Britt T. McKinney
Sr. Vice President & Chief Nuclear Officer

PPL Susquehanna, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.3149 Fax 570.542.1504
btmckinney@pplweb.com

OCT 30 2008

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 274 TO UNIT 2
LICENSE NPF-22: MCPR SAFETY LIMITS
PLA-6438 **Docket No. 50-388**

In accordance with the provisions of 10 CFR 50.90, PPL Susquehanna, LLC (PPL) is submitting a request for an amendment to the Technical Specifications for Susquehanna Steam Electric Station (SSES) Unit 2.

The proposed change revises the Section 2.1.1.2 Minimum Critical Power Ratio Safety Limits (MCPRSLs) for two-loop and single-loop operation.

There are no new regulatory commitments associated with this change.

The enclosures to this letter contain PPL's evaluation of this proposed change. Included are a description of the proposed change, the technical analysis of the change, the regulatory analysis of the change (No Significant Hazards Consideration and the Applicable Regulatory Requirements), and the environmental considerations associated with the change.

Enclosure 1 contains AREVA NP, Inc. proprietary information. As such, AREVA NP, Inc. requests that the information be withheld from public disclosure in accordance with 10 CFR 2.390 (a) (4) and 9.17 (a) (4). An affidavit supporting this request is contained in Attachment 1. Enclosure 2 contains a non-proprietary version of the information.

Attachment 2 provides the applicable pages of SSES Unit 2 Technical Specifications, marked to show the proposed change.

Attachment 3 provides a description of the planned Unit 2 Cycle 15 (U2C15) core composition to assist in your review.

Attachment 4 provides the planned U2C15 Core Loading Pattern.

A001
NRR

Attachment 5 provides descriptions of the planned reload fuel bundles for U2C15.

Attachment 6 provides a diagram of the NRC approved MCPRSL Methodology.

The proposed changes have been reviewed by the SSES Plant Operations Review Committee and the Susquehanna Review Committee.

PPL plans to implement the proposed changes in the spring of 2009 to support the startup of U2C15 operation. Therefore, we request NRC complete its review of this change by March 12, 2009 with the changes effective upon startup following the Unit 2 14th Refueling and Inspection Outage.

Any questions regarding this request should be directed to Mr. Charlie Manges at (570)-542-3089.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 10 30 08

B. T. McKinney

Enclosure 1: PPL Evaluation of the Proposed Changes - Unit 2 Minimum Critical Power Safety Limits - (PROPRIETARY)
Enclosure 2: PPL Evaluation of the Proposed Changes - Unit 2 Minimum Critical Power Safety Limits - (NON-PROPRIETARY)

Attachments:
Attachment 1 - AREVA NP, Inc. Affidavit for Proprietary Information
Attachment 2 - Proposed Technical Specification Changes Unit 2, (Mark-ups)
Attachment 3 - Description of the Planned Unit 2 Cycle 15 Core Composition
Attachment 4 – Planned Unit 2 Cycle15 Core Loading Pattern
Attachment 5 - Descriptions of the Planned Unit 2 Cycle 15 Reload Bundles
Attachment 6 - Diagram of NRC Approved Minimum Critical Power Ratio Safety Limit Methodology

cc: NRC Region I
Mr. R. Janati, DEP/BRP
Mr. F. W. Jaxheimer, NRC Sr. Resident Inspector
Mr. B. K. Vaidya, NRC Project Manager

ENCLOSURE 2 to PLA-6438

PPL Evaluation of the Proposed Changes

Unit 2 Minimum Critical Power Ratio Safety Limits

(NON-PROPRIETARY)

PPL EVALUATION

Subject: Unit 2 Cycle 15 MCPR Safety Limits

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-22 for PPL Susquehanna, LLC (PPL), Susquehanna Steam Electric Station (SSES) Unit 2.

The proposed changes would revise the SSES Unit 2 Technical Specifications (TS) Section 2.1.1.2 Minimum Critical Power Ratio Safety Limits (MCPRSLs) for two-loop and single-loop operation. The change to Section 2.1.1.2 is necessary as a result of Unit 2 Cycle 15 (U2C15) cycle specific calculations.

The calculations performed to support the proposed MCPRSLs utilize NRC approved methodology and comply with NRC required license condition (Reference 7.2, Section 3.4.3.2) on power distribution uncertainties for application to Extended Power Uprate (EPU) Conditions (Reference 7.2). The calculations also account for a Part 21 notification regarding non-conservative SPCB Critical Power correlation additive constants (Reference 7.1). AREVA has submitted the corrected additive constants to the NRC in Reference 7.3.

The proposed changes are described in detail in Section 4.0.

The requested approval date (March 12, 2009) will allow time for the Core Operating Limits Report (COLR) to be prepared and reviewed by the Plant Operation Review Committee (PORC) prior to the Spring 2009 Unit 2 refueling outage.

2.0 PROPOSED CHANGE

Specifically, the proposed changes would revise the following:

2.1 TS 2.1.1.2

The MCPRSLs are revised from 1.11 (two-loop operation) and 1.14 (single-loop operation) to 1.08 (two-loop operation) and 1.11 (single-loop operation) to reflect results of the cycle specific MCPRSL analysis for U2C15.

