

Vogle PEmails

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The attached document is provided for NRC Staff review in advance of the September 13 Pre-Submittal Meeting for LAR-18-023, "Request for License Amendment: Protection and Safety Monitoring System Watchdog Timer and Common Q Design Description Changes."

This version of the draft LAR does not contain proprietary information and may be released to the Public. The non-Public (i.e., Proprietary) version of this draft LAR will be provided in a separate email. The Westinghouse affidavit supporting this request to withhold proprietary information is attached to both this email as well as the email that will provide the non-Public (Proprietary) version of this draft LAR.

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Southern Nuclear Operating Company

ND-18-1085

Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment:

PMS Watchdog Timer and Common Q Design Description Changes

(Publicly Available Information)

(LAR-18-023)

(This Enclosure consists of 23 pages, including this cover page)

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Request for License Amendment: PMS Watchdog Timer and Common Q Design Description
Changes (Publicly Available Information) (LAR-18-023)

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Request for License Amendment: PMS Watchdog Timer and Common Q Design Description Changes (Publicly Available Information) (LAR-18-023)

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) hereby requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

1. SUMMARY DESCRIPTION

The proposed changes would revise the COLs to accurately describe the design and use of the central processing unit (CPU) watchdog timers (WDTs) in the microprocessors of the Processing Section (PS) and the Communication Section (CS) of the Advant Controller 160 (AC160) processor module of the Common Qualified (Common Q) platform portion of the protection and safety monitoring system (PMS). This LAR also proposes several changes to the design description of the Common Q platform, as presented in the Updated Final Safety Analysis Report (UFSAR) and various supporting technical reports that are incorporated by reference into the UFSAR.

The requested amendment proposes a change to UFSAR information that involves a departure from Tier 2* information that is incorporated by reference into the UFSAR. This enclosure requests approval of the license amendment necessary to implement this Tier 2* departure and the involved Tier 2 UFSAR change.

2. DETAILED DESCRIPTION

Background

It was identified that the []^{a,c} within the AC160 software is not enabled as described in WCAP-16097-P-A, Revision 3 (LAR Section 2.1.1). This condition is identified in Westinghouse Nuclear Safety Advisory Letter (NSAL)-17-2, "AC160 Processor Module Stall Timers Not Activated as Described in Licensing Basis." In addition, the []^{a,c} cycle time provided in WCAP-16097-P-A does not reflect the as-built system. Therefore, WCAP-16097-P-A needs to be changed to accurately reflect the []^{a,c} and the []^{a,c} timeout window (LAR Section 2.1.2).

As part of an extent of condition performed on the Common Q platform, it was discovered that several additional design descriptions within WCAP-16097-P-A also need to be updated. This includes an updated description of:

- The timing of a SYSDia test (LAR Section 2.2)
- Where AC160 system software is executed (LAR Section 2.3)
- The memory capacity of the CS section of the processor module (LAR Section 2.4)
- When the OVERL Terminal is set to TRUE (LAR Section 2.5)
- What the processor module does when a CI communication module fails (LAR Section 2.6)

To support these changes, several conforming administrative changes are made to the UFSAR, WCAP-16674, and WCAP-16675 (LAR Sections 2.1.3 and 2.7).

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The changes to WCAP-16097-P-A are proposed as changes to WCAP-15927-P-A, Table 3-2, which provides alternatives to the processes and descriptions in WCAP-16097-P-A.

System and Platform Overview

Protection and Safety Monitoring System Overview

The protection and safety monitoring system (PMS) is the AP1000 plant safety-related instrumentation and controls (I&C) system that provides detection of off-nominal conditions and actuation of appropriate safety-related functions necessary to achieve and maintain the plant in a safe shutdown condition. The PMS consists of four redundant divisions, designated A, B, C, and D.

Common Qualified Platform Overview

The PMS is based on the Common Qualified (Common Q) platform, as described in WCAP-16097-P-A, Revision 3. The Common Q platform is designed with a modular structure. It consists, in part, of the following major building blocks: Advant Controller 160 (AC160) processor module, input and output (I/O) modules, and Advant Fieldbus (AF100 bus) communication.

- Processor Module

[

○

○

]a,c

The Processor Module contains three hardware watchdog timers as discussed below.

- AF100 Communication Interface

The processor modules within an AC160 controller share data with each other using the global memory resident on the AF100 bus Communication Interface Module (Model CI631). Each processor module sends data to the CI631 communication interface module for use on the AF100 bus.

- I/O Modules

The AC160 uses the S600 I/O system. A range of I/O modules is available, covering analog and digital signals of various types. In addition, there are modules for temperature measurement and rotational speed measurement. The process signals are connected to the front of the I/O modules. [

] ^{a,c}

Common Q Fault Detection

The AC160 performs a variety of diagnostic and supervision functions to continuously monitor the correct operation of the system. Each of the modules has diagnostic functions. The CPU module monitors the system as a whole by collecting all the diagnostic information and checking the consistency of the hardware configuration and the application software. The supervision functions are subdivided into the following groups: problem detection, signaling the nature of the problem, automatic reaction to problems.

Severe problems (e.g., component errors) in the processor module stop the processor module. These errors also switch an internal watchdog timer relay in the processor module. For Common Q applications, this relay is used to provide an alarm, and in some applications, conservative failure responses of the affected division. For example, the watchdog timer relay for the PMS reactor trip Local Coincidence Logic Subsystem processor modules (note: this subsystem combines partial trip signals and generates a trip output signal to the reactor trip switchgear and initiation logic when 2 out of 4 divisions indicate a trip) will generate a trip signal when the watchdog timer relay is open.

Each module is equipped with two light emitting diode indicators, FAULT and RUN. During normal operation, the green RUN LED is lit on all modules. The red FAULT LED lights only if a problem occurs on the module. The diagnostic function displays an error code on the front of the CPU module to facilitate fault tracing.

- Common Q Watchdog Timer Overview

[

] ^{a,c} The WDTs check for internal faults within the processor modules. If a fault is identified, the processor module is placed into a safe state.

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- CPU Overload]^{a,c}
[

- Loss of Communication]^{a,c}

The AF100 Communication Interface (CI) module, CI631, monitors the validity of the data sets it is supposed to receive. If no data has been received for four cycles for the data set or when the communication interface has failed, the database element for the data set will be flagged as failed. The control module programming will constantly monitor the database element flag and perform the appropriate error processing.

The AC160 CI631 module configuration provides on-line surveillance to ensure that it is in operational condition. The CI module contains self-diagnostics and reports any errors to the application in the processor module. This error report can be used for alarm or screen indication to direct technicians to the specific AC160 node that has the CI failure. Normally the failed module will be indicated by a red light on the front panel.

