1.0 THE SOUTH TEXAS PROJECT PLANT

1.1 Introduction

1.1.1 Introduction

By letter dated September 20, 2007 (Agency-wide Documents Access and Management System [ADAMS] Accession No. ML072830407), South Texas Project (STP) Nuclear Operating Company (STPNOC or the applicant), pursuant to Sections 103 and 185b. of the Atomic Energy Act and Title10 of the *Code of Federal Regulations* (10 CFR) Part 52, Subpart C, submitted to the U.S. Nuclear Regulatory Commission (NRC) an application for Class 103 combined licenses (COL) to construct and operate two new Advanced Boiling-Water Reactor (ABWR) units designated as STP Units 3 and 4. The applicant also applied for the additional licenses that are required to possess and use source, special nuclear, and byproduct materials in connection with the operation of the plant. The proposed units are to be built on the applicant's existing site in Matagorda County, Texas, about 90 miles southwest of Houston. STP Units 3 and 4 are to be co-located with STP Units 1 and 2, two existing pressurized water reactors.

The COL application incorporates by reference the U.S. Certified ABWR (Docket No. 52-001), as the design for the STP Units 3 and 4. The ABWR has a pressure suppression primary containment system that is comprised of the drywell and wetwell along with supporting systems. The ABWR has a rated thermal power of 3,926 megawatt thermal (MWt), and the generator will deliver a net electrical power of about 1,300 megawatt electrical (MWe). The expected completion dates (fuel loading) for Units 3 and 4 are September 2014 and October 2015, respectively, with anticipated commercial operation dates of June 2015 and July 2016, respectively.

The STP COL application is organized as follows:

- **Part 1, General Financials,** provides an introduction to the application and includes certain corporate information pursuant to 10 CFR 50.33.

- **Part 2, Final Safety Analysis Report (FSAR),** includes Tier 1 and Tier 2 departures and "supplements" or "supplemental information" pertaining to the standard design described in the certified ABWR design control document (DCD). The information in the FSAR is pursuant to the requirements of 10 CFR 52.79 and, in general, adheres to the content and format guidance in Regulatory Guide (RG) 1.206.

- **Part 3, Environmental Report (ER)**, provides the environmental impacts of constructing and operating new nuclear units at the STP site, pursuant to the requirements of 10 CFR 51.50(c).

- **Part 4, Technical Specifications (TS),** includes ABWR Generic TS and Bases and the STP Units 3 and 4 site-specific TS and Bases.

- **Part 5, Emergency Plan,** provides site emergency plan and supporting information, such as evacuation time estimates and applicable offsite State and local emergency plans for the STP site.

- **Part 6 is a place holder for a possible future site redress plan.**

- **Part 7, Departures Report,** includes "departures" and "exemptions" from the standard design described in the certified ABWR DCD. In Part 7 In accordance with Section VIII, "Processes for Changes and Departures," of "Appendix A to Part 52--Design Certification Rule for the U.S. Advanced Boiling Water Reactor," the applicant identifies and evaluates departures. Section 2 discusses departures requiring prior NRC approval, divided into Tier 1, Tier 2*, Tier 2, and Technical Specifications departures from the approved ABWR DCD. Section 3 of Part 7 discusses Tier 2 departures that do not require prior NRC approval and are evaluated pursuant to the requirements of 10 CFR Part 52, Appendix A, Section VIII.B.5. In addition, to address some of the Tier 2 departures that do not require prior NRC approval, the staff engaged in 10 CFR Part 52, Appendix A, VIII.B.5 audits (similar to 10 CFR 50.59 process) with the applicant (ML092510426 and ML093360537). .

- **Part 8, Security/Training Qualification/Safeguards Plan**, includes security plan and safeguards information that is withheld from public disclosure.

- **Part 9, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)** includes ABWR DCD Tier 1 information and the STP Units 3 and 4 ITAAC arranged as follows: (1) Introduction, (2) Design Certification ITAAC, (3) Site-Specific ITAAC, (4) Emergency Planning ITAAC, and (5) Physical Security ITAAC.

- **Part 10 contains proprietary information.**

- **Part 11, Mitigative Strategies Report,** is required by 10 CFR 52.80(d). This Section contains the applicant's Mitigative Strategies Report. In 2009, the Code of Federal Regulations was changed to require applicants to include, in their application, a description and plans for implementation of the guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associate with the loss of large areas of the plant due to explosions or fire as required by § 50.54(hh)(2) of this chapter. The Mitigative Strategies Report addresses these requirements.

1.1.2 Summary of Application

Section 1.1 of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1.1 of the certified ABWR DCD Revision 4, which is referenced in 10 CFR Part 52, Appendix A.

In addition, in COL FSAR Section 1.1, the applicant provides the following:

Format and Content:

This section contains general information regarding the format and content of the application. It also describes basic formatting conventions used in revising and supplementing the DCD; for example, the use of italicized text to indicate DCD information contained as a part of the FSAR.

Tier 2 Departures Not Requiring Prior NRC Approval

- STD DEP 1.1-1 Type of License Required

This departure recognizes that the ABWR DCD was submitted as a design certification, whereas the COL application was submitted as a Class 103 COL.

- STP DEP 1.1-2 Dual Units at STP 3 & 4

This departure recognizes that the ABWR DCD references a single unit, while the COL application is for two units that share certain systems.

- STP DEP 10.1-3 Rated Heat Balance

This departure revises the rated heat balance as a result of a change in the turbine design.

- STP DEP Vendor

This departure changes the text to remove the reference to General Electric (GE).

COL License Information Item

- COL License Information Item 1.1 Design Process to Establish Detailed Design Documentation

This COL license information item directs the COL applicant to provide the design process, which is necessary to establish the detailed design documentation. The applicant states that the project design process is fully described in the STP Units 3 and 4 Quality Assurance Program Description (QAPD). This QAPD was submitted as a part of the COL application and is referenced in FSAR Section 17.5S.

1.1.3 Regulatory Basis

The regulatory basis for the information incorporated by reference is contained in NUREG-1503, "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling-Water Reactor Design," (July 1994) (FSER related to the ABWR DCD). In addition, the regulatory basis for reviewing the COL license information items is contained in Section 1.0, "Introduction and Interfaces," of NUREG–0800.

In addition, in accordance with Section VIII, Process for Changes and Departures, of Appendix A to Part 52—Design Certification Rule for the ABWR Design, the applicant identified Tier 2 departure(s) that do not require prior Commission approval. These departures are subject to the requirements of Section VIII, which are similar to the requirements in 10 CFR 50.59.

Applicable Regulations

10 CFR Part 52, Subpart C, "Combined Licenses," sets forth the requirements and procedures applicable to the Commission's issuance of a COL for nuclear power facilities. The following requirements are of particular importance:

- 10 CFR 52.77 requires the COL application to contain all information required by 10 CFR 50.33.

- 10 CFR 52.79 provides requirements for the technical information that must be contained in the FSAR.

- 10 CFR 52.79(d) provides additional requirements for a COL referencing a standard certified design.

- 10 CFR 52.80 provides requirements for additional technical information outside of the FSAR (e.g., ITAAC and the environmental report).

- 10 CFR 52.81 provides standards for reviewing the application.

- 10 CFR 52.83 provides for the finality of referenced NRC approvals (e.g., standard design certification and early site permits).

- 10 CFR 52.85 provides requirements for administrative reviews and hearings.

- 10 CFR 52.87 provides for referrals to the Advisory Committee on Reactor Safeguards (ACRS).

In accordance with Section VIII, "Processes for Changes and Departures," of "Appendix A to Part 52--Design Certification Rule for the U.S. Advanced Boiling Water Reactor," the applicant identified Tier 2 departures. Tier 2 departures are subject to the requirements of 10 CFR Part 52, Appendix A, Section VIII.B.5, which are similar to the requirements in 10 CFR 50.59.

Finality of Referenced NRC Approvals

In accordance with 10 CFR 52.83, "Finality of referenced NRC approvals; partial initial decision on site suitability," if the application for a COL references a design certification rule (DCR), the scope and nature of matters resolved for the application and any combined license issued are governed by the relevant provisions addressing finality. For the ABWR DCR, finality is specifically addressed by 10 CFR 52.63: "Finality of standard design certifications." and 10 CFR Part 52, Appendix A, Section VI. Based on the finality afforded to referenced certified designs, the scope of this COL application review as it relates to the referenced certified design is primarily limited to ensuring that the COL applicant adequately addresses the identified COL action items.

The contents of the FSAR are specified by 10 CFR 52.79(a), which requires the submission of information within the final safety analysis report that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the structures, systems, and components of the facility as a whole. For a COL application that references a design certification (DC), Section 52.79(d) requires the DCD to be included or incorporated by reference into the FSAR. Additionally, a COL application that references a DC must also contain the information and analysis required to be submitted within the scope of the COL application, but which is outside the scope of the DCD. This set of information addresses plant and site-specific information and includes all COL action or information items; design information replacing conceptual design information; and programmatic information that was not reviewed and approved in connection with the design certification rulemaking.

The initial step in the staff evaluation of the COL application is to confirm that the complete set of information required to be addressed within the COL application was addressed within the

DC, the DC as supplemented by the COL application or completely within the COL application. Following this confirmation, the staff review of the COL application is limited to the COL review items.

1.1.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1.1 of the certified ABWR DCD. NRC staff reviewed Section 1.1 of the STP Units 3 and 4 COL FSAR. The staff also checked the referenced ABWR DCD to ensure that the combination of information in the COL FSAR and information in the ABWR DCD represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to the introduction.

In addition, in accordance with Section VIII, Process for Changes and Departures, of Appendix A to Part 52—Design Certification Rule for the ABWR Design, the applicant identified Tier 2 departure(s) that do not require prior Commission approval. These departures are subject to the requirements of Section VIII, which are similar to the requirements in 10 CFR 50.59.

The staff reviewed the information in the COL FSAR:

Tier 2 Departures Not Requiring Prior NRC Approval

The following Tier 2 Departures Not Requiring NRC Approval identified by the applicant in this section may also be addressed in other sections of this SER. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these departures.

- STD DEP 1.1-1 Type of License Required

This departure from the ABWR DCD asks for a Class 103 COL as opposed to a design certification. The applicant's evaluation in accordance with 10 CFR Part 52, Appendix A, Section VIII item B.5 determined that this departure did not require prior NRC approval. For the purposes of the staff's Section 1.1 review, the staff found it reasonable that the departure does not require prior NRC approval.

- STP DEP 1.1-2 Dual Units at STP 3 & 4

This departure from the ABWR DCD references a two-unit site as opposed to a one-unit site under the provisions of Section VIII.B.5 of Appendix A to 10 CFR Part 52. For the purposes of the staff's Section 1.1 review, the staff found it reasonable that the departure does not require prior NRC approval.

- STP DEP 10.1-3 Rated Heat Balance

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

For this review section, the impact of this departure resulted in a revision to figure 1.1-2. For the purposes of the staff's Section 1.1 review, the staff found it reasonable that the departure does not require prior NRC approval.

- STP DEP Vendor

This departure removes reference to GE as a vendor and supplier of the ABWR design. For the purposes of the staff's Section 1.1 review, the staff found it reasonable that the departure does not require prior NRC approval and is editorial in nature. In addition, alternate vendor qualification is addressed in section 1.4S of this SER.

The applicant's evaluation in accordance with 10 CFR Part 52, Appendix A, Section VIII item B.5 determined that the above departures do not require prior NRC approval. Within the review scope of this section, the staff found it reasonable that these departures do not require prior NRC approval. In addition, the applicant's process for evaluating departures and changes to the DCD is subject to NRC inspections.

COL License Information Item:

- COL License Information Item 1.1 Design Process to Establish Detailed Design Documentation

With regard to this COL license information item, the staff agrees that the QAPD is an appropriate place to describe the design process to establish detailed design documentation. The QAPD is evaluated in Chapter 17 of this SER.

1.1.5 Post Combined License Activities

There are no post COL activities related to this section.

1.1.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to "Introduction", and no outstanding information is expected to be addressed in the COL FSAR related to this section.

The NRC staff's finding related to information incorporated by reference is in NUREG–1503. The staff's review confirmed that there is no outstanding issue related to this section. Pursuant to 10 CFR 52.63(a)(5) and Part 52, Appendix A, Section VI.B.1, all nuclear safety issues relating to the introduction that were incorporated by reference have been resolved.