3.0 BACKGROUND

3.1 MCPR SAFETY LIMIT CHANGE

Excessive thermal overheating of the fuel rod cladding can result in cladding damage and release of fission products. In order to protect the cladding against thermal overheating due to boiling transition, MCPRSLs (Section 2.1.1.2 of the SSES Unit 2 Technical Specifications) were established.

NUREG-0800, Standard Review Plan, Section 4.4, specifies an acceptable, conservative approach to define the MCPRSLs. Specifically, a MCPR value is specified such that at least 99.9% of the fuel rods are expected to avoid boiling transition during normal operation or Anticipated Operational Occurrences (AOOs). Boiling transition is predicted using a correlation based on test data (i.e., a Critical Power Correlation). The MCPRSL calculation accounts for various uncertainties such as feedwater flow, feedwater temperature, pressure, power distribution uncertainties (including the effects of fuel channel bow), and uncertainty in the Critical Power Correlation.

Both two-loop and single-loop MCPRSL values have been calculated using NRC approved analytical methods with the SPCB critical power correlation for ATRIUM™-10 fuel. The AREVA methodology has been reviewed by the NRC for applicability to EPU Conditions (Reference 7.2). Corrected SPCB additive constants have been applied to address a non-conservatism reported by AREVA through Part 21 (Reference 7.1.) AREVA has submitted the corrected additive constants to NRC in Reference 7.3. The proposed MCPRSL values (1.08 for two-loop operation and 1.11 for single-loop operation) assure that at least 99.9% of the fuel rods are expected to avoid boiling transition during normal operation or anticipated operational occurrences.

The MCPRSL analysis is the first in a series of analyses that assure the core loading is operated in a safe manner. Prior to startup, analyses are performed (using NRC approved methodologies referenced in TS Section 5.6.5.b) to determine changes in the Critical Power Ratio (CPR) as a result of anticipated operational occurrences. These results are combined with the MCPRSL values to generate the MCPR operating limits (MCPROLs) that are identified in the Core Operating Limits Report (COLR). The COLR operating limits assure that the MCPRSL will not be exceeded during normal operation or anticipated operational occurrences, providing the required protection for the fuel rod cladding. Postulated accidents are also analyzed prior to startup and the results shown to be within the NRC approved criteria.

4.0 TECHNICAL ANALYSIS

4.1 MCPR SAFETY LIMIT CHANGE

This TS change decreases the MCPRSL from the current Unit 2 limits of 1.11 for two-loop and 1.14 for single-loop to the proposed limits of 1.08 for two-loop and 1.11 for single-loop. Descriptions of the methodology, inputs, results, and the reasons for the decrease in the MCPRSL are provided in the following subsections.

Methodology

The two-loop and single loop MCPRSL values are calculated using the following methods:

- ANF-524(P)(A) Revision 2 and Supplements 1 and 2, ANF Critical Power Methodology for Boiling Water Reactors, Advanced Nuclear Fuels Corporation, November 1990.

- EMF-2209(P)(A) Revision 2, SPCB Critical Power Correlation, Framatome ANP, September 2003.

These methods are included in TS 5.6.5.b.

In the MCPRSL methodology, a Monte Carlo procedure is used to evaluate reactor system measurement uncertainties and fuel related uncertainties so that during sustained operation at the MCPRSL, at least 99.9% of the fuel rods in the core would be expected to avoid boiling transition. The effects of channel bow were accounted for in the MCPRSL analysis using the ANF-524(P)(A) methodology.

MICROBURN-B2 (MB2) was used to design the cycle and MB2/POWERPLEX®-III CMSS will be used for monitoring. The exposure-specific radial and axial power distribution inputs were generated using MB2. The exposure-specific local power distribution inputs were generated using CASMO-4 (C4). The C4/MB2 code system has been approved by the NRC and is described in EMF-2158(P)(A), Rev. 0 which is listed in TS 5.6.5.b. AREVA nuclear design methods including, C4/MB2, have been determined to be applicable to SSES EPU conditions. (Reference 7.2, Section 2.8.7.4.)

A depiction of the MCPRSL analysis process, including applicable methodology reports, is provided in Attachment 6. The AREVA MCPRSL methodology was found to be applicable to EPU conditions, subject to additional penalties on power distribution uncertainties (Reference 7.2). Uncertainties are described in the next section.

AREVA notified the NRC of a non-conservatism in the SPCB CPR correlation additive constants (Reference 7.1). The U2C15 MCPRSL analysis applied the corrected additive constants that have been submitted to the NRC in EMF-2209 (P), Revision 2, Addendum 1 (Reference 7.3).

Uncertainties

The following uncertainties were applied for the U2C15 MCPRSL analysis. These uncertainties are applicable to EPU conditions (Reference 7.2, Section 2.8.7). Radial and local power distribution uncertainties conform to the license condition specified for EPU (Reference 7.2, Section 2.8.7.3.1, Page 185).

