidence by Caldon and not customarily disclosed to the public. Caldon has a rational basis for determining the types of information customarily held in confidence by it and, in that connection utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Caldon policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential advantage, as follows:

- (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Caldon's competitors without license from Caldon constitutes a competitive economic advantage over other companies.
- (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.
- (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, and assurance of quality, or licensing a similar product.
- (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Caldon, its customer or suppliers.
- (e) It reveals aspects of past, present or future Caldon or customer funded development plans and programs of potential customer value to Caldon.
- (f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Caldon system, which include the following:

- (a) The use of such information by Caldon gives Caldon a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Caldon competitive position.
- (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Caldon ability to sell products or services involving the use of the information.

- (c) Use by our competitor would put Caldon at a competitive disadvantage by reducing his expenditure of resources at our expense.
  - (d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Caldon of a competitive advantage.
  - (e) Unrestricted disclosure would jeopardize the position of prominence of Caldon in the world market, and thereby give a market advantage to the competition of those countries.
  - (f) The Caldon capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iii) The information is being transmitted to the Commission in confidence, and, under the provisions of 10CFR Section 2.790, it is to be received in confidence by the Commission.
- (iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same manner or method to the best of our knowledge and belief.
- (v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in the enclosure (Caldon ER-157P) to FENOC Beaver Valley LLC Letter L-01-024 from Lew W. Myers to the NRC Document Control Desk, "Response to a request for additional information in support of LAR Nos. 289 and 161". This information is submitted for use by the NRC Staff and is expected to be applicable in other license submittals for justification of the use of Ultrasonic Flow Measurement Instrumentation to increase reactor plants' thermal power.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Caldon because it would enhance the ability of competitors to provide similar flow and temperature measurement systems and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Caldon effort and the expenditure of a considerable sum of money.

In order for competitors of Caldon to duplicate this information, similar products would have to be developed, similar technical programs would have to be performed, and a significant manpower effort, having the requisite talent and experience, would have to be expended for developing analytical methods and receiving NRC approval for those methods.

Further the deponent sayeth not.

**Letter L-01-024 - Attachment D**

**Revised Technical Specification Pages**

6.9.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:

- 3.1.3.5 Shutdown Rod Insertion Limits
- 3.1.3.6 Control Rod Insertion Limits
- 3.2.1 Axial Flux Difference-Constant Axial Offset Control
- 3.2.2 Heat Flux Hot Channel Factor- $F_Q(Z)$
- 3.2.3 Nuclear Enthalpy Rise Hot Channel Factor- $F_{NH}^N$

- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY," July 1985 (Westinghouse Proprietary).

WCAP-10266-P-A Rev. 2/WCAP-11524-NP-A Rev. 2, "The 1981 Version of the Westinghouse ECCS Evaluation Model Using the BASH Code," Kabadi, J. N., March 1987; including Addendum 1-A "Power Shape Sensitivity Studies" 12/87 and Addendum 2-A "BASH Methodology Improvements and Reliability Enhancements" 5/88.

WCAP-8385, "POWER DISTRIBUTION CONTROL AND LOAD FOLLOWING PROCEDURES - TOPICAL REPORT." September 1974 (Westinghouse Proprietary).

T. M. Anderson to K. Kniel (Chief of Core Performance Branch, NRC) January 31, 1980 -- Attachment: Operation and Safety Analysis Aspects of an Improved Load Follow Package.

NUREG-0800, Standard Review Plan, U.S. Nuclear Regulatory Commission, Section 4.3, Nuclear Design, July 1981. Branch Technical Position CPB 4.3-1, Westinghouse Constant Axial Offset Control (CAOC), Rev. 2, July 1981.

WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary).

- INSERT 7** →
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met.

Unit 1 INSERT 7

As described in reference documents listed above, when an initial assumed power level of 102% of rated thermal power is specified in a previously approved method, 100.6% of rated thermal power may be used when input for reactor thermal power measurement of feedwater flow is by the leading edge flow meter (LEFM).

