~~**Proprietary Information - Withhold From Public Disclosure Under 10 CFR 2.390**~~
~~**The balance of this letter may be considered non-proprietary upon removal of Attachment 3.**~~

Entergy Operations, Inc.
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Killona, LA 70057-3093
Tel 504-464-3786

Paul Wood
Manager, Regulatory Assurance
Waterford 3

W3F1-2019-0082

December 5, 2019

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

Subject: Transmittal of Slides for Second Partially Closed Presubmittal Meeting with Entergy Operations, Inc. to Discuss a Planned License Amendment Request for Digital Instrumentation and Control Modification at Waterford Steam Electric Station, Unit 3 (EPID L-2019-LRM-0079)

Waterford Steam Electric Station, Unit 3
NRC Docket No. 50-382
Renewed Facility Operating License No. NPF-38

Reference: Meeting Notice, "Second Partially Closed Presubmittal Meeting with Entergy Operations, Inc. to Discuss a Planned License Amendment Request for Digital Instrumentation and Control Modification at Waterford Steam Electric Station, Unit 3 (EPID L-2019-LRM-0079)," (ADAMS Accession No. ML19337B567), dated November 26, 2019

A partially closed meeting between Entergy Operations, Inc. (Entergy) and the U.S. Nuclear Regulatory Commission (NRC) staff is scheduled for December 11, 2019. The purpose of this meeting is to discuss one feature of a planned license amendment request to replace the Waterford 3 Core Protection Calculator and Control Element Assembly Calculator Systems in accordance with Digital Instrumentation and Control (DI&C) Interim Staff Guidance (ISG) DI&C-ISG-06, Revision 2.

Attached to this letter are:

- Presubmittal Meeting Slides, "Waterford Unit 3 CPC/CEAC Replacement License Amendment Request NRC Technical Meeting" [Westinghouse document WAAP-11619-NP (Non-Proprietary)] (Attachment 1).

- Westinghouse Letter CAW-19-4979, Affidavit, Proprietary Information Notice, and Copyright Notice (Attachment 2).

- Presubmittal Meeting Slides, "Waterford Unit 3 CPC/CEAC Replacement License Amendment Request NRC Technical Meeting" [Westinghouse document WAAP-11619-P (Proprietary)] (Attachment 3).

As Attachment 3 contains information proprietary to Westinghouse Electric Company LLC ("Westinghouse"), it is supported by an Affidavit signed by Westinghouse, the owner of the information. The Affidavit sets forth the basis on which the information may be withheld from public disclosure by the Nuclear Regulatory Commission ("Commission") and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.390 of the Commission's regulations.

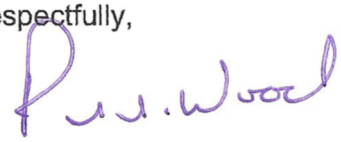
Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse Affidavit should reference CAW-19-4979 and should be addressed to Camille T. Zozula, Manager, Infrastructure & Facilities Licensing, Westinghouse Electric Company, 1000 Westinghouse Drive, Suite 165, Cranberry Township, Pennsylvania 16066.

This letter contains no new regulatory commitments.

If you have any questions or require additional information, please contact the Regulatory Assurance Manager, Paul Wood, at (504) 464-3786.

Respectfully,



Paul Wood

PW/mmz

Attachments:
1. Waterford Unit 3 CPC/CEAC Replacement License Amendment Request NRC Technical Meeting Slides [Westinghouse document WAAP-11619-NP (Non-Proprietary)]
2. Westinghouse Letter CAW-19-4979
3. Waterford Unit 3 CPC/CEAC Replacement License Amendment Request NRC Technical Meeting Slides [Westinghouse document WAAP-11619-P (Proprietary)])

cc: NRC Region IV Regional Administrator
NRC Senior Resident Inspector – Waterford 3
NRC Project Manager - Waterford 3

Attachment 1

W3F1-2019-0082

Waterford Unit 3 CPC/CEAC Replacement License Amendment Request
NRC Technical Meeting Slides
[Westinghouse document WAAP-11619-NP (Non-Proprietary)]