Parameter	Standard Deviation	Basis
Reactor System Related Uncertainties		
Feedwater Flow Rate	1.76%	ANF-524(P)(A), Table 5.1.
Feedwater Temperature	0.76%	ANF-524(P)(A), Table 5.1.
Core Pressure	0.50%	ANF-524(P)(A), Table 5.1.
Total Core Flow Rate Two-Loop Single-Loop	 2.50% 6.00%	 ANF-524(P)(A), Table 5.1. PLA-2520, SLO Report Transmittal, Section 15.C.2.
Fuel Related Uncertainties		
[		

]

Channel Bow

NRC Bulletin 90-02 was issued to ensure that the effects of channel box bow on the CPR calculations are properly taken into account. In response to NRC Bulletin 90-02, AREVA issued Supplement 1 to their CPR Methodology, ANF-524(P)(A). The ANF-524(P)(A) methodology incorporates the effects of channel bow on CPR through the MCPRSL calculation.

Prior to Unit 2 Cycle 14 (U2C14), SSES experienced significant operational difficulty due to channel bow. PPL's root cause analysis identified shadow corrosion induced channel bow in Zr-2 fuel channels. Subsequently, PPL implemented a large scale channel replacement strategy by re-channeling suspect Zr-2 fuel channels with new Zr-4 fuel channels. During the U2-13RIO (Refueling and Inspection Outage), PPL completed re-channeling of all once burned fuel assemblies with new 100 mil Zr-4 fuel channels. Also during the outage, all fresh fuel assemblies received new 100 mil Zr-4 fuel channels. The re-channeling was performed to eliminate the effects of shadow corrosion induced channel bow for U2C14 and future operating cycles. New Zr-4 fuel channels will be placed on fresh fuel for U2C15.

For U2C15, PPL requested that AREVA use their standard, nominal mean channel bow assumptions based on the following: 1) All fuel channels to be used in the U2C15 core have had no more than one cycle's worth of irradiation prior to U2C15 due to the PPL rechanneling campaigns performed prior to U2C14, and 2) All fuel channels used in the U2C15 core are first-lifetime, 100 mil Zr-4 channels. (U2C15 contains no Zr-2 fuel channels.) Based on these facts, all of the fuel channels to be used in U2C15 are within the assumptions of the AREVA channel bow experience base. AREVA channel bow data used in calculating two-loop and single-loop MCPRSL are shown below:

[

]

Fluence gradient channel bow is managed during core design per GE-SIL 320 Supplements 1, 2 and 3. All peripheral fuel assemblies in U2C14 will be discharged from the U2C15 core. All U2C15 fuel channels will experience no more than two cycles of irradiation due to the PPL rechanneling campaigns performed during U2-13RIO. As a result, U2C15 fuel channel exposures at end of U2C15 will be significantly below the threshold for breakaway fluence induced growth (approx. 40 GWD/MT), effectively

mitigating inward and outward fluence gradient induced bow.

PPL maintains a fuel channel monitoring program and will continue to monitor fuel channel performance during the operating cycle.

Design Basis Power Distributions

The U2C15 core consists of a full core of AREVA's ATRIUM™-10 fuel design. U2C15 has been designed for Extended Power Uprate operating conditions. The core composition is provided as Attachment 3 and the corresponding core loading pattern is provided as Attachment 4. The fresh fuel bundles for Unit 2 Cycle 15 are split into five different neutronic assembly types, according to their enrichment and gadolinia distributions, as described in Attachment 5. The descriptions of the previous U2C14 core loading and exposed fuel assemblies used in U2C15 can be found in the Susquehanna FSAR Section 4.3.

The design basis radial, local, and axial power distributions at each cycle exposure point were evaluated to determine potentially limiting conditions. These power distributions are conservative compared to power distributions that would exist during reactor operation when the core is at the MCPROL and the MCPRSL could be reached during an AOO (Reference ANF-524(P)(A), Section 5.0). Design basis power distributions are representative of operation within the approved EPU (ARTs/MELLLA) operating domain.

Results Summary

A summary of the MCPRSL calculations performed by AREVA is provided in the following tables:

Percentage of Pins in Boiling Transition
for Two-Loop Operation

Proposed MCPRSL	% of Pins In Boiling Transition
1.07	0.0996
1.08	0.0664

Percentage of Pins in Boiling Transition
for Single-Loop Operation

Proposed MCPRSL	% of Pins In Boiling Transition
1.11	0.0592

The above tables demonstrate that MCPRSLs of 1.08 (two-loop) and 1.11 (single-loop) result in < 0.1% of pins in boiling transition. Therefore, MCPRSLs of 1.08 (two-loop) and 1.11 (single-loop) are proposed for U2C15 operation.

Comparison to U2C14 MCPRSL

For U2C14, AREVA analyses showed that MCPRSLs of 1.10 and 1.13 could be supported for two-loop and single-loop operation, respectively. To reduce the predicted number of pins in boiling transition, PPL conservatively added 0.01 to the MCPRSL values calculated by AREVA. Therefore, the U2C14 MCPRSLs were set to 1.11 and 1.14 for two-loop and single-loop operation, respectively (Reference 7.4).

For U2C15, MCPRSLs of 1.08 and 1.11 are supported for two-loop and single-loop operation, respectively. This represents a 0.02 reduction in the calculated MCPRSL for both two-loop operation and single-loop operation. The reduction in MCPRSL is a result of changes in the core loading pattern and in the mean channel bow values used in the MCPRSL analyses.