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PMS Failure Modes and Effects Analysis Overview

The PMS failure modes and effects analysis (FMEA) is documented in WCAP-16438, Revision 3 (as modified by the changes provided in UFSAR Appendix 7A.4). The PMS FMEA examines failures of the major PMS components. For each postulated failure, the PMS FMEA assigns a fault classification. This fault classification includes a failure criticality class, a failure detectability class, and a failure likelihood class (see WCAP-16438 Table 3-1, Table 3-2, and Table 3-3). The failure criticality, detectability, and likelihood classes are used to rank the criticality, detectability, and likelihood of each failure. A final safety conclusion is determined based on these classifications. Through the process of examining the relevant failure modes and making a final safety determination for each failure with the given fault classifications, it is concluded that the AP1000 protection system maintains its safety functions during single point failures.

Description and Justification of Proposed Changes

2.1 Common Q Watchdog Timer Description Update

2.1.1 Revise Description of []^{a,c} Enable

As described in NSAL-17-2, the []^{a,c}
within the AC160 is not activated as described in WCAP-16097-P-A.
Specifically, WCAP-16097-P-A Section 5.2.1.2.1 item 6 states []

] ^{a,c}

WCAP-16675 Section 2.2.8 describes what happens when a BPL processor stalls. The text states []

] ^{a,c}

Brief Description of the Activity

The CPU WDT is deleted in WCAP-16097-P-A Sections 5.2.1.2.1 and 5.2.1.3, Table 5-1, and Figure 5-13. This includes deleting a sentence from the description of the []^{a,c} in Table 5-1 which states that it performs the same function as the []^{a,c}

A statement is added to WCAP-16097-P-A Section 5.2.1.3 to clarify that the []^{a,c} are the credited watchdog for closing Generic Open Item 7.3 from the Common Q Topical Report.

WCAP-16675 Section 2.2.8 is changed []

] ^{a,c}

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Technical Justification of the Activity

There are no PMS requirements that credit the []^{a,c}

The AP1000 PMS has other mitigations to protect against a stalled processor. Specifically, upon detection of an internal processor module fault, the []^{a,c} will put the PMS in a safe state. []

[]^{a,c} See WCAP-16438 for an evaluation of specific PMS faults. Westinghouse has qualified the []^{a,c} for this purpose as discussed in the closure of Common Q Topical Report Generic Open Item 7.3 (see WCAP-16097-P-A, Revision 0 and Revision 3 Generic Open Items [ADAMS Accession No. ML030550776] and the Common Q summary qualification report).

If a software anomaly were to occur, the operator would hear and see an alarm of PMS Division Fault via the Alarm Presentation System and see an indication of a Division Fault on the Safety Display. The red FAULT LED lights on the failed processor module would also provide indication of a fault. These indications would be due to the other diagnostics that would annunciate as a result of the same software anomaly. The operator would take the necessary actions to resolve the fault via the maintenance procedures in the PMS technical manual.

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure	Description of the Proposed Change
WCAP-15927, Section 3.10 (WCAP-16097-P-A, Section 5.2.1.2.1, Item 6)	Delete Item 6 from Section 5.2.1.2.1.
WCAP-15927, Section 3.10 (WCAP-16097-P-A, Section 5.2.1.3)	Update to state that the [] ^{a,c} are the credited watchdog for closing Generic Open Item 7.3 from the Common Q Topical Report.
WCAP-15927, Section 3.10 (WCAP-16097-P-A, Table 5-1)	Delete the [] ^{a,c} from the table.
WCAP-15927, Section 3.10 (WCAP-16097-P-A, Figure 5-13)	Delete the [] ^{a,c} from the figure.
UFSAR Appendix 7A.8 (WCAP-16675 Section 2.2.8)	Change to remove discussion of the [] ^{a,c}

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2.1.2 Correction of Watchdog Timeout Window

As described above, [

]a,c

Brief Description of the Activity

[

]a,c

Technical Justification of the Activity

[

]a,c

Therefore, this activity does not adversely impact the safety function of the processor modules.

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure

Description of the Proposed Change

WCAP-15927 Section 3.10
(WCAP-16097-P-A Section
5.2.1.2.1)

Change [

]a,c

WCAP-15927 Section 3.10
(WCAP-16097-P-A
Table 5-1)

Change [

]a,c

WCAP-15927 Section 3.10
(WCAP-16097-P-A
Figure 5-13)

Change [

]a,c

2.1.3 Removal of Duplicate Information from WCAP-16675

WCAP-16675 contains duplicate information on the watchdog timers from the information included in WCAP-16097-P-A. Specifically, parts of WCAP-16675 Section 2.2.8 and the entirety of Figure 2-4 and Table 2-1 are duplicated in

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WCAP-16097-P-A Section 5.2.1.3, Table 5-1, and Figure 5-13. Therefore, the information can be removed from WCAP-16675.

Brief Description of the Activity

The first paragraph of WCAP-16675 Section 2.2.8 is changed to point to the Common Q alternatives in WCAP-15927 for a description of the processor module WDTs. WCAP-16675 Figure 2-4 and Table 2-1 are deleted.

Technical Justification of the Activity

This is an administrative change only to remove duplicate licensing basis information. No content is being removed from the licensing basis information. The information will be maintained in WCAP-15927, which is a Tier 2* document.

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure	Description of the Proposed Change
UFSAR Appendix 7A.8 (WCAP-16675 Section 2.2.8)	Change the first paragraph of WCAP-16675 Section 2.2.8 to point to the Common Q alternatives in WCAP-15927 for a description of the processor module WDTs.
UFSAR Appendix 7A.8 (WCAP-16675 Figure 2-3)	Delete Figure 2-4.
UFSAR Appendix 7A.8 (WCAP-16675 Table 2-1)	Delete Table 2-1.

2.2. SYSDia Test Timer Correction

[

]a,c

[

]a,c

Brief Description of the Activity

[

]a,c

Technical Justification of the Activity

[

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Proposed Licensing Basis Change Descriptions

Text, Table, or Figure

WCAP-15927 Section 3.10
(WCAP-16097-P-A Section
5.2.1.2.1)

Description of the Proposed Change

Update to state [

]a,c

]a,c

2.3. Revise Description of AC160 System Software Execution Location

WCAP-16097-P-A Section 5.2.1.1.1 states, [

]a,c

[

]a,c

Brief Description of the Activity

WCAP-16097-P-A Section 5.2.1.1.1 is updated [

]a,c

Technical Justification of the Activity

The safety function and operability of the processor module is not adversely impacted by this change.

