14.0 INITIAL TEST PROGRAM

This chapter of the combined license (COL) Final Safety Analysis Report (FSAR) addresses information concerning the Initial Test Program (ITP) for structures, systems, and components (SSCs) and design features for both the nuclear portion of the Fermi Unit 3 Station (Fermi 3) and the balance of plant. The information includes major phases of the test program, including preoperational tests, initial fuel loading and initial criticality, low-power tests, and power-ascension tests. The COL applicant thus describes the scope of the ITP as well as general plans for accomplishing the ITP in sufficient detail to demonstrate that there is due consideration given to matters that normally require advance planning.

In accordance with Regulatory Guide (RG) 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," Regulatory Position C.I.14, "Verification Programs," dated June 2007, the COL applicant describes the technical aspects of the ITP in sufficient detail to show that (1) the test program adequately verifies the functional requirements of plant SSCs, and (2) the sequence of testing is such that the safety of the plant does not depend on untested SSCs. The COL applicant also describes measures to ensure that (1) the ITP will be accomplished with adequate numbers of qualified personnel; (2) there will be adequate administrative controls established to govern the ITP; (3) the ITP will be used, to the extent practicable, to train and familiarize the plant's operating and technical staff in the operation of the facility; and (4) the adequacy of plant operating and emergency procedures will be verified, to the extent practicable, during the period of the ITP.

This chapter also provides information on the inspections, tests, analyses, and acceptance criteria (ITAAC) that the applicant proposes to demonstrate that, when the identified ITAAC are performed and the associated acceptance criteria met, the facility will have been constructed and will operate in conformity with (1) the COL; (2) the Atomic Energy Act of 1954, as amended; and (3) the U.S. Nuclear Regulatory Commission (NRC) regulations.

14.1 Initial Test Program for Preliminary Safety Analysis Reports

Section 14.1 of the Fermi 3 Combined License Application (COLA) FSAR, Revision 4, incorporates by reference, with no departures or supplements, Section 14.1, "Initial Test Program for Preliminary Safety Analysis Reports," of Revision 9 of the economic simplified boiling-water reactor (ESBWR) design certification document (DCD), which is itself incorporated by reference into Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," Appendix [X]. The NRC staff reviewed the application and checked the referenced DCD to ensure that no issue relating to this section remained for review.[1] The NRC 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 [X], Section VI.B.1, all nuclear safety issues relating to summary description that were incorporated by reference have been resolved.

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.2.2 for a discussion on the staff's review related to verification of the scope of information to be included in a COLA that references a design certification.

14.2 Initial Plant Test Program for Final Safety Analysis Reports

14.2.1 Introduction

This section of the FSAR presents an overview of the Fermi 3 ITP.

14.2.2 Summary of Application

Section 14.2, "Initial Plant Test Program for Final Safety Analysis Reports," of the Fermi 3 FSAR, Revision 4, incorporates by reference Section 14.2, "Initial Plant Test Program for Final Safety Analysis Reports," of the ESBWR DCD, Revision 9.

In addition, the Fermi 3 FSAR, Revision 4, Section 14.2, provides the following:

COL Items

- STD COL 14.2-1-A Description – Initial Test Program Administration

The applicant developed and provided a description of the ITP administration in Appendix 14AA of the Fermi 3 FSAR, Revision 4.

- STD COL 14.2-2-A Startup Administrative Manual

The applicant provided a milestone for completing the Startup Administrative Manual (SAM).

- STD COL 14.2-3-A Test Procedures

The applicant provided milestones for making approved test procedures satisfying the requirements of the ITP.

- STD COL 14.2-4-A Test Program Schedule and Sequence

The applicant provided a license condition to develop and make detailed testing schedules available for NRC review prior to actual implementation. The implementation milestones for the ITP are provided in Section 13.4 of the Fermi 3 FSAR, Revision 4.

- EF3 COL 14.2-5-A Site Specific Preoperational and Startup Tests

The applicant described the site specific preoperational and initial startup tests not addressed in DCD Section 14.2.8.

- EF3 COL 14.2-6-A Site Specific Preoperational and Startup Tests

The applicant specified that site specific testing will be performed and acceptance criteria for each preoperational and startup test are documented in test procedures available 60 days prior to their intended use.

