Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-20-074

August 28, 2020

10 CFR 50.90

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

Watts Bar Nuclear Plant, Unit 2
Facility Operating License No. NPF-96
NRC Docket No. 50-391

Subject: Additional Supplement to License Amendment Request for Measurement Uncertainty Recapture Power Uprate (WBN-TS-19-06) (EPID L-2019-LLS-0000)

References:

1. TVA Letter to NRC, CNL-19-082, "License Amendment Request for Measurement Uncertainty Recapture Power Uprate (WBN-TS-19-06)," dated October 10, 2019 (ML19283G117)

2. TVA Letter to NRC, CNL-20-030, "Response to Request for Additional Information to License Amendment Request for Measurement Uncertainty Recapture Power Uprate (WBN-TS-19-06) (EPID L-2019-LLS-0000)," dated April 29, 2020 (ML20120A582)

3. TVA Letter to NRC, CNL-20-063, "Supplement to License Amendment Request for Measurement Uncertainty Recapture Power Uprate (WBN-TS-19-06) (EPID L-2019-LLS-0000)," dated July 27, 2020 (ML20210M034 and ML20210M035)

In Reference 1, Tennessee Valley Authority (TVA) submitted a request for an amendment to Facility Operating License No. NPF-96 for the Watts Bar Nuclear Plant (WBN), Unit 2. The proposed license amendment request (LAR) would increase the WBN, Unit 2 authorized core power level from 3411 megawatts thermal (MWt) to 3459 MWt (i.e., an increase of approximately 1.4 percent (%) Rated Thermal Power), based on the use of the Caldon®[1] Leading Edge Flow Meter (LEFM®[1]) CheckPlus System.

In Reference 2, TVA responded to a Nuclear Regulatory Commission (NRC) request for additional Information (RAI). In Reference 3, TVA submitted a supplement to Reference 1 to correct some proprietary markings in the enclosures to Reference 1.

[1] Caldon is now owned by Cameron Technologies US, LLC, which is a wholly owned subsidiary of Sensia, LLC. Caldon and LEFM are registered trademarks of Cameron/Sensia.

Following the submittal of Reference 3, Cameron Technologies US LLC (Cameron) identified an error regarding certain input parameters used in the calculation of the system mass flow and thermal power measurement uncertainty values in Engineering Reports ER-734P and ER-734NP, Revision 3 (Enclosures 3 and 4 to Reference 3, respectively). Correction of the error resulted in some minor changes to the calculated uncertainty values (Note: the specific values are proprietary and are summarized in Sections 2.1 and 2.3 of ER-734P). The calculated mass flow uncertainty for the LEFM NORMAL mode did not change. The corrected value for the MAINTENANCE mode mass flow uncertainty increased by 0.02 percent over the value in Section 2.1 of ER-734P, Revision 3. This change affects the following statements Enclosure 2 to Reference 1:

> "This 1.4% power uprate is based on a bounding uncertainty analysis (Enclosure 6) which uses the same uncertainty as for the WBN Unit 1 Check system (i.e., an LEFM flow uncertainty of 0.48%). As shown in Section I.I.D.vi, and discussed in Section I.1.E, this assumed uncertainty value bounds the total thermal power uncertainty corresponding to the LEFM CheckPlus system in MAINTENANCE mode (as calculated in Enclosure 5)." (Section I.1.D.v of Enclosure 2 to Reference 1)
>
> "Cameron report ER-734P shows that the LEFM mass flow uncertainty, which is used as input to the calorimetric, is less than 0.48% for WBN Unit 2." (Section I.1.E of Enclosure 2 to Reference 1)

Accordingly, Enclosure 1 to this submittal provides corrected pages from the above quoted sections of Enclosure 2 to Reference 1. The information in Enclosure 1 to this submittal supersedes the corresponding information in Enclosure 2 to Reference 1.

As outlined in Section I.1.E of Enclosure 2 to Reference 1, the measured thermal power uncertainty analysis for Watts Bar Unit 2 is based on the Westinghouse methodology in Topical Report WCAP-18419-P (Enclosure 6 of Reference 1). The small changes (i.e., 0.01 percent) to the Cameron calculated thermal power measurement uncertainty values in Section 2.3 of ER-734P do not affect the Westinghouse methodology or results, which remain bounding.