[

]a,c

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure

WCAP-15927 Section 3.10
(WCAP-16097-P-A Section
5.2.1.1.1)

Description of the Proposed Change

Update to state [

]a,c

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2.4 Processor Communication Section Memory Capacity Change

WCAP-16097-P-A Section 5.2.1.1.1 states, “A second Motorola MC68360 processor for HSL communications, with an extra 512 Kbytes nonvolatile memory (Flash PROM) for the system software and an extra 2 Mbytes SRAM is provided for communications.” However, the CS of the processor module has 512 Kbyte RAM, not 2 Mbytes of RAM.

Brief Description of the Activity

The description of the memory capacity of the processor module is changed from 2 Mbytes of RAM to 512 Kbyte of RAM to match the as-built design.

Technical Justification of the Activity

The CS of the processor module has 512 Kbyte of SRAM, which is sufficient memory for the CS software.

If the CS software is larger than the available CS memory, then the user will not be able to load the software into the processor module. The actual size of the CS software is less than 512 Kbyte. Therefore, the reduced size of the CS memory described in WCAP-16097-P-A will not impact the functionality of the CS software.

The size of the memory does not contribute to the safety function or operability of the CS of the processor module.

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure	Description of the Proposed Change
WCAP-15927 Section 3.10 (WCAP-16097-P-A Section 5.2.1.1.1)	Change the description of the memory capacity of the processor module from 2 Mbytes of RAM to 512 Kbyte of RAM.

2.5 Change to Description of when the Overload (OVERL) Terminal is set to TRUE

[

] ^{a,c}

WCAP-16097-P-A, Section 5.3.1.1 states [

] ^{a,c}

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Brief Description of the Activity

WCAP-16097-P-A, Section 5.3.1.1 is updated [

] ^{a,c}

Technical Justification of the Activity

[

] ^{a,c} Therefore, this activity does not impact the ability to detect high CPU load conditions and, therefore, does not have an adverse impact on the system to perform its safety function.

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure

Description of the Proposed Change

WCAP-15927 Section 3.10
(WCAP-16097-P-A Section
5.3.1.1)

Update to state [

] ^{a,c}

2.6 Deletion of Description of the Processor Module [

] ^{a,c}

WCAP-16097-P-A Section 5.4.1.4.1 states that the processor module will reboot the CI communication module if the CI communication module has a transient error. However, the processor does not reboot the CI communication module. [

] ^{a,c} The failed CI communication modules will be indicated by a red light on the front panel and will not be rebooted.

Brief Description of the Activity

The text in WCAP-16097-P-A Section 5.4.1.4.1 that states the PM reboots the CI communication module is deleted.

Technical Justification of the Activity

The PMS FMEA evaluates [

] ^{a,c} This change does not impact these analyses, including the fault classification. The system continues to fail to a safe state. Therefore, the proposed change is consistent with the current PMS FMEA and does not adversely impact the PMS safety functions.

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure

Description of the Proposed Change

WCAP-15927 Section 3.10
(WCAP-16097-P-A Section
5.4.1.4.1)

Delete the text that states [^{a,c} the PM reboots the CI communication module.

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2.7 Conforming Administrative Changes

Various conforming changes are necessary to support the changes described above. This includes:

- Updating the revision number of WCAP-15927 throughout the licensing basis
- Updating the title for WCAP-15927 Section 3.10 and Table 3-2 because it contains additional exceptions unrelated to design processes
- Adding a note to Reference 1 of WCAP-16674 (i.e. WCAP-16097-P-A, Rev.3) to state, “as modified by the Topical Report alternatives in WCAP-15927, Rev.7”
- Adding Reference 15 to WCAP-16674 (i.e., WCAP-15927).

Brief Description of the Activity

- WCAP-15927 is changed from Revision 6 to Revision 7 throughout the licensing basis. The revision number of WCAP-15927 is deleted in UFSAR Appendix 1A.
- WCAP-15927, Section 3.10 (including the titles of the section and Table 3-2) is changed to capture the fact that the alternative approaches to WCAP-16097-P-A now include technical material unrelated to design processes.
- A note is added to Reference 1 of WCAP-16674 (i.e. WCAP-16097-P-A, Rev. 3) to state, “as modified by the Topical Report alternatives in WCAP-15927, Rev.7.”
- Reference 15 (i.e., WCAP-15927) is added to WCAP-16674.

Technical Justification of the Activity

This is an administrative change only. See the other changes for an evaluation of the change to technical content to WCAP-16097-P-A and WCAP-15927.

It is unnecessary to list the revision number of WCAP-15927 in UFSAR Appendix 1A; the revision number listed in UFSAR Table 1.6-1 and Chapter 7 is sufficient.

Proposed Licensing Basis Change Descriptions

Text, Table, or Figure	Description of the Proposed Change
UFSAR Table 1.6-1	<ul style="list-style-type: none">• Update WCAP-16096 and WCAP-16097 references from Revision 6 to Revision 7.• Update WCAP-15927 reference from Revision 6 to Revision 7. Update document number to refer to both P (proprietary) and NP (non-proprietary) versions.
UFSAR Appendix 1A	Delete the revision number of WCAP-15927.
UFSAR Section 7.1.7	<ul style="list-style-type: none">• Update WCAP-16096 and WCAP-16097 references from Revision 6 to Revision 7.

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- Update WCAP-15927 reference from Revision 6 to Revision 7. Update document number to refer to both P (proprietary) and NP (non-proprietary) versions.

UFSAR Appendix 7A.7
(WCAP-16674 References
Section)

A note is added to Reference 1 of WCAP-16674 (i.e. WCAP-16097-P-A, Rev.3) to state, "as modified by the Topical Report alternatives in WCAP-15927, Rev.7".

WCAP-15927 is added as Reference 15.

WCAP-15927 Section 3.10

WCAP-15927, Section 3.10 and Table 3-2 is changed to capture the fact that the alternative approaches to WCAP-16097-P-A now include technical material unrelated to design descriptions.

Common Evaluation of Changes

The proposed changes do not affect the radiological source terms (i.e., amounts and types of radioactive materials released, their release rates and release durations) used in the accident analyses. The PMS Common Q platform equipment involved in these proposed changes does not affect a fission product barrier. No system or design function or equipment qualification is adversely affected by the proposed changes. The changes do not result in a new failure mode, malfunction or sequence of events that could adversely affect a radioactive material barrier or safety-related equipment. The proposed changes do not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures.

The SSCs affected by this license amendment request are not used to contain, control, channel, monitor, process or release radioactive and non-radioactive materials. The types and quantities of expected effluents are not changed, and no effluent release path is adversely affected by the proposed changes. Therefore, radioactive or non-radioactive material effluents are not affected by the proposed changes.