Previous cycle sensitivity analyses have shown that cycle to cycle core loading pattern changes can affect the MCPRSL by ±0.01 (Reference 7.5, page 3). In addition, previous cycle sensitivity analyses have shown that increasing the nominal channel bow assumption by a factor of two increased the MCPRSL by +0.01 to +0.02 (Reference 7.5, page 4).

For the U2C14 analyses, twice the mean channel bow values were used. For the U2C15 analyses, the standard, nominal mean channel bow values were used (See Subsection "Channel Bow" for the basis.). Based on the above sensitivity analyses, a 0.01 to 0.02 reduction in the value of the MCPRSL is estimated by reducing the channel bow assumption by a factor of two. The U2C15 results for two-loop operation support the trends from the channel bow sensitivity analyses.

The U2C14 MCPRSL analyses were not performed using the increased local peaking and radial peaking uncertainties required for EPU conditions. The U2C15 MCPRSL analyses were performed using the increased local peaking and radial peaking uncertainties required for EPU conditions (Reference 7.2). Increasing the local peaking and radial

peaking uncertainties results in an increase in the number of rods in boiling transition and is estimated to have a 0.00 to +0.01 impact on the MCPR results (Reference 7.2 page 205).

The following table summarizes the changes from U2C14:

	Two Loop	Single Loop
Current TS value	1.11	1.14
Removal of PPL added conservatism for U2C14 (Reference 7.4)	-0.01	-0.01
Use of nominal channel bow	-0.01 to -0.02	-0.01-0.02
Cycle to cycle variation	-0.01 to +0.01	-0.01 to +0.01
Use of increased power distribution uncertainties for EPU	0.00 to +0.01	0.00 to +0.01
U2C15 Proposed TS value	1.08	1.11

From the above table, the reduction in the value of mean channel bow for U2C15 has the largest overall effect on reducing the MCPRSL. Given the range of sensitivities provided in the table, it is reasonable that the resulting number of rods in BT (Boiling Transition) would be lower than that of U2C14, thus reducing the value of the MCPRSL for U2C15.

Additional Discussion for MCPRSL Change

The proposed change to the MCPRSLs does not directly or indirectly affect any plant system, equipment, component, or change the processes used to operate the plant. As discussed above, the reload analyses performed prior to U2C15 startup will meet all applicable acceptance criteria. Therefore, the proposed changes do not affect the failure modes of any systems or components. Thus, the proposed change does not create the possibility of a previously unevaluated operator error or a new single failure. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Since the proposed change does not alter any plant system, equipment, or component, the proposed change will not jeopardize or degrade the function or operation of any plant system or component governed by TS. The proposed MCPRSLs do not involve a significant reduction in the margin of safety as currently defined in the Bases of the applicable TS sections because the MCPRSLs calculated for U2C15 preserve the required margin of safety.

Operator performance and procedures are unaffected by these proposed changes since the changes are essentially transparent to the operators and plant procedures, and do not change the way in which the plant is operated. The MCPROLs to be incorporated in the COLR (determined from the MCPRSLs and U2C15 transient analysis results) may be different from the previous Unit 2 limits. Following the use of the methodology to analyze the U2C15 core design and future Unit 2 reloads, the reload cycle specific results are incorporated into the FSAR via inclusion of the COLR in the Technical Requirements Manual (TRM).

4.2 CONCLUSION

The proposed change to the MCPRSL does not affect any plant system, equipment, or component. Therefore, the proposed change will not jeopardize or degrade the function or operation of any plant system or component governed by TS. The proposed MCPRSL change does not involve a significant reduction in the margin of safety as currently defined in the Bases of the applicable TS sections because the MCPRSLs calculated for U2C15 preserve the required margin of safety.

Licensing analyses will be performed (using methodology referenced in TS Section 5.6.5.b) to determine changes in the CPR as a result of anticipated operational occurrences. These results are added to the MCPRSL values proposed herein to generate the MCPROLs in the U2C15 COLR. Thus, the MCPROLs assure that the MCPRSLs will not be exceeded during normal operation or AOOs, providing the required protection for the fuel rod cladding. The proposed change to the MCPRSLs will have a negligible impact on the results of postulated accident analyses.

Therefore, the proposed action does not involve an increase in the probability or an increase in the consequences of an accident previously evaluated in the SAR. Thus, the proposed changes are in compliance with applicable regulations. The health and safety of the public are not adversely impacted by operation of SSES as proposed.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

The proposed changes would revise the following:

TS 2.1.1.2

The two-loop and single-loop Minimum Critical Power Ratio Safety Limits (MCPRSLs) are revised to reflect results of the cycle specific MCPRSL analysis for U2C15. The two-loop MCPRSL decreases from 1.11 to 1.08. The single-loop MCPRSL decreases from 1.14 to 1.11.

PPL has evaluated whether or not a significant hazards consideration is involved with the proposed amendment 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 of occurrence or consequences of an accident previously evaluated?

Response: No.

The proposed change to the two-loop and single-loop MCPRSLs do not directly or indirectly affect any plant system, equipment, component, or change the processes used to operate the plant. Further, the proposed MCPRSLs were generated using NRC approved methodology and meet the applicable acceptance criteria. Thus, this proposed amendment does not involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated.