In addition, the staff concluded that the relevant information in the COL FSAR is acceptable and meets the requirements defined in the ABWR DCD, which is incorporated by reference into 10 CFR Part 52, Appendix A. The staff's conclusion is based on the following:

- For the purposes of the staff's Section 1.1 review, the staff found that all of the "Tier 2 Departures Not Requiring Prior NRC Approval" identified by the applicant are reasonable and that these departures do not require prior NRC approval.

- Within the review scope of this section, the staff's review confirmed that the applicant has adequately addressed COL license information 1.1 in accordance with Section 1.0, "Introduction and Interfaces," of NUREG–0800.

1.2 General Plant Description

1.2.1 Introduction

This section of the certified ABWR DCD provides a short description of all major design components. Site-specific information is in the corresponding section of the STP Units 3 and 4 COL FSAR.

1.2.2 Summary of Application

Section 1.2 of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1.2 in Revision 4 of the certified ABWR DCD.

In addition, in COL FSAR Section 1.2, the applicant provides the following:

Tier 1 Departures

- STD DEP T1 2.3-1 Deletion of main steam isolation valve (MSIV) Closure and Scram on High Radiation

This departure removes the Scram and the MSIV automatic closure upon receipt of a high main steamline radiation monitor signal.

- STD DEP T1 2.4-3 Reactor core isolation cooling (RCIC) Turbine/Pump

This design change replaces the steam turbine-driven RCIC pump with a pump that has an improved design.

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

This design change removes the hydrogen recombiners.

- STD DEP T1 3.4-1 Safety-Related instrumentation and control (I&C) Architecture

This design change revises the safety-related I&C architecture.

Tier 2 Departure Requiring Prior NRC Approval

- STD DEP 8.3-1 Plant Medium Voltage Electrical System Design

This departure changes the plant's medium voltage electrical system from a single 6.9 kilovolt (kV) system to a dual-voltage 13.8 kV and 4.16 kV system and affects the TS related to the design change.

Tier 2 Departures Not Requiring Prior NRC Approval

- STP DEP 1.1-2 Dual Units at STP 3 & 4

This departure recognizes that the ABWR DCD references a single unit, while the COL application is for two units.

- STD DEP 1.2-1 Control Building Annex

This design change relocates the reactor internal pump motor generator sets from the control building to a non-seismic control building annex.

- STP DEP 1.2-2 Turbine Building

This departure changes the design of the turbine building.

- STD DEP 3.8-1 Resizing the Radwaste Building (RW/B)

This design change resizes and makes other changes to the layout of the RW/B.

- STD DEP 9.1-1 Update of Fuel Storage and Handling Equipment

This departure updates the description of the fuel storage and handling equipment.

- STD DEP 9.4-3 Service Building heating, ventilation, and air conditioning (HVAC) System

This departure changes the design of the service building HVAC system.

- STD DEP 9.4-4 Turbine Island HVAC System

This design change revises the turbine island HVAC system.

- STP DEP 10.2-1 Turbine Design

This departure changes the design of the turbine.

- STP DEP 10.4-2 Main Condenser

This departure changes the design of the main condenser.

- STD DEP 10.4-6 Load Rejection Capability

This departure changes the load rejection capability of STP Units 3 and 4.

- STD DEP 11.4-1 Radioactive Solid Waste Update

This departure modifies the solid waste management system.

- STD DEP Admin

This administrative departure recognizes that the size of the site is 12,220 acres rather than 12, 200 acres.

COL License Information Items

- COL License Information Item 1.1a Plant Design and Aging Management

The application contains a supplemental description of the applicant's plan for plant design and aging management.

1.2.3 Regulatory Basis

The regulatory basis for the information incorporated by reference is contained in NUREG–1503 Section 1.2. The regulatory basis for reviewing the COL license information item 1.1a is in Section 1.0, of NUREG–0800.

In addition, in accordance with Section VIII, Processes for Changes and Departures, of Appendix A to Part 52-- Design Certification Rule for the ABWR Design, the applicant identified Tier 2 departure(s) that do not require prior Commission approval. These departures are subject to the requirements of Section VIII, which are similar to the requirements in 10 CFR 50.59.

1.2.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1.2 of the certified ABWR DCD. NRC staff reviewed Section 1.2 of the STP Units 3 and 4 COL FSAR. The staff also checked the referenced ABWR DCD to ensure that the combination of information in the COL FSAR and information in the ABWR DCD represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to general plant description with the exception of the open items identified below.

The following items are also reviewed in this section:

Tier 1 Departures

The following Tier 1 Departures identified by the applicant in this section require prior NRC approval in the form of an exemption and the full scope of their technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these Tier 1 departures. In addition, compliance with 10 CFR Part 52, Appendix A, Section VIII.A.4 for these Tier 1

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

departures will be addressed by the staff in future exemption evaluations. This will be tracked as global **Open Item 01-1** throughout the staff's SER.

- STD DEP T1 2.3-1 Deletion of MSIV Closure and Scram on High Radiation

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.3-1 results in a necessary editorial revisions to ABWR DCD section 1.2.2.2.3.1. Within the review scope of SER section 1.2, the staff find's that this departure is editorial in nature and is acceptable. However, section ABWR DCD section 1.2.2.2.3.1 does not exist, and it appears the applicant should be referring to ABWR DCD section 1.2.2.2.2.1 instead. The applicant is asked to address this discrepancy in RAI 01-17. **This is Open Item 01-2.**

- STD DEP T1 2.4-3 RCIC Turbine/Pump

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.4-3 results in necessary editorial revisions to ABWR DCD sections 1.2.2.5.4 and 1.2.2.5.5. Within the review scope of SER section 1.2, the staff find's that this departure is editorial in nature and is acceptable. However, section ABWR DCD section 1.2.2.2.5.5 does not exist. The applicant is asked to address this discrepancy in RAI 01-17. **This is Open Item 01-2**.

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.14-1 results in necessary editorial revisions to ABWR DCD sections 1.2.4.3 and 1.2.5.3 and removal of section 1.2.2.15.8. Within the review scope of SER section 1.2, the staff find's that this departure is editorial in nature and is acceptable.

- STD DEP T1 3.4-1 Safety-Related I&C Architecture

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 3.4-1 results in necessary editorial revisions to ABWR DCD sections 1.2.2.3.11. Within the review scope of SER section 1.2, the staff find's that this departure is editorial in nature and is acceptable.

Tier 2 Departure Requiring Prior NRC Approval

The following Tier 2 Departure identified by the applicant in this section requires prior NRC approval and the full scope of its technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by this departure.

- STD DEP 8.3-1 Plant Medium Voltage Electrical System Design

With respect to this section of the FSAR, the applicant has identified that STD DEP 8.3-1 results in necessary editorial revisions to ABWR DCD sections 1.2.2.13.2 thru 1.2.2.13.5, 1.2.2.13.13, 1.2.2.13.17, and 1.2.2.14.1. Within the review scope of SER section 1.2, the staff find's that this departure is editorial in nature and is acceptable.

Tier 2 Departures Not Requiring Prior NRC Approval

The following Tier 2 Departures not requiring NRC approval identified by the applicant in this section may also be addressed in other sections of this SER. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these departures.

- STP DEP 1.1-2 Dual Units at STP 3 & 4
- STD DEP 1.2-1 Control Building Annex
- STP DEP 1.2-2 Turbine Building
- STD DEP 3.8-1 Resizing the RW/B
- STD DEP 9.1-1 Update of Fuel Storage and Handling Equipment
- STD DEP 9.4-3 Service Building HVAC System
- STD DEP 9.4-4 Turbine Island HVAC System
- STP DEP 10.2-1 Turbine Design
- STP DEP 10.4-2 Main Condenser
- STD DEP 10.4-6 Load Rejection Capability
- STD DEP 11.4-1 Radioactive Solid Waste Update

Administrative Departure

- STD DEP Admin

The applicant defines administrative departures as minor corrections, such as editorial or administrative errors in the referenced ABWR DCD (i.e., misspellings, incorrect references, table headings, etc.). The applicant identifies that this administrative departure recognizes that the size of the site is 12,220 acres rather than 12,200 acres. NRC staff found that this administrative departure does not affect the presentation of any design discussion or qualification of design margin. Therefore, this departure is acceptable.

The applicant's evaluation in accordance with 10 CFR Part 52, Appendix A, Section VIII item B.5 determined that these departures do not require prior NRC approval. Within the review scope of this section, the staff found it reasonable that these departures do not require prior NRC approval. In addition, the applicant's process for evaluating departures and changes to the DCD is subject to NRC inspections.

COL License Information Items

- COL License Information Item 1.1a Plant Design and Aging Management

This COL License Information Item directs the applicant to initiate life-cycle management early in the design process and to consider the design life requirements as outlined in Subsection 1.2.1.3 of the DCD. It also specifies that the aging management program shall cover the structures and components, and consider the potential corrosion causes, outlined in Subsection 1.2.1.3. of the DCD.

The applicant described their design and aging management program, breaking it down in to the areas of Design Life, Design Life Maintenance, and Aging Management. The design and aging management program is a broad one considering a variety of issues such as design margins, water quality, material selection, and environmental conditions. Detailed technical reviews of

such programs are normally conducted as a part of a license renewal process. Pending further staff review, this COL License Information item will be tracked as **Open Item 01-3.**

1.2.5 Post Combined License Activities

There are no post COL activities related to this section.

1.2.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to "General Plant Description". With the exception of **Open Items 01-1, 01-2 and 01-3**, no outstanding information is expected to be addressed in the COL FSAR related to this section. As a result of this open item, the staff is unable to finalize the conclusions for this section relating to "General Plant Description" in accordance with NRC requirements.

1.3 Comparison Tables

This section of the FSAR highlights the principal design features of the plant and compares its major features with those of other BWR facilities.

Section 1.3 of the STP COL FSAR incorporates by reference, with no departures or supplements, Section 1.3, "Comparison Tables," of the ABWR DCD, Revision 4, which is referenced in 10 CFR Part 52, Appendix A. U.S. Nuclear Regulatory Commission (NRC) staff reviewed the application and considered the referenced DCD to ensure that no issue relating to this section remains for review.[1] The staff's review confirmed that there is no outstanding information outside of the DCD related to this section. Pursuant to 10 CFR 52.63(a)(5) and Part 52, Appendix A, Section VI.B.1, all nuclear safety issues relating to the "Comparison Tables" have been resolved.

1.4 Identification of Agents and Contractors

1.4.1 Introduction

This section of the COL FSAR identifies the primary agents and contractors for STP Units 3 and 4.

1.4.2 Summary of Application

Section 1.4 of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1.4 of the certified ABWR DCD Revision 4, with no departures.

In addition, in COL FSAR Section 1.4, the applicant provides the following:

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

Supplemental Information

The applicant identifies STPNOC as the operator of STP Units 3 and 4 and the agent responsible for maintaining control and oversight of design and construction.

The applicant identifies Toshiba Power Systems Company (Toshiba) as responsible for the engineering, procurement, and construction (EPC) of STP Units 3 and 4, with overall responsibility for the design and construction of the facility and for support of the COL application.

The applicant identifies Westinghouse Electric Corporation (Westinghouse or WEC) as a subcontractor with significant experience in the design, construction, inspection, and maintenance of nuclear power plants.

The applicant identifies Sargent & Lundy as a subcontractor providing engineering services, specifically for the design of the nuclear island but also including the reactor building, control building, radwaste buildings, and ultimate heat sink.

The applicant identifies the following specialized consultants:

- Tetra Tech NUS, Inc., prepared sections of the FSAR and Environmental Report (ER) including socioeconomics, demographics, ecology, impacts of construction and operation, impacts of radioactive waste generation and transportation, and environmental impacts of postulated accidents.

- MACTEC Engineering and Consulting, Inc., performed geotechnical field and laboratory tests.

- William Lettis & Associates, Inc., performed geologic mapping and characterization of seismic sources.

- Risk Engineering, Inc., performed probabilistic seismic hazard assessments.

- Bechtel Corporation provided support with regard to the ER and site characterization.

1.4.3 Regulatory Basis

The regulatory basis for the information incorporated by reference is in NUREG–1503.

In addition, the relevant requirements for the Commission's regulations and the associated acceptance criteria for reviewing supplemental information are in Section C.I.1.4 of RG 1.206.

1.4.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1.4 of the certified ABWR DCD. NRC staff reviewed Section 1.4 of the STP Units 3 and 4 COL FSAR. The staff also checked the referenced ABWR DCD to ensure that the combination of information in the COL FSAR and information in the ABWR DCD represents the complete scope of information

relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to identification of agents and contractors.