Plant radiation zones (as described in UFSAR Section 12.3), controls under 10 CFR 20, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures do not change.

Summary

The proposed changes revise the COLs to accurately describe the design and use of the CPU WDTs in the microprocessors of the PS and CS of the AC160 processor module of the Common Q platform portion of the PMS. This LAR also proposes several changes to the design description of the Common Q platform, as presented in the UFSAR and various supporting technical reports that are incorporated by reference into the UFSAR. The above proposed changes would not adversely affect any safety-related equipment or function, design function, radioactive material barrier or safety analysis.

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3. TECHNICAL EVALUATION (Incorporated into Section 2, above)

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

- 10 CFR Part 52, Appendix D, VIII.B.6 requires prior NRC approval for departure from Tier 2* information. The proposed activity makes changes to WCAP-15927, which is referenced in UFSAR as a Tier 2* document. Therefore, a license amendment request (LAR) (as supplied herein) is required.
- 10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2* information, or the Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of the section. The requested amendment proposes changes to Tier 2 information that involve Tier 2* changes and, thus, requires prior NRC approval.
- 10 CFR 50.55a(a)(1), "Quality Standards for Systems Important to Safety," requires that "Structures, systems, and components must be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed." The Common Q Topical Report was determined to be an acceptable approach to satisfying the regulatory requirements in 10 CFR 50.55a(a)(1) applicable to the Common Q portion of the protection and safety monitoring system. The Common Q Topical Report is modified by the Topical Report alternatives proposed and evaluated in this License Amendment Request. Therefore, it is concluded that the requirements of 10 CFR 50.55a(a)(1) are met.
- 10 CFR 50.55a(h), "Protection and safety systems," approves the 1991 version of IEEE Standard 603, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," including the correction sheet dated January 30, 1995 for incorporation by reference. The Common Q portion of the protection and safety monitoring system described in WCAP-16096 (Revision 4), as modified by the Topical Report alternatives in WCAP-15927 (Revision 7) and the proposed changes to these alternatives in Enclosure 2, continues to meet the requirements in IEEE Standard 603-1991 and, therefore, satisfies 10 CFR 50.55a(h).
- 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants"

The design of the Common Q-based safety systems continues to meet the relevant requirements of GDC 1, 2, 4, 13, and 19 through 25.

General Design Criteria:

- GDC 1, "Quality Standards and Records," states that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed.

The Common Q Topical Report adequately identifies the regulatory guides and industry codes applicable to the Common Q. The Common Q Topical Report was determined to be an acceptable approach to satisfying the regulatory requirements in GDC 1. The changes proposed by this activity do not change the PMS compliance with the regulatory guides or industry standards applicable to the Common Q platform. Therefore, the requirements of GDC 1 are met.

- GDC 2, "Design Basis for Protection Against Natural Phenomena," states that structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena without loss of capability to perform their safety functions.

Westinghouse has identified those systems and components for the safety systems designed to survive the effects of earthquakes, abnormal environments and missiles, and other natural phenomena. These systems and components continue to be consistent with their design bases. Therefore, the requirements of GDC 2 are met.

- GDC 4, "Environmental and Dynamic Effects Design Basis," states that structures, systems, and components important to safety shall be designed to accommodate the effects of, and to be compatible with, the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents.

Equipment in the Common Q-based portion of the PMS is qualified for a mild environment per the AP1000 Equipment Qualification Program. The proposed change does not affect the Electromagnetic Interference (EMI)/ Radio Frequency Interference (RFI) testing, environmental testing, or seismic testing that is performed to demonstrate that the equipment in the Common Q portion of the PMS will function under prescribed mild environment conditions. Therefore, the requirements of GDC 4 are met.

- GDC 13, "Instrumentation and Control," states that instrumentation shall be provided to monitor and control variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions

The Common Q portion of the protection and safety monitoring system appropriately supports actions to monitor and operate the nuclear power unit in a safe and reliable manner during normal operation, anticipated operational occurrences, and accident conditions. The proposed changes do not adversely

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impact the PMS ability to monitor and operate the AP1000 nuclear power units. Therefore, the requirements of GDC 13 are met.

- GDC 19, "Control Room," states that a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions.

The proposed change does not adversely affect the ability of the Common Q portion of the PMS to appropriately support actions to monitor and operate the nuclear power unit from a control room in a safe and reliable manner during normal operation, anticipated operational occurrences, and accident conditions. Therefore, the requirements of GDC 13 are met.

- GDC 20, "Protection System Functions," states that the protection system shall be designed to initiate automatically the operation of appropriate systems to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and to sense accident conditions and to initiate the operation of systems and components important to safety.

The proposed change does not affect conformance to IEEE Std 603-1991 by the Common Q portion of the PMS, nor does it affect the ability of the PMS to detect accident conditions and anticipated operational occurrences in order to initiate reactor shutdown consistent with the accident analysis presented in UFSAR Chapter 15. Therefore, the requirements of GDC 20 are met.

- GDC 21, "Protection System Reliability and Testability," states that the protection system shall be designed for high functional reliability and in-service testability commensurate with the safety functions to be performed.

The Common Q portion of the PMS facilitates conformity to the guidelines of Regulatory Guide 1.22 and Regulatory Guide 1.118 for periodic testing, the guidelines of Regulatory Guide 1.47 for bypassed and inoperable status indication, and IEEE Std 379-2000, as supplemented by Regulatory Guide 1.53, for the application of the single-failure criterion, and satisfies the requirements of IEEE Std 603-1991 with regard to system reliability and testability. The proposed change does not affect aspects of the Common Q portion of the PMS that would have an adverse effect on system reliability and testability, as demonstrated by continued conformance to these Regulatory Guides and industry guidance. Therefore, the requirements of GDC 21 are met.

- GDC 22, "Protective System Independence," states that the protection system shall be designed to assure that the effects of natural phenomena, and of normal operating, maintenance, testing, and postulated accident conditions on redundant channels do not result in loss of the protection function or shall be demonstrated to be acceptable on some other defined basis.

The proposed change does not adversely affect the plant's existing compliance with Regulatory Guide 1.75 for protection system independence, nor does it

adversely affect the ability of the Common Q portion of the PMS to satisfy the requirement of IEEE Std 603-1991 with regard to system independence. Therefore, the requirements of GDC 22 are met.

- GDC 23, "Protective System Failure Modes," states that the protection system shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy, or postulated adverse environments are experienced.

The AP1000 failure modes and effects analysis adequately demonstrates how the protection and safety monitoring system will operate with a single failure under all postulated operating conditions. The proposed activity does not adversely affect this analysis and the PMS continues to fail to a safe state. Therefore, the requirements of GDC 23 are met.