Prior to the startup of U2C15, licensing analyses are performed (using NRC approved methodology referenced in TS Section 5.6.5.b) to determine changes in the CPR as a result of anticipated operational occurrences. These results are added to the MCPRSL values to generate the MCPROLs in the COLR. These limits could be different from those specified for the previous Unit 2 COLR. The COLR operating limits thus assure that the MCPRSL will not be exceeded during normal operation or AOOs. Postulated accidents are also analyzed prior to the startup and the results shown to be within the NRC approved criteria.

Therefore, this proposed amendment does not involve a significant increase in the probability of occurrence 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?

Response: No.

The changes to the two-loop and single-loop MCPRSLs do not directly or indirectly affect any plant system, equipment, or component and therefore does not affect the failure modes of any of these items. Thus, the proposed change does not create the possibility of a previously unevaluated operator error or a new single failure.

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

4. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

Since the proposed changes do not alter any plant system, equipment, component, or processes used to operate the plant, the proposed change will not jeopardize or degrade the function or operation of any plant system or component governed by TS. The proposed two-loop and single-loop MCPRSLs do not involve a significant reduction in the margin of safety as currently defined in the Bases of the applicable TS sections, because the proposed MCPRSLs preserve the required margin of safety.

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

Based upon the above, PPL concludes that the proposed amendment presents 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

Title 10 of the Code of Federal Regulations (10 CFR) establishes the fundamental regulatory requirements with respect to reactivity control systems. Specifically, General Design Criterion 10 (GDC-10), " Reactor design," in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 states, in part, that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded.

The proposed MCPRSL values in TS Section 2.1.1.2 will ensure that 99.9% of the fuel rods in the core are not expected to experience boiling transition. This satisfies the requirements of GDC-10 regarding acceptable fuel design limits.

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

10 CFR 51.22(c)(9) identifies certain licensing and regulatory actions, which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility does not require an environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; or (3) result in a significant increase in individual or cumulative occupational radiation exposure. PPL Susquehanna, LLC has evaluated the proposed changes and has determined that the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Accordingly, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with issuance of the amendment. The basis for this determination, using the above criteria, follows:

BASIS

As demonstrated in the No Significant Hazards Consideration Evaluation, the proposed amendment does not involve a significant hazards consideration.

There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

There is no significant increase in individual or cumulative occupational radiation exposure. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

7.0 REFERENCES

7.1. Part 21 Notification, "Notification of Potential Part 21 Report – AREVA Minimum Critical Power Ratio," dated October 8, 2007 (Adams ML072830334)

7.2 Letter from R.V. Guzman (USNRC) to B. T. McKinney (PPL), "Susquehanna Steam Electric Station, Units 1 and 2 – Issuance of Amendment Regarding the 13-Percent Extended Power Uprate (TAC NOS. MD3309 and MD3310)," dated January 30, 2008.

7.3 Request for Review and Approval of EMF-2209(P), Revision 2, Addendum 1, "SPCB Additive Constants for ATRIUM-10 Fuel," dated May 1, 2008 (Adams ML081260442)

7.4 PLA-6132, B. T. McKinney (PPL) to USNRC, "Susquehanna Steam Electric Station Proposed Amendment No. 259 to Unit 2 License NPF-22: MCPR Safety Limits and Reference Changes," dated November 16, 2006.

7.5 PLA-6156, B. T. McKinney (PPL) to USNRC, "Susquehanna Steam Electric Station Request for Additional Information Regarding Proposed Amendment No. 259 to Unit 2 License NPF-22: MCPR Safety Limits and Reference Changes," dated February 15, 2007.

Attachment 1 to PLA-6438

AREVA NP, Inc., Affidavit for Proprietary Information

AFFIDAVIT

COMMONWEALTH OF VIRGINIA)
) ss.
CITY OF LYNCHBURG)

1. My name is Gayle F. Elliott. I am Manager, Product Licensing, for AREVA NP Inc. and as such I am authorized to execute this Affidavit.

2. I am familiar with the criteria applied by AREVA NP to determine whether certain AREVA NP information is proprietary. I am familiar with the policies established by AREVA NP to ensure the proper application of these criteria.

3. I am familiar with the AREVA NP information contained in the enclosure to a letter to the U.S. Nuclear Regulatory Commission from Mr. Britt T. McKinney (PPL Susquehanna, LLC) entitled, "Susquehanna Steam Electric Station Proposed Amendment to Unit 2 License NPF-22: MCPR Safety Limits," dated October 2008 and referred to herein as "Document." Information contained in this Document has been classified by AREVA NP as proprietary in accordance with the policies established by AREVA NP for the control and protection of proprietary and confidential information.

4. This Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by AREVA NP and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in this Document as proprietary and confidential.

5. This Document has been made available to the U.S. Nuclear Regulatory Commission in confidence with the request that the information contained in this Document be withheld from public disclosure. The request for withholding of proprietary information is made in

accordance with 10 CFR 2.390. The information for which withholding from disclosure is requested qualifies under 10 CFR 2.390(a)(4) "Trade secrets and commercial or financial information."