Supplemental Information

- STD SUP 14.2-2 Test Records

The applicant specified that startup test reports are prepared in accordance with RG 1.16.

- STD SUP 14.2-4 AC Power Distribution System Preoperational Test General Test Methods and Acceptance Criteria

The applicant specified that proper operation of the automatic transfer capability of the normal preferred power source to the alternate preferred power source.

- EF3 SUP 14.2-1 Organization and Staffing

The applicant provided additional information regarding responsibilities, qualifications, and organization for the pre-operational and startup testing program.

- EF3 SUP 14.2-2 Site-Specific Performance Test

The applicant specified that the objective of this test is to demonstrate acceptable performance of the waste heat rejection portion of the CIRC (i.e., the hyperbolic cooling tower and basin).

- EF3 SUP 14.2-3 Site-Specific Pre-Operational Tests

The applicant specified site-specific pre-operational tests for the Station Water System (SWS) and the Cooling Tower.

- EF3 SUP 14.2-4 Plant Service Water System (PSWS) Preoperational Test

The applicant specified the verification of proper operation of the PSWS.

- EF3 SUP 14.2-5 Plant Service Water System Performance Test

The applicant specified the verification of performance of the PSWS under expected reactor power operation load conditions.

14.2.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG–1966, the Final Safety Evaluation Report (FSER) related to the certified ESBWR DCD.

The regulatory basis for acceptance of supplemental information related to operational programs is addressed in the following documents:

- Section 14.2, “Initial Plant Test Program—Design Certification and New License Applicants,” of NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants” (SRP)

- Section C.I.14, "Verification Programs," of RG 1.206, "Combined License Applications of Nuclear Power Plants (LWR Edition)"; and

- RG 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants"

The regulatory basis for applicant development of administrative controls that will be used to govern the ITP is addressed in SRP Sections 14.2.3.B.ii and iii, and in RG 1.206, Section C.I.14. The applicable regulatory requirements for the information being reviewed in this section are 10 CFR 52.79(a)(28) and Criterion XI of Appendix B to 10 CFR Part 50.

14.2.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 14.2 of the certified ESBWR DCD. The staff reviewed Section 14.2 of the Fermi 3 COL FSAR, Revision 4, and checked the referenced ESBWR DCD to ensure that the combination of the information in the ESBWR DCD and the information in the Fermi 3 COL FSAR, Revision 4, appropriately represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information contained in the application and the information incorporated by reference address the relevant information related to this section.

The Fermi 3 ITP includes a test program that will verify the functional requirements of plant SSCs. The ITP also includes the applicant's plans for the sequence of testing. The staff noted that the sequence of testing is organized in such a manner that the safety of the plant does not depend on any untested SSCs. In addition, the staff noted the following:

- The ITP is to be conducted with an adequate number of qualified personnel.

- Appropriate administrative controls have been established to govern the ITP.

- The test program will be used to train and familiarize the plant's operating and technical staff with general operation of the facility.

- The adequacy of plant operating and emergency procedures will be verified, to the extent practicable, during the ITP performance period.

The NRC staff's technical evaluation of the FSAR sections affected by COL items STD COL 14.2-1-A, STD COL 14.2-2-A, STD COL 14.2-3-A, STD COL 14.2-4-A, EF3 COL 14.2-5-A, EF3 COL 14.2-6-A and supplemental information items STD SUP 14.2-2, STD SUP 14.2-4, EF3 SUP 14.2-1, EF3 SUP 14.2-2, EF3 SUP 14.2-3, EF3 SUP 14.2-4, and EF3 SUP 14.2-5 is discussed in Subsections 14.2.4.1 through 14.2.4.8.

[1] See "*Finality of Referenced NRC Approvals*," in SER Section 1.2.2, 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.

14.2.4.1 ***Organization and Staffing***

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

Supplemental Information

- EF3 SUP 14.2-1

In FSAR Section 14.2.1.4, "Organization and Staffing," the applicant added the following:

> Section 13.1 provides additional information regarding responsibilities, qualifications, and organization for implementing the preoperational and startup testing program.

The staff found the administrative addition of a pointer to Section 13.1 of the FSAR, regarding organization and staffing, acceptable.

14.2.4.2 ***Startup Administrative Manual***

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

COL Items

- STD COL 14.2-1-A Description – Initial Test Program Administration

The applicant developed and provided a description of the ITP administration in Appendix 14AA of the Fermi 3 FSAR, Revision 4.

