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Paul Wood
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Waterford 3

W3F1-2020-0017

March 12, 2020

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

Subject: Transmittal of Slides for Fourth 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-2020-LRM-0016)

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

Reference: Meeting Notice, "Fourth 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-2020-LRM-0016)," (ADAMS Accession No. ML20059N287), dated February 28, 2020

A partially closed meeting between Entergy Operations, Inc. (Entergy) and the U.S. Nuclear Regulatory Commission (NRC) staff is scheduled for March 19, 2020. The purpose of this meeting is to discuss a planned license amendment request (LAR) regarding the effect of a digital modification to the core protection calculator and control element assembly calculator at Waterford Steam Electric Station, Unit 3. Entergy will discuss the effect of the planned modification on the plant's Technical Specifications, Failure Mode and Effects Analysis, and Vendor Oversight Program.

Attached to this letter are:

- Presubmittal Meeting Slides, "Waterford Unit 3 CPC/CEAC Replacement License Amendment Request NRC Pre-submittal Meeting #3" [Westinghouse document WAAP-11715-NP (Non-Proprietary)] (Attachment 1).

- Westinghouse Letter CAW-20-5015, which includes the Affidavit, Proprietary Information Notice, and Copyright Notice (Attachment 2).
- Presubmittal Meeting Slides, "Waterford Unit 3 CPC/CEAC Replacement License Amendment Request NRC Pre-submittal Meeting #3" [Westinghouse document WAAP-11715-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-20-5015 and should be addressed to Zachary S. Harper, Manager, Licensing Engineering, 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 Pre-submittal Meeting #3 [Westinghouse document
WAAP-11715-NP (Non-Proprietary)]
 2. Westinghouse Letter CAW-20-5015
 3. Waterford Unit 3 CPC/CEAC Replacement License Amendment Request
NRC Pre-submittal Meeting #3 [Westinghouse document
WAAP-11715-P (Proprietary)]

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

Attachment 1

W3F1-2020-0017

**Waterford Unit 3 CPC/CEAC Replacement License Amendment Request
NRC Pre-submittal Meeting #3
[Westinghouse document WAAP-11715-NP (Non-Proprietary)]**

Waterford Unit 3 CPC/CEAC Replacement License Amendment Request NRC Pre-submittal Meeting #3

March 19, 2020



Participants

Entergy Waterford Unit 3

- John Schrage, Senior Staff Engineer - Corporate Licensing
- Loren Miller, Project Manager, CPC Replacement Project
- David Constance, Assistant Operations Manager - Support
- Alan Harris, Site Regulatory Assurance
- Pareez Golub, Major Fleet Projects - Engineering

Westinghouse

- Warren Odess-Gillett, Licensing Lead
- Steven Merkiel, Senior Engineer

Pre-submittal Meeting Purpose

- Engage with NRC Staff prior to LAR submittal and describe the WF3 CPC/CEAC digital upgrade
- Solicit Staff feedback prior to LAR submittal to facilitate a more efficient NRC review

Agenda

Open Portion

- Project Milestones
- Acronym List

Closed Portion

- Technical Specification Changes
- FMEA & FMEDA Discussion
- VOP Update
- Miscellaneous Topics
- Test Procedure Plan



Pre-submittal Meeting Open Portion

Project Milestones

- Draft LAR Submitted 6/2020
- NRC Pre-submittal Meeting 6/2020
- LAR Submittal 7/2020 *
- Request NRC approval 7/2021 *
- System Installation (RF 24) 4/2022

* Discuss Expectations, Timing and Impact of 6/2020 Submittal of Draft LAR

Acronym List

Alternate Review Process	ARP
Asymmetrical Steam Generator Trip	ASGT
Auxiliary Multiplexer	Aux MUX
Axial Shape Index	ASI
CEA Withdrawal Prohibit	CWP
Common Cause Failure	CCF
Control Element Assembly	CEA
Control Element Assembly Calculator	CEAC
Control Element Assembly Position Display System	CEAPDS
Control Panel	CP
Core Operating Limit Supervisory System	COLSS
Core Protection Calculator	CPC
Core Protection Calculator System	CPCS
Departure From Nucleate Boiling Ratio	DNBR
Digital Instrumentation and Control	DI&C
Electromagnetic Interference/Radio Frequency Interference	EMI/RFI
Electro-magnetic Compatibility	EMC
Equipment Qualification	EQ
Equipment Qualification Summary Report	EQSR

