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Your ref: Project Number 740
Our ref: DCP/NRC1773

September 8, 2006

Subject: AP1000 COL Standard Technical Report Submittal

In support of Combined License application pre-application activities, Westinghouse is submitting Revision 1 of AP1000 Standard Combined License Technical Report Number 62. This report identifies and justifies standard changes to DCD Section 3.10 and DCD Appendix 3D in the AP1000 Design Control Document. Changes to the Design Control Document identified in Technical Report Number 62 are intended to be incorporated into FSARs referencing the AP1000 design certification or incorporated into the design certification using supplemental rulemaking if Part 52 is revised to permit revision of the design certification. This report is submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in this report is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

The purpose for submittal of this report was explained in a March 8, 2006 letter from NuStart to the U.S. Nuclear Regulatory Commission.

Pursuant to 10 CFR 50.30(b), APP-GW-GLN-006, Revision 1, "Methodology for Qualifying AP1000 Safety Related Electrical and Mechanical Equipment," Technical Report Number 62, is submitted as Enclosure 1 under the attached Oath of Affirmation.

Please note that Revision 0 of this report was issued on May 22, 2006 under letter DCP/NRC1735.

It is expected that when the NRC review of Technical Report Number 62 is complete, the changes to the AP1000 Design Control Document identified in Technical Report 62 will be considered approved generically for COL applicants referencing the AP1000 Design Certification.

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Questions or requests for additional information related to the content and preparation of this report should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,



A. Sterdis, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Attachment

1. "Oath of Affirmation," dated September 8, 2006

/Enclosure

1. APP-GW-GLN-006, Revision 1, "Methodology for Qualifying AP1000 Safety Related Electrical and Mechanical Equipment," Technical Report Number 62, dated September 2006.

cc:	S. Bloom	- U.S. NRC	1E	1A
	S. Coffin	- U.S. NRC	1E	1A
	G. Curtis	- TVA	1E	1A
	P. Grendys	- Westinghouse	1E	1A
	P. Hastings	- Duke Power	1E	1A
	C. Ionescu	- Progress Energy	1E	1A
	D. Lindgren	- Westinghouse	1E	1A
	A. Monroe	- SCANA	1E	1A
	M. Moran	- Florida Power & Light	1E	1A
	C. Pierce	- Southern Company	1E	1A
	E. Schmiech	- Westinghouse	1E	1A
	G. Zinke	- NuStart/Entergy	1E	1A

ATTACHMENT 1

“Oath of Affirmation”

ATTACHMENT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of:)
NuStart Bellefonte COL Project)
NRC Project Number 740)

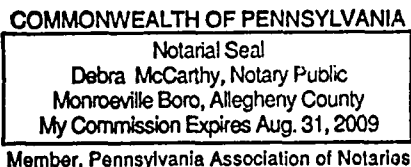
APPLICATION FOR REVIEW OF
"AP1000 GENERAL COMBINED LICENSE INFORMATION"
FOR COL APPLICATION PRE-APPLICATION REVIEW

W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs & Standardization, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.



W. E. Cummins
Vice President
Regulatory Affairs & Standardization

Subscribed and sworn to
before me this day
of September 2006.



Notary Public

ENCLOSURE 1

APP-GW-GLN-006, Revision 1

Methodology for Qualifying AP1000 Safety Related Electrical and Mechanical Equipment

Technical Report Number 62

AP1000 DOCUMENT COVER SHEET

TDC: _____ Permanent File: _____ APY: _____

RFS#: _____ RFS ITEM #: _____

AP1000 DOCUMENT NO. APP-GW-GLN-006	REVISION NO. 1	Page 1 of 14	ASSIGNED TO W-A. Sterdis
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ALTERNATE DOCUMENT NUMBER:

WORK BREAKDOWN #:

ORIGINATING ORGANIZATION: Westinghouse Electric Company

TITLE: Methodology for Qualifying AP1000 Safety Related Electrical and Mechanical Equipment

ATTACHMENTS:	DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION:
CALCULATION/ANALYSIS REFERENCE:	

ELECTRONIC FILENAME APP-GW-GLN-006 Rev. 1	ELECTRONIC FILE FORMAT Microsoft Word	ELECTRONIC FILE DESCRIPTION
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LEGAL REVIEW <i>Tom White</i>	SIGNATURE/DATE <i>on file</i>
PATENT REVIEW <i>MIKE CORLOTTI</i>	SIGNATURE/DATE <i>MIKE CORLOTTI</i>