Caldon, Inc. Engineering Report-80P, "Improving Thermal Accuracy and Plant Safety While Increasing Operating Power Level Using the LEFM<sup>✓</sup>™ System," Revision 0, March 1997.

↖ Caldon, Inc. Engineering Report-157P, "Supplement to Topical Report ER-80P: Basis for a Power Uprate With the LEFM<sup>✓</sup>™ or LEFM CheckPlus™ System" Revision 2, ~~December 2000~~. (3) FEBRUARY, 2001

Caldon, Inc. Engineering Report-160P, "Supplement to Topical Report ER-80P: Basis for a Power Uprate With the LEFM<sup>✓</sup>™," Revision 0, May 2000.

(Revised page.)

REPORTING REQUIREMENTS (Continued)

WCAP-10266-P-A Rev. 2/WCAP-11524-NP-A Rev. 2, "The 1981 Version of the Westinghouse ECCS Evaluation Model Using the BASH Code," Kabadi, J. N., March 1987; including Addendum 1-A "Power Shape Sensitivity Studies" 12/87 and Addendum 2-A "BASH Methodology Improvements and Reliability Enhancements" 5/88.

WCAP-8385, "POWER DISTRIBUTION CONTROL AND LOAD FOLLOWING PROCEDURES - TOPICAL REPORT." September 1974 (Westinghouse Proprietary).

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WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary).

INSERT 14

- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

6.10 DELETED

6.11 RADIATION PROTECTION PROGRAM

Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure.

6.12 HIGH RADIATION AREA

6.12.1 In lieu of the "control device" or "alarm signal" required by paragraph 20.1601 of 10 CFR 20, each high radiation area in which the intensity of radiation is greater than 100 mrem/hr but less than 1000 mrem/hr shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring

Unit 2 INSERT 14

As described in reference documents listed above, when an initial assumed power level of 102% of rated thermal power is specified in a previously approved method, 100.6% of rated thermal power may be used when input for reactor thermal power measurement of feedwater flow is by the leading edge flow meter (LEFM).

Caldon, Inc. Engineering Report-80P, "Improving Thermal Accuracy and Plant Safety While Increasing Operating Power Level Using the LEFM<sup>✓</sup>™ System," Revision 0, March 1997.

Caldon, Inc. Engineering Report-157P, "Supplement to Topical Report ER-80P: Basis for a Power Uprate With the LEFM<sup>✓</sup>™ or LEFM CheckPlus™ System" Revision 2, ~~December 2000~~.

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FEBRUARY, 2001

Caldon, Inc. Engineering Report-160P, "Supplement to Topical Report ER-80P: Basis for a Power Uprate With the LEFM<sup>✓</sup>™," Revision 0, May 2000.

(Revised page)

**Letter L-01-024 - Attachment E**

**Revised No Significant Hazards Evaluation**

## E. NO SIGNIFICANT HAZARDS EVALUATION

For Beaver Valley Power Station (BVPS) Unit 1 and 2 the proposed changes consist of the following:

- Section 2.C.(1) of the Operating License (OL) for Beaver Valley Power Station Unit 2 will be revised to be identical with that used in the Unit 1 operating license.
- The definition of RATED THERMAL POWER (RTP) in the Unit 1 and Unit 2 Technical Specifications (TS) will be changed to reflect to the uprated power level.
- Unit 2 TS 3/4.4.9, "Pressure/Temperature Limits" contain heatup/cooldown curves, i.e., Figures 3.4-2 and 3.4-3 (sheets 1-5). These curves are being revised from 15 Effective Full Power Years (EFPY) to 14 EFPY. The applicable Bases pages are also revised to reflect the change in EFPY.
- Unit 1 and 2 Technical Specification Section 6.9.5(b), Analytical Methods for Core Operating Limits Report (COLR), will be revised to state that future revisions of the listed reports will be revised to state that 100.6% of rated thermal power may be used under the appropriate conditions.
- Technical Specification Section 6.9.5(b) is also revised to add references to the following Caldon Reports:

Caldon, Inc. Engineering Report-80P, "Improving Thermal Accuracy and Plant Safety While Increasing Operating Power Level Using the LEFM<sup>✓</sup>™ System," Revision 0, March 1997;

Caldon, Inc. Engineering Report-157P, "Supplement to Topical Report ER-80P: Basis for a Power Uprate With the LEFM<sup>✓</sup>™ or CheckPlus™ System" Revision 3, February 2001, and

Caldon, Inc. Engineering Report-160P, "Supplement to Topical Report ER-80P: Basis for a Power Uprate With the LEFM<sup>✓</sup>™," Revision 0, May 2000.

- Technical Specification 3.7.1.1, "Main Steam Safety Valves (MSSVs)", is being revised to be consistent with Technical Specification Traveler Form-235 (TSTF-235) Revision 1 and the Improved Standard Technical Specifications (ISTS).

The proposed changes include a rewrite of the Limiting Condition for Operation (LCO) and a change to the title and content of Table 3.7-1 to be consistent with the ISTS, the creation of new Actions to address MSSVs being inoperable and reducing the Power Range Neutron Flux-High reactor trip setpoint to be consistent with TSTF-235, Rev. 1, and changes to the maximum power levels permissible with inoperable MSSVs due the proposed power uprate. The applicable Bases is also changed to be consistent with the revised Technical Specifications. A clarification is also added to the Bases addressing the determination of the total relieving capacity of the MSSVs.

The applicable Index, Technical Specifications and Bases will be augmented and repaginated as necessary to meet format requirements.

The no significant hazards considerations involved with the proposed amendments have been evaluated. The evaluation focused on the three standards set forth in 10 CFR 50.92(c), as quoted below:

The Commission may make a final determination, pursuant to the procedures in paragraph 50.91, that a proposed amendment to an operating license for a facility licensed under paragraph 50.21(b) or paragraph 50.22 or a testing facility involves no significant hazards considerations, if operation of the facility in accordance with the proposed amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The following evaluation is provided for the no significant hazards consideration standards:

- 1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated. Comprehensive analytical efforts performed to support the proposed changes included a review of the Nuclear Steam Supply System (NSSS) systems and components that could be affected by these changes. All systems and components will function as designed and the applicable performance requirements have been evaluated and found to be acceptable.

The primary loop components (reactor vessel, reactor internals, control rod drive mechanisms (CRDMs), loop piping and supports, reactor coolant pump, steam generator and pressurizer) continue to comply with their applicable structural limits and will continue to perform their intended design functions. Thus, there is no increase in the probability of a structural failure of these components.

The Rod Control Cluster Assembly (RCCA) drop time remains within the current limits assumed in the accident analyses. Thus, there is no increase in the consequences of the accidents which credit RCCA drop.

The Leak-Before-Break analysis conclusions remain valid and the breaks previously exempted from structural considerations remain unchanged.

All of the NSSS systems will continue to perform their intended design functions during normal and accident conditions. The pressurizer spray flow remains above its design value. Thus, the control system design analyses, which credit

the flow, do not require any modification. The auxiliary systems and components continue to comply with applicable structural limits and will continue to perform their intended design functions. Thus, there is no increase in the probability of a structural failure of these components.

All of the NSSS/Balance of Plant (BOP) interface systems will continue to perform their intended design functions. The steam generator safety valves will provide adequate relief capacity to maintain the steam generators within design limits. The atmospheric dump valves will still relieve at least 10% of the maximum full load steam flow. The steam dump system will still relieve at least 40% of the maximum full load steam flow. The current loss of coolant accident (LOCA) hydraulic forcing functions are still bounding.

Additionally, the reduction in the power measurement uncertainty allows for certain safety analyses to continue to be used, without modification, at the 2705 MWt power level (102% of 2652 MWt). Other safety analyses performed at a nominal power level have been either re-performed or re-evaluated at the 2689 MWt power level and continue to meet their applicable acceptance criteria.