- GDC 24, "Separation of Protection and Control," states that the protection system shall be separated from control systems to the extent that failure of any single control system component or channel, or failure or removal from service of any single protection system component or channel which is common to the control and protection systems, leaves intact a system satisfying all reliability, redundancy, and independence requirements of the protection system.

Regulatory Guide 1.153 endorses IEEE Std 603-1991 as an acceptable method for satisfying the requirements of GDC 24. The Common Q portion of the PMS and the plant operating control systems continue to satisfy the requirements of IEEE Std 603-1991 with regard to protection and control system interactions. Therefore, the requirements of GDC 24 are met.

- GDC 25, "Protection System Requirements for Reactivity Control Malfunctions," states that the protection system shall be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems.

The Common Q portion of the PMS continues to satisfy protection system requirements for malfunctions of the reactivity control system such as accidental withdrawal of control rods. Therefore, the requirements of GDC 25 are met.

4.2 Precedent

No precedent is identified.

4.3 Significant Hazards Consideration

The proposed changes would revise the Combined Licenses (COLs) to accurately describe the design and use of the central processing unit (CPU) watchdog timers (WDTs) in the microprocessors of the Processing Section (PS) and the Communication Section (CS) of the Advant Controller 160 (AC160) processor module of the Common Q platform portion of the protection and safety monitoring system (PMS). This LAR also proposes several changes to the design description of the Common Qualified (Common Q) platform,

as presented in the Updated Final Safety Analysis Report (UFSAR) and various supporting technical reports that are incorporated by reference into the UFSAR.

The requested amendment proposes a change to UFSAR information that involves a departure from Tier 2* information that is incorporated by reference into the UFSAR. This enclosure requests approval of the license amendment necessary to implement this Tier 2* departure and the involved Tier 2 UFSAR change.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No.

The proposed change would revise the COLs in regard to the design description of the watchdog timers of the Common Q portion of the protection and safety monitoring system (PMS) and other design description aspects of the Common Q platform. The watchdog timers are components within the processor modules that check for internal faults within the processor modules and place the processor module into a safe state if an internal fault is detected. The proposed change revises the description of the design and use of the diagnostic functions of the watchdog timers and the Common Q platform and does not alter any safety-related functions of the PMS or any supported systems. The change does not affect the operation of any systems or equipment that initiate an analyzed accident or alter any structures, systems, and components (SSC) accident initiator or initiating sequence of events.

The change does not impact the support, design, or operation of mechanical and fluid systems. There is no change to plant systems or the response of systems to postulated accident conditions. There is no change to the predicted radioactive releases due to normal operation or postulated accident conditions. Consequently, the plant response to previously evaluated accidents or external events is not adversely affected, nor does the proposed change create any new accident precursors.

Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed change would revise the COLs in regard to the design description of the watchdog timers of the Common Q portion of the protection and safety monitoring system (PMS) and other design description aspects of the Common Q platform. The proposed change does not affect the operation of any systems or equipment that may initiate a new or different kind of accident or alter any SSC such that a new accident initiator or initiating sequence of events is created.

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

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

Response: No.

The proposed change would revise the COLs in regard to the design description of the watchdog timers of the Common Q portion of the PMS and other design description aspects of the Common Q platform. The PMS continues to meet the requirements of the applicable 10 CFR Part 50, Appendix A, General Design Criteria for the design of safety-related reactor protection systems, engineered safety features systems, and other plant systems, and the supporting industry standards for the design of digital systems.

No safety analysis is adversely affected by the proposed changes. Furthermore, no system function, design function, or equipment qualification will be adversely affected by the change. Consequently, no safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed change, thus the margin of safety is not reduced.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a 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.

4.4 Conclusions

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. Pursuant to

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10 CFR 50.92, the requested change does not involve a Significant Hazards Consideration.

5. ENVIRONMENTAL CONSIDERATIONS

The details of the proposed changes are provided in Section 2 of this license amendment request.

The proposed changes would revise the Combined Licenses (COLs) to accurately describe the design and use of the central processing unit (CPU) watchdog timers (WDTs) in the microprocessors of the Processing Section (PS) and the Communication Section (CS) of the Advant Controller 160 (AC160) processor module of the Common Q platform portion of the protection and safety monitoring system (PMS). This LAR also proposes several changes to the design description of the Common Q platform, as presented in the Updated Final Safety Analysis Report (UFSAR) and various supporting technical reports that are incorporated by reference into the UFSAR.

The requested amendment proposes a change to UFSAR information that involves a departure from Tier 2* information that is incorporated by reference into the UFSAR. This enclosure requests approval of the license amendment necessary to implement this Tier 2* departure and the involved Tier 2 UFSAR change.

This review has determined the proposed change requires an amendment to the COL. However, a review of the anticipated construction and operational effects of the requested amendment has determined the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) *There is no significant hazards consideration.*

As documented in Section 4.3, Significant Hazards Consideration Determination, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration determined that (1) the requested amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the requested amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the requested amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the requested amendment does not involve a 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.

(ii) *There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.*

The proposed changes in the requested amendment revise the COLs in regard to various aspects of equipment in the protection and safety monitoring system (PMS). The PMS is the AP1000 plant safety-related instrumentation and controls (I&C) system that provides detection of off-nominal conditions and actuation of appropriate safety-related functions necessary to achieve and maintain the plant in a safe shutdown condition. The proposed changes are unrelated to any aspect of plant construction or operation that would

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introduce any change to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents), or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed changes do not affect any effluent release path or diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the requested amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

- (iii) *There is no significant increase in individual or cumulative occupational radiation exposure.*

The proposed changes in the requested amendment revise the COLs in regard to various aspects of equipment in the PMS. Plant radiation zones (addressed in UFSAR Section 12.3) are not affected, and controls established under 10 CFR 20 to preclude a significant increase in occupational radiation exposure are not affected. Therefore, the requested amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the requested amendment, it has been determined that anticipated construction and operational effects of the requested amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed exemption is not required.

6. REFERENCES

None.

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Enclosure 3

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Proposed Changes to Licensing Basis Documents

(Publicly Available Information)

(LAR-18-023)

Insertions Denoted by Blue Underline and Deletions by ~~Red~~ Strikethrough
Omitted text is identified by three asterisks (* * *)

(This Enclosure consists of 12 pages, including this cover page)

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Proposed Changes to Licensing Basis Documents (Publicly Available Information)

(LAR-18-023)

1. UFSAR Section 1.6, Table 1.6-1, “Material Referenced”:

Revise Tier 2* text applicable to DCD Section 7.1 in UFSAR Table 1.6-1 to reflect changes to referenced WCAPs.