Section 14.2.2.1 "Startup Administrative Manual," of the DCD states in part that:

> A description of the initial test program administration is developed and made available to the NRC by the COL Applicant. This includes a discussion and description of the process and organizational controls and requirements that are included in the Startup Administrative Manual. See Subsection 14.2.10, COL Information Item 14.2-1-A.

The applicant developed and provided a description of the ITP administration in Appendix 14AA of the Fermi 3 FSAR, Revision 4. The staff reviewed the appendix and noted that it provided an adequate discussion and description of the process and organizational controls and requirements that are included in the Startup Administrative Manual.

The staff evaluated STD COL 14.2-1-A according to the relevant NRC regulations and acceptance criteria defined in NUREG-0800, Section 14.2 along with the guidance in RG 1.68 and RG 1.206, Section C.I.14, and finds that the applicant has satisfactorily addressed DCD COL Item 14.2-1-A.

- STD COL 14.2-2-A Startup Administrative Manual

Section 14.2.2.1 "Startup Administrative Manual," of the DCD states in part that:

> The COL Applicant will provide a milestone for completing the Startup Administrative Manual and making it available for Nuclear Regulatory Commission (NRC) inspection (COL 14.2-2-A). [Note: The official designation of this manual may differ for the plant owner/operator referencing the ESBWR design; the term Startup Administrative Manual is used throughout this discussion for illustrative purposes only.]

The applicant replaced the above section with a milestone for developing and providing the startup administrative manual no later than 60 days prior to the intended use for preoperational test and scheduled fuel loading for initial startup tests. In Section 14.2.2.1 of the FSAR, the applicant stated that:

> The Startup Administration Manual will be developed and made available for review 60 days prior to scheduled start of the preoperational test program.

In addition, the applicant identified a license condition for STD COL 14.2-2-A, in Part 10, Section 3.2.1, Revision 3, February 2012, of the COL application and is also addressed below in Post Combined License Activities. The licensee will track the development of the startup administrative manual in order to address this COL information item in accordance with applicable guidance. The staff evaluated STD COL 14.2-2-A according to the relevant NRC regulations and acceptance criteria defined in NUREG-0800, Section 14.2 along with the guidance in RG 1.68 and RG 1.206, Section C.I.14, and finds that the applicant has satisfactorily addressed DCD COL Item 14.2-2-A.

14.2.4.3 ***Test Procedures***

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

COL Item

- STD COL 14.2-3-A Test Procedures

Section 14.2.2.2 "Test Procedures," of the DCD states in part that:

> The COL Applicant will provide milestones for making available to the NRC approved test procedures satisfying the requirements for the ITP (COL 14.2-3-A).

The applicant replaced the sentence above with a milestone for developing and providing approved test procedures no later than 60 days prior to the intended use for preoperational test and scheduled fuel loading for initial startup tests. In Section 14.2.2.2 of the FSAR, the applicant stated that:

> Approved test procedures for satisfying this section will be developed and available for review no later than 60 days prior to their intended use for preoperational tests and scheduled fuel loading for initial startup tests.

In addition, the applicant identified a license condition for STD COL 14.2-3-A in Part 10, Section 3.2.2 of their application and which is also listed below in Post Combined License Activities. The licensee will track the development of test procedures in order to address this COL information item in accordance with applicable guidance. The staff evaluated STD COL 14.2-3-A according to the relevant NRC regulations and acceptance criteria defined in NUREG-0800, Section 14.2 along with the guidance in RG 1.68 and RG 1.206, Section C.I.14, and finds that the applicant has satisfactorily addressed DCD COL Item 14.2-3-A.

14.2.4.4 *Test Records*

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

Supplemental Information

- STD SUP 14.2-2 Test Records

In FSAR Section 14.2.2.5, "Test Records," the applicant added the following:

> Startup test reports are prepared in accordance with RG 1.16.

The staff determined that the COL applicant's supplemental information STD SUP 14.2-2 regarding the development of startup test reports is acceptable because it meets the regulatory basis in SRP Section 14.2, Item 3.F.v, "Review, Evaluation, and Approval of Test Results."