The following item is also reviewed in this section:

Supplemental Information

In accordance with RG 1.206 C.I.1.4, "Identification of Agents and Contractors," the applicant has provided supplemental information that identifies the primary agents for the design, construction, and operation of the proposed facility. The applicant delineates the division of responsibility among the contractors. For each subcontractor and specialized consultant contractor, the applicant provides a history of nuclear-related work experience. Each subcontractor and specialized consultant is known and is acceptable to the staff for providing expertise in the technical area or in areas specified in the application. The staff finds that the applicant has adequately addressed this supplemental information in accordance with Section 1.I.6 of RG 1.206.

1.4.5 Post Combined License Activities

There are no post COL activities related to this section.

1.4.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has address the required information relating to "Identification of Agents and Contractors", and no outstanding information is expected to be addressed in the COL FSAR related to this section.

The NRC staff's finding related to information incorporated by reference is in NUREG–1503. The staff's review confirmed that there is no outstanding issue related to this section. Pursuant to 10 CFR 52.63(a)(5) and Part 52, Appendix A, Section VI.B.1, all nuclear safety issues relating to identification of agents and contractors and other documents that were incorporated by reference have been resolved.

In addition, the staff concluded that the relevant information in the COL FSAR is acceptable and meets the requirements defined in the ABWR DCD, which is incorporated by reference into 10 CFR Part 52, Appendix A. The staff's conclusion is based on the following:

- The NRC staff's review confirmed that the applicant has adequately addressed the supplemental information in accordance with Section C.I.1.4 of RG 1.206.

1.4S Qualifications of Alternate Vendor

This section does not exist in either the ABWR DCD or COL FSAR. The NRC staff has added this section to the SER in order to address issues regarding the applicant's alternate vendor qualifications.

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[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

1.4S.1 Introduction

STPNOC is the applicant for the COL. The EPC was awarded to Toshiba. As the Holder of the EPC, Toshiba will assume the duties normally assigned to the plant vendor and the entity that originally obtained the design certification. Because Toshiba is not the entity that originally obtained the design certification, it is referred to as an "alternate vendor."

Worldwide, Toshiba has been in the nuclear field since the late 1950s. Toshiba's experience as a subcontractor for nuclear power plant construction dates back to the 1960s and experience as a prime contractor in nuclear power plant construction dates back to the early 1970s. Toshiba supplied the nuclear steam supply system for both the Kashiwazaki-Kariwa Nuclear Power Station Unit No. 6 and Hamaoka Nuclear Power Station Unit No. 5 and supplied the balance of the plant (without turbine and generator) for Kashiwazaki-Kariwa Nuclear Power Station Unit No. 7. These three plants are all ABWRs, though their designs differ from the U.S. certified ABWR design. Toshiba was also an associate of GE's in the development of the U.S. ABWR design.

The U.S. ABWR design certification FSER (NUREG–1503) describes the relationship between GE and its associates (including Toshiba) in support of the U.S. certified ABWR design. Recognizing Toshiba's contributions to the ABWR certified design, NRC staff proposed two activities for conducting the alternate vendor qualification review:

(1) a review of the STPNOC due diligence summary report

(2) audits or inspections, as necessary, conducted during Phase 1 of the COL application review to support the review of the STPNOC due diligence summary report

This section of the SER documents the review and the findings of the associated audits and inspections. In preparing the safety evaluation, the staff addressed these fundamental questions:

- Since Toshiba is not the entity that obtained the design certification, what information needed to support the COL process may not be available to the applicant (e.g., proprietary topical reports or computer codes)? How does the applicant intend to fill the design-basis gaps caused by the unavailability of this information?

- Has the applicant adequately assessed the ability of Toshiba (and other contractors) to provide the information that must be reconstituted?

- Do we have a reasonable assurance that the process employed by the applicant was adequate to identify all design-basis information that must be reconstituted?

- Do we have a reasonable assurance that Toshiba and its contractors will be able to assume the duties normally assigned to the plant vendor and to the entity that originally obtained the design certification? Do they have the expertise and technical competence to adequately manage and control design changes and support the licensing process?

- What are the differences between the ABWR designs that Toshiba has already developed and the U.S. certified ABWR design? Is there a reasonable assurance that Toshiba can address these differences and provide a U.S. certified ABWR design?

1.4S.2 Summary of Due Diligence Outline

In a letter dated August 19, 2008, STPNOC submitted on the STP Unit 3 and 4 Dockets (ADAMS Accession Nos. ML082350161 [proprietary] and ML082350160 [non-proprietary]) outlines of the due diligence assessment of Toshiba's qualifications to provide the ABWR design for STP Units 3 and 4. The due diligence effort was intended to assess areas where, in the applicant's opinion, Toshiba may not have the direct experience necessary to support the U.S. certified ABWR design. The applicant evaluated, in detail, the areas of design documentation, ongoing technical development, licensing support, and the development and implementation of a supply chain.

In conducting the due diligence evaluation, the applicant divided the scope of work into the following nine basic tasks:

(1) Design Documentation – This task identifies the references in licensing documents that must be reestablished or reconstituted in order to support the licensing process.

(2) Unique Issues – This task identifies unique issues and develops an understanding of how these issues affect the plant's design.

(3) Design-Basis Information – This task identifies the design-basis information required from Toshiba, including the ability to estimate the level of effort needed to provide that information.

(4) Americanization – This task determines the impact of issues such as the conversion to U.S. units of measure (e.g., metric to English units); the use of U.S. codes and standards; and the shift from foreign to U.S. suppliers.

(5) Engineering Schedule/Resources – This task updates the schedule and resource requirements identified in the results of the other tasks.

(6) USNRC Interface – This task determines how to implement 10 CFR Part 52 with an alternate vendor and how to develop COL application revisions without the participation of the ABWR design applicant.

(7) Specific Engineering Disciplines – This task develops action plans for addressing issues of seismic and structural design, safety-related I&C, the oscillation power range monitor (OPRM) system, human factors engineering, fuel analyses, probabilistic risk assessments, severe accident mitigation, and hydrodynamic loads.

(8) Supply Chain – This task demonstrates that the engineering, procurement, and construction teams are able to deliver the required materials and equipment.

(9) Mitigation Management Assessment – This task presents and summarizes mitigation management methods for uncertainties.

In a letter dated December 18, 2008, STPNOC submitted proprietary (ML083660245) and non-proprietary (ML083660244) revisions to the outline of the due diligence effort. These revisions update STPNOC's decision on the disposition of various documents associated with the ABWR design.

1.4S.3 Regulatory Basis

The application for certification of the U.S. ABWR design was filed by GE Nuclear Energy. As the Holder of the EPC, Toshiba will provide the design for STP Units 3 and 4. The regulations in 10 CFR 52.73(a) allow an alternate vendor to supply a certified design; however, the regulations require the alternate vendor to be demonstrated as qualified to supply that design.

1.4S.4 Technical Evaluation

1.4S.4.1 *Design-Basis Documentation*

In order to supply a design for the U.S. Certified ABWR, Toshiba will have to translate the design descriptions in the DCD into a workable design and support that design throughout the licensing process. Some information in the DCD or in its references may not be publically available, either because it is proprietary to the design certification applicant or for other reasons. The unavailability of information could result in gaps in the design-basis documentation, which could make it necessary for the applicant to reconstitute certain information.

The applicant has performed a thorough review of the DCD, the NRC staff's Evaluation Report (FSER) of the DCD (NUREG–1503), and the applicant's COL application. The applicant has identified the references cited in these documents and grouped those references into three categories: direct references (i.e., documents cited directly); embedded references (i.e., documents cited in a direct reference); and indirect references (i.e., technical statements that are not associated with a direct reference).

The result of the applicant's review is a proprietary Direct Reference Master List with 162 references that the applicant provided in the December 18, 2008, revised due diligence submittal. The applicant grouped these references into 8 major categories (Category 2 has three subcategories). Each category is associated with a proposed method of disposition. The categories and proposed dispositions for the references are as follows:

Category 1 Reference was replaced with a report that changed the licensing basis.

Category 2A New reports were needed to support the STP COL application.

Category 2B New reports were written for closing the ITAAC.

Category 2C New reports were needed at the time of the COL issuance.

Category 3 Reference was replaced as part of the license fuel amendment.

Category 4 No replacement is necessary (e.g., applicant is authorized to use the reference).

Category 5 Reference was replaced by a new report (NRC staff approval is not necessary).

Category 6 Superseded documents are not required for STP Units 3 and 4.

Category 7 Document is no longer valid; the information is in the COL application.

Category 8 Documents are not applicable to STP Units 3 and 4.

The staff reviewed the applicant's reference list and the proposed methods of disposition for both completeness and acceptability, taking into account the experience and abilities of the applicant; the Holder of the EPC; and the other contractors and subcontractors identified in this section of the SER. The staff determined that the following areas warranted additional inspection, audit, or other information before a conclusion on vendor qualifications could be reached.

Pressure-Temperature Limits

Approved pressure-temperature (P/T) limits or an approved pressure-temperature limits report (PTLR) is required to support issuance of a COL. The P/T limits in the ABWR DCD are representative curves only; they are not approved plant-specific curves that are appropriate for incorporation by reference. GE's methodology for developing P/T limits is in proprietary documents.

In response to a request for this documentation, the applicant submitted a PTLR in July 2009 for NRC staff to review. This PTLR review included the methodology for developing acceptable P/T limits. The staff's review is in the appropriate section of Chapter 5 of this SER.

Neutron Fluence Projection

The impact of radiation embrittlement of the reactor vessel must be evaluated to support the COL issuance. GE's staff-approved methodology for determining radiation embrittlement is in a proprietary document.

In addition to the PTLR, the applicant submitted a methodology for determining the impact of radiation embrittlement on the reactor vessel. The NRC staff's review of this methodology is in the appropriate section of Chapter 5 of this SER.

Containment Analytical Model

The ABWR containment combines design features of Mark II and Mark III containments. The vent system is a combination of vertical (Mark II design) and horizontal (Mark III design) drywell-to-wetwell vent systems, and the wetwell (suppression pool and air space) is similar to a Mark II. The referenced NEDO–20533 report and its supplement were originally written for predicting Mark III transients. Adapting these models to simulate the ABWR design is possible but was not straightforward, as discussed in the NRC staff's evaluation of ABWR DCD Subsection 6.2.1.2, NUREG–1503, dated July 1994. It was only after receiving a letter dated May 22, 1992, which provided additional justification and documented a May 6, 1992, meeting where GE clarified assumptions, that the NRC staff concluded that the use of NEDO-20533 for the ABWR is acceptable.

The applicant states in Section 4.1 of Revision 0 of the Due Diligence Report that Toshiba has access and shares ownership rights to the ABWR common engineering documents, and Toshiba has either already acquired the required design documentation for STP Units 3 and 4 or has the capability to develop or reconstitute the necessary documentation, which the staff confirmed during an inspection of Toshiba's facilities in Japan in July 2009.

Based on this review of the information in the application, the staff determined that inspection efforts were necessary in the area of containment analysis. The staff will need to confirm that the models and analytical assumptions described in NEDO–20533 and its supplements have been correctly implemented into the GOTHIC code, so that the calculated containment peak pressures are bounded by the approved DCD containment analysis. In addition, the staff will need to confirm that the GOTHIC analysis is bounded by the GE analysis and has been benchmarked against applicable empirical test data. The results of the staff's efforts in this area are detailed in Chapter 6 of this SER.

Containment Hydrodynamic Loads

The evaluation of containment hydrodynamic loads is closely related to the implementation of NEDO–20533 models and assumptions in the STP GOTHIC analysis, as discussed in Subsection 1.4.2.9.

The NRC staff's evaluation of the original GE application is included in Subsection 6.2.1.6 of NUREG-1503. The staff noted that direct application of the Mark II methodology (PISCM Code) to the ABWR design is inappropriate due to the differences in vent configurations. GE had to develop a special correlation to account for the uneven pool slug rise observed in the Mark III Pressure Suppression Test Facility (PSTF) tests. In addition, the staff noted that the Mark II pool swell model (PSAM Code) is unacceptable, and the ultimate acceptance is based on comparisons with the database. The staff further stated that "as a result, the use of the program for configurations other than those encompassed by the test data would not be accepted without further comparisons with applicable test data."