Acronym List

Flat Panel Display	FPD
Generic Open Item	GOI
Human Factors Engineering	HFE
Inter-Range Instrument Group	IRIG
Institute of Electrical and Electronics Engineers	IEEE
Interim Staff Guidance	ISG
License Amendment Request	LAR
Local Power Density	LPD
Main Control Room	MCR
Maintenance Test Panel	MTP
Operator Module	OM
Plant Protection System	PPS
Plant Specific Action Item	PSAI
Pressurizer	PZR
Quality Assurance	QA
Radial Peaking Factor	RPF
Reactor Coolant Pump	RCP
Reactor Protection System	RPS
Record of Changes	ROC

Acronym List

Reed Switch Position Transmitter	RSPT
Requirements Traceability Matrix	RTM
Response Time Test	RTT
Safety Evaluation Report	SER
Secure Development and Operational Environment	SDOE
Secure Development Environment	SDE
Secure Operational Environment	SOE
Single Point Vulnerabilities	SPV
Site Acceptance Test	SAT
Software Program Manual	SPM
Standard	Std.
System Requirements Specification	SyRS
Technical Specifications	TS
Topical Report	TR
United States Nuclear Regulatory Commission	NRC
Variable Overpower Trip	VOPT
Vendor Oversight Plan	VOP
Waterford Unit 3	WF3
Westinghouse Common Qualified Platform	Common Q