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REVIEWERS	SIGNATURE/DATE	
VERIFIER P. Sowatskey	SIGNATURE/DATE <i>Paul P. Sowatskey</i> 9/6/06	VERIFICATION METHOD PAGE BY PAGE REVIEW
AP1000 RESPONSIBLE MANAGER D. Adomaitis	SIGNATURE* <i>D. Adomaitis</i>	APPROVAL DATE 9/6/2006

* Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

AP1000 DOCUMENT COVER SHEET

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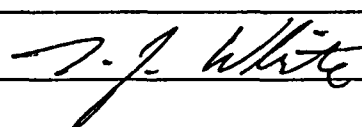
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VERIFIER P. Sowatskey	SIGNATURE/DATE	VERIFICATION METHOD
AP1000 RESPONSIBLE MANAGER D. Adomaitis	SIGNATURE*	APPROVAL DATE

* Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

WESTINGHOUSE ELECTRIC COMPANY
AP1000 Licensing Design Change Document

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Title: Methodology for Qualifying AP1000 Safety-Related Electrical and Mechanical Equipment

Brief Description of the change (what is being changed and why):

During the detailed development of the Methodology for Qualifying AP1000 Safety-Related Electrical and Mechanical Equipment, it was determined that clarification is required to the AP1000 Design Control Document (DCD) for seismic qualification by analysis to be consistent with the current industry standards and practices. Also, clarification is provided to ensure that when qualification by analysis is conducted using the static coefficient method it is performed in a manner that yields conservative results. The methodology of seismic qualification based on test experience will be performed in accordance with Section 9.0 of IEEE 344-1987. The details of the methodology, qualification basis, and supporting data will be executed in accordance with the delineation and details provided in section IV of this report. The updated equipment qualification methodology sections satisfy the AP1000 design criteria and specifications.

I. APPLICABILITY DETERMINATION

This evaluation is prepared to document that the change described above is a departure from Tier 2 information of the DCD (APP-GW-GL-700) that may be included in plant specific FSARs without prior NRC approval.

A.	Does the proposed change include a change to:		
	1. Tier 1 of the AP1000 Design Control Document APP-GW-GL-700	<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	(If YES prepare a report for NRC review of the changes)
	2. Tier 2* of the AP1000 Design Control Document, APP-GW-GL-700	<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	(If YES prepare a report for NRC review of the changes)
	3. Technical Specification in Chapter 16 of the AP1000 Design Control Document, APP-GW-GL-700	<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	(If YES prepare a report for NRC review of the changes)
B.	Does the proposed change involve:		
	1. Closure of a Combined License Information Item identified in the AP1000 Design Control Document, APP-GW-GL-700	<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	(If YES prepare a COL item closure report for NRC review.)
	2. Completion of an ITAAC item identified in Tier 1 of the AP1000 Design Control Document, APP-GW-GL-700	<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	(If YES prepare an ITAAC completion report for NRC review.)

☒ The questions above are answered no, therefore the departure from the DCD does not require prior NRC review unless review is required by the criteria of 10 CFR part 52 Appendix D Section VIII B.5.b. or B.5c

II. TECHNICAL DESCRIPTION AND JUSTIFICATION

Changes are being made to provide clarification and consistency to the practices of IEEE 344-1987, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations."

The changes and justifications are listed below:

1. Changes are being made to the DCD to address Clause 6, (Analysis) of IEEE Std 344-1987 which states "The analysis method is not recommended for complex equipment that cannot be modeled to

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adequately predict its response. Analysis without testing may be acceptable only if structural integrity alone can ensure the design-intended function.” To address this requirement in Subsection 3D.6.2 the use of analysis is clarified by deleting a contradictory paragraph. This proposed change brings this subsection to be consistent with IEEE 344-1987. It does not introduce new qualification methods or qualification criteria. In addition, in Subsection E.3.2 the sentence that states that qualification by analysis alone is not permitted is revised to define the circumstances when it is permitted. These proposed changes make this paragraph consistent with IEEE 344-1987. These changes replace the current rigid restriction on use of analysis to allow its use in a conservative manner in accordance with the industry practices, IEEE standards and the regulatory guides.