TVA hereby withdraws ER-734P and ER-734NP, Revision 3 (Enclosures 3 and 4 to Reference 3, respectively). Enclosures 2 and 3 to this submittal provide Revisions 4 to ER-734P and ER-734NP, respectively, correcting the error in the LEFM measurement uncertainty values and removing some additional proprietary marking regarding the references to the NORMAL and MAINTENANCE modes for consistency with Enclosure 2 to Reference 1. Enclosures 2 and 3 to this submittal supersede the corresponding reports in Enclosures 5 and 9 to Reference 1 and Enclosures 3 and 4 to Reference 3.

The proprietary information in Enclosure 2 is supported by an affidavit (Enclosure 4) signed by Cameron, the owner of the information, which sets forth the basis on which the information should be withheld from public disclosure by the NRC and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR 2.390. Accordingly, TVA requests that the information, which is proprietary to Cameron, be withheld from public disclosure in accordance with 10 CFR 2.390. Correspondence with respect to the copyright or proprietary aspects of the technical information listed above or the supporting Cameron affidavit should reference Cameron letter CAW 20-09 and should be addressed to Joanna Phillips, Nuclear Sales Manager, Caldon Ultrasonics Technology Center, Cameron, 1000 McClaren Woods Drive, Coraopolis, Pennsylvania 15216.

This letter does not change the conclusions, the no significant hazards consideration, nor the environmental considerations contained in Reference 1. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and the enclosures to the Tennessee Department of Environment and Conservation.

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this request to Gordon R. Williams, Senior Manager, Fleet Licensing (Acting) at (423) 751-2687.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 28th day of August 2020.

Respectfully,

James Barstow
Vice President, Nuclear Regulatory Affairs & Support Services

Enclosures:

1. Corrected pages from Enclosure 2 to CNL-19-082
2. Cameron Engineering Report ER-734P, Revision 4 (Proprietary)
3. Cameron Engineering Report ER-734NP, Revision 4 (Non-Proprietary)
4. Cameron Affidavit CAW 20-09

cc (Enclosures):

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Watts Bar Nuclear Plant
NRC Project Manager – Watts Bar Nuclear Plant
Director, Division of Radiological Health – Tennessee State Department of Environment and Conservation

Enclosure 1

Corrected pages from Enclosure 2 to CNL-19-082

I.1.D.v Criterion 1 from ER-157P, Rev 8 - Continued operation at the pre-failure power level for a pre-determined time and the decrease in power that must occur following that time are plant-specific and must be acceptably justified.

RESPONSE:

Similar to WBN Unit 1, if a non-functional LEFM for WBN Unit 2 is not restored to functional status prior to the next performance of TS SR 3.3.1.2, which is performed every 24 hours, then Unit 2 power will be reduced to no more than 3411 MWt (i.e., the current licensed thermal power (CLTP)). This is consistent with the proposed change to TS 5.9.5b, which states "When feedwater flow measurements from the LEFM are unavailable, the originally approved initial power level of 102% RTP (3411 MWt) shall be used."

The basis for the proposed completion time (CT) of "prior to the next performance of TS SR 3.3.1.2," which would potentially allow for a maximum of 24 hours prior to reducing power, is as follows:

1. The same CT is used for WBN Unit 1.
2. When an LEFM system is non-functional, signals from the existing feedwater flow venturis will be used as input to the secondary calorimetric portion of the RTP calculation in place of the LEFM system. During normal LEFM operations, the signals from the flow venturi are calibrated to the LEFM signals, and upon LEFM failure, the flow venturi calibration is locked to the last valid LEFM value.
3. Any slight drift of the feedwater flow nozzle measurements due to fouling would result in a higher than actual indication of feedwater flow and an overestimation of the calculated calorimetric power level. This is conservative because the reactor will actually be operating below the calculated power level. A sudden de-fouling event during a 24-hour period is unlikely and any significant sudden de-fouling would be detected as a corresponding reduction in indicated thermal power that deviates from other plant parameters.
4. It is expected that minor issues resulting in a non-functional LEFM system could be resolved prior to the next performance of TS SR 3.3.1.2.
5. The NRC has approved a 72-hour CT for previous MUR power uprate applications, which bounds the maximum allowed outage time of 24 hours proposed for the LEFM system for WBN Unit 2 (References I.13 – I.16).