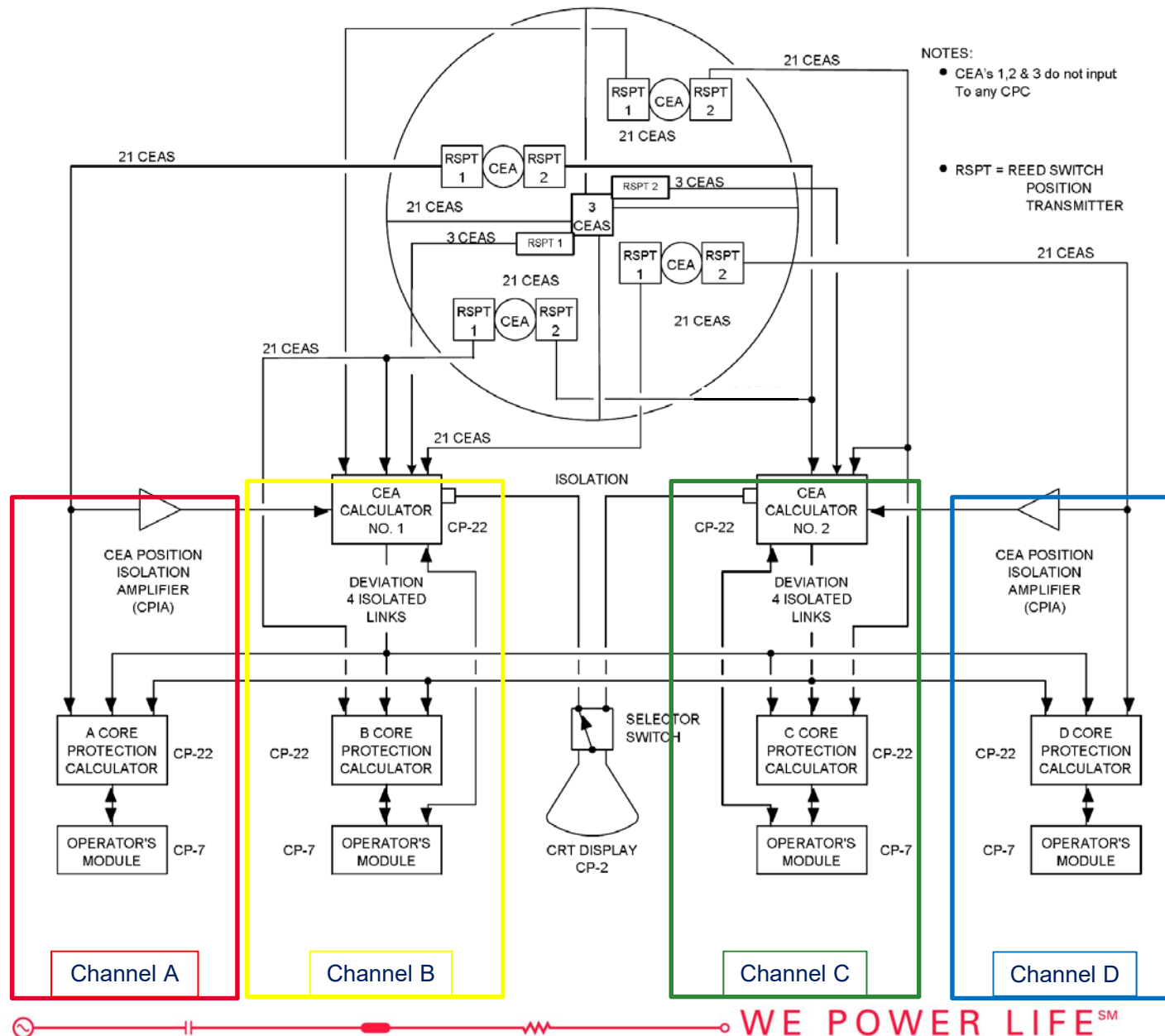


Pre-submittal Meeting Closed Portion



Technical Specification Changes

CPC/CEAC System Overview



CPC/CEAC System Overview

Westinghouse Proprietary Class 2

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Technical Specification Changes

Waterford 3 will use the Palo Verde TSs as benchmark, noting the below differences:

- PV - NUREG 1432 Improved Standard Tech Specs
WF3 - Custom Tech Specs
- PV - dedicated CEAC TS 3.3.3
WF3 - CEACs included in TS 3.3.1 with CPCs
- WF3 utilizing operational flexibility allowed by
8 CEAC design configuration

Technical Specification Changes

(Refer to handout of TS markups)

2.2.1 Reactor Trip Setpoints

Table 2.2-1 "Reactor Protective Instrumentation Trip Setpoint Limits"

- Combined CPC, CEAC, LPD, DNBR under single Functional Unit 9

3.1.3.1 CEA Position

SR 4.1.3.1.1 CEA Position Verification

- Revised wording to align with 8 CEAC configuration

3.2.4 DNBR Margin

Reformatted LCO wording similar to Palo Verde

- Separated conditions into COLSS in Service and COLSS Out of Service
- Action statements unchanged from current WF3 TS

Technical Specification Changes

(Refer to handout of TS markups)

3.3.1 Reactor Protective Instrumentation

SR 4.3.1.2 Reactor Trip Response Time

- added CPC and CEAC to exemptions from Response Time Testing

SR 4.3.1.4 Isolation Amp and Optical Isolator checks

- Deleted entire SR

SR 4.3.1.5 Auto Restart count verification

- Deleted entire SR

SR 4.3.1.6 Cabinet High Temperature Alarm

- Deleted entire SR

SR 4.3.1.7 CPC Output Trip Test

- New SR to perform manual trip test

Technical Specification Changes

(Refer to handout of TS markups)

3.3.1 Reactor Protective Instrumentation

Table 3.3-1 "Reactor Protective Instrumentation"

- Combined CPC, CEAC, LPD, DNBR under single Functional Unit 9
- Revised values under Total No. of Channels, Channels to Trip, and Minimum Channels OPERABLE to align with 8 CEAC configuration
- Added Notes (g), (h) and (i) addressing CEAC & CPC operability
- Revised entry criteria for Action 6 depending on number of CEACs Inoperable.

NOTE: Actions taken are unchanged, based on impact on CPCs.