6. The following criteria are customarily applied by AREVA NP to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA NP's research and development plans and programs or their results.

(b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.

(c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for AREVA NP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA NP in product optimization or marketability.

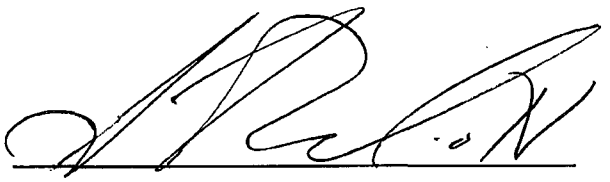
(e) The information is vital to a competitive advantage held by AREVA NP, would be helpful to competitors to AREVA NP, and would likely cause substantial harm to the competitive position of AREVA NP.

The information in the Document is considered proprietary for the reasons set forth in paragraphs 6(b) and 6(c) above.

7. In accordance with AREVA NP's policies governing the protection and control of information, proprietary information contained in this Document have been made available, on a limited basis, to others outside AREVA NP only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. AREVA NP policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

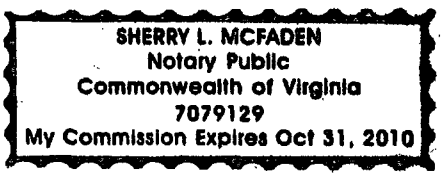
9. The foregoing statements are true and correct to the best of my knowledge, information, and belief.



SUBSCRIBED before me this 30th

day of September 2008.

Sherry L. McFaden
NOTARY PUBLIC, COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES: 10/31/10
Reg. # 7079129



Attachment 2 to PLA-6438

Proposed Technical Specification Changes
Unit 2

(Mark-ups)

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10 million lbm/hr:

THERMAL POWER shall be ≤ 25% RTP.

2.1.1.2 With the reactor steam dome pressure ≥ 785 psig and core flow ≥ 10 million lbm/hr:

MCPR shall be ≥ ~~1.11~~ 1.08 for two recirculation loop operation or ≥ ~~1.14~~ 1.11 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be ≤ 1325 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

Attachment 3 to PLA-6438

Description of the Planned Unit 2 Cycle 15 Core Composition

Unit 2 Cycle 15 Core Composition

Assembly Type	Operational History	Number of Assemblies
AREVA ATRIUM™-10	Fresh	316
AREVA ATRIUM™-10	Once-burned	292
AREVA ATRIUM™-10	Twice-burned	156

Attachment 4 to PLA-6438

Planned Unit 2 Cycle 15 Core Loading Pattern

	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59
30	26	33	27	33	28	32	26	33	27	29	28	31	28	23	25
	22.7	0.0	23.5	0.0	22.0	0.0	22.3	0.0	24.1	0.0	22.2	0.0	23.7	35.4	41.2
28	33	28	32	27	32	27	32	28	32	27	32	30	28	28	24
	0.0	22.2	0.0	23.6	0.0	24.3	0.0	22.2	0.0	21.7	0.0	0.0	21.8	19.3	41.4
26	27	32	27	32	28	32	27	32	27	33	27	33	28	23	24
	23.3	0.0	23.1	0.0	23.3	0.0	23.1	0.0	22.2	0.0	20.6	0.0	22.2	34.5	42.2
24	33	27	32	27	33	27	32	28	33	27	31	29	30	28	24
	0.0	23.6	0.0	23.5	0.0	24.2	0.0	23.9	0.0	23.6	0.0	0.0	0.0	20.2	41.4
22	28	32	28	33	26	32	27	32	27	32	28	33	26	23	24
	22.0	0.0	23.3	0.0	24.3	0.0	22.5	0.0	24.1	0.0	21.0	0.0	22.7	35.4	42.4
20	32	27	32	27	32	27	32	28	32	27	31	30	30	28	24
	0.0	24.3	0.0	24.2	0.0	23.6	0.0	23.8	0.0	22.6	0.0	0.0	0.0	20.1	42.7
18	26	32	27	32	27	32	27	32	27	33	27	30	28	24	24
	21.8	0.0	23.1	0.0	22.6	0.0	20.9	0.0	21.1	0.0	21.3	0.0	19.1	39.1	41.5
16	33	28	32	28	32	28	32	26	31	30	30	28	23	24	
	0.0	22.2	0.0	23.9	0.0	23.8	0.0	24.2	0.0	0.0	0.0	19.1	36.8	42.4	
14	27	32	27	33	27	32	27	31	27	30	23	24	24		
	24.1	0.0	22.2	0.0	24.1	0.0	21.1	0.0	20.3	0.0	33.5	40.1	40.7		
12	29	27	33	27	32	27	33	30	30	30	23	24	24		
	0.0	21.7	0.0	23.5	0.0	22.8	0.0	0.0	0.0	0.0	34.7	40.7	41.3		
10	28	32	27	31	28	31	27	30	23	23	24				
	22.2	0.0	20.7	0.0	21.0	0.0	21.3	0.0	33.4	34.6	42.9				
8	31	30	33	29	33	30	30	28	24	24					
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	40.0	41.2					
6	28	28	28	30	26	30	28	23	24	24					
	23.7	21.8	22.2	0.0	22.9	0.0	19.1	36.7	40.7	41.3					
4	23	28	23	28	23	28	24	24							
	35.3	19.4	34.4	20.2	35.4	20.1	38.9	42.0							
2	25	24	24	24	24	24	24								
	40.5	41.2	42.5	41.3	42.3	43.1	41.7								