Additionally, for WBN Unit 2, the redundancy inherent in the two measurement planes of an LEFM CheckPlus system makes the system more tolerant to component failures, as compared to the Check system installed for WBN Unit 1, which only has one measurement plane. The LEFM CheckPlus system has three modes: NORMAL, MAINTENANCE, and FAIL. If an LEFM flow meter is in a status other than NORMAL, the uncertainty for that meter is increased. If the WBN Unit 2 LEFM is in MAINTENANCE mode then a 72-hour CT will be used prior to reducing power to 3411 MWt. In addition to the basis provided above (in Bullets 2, 3, and 5) for the CT associated with an LEFM in FAIL mode, the following considerations are used to justify a CT of up to 72 hours for an LEFM in MAINTENANCE mode for WBN Unit 2:

- WBN Unit 2 is only proposing a 1.4% power uprate in order for WBN Unit 2 to remain consistent with WBN Unit 1. This 1.4% power uprate is based on a bounding uncertainty analysis (Enclosure 6) which uses the same uncertainty as for the WBN Unit 1 Check system (i.e., an LEFM flow uncertainty of 0.48%). As shown in Section I.1.D.vi, and discussed in Section I.1.E, this assumed flow uncertainty value ~~bounds~~ is only slightly exceeded ~~the total thermal power uncertainty corresponding to~~ by the LEFM CheckPlus system in MAINTENANCE mode (as calculated in Enclosure 5) and has no effect on the total thermal power uncertainty.

I.1.E A calculation of the total power measurement uncertainty at the plant, explicitly identifying all parameters and their individual contribution to the power uncertainty

RESPONSE:

The calculation of total power measurement uncertainty has been completed for WBN Unit 2 and is included in Enclosure 6.

Cameron report ER-734P shows that the LEFM mass flow uncertainty, which is used as input to the calorimetric, is less than 0.48% for WBN Unit 2 in the NORMAL mode. The uncertainty (in NORMAL and MAINTENANCE modes) was determined utilizing the calculation methodology described in Cameron Engineering Reports ER-80P and ER-157P (References I.2 and I.3).

In addition to the feedwater header mass flow rate and feedwater temperature provided by the Cameron CheckPlus system, the WBN Unit 2 ICS uses the following measured inputs:

- Feedwater pressure
- Steam pressure
- Steam generator blowdown flow

An uncertainty calculation was performed for each of these process inputs to determine a bounding instrument loop uncertainty for WBN Unit 2. Enclosure 6 denotes the individual contribution to the total power measurement uncertainty for each input parameter and additional parameters such as net pump heat addition and steam moisture content. As shown in Table I.1.E-1, an assumed bounding LEFM thermal power uncertainty of 0.48% was combined with the non-LEFM uncertainties to obtain a total power uncertainty of 0.6% RTP (rounded up) for WBN Unit 2. A bounding feedwater density/pressure uncertainty term (% power/psi) (Enclosure 6, Table 2) was used, consistent with WBN Unit 1, instead of a realistic value based on the steam tables, which provides additional conservatism.

Table I.1.E-1: Bounding Total Thermal Power Uncertainty Determination

Parameter	WBN Unit 2 Analysis
Assumed Bounding Power Uncertainty Due to LEFM (See Westinghouse Report, WCAP-18419-P, in Enclosure 6)	0.48%
Total Thermal Power Uncertainty (See Westinghouse Report, WCAP-18419-P, in Enclosure 6)	0.6%

WCAP-18419-P is the portion of the analysis of record, for WBN Unit 2, pertaining to the use of the LEFM for calculating the total thermal power uncertainty. This bounding analysis supports a power uprate of 1.4% so that WBN Unit 2 will be consistent with WBN Unit 1. Although the Westinghouse methodology used for calculation of the total thermal power uncertainty for WBN Unit 2 is not generically approved by the NRC, it was previously accepted for WBN Unit 1 (Reference I.18). The Cameron engineering reports demonstrate that the thermal power uncertainty results of the Westinghouse analysis are conservative and bound use of the LEFM in both NORMAL and MAINTENANCE mode.