The applicant acknowledges in the due diligence report that (1) there is a lack of explicit benchmark data for the horizontal vent design, (2) further benchmarking is planned, and (3) Toshiba has access to and permission to use the data collected from a Mark III test. A separate technical report was submitted for NRC to review and approve in parallel with the COL application review. The results of the staff's efforts in this area are in Section 6.2 of this SER.

Based on the review of the information in the application, the staff determined that inspection efforts are necessary in the area of vent clearing and pool swell analytical models, including the available database and computer benchmarking, if any. The results of the staff's inspection efforts are in Section 1.4S.4.2 of this SER.

Instrumentation and Control

NRC staff reviewed the outline of the applicant's due diligence efforts and determined that a high-level inspection is appropriate of the EPC team's qualifications to design and implement I&C systems for STP Units 3 and 4. The staff specifically wanted to evaluate the EPC team's technical capabilities and qualifications to specify, manufacture, test, and implement a field programmable gate array (FPGA) -based nuclear monitoring system that includes an OPRM, a startup range nuclear monitoring system, a power range nuclear monitoring system, and other non-safety related components. The staff focused on the development of the OPRM, which is a first-of-a-kind product for Toshiba, and on the use of FPGA technology, which is a first-of-a-kind technology for safety-related applications in the U.S. nuclear industry.

The staff also determined the need to inspect the EPC team's abilities and to specify, manufacture, test, and implement a FPGA-based reactor trip isolation system, which is a

first-of-a-kind product for both Toshiba and the U.S. nuclear industry, and to design and integrate several different digital I&C platforms for both safety-related and non-safety related systems. The staff conducted these inspections at Toshiba's Yokohama and Fuchu facilities in Japan in July 2009. The results of the staff's inspections are in Section 1.4S.4.2 of this SER.

Quality Assurance

To justify the independent assessment of Toshiba's qualifications as an alternate vendor, NRC staff verified that Toshiba has implemented a Quality Assurance (QA) Program that complies with the requirements of Appendix B to 10 CFR Part 50, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," (Appendix B) and a program for reporting defects and non-conformances consistent with the requirements of 10 CFR Part 21, "Reporting of Defects and Noncompliance," in a manner that provides a reasonable assurance that Toshiba is capable of supplying the design of the ABWRs for STP Units 3 and 4. Specific areas of the staff's inspection included the following:

- *Alternate Vendor Qualification* – NRC inspectors reviewed ABWR engineering documents, licensing technical reports referenced in the ABWR DCD, and applicable test data to independently confirm that Toshiba has access to the ABWR engineering documents that form the design-basis documents for the certified U.S. ABWR design.

- *10 CFR Part 21 Program* – NRC inspectors reviewed Toshiba's policies and implementation procedures that govern the 10 CFR Part 21 Program to verify compliance with the requirements of 10 CFR Part 21, "Reporting of Defects and Non-compliances."

- *Quality Assurance Program* – NRC inspectors reviewed Toshiba's QA policies and implementing procedures that govern the QA Program to verify compliance with the requirements of Criterion II, "Quality Assurance Program," of Appendix B.

- *Design Control* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the design control process to verify compliance with the requirements of Criterion III, "Design Control," of Appendix B.

- *Procurement Document Control* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the procurement document control process to verify compliance with the requirements of Criterion IV, "Procurement Document Control," of Appendix B.

- *Document Control* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the document control process to verify compliance with the requirements of Criterion VI, "Document Control," of Appendix B.

- *Control of Purchased Materials, Equipment, and Services* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the control of purchased materials, equipment, and services to verify compliance with the requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B.

- *Non-Conforming Materials, Parts, or Components* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the nonconforming materials, parts, or

components to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts or Components," of Appendix B.

- *Corrective Action* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the corrective action process to verify compliance with the requirements of Criterion XVI, "Corrective Action," of Appendix B.

- *Training and Qualifications* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the control of training and qualifying personnel performing activities affecting quality to verify compliance with the requirements of Criterion II, "Quality Assurance Program," of Appendix B.

- *Initial Test Program (ITP)* – NRC inspectors reviewed Toshiba's QA policies and implementation procedures that govern the process used to develop and implement the STP Units 3 and 4 Initial Plant Test Program.

The staff conducted these reviews during inspections of Toshiba's Yokohama and Fuchu engineering facilities in Japan in July 2009. During the inspections, staff had access to translated documentation. The staff's conclusions as a result of these inspections are in Section 1.4S.4.2 of this SER.

1.4S.4.2 *Specific Inspection Findings*

Containment Analytical Model

The P/T calculation will be performed by Westinghouse using the GOTHIC computer code. Toshiba will not provide any specific test data as a basis for the GOTHIC qualification. However, the selected Horizontal Vent Tests (HVTs) will be used for code verification. The NRC inspector confirmed that Toshiba has access to the HVT test data to be used to verify the GOTHIC code for the P/T calculation.

Containment Hydrodynamic Loads

A pool swell analysis will be performed by Westinghouse using the GOTHIC code. The code will be benchmarked against the GE PSTF test data (5800 series). Toshiba will provide the test data in the form of a "derivative document" based on the GE data. Toshiba presented a first revision of this document. The NRC inspector confirmed that Toshiba has access to the GE PSTF test data and that the process being used to develop the Toshiba derivative document is acceptable.

Hydrodynamic loads will be defined by Toshiba and will be provided to the STP to be used in a licensing structural analysis. The definition of the pressure-forcing functions for the condensation oscillation (CO) and chugging (CH) loads will be based on the HVT test data (full-scale and subscale), as defined in the internal derivative document. The Toshiba derivative document for CO and CH loads is not yet complete. Subscale data will be used for the CO load, and full-scale data will be used for the CH load. The hydrodynamic loads are addressed in Section 3.8, and Chapter 6 of this SER. At this time, those reviews are still ongoing and therefore this will be tracked as **Open Item 01-4** for this chapter]

For the safety/relief valve (SRV) loads, Toshiba will use the GE empirical correlation developed for the X-quenchers that are to be used in the STP ABWR. This correlation was previously approved by NRC for the BWR licensing applications. The NRC inspector confirmed that Toshiba has access to the GE data developed for the X-quenchers.

Instrumentation and Control

Based on GE's publically available algorithms and logic for the OPRM system, Toshiba has already developed an OPRM prototype using the FPGA technology. Toshiba is essentially following the software QA process suitable for developing safety–related, central processing unit-based digital I&C systems, in accordance with Electric Power Research Institute Topical Report–107330, "Generic Requirements Specification for Qualifying a Commercial PLC for Safety-Related Applications in Nuclear Power Plants."

NRC inspectors concluded that Toshiba has the experience and capability to supply the OPRM system for STP Units 3 and 4. Toshiba also demonstrated through its past experience in Japan and its ongoing efforts with STP Units 3 and 4 the ability to integrate the various I&C safety and non-safety platforms for the entire plant. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Quality Assurance

Alternate Vendor Qualifications – Based on the areas reviewed during the inspection, NRC inspectors independently confirmed STPNOC's due diligence review of Toshiba. The inspectors concluded that STPNOC's due diligence review adequately demonstrates that Toshiba is qualified to supply the ABWR certified design, as required by 10 CFR 52.73(a). The staff also found a reasonable assurance that Toshiba has the capabilities and technical competence necessary to assume the duties normally assigned to the design vendor. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

10 CFR Part 21 Program – NRC inspectors concluded that Toshiba's program requirements for 10 CFR Part 21 are consistent with the regulatory requirements of 10 CFR Part 21 and are being effectively implemented. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Appendix B Program – NRC inspectors concluded that Toshiba's requirements for the QA Program are consistent with the regulatory requirements of Criterion II of Appendix B. Based on the limited sample of documents reviewed, the inspectors also determined that Toshiba's Quality Assurance Manual (QAM) and associated procedures related to the QA Program are being effectively implemented. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Design Control – NRC inspectors concluded that Toshiba's program requirements for design control are consistent with the regulatory requirements of Criterion III of Appendix B. Based on the limited sample of design documentation reviewed, the inspectors also determined that Toshiba's QAM and associated design control procedures are being effectively implemented. A

more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Procurement Document Control – NRC inspectors concluded that Toshiba's program requirements for procurement document control are consistent with the regulatory requirements of Criterion IV of Appendix B. Based on the limited sample of documents reviewed, the NRC inspectors also determined that Toshiba's QAM and associated procedures for procurement document control are being effectively implemented. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Document Control – NRC inspectors concluded that Toshiba's program requirements for document control are consistent with the regulatory requirements of Criterion VI of Appendix B. Based on the limited sample of documents reviewed, the inspectors also determined that Toshiba's QAM and associated document control procedures are being effectively implemented. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Control of Purchased Materials, Equipment, and Services – The NRC inspectors made a finding relative to the use of an external audit checklist in performing internal audits; Toshiba is taking action to allow for the use of more appropriate checklists. The inspectors concluded that Toshiba's program requirements for the control of purchased materials, services, and equipment, and services are consistent with the regulatory requirements of Criterion VII of Appendix B. Based on the limited sample of documents reviewed, the inspectors also determined that Toshiba's QAM and associated procedures for the control of purchased materials, equipment, and services are being effectively implemented. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Nonconforming Materials, Parts, or Components – NRC inspectors concluded that Toshiba's program requirements for the control of nonconforming materials, parts, or components are consistent with the regulatory requirements of Criterion XV of Appendix B. Based on the limited sample of documents reviewed, the inspectors also determined that Toshiba's QAM and associated procedures for the control of nonconforming materials, parts, or components are being effectively implemented. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Corrective Action – The NRC inspectors made a finding relative to the timeliness of some corrective actions; Toshiba is revising its procedures to improve in this area. The inspectors concluded that Toshiba's program requirements for corrective actions are consistent with the regulatory requirements of Criterion XVI of Appendix B. Based on the limited sample of documents reviewed, the inspectors also determined that Toshiba's QAM and associated corrective action procedures are being effectively implemented. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Training and Qualification – The NRC inspectors found that there was no implementing procedure for the new training database; nevertheless, Toshiba QA staff were knowledgeable on how the database works. Toshiba initiated a corrective action to address the lack of

procedural guidance. The inspectors found that Toshiba's program requirements for training and qualifying personnel performing activities affecting quality are consistent with the regulatory requirements of Criterion II of Appendix B. Based on the limited sample of training and qualification records reviewed, the inspectors also determined that Toshiba's QAM and associated training and qualification procedures are being effectively implemented. A more detailed presentation of the staff's findings is available in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

Initial Test Program – NRC inspectors concluded that STPNOC and Toshiba have adequate design and change controls for documenting STP Units 3 and 4 ITP changes and/or Tier 2 departures. The inspectors also concluded that STPNOC and Toshiba have provided adequate procedures to document overlapping activities between the ITP and the ITAAC. A more detailed presentation of the staff's findings is in the NRC Inspection Report (IR 05200012/2009-202 and 05200013/2009-202 dated August 28, 2009 [ML092370709]).

1.4S.5 Post Combined License Activities

There are no post COL activities related to this section.

1.4S.6 Conclusion

As a result of **Open Item 01-4**, the staff is unable to finalize the conclusions for this section relating to "Alternate Vendor Qualifications" in accordance with NRC requirements.

1.5 Requirements for Further Technical Information

In its application, the COL applicant who references a certified design should identify any requirements for further technical information related to those portions of the facility that are not certified, including an estimated schedule for providing the additional technical information that was not included with the initial COL application submittal and which may be necessary for issuance of a COL.

Section 1.5 of the STP COL FSAR incorporates by reference, with no departures or supplements, Section 1.5, "Requirements for Further Technical Information," of the certified ABWR DCD, Revision 4, which is referenced in 10 CFR Part 52, Appendix A. NRC staff reviewed the application and checked the referenced DCD to ensure that no issue relating to this section remains for review [1]. The staff's review confirmed that there is no outstanding issue related to this subsection. Pursuant to 10 CFR 52.63(a)(5) and Part 52, Appendix A, Section VI.B.1, all nuclear safety issues relating to the "Requirements for Further Technical Information" have been resolved.

1.5S Other Regulatory Considerations

This section does not exist in either the ABWR DCD or COL FSAR. The NRC staff has added this section to the SER in order to address issues regarding other regulatory considerations for the applicant.