2. A change to the DCD is being made to have analysis static coefficient requirements consistent with Clause 6.3, (Static Coefficient Analysis) of IEEE Std 344-1987 which states “A lower static coefficient may be used when it can be shown to yield conservative results.” Subsection E.6.3.2 describes the use of the static coefficient. Information is added to clarify that use of a static coefficient lower than 1.5 is permissible when it is clearly demonstrated that conservative results are attainable.
3. Changes to the DCD are being made to define the methods to be employed to address the practice of qualification by test experience delineated in Clause 9.2 (Experience Data) of IEEE Std 344-1987. Section 3D.7.6 will be updated to define the test experience-based method using previous qualification test data.

III. DCD MARK-UP

Revise the last paragraph of Subsection 3.10.2 as follows:

3.10.2 Methods and Procedures for Qualifying Electrical Equipment, Instrumentation, and Mechanical Components

The seismic qualification of Class 1E safety-related equipment ~~and active valves and dampers~~ may be based on properly documented experience data. *[Seismic qualification based on experience is performed in accordance with Section 9.0 of IEEE 344-1987 on a case-by-case basis. In such cases where experience data are used, aspects of the methodology, qualification basis, and supporting data will be properly documented by the Combined License applicant.]** The methodology, qualification basis, and reference test data for seismic qualification based on test experience are documented in accordance with the recommended practices of Sections 9 and 10 of IEEE 344-1987. Identification of the specific equipment qualified ~~based on using the~~ experience based methodology and the details of the methodology and the corresponding ~~experience-reference test data~~ experience-reference test data for each piece of equipment are included in the equipment qualification ~~file test report~~. The Combined License applicant will identify the specific equipment and include details of the methodology and the corresponding experience data for each piece of equipment.

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Revise first two paragraphs of Subsection 3D.6.2 to read as follows:

3D.6.2 Analysis

The AP1000 equipment qualification program uses analysis for seismic qualification of equipment if the primary requirement is the demonstration of structural integrity during a seismic event. For equipment that performs an active or dynamic function, seismic qualification by analysis may also be used. (See Section E.3 of Attachment E.) However, the similarity between a qualified test unit and an as-supplied unit must be demonstrated unless otherwise justified. (See Section E.3 of Attachment E.) Subsection 3.9.2.2 describes the qualification requirements for safety-related mechanical equipment where a fluid pressure boundary is involved. For those mechanical components that are not pressure boundaries, analysis is performed in compliance with the applicable industry design standard. Where age-sensitive materials, such as gaskets and packing, are used in the assembly of mechanical equipment, the aging of these materials is normally evaluated based on an item-by-item review of the aging characteristics of the material. (See subsection 3D.6.2.3.)

~~The AP1000 equipment qualification program does not establish seismic and environmental qualification of Class 1E electrical or electromechanical equipment for design basis event conditions on the bases of analyses alone. Analysis is employed to supplement testing or to provide verification that the test results are applicable. The following subsections provide examples of the necessary and sufficient conditions under which analysis will be applied in the qualification of safety-related equipment for the AP1000.~~

Revise the last sentence of Appendix D Attachment E, Subsection E.3.2 as follows:

~~Seismic qualification of safety-related electrical equipment by analysis alone is not permitted.~~ recommended for complex equipment that cannot be modeled to adequately predict its response. Analysis without testing may be acceptable provided structural integrity alone can ensure the design-intended function.

Revise the last paragraph of Appendix D Attachment E, Subsection E.6.3.2 as follows:

As an alternative to the response spectrum method, the static coefficient method of analysis may be used. In this method the frequencies of the equipment are not determined, but a static analysis is performed, assuming that a peak acceleration equal to 1.5 times the peak spectral acceleration given in the applicable required response spectrum acts on the structure. The static coefficient of 1.5 takes into account the combined effects of multi-frequency excitation and multimode response for equipment and structures which can be represented by a simple model. A lower static coefficient may be used when it can be demonstrated that it will yield conservative results.

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IV. Test Experience-Based Qualification Methodology

A. Introduction and Purpose

Section 9.0 of IEEE 344-1987 provides guidelines for seismic qualification using experience based data. The qualification of equipment may be accomplished by justifying their similarity with previously qualified equipment that has been qualified at equal or more severe seismic requirements. Similarity of equipment characteristics and of the excitation environment must be established by techniques that can be technically justified. Differences in designs and manufacturing techniques must be considered as part of the technical justification supporting similarity.