Waterford Unit 3

CPC/CEAC Replacement License Amendment Request

NRC Technical Meeting

Entergy®

Participants

Entergy/Westinghouse

- John Schrage, Senior Staff Engineer - Corporate Licensing, Entergy
- Jerry Holman, Safety Analysis SME, Entergy
- Amanda Charleroy, Westinghouse Manager, Transient Analysis, Westinghouse
- Kim Jones, Fellow Engineer, Transient Analysis, Westinghouse

Purpose and Goal of Meeting

- Meeting Purpose: Describe the approach that Entergy will utilize in the planned LAR for the Core Protection Calculator (CPC)/Control Element Assembly Calculator (CEAC) upgrade project to demonstrate that the calculated response times in the new CPCS design are bounded by the accident analysis (i.e., DI&C ISG-06, Revision 2, Item D.2.4.1).

- Meeting Goal: Inform NRC and obtain feedback concerning topics and information that should be included in LAR.

Agenda

- Topic Statement
- Estimated Response Time Changes
- Estimated Impacts on Response Times
- Impact on Safety Analysis
- Qualitative Assessment Approach
- Conclusion

Topic Statement

- Changes in calculated response times will impact the Waterford analyses of record (AOR).
- Revised analyses using the updated Common Q CPC response times will not be completed prior to LAR submittal in June 2020.
- This concludes the open portion of the meeting.

End of Open Portion

Estimated Response Time Changes

- The current Waterford 3 CPCS response time acceptance criteria is based on the calculated response time of legacy CPCS digital equipment, and not a bounding response time assumption.

- Common Q architectural changes will result in some response times for the new CPC system to be slightly different than those credited in Waterford-3 Safety Analysis Report (SAR) Chapter 15 Non-LOCA Safety Analyses

Conclusion

- The LAR will include a complete description of Waterford-specific calculated Common Q response times, and comparison with current response times.

- The LAR will include a complete description of qualitative approach used to evaluate the impact of the Common Q response times on the Chapter 15 non-LOCA transients that use a CPCS trip.

- The revised safety analyses will be completed prior to new fuel load, in accordance with 10 CFR 50.59 process. The 50.59 process will ensure the CPC response time changes remains within the existing operating margins.

Estimated Response Time Changes (cont.)

- Common Q Architectural Changes
  - Single minicomputer to multiple Programmable Logic Controllers (PLCs) in a channel
  - Multiplication of CEACs from 2 to 8
  - Conservative estimates in the Common Q calculation
- Gathering data from the additional components [ ] [a,c] the overall time required for CPC to complete its calculations and functions.
- The calculated response times will be determined as part of design process, with an expected completion date of January 2020.
- The expected Waterford-3 Common Q response times are based on the Palo Verde Nuclear Generation Stations (PVNGS) calculated Common Q values.

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

Estimated Impact on Response Times

Table 1
Examples Waterford-3 Current versus Expected Common Q Response Time Assumption

	Waterford-3 Current Analysis Assumption Response Time msec	[ ]a,c	[ ]a,c
Neutron Flux Power from Excore Detector	275	[ ]a,c	[ ]a,c
CEA Position – CPC	1343	[ ]a,c	[ ]a,c
Cold Leg Temperature (Tcold)	370	[ ]a,c	[ ]a,c
Hot Leg Temperature **Variable Overpower Trip** **Hot Leg Saturation Trip**	370 2952	[ ]a,c [ ]a,c	[ ]a,c [ ]a,c
RCP Shaft Speed	232	[ ]a,c	[ ]a,c
Pressurizer Pressure	270	[ ]a,c	[ ]a,c

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Impacted Safety Analyses

Table 2 Representative Chapter 15 Events Impacted		
CPCS Auxiliary Trip Functions	**SAR Chapter 15 Events**	**[ ] a,c**
Variable Overpower Trip	HFP and HZP CEA Bank Withdrawal, Excess Load, Pre-trip Steam Line Break, CEA Ejection	[ ] a,c
ΔTcold Trip	Asymmetric SG Transient	[ ] a,c
RCP Shaft Speed Trip	Loss of Forced Reactor Coolant Flow, Single RCP Shaft Seizure/Sheared Shaft	[ ] a,c
Hot Leg Saturation Trip	SG Tube Rupture	[ ] a,c
Pressurizer Pressure	Letdown Line Break	[ ] a,c

Table 2 presents the impact on expected Common Q assumed response time assumptions for a representative set of Non-LOCA safety analyses from SAR Chapter 15.