14.2.4.5 *Test Program Schedule and Sequence*

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

COL Item

- STD COL 14.2-4-A Test Program Schedule and Sequence

The applicant provided a license condition to develop and make detailed testing schedules available for NRC review prior to actual implementation. The implementation milestones for the ITP are provided in Section 13.4 of the Fermi 3 FSAR, Revision 4.

Section 14.2.7 "Test Program Schedule and Sequence," of the DCD states in part that:

> The COL Applicant will provide a milestone for completing the detailed testing schedule and making it available to the NRC (COL 14.2-4-A).

In FSAR Section 14.2.7, "Test Program Schedule and Sequence," the applicant noted that a detailed testing schedule will be developed and made available for review prior to actual implementation. The applicant added that the schedule may be updated and continually optimized to reflect actual progress and subsequently revised projections. In Revision 2 to FSAR Section 14.2.7, the COL applicant revised this COL issue to be COL applicant item STD COL 14.2-4-A.

The applicant identified a license condition for STD COL 14.2-4-A, as discussed below in Post Combined License Activities. The license condition is included in Part 10: ITAAC, Revision 3,

February 2012, Item 3.6. The licensee will track the development of the detailed testing schedule in order to address this COL information item in accordance with applicable guidance. The staff evaluated STD COL 14.2-4-A according to the relevant NRC regulations and acceptance criteria defined in NUREG-0800, Section 14.2 along with the guidance in RG 1.68 and RG 1.206, Section C.I.14, and finds that the applicant has satisfactorily addressed DCD COL Item 14.2-4-A.

14.2.4.6 *AC Power Distribution System Preoperational Test General Test Methods and Acceptance Criteria*

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

Supplemental Information

- STD SUP 14.2-4 AC Power Distribution System Preoperational Test General Test Methods and Acceptance Criteria

In the FSAR Section 14.2.8.1.36, "AC Power Distribution System Preoperational Test General Test Methods and Acceptance Criteria," the applicant added the following:

> Proper operation of the automatic transfer capability of the normal preferred power source to the alternate preferred power source.

The staff issued RAI 14.02-1 on March 25, 2009 (ML090840227), requesting that the applicant address the deletion of the above statement from FSAR Section 14.2.9. In a letter response to RAI 14.02-1, dated April 23, 2009 (ML091250352), the applicant stated in part that:

> FSAR Section 14.2.8.1.36, AC Power Distribution System Preoperational Test, has been added with a requirement to perform a test demonstrating the capability to transfer power from the normal preferred power supply to the alternate preferred power supply

The staff noted that the test requirement was not deleted but moved from Section 14.2.9.1.4 to FSAR Section 14.2.8.1.36, consistent with the DCD. The COL applicant also added STD SUP 14.2-4 to track supplemental preoperational test information in FSAR Section 14.2.8.1.36. The staff determined that the applicant's RAI response was acceptable. The staff also determined that the supplemental information item adequately addressed the need to verify the proper operation of the automatic transfer capability of the normal preferred power source to the alternate preferred power source. Therefore, the staff determined that STD SUP 14.2-4, which added the site-specific test acceptance criteria, was acceptable.

14.2.4.7 *Plant Service Water System Preoperational Test and Purpose*

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

Supplemental Information

- EF3 SUP 14.2-4 Plant Service Water System Preoperational Test Purpose
- EF3 SUP 14.2-5 Plant Service Water System Performance Test

In the COL FSAR, the applicant added site-specific supplemental information that included details regarding preoperational and performance tests for the Alternate Heat Sink (AHS). Specifically, the applicant included AHS in the descriptions of the test objectives in Section 14.2.8.1.51 "Plant Service Water System Preoperational Test Purpose," and in Section 14.2.8.2.18, "Plant Service Water System Performance Test Purpose," of the FSAR. In addition, the applicant also added the following details and statement regarding AHS testing in FSAR Section 14.2.8.1.51:

- Proper operation of control interlocks and equipment protective devices in AHS fans, motors, and valves;

- Proper operation of the AHS fans, motors, and valves in all design operating modes;

- Automatic transfer between PSWS trains and components in response to Anticipated Operational Occurrences (AOOs); and

- Proper operation of water hammer mitigating design features.

However, due to insufficient heat loads during preoperational test phase, the heat exchanger and the AHS performance verification is deferred until the startup phase.