The purpose of this section is to define the methodology for seismic qualification of equipment based on test experience-based data for a group of previously tested equipment in compliance with IEEE Std 344-1987. The sections that follow define the process to be employed to meet the experience-based requirements set forth in Section 9 of IEEE 344-1987 and provide descriptions of how the requirements will be met when performing test experience-based qualification.

B. IEEE 344-1987, Section 9.2: Experience Data

Section 9.2 of IEEE 344-1987 provides three sources for experience data. They are identified as follows:

1. Analysis or test data from previous qualification programs
2. Documented data from equipment in facilities that have experienced earthquakes
3. Data from operating dynamic loading or other dynamic environments

Westinghouse may use existing test data or combined test and analysis qualifications as a basis for test experience-based qualification. Earthquake experience and/or operating dynamic loads are not considered as qualification approaches for the AP1000 safety related equipment at this time.

B.1. IEEE 344-1987, Section 9.2.1: Previous Qualification

Section 9.2.1 of IEEE 344-1987 states that existing dynamic and seismic qualification programs of equipment in the nuclear industry can be used to develop an experience data base. The standards also indicate that to utilize an experience data base, the input motions to which the equipment was previously qualified must have been clearly documented, together with pertinent qualification parameters, such as resonance frequencies, damping, and responses throughout the equipment.

1. Test programs of similar types of equipment will be used as the basis for qualification using the test experience-based approach. Only test programs where all identified requirements have been documented will be used.

B.2. IEEE 344-1987 Section 9.2.2: Earthquakes

This section will not be used. At this time, we are not planning to utilize earthquake experience data as a source for seismic qualification of AP1000 safety related equipment.

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B.3. IEEE 344-1987 Section 9.2.3: Other Experience

This section will not be used. At this time, only documented seismic test and qualification data of similar equipment will be used in seismic qualification of AP1000 safety related equipment.

C. IEEE 344-1987 Section 9.3: Similarity

Section 9.3 of IEEE 344-1987 provides guidelines for showing similarity of candidate equipment and previously tested and qualified equipment. The standard identifies that the qualification process for equipment is comprised of the following basic factors:

1. Excitation
2. Physical system (dynamic properties and operability)
3. Dynamic response

Section 9.3 of IEEE 344-1987 identifies that the equipment qualification levels, experience response spectra (ERS) can be used to qualify similar equipment when the equipment seismic requirements are equal to or enveloped by the ERS. The standard also states that when at least two or more dynamically similar items have been qualified to different excitations they may be both shown to be qualified to a composite ERS. The composite ERS may be used for qualification of candidate equipment.

For the Westinghouse test experience-based method, a composite ERS will be generated using the frequency-by-frequency mean of Test Response Spectra (TRS) from a minimum of five independent successful equipment test programs. The Operating Basis Earthquake (OBE) and Safe Shutdown Earthquake (SSE) composite ERS define the lower bound seismic capacity of the group of individual equipment in the front-to-back, side-to-side, and vertical directions.

The IEEE 344-1987 standard identifies the following four subsections in demonstrating similarity:

C.1. IEEE 344-1987 Section 9.3.1 Excitation

Similarity of excitation is described in Section 9.3.1. The section also identifies that test input shall be of at least 15 seconds of strong motion duration. Also, OBE test levels must be documented as part of experience data or lack of fatigue effects must be justified.

To meet the above requirements and establish test experience input motions for tested equipment, the following requirements shall be met.

1. The test input motion shall be multi-frequency and must meet the relevant requirements in the IEEE 344-1987 standard.
2. The test input motion shall be characterized by the test response spectra in the front-to-back, side-to-side and vertical directions.
3. The test input shall be recorded at the mounting points of the equipment.

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4. The test input motion should have broadband response spectra shape with an amplified region of one octave or more. If the test response spectra of the equipment are narrowband, the peak spectral acceleration in the narrowband region shall be reduced by a factor of 0.7.
5. The test input motion shall be biaxial or triaxial. If equipment is susceptible to cross-coupling effects, a reduction factor of 0.7 shall be considered for a biaxial test response spectra.