Some existing safety analyses had been previously performed at a power level greater than 2689 MWt, and thus continue to bound the 2689 MWt power level. The effects on accident radiation dose for the power uprate were reanalyzed at 2705 MWt, and therefore are bounding when operating at 2689 MWt using the leading edge flow meter (LEFM) flow instrumentation.

The proposed changes to the Unit 2 reactor coolant system heatup/cooldown curves are being made to impose a conservative projection of the increase in neutron fluence associated with the power uprate. This projection will ensure that the requirements of 10 CFR 50, Appendix G, "Fracture Toughness Requirements", will continue to be met following the power uprate. The proposed changes to the MSSV Technical Specifications will not reduce the valve's capability to provide pressure relief when required. The design basis events that were protected against by the heatup/cooldown curves and the MSSVs have not changed; therefore, the probability of an accident previously evaluated is not increased by these proposed changes. These proposed changes also do not alter any assumptions previously made in the radiological consequence evaluations, nor affect mitigation of the radiological consequences of an accident previously evaluated.

Therefore the proposed changes will not result in a significant increase in the probability or consequences of an accident previously evaluated.

- 2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

No new accident scenarios, failure mechanisms or single failures are introduced as a result of the proposed changes. All systems, structures, and components previously required for the mitigation of an event remain capable of fulfilling

their intended design function. The proposed changes have no adverse effects on any safety-related system or component and do not challenge the performance or integrity of any safety related system.

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

- 3) Does the proposed amendment involve a significant reduction in a margin of safety?

Operation at the 2689 MWt core power does not involve a reduction in a margin of safety. Extensive analyses of the primary fission product barriers have concluded that all relevant design criteria remain satisfied, both from the standpoint of the integrity of the primary fission product barrier and from the standpoint of compliance with the regulatory acceptance criteria. As appropriate, all evaluations have been performed using methods that have either been reviewed and approved by the Nuclear Regulatory Commission (NRC) or that are in compliance with applicable regulatory review guidance and standards.

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

**Letter L-01-024 - Attachment G**

**Revised Environmental Impact Considerations**

## **ENVIRONMENTAL IMPACT CONSIDERATIONS**

Environmental issues associated with the issuance of an operating license for both Beaver Valley Power Station units were originally evaluated and reported to the Atomic Energy Commission (now known as the Nuclear Regulatory Commission (NRC)) in the Beaver Valley Final Environmental Report (FER). The Final Environmental Statements for both Units 1 and 2 (construction permit and operating license) were issued in July, 1973. This action involves no use of resources not previously considered in the Final Environmental Statement for the Beaver Valley Power Station (BVPS).

This approval allows FirstEnergy Nuclear Operating Company (FENOC) to operate BVPS Units 1 and 2 for a full 40-year operating period with requirements. One of which is providing written notification to Nuclear Reactors Regulations (NRR) when an activity results in impacts to the Final Environmental Statement. These documents were reviewed as part of the uprate. Their requirements and commitments are incorporated into various plant documents and permits. The assessments, and the assumptions, on which the FES is based, remain valid and are not impacted as a result of the thermal power uprate.

The environmental review conducted for the proposed thermal power uprate considered the need for the power uprate and the resulting radiological and non-radiological impact associated with it. This included considering the operating license and NPDES permit limits and the information contained in the Environmental Report and other applicable documents. This evaluation included determining whether the power uprate would cause the plant to exceed discharge limits and NPDES permit conditions associated with the operation of the plants at the uprate power level. Although slight increases in discharge amounts associated with the proposed thermal power uprate may be possible, they will remain below limits and thus acceptable, as annual discharges will continue to be a small percentage of the allowable limits. As noted in License Amendment Request 289/161, the proposed uprate will have no adverse impacts to the environment. The radiological and non-radiological assessments are discussed in the various sections of License Amendment Request 289/161 and summarized below.