The staff noted that the applicant's site-specific supplemental information EF3 SUP 14.2-4 and EF3 SUP 14.2-5 regarding preoperational and performance test for the AHS did not represent a reduction in commitment, and were added in response to RAI 09.02.01-9. The staff's review of the applicant's response to RAI 09.02.01-9 is discussed in the Staff SER Section 9.2.1.4. The staff determined that the applicant's supplementary information is acceptable.

14.2.4.8 *Site Specific Preoperational and Startup Tests*

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

COL Items

- EF3 COL 14.2-5-A Site Specific Tests

Section 14.2.9 "Site-Specific Preoperational and Start up Tests," of the DCD states in part that:

> The COL Applicant will define any required site specific preoperational and startup testing. See Subsection 14.2.10 for COL Information item 14.2-5-A. Testing of such systems and components should be adequate to demonstrate conformance to such requirements as defined throughout the specific chapters of the Standard Safety Analysis Report (SSAR). Below are systems that may require such testing:
>
> - Electrical switchyard and equipment;
> - Station Water System;
> - Personnel monitors and radiation survey instruments; and
> - The automatic dispatcher control system (if applicable).

The applicant deleted FSAR Subsection 14.2.9.1.4 and moved preoperational tests for electrical switchyard equipment to FSAR Subsection 14.2.8.1.36. For additional details on preoperational testing of electrical equipment, see FSER Section 14.2.4.6. The applicant added site-specific supplemental information in EF3 SUP 14.2-3 and EF3 SUP 14.2-2 in FSAR Subsection 14.2.9.1.1, "Station Service Water Preoperational Test," and FSAR Subsection 14.2.9.1.2, "Cooling Tower Preoperational Test." The applicant also deleted FSAR Subsections 14.2.9.1.3 since the COL applicant took exception to guidance in RG 1.68 Appendix A, Items 1.k(2) "personnel monitors and radiation survey instruments" and 1.k(3) "laboratory equipment used to analyze or measure radiation levels and radioactivity concentrations." For additional details on these exceptions, see the evaluation below. The applicant did not address the automatic dispatcher control system testing since it is not applicable to Fermi 3.

In the COL FSAR, the applicant states the following:

> This section describes the site specific preoperational and initial startup tests not addressed in DCD Section 14.2.8.

The applicant identified supplemental information in EF3 SUP 14.2-2 and EF3 SUP 14.2-3 regarding the preoperational and initial startup tests not addressed in DCD Section 14.2.8. EF3 SUP 14.2-3 contains the test abstracts for "Station Water System Pre-Operational Test," and "Cooling Tower Preoperational Test." EF3 SUP 14.2-2 contains the test abstract for "Cooling Tower Performance Test."

The staff noted that, in addition to the individual test descriptions in Sections 14.2.8 of the FSAR, the applicant defined its required site-specific preoperational and startup testing, as noted in EF3 SUP 14.2-2 and EF3 SUP 14.2-3. The staff evaluated EF3 COL 14.2-5-A according to the relevant NRC regulations and acceptance criteria defined in NUREG-0800, Section 14.2 along with the guidance in RG 1.68 and RG 1.206, Section C.I.14, and finds that the applicant satisfactorily addressed DCD COL Item 14.2-5-A.

- EF3 COL 14.2-6-A Specific Testing Test Procedures

Section 14.2.9 of the DCD states in part that:

> If site-specific preoperational or startup tests are identified as necessary, the appropriate procedures will be prepared by the same method and to the same standard as discussed in Subsection 14.2.2.2. The COL Applicant will provide milestones for making available to the NRC approved test procedures satisfying the requirements for the ITP (COL 14.2-6-A).

In the COL FSAR, the applicant states the following:

> Specific testing to be performed and the applicable acceptance criteria for each preoperational and startup test are documented in test procedures to be made available to the NRC approximately 60 days prior to their intended use for preoperational tests, and not less than 60 days prior to scheduled fuel load for initial startup tests. Site-specific preoperational tests are in accordance with the system specifications and associated equipment specifications for equipment in those systems provided by the licensee that are not part of the standard plant described in DCD Section 14.2.8. The

tests demonstrate that the installed equipment and systems perform within the limits of these specifications.