C.2. IEEE 344-1987 Section 9.3.2: Physical Systems

Section 9.3.2 of the standard indicates that similarity can be established by comparing the pre-dominant resonant frequencies and mode shapes.

C.3. IEEE 344-1987 Section 9.3.3: Dynamic Response

Section 9.3.3 of the standard provides information to evaluate and extend the equipment physical response during testing to other similar systems.

To meet the requirements specified above and establish similarity of candidate equipment to tested equipment (physical systems and dynamic response), the tested equipment and candidate equipment must be shown to meet certain inclusion rules and prohibited features. This will confirm that candidate equipment and tested equipment are similar and share a narrow range of physical, functional, dynamic characteristics, and electrical performance that has been demonstrated during testing. The inclusion rules and prohibited features are listed below. They must be verified during the process of developing test experience-based composite ERS and establishing the qualification of candidate equipment based on test experience.

Inclusion Rules

The inclusion rules are as follows:

- a. Physical characteristics
- b. Design details
- c. Dynamic characteristics
- d. Functions
- e. Equipment type
- f. Manufacturer
- g. Weight
- h. Structural and mechanical designs details
- i. Design features
- j. Size and shape
- k. Vintage
- l. Capacity rating
- m. Load path
- n. Mounting

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- o. Industry practices
- p. Materials
- q. Dominant natural frequencies
- r. Moveable sub-assemblies
- s. Attached items or components
- t. Modifications

Prohibited Features

Prohibited features are design details, materials, construction features, or installation characteristics that have resulted in seismic weaknesses leading to the equipment being incapable of performing its intended safety function(s) or maintaining structural integrity. A list of related prohibited features based on testing shall be compiled and addressed. The bases for their resolution shall also be explained. Failure data from other sources may also need to be considered and included in the prohibited features list. The list should also include prohibited features that would contribute to fatigue failure from low cycle loads from a combination of a number of OBE and SSE events.

C.4. IEEE 344-1987 Section 9.3.4: Operability (Last Requirement in Section 9)

Section 9.3.4 indicates that experience data must provide documented evidence to support the demonstration of proper operability of the equipment during and after the seismic tests. The experience data must provide sound evidence that the equipment performed as required in a similar electrical system.

This last requirement in section 9 will be fulfilled by showing that all safety related components on the candidate equipment have been seismically tested and qualified in the existing test programs. If not, then additional seismic testing of the components to their seismic demands will be performed.

D. Process for Qualification of Candidate Equipment Based on Test Experience Data

The Westinghouse process for qualification of candidate equipment based on test experience data involves the following five steps:

1. Characterization of test motions experienced by the tested equipment
2. Establishment of the composite ERS based on the actual test inputs
3. Characterization of tested equipment
4. Comparison of candidate equipment to tested equipment
5. Documentation of the qualification process

In using test experience for seismic qualification of equipment, all of the above requirements will be shown to be met. The qualification steps will verify that the following requirements are met.

1. The existing qualification programs and experience test data meet the requirements in IEEE 344-1987 standards.
2. The test excitation is at least 15 s of strong seismic motion, well documented in the existing test reports and the qualification seismic levels are well defined.

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3. Similarity of the candidate equipment to tested and qualified equipment is demonstrated by showing the physical systems and their dominant natural frequencies to be similar.
4. The vibration aging seismic requirements and SSE RRS of the AP1000 should be enveloped by the respective composite OBE and SSE ERS of the tested equipment over the frequency range of interest (typically 1-33 Hz). If the RRS is not enveloped it must be justified.
5. The vibration aging seismic requirements and SSE RRS of the AP1000 used for comparison with respective composite OBE and SSE ERS should be the in-structure response spectrum at the mounting location of the candidate equipment. This RRS, as defined in the qualification specification, shall be derived from the SSE. If the RRS is peak-broadened to account for uncertainty or variation of location, then it should be justified that the actual response spectrum at the mounting location is narrow banded.
6. The vibration aging seismic requirements and SSE RRS of the AP1000 used for comparison with the respective composite OBE and SSE ERS should be computed for the same damping value as the composite ERS. Westinghouse uses 5% critical damping in the generation of TRS in seismic qualification test programs. When the damping values of the RRS and the composite ERS are different, additional guidance in 5.3.2 of IEEE 344-1987 may be used for making the comparison.
7. The candidate equipment shall be verified to be within the inclusion rules of tested equipment.
8. The candidate equipment shall be verified to exclude the prohibited features of the tested equipment.
9. The safety function of the candidate equipment including the enclosed or attached devices or subassemblies, if applicable, during and/or after the earthquake shall be demonstrated by the tested equipment or additional test data.
10. The equipment mounting shall be shown similar or equivalent to the tested and qualified mounting configurations or shall be evaluated in accordance with the qualification specification requirements.
11. Since equipment capacity may change with vintage, candidate equipment of newer vintage than the tested equipment shall be evaluated for any significant changes in the design, materials, or fabrication that could reduce its seismic capacity compared to the tested equipment.
12. The qualification of the candidate equipment shall be documented in accordance with the requirements of IEEE 344-1987, Section 10.