Enclosure 2

Cameron Engineering Report ER-734P, Revision 4 (Proprietary)

Proprietary Information Withhold Under 10 CFR § 2.390

Enclosure 3

Cameron Engineering Report ER-734NP, Revision 4 (Non-Proprietary) sensia

Rockwell Automation + Schlumberger

August 24, 2020

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

RE: Sensia LLC documents ER-734P Rev 4 and ER-734NP Rev 4 in support of Watts Bar Nuclear Plant, Unit 2 Facility Operating License No. NPF-96 NRC Docket No. 50-391

Gentlemen/Ladies,

Sensia, LLC, hereby grants the U.S. NRC license to use the above-referenced reports in the normal course of business and authorizes incorporation of documents ER-734P Rev 4 and ER-734NP Rev 4 into the ADAMS documentation system.

Your sincerely,

Xavier Jordan
Deputy General Counsel

sensiaglobal.com
1000 McClaren Woods Drive, Coraopolis, PA 15108 USA

Caldon® Ultrasonics

Engineering Report: ER-734NP Rev. 4

BOUNDING UNCERTAINTY ANALYSIS FOR THERMAL POWER DETERMINATION AT WATTS BAR UNIT 2 USING THE LEFM✓+ SYSTEM

Prepared by: Jonathan Lent
Reviewed by: Ryan Hannas
Reviewed for Proprietary Content by: Joanna Phillips

August 2020

Engineering Report No. ER-734NP Rev. 4
August 2020

Engineering Report: ER-734NP Rev. 4

BOUNDING UNCERTAINTY ANALYSIS FOR THERMAL POWER DETERMINATION AT WATTS BAR UNIT 2 USING THE LEFM✓+ SYSTEM

Table of Contents

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1.0 INTRODUCTION

The LEFM✓ and LEFM✓+[1] are advanced ultrasonic systems that accurately determine the volume flow and temperature of feedwater in nuclear power plants. Using a feedwater pressure signal input to the LEFM✓ and LEFM✓+: mass flow can be determined and, along with the temperature output are used along with plant data to compute reactor core thermal power. The technology underlying the LEFM✓ ultrasonic instruments and the factors affecting their performance are described in a topical report, Reference 1, and a supplement to this topical report, Reference 2.

The LEFM✓+, which is made of two LEFM✓ subsystems, is described in another supplement to the topical report, Reference 3. The exact amount of the uprate allowable under a revision to 10CFR50 Appendix K depends not only on the accuracy of the LEFM✓+ instrument, but also on the uncertainties in other inputs to the thermal power calculation.

It is the purpose of this document to provide an analysis of the uncertainty contribution of the LEFM✓+ System in its normal operation as well as when operating in its maintenance mode[2] to the overall mass flow and thermal power uncertainty of Watts Bar Unit 2 (Appendix B).

The uncertainties in mass flow and feedwater temperature are also used in the calculation of the overall thermal power uncertainty (Appendix B). [ ] A detailed discussion of the methodology for combining these terms is described in Reference 3.

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This analysis is a bounding analysis for Watts Bar Unit 2. [ ]

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[1] The LEFM✓+ is composed of the average flow of two independent LEFM3 subsystems. There are four acoustic paths in an LEFM✓ summing to eight paths in the LEFM✓+.

[2] Maintenance Mode refers to the state when any LEFM✓+ meter has only one of its two LEFM✓ subsystems fully operational, resulting in that meter's computing flow from just the remaining fully operational LEFM✓ subsystem.