### **RADIOLOGICAL ASSESSMENT**

A review of the recent BVPS Units 1 and 2 Annual Radioactive Effluent Discharge Reports demonstrates that the actual releases from the plants are a very small percentage of the Technical Specification allowable limits and the FER estimates. The discharge amounts will not be significantly increased by the thermal power uprate and will continue to be a small percentage of the allowable limits and the FER estimates.

Onsite and offsite radiation exposures from normal operation and postulated accidents are addressed in Section 3.12 of License Amendment Request 289/161. The offsite doses for the exposure postulated under accident conditions remains within the guidelines of the Code of Federal Regulations (CFR) 10 CFR 100.

The proposed uprate to 2,689 MWt Rated Thermal Power (RTP) will increase the concentration of fission products in the primary and secondary coolant by approximately 1.4 percent. The expected source terms, which are generated based on the power level, will increase by approximately the same percentage. The original design basis radiation source terms were based on a core power level of 2,766 MWt and a 12-month operating cycle. These source terms are bounding for the uprated power level of 2,689 MWt RTP, for the majority of the isotopes in the primary and secondary coolant with the exception of the long lived isotopes which increased as the result of the 18-month fuel cycle. The overall impact of power uprate on the design basis source terms is insignificant. In addition, the plant Technical Specifications controls reactor coolant concentration, which is independent of core power level.

### **Solid Waste Management**

Per regulatory guidance, for a "new" facility the estimated volume and activity of solid waste is linearly related to the core power level. However, for an existing facility that is undergoing uprate, the volume of solid waste would not be expected to increase proportionally, since the power uprate neither appreciably impacts installed equipment performance, nor does it require drastic changes in system operation. Only minor, if any, changes in waste generation volume are expected.

As the estimated coolant activity does not change appreciably and maintenance and operational practices are not expected to change, the calculated specific activity of solid waste is not expected to change. Consequently, the proposed 1.4% power uprate has no significant impact on solid waste estimates.

### **Gaseous and Liquid Waste Management**

The design basis Unit 1 and 2 gaseous and liquid system design/effluent releases were originally based on operation at a core power level of 2,766 MWt. As a result, system design is well equipped to accommodate operation at 2,689 MWt RTP. The gaseous and liquid effluent releases are expected to increase from current values by no more than the percentage increase in power level. Currently, effluents are controlled administratively by the Offsite Dose Calculation Manual which ensures that offsite release concentrations and doses are maintained within the limits of 10 CFR 50, Appendix I.

### **Radiological Exposure**

Power uprate will not cause radiological exposure in excess of the dose criteria (for restricted and unrestricted access) provided in the current 10 CFR 20. From an operations perspective, radiation levels in the plant are expected to increase by no more than the percentage increase in power level. Individual worker exposures will be maintained within acceptable limits by the site ALARA Program.

FENOC has submitted License Amendment Requests to the NRC that modify information on the design basis accident radiological dose analyses presented in the Updated Final Safety Analysis Report. The revised design basis accident radiological dose analyses were performed based on a reactor power of 2,705 MWt (and included the effects on the source term caused by operating at 18-month fuel cycles). The revised analyses demonstrate that the dose limits set by 10 CFR 100 and 10 CFR 50, Appendix A, General Design Criterion 19 for the site boundary and control room, respectively, are met. Therefore, the proposed power uprate to 2,689 MWt RTP will not impact the dose consequences reported for design basis accidents. (Reference LAR-280 (Unit 1) and LAR-151 (Unit 2) issued under FENOC Letter L-00-008, May 12, 2000 and LAR-284 (Unit 1) issued under FENOC Letter L-00-085, July 21, 2000).

## **NON-RADIOLOGICAL ASSESSMENT**

The FER assessed the non-radiological impacts of plant operation as a function of plant design features, relative loss of renewable resources, and relative loss or degradation of available habitat. Environmental impacts associated with 40-year operating licenses were originally evaluated in the FER. After weighing the environmental, economic, technical, and other benefits against environmental costs and considering available alternatives, and subject to certain conditions, from the standpoint of environmental effects, the FER concluded that the issuance of operating licenses for BVPS Units 1 and 2 was an acceptable action. These assessments, and the assumptions, on which they were based, remain valid and are not impacted as a result of the thermal power uprate.