- Deleted Action 7 addressing Auto Restarts

Technical Specification Changes

(Refer to handout of TS markups)

3.3.1 Reactor Protective Instrumentation

Table 4.3-1 "Reactor Protective Instrumentation Surveillance Requirements"

- Combined CPC, CEAC, LPD, DNBR under single Functional Unit
- Replaced all Channel Functional Test requirements for CPCS (Functional Unit 9) with "NONE"
- Deleted Note (6) describing refuel interval trip test requirement
- Deleted Note (9) for verification of addressable constant values

6.8.1 Procedures and Programs

- Note (2) updated with Common Q Software Program Manual information

Technical Specification Changes

Surveillance Requirements Removed

- TS SR 4.3.1.3 (RTT of the CPCS portion of the SR)
- TS SR 4.3.1.4 (Isolation Amplifier)
- TS SR 4.3.1.5 (CPC/CEAC Operability)
- TS SR 4.3.1.6 (High Temperature Alarm)
- TS Table 4.3-1 (CPC Functional Testing)

Technical Specification Changes

The LAR will propose eliminating certain TS Surveillance Testing by crediting self-diagnostics of Common Q.

- CPCS Response Time Testing
- CPCS Functional Testing
- Refer to draft CPCS TS markups

Technical Specification Changes

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Technical Specification Changes

a,c

Surveillance Requirement Elimination

- **SR 4.3.1.1 (Channel Functional Testing of the CPCS portion of the SR)**
- **SR 4.3.1.3 (CPCS portion of the RTT SR)**
- **SR 4.3.1.4** – Isolation amplifiers and opto-isolators no longer part of the CPCS design, so this SR is no longer needed.
- **SR 4.3.1.5** – This SR was in reference to the legacy CPCS auto-restart feature that does not exist in the Common Q CPCS (the processor module halts). As a result, this SR is no longer required to ensure operability of the CPCS based on self-diagnostics being credited to confirm operability of the system.
- **SR 4.3.1.6** – This SR is no longer required to ensure operability of the CPCS after receipt of a high-cabinet temperature alarm based on design margins and self-diagnostics being credited to confirm operability of the system.

Remaining Surveillance Requirements

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FMEA and FMEDA Discussion

Overview of FMEAs

Failure Modes and Effects Analysis (FMEA)

- FMEAs are used to reveal potential single points of vulnerability within a system design.
- The Waterford 3 CPCS FMEA will be included with LAR submittal.
 - Based on Reference Design CPCS FMEA
 - Modified by changes outlined in the Waterford 3 CPCS System Requirements Specification (SyRS)

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Overview of FMEDAs

Failure Modes, Effects, and Diagnostic Analysis (FMEDA)

- FMEDA tables within Section B.6 of the LTR are used to show self-diagnostic coverage for CPCS-related failure modes (based on the specific WF3 CPCS architecture).
- The self-diagnostics are either implemented in the platform or the application Software, and are defined within Section B.5 of the LTR.

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VOP UPDATE

Software Development Oversight

Vendor Oversight – Audit Update

Planned Audits (dates are tentative):

- Regression Analysis for the CPC Reference Design (March 9-13, 2020)
 - Includes software test plans and results, IV&V reports, and the regression analysis documents
- Requirements Traceability (May 2020)
 - Includes system requirements specifications, drawings, analysis, calculations, etc.
- Regression Analysis for the WF3 changes (Aug 2020)
 - Includes the software test plans and results, IV&V reports, and the regression analysis documents
- Testing Observation and Requirements Traceability (Sep-Oct 2020)
 - Includes observation of testing for the WF3 project associated with the WF3 software and hardware

Vendor Oversight Plan (VOP)

VOP describes the auditing of the WF3 design process in accordance with the following plans from the NRC-approved Westinghouse Software Program Manual (SPM):

- Software Safety Plan
- Software Quality Assurance Plan (SQAP)
- Software Verification and Validation Plan*
- Software Configuration Management Plan*
- Software Test Plan*
- Secure Development and Operational Environment Plan

*There is also a WF3 specific plan

Vendor Oversight Plan (VOP)

VOP provides acceptance criteria for the following software lifecycle development topics – criteria is based, in part, on NRC input to industry (ML19087A230):

- Quality Assurance
- Configuration Management
- Software Verification and Validation (V&V)
- Software Safety
- Secure Development Environment
- Software Lifecycle Processes (Requirements, Design, Implementation, Integration, and Test)



MISCELLANEOUS TOPICS

FSAR Impacts

The draft FSAR markup will be provided – for information only – with the LAR as part of the LTR.