2.0 SUMMARY

For Watts Bar Unit 2, Revision 4 results are as follows:

1. The mass flow uncertainty approach is documented in Reference 3. The uncertainty in the LEFM✓+'s mass flow of feedwater is as follows:
    - Fully Functional LEFM✓+ system mass flow uncertainty is [ ]
    - Maintenance Mode LEFM✓+ system mass flow uncertainty is [ ]

   [Note: The LEFM✓+ system is in maintenance mode when only one of the two LEFM✓+ subsystems is fully functional, i.e., LEFM✓+ System is operating as a LEFM✓ System. [ ]

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2. The uncertainty in the LEFM✓+ feedwater temperature is as follows:
    - Fully Functional LEFM✓+ system temperature uncertainty is [ ]
    - Maintenance Mode LEFM✓+ system the uncertainty is [ ]

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3. The total thermal power uncertainty approach is documented in Reference 3 and Appendix B of this document. The total uncertainty in the determination of thermal power uses the LEFM✓+ system parameters and plant specific parameters, i.e., heat gain/losses, etc. and is as follows:
    - Thermal power uncertainty using a Fully Functional LEFM✓+ system is ± 0.43%
    - Thermal power uncertainty using a Maintenance Mode LEFM✓+ system is [ ]

   [ ]

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3.0 APPROACH

All errors and biases are calculated and combined according to the procedures defined in Reference 4 in order to determine the 95% confidence and probability value. The approach to determine the uncertainty, consistent with determining set points, is to combine the random and bias terms by the means of the RSS approach provided that all the terms are independent, zero-centered and normally distributed.

Reference 4 defines the contributions of individual error elements through the use of sensitivity coefficients defined as follows:

A calculated variable P is determined by algorithm f, from measured variables X, Y, and Z.

$$P = f(X, Y, Z)$$

The error, or uncertainty in P, dP, is given by:

$$dP = \left.\frac{\partial f}{\partial X}\right|_{YZ} dX + \left.\frac{\partial f}{\partial Y}\right|_{XZ} dY + \left.\frac{\partial f}{\partial Z}\right|_{XY} dZ$$

As noted above, P is the determined variable--in this case, reactor power or mass flow-- which is calculated via measured variables X, Y, and Z using an algorithm f (X, Y, Z). The uncertainty or error in P, dP, is determined on a per unit basis as follows:

$$\frac{dP}{P} = \left\{\frac{X}{P}\left.\frac{\partial f}{\partial X}\right|_{YZ}\right\}\frac{dX}{X} + \left\{\frac{Y}{P}\left.\frac{\partial f}{\partial Y}\right|_{XZ}\right\}\frac{dY}{Y} + \left\{\frac{Z}{P}\left.\frac{\partial f}{\partial Z}\right|_{XY}\right\}\frac{dZ}{Z}$$

where the terms in brackets are referred to as the sensitivity coefficients.

If the errors or biases in individual elements (*dX/X, dY/Y, and dZ/Z* in the above equation) are all caused by a common (systematic) boundary condition (for example ambient temperature) the total error dP/P is found by summing the three terms in the above equation. If, as is more often the case, the errors in X, Y, and Z are independent of each other, then Reference 4 recommends and probability theory requires that the total uncertainty be determined by the root sum square as follows (for 95% confidence and probability):

$$\frac{dP}{P} = \sqrt{\left[\left(\left\{\frac{X}{P}\left.\frac{\partial f}{\partial X}\right|_{YZ}\right\}\frac{dX}{X}\right)^2 + \left(\left\{\frac{Y}{P}\left.\frac{\partial f}{\partial Y}\right|_{XZ}\right\}\frac{dY}{Y}\right)^2 + \left(\left\{\frac{Z}{P}\left.\frac{\partial f}{\partial Z}\right|_{XY}\right\}\frac{dZ}{Z}\right)^2\right]}$$

Obviously, if some errors in individual elements are caused by a combination of boundary conditions, some independent and some related (i.e., systematic) then a combination of the two procedures is appropriate.

4.0 OVERVIEW

The analyses that support the calculation of LEFM✓+ uncertainties are contained in the appendices to this document. The function of each appendix is outlined below.

Appendix A.1, LEFM✓+ Inputs

This appendix tabulates dimensional and other inputs to the LEFM✓+. The spreadsheet calculates other key dimensions and factors from these inputs [ ], which is used by the LEFM✓+ for the computation of mass flow and temperature.