The BVPS units employ a closed-cycle cooling system. In the closed-cycle cooling system, cooling water is circulated through the plant's surface condensers in the turbine building, where it is heated by waste heat from the unit's turbine exhaust. The cooling water is then circulated through the natural draft cooling towers where the waste heat is transferred to the atmosphere by evaporation of some of the hot water entering the tower and sensible heating of the ambient air flowing up through the tower. The cooled water is then recirculated back through the plant via the circulating water system (CWS). Makeup water to replace water lost through evaporation and tower blowdown to maintain water chemistry comes from the Ohio River. Cooling Tower blowdown is returned to the Ohio River.

### **Circulating Water System**

The CWS is designed to dissipate a total of approximately  $6.3 \times 10^9$  Btu/hr (Unit 1) and  $6.4 \times 10^9$  Btu/hr (Unit 2) of waste heat to the atmosphere. The total design circulating water flow rate to each cooling tower is approximately 507,400 gpm, which includes cooling water from the main condenser and water discharged from the river/raw water and service water systems.

The uprate heat duty increase to the CWS system will be approximately  $1.2 \times 10^8$  Btu/hr. This represents a 1.4-percent increase over the present power level, compared to the current heat load from the two units. The maximum circulating water temperature increase expected as a result of uprate will be approximately 0.5°F over existing plant operation, and is bounded by CWS design.

### **Reactor (Primary) Component Cooling Water Systems**

The Reactor (Primary) Component Cooling Water (CCW) Systems remove heat from reactor plant auxiliary systems where it is transferred to the River Water (Unit 1) or Service Water (Unit 2) Systems. The heat is then transferred to the ultimate heat sink. The CCW closed loop systems provide an intermediate barrier to contain radioactive or potential radioactive sources, thus precluding direct leakage of radioactive fluids into the ultimate heat sink. The Ohio River serves as the ultimate heat sink to safely operate, shut down and cool down both Units 1 and 2.

### **River (Service) Water System**

The Unit 1 River Water System and the Unit 2 Service Water System provide once-through cooling water to various equipment under all modes of operation. The ability of these systems to remove heat from a component is a function of the Ohio River supply temperature and the system flow rate through the components. The designs of the systems are based on maximum river water temperatures of 90°F for Unit 1 and 89°F for Unit 2.

The impact of the uprate was evaluated to assess the river water systems' capability to remove heat. There will be slightly increased heat loads from the primary component cooling water heat exchanger (as a result of increased spent fuel pool cooling and residual heat removal cool down loads) and from the secondary component cooling water heat exchanger (due to the small increased turbine plant heat loads). The slight increase in heat loads will have an insignificant effect on the River (Service) Water Systems and maximum temperature limits will not be exceeded as a result of the 1.4% uprate.

#### **Steam Generator Blowdown**

At BVPS, steam generator blowdown is not discharged to the river, but is instead returned to the feed and condensate system after passing through an ion exchanger polishing system.

#### **NPDES PERMIT**

The Beaver Valley NPDES permit (Permit No. PA0025615) does not place any absolute operating limits on either flow or temperature for discharging into the Ohio River. However, the permit limits the maximum allowable rise in the receiving stream water temperature to 2°F within an hour.

As discussed above, the thermal power uprate of the Beaver Valley Units 1 and 2 will have no adverse impacts on the environment and will not produce results that exceed NPDES permit limits.

Protection of the environment is assured by compliance with permits issued by federal, state, and local agencies. The proposed change does not involve a significant hazard consideration, a significant change in the types of, or significant increase in the amounts of, any effluents that may be released offsite, or a significant increase in individual or cumulative occupational radiation exposure. The proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c) (9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.