EQ Summary Report (EQSR)

- Entergy will submit an EQ Summary Report that will document that the generic Common Q platform type tests meet the WF3 site requirements
- The next slide lists the components included in the EQSR
- This list is included in the Licensing Technical Report attached to the LAR, Section 4 “Hardware Equipment Qualification (D.3)”
- Further equipment qualification testing and/or analysis required after detailed design phase due to obsolescence, e.g.:
 - HSL modems
 - Power supply assembly
 - Interposing relays

EQSR Scope of Components

- Operators Module /Maintenance and Test Panel (MTP)
 - PC Node Box (Additional analysis and/or testing may be required based on final mounting design)
 - MTP Keyboard
- AC160 Racks
 - Seismic Stiffening Kit with Fan (Additional analysis and/or testing may be required based on final mounting design)
- AC160 Modules
 - PM646A
 - CI631
 - AI688
 - DP620
 - DI620
 - AO650
 - DO625

Common Q Topical Report

- The Licensing Technical Report will be attached to the LAR and will reference:
 - WCAP-16097-P-A, “Common Qualified Platform Topical Report”, Revision 4, (the latest NRC-approved Common Q Topical Report version)
 - WCAP-16096-P-A, “Software Program Manual for Common Q™ Systems”, Revision 5

ISG-06 “Living Documents”

- ISG-06 defines living documents as “documents associated with software development [that] will be revised as system development activities progress”
- Reviewing the required submittals from ISG-06 Enclosure B for the AR process (see next slide), Entergy does not anticipate nor has scheduled revisions to these submittals, with one exception:
 - System Requirements Specification (SyRS) (inferred by item 1.5 in the next slide)

ISG-06 Enclosure B Excerpt

	A R	Tier			Plant-Specific Information Submitted with License Amendment Request (Phase 1 for Tier 1, Tier 2, and Tier 3)
		1	2	3	
1.1	X				(Summary of) Application Software Planning and Processes (see D.4)
1.2	X				(Summary of) Vendor Oversight Plan (see C.2.2)
1.3	X	X	X		Approved Topical Report Safety Evaluation (see D.5)
1.4	X	X	X	X	System Description (see D.1)
1.5	X	X	X	X	System Architecture (see D.2)
1.6	X	X	X	X	(Summary of) Hardware Equipment Qualification (see D.3)
1.7	X	X	X	X	(Unified Compliance/Conformance Matrix for) IEEE Std 603-1991 and 7-4.3.2-2003 (see D.6)
1.8	X	X	X	X	(Changes to) Technical Specifications (see D.7)
1.9	X	X	X	X	Setpoint Methodology and Calculations (see D.7) Provided when technical specification setpoint methodology changes or calculations deviate from or are not addressed in an applicable referenced NRC-approved topical report
1.10	X	X	X	X	Secure Development and Operational Environment (see D.8)

Living Documents (cont.)

- SyRS: At present only one revision is planned after the Licensing Technical Report is issued March 2020:
 - This revision is planned for May/June 2020
 - Incorporate editorial/clarification comments captured as the design phase commences
 - Would be available for NRC staff audit
- In addition, the NRC staff requested that the FMEA be submitted to support the elimination of certain surveillances.
 - The FMEA is considered a living document that is reviewed after each life cycle phase for possible updating.



Test Procedure Plan

WF3 CPCS Test Procedure Plan

- System Level Integration
 - One Channel System Test
 - Procedure: April 2021
 - Report: July/August 2021
- Factory Acceptance Test (FAT)
 - Four Channel FAT
 - Procedure: June 2021
 - Report: August 2021
- Site Acceptance Test (SAT)
 - Performance November 2021

Questions?

Attachment 2

W3F1-2020-0017

Westinghouse Letter CAW-20-5015

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-11715-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

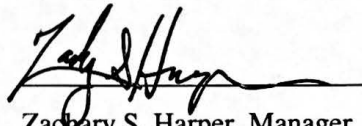
AFFIDAVIT

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: 3/12/2020


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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The reports transmitted herewith each bear a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in these reports which are necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.390 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. With respect to the non-proprietary versions of these reports, the NRC is permitted to make the number of copies beyond those necessary for its internal use which are necessary in order to have one copy available for public viewing in the appropriate docket files in the public document room in Washington, DC and in local public document rooms as may be required by NRC regulations if the number of copies submitted is insufficient for this purpose. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.