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[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

1.5S.1 Applicant Technical Qualifications (10 CFR 52.97(a)(32))

STPNOC currently owns and operates the STP Units 1 and 2 nuclear power plants. Based on the applicant's experience and demonstrated performance related to the construction and operation of these existing nuclear units, the staff concludes that the applicant is technically qualified to engage in the activities associated with a COL for STP Units 3 and 4 in accordance with the provisions of 10 CFR 52.97(iv)

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1.5S.2 Applicant Financial Qualifications and Organization Considerations

The staff's evaluation of the applicant's financial qualifications, decommissioning funding assurance, foreign ownership, and nuclear insurance and indemnity will be provided in a future appendix to this Chapter. The staff's review of this information is not yet complete and this is being tracked as **Open Item 01-5**. Due to this open item, staff is unable to finalize the conclusions in this section in accordance with the requirements of NRC regulations.

1.5S.3 Nuclear Waste Policy Act

Section 302(b) of the Nuclear Waste Policy Act of 1982, as amended, requires as a precondition to the issuance or renewal of a license to a person to use a utilization or production facility under section 103 or 104 of the Atomic Energy Act of 1954 [42 U.S.C. 2133, 2134] that the applicant for such license shall have entered into a contract under Section 302 with the Secretary or that the Secretary affirms in writing that the applicant is actively and in good faith negotiating with the Secretary for a contract under this section. The COL application did not contain information regarding a contract for the disposal of high-level radioactive waste.

The staff issued RAI 01-16 which requested the applicant to identify the Department of Energy (DOE) contract number applicable to STP Units 3 and 4 for disposal of high-level radioactive waste and spent nuclear fuel. In a response dated December 8, 2009 (ML093450355), the applicant identified the requested DOE contract numbers as DE-CR01-09RW09007 (for STP Unit 3) and DE-CR01-09RW09008 (for STP Unit 4). The staff found this response acceptable, and this RAI is considered closed. Accordingly, the staff concludes that the applicant has satisfied the above requirements.

1.5S.4 Consultation with Department of Homeland Security

In accordance with Section 657 of the Energy Policy Act of 2005, the NRC consulted with the Department of Homeland Security (DHS) with respect to STPNOC's COL application for STP Units 3 and 4. During January 30, 2008 through February 1, 2008, DHS performed a site visit with the applicant and was accompanied by NRC staff (ML080520367). On September 5, 2008, NRC issued the DHS consultation report regarding the site visit with the applicant (ML082340558). The staff concludes that the applicant and NRC staff have satisfied these requirements.

1.5S.5 Receipt, Possession, and Use of Source, byproduct and Special Nuclear Material Authorized by 10 CFR Part 52 Combined Licenses.

In their September 20, 2007, cover letter to Revision 0 of the COL application, STPNOC requested such other licenses as would be required for receipt, possession and use of source, byproduct and special nuclear material in connection with the operation of Unit 3. The staff

notes that such licenses would be in accordance with Commission regulations in 10 CFR Parts 30, 40, and 70.

In a memorandum (ML083030065) dated December 9, 2008, the staff proposed the following standard license conditions and requirements regarding 10 CFR Parts 30, 40, and 70:

> (1) (i) Pursuant to the Act and 10 CFR Part 70, to receive and possess at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, described in the final safety analysis report (FSAR), as supplemented and amended;
>
> (ii) Pursuant to the Act and 10 CFR Part 70, to use special nuclear material as reactor fuel, after the finding in Section 2.D(1) of this license has been made, in accordance with the limitations for storage and amounts required for reactor operation, and described in the FSAR, as supplemented and amended;
>
> (2) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, at any time, any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
>
> (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required, any byproduct, source, or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
>
> (4) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

In RAI 01-15 the staff requested for the applicant to determine if the proposed standard license conditions for 10 CFR Part 30, 40, and 70 (as identified above) are appropriate for the South Texas Project Unit 3 and 4 COLA and also requested for the applicant to provide additional supporting information accordingly. This is being tracked as **Open Item 01-6**. Due to this open item, staff is unable to finalize the conclusions in this section in accordance with the requirements of NRC regulations.

1.5S.6 Aircraft Impact Assessment 10 CFR Part 50.150

Since docketing the COL application, 10 CFR part 52, Subpart C, Combined Licenses, Section 52.79 has been revised through the addition of a new paragraph (a)(47) requiring that an applicant's FSAR contain the information required by 10 CFR 50.150, Aircraft Impact Assessment. At this time, the COL application does not address these new requirements and this is being tracked as **Open Item 01-7**. Due to this open item, the staff is unable to finalize the conclusions in this section in accordance with the requirements of NRC regulations.

1.6 General Electric Topical Reports and Other Documents

1.6.1 Introduction

This section of the certified ABWR DCD contains a comprehensive listing of GE reports that are applicable to the ABWR design.

1.6.2 Summary of Application

Section 1.6 of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1.6 of the certified ABWR DCD Revision 4, with no departures.

In addition, in COL FSAR Section 1.6, the applicant provides the following:

Supplemental Information

Table 1.6-2 is a supplemental tabulation of GE Topical Reports incorporated by reference as part of the COL application.

1.6.3 Regulatory Basis

The regulatory basis for reviewing supplemental information is in NUREG–0800 Section 1.I.6, "Material Referenced."

1.6.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1.6 of the certified ABWR DCD. NRC staff reviewed Section 1.6 of the STP Units 3 and 4 COL FSAR. The staff also checked the referenced ABWR DCD to ensure that the combination of information in the COL FSAR and information in the ABWR DCD represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to General Electric topical reports and other documents.

The following item is also reviewed in this section:

Supplemental Information

The applicant's supplement to this section consists of incorporating by reference NEDO-32686-A, "Utility Resolution Guidance for ECCS [emergency core cooling system] Suction Strainer Blockage," October 1998. This is a topical report approved by the NRC staff. The staff therefore found it appropriate to incorporate this report by reference.

1.6.5 Post Combined License Activities

There are no post COL activities related to this section.

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[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

1.6.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has address the required information relating to "General Electric Topical Reports and other Documents", and no outstanding information is expected to be addressed in the COL FSAR related to this section.

The NRC staff's finding related to information incorporated by reference is in NUREG–1503. The staff's review confirmed that there is no outstanding issue related to this section. Pursuant to 10 CFR 52.63(a)(5) and Part 52, Appendix A, Section VI.B.1, all nuclear safety issues relating to General Electric topical reports and other documents that were incorporated by reference have been resolved.

In addition, the staff concluded that the relevant information in the COL FSAR is acceptable and meets the requirements defined in the ABWR DCD, which is incorporated by reference into 10 CFR Part 52, Appendix A. The staff's conclusion is based on the following:

- The staff's review confirmed that the applicant has adequately addressed the supplemental information in accordance with Section 1.I.6 of NUREG–0800.

1.7 Drawings

1.7.1 Introduction

This section of the certified ABWR DCD contains drawings that are pertinent to the basic ABWR design. The section also details certain conversion factors, drawing symbols, and drawing standards utilized in the certified ABWR DCD. Furthermore, the STP Units 3 and 4 COL FSAR provides site-specific complementary information.

1.7.2 Summary of Application

Section 1.7 of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1.7 of the certified ABWR DCD Revision 4.

In addition, in COL FSAR Section 1.7, the applicant provides the following:

Tier 1 Departures

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

This design change removes the hydrogen recombiners. Table 1.7-1 contains a list of system piping and instrumentation diagrams (P&IDs), some of which are affected by the removal of the hydrogen recombiners.

- STD DEP T1 3.4-1 Safety-Related I&C Architecture

This design change revises the safety-related I&C architecture.

COL License Information Item

- COL License Information Item 1.2 P&ID Pipe Schedule

This COL license information item directs COL applicants to complete the P&ID schedule labeled as "COL applicant." The applicant addresses this item in Subsection 1.7.2.1 by identifying the minimum pipe schedule for ANSI nominal pipe sizes for any individual piping system shown on a P&ID.

Supplemental Information

The applicant identifies two supplements to the DCD. FSAR Table 1.7-6 documents additional or updated I&C and electrical drawings, and Table 1.7-7 includes system drawings that are not part of the ABWR DCD.

1.7.3 Regulatory Basis

In accordance with Section VIII, "Processes for Changes and Departures,"of 10 CFR Part 52, Appendix A, the applicant identifies Tier 1 departures. Tier 1 departures are subject to the requirements of 10 CFR Part 52, Appendix A, Section VIII.A.4.

The regulatory basis for reviewing the COL license information items is in Section 1.I.7, "Drawings and Other Detailed Information," of NUREG–0800. In addition, the relevant requirements for the Commission's regulations and associated acceptance criteria for reviewing supplemental information are in Section 1.0, "Introduction and Interfaces," of NUREG–0800.

1.7.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1.7 of the certified ABWR DCD. NRC staff reviewed Section 1.7 of the STP Units 3 and 4 COL FSAR. The staff also checked the referenced ABWR DCD to ensure that the combination of information in the COL FSAR and information in the ABWR DCD represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to drawings with the exception of the open item identified below.

Tier 1 Departures

The following Tier 1 Departures identified by the applicant in this section require prior NRC approval in the form of an exemption and the full scope of their technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these Tier 1 departures. In addition, compliance with 10 CFR Part 52, Appendix A, Section VIII.A.4 for these Tier 1 departures will be addressed by the staff in future exemption evaluations. This will be tracked as global **Open Item 01-1** throughout the staff's SER.

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.14-1 results in a needed modification to DCD table 1.7-1 and the modified portion of the table has been included in this section of the applicant's FSAR. Within the review scope of SER section 1.7, the staff find's that this departure is editorial in nature and acceptable.

- STD DEP T1 3.4-1 Safety-Related I&C Architecture

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 3.4-1 results in needed modifications to DCD table 1.7-5 and the modified portion of the table has been included in this section of the applicant's FSAR. Within the review scope of SER section 1.7, the staff find's that this departure is editorial in nature and acceptable.

COL License Information Item

- COL License Information Item 1.2 P&ID Pipe Schedule

This COL license information item directs the applicant to complete specific P&ID pipe schedules. The staff agreed that the applicant has provided this information in Subsection 1.7.2.1 of the FSAR. To the extent that the technical information in that section needs to be evaluated, the evaluation will be in the appropriate chapter of this SER or in a future audit or inspection.

Supplemental Information

The applicant included Table 1.7-6 which contains a list of I&C and electrical drawings that were not part of the DCD. Each drawing is associated with a particular chapter in the FSAR. The information in these drawings is addressed, as necessary, in the technical evaluation of the individual chapters.

The applicant included Table 1.7-7 which contains a list of system drawings not included in the ABWR DCD. Each drawing is associated with a particular chapter in the FSAR. The information in these drawings is addressed, as necessary, in the technical evaluation of the individual chapters.

1.7.5 Post Combined License Activities

There are no post COL activities related to this section.

1.7.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to "Drawings". With the exception of **Open Item 01-1**, no outstanding information is expected to be addressed in the COL FSAR related to this section. As a result of this open item, the staff is unable to finalize the conclusions for this section relating to "Drawings" in accordance with NRC requirements.

1.8 Conformance with Standard Review Plan and Applicability of Codes and Standards

1.8.1 Introduction

Section 1.8, of the FSAR addresses the requirement of 10 CFR 52.79(a)(41) that COL applicants referencing a certified design should provide an evaluation of conformance to the guidance in the NRC Standard Review Plan (SRP) that was in effect 6 months before the docket date of the COL application for the site-specific portions of the facility design that are not included in the referenced certified design. Section 1.8 also addresses the applicability of Codes, Standards, and RGs.

The applicant has added a new section titled, "Site Parameters, Interface Requirements, COL License Information Items, and Conceptual Design Information," to supplement Section 1.8 of the FSAR and to conform with the guidance in RG 1.206. This new section is designated as Section 1.8S. Section 1.8S identifies the FSAR chapters where site parameters, interface requirements, COL license information items, and replacement conceptual design information (CDI) are addressed.

1.8.2 Summary of Application

Section 1.8 of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1.8 of the certified ABWR DCD Revision 4. Section 1.8S is a new section providing supplemental information on conformance with the site parameters, interface requirements, COL license information items, and conceptual design information.

In addition, in COL FSAR Sections 1.8 and 1.8S, the applicant provides the following:

Tier 1 Departure

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

The applicant modified Table 1.8-20 by revising the applicable version of RG 1.7, "Control of Combustible Gas Concentration in Containment."

Tier 2 Departure Requiring Prior NRC Approval*

- STD DEP 1.8-1 Tier 2* Codes, Standards, and Regulatory Guide Edition Change

The applicant updated entries in Tables 1.8-7, 1.8-20, and 1.8-21 to reflect the affected changes in codes, standards, and regulatory guides in the ABWR DCD.