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Appendix A.2, LEFM✓+ Uncertainty Items Calculations

This appendix calculates the uncertainties in mass flow and temperature as computed by the LEFM✓+ using the methodology described in Appendix E of Reference 1 and Appendix A of Reference 3[3], with uncertainties in the elements of these measurements bounded as described in both references[4]. The spreadsheet calculations draw on the data of Appendix A.1 for dimensional information. It draws from Appendix A.4 [ ]. It draws from Appendix A.5 [ ]. These uncertainties are an important factor in establishing the overall uncertainty of the LEFM✓+.

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This appendix utilizes the results of the calibration testing for the plant spool piece(s) for the uncertainty in the profile factor (calibration coefficient). The engineering reports for the spool piece calibration tests are referenced in Appendix A.3 to this report.

[3] Reference 3 (ER 157P-A) develops the uncertainties for the LEFM✓+ system. Because this system uses two measurement planes, the structure of its uncertainties differs somewhat that of an LEFM3.
[4] Reference 3 (ER 157P-A) revised some of the time measurement uncertainty bounds. The revised bounds are a conservative projection of actual performance of the LEFM hardware. ER 80P used bounds that were based on a conservative projection of theoretical performance.

Appendix A.3, Meter Factor (Calibration) Uncertainties

As noted above, the calibration test report for the spool piece(s) establishes the overall uncertainty in the meter factor of the LEFM✓+. [

]

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[

].

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Appendix A.4, [ ]

This appendix calculates the [ ]

Appendix A.5, [ ]

This appendix calculates the [ ]

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Appendix B, Total Thermal Power Uncertainty due to the LEFM ✓+

The total thermal power uncertainty due to the LEFM✓+ is calculated in this appendix, using the results of Appendix A.2, A.4 and A.5. Plant supplied steam conditions (which enter into the computation of errors due to feedwater temperature) are used for this computation. This appendix also computes the fraction of the uncertainty in feedwater temperature that is systematically related to the mass flow uncertainty.

5.0 REFERENCES

1) Cameron Topical Report ER-80P, "Improving Thermal Power Accuracy and Plant Safety While Increasing Operating Power Level Using the LEFM Check System", Rev. 0

2) Cameron Engineering Report ER-160P, "Supplement to Topical Report ER 80P: Basis for a Power Uprate with the LEFM System", May 2000

3) Cameron Engineering Report ER-157(P-A), "Supplement to Cameron Topical Report ER-80P: Basis for Power Uprates with an LEFM Check or an LEFM CheckPlus", dated May 2008, Revision 8 and Revision 8 Errata

4) ASME PTC 19.1-1985, Measurement Uncertainty

Appendix A

Appendix A.1, LEFM✓+ Inputs

Appendix A.2, LEFM✓+ Uncertainty Items/Calculations

Appendix A.3, Meter Factor Calculation and Accuracy Assessment

Appendix A.4, [ ]

Appendix A.5, [ ]

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Appendix A.1

LEFM✓+ Inputs

No attachment to follow, as Appendix is Proprietary in its Entirety

Appendix A.2

LEFM✓+ Uncertainty Items/Calculations

No attachment to follow, as Appendix is Proprietary in its Entirety

Appendix A.3

LEFM✓+ Meter Factor Calculation and Accuracy Assessment

Reference Caldon Engineering Report

ER-732 Rev 0, “Meter Factor Calculation and Accuracy Assessment for Tennessee Valley Authority, Watts Bar Nuclear Power Plant Unit 2”, December 2008

Appendix A.4

[ ]

Trade Secret & Confidential Commercial Information

No attachment to follow, as Appendix is Proprietary in its Entirety

Appendix A.5

[ ]

Trade Secret & Confidential Commercial Information

No attachment to follow, as Appendix is Proprietary in its Entirety

Appendix B

Total Thermal Power and Mass Flow Uncertainty using the LEFM✓+ System

No attachment to follow, as Appendix is Proprietary in its Entirety

Enclosure 4

Cameron Affidavit CAW 20-09

Sensia
Rockwell Automation + Schlumberger

Cameron Technologies US LLC

August 17, 2020
CAW 20-09

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

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: Cameron Engineering Report ER-734 Rev 4 "Bounding Uncertainty Analysis for Thermal Power Determination at Watts Bar Unit 2 Using the LEFM ✔ + System"