DCD Section Number	Westinghouse Topical Report Number	Title
* * *		
7.1	* * *	
	[WCAP-16096-P-A WCAP-16096-NP-A]	Software Program Manual for Common Q™ Systems, Revision 4, February 2013 ⁽¹⁾ (as modified by the SPM alternatives in WCAP-15927, Revision 6 <u>7</u>)*
	[WCAP-16097-P-A WCAP-16097-NP-A]	Common Qualified Platform Topical Report, Revision 3, February 2013 (as modified by the Topical Report alternatives in WCAP-15927, Revision 6 <u>7</u>)*
	* * *	
	<u>[WCAP-15927-P WCAP-15927-NP WCAP-15927 (NP)</u>	Design Process for AP1000 Common Q Safety Systems, Revision 7 <u>6</u> , February 2017)*
* * *		

2. UFSAR Appendix 1A, “Conformance with Regulatory Guides”:

- Revise Tier 2 Regulatory Guide conformance position and summary description for Regulatory Guide (RG) 1.152, as follows:

Criteria Section	Referenced Criteria	AP1000/FSAR Position	Clarification/Summary Description of Exceptions
* * *			
Reg. Guide 1.152, Rev. 1, 1/96 – Criteria for Digital Computers in Safety-Systems of Nuclear Power Plants			
Regulatory Guide 1.152, Rev. 2, 1/06 – Criteria for Use of Computers in Safety Systems of Nuclear Power Plants			
Conformance of the design aspects with Revision 1 of the Regulatory Guide is as stated below in the DCD.			
General	ANSI/ IEEE-ANS-7-4.3.2 -1993	Exception	The Common Q portion of the protection and safety monitoring system is developed using the Common Q Software Program Manual (SPM) (as modified by the SPM alternatives in WCAP-15927, Revision 4) and Common Q Topical Report (as modified by the Topical Report alternatives in WCAP-15927, Revision 6). The Common Q SPM and Topical Report were reviewed and approved by the NRC. The Common Q SPM and Topical Report meet IEEE Std. 7-4.3.2-2003, as endorsed by Regulatory Guide 1.152, Revision 3.

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- **Revise Tier 2 Regulatory Guide conformance position and summary description for Regulatory Guide (RG) RG 1.168, as follows:**

Criteria Section	Referenced Criteria	AP1000/ FSAR Position	Clarification/Summary Description of Exceptions
* * *			

Reg. Guide 1.168, Rev. 0, 9/97 and Rev. 1, 2/04 – Verification, Validation, Reviews, and Audits for Digital Computer Software Used in Safety Systems of Nuclear Power Plants

Conformance of the design aspects with Revision 0 of the Regulatory Guide is as stated below in the DCD.

General	Exception	See Chapter 7 for a discussion of the instrumentation and control software program related to Common Qualified Platform (Common Q). The Common Q portion of the protection and safety monitoring system is developed using the Common Q SPM (as modified by the SPM alternatives in WCAP-15927, Revision 6). The Common Q SPM was reviewed and approved by the NRC using the criteria of IEEE Std. 1012-1998 and IEEE Std. 1028-1997 as endorsed by Regulatory Guide 1.168, Revision 1.
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- **Revise Tier 2 Regulatory Guide conformance position and summary description for Regulatory Guide (RG) RG 1.169, as follows:**

Criteria Section	Referenced Criteria	AP1000/ FSAR Position	Clarification/Summary Description of Exceptions
* * *			

Reg. Guide 1.169, Rev. 0, 9/97 – Configuration Management Plans for Digital Computer Software Used in Safety Systems of Nuclear Power Plants

General	Exception	Westinghouse uses the Common Q SPM (as modified by the SPM alternatives in WCAP-15927, Revision 6) to develop and maintain the Common Q portion of the protection and safety monitoring system. The Common Q SPM was reviewed and approved by the NRC using the criteria of Regulatory Guide 1.169, Revision 0 and IEEE 828-2005. The CIM subsystem complies with Regulatory Guide 1.169, Revision 0 with the exception(s) identified below:
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- **Revise Tier 2 Regulatory Guide conformance position and summary description for Regulatory Guide (RG) RG 1.170, as follows:**

Criteria Section	Referenced Criteria	AP1000/ FSAR Position	Clarification/Summary Description of Exceptions
* * *			
Reg. Guide 1.170, Rev. 0, 9/97 – Software Test Documentation for Digital Computer Software Used in Safety Systems of Nuclear Power Plants			
General		Exception	The Common Q portion of the protection and safety monitoring system is developed using the Common Q SPM (as modified by the SPM alternatives in WCAP-15927, Revision 6). The Common Q SPM was reviewed and approved by the NRC using the criteria of Regulatory Guide 1.170, Revision 0 and IEEE 829-1998. The CIM subsystem complies with Regulatory Guide 1.170, Revision 0 with the exception(s) identified below:

- **Revise Tier 2 Regulatory Guide conformance position and summary description for Regulatory Guide (RG) RG 1.172, as follows:**

Criteria Section	Referenced Criteria	AP1000/ FSAR Position	Clarification/Summary Description of Exceptions
* * *			
Reg. Guide 1.172, Rev. 0, 9/97 – Software Requirements Specifications for Digital Computer Software Used in Safety Systems of Nuclear Power Plants			
General		Exception	The Common Q portion of the protection and safety monitoring system is developed using the Common Q SPM (as modified by the SPM alternatives in WCAP-15927, Revision 6). The Common Q SPM was reviewed and approved by the NRC using the criteria of Regulatory Guide 1.172, Revision 0 and IEEE 830-1998. See Chapter 7 for a discussion of the instrumentation and control software program.

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- **Revise Tier 2 Regulatory Guide conformance position and summary description for Regulatory Guide (RG) RG 1.173, as follows:**

Criteria Section	Referenced Criteria	AP1000/FSAR Position	Clarification/Summary Description of Exceptions
* * *			
Reg. Guide 1.173, Rev. 0, 9/97 – Developing Software Life Cycle Processes for Digital Computer Software Used in Safety Systems of Nuclear Power Plants			
General		Exception	Westinghouse uses the Common Q SPM (as modified by the SPM alternatives in WCAP-15927, Revision 6) to develop and maintain the Common Q portion of the protection and safety monitoring system. The Common Q SPM was reviewed and approved by the NRC using the criteria of IEEE 1074-1995 as endorsed by Regulatory Guide 1.173, Revision 0. The CIM subsystem complies with Regulatory Guide 1.173, Revision 0 with the exception(s) identified below.