Tier 2 Departures Not Requiring Prior NRC Approval

- STD DEP 5A-1 Deletes the Appendix on Compliance with RG 1.150

The applicant updated Table 1.8-20 by deleting RG 1.150 for ultrasonic testing of reactor vessel welds. This test is being performed in accordance with American Society of Mechanical Engineers (ASME) Section XI Appendix VIII, as required by 10 CFR 50.55a.

- STD DEP 6C-1 Containment Debris Protection for ECCS Strainers

This departure identifies the ECCS strainer design for preventing debris from clogging the strainers during long-term recirculation cooling, following the loss-of-coolant accident (updates Table 1.8-20 for RG 1.82).

- STD DEP 9.1-1 Update of Fuel Storage and Handling Equipment

This departure updates the entry in Table 1.8-21a for codes and standards related to the construction of an overhead and gantry crane.

- STP DEP 9.5-1 Diesel Generator Jacket Cooling Water System

The departure withdraws RG 1.108 and replaces it with RG 1.9, Revision 3 in Table 1.8-20.

- STD DEP 11.2-1 Liquid Radwaste Process Equipment

This departure updates the entry for RG 1.143 to Revision 2 in Table 1.8-20 and completely replaces this section of the ABWR DCD.

Supplemental Information

Section 1.8 of the STP Units 3 and 4 FSAR includes the following revisions to the RGs in Table 1.8-20 reflecting changes to the DCD Table 1.8-20 resulting from various departures and conformance to RG 1.206.

- RG 1.75, Revision 3
- RG 1.82, Revision 3
- RG 1.84, Revision 33
- RG 1.136, Revision 3
- RG 1.142, Revision 2
- RG 1.143, Revision 2
- RG 1.153, Revision 1
- RG 1.85 has been withdrawn

Similarly, the departures and conformance to RG 1.206 result in revisions to Table 1.8-21 providing the following Codes and Standards:

- American Concrete Institute 349, 1997
- ASME Boiler and Pressure Vessel Codes, Section III, Division 2, 2001, Edition with 2003 Addenda
- Military (MIL) STD-461E, 1999
- MIL STD-462E, 1999
- Institute of Electrical and Electronic Engineers (IEEE) 279, 1971, has been replaced by IEEE 603, 1991
- IEEE 384, 1992
- IEEE 603, 1991
- MIL STD-1478, 1991, has been cancelled by the U.S. Department of Defense
- International Building Code, 2006

- IEEE 665, 1995

Section 1.8S, "Site Parameters, Interface Requirements, COL License Information Items, and Conceptual Design Information," includes Table 1.8S-1, which cross-references FSAR sections that demonstrate conformance to each of the site parameters. Table1.8S-2 cross-references FSAR sections that describe conformance to the interface requirements. Table 1.8S-3 identifies the FSAR sections that replace the conceptual design information and address the impact of any differences between the conceptual and site-specific designs.

1.8.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG–1503. In addition, the relevant requirements for the Commission's regulations and associated acceptance criteria for the review of supplemental information are in Section 1.I.9, "Conformance with Regulatory Criteria," of NUREG–0800.

In addition, in accordance with Section VIII, Process for Changes and Departures, of Appendix A to Part 52—Design Certification Rule for the ABWR Design, the applicant identified Tier 2 departure(s) that do not require prior Commission approval. These departures are subject to the requirements of Section VIII.B.5, which are similar to the requirements in 10 CFR 50.59.

1.8.4 Technical Evaluation

As documented in NUREG–1503, NRC staff reviewed and approved Section 1.1 of the certified ABWR DCD. The staff reviewed Section 1.8 of the STP Units 3 and 4 COL FSAR and checked the referenced ABWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ABWR DCD appropriately represents the complete scope of information relating to this review topic[1]. In addition, the staff also reviewed Section 1.8S to ensure that the applicant has provided the required information consistent with the guidance of RG 1.206, Part III, Section C.I.1.8 and Section C.III.1.9. The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to conformance with standard review plan and applicability of codes and standards with the exception of the open item identified below.

In addition, the impact of changes in the conformance with the SRP and applicability of codes and standards may receive additional technical evaluations within the appropriate chapters of this SER.

The staff reviewed the information in the COL FSAR:

Tier 1 Departure

The following Tier 1 Departures identified by the applicant in this section require prior NRC approval in the form of an exemption and the full scope of their technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these Tier 1 departures.

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

In addition, compliance with 10 CFR Part 52, Appendix A, Section VIII.A.4 for these Tier 1 departures will be addressed by the staff in future exemption evaluations. This will be tracked as global **Open Item 01-1** throughout the staff's SER.

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.14-1 results in an revision to Table 1.8-20 that updates the version of RG 1.7 in the ABWR DCD. Within the review scope of SER section 1.8, the staff find's that this departure is editorial in nature and is acceptable.

Tier 2 Departure Requiring Prior NRC Approval*

The following Tier 2 Departure identified by the applicant in this section requires prior NRC approval and the full scope of its technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by this departure.

- STD DEP 1.8-1 Tier 2* Codes, Standards, and RG Edition Change

With respect to this section of the FSAR, the applicant has identified that STD DEP 1.8-1 results in revision to Tables 1.8-7, 1.8-20 and 1.8-21 that reflect the affected changes in codes, standards, and regulatory guides in the ABWR DCD. Within the review scope of SER section 1.8, the staff find's that this departure is editorial in nature and is acceptable.

Tier 2 Departures Not Requiring Prior NRC Approval

The following Tier 2 Departures not requiring NRC approval identified by the applicant in this section may also be evaluated in other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these departures.

- STD DEP 5A-1 Deletes the Appendix on Compliance with RG 1.150
- STD DEP 6C-1 Containment Debris Protection for ECCS Strainers
- STD DEP 9.1-1 Update of Fuel Storage and Handling Equipment
- STD DEP 9.5-1 Diesel Generator Jacket Cooling Water System
- STD DEP 11.2-1 Liquid Radwaste Process Equipment

The applicant's evaluation in accordance with 10 CFR Part 52, Appendix A, Section VIII item B.5 determined that these departures do not require prior NRC approval. Within the review scope of this section, the staff finds it reasonable that these departures do not require prior NRC approval. In addition, the applicant's process for evaluating departures and changes to the DCD is subject to NRC inspections.

Supplemental information

Section 1.8 of the STP Units 3 and 4 FSAR includes additional editorial revisions to the ABWR DCD Table 1.8-20 updating the revisions of regulatory guides as a result of various departures and conformance to RG 1.206. Within the review scope of SER section 1.8, the staff find's that these supplemental changes are editorial in nature and are acceptable. The adherence to the

correct revision of the applicable regulatory guides is addressed by the staff, as necessary, in the appropriate technical review section of this SER.

Section 1.8 of the STP Units 3 and 4 FSAR includes additional editorial revisions to the ABWR DCD Table 1.8-21 updating the revisions and applicable Codes and Standards. Within the review scope of SER section 1.8, the staff find's that these supplemental changes are editorial in nature and are acceptable. The adherence to the correct Codes and Standards is addressed by the staff, as necessary, in the appropriate technical review section of this SER.

Section 1.8 of the STP Units 3 and 4 FSAR includes a supplemental table 1.8-21a. This table is described as a site specific supplement to ABWR DCD table 1.8-21. Table 1.8-21a identifies Codes and Standards for Site-Specific Systems. Within the review scope of SER section 1.8, the staff find's that this table is editorial in nature and is acceptable. The adherence to the correct Codes and Standards for Site-Specific Systems is addressed by the staff, as necessary, in the appropriate technical review section of this SER.

Section 1.8S of the STP Units 3 and 4 FSAR includes Tables 1.8S-1, 1.8S-2 and 1.8S-3, which cross references to the FSAR sections where site-specific parameters, interface requirements, COL license information items, and replacement conceptual design information are discussed. Within the review scope of SER section 1.8, the staff find's that these tables are editorial in nature and are acceptable. The cross references to the FSAR sections where site-specific parameters, interface requirements, COL license information items, and replacement conceptual design information are addressed by the staff, as necessary, in the appropriate technical review section of this SER.

Site-Parameters

The applicant has included supplemental section 1.8S.1 and table 1.8S-1 that presents information regarding the conformance of the STP Units 3 and 4 site with the ABWR DCD site-parameters. Within the review scope of SER section 1.8, the staff find's that this supplemental section is acceptable. The conformance of the STP 3 and 4 site with site parameters is evaluated in Chapter 2.0 of this SER.

Interface Requirements

The applicant has included supplemental section 1.8S.2 and table 1.8S-2 that presents information regarding conformance of the STP Units 3 and 4 to the interface requirements for completing site-specific designs for the facility. Within the review scope of SER section 1.8, the staff find's that this supplemental section is acceptable. The staff review found the applicant correctly cross-references the FSAR sections in which conformance to the interface requirements is described.

COL License Information Item

The applicant has included supplemental section 1.8S.3 that indicates that the list of the ABWR COL license information items is contained in Section 1.9 of Tier 2 of the reference ABWR DCD. Table 1.9-1 in Section 1.9 of the DCD provides a cross-reference to the FSAR sections in which these COL license information items are addressed. The staff's review found this acceptable.

Replacement of Conceptual Design Information

The applicant has included supplemental section 1.8S.4 and table 1.8S-3 that presents information regarding replacement of conceptual design information (CDI) included in the ABWR DCD for certain systems that are outside the scope of the standard design and are site-specific. The FSAR replaces the conceptual design information (CDI) with a description and evaluation of the site-specific design. Table 1.8S-3 identifies the FSAR sections that replace the conceptual design information. These sections address the impact of any differences between the conceptual and site-specific design on the standard design and the design probabilistic risk assessment. Within the review scope of SER section 1.8, the staff find's that this supplemental section is acceptable. The replacement of CDI is addressed by the staff, as necessary, in the appropriate technical review section of this SER.

1.8.5 Post Combined License Activities

There are no post COL activities related to this section.

1.8.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to "Conformance with Standard Review Plan and Applicability of Codes and Standards". With the exception of **Open Item 01-1**, no outstanding information is expected to be addressed in the COL FSAR related to this section. As a result of this open item, the staff is unable to finalize the conclusions for this section relating to "Conformance with Standard Review Plan and Applicability of Codes and Standards" in accordance with NRC requirements.

1.9 COL License Information and 1.9S Conformance with Regulatory Criteria

1.9.1 Introduction

Section 1.9, "COL License Information," of the FSAR references Section 1.9 of the ABWR DCD for the list of COL license information items. The applicant has added a new section titled, "Conformance with Regulatory Criteria" to Supplement Section 1.9 of the FSAR in conformance with the guidance of RG 1.206. This new section of the FSAR is designated as 1.9S and addresses applicable RG, the Standard Review Plan, Generic Issues, and Operational Experience (Generic Communications).

The COL applicant in accordance with 10 CFR 52.79(a)(41), must address conformance with the SRP sections that were in effect 6 months before the docket date of the COL application for the site-specific portions of the facility design that are not included in the referenced certified design. The evaluation required by 10 CFR 52.79(a)(41) includes an identification and description of all differences in design features, analytical techniques, and procedural measures proposed for a facility and those corresponding features, techniques, and measures given in the SRP acceptance criteria. Where a difference exists, the evaluation shall discuss how the proposed alternative provides an acceptable method of complying with the Commission's regulations, or portions thereof, that underlie the corresponding SRP acceptance criteria.

According to RG 1.206, COL applicants should provide an evaluation of conformance with the guidance in NRC regulatory guides in effect 6 months before the submittal date of the COL

application for the site-specific portions of the facility design that are not included in the referenced certified design. That evaluation also includes an identification and description of departures from the guidance in the NRC regulatory guides as well as acceptable justifications for any alternative approaches proposed.

The COL application, in accordance with 10 CFR 52.79(a)(20), must provide proposed resolutions to applicable unresolved safety issues and medium- and high priority generic safety issues identified in the version of NUREG-0933 current on the date up to 6 months before the docket date of the application and which are technically relevant to the design, for the site-specific portions of the facility design that are not included in the referenced certified design. The COL application should address how these issues pertain to operational aspects of the facility.