E. Limitations

In addition qualification using test experience is limited by the following considerations. If these limitations exist, then seismic qualification using other acceptable methods must be considered.

1. Some complex equipment such as microprocessor-based systems, relays and potentiometers may be difficult to qualify using the experience based method.
2. Insufficient number of independent test items.
3. For pressure boundary components, the capability of the component to perform the specified pressure retaining functions in combination with an earthquake must be addressed separately using appropriate criteria.
4. Applications that required equipment to be exposed to harsh environment or aging (e.g., IEEE Std 323) prior to or during an earthquake require special consideration.

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V. REGULATORY IMPACT

A. FSER IMPACT

There is no impact on the FSER. The changes in the equipment qualification methodology have no effect on design function. This change has no effect on analysis or analysis method. This change has no effect on Tier 1 information.

B. SCREENING QUESTIONS (Check correct response and provide justification for that determination under each response)

1. Does the proposed change involve a change to an SSC that adversely affects a DCD ☐ YES ☒ NO described design function?

There is no change to a design function of any safety related equipment.

2. Does the proposed change involve a change to a procedure that adversely affects ☐ YES ☒ NO how DCD described SSC design functions are performed or controlled?

The clarifications in the equipment qualification methodology have no effect on operation of the reactor coolant system. The clarifications have no effect on the initiation or operation of the passive core cooling system.

3. Does the proposed activity involve revising or replacing an DCD described ☐ YES ☒ NO evaluation methodology that is used in establishing the design bases or used in the safety analyses?

The changes to the equipment qualification methodology do not require changes to the evaluation of the response to postulated accident conditions. The changes to the equipment qualification methodology do not require changes to the structural or safety analysis of any safety related equipment. The removal of a statement that qualification by analysis alone is no used is not a change in methodology since it is in conflict with information in Appendix 3D on requirements for qualification by analysis.

4. Does the proposed activity involve a test or experiment not described in the DCD, ☐ YES ☒ NO where an SSC is utilized or controlled in a manner that is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the DCD?

The changes to the equipment qualification methodology do not require an additional test or experiment or changes to testing.

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C. EVALUATION OF DEPARTURE FROM TIER 2 INFORMATION (Check correct response and provide justification for that determination under each response)

10 CFR Part 52, Appendix D, Section VIII. B.5.a. provides that an applicant for a combined licensee who references the AP1000 design certification may depart from Tier 2 information, without prior NRC approval, if it does not require a license amendment under paragraph B.5.b. The questions below address the criteria of B.5.b.

1. Does the proposed activity result in more than a minimal increase in the frequency of ☐ YES ☒ NO occurrence of an accident previously evaluated in the plant-specific DCD?

Since there is no change to the equipment qualification methodology that could affect the plant design or operations, there are no new accident initiators and no effect on the frequency of evaluated accidents.
2. Does the proposed activity result in more than a minimal increase in the likelihood of ☐ YES ☒ NO occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD?

Since there is no change to the equipment qualification methodology that could affect the plant design or operations, there is no effect on malfunctions of structures, systems, or components. The operating conditions for the reactor coolant system and passive core cooling system are not altered.
3. Does the proposed activity result in more than a minimal increase in the consequences of ☐ YES ☒ NO an accident previously evaluated in the plant-specific DCD?