3. UFSAR Subsection 7.1.7, “References”:

Revise Tier 2* information for references, as shown in the excerpts below:

8. [WCAP-16097-P-A (Proprietary) and WCAP-16097-NP-A (Non-Proprietary), Revision 3, “Common Qualified Platform Topical Report,” February 2013. (Note: as modified by the Topical Report alternative in WCAP-15927, Revision ~~6~~7).]*
9. [WCAP-16096-P-A (Proprietary) and WCAP-16096-NP-A (Non-Proprietary), Revision 4, “Software Program Manual for Common Q™ Systems,” February 2013. (Note: as modified by the Software Program Manual alternatives in WCAP-15927, Revision ~~6~~7).]*

* * *

20. [~~WCAP-15927-P (Proprietary) and WCAP-15927-NP (Non-Proprietary), Revision 7, WCAP-15927, Revision 6 (Non-proprietary),~~ “Design Process for AP1000 Common Q Safety Systems.”]*

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Proposed Changes to Licensing Basis Documents (Publicly Available Information) (LAR-18-023)

4. UFSAR Appendix 7A, “Instrumentation and Controls Licensing Basis Document Changes,” Subsection 7A.7, “WCAP-16674-P and WCAP-16674-NP, AP1000 I&C Data Communication and Manual Control of Safety Systems and Components”:

Revise Tier 2 information in Subsection 7A.7 regarding the References in WCAP-16674-P and WCAP-16674-NP, as follows:

- Revise the Reference section, as follows:
 1. WCAP-16097-P-A, Rev. 0-3 (proprietary), “Common Qualified Platform Topical Report,” Westinghouse Electric Company LLC [\(as modified by the Topical Report alternatives in WCAP-15927, Rev. 7\)](#)

* * *

15. WCAP-15927, Rev. 7, “Design Process for AP1000 Common Q Safety Systems,” Westinghouse Electric Company LLC

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5. **UFSAR Appendix 7A, “Instrumentation and Controls Licensing Basis Document Changes,” Subsection 7A.8, “WCAP-16675-P and WCAP-16675-NP, AP1000 Protection and Safety Monitoring System Architecture Technical Report”:**

Revise Tier 2 information in Subsection 7A.8, following the current directions to revise Section 1.3, as follows:

- Revise Section 2.2.8, “Watchdog Timer Implementation,” as follows:

* * *

[

]^{a,c} [Refer to the Common Q Topical Report alternatives in WCAP-15927, Design Process for AP1000 Common Q Safety Systems,” \(Reference 40\) for a description of the Processor Module Watchdog Timers.](#)

When ~~a stall WDT activation occurs in a BPL processor, it resets the CPU which will terminates, it resets the BPL processor stalls,~~ the HSL communication to the LCLs is terminated. The LCL then marks the BPL data with bad quality. If only the window WDT activates, then the BPL will mark all HSL data as bad quality. In either case, if both BPLs fail than the LCLs go to a 1oo3 for Reactor Trip and 2oo3 for ESFAS coincidence logic for the affected parameter.

* * *

- Delete Figure 2-4, Watchdog Timer Configuration.
- Delete Table 2-1, Processor Module WDT Arrangement Watchdog Timer Summary.

6. **WCAP-15927-P and WCAP-15927-NP, “Design Process for AP1000 Common Q Safety Systems”:**

Revise Tier 2* information in UFSAR Chapter 7 reference document, WCAP-15927-P and WCAP-15927-NP, “Design Process for AP1000 Common Q Safety Systems, as follows:

Note that WCAP-15927 is incorporated by reference as a Tier 2* document, however, the text in this document is not depicted using italics and brackets as is typical of Tier 2* material in the UFSAR (plant-specific DCD).

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- Revise Section 3.10, *Alternative to Processes Defined in WCAP-16097-P-A*, with corresponding change to the Table of Contents, as follows:

3.10 ALTERNATIVE ~~S~~ ~~METHODS~~ TO PROCESSES ~~DEFINED~~ AND DESCRIPTIONS IN WCAP-16097-P-A

Table 3-2 identifies alternatives to the processes ~~defined~~ and design descriptions in WCAP-16097-P-A, "Common Qualified Platform Topical Report" (Reference 4.2.2).

- Revise Table 3-2, Alternative Methods and Design Descriptions to the Common Q Topical Report, as follows:

Table 3-2 Alternative Methods <u>and Design Descriptions</u> to the Common Q Topical Report		
WCAP-16097-P-A Section	WCAP-16097-P-A Text	Alternative
References	27. WCAP-17266, Rev. 0, "Common Q Platform Generic Change Process," Westinghouse Electric Company LLC.	<u>Alternative</u> 27. WCAP-17266, "Common Q Platform Generic Change Process," Westinghouse Electric Company LLC.

a,c

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Table 3-2 Alternative Methods [and Design Descriptions](#) to the Common Q Topical Report

WCAP-16097-P-A Section	WCAP-16097-P-A Text	Alternative

a,c

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- Revise Section 5.2.1.3, Watchdog Timer, as shown in the “*Updated Section 5.2.1.3 Watchdog Timer Text*,” provided below:

[

]