The applicant identified a license condition for EF3 COL 14.2-6-A, as discussed below in Post Combined License Activities. The licensee will track the development of test procedures for each preoperational and startup test in order to address this COL information item in accordance with applicable guidance. The staff evaluated STD COL 14.2-6-A according to the relevant NRC regulations and acceptance criteria defined in NUREG-0800, Section 14.2 along with the guidance in RG 1.68 and RG 1.206, Section C.I.14, and finds that the applicant has satisfactorily addressed DCD COL Item 14.2-6-A.

Supplemental Information

- EF3 SUP 14.2-2 Site-Specific Performance Tests
- EF3 SUP 14.2-3 Site-Specific Pre-Operational Tests

As noted above for EF3 COL 14.2-5-A, the applicant provided these supplemental information items regarding site-specific performance and pre-operational tests. The applicant included this supplemental information in the FSAR in order to describe the site specific preoperational and initial startup tests not addressed in DCD Section 14.2.8 per the requirements of STD COL 14.2-5-A.

The applicant identified one site-specific performance test in the FSAR:

- 14.2.9.2.1 Cooling Tower Performance Test

As noted below, in the Evaluation of Site-Specific Preoperational and Startup Tests, FSER Section 10.4.5.2.1 provides the technical discussion of the CIRC which includes the cooling towers. The staff reviewed the site-specific startup test abstract for the Cooling Tower Performance Test. The staff finds that the test abstract provides adequate guidance to develop test procedures to verify proper operation of the waste heat rejection portion of the CIRC.

The staff reviewed Fermi 3 FSAR, Revision 4, Subsection 14.2.9 and the referenced DCD Subsection 14.2.9 to ensure that with a combination of the DCD and the COL information, a complete scope of information related to this review topic was covered. The staff's review confirmed that the information contained in the application and incorporated by reference addressed required information.

The applicant identified two site-specific pre-operational tests in the FSAR:

- 14.2.9.1.1 Station Water System Pre-Operation Test

As noted below, in the Evaluation of Site-Specific Preoperational and Startup Tests, FSER Section 9.2.10 provides the technical discussion of the Station Water System. The staff reviewed the test abstract for the Station Water System Pre-Operational Test and finds that it contains adequate guidance to develop test procedures to verify that the station water system will operate as designed.

- 14.2.9.1.2 Cooling Tower Preoperational Test

As noted below, in the Evaluation of Site-Specific Preoperational and Startup Tests, FSER Section 10.4.5.2.1 provides the technical discussion of the CIRC which includes the cooling towers. The staff reviewed the test abstract for the Cooling Tower Preoperational test and finds that it contains adequate guidance to develop test procedures to verify that the cooling tower will operate as designed.

Evaluation of the Deletion of Two Site-Specific Preoperational Tests

- FSAR Subsection 14.2.9.1.3, "Personnel Monitors and Radiation Survey Instruments Preoperational Test" (Deleted in Revision 1 to FSAR 14.2.9 per EF3 SUP 14.2-3)

- FSAR Subsection 14.2.9.1.4, "Electrical Switchyard System Preoperational Test" (Deleted in Revision 1 to FSAR 14.2.9 per EF3 SUP 14.2-3)

The NRC staff reviewed Revision 0 to FSAR Subsection 14.2.9.1.3, "Personnel Monitors and Radiation Survey Instruments Preoperational Test." Subsection 14.2.9.1.3 described the preoperational test for personnel monitors and radiation survey instruments. In Revision 1 to the FSAR, the COL Applicant deleted the description of this test abstract from the FSAR. As the basis for deleting this subsection, the COL Applicant stated that since personnel monitors and radiation survey instruments, as well as laboratory equipment, are purchased as standard plant commercial grade equipment and are routinely replaced over the life of the plant, this equipment does not meet the RG 1.68 criteria for plant features to be tested in the ITP and, therefore, is not subject to the ITP. Accordingly, in Revision 1 to the FSAR, the COL applicant modified FSAR Table 1.9-202 to take exception to RG 1.68, Appendix A, Items 1.k(2) "personnel monitors and radiation survey instruments" and 1.k(3) "laboratory equipment used to analyze or measure radiation levels and radioactivity concentrations."