The COL application, in accordance with 10 CFR 52.79(a)(37), must provide the information necessary to demonstrate how operating experience insights have been incorporated into the plant design. According to RG 1.206, the COL application should address this requirement by describing how operating experience insights from generic letters and bulletins issued after the most recent revision of the applicable SRP and 6 months before the docket date of the application, or comparable international operating experience, have been incorporated into the plant design, for the site specific portions of the facility design that are not included in the referenced certified design.

1.9.2 Summary of Application

Section 1.9 of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1.9 of the certified ABWR DCD, Revision 4, referenced in 10 CFR Part 52, Appendix A. Section 1.9S is a new supplemental information addressing applicable Regulatory Guides, the Standard Review Plan, Generic Issues, and Operational Experience (Generic Communications).

In addition, in COL FSAR Sections 1.9, and 1.9S, the applicant provides the following:

Tier 1 Departure

- STD DEP T1 3.4-1 Safety-Related I&C Architecture

This departure revises the safety-related I&C architecture. The applicant modifies the title of the COL License Information Item 19.8 in Table 1.9-1 of the ABWR DCD to be consistent with the new naming convention in the revised I&C architecture.

Supplemental Information

Section 1.9S, provides supplemental information to address applicable RGs, SRP, Generic issues, and Operational Experience Table 1.9S-1 of the STP Units 3 and 4 FSAR lists the applicable Division 1 and Division 8 regulatory guides that were in effect in March 2007, which STP Units 3 and 4 conform to for the site-specific portions of the facility design not included in the referenced ABWR DCD. The operational aspects of the facility are included. Table 1.9S-1 also includes those regulatory guides with which the departures from the referenced ABWR DCD conform. Table 1.9S-2 lists an evaluation of the exceptions from the regulatory guides, which are noted as “COL Applicant” in the DCD. Table 1.9S-3 addresses conformance to the March 2007 SRP for the site-specific portions of the facility design. Table 1.9S-4 addresses

conformance to the March 2007 SRP for the Tier 1 and Tier 2* departures. The applicant consistent with the guidance in RG 1.206, addresses conformance with the March 2007 SRP for the Tier 1 and Tier 2* departures for the site specific portions of the facility design that were not included in the reference ABWR DCD. Table 1.9S-5 addresses generic issues identified in Table 19B of the referenced ABWR DCD as the responsibility of the COL applicant. Table 1.9S-6 addresses those generic communications (Generic Letters and Bulletins) identified in the referenced ABWR DCD Table 1.8.22 as the responsibility of the COL applicant.

1.9.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG–1503. In addition, the relevant requirements for the Commission's regulations and associated acceptance criteria for reviewing COL license information and supplemental information are in Section 1.0, "Introduction and Interfaces," of NUREG–0800.

1.9.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1.9 of the certified ABWR DCD. The staff reviewed Section 1.9 of the STP Units 3 and 4 COL FSAR and checked the referenced ABWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ABWR DCD appropriately represents the complete scope of information relating to this review topic. The staff also reviewed Section 1.9S to ensure that the applicant has provided the required information consistent with the guidance of RG 1.206, Part III, Section C.I.1.9. The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to COL license information and conformance with regulatory criteria with the exception of the open item identified below.

In addition, the impact of changes in the COL license information and conformance with regulatory may receive additional technical evaluations within the appropriate chapters of this SER.

The staff reviewed the information in the COL FSAR:

Tier 1 Departure

The following Tier 1 Departure identified by the applicant in this section require prior NRC approval in the form of an exemption and the full scope of its technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by this Tier 1 departure. In addition, compliance with 10 CFR Part 52, Appendix A, Section VIII.A.4 for this Tier 1 departure will be addressed by the staff in a future exemption evaluation. This will be tracked as global **Open Item 01-1** throughout the staff's SER.

- STD DEP T1 3.4-1 Safety-Related I&C Architecture

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 3.4-1 results in an revision to COL License Information Item 19.8 in Table 1.9-1 of the ABWR DCD to be consistent with the new naming convention in the revised I&C architecture. Within the review

scope of SER section 1.9, the staff find's that this departure is editorial in nature and is acceptable.

Supplemental Information

Consistent with 10 CFR 52.79(a) and the guidance in RG 1.206, Section 1.9S, provides supplemental information addressing applicable RGs, SRP, Generic Issues, and Operational Experience.

The staff reviewed Table 1.9S-1, "Site-Specific Conformance with Regulatory Guides," in order to confirm that it lists Division 1 and Division 8 RGs and uses the correct RG revisions. Additionally, the staff reviewed the list of RGs in Table 1.9S-2 annotated as "COL Applicant" in the reference ABWR DCD Table 1.8-20. The staff noted that the applicant's FSAR does not address regulatory guides related to quality assurance. The staff issued RAI 01-14 and the applicant responded on October 29, 2009. The staff found that the applicant's response was insufficient, and the staff will be issuing a supplemental RAI. This will be tracked as Open Item 01-8. Additional technical discussion regarding this Open Item can be found in Chapter 17 of this SER.

Consistent with RG 1.206, the applicant notes that the only applicable medium-or high priority generic issue listed in NUREG-0933, Appendix B, Rev.21, dated June 30, 2006, is Generic Issue 156.6.1 regarding pipe break effects on systems and components. The site-specific portions of the STP Units 3 and 4 design that are not included in the referenced ABWR DCD meet the criteria of SRP 3.6.1 Revision 3 and SRP 3.6.2 Revision 2 (dated March 2007), which address this issue. The staff found this evaluation reasonable and sufficient.

The staff reviewed Table 1.9S-4 and found that the applicant consistent with the guidance in RG 1.206 has addressed conformance with the March 2007 SRP for the Tier 1 and Tier 2* departures for the site specific portions of the facility design that were not included in the reference ABWR DCD. The staff's review found three SRP sections in Table 1.8-19 of DCD Tier 2 that are listed as the responsibility of the COL applicant but are not included in Table 1.9S-3 or in Table 1.9S-4, which indicates nonconformance to the SRP. These sections are SRP 9.5.2, "Communication Systems"; SRP 13.5.2, "Operating and Maintenance Procedures"; and SRP 17.2, "Quality Assurance During the Operations Phase." The staff issued RAI 01-13 requesting the applicant to reconcile these apparent omissions. In a response dated October 15, 2009, the applicant states that COL FSAR Table 1.9S-3 will be updated to include these omissions. The staff found this response acceptable, and this RAI is now **Confirmatory Item 01-1**. However, the staff has noted that this table did not address Tier 2 Departures requiring prior NRC approval. The staff will issue a future RAI to request that the applicant resolve this discrepancy and this will be tracked as **Open Item 01-9**.

The staff reviewed the resolution comments included in Table 1.9S-5 and found that they reasonably and adequately address the generic issues identified as the responsibility of the COL applicant in Table 19B of the referenced ABWR DCD.

The staff also reviewed Table 1.9S-6, "COL Applicant Resolution of Generic Communication Issues." The staff found that the applicant has adequately addressed all relevant Generic Letters and Inspection and Enforcement Bulletins.

Based on the above, The NRC staff's review found the applicant has provided sufficient information in Section 1.9S for conformance with RG 1.206.

1.9.5 Post Combined License Activities

There are no post COL activities related to this section.

1.9.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to "Conformance with Standard Review Plan and Applicability of Codes and Standards". With the exceptions of **Open Items 01-1, 01-8** and 01-9, and **Confirmatory Item 01-1**, no outstanding information is expected to be addressed in the COL FSAR related to this section. As a result of these open and confirmatory items, the staff is unable to finalize its conclusions relating to "COL License Information and Conformance with Regulatory Criteria" in accordance with NRC requirements.

1.10S Impact of Construction Activities on Units 1 and 2

This section remains open pending the development of interim staff guidance. This is being tracked as **Open Item 01-9.**

APPENDICES 1A and 1AA Response to TMI Related Matters, and Plant Shielding to Provide Access to Vital Areas and Protective Safety Equipment for Post-Accident Operation,

1A-1AA.1 Introduction

Appendix 1A of the STP Units 3 and 4 FSAR addresses TMI-related matters; and Appendix 1AA addresses plant shielding to provide access to vital areas and protective safety equipment for post-accident operations.

1A-1AA.2 Summary of Application

Appendices 1A and 1AA of the STP Units 3 and 4 COL FSAR incorporate by reference Appendices 1A and 1AA of the certified ABWR DCD, Revision 4. In addition, in COL FSAR Appendices 1A and 1AA, the applicant provides the following:

Appendix 1A Response to TMI Related Matters

Tier 1 Departures

- STD DEP T1 2.3-1 Deletion of MSIV Closure and Scram on High Radiation

This departure evaluates the deletion of the reactor Scram and the MSIV closure on the high main steamline radiation monitor trip. This departure affects TMI Action Plan III.D.1.1(1).

- STD DEP T1 2.4-3 RCIC Turbine/PUMP

This departure evaluates an alternate design for the reactor core isolation cooling (RCIC) turbine/pump. This departure affects TMI Action Plan III.K.3(15).

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirement Elimination

This departure evaluates the removal of hydrogen recombiners and associated components. This departure affects TMI Action Plans II.B.3, II.E.4.3, II.F-3, and III.D.1.1(1).

COL License Information Items

Appendix 1A.3, "COL License Information," addresses COL License Information Items 1.5 through 1.12:

- COL License Information Item 1.5 Emergency Procedures and Emergency Procedures Training Program

This COL license information item addresses the requirement to develop and implement emergency procedures based on the emergency procedures guidelines (EPGs) before fuel loading (Subsection 1A.2.1). The emergency procedures will be consistent with the plant operating procedure development plan in Section 13.5. This item is in response to TMI Action Plan I.C.1.3. (Commitment [COM] 1A-1).

- COL License Information Item 1.6 Review and Modify Procedures for Removing Safety-Related Systems from Service

This COL license information item addresses administrative procedures to be developed by the licensee before fuel loading, which will require approval for the performance of surveillance tests and maintenance for safety-related systems, including equipment removal from service and return to service to assure that the operability status is known. These procedures will be consistent with the plant operating procedure development plan in Section 13.5. This item is in response to TMI Action Plan II.K.1.(10). (COM 1A-2).

- COL License Information Item 1.7 In-Plant Radiation Monitoring

This COL license information item addresses equipment, training, and procedures necessary to accurately determine the presence of airborne radioiodine in areas within the plant, where plant personnel may be present during an accident, consistent with Section 13.5. The equipment will be specified and the training and procedures will be consistent with FSAR Section 12.3, "Radiation Protection Design Features." This item is in response to TMI Action Plan II.D.3.3 (3). (COM 1A-3).

- COL License Information Item 1.8 Reporting Failures of Reactor System Relief Valves

This COL license information item addresses administrative procedures to be developed by the licensee before fuel loading, which will direct that failures of reactor system relief valves be reported in the licensee's annual report to the NRC. These procedures will be consistent with the plant operating procedure development plan in Section 13.5. This item is in response to TMI Action Plan II.K.3 (3). (COM 1A-4).

- COL License Information Item 1.9 Report on ECCS Outages

This COL license information item addresses administrative procedures to be developed by the licensee before fuel loading, which direct that instances of the unavailability of the ECCS because of component failure, maintenance outage (both forced or planned), or testing shall be collected and reported to the NRC annually. These reports may consist of the performance indicator report for mitigating systems periodically provided to the NRC as part of the Reactor Oversight Process. These procedures will be consistent with the plant operating procedure development plan in Section 13.5. This item is in response to TMI Action Plan II.K.3 (17). (COM 1A-5).

- COL License Information Item 1.10 Procedures for Reactor Venting

This COL license information item addresses EPGs to be written for the ABWR that will be applicable to STP Units 3 and 4. The ABWR EPGs are in Appendix 18A. The operator procedures will use the ABWR EPGs and will be developed before fuel loading. These procedures will be consistent with Section 13.5. This item is in response to TMI Action Plan II.B.1. (COM 1A-6).

- COL License Information Item 1.11 Testing of SRV and Discharge Piping

Testing of the SRVs and discharge piping is included in the ITP described in Section 14.2. This item is in response to TMI Action Plan II.D.1.

- COL License Information Item 1.12 RCIC Bypass Start System Test

With respect to STD DEP T1 2.4-3, the applicant has removed the RCIC bypass line and valve. Therefore the applicant has replaced the RCIC bypass start system test with the RCIC start test. This modified RCIC start test is included in the Initial Test Program (ITP) described in Section 14.2. This item is in response to TMI Action Plan II.K.3 (15).