The clarifications in the qualification methodology have no effect on the operation, performance, and pressure boundary integrity of the safety related equipment. Therefore, there is no increase in the calculated release of radioactive material during postulated accident conditions.
4. Does the proposed activity result in more than a minimal increase in the consequences of a ☐ YES ☒ NO malfunction of an SSC important to safety previously evaluated in the plant-specific DCD?

The clarifications in the qualification methodology have no effect on the design functions or reliability of the safety related equipment or other components and operation of the passive core cooling system. Therefore, there is no increase in the calculated release of radioactive material due to a malfunction of an SSC.
5. Does the proposed activity create a possibility for an accident of a different type than any ☐ YES ☒ NO evaluated previously in the plant-specific DCD?

The clarifications in the equipment qualification methodology have no effect on the operation, performance, and pressure boundary integrity of the plant equipment. The response of the safety related equipment and the passive core cooling system to postulated accident conditions is not altered by the changes. The changes do not introduce any additional failure modes. Therefore, there is no possibility of an accident of a different type than any evaluated previously in the DCD.
6. Does the proposed activity create a possibility for a malfunction of an SSC important to ☐ YES ☒ NO safety with a different result than any evaluated previously in the plant-specific DCD?

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The changes have no effect on the design functions of the safety related equipment or operation of the passive core cooling system. Therefore, there are no additional failure modes or the possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously.

7. Does the proposed activity result in a design basis limit for a fission product barrier as ☐ YES ☒ NO described in the plant-specific DCD being exceeded or altered?

There is no change to the design function of the safety related equipment. The criteria to provide for pressure boundary integrity are not exceeded or altered.

8. Does the proposed activity result in a departure from a method of evaluation described in ☐ YES ☒ NO the plant-specific DCD used in establishing the design bases or in the safety analyses?

The changes are provided as clarification to the equipment qualification methodology of safety related equipment. A paragraph stating analysis alone is not used was removed since it was in conflict with information in Appendix 3D defining the conditions under which the analysis method may be used. Since the requirements for qualification using analysis are included in Appendix 3D, deleting the conflicting paragraph is not a change in methodology. The method described is consistent with IEEE standards and industry practice and employed in a manner that yields conservative results and have been approve by the NRC for qualification of equipment in operating nuclear plants. The changes have no impact on the evaluation methodology for the pressure boundary integrity.

- ☒ The answers to the evaluation questions above are "NO" and the proposed departure from Tier 2 does not require prior NRC review to be included in plant specific FSARs as provided in 10 CFR Part 52, Appendix D, Section VIII. B.5.b
- ☐ One or more of the answers to the evaluation questions above are "YES" and the proposed change requires NRC review.

D. IMPACT ON RESOLUTION OF A SEVERE ACCIDENT ISSUE

10 CFR Part 52, Appendix D, Section VIII. B.5.a. provides that an applicant for a combined licensee who references the AP1000 design certification may depart from Tier 2 information, without prior NRC approval, if it does not require a license amendment under paragraph B.5.c. The questions below address the criteria of B.5.c.

1. Does the proposed activity result in an impact features that mitigate severe accidents. If ☐ YES ☒ NO the answer is Yes answer Questions 2 and 3 below.

The systems and components identified in the DCD Subsection 1.9.5 and Appendix 19 B that mitigate severe accidents are not impacted by a change in equipment qualification methodology.

2. Is there is a substantial increase in the probability of a severe accident such that a particular severe accident previously reviewed and determined to be not credible could become credible? ☐ YES ☐ NO ☒ N/A

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3. Is there is a substantial increase in the consequences to the public of a particular severe accident previously reviewed? ☐ YES ☐ NO
☒ N/A

☒ The answers to the evaluation questions above are "NO" or are not applicable and the proposed departure from Tier 2 does not require prior NRC review to be included in plant specific FSARs as provided in 10 CFR Part 52, Appendix D, Section VIII. B.5.c

- | ☐ One or more of the he answers to the evaluation questions above are "YES" and the proposed change requires NRC review.

E. SECURITY ASSESSMENT

1. Does the proposed change have an adverse impact on the security assessment of the AP1000. ☐ YES ☒ NO

The change in equipment qualification methodology will not alter barriers or alarms that control access to protected areas of the plant. The change in equipment qualification methodology will not alter requirements for security personnel. Therefore, the change in equipment qualification methodology does not have an adverse impact on the security assessment of the AP1000.

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