a,c

DRAFT

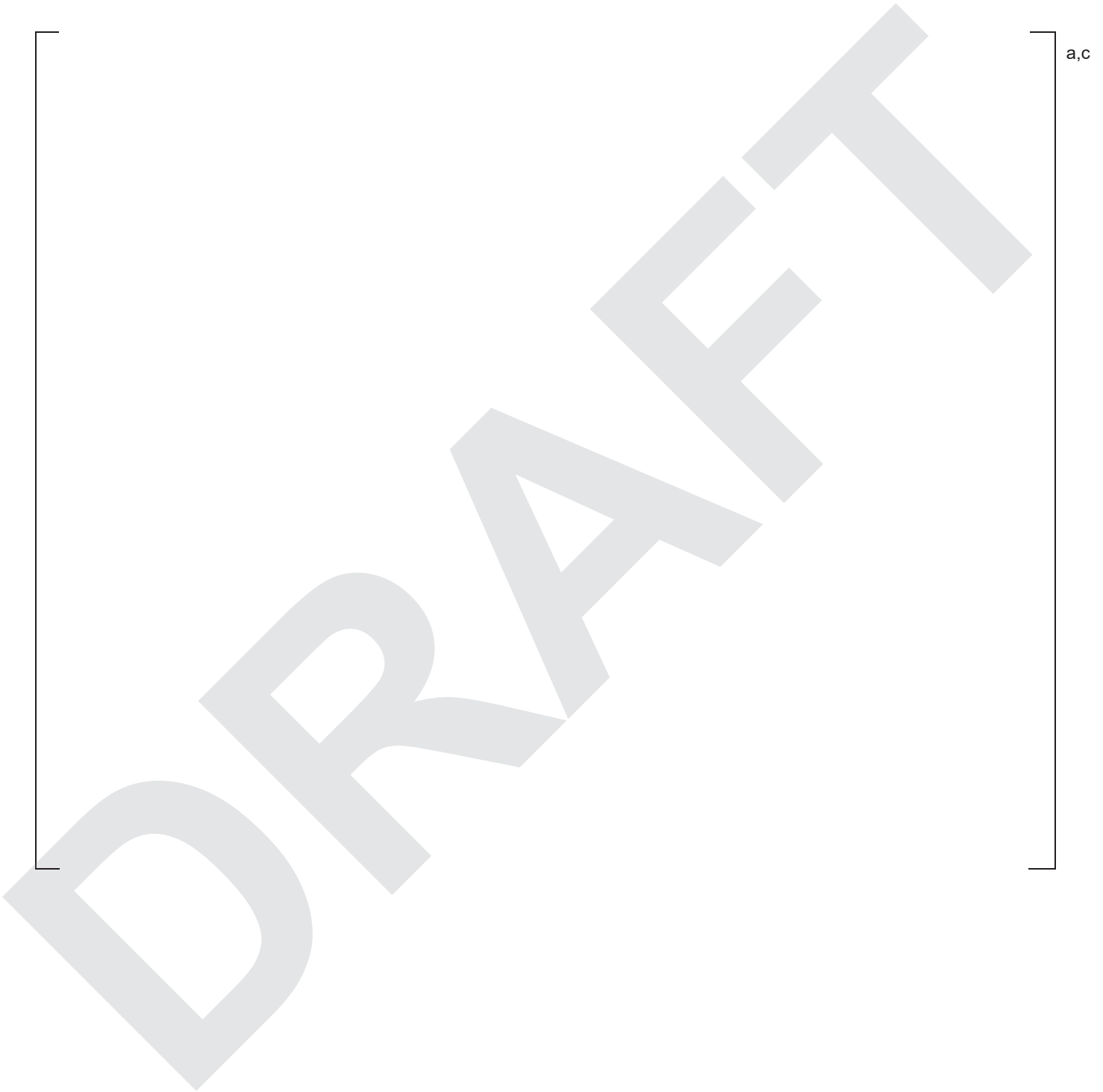
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- Replace Figure 5-13, Watchdog Timer Configuration, with the *Updated Figure 5-13 Watchdog Timer Configuration*, provided below:



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- Revise Table 5-1, Processor Module WDT Arrangement Watchdog Timer Summary, as shown in the *Updated Table 5-1 Processor Module WDT Arrangement Watchdog Timer Summary*, provided below:



Westinghouse Electric Company
1000 Westinghouse Drive
Cranberry Township, Pennsylvania 16066
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Direct tel: (412) 374-4372
Direct fax: (724) 940-8505
e-mail: monohajs@westinghouse.com

CAW-18-4783

September 6, 2018

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: Transmittal of APP-FSAR-GEF-036, "PMS Watchdog Timer Change and Additional Common Q Design Description Changes"

The Application for Withholding Proprietary Information from Public Disclosure is submitted by Westinghouse Electric Company LLC ("Westinghouse"), pursuant to the provisions of paragraph (b)(1) of Section 2.390 of the Nuclear Regulatory Commission's ("Commission's") regulations. It contains commercial strategic information proprietary to Westinghouse and customarily held in confidence.

The proprietary information for which withholding is being requested in the above-referenced response is further identified in Affidavit CAW-18-4783 signed by the owner of the proprietary information, Westinghouse. The Affidavit, which accompanies this letter, 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 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying Affidavit by Southern Nuclear Operating Company.

Correspondence with respect to the proprietary aspects of the Application for Withholding or the Westinghouse Affidavit should reference CAW-18-4783, and should be addressed to Edmond J. Mercier, Manager, Fuels Licensing and Regulatory Support, Westinghouse Electric Company, 1000 Westinghouse Drive, Building 2 Suite 256, Cranberry Township, Pennsylvania 16066.

Jill S. Monahan, Manager
Licensing Inspections and Special Programs



Westinghouse Electric Company
1000 Westinghouse Drive
Cranberry Township, Pennsylvania 16066
USA

Enclosures to CAW-18-4783

1. AFFIDAVIT
2. PROPRIETARY INFORMATION NOTICE and COPYRIGHT NOTICE

ENCLOSURE 1 to CAW-18-4783

AFFIDAVIT

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

COUNTY OF BUTLER:

I, Jill S. Monahan, am authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC ("Westinghouse") and declare that the averments of fact set forth in this Affidavit are true and correct to the best of my knowledge, information, and belief.

Executed on: 9-6-2018

A handwritten signature in dark ink that reads "Jill S Monahan". The signature is written in a cursive style with a horizontal line underneath the name.

Jill S. Monahan, Manager
Licensing Inspections and Special Programs

- (1) I am Manager, Licensing Inspections and Special Programs, Westinghouse Electric Company LLC ("Westinghouse"), 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 rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Nuclear Regulatory Commission's ("Commission's") regulations and in conjunction with the Westinghouse Application for Withholding Proprietary Information from Public Disclosure accompanying this Affidavit.
- (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 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 Westinghouse.
 - (ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse 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 constitute Westinghouse policy and provide the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential 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.
- (iii) There are sound policy reasons behind the Westinghouse system which include the following:
- (a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.
 - (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.
 - (c) Use by our competitor would put Westinghouse 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 Westinghouse of a competitive advantage.
 - (e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.
 - (f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iv) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, is to be received in confidence by the Commission.
- (v) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.
- (vi) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in ND-18-1085, "Request for License Amendment: Protection and Safety Monitoring System Watchdog Timer and Common Q Design Description Changes (LAR-18-023)", for submittal to the Commission, being transmitted by Southern Nuclear Operating Company letter. The proprietary information as submitted by Westinghouse is that associated with review of Licensing Change Package ND-18-1085 (Westinghouse LAR-213, SNC LAR -18-023), and may be used only for that purpose.
- (a) This information is part of that which will enable Westinghouse to:
 - (i) Manufacture and deliver products to utilities based on proprietary designs.

- (b) Further, this information has substantial commercial value as follows:
- (i) Westinghouse plans to sell the use of similar information to its customers for the purpose of licensing of new nuclear power stations.
 - (ii) Westinghouse can sell support and defense of industry guidelines and acceptance criteria for plant-specific applications.
 - (iii) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

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.

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 Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

ENCLOSURE 2 to CAW-18-4783

PROPRIETARY INFORMATION NOTICE and COPYRIGHT NOTICE

PROPRIETARY INFORMATION NOTICE

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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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