Appendix 1AA Plant Shielding to Provide Access to Vital Areas and Protective Safety Equipment for Post-Accident Operation

Tier 1 Departures

- STD DEP T1 2.4-1 Residual Heat Removal System and Spent Fuel Pool Cooling

This departure updates entries in Table 1AA-2 to add equipment to the list. The entries are consistent with the need to keep spent fuel pool cooling during post-accident operations.

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

This departure updates entries in Table 1AA-3 that are consistent with design changes associated with the removal of hydrogen recombiners and associated equipment.

Tier 2 Departures Not Requiring Prior NRC Approval

- STD DEP 1AA-1 Shielding Design Review

This departure allows for changes in the Appendix to reflect revisions to the integrated doses for the environmental qualification of safety-related equipment.

- STD DEP Admin Administrative Changes

This departure updates entries in Table 1AA-2 that are consistent with the affected changes to the ABWR DCD.

1A-1AA.3 Regulatory Basis

The regulatory basis for the information incorporated by reference is in NUREG–1503. In addition, the relevant requirements for the Commission's regulations and associated acceptance criteria for reviewing COL license information and supplemental information are in Section 1.0, "Introduction and Interfaces," of NUREG–0800.

In addition, in accordance with Section VIII, Process for Changes and Departures, of Appendix A to Part 52—Design Certification Rule for the ABWR Design, the applicant identified Tier 2 departure(s) that do not require prior Commission approval. These departures are subject to the requirements of Section VIII, which are similar to the requirements in 10 CFR 50.59.

1A-1AA.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1.4 of the certified ABWR DCD. NRC staff reviewed Section 1A-1AA of the STP Units 3 and 4 COL FSAR. The staff also checked the referenced ABWR DCD to ensure that the combination of information in the COL FSAR and information in the ABWR DCD represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to TMI related matters and plant shielding to provide access to vital areas and protective safety equipment for post-accident operation.

Tier 1 Departures

The following Tier 1 Departures identified by the applicant in this section require prior NRC approval in the form of an exemption and the full scope of their technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these Tier 1 departures. In addition, compliance with 10 CFR Part 52, Appendix A, Section VIII.A.4 for these Tier 1 departures will be addressed by the staff in future exemption evaluations. This will be tracked as global **Open Item 01-1** throughout the staff's SER.

- STD DEP T1 2.3-1 Deletion of MSIV Closure and Scram on High Radiation

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.3-1 results in revisions to section 1A.2.34. Within the review scope of SER section 1A-1AA, the staff find's that this departure is editorial in nature and is acceptable.

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

- STD DEP T1 2.4-1 Residual Heat Removal System and Spent Fuel Pool Cooling

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.4-1 results in revisions to section 1AA.5.1.2 and Table 1AA-2 of the ABWR DCD. Within the review scope of SER section 1A-1AA, the staff find's that this departure is editorial in nature and is acceptable.

- STD DEP T1 2.4-3 RCIC Turbine/PUMP

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.4-3 results in revisions to sections 1A.2.23 and 1A.2.34 of the ABWR DCD. Within the review scope of SER section 1A-1AA, the staff find's that this departure is editorial in nature and is acceptable.

- STD DEP T1 2.14-1 Hydrogen Recombiner Requirements Elimination

With respect to this section of the FSAR, the applicant has identified that STD DEP T1 2.14-1 results in revisions to sections 1A.2.7, 1A.2.13, 1A.2.17, 1A.2.34, 1AA.3.2, 1AA.5.1.3 and Table 1AA-3. Within the review scope of SER section 1A-1AA, the staff find's that this departure is editorial in nature and is acceptable.

Tier 2 Departures Not Requiring Prior NRC Approval

The following Tier 2 Departures not requiring NRC approval identified by the applicant in this section may also be addressed in other sections of this SER. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by these departures.

- STD DEP 1AA-1 Shielding Design Review

With respect to this section of the FSAR, the applicant has identified that STD DEP 1AA-1 results in revisions to section 1AA-2. Within the review scope of SER section 1A-1AA, the staff find's that this departure is reasonable and this departure does not require prior NRC approval.

Administrative Departure

- STD DEP Admin Administrative Changes

The applicant defines administrative departures as minor corrections, such as editorial or administrative errors in the referenced ABWR DCD (i.e., misspellings, incorrect references, table headings, etc.). The applicant identifies that this administrative departure updates entries in Table 1AA-2 that are consistent with the affected changes to the ABWR DCD. NRC staff found that this administrative departure does not affect the presentation of any design discussion or qualification of design margin. Therefore, this departure is acceptable.

The applicant evaluation in accordance with Item B.5 of Section VIII of Appendix A to 10 CFR Part 52 determined that the Tier 2 departures did not require prior NRC approval. For the purposes of the staff's Appendices 1A and 1AA review, the staff found it reasonable that these departures do not require prior NRC approval. The applicant process for evaluating departures and other changes to the DCD is subject to NRC inspections.

COL License Information Items

The staff reviewed the applicant's resolution to COL License Information Items 1.5 through 1.12, and found that the applicant has addressed these items, as required by the DCD. The staff found the applicant's commitments (i.e., COM 1A-1 through COM 1A-6) are reasonable and sufficient. Technical evaluations of these items are in the appropriate sections of this SER.

1A-1AA.5 Post Combined License Activities

The applicant identifies the following commitments:

- Commitment (COM 1A-1) – The applicant is required to develop and implement emergency procedures based on the emergency procedure guidelines before fuel loading.

- Commitment (COM 1A-2) – The applicant is required to develop, before fuel loading, administrative procedures that require approval for the performance of surveillance tests and maintenance for safety-related systems, including equipment removal from service and return to service.

- Commitment (COM 1A-3) – The applicant is required to provide equipment, training, and procedures to accurately determine the presence of airborne radioiodine in areas within the plant where plant personnel may be present during an accident.

- Commitment (COM 1A-4) – The applicant is required to provide administrative procedures, before fuel loading, which require that failures of reactor system relief valves be reported in the licensee's annual report to the NRC.

- Commitment (COM 1A-5) – The applicant is required to provide administrative procedures, before fuel loading, which require that instances of ECCS unavailability because of component failure, maintenance outage (both forced or planned), or testing shall be collected and reported to the NRC annually.

- Commitment (COM 1A-6) – The applicant is required to develop operator procedures for reactor venting, before fuel loading, which use the ABWR emergency procedure guidelines.

1A-1AA.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to "TMI Related Matters and Plant Shielding to Provide Access to Vital Areas and Protective Safety Equipment for Post-Accident Operation". With the exception of **Open Item 01-1**, no outstanding information is expected to be addressed in the COL FSAR related to this section. As a result of this open item, the staff is unable to finalize the conclusions for this section relating to "TMI Related Matters and Plant Shielding to Provide Access to Vital Areas and Protective Safety Equipment for Post-Accident Operation" in accordance with NRC requirements.

Appendix 1B

This appendix is not used in both the ABWR DCD and the applicant's FSAR.

Appendix 1C ABWR Station Blackout Considerations

1C.1 Introduction

This appendix describes (a) how the ABWR Design addresses Station Blackout (SBO) Events; (b) how the ABWR Design complies with 10 CFR 50.63 SBO requirements; and (c) where supporting documentation to these conformances exist in Tier 2.

1C.2 Summary of Application

Section 1C of the STP Units 3 and 4 COL FSAR incorporates by reference Section 1C in Revision 4 of the certified ABWR DCD.

In addition, in COL FSAR Section 1.2, the applicant provides the following:

Tier 2 Departure Requiring Prior NRC Approval*

- STD DEP 1.8-1 Tier 2* Codes, Standards, and Regulatory Guide Edition Change

The applicant updated entries in Table 1.C-3 to reflect the affected changes in codes, standards, and regulatory guides in the ABWR DCD.

Tier 2 Departure Requiring Prior NRC Approval

- STD DEP 8.3-1 Plant Medium Voltage Electrical System Design

This departure changes the plant's medium voltage electrical system from a single 6.9 kilovolt (kV) system to a dual-voltage 13.8 kV and 4.16 kV system and affects the TS related to the design change.

COL License Information Items

- COL License Information Item 1.13 Station Blackout Procedures

This COL license information item addresses the requirement to provide procedures for Station Blackout (SBO) events including the use of a combustion turbine generator (CTG). The applicant has identified that the SBO procedures will be developed consistent with the plant operating procedure development plan identified in FSAR Section 13.5 (COM 1C-1).

1C.3 Regulatory Basis

The regulatory basis for the information incorporated by reference is in NUREG–1503. In addition, the relevant requirements for the Commission's regulations and associated acceptance criteria for reviewing COL license information and supplemental information are in Section 1.0, "Introduction and Interfaces," of NUREG–0800.

In addition, in accordance with Section VIII, Process for Changes and Departures, of Appendix A to Part 52—Design Certification Rule for the ABWR Design, the applicant identified Tier 2 departure(s) that do not require prior Commission approval. These departures are

subject to the requirements of Section VIII, which are similar to the requirements in 10 CFR 50.59.

1C.4 Technical Evaluation

As documented in NUREG–1503, the staff reviewed and approved Section 1C of the certified ABWR DCD. NRC staff reviewed Section 1C of the STP Units 3 and 4 COL FSAR. The staff also checked the referenced ABWR DCD to ensure that the combination of information in the COL FSAR and information in the ABWR DCD represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to ABWR station blackout considerations.

Tier 2 Departure Requiring Prior NRC Approval*

The following Tier 2 Departure identified by the applicant in this section requires prior NRC approval and the full scope of its technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by this departure.

- STD DEP 1.8-1 Tier 2* Codes, Standards, and Regulatory Guide Edition Change

With respect to this section of the FSAR, the applicant has identified that STD DEP 1.8-1 results in a revision to section 1C.2.2.2 and Table 1C-3 in the ABWR DCD. Within the review scope of SER section 1.8, the staff find's that this departure is editorial in nature and is acceptable.

Tier 2 Departure Requiring Prior NRC Approval

The following Tier 2 Departure identified by the applicant in this section requires prior NRC approval and the full scope of its technical impact may be evaluated in the other sections of this SER accordingly. For more information, please refer to COLA Part 07, Section 5.0 for a listing of all FSAR sections affected by this departure.

- STD DEP 8.3-1 Plant Medium Voltage Electrical System Design

With respect to this section of the FSAR, the applicant has identified that STD DEP 8.3-1 results in a revisions to sections 1C.2.2.2, 1C.2.3.1.1, 1C.2.3.1.3, 1C.2.3.2 and Tables 1C-1, 1C-2 and 1C-3 in the ABWR DCD. Within the review scope of SER section 1C, the staff find's that this departure is editorial in nature and is acceptable.

COL License Information Item

The staff reviewed the applicant's resolution to COL License Information Item 1.13, and found that the applicant has addressed this item, as required by the DCD. The staff found the applicant's commitment is reasonable and sufficient within the review scope of this section. Further technical evaluation of this item is in SER Section 13.5.

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.1.3 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

1C.5 Post Combined License Activities

The applicant identifies the following commitment:

- Commitment (COM 1C-1) – The applicant is required to develop operator procedures for Station Blackout (SBO) events including the use of a combustion turbine generator (CTG), before fuel loading, which use the ABWR plant operating procedures.

The staff reviewed the applicant's resolution to COL License Information Item 1.13, and found that the applicant has addressed this item, as required by the DCD. The staff found the applicant's commitment is reasonable and sufficient within the review scope of this section. Further technical evaluation of this item is in SER Section 13.5.

1C.6 Conclusion

NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to "ABWR Station Blackout Considerations", and no outstanding information is expected to be addressed in the COL FSAR related to this section.

The NRC staff's finding related to information incorporated by reference is in NUREG–1503. The staff's review confirmed that there is no outstanding issue related to this section. Pursuant to 10 CFR 52.63(a)(5) and Part 52, Appendix A, Section VI.B.1, all nuclear safety issues relating to ABWR station blackout procedures that were incorporated by reference have been resolved.

In addition, the staff concluded that the relevant information in the COL FSAR is acceptable and meets the requirements defined in the ABWR DCD, which is incorporated by reference into 10 CFR Part 52, Appendix A. The staff's conclusion is based on the following:

- For purposes of the staff's Section 1C review, the staff found that departures STD DEP 1.8-1 and STD DEP 8.3-1 are acceptable.

- Within the review scope of this section, the staff's review confirmed that the applicant has adequately addressed COL license information 1.13 in accordance with Section C.III.4.3 of NUREG–1.206.