Nuclear Fuel Type
BOC Exposure (GWd/MTU)

Fuel Type	Description	Cycle Loaded	No. Per Quarter Core
23	4.12B-14GV7	13	12
24	4.12B-15GV8	13	25
25	3.90B-15GV7	13	2
26	3.674B-12GV7	14	7
27	4.057-14GV8	14	35
28	4.241B-14GV8	14	31
29	3.887B-14GV80a	15	4
30	4.215B-12GV80	15	17
31	4.207B-14GV80	15	8
32	4.204B-14GV80	15	32
33	3.887B-14GV80	15	18

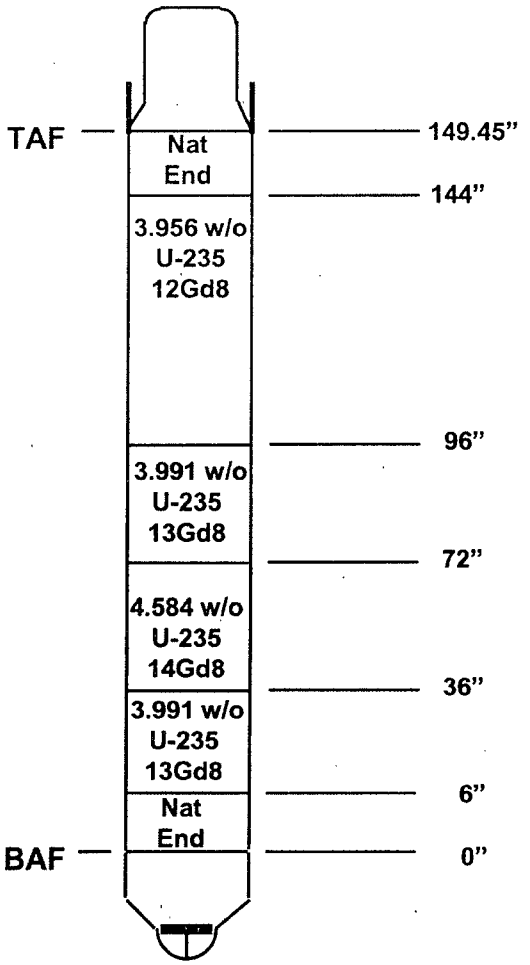
Susquehanna Unit 2 Cycle 15 Lower Right Quarter Core Layout by Fuel Type

Attachment 5 to PLA-6438

Descriptions of the Planned Unit 2 Cycle 15 Reload Bundles

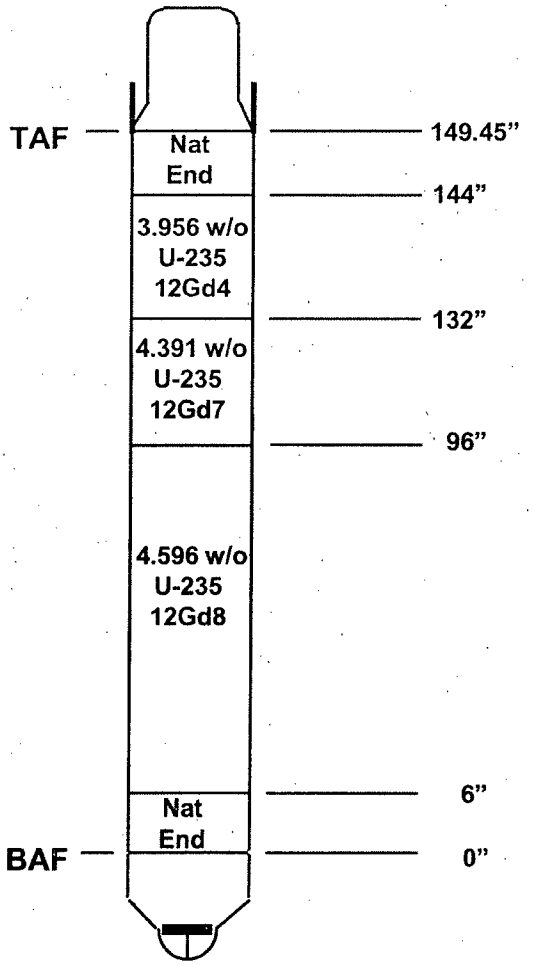
Assembly Type 29
Reload Bundle Description
(ATRIUM-10, 100mil Channel)