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(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

Qualitative Approach - Safety Analysis Impacts

- June 2020 CPC/CEAC LAR will utilize a qualitative approach, comparing the new calculated response times against the acceptance criteria, to demonstrate that Safety Analysis limits will not be exceeded with the calculated changes in response times.
- 2015 Waterford LAR requested approval to increase the average and slowest CEA drop time by 200 msec.
  - The analytical approach that Entergy utilized to support the 200 msec delay in CEA drop time will be used to determine the impact of [ ] [a,c] CPC response times on affected safety analyses.
  - The Common Q [ ] [a,c] in CPCS response times produces the same effect as the 2015 license amendment, but the [ ] [a,c] in response times are significantly smaller.
- There will be no changes to the accident analyses methodologies. The reload methodology will account for any changes in CPC response time by utilizing existing COLSS and CPC operating margins.
- The following tables demonstrate that after accounting for new response times, the Chapter 15 non-LOCA Safety Analysis will still meet the acceptance criteria.

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

Qualitative Approach - Safety Analysis Impacts (cont.)

Table 3A
Assessment Results for the Loss of Reactor Coolant Flow

Parameter	Previous Analysis Value	Analysis Value for 200 msec Delay	Expected Value including Response Time of [ ] a,c	Acceptance Criteria
DNBR	1.302	1.282(1)	[ ] a,c	≥ 1.24
Peak Pressure, psia	2395	2415	[ ] a,c	≤ 2750

1) **Value based on 200 msec change only; reported value is 1.293 which includes other conservatisms.**

Table 3B
Assessments Result for the Pre-Trip Steam Line Break

Parameter	Previous Analysis Value	Analysis Value for 200 msec Delay	Expected Value including Response Time of [ ] a,c	Acceptance Criteria
DNBR	1.428	1.365	[ ] a,c	NA
Fuel Failure, %	0	0	[ ] a,c	≤ 8

Table 3C
Assessment Results for the Uncontrolled CEA Bank Withdrawal from HZP

Parameter	Previous Analysis Value	Analysis Value for 200 msec Delay	Expected Value including Response Time of [ ] a,c	Acceptance Criteria
DNBR	3.44	2.90	[ ] a,c	≥ 1.24
Full Power Seconds Limit, (sec)	1.35	1.49	[ ] a,c	≤ 2.53(1)
Fuel Centerline Temp. °F	< 3500	< 3500	[ ] a,c	< 4663(2)

1) **The 2.53 seconds corresponds to a fuel centerline temperature of 3500 °F.**
2) **Actual Criteria for maximum allowed burnup.**

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

Questions?

Attachment 2

W3F1-2019-0082

Westinghouse Letter CAW-19-4979

As Attachment 3 contains information proprietary to Westinghouse Electric Company LLC, it is supported by an Affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the commission and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.390 of the Commission's regulations

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:
COUNTY OF BUTLER:

(1) I, Zachary S. Harper, have been specifically delegated and authorized to apply for withholding and execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse).

(2) I am requesting the proprietary portions of WAAP-11619-P be withheld from public disclosure under 10 CFR 2.390.

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

(4) Pursuant to 10 CFR 2.390, 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 Westinghouse and is not customarily disclosed to the public.

(ii) Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar technical evaluation justifications 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 purchasing the right to use the information.

AFFIDAVIT

(5) Westinghouse has policies in place to identify proprietary information. 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 competitive 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 Westinghouse's competitors without license from Westinghouse 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, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

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

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

(6) The attached documents are bracketed and marked to indicate the bases for withholding. The justification for withholding is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters

AFFIDAVIT

refer to the types of information Westinghouse customarily holds in confidence identified in Sections (5)(a) through (f) of this Affidavit.

I declare that the averments of fact set forth in this Affidavit are true and correct to the best of my knowledge, information, and belief.

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

Executed on: 12/4/2019

Zachary S. Harper, Manager
Licensing Engineering

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and non-proprietary versions of a document, furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the Affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

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