Gentlemen:

This application for withholding is submitted by Cameron Technologies US, LLC, a Delaware limited liability company and wholly owned subsidiary of Sensia, LLC (herein called "Cameron"), pursuant to the provisions of paragraph (b)(1) of Section 2.390 of the Commission's regulations. It contains trade secrets and/or commercial information proprietary to Cameron 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 2.390, Affidavit CAW 20-09 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 Cameron, be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

Correspondence with respect to this application for withholding or the accompanying affidavit should reference CAW 20-09 and should be addressed to the undersigned.

Very truly yours,

Joanna Phillips
Nuclear Sales Manager

Enclosures (Only upon separation of the enclosed confidential material should this letter and affidavit be released.)

August 17, 2020
CAW 20-09

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Joanna Phillips, who, being by me duly sworn according to law, deposes and says that she is authorized to execute this Affidavit on behalf of Cameron Technologies US, LLC, a Delaware limited liability company and wholly owned subsidiary of Sensia LLC (herein called "Cameron"), and that the averments of fact set forth in this Affidavit are true and correct to the best of her knowledge, information, and belief:

Joanna Phillips
Nuclear Sales Manager

Signed and sworn to before me

this 17th day of

August, 2020

Frances A. Lewis
Notary Public

Commonwealth of Pennsylvania - Notary Seal
Frances A. Lewis, Notary Public
Allegheny County
My commission expires November 25, 2022
Commission number 1287160
Member, Pennsylvania Association of Notaries

1. I am the Nuclear Sales Manager for Cameron Technologies US, LLC, 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 Cameron.

2. I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Cameron application for withholding accompanying this Affidavit.

3. I have personal knowledge of the criteria and procedures utilized by Cameron in designating information as a trade secret, privileged or as confidential commercial or financial information.

4. Cameron requests that the information identified in paragraph 5(v) below be withheld from the public on the following bases:

   <u>Trade secrets and commercial information obtained from a person and privileged or confidential</u>

   The material and information provided herewith is so designated by Cameron, in accordance with those criteria and procedures, for the reasons set forth below.

5. Pursuant to the provisions of paragraph (b) (4) of Section 2.390 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 Cameron.

   (ii) The information is of a type customarily held in confidence by Cameron and not customarily disclosed to the public. Cameron 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 Cameron policy and provides the rational basis required. Furthermore, the information is submitted voluntarily and need not rely on the evaluation of any rational basis.

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 Cameron's competitors without license from Cameron 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 Cameron, its customer or suppliers.

(e) It reveals aspects of past, present or future Cameron or customer funded development plans and programs of potential customer value to Cameron.

(f) It contains patentable ideas, for which patent protection may be desirable.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (a), (b) and (c), above.

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

(a) The use of such information by Cameron gives Cameron a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Cameron competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Cameron ability to sell products or services involving the use of the information.

(c) Use by our competitor would put Cameron 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 Cameron of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Cameron in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Cameron 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 10 CFR §§ 2. 390, 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 is the submittal titled:

Subject: Cameron Engineering Report ER-734 Rev 4 "Bounding Uncertainty Analysis for Thermal Power Determination at Watts Bar Unit 2 Using the LEFM ✔ + System"

- Table of Contents page contains partial proprietary information
- Pages 4, 5, 7, and 8 contain partial proprietary information
- Appendix A, A.4 and A.5 cover pages contain partial proprietary information
- Appendices A.1, A.2, A.4, A.5 and B are proprietary in their entirety

It is designated therein in accordance with 10 CFR §§ 2.390(b)(1)(i)(A,B), with the reason(s) for confidential treatment noted in the submittal and further described in this affidavit. This information is voluntarily submitted for use by the NRC Staff in their review of the accuracy assessment of the proposed methodology for the LEFM CheckPlus System used by Watts Bar Unit 2 for flow measurement at the licensed reactor thermal power level of 3459 MWt.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Cameron 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 Cameron effort and the expenditure of a considerable sum of money.

In order for competitors of Cameron 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.