Bundle Average Enrichment = 3.887%



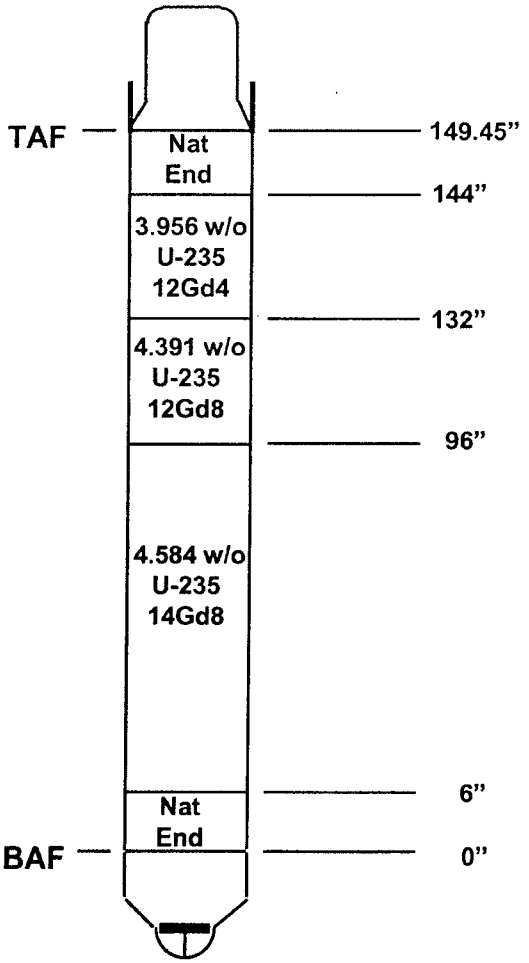
Assembly Type 30
Reload Bundle Description
(ATRIUM-10, 100mil Channel)

Bundle Average Enrichment = 4.215%



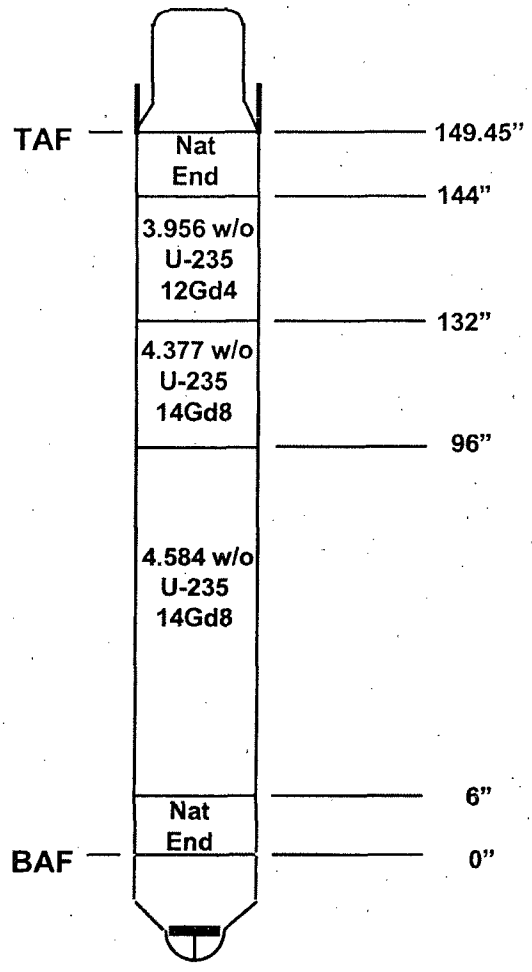
Assembly Type 31
Reload Bundle Description
(ATRIUM-10, 100mil Channel)

Bundle Average Enrichment = 4.207%



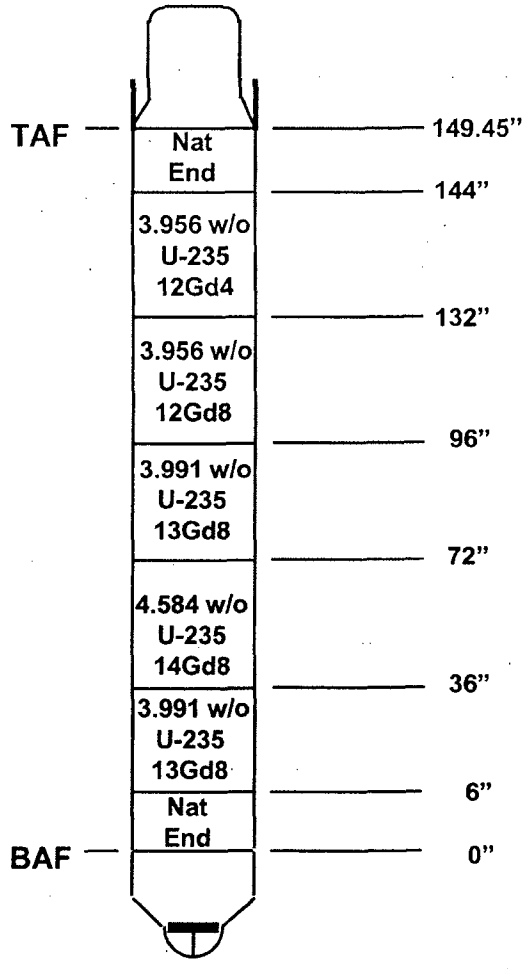
Assembly Type 32
Reload Bundle Description
(ATRIUM-10, 100mil Channel)

Bundle Average Enrichment = 4.204%



Assembly Type 33
Reload Bundle Description
(ATRIUM-10, 100mil Channel)

Bundle Average Enrichment = 3.887%



Attachment 6 to PLA-6438

Diagram of NRC Approved Minimum Critical Power Ratio Safety Limit Methodology

MCPR Safety Limit Methodology