In lieu of testing this equipment as part of the ITP, the COL Applicant stated that the Radiation Protection Program (RPP) provides adequate tests of both laboratory and portable instrumentation used for radiation protection. The COL applicant's RPP is described in Nuclear Energy Institute (NEI) 07-03A, Revision 0, "Generic FSAR Template Guidance for Radiation Protection Program Description," which has been incorporated by the applicant in Appendix 12BB of the Fermi 3 FSAR accordingly. NEI 07-03A, revision 0, provides descriptions of the types of radiation protection instruments and equipment that will be used in the plant. The COL Applicant stated that each new survey instrument or personnel monitor is tested prior to being placed in service to assure conformance with performance requirements. The COL Applicant further stated that the applicable standards for testing radiation monitors and survey instruments, including a description of the proper functioning and operation of range selection and response in each range, are contained in the following documents:

- American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE) N323A, "Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments," dated December 31, 1997

- ANSI/IEEE N323D, "Installed Radiation Protection Instrumentation," issued in 2003

ANSI/IEEE N323A is referenced in Table 1.9-22 of the ESBWR DCD and is incorporated by reference by the COL applicant. Since the Fermi 3 FSAR did not contain a reference to

ANSI/IEEE N323D, the staff requested that the COL Applicant include a reference to this standard in the FSAR. The COL Applicant agreed to amend Table 1.9-204 of the Fermi 3 FSAR to add a reference to ANSI/IEEE N323D. The staff reviewed Revision 4 of the Fermi 3 FSAR COL and verified that the COL applicant has added a reference to ANSI/IEEE N323D in Table 1.9-204.

The COL Applicant's RPP specifies, in Section 12.5.3.2 of NEI 07-03A, Revision 0, that "radiation monitoring instrumentation and equipment are selected, maintained and used to provide the appropriate detection capabilities, ranges, sensitivities and accuracies required for the types and levels of radiation anticipated at the plant and in the environs during routine operations, major outages, abnormal occurrences, and postulated accident conditions." NEI 07-03A, Revision 0, also specifies the types of instruments and equipment that will be available (i.e., tested and ready for service) at specified milestones for the Radiation Protection Program. On this basis, the staff finds that the COL Applicant's laboratory and portable instrumentation used for radiation protection can be adequately tested and maintained under the COL Applicant's RPP (as described in NEI 07-03A, Revision 0). Therefore, the staff finds it acceptable that the test abstract for personnel monitors and radiation survey instruments is removed from the ITP and agrees with the deletion of Subsection 14.2.9.1.3 from the Fermi 3 FSAR.

The NRC staff reviewed Revision 0 to FSAR Subsection 14.2.9.1.4. In Revision 1 to FSAR Subsection 14.2.9, the COL applicant deleted this test abstract (electrical switchyard system preoperational test) and incorporated by reference ESBWR DCD Subsection 14.2.8.1.36 since it is the same test abstract in the approved FSER for the ESBWR DCD. The NRC staff determined that this change meets the requirements of, 10 CFR 52.79(a)(28), RG 1.68 and RG 1.206. Therefore, the staff finds it acceptable that the test abstract for electrical switchyard system preoperational test is removed from the ITP and agrees with the deletion of Subsection 14.2.9.1.4 from the Fermi 3 FSAR.

The staff found that the applicant's site-specific supplemental information EF3 SUP 14.2-2 and EF3 SUP 14.2-3 regarding site-specific performance and preoperational tests were consistent with applicable regulations and guidance. Therefore, the staff determined that the applicant's supplementary information is acceptable.

License Conditions:

On May 27, 2010, in RAI 14.02-4 (ML101470123), the NRC staff identified all the license conditions pertaining to the review of this section. The NRC imposes license conditions for test activities that cannot be resolved during the COL applicant stage but are resolved after the COL is issued. On July 9, 2010, the applicant responded to this RAI (ML101960646) and agreed that the license conditions were appropriate and the applicant suggested some minor editorial clarifications, which the staff accepted in part. Therefore this RAI is resolved. These license conditions are currently in the Fermi 3 Combined License Application, Part 10, "ITAAC," Revision 3, dated February 2012, Section 3, and are presented in Section 14.2.5 below.

14.2.5 Post Combined License Activities

For the reasons discussed in the technical evaluation section above, the staff finds the following license conditions acceptable:

Startup Administrative Manual, Standard

Prior to initiating the plant's initial test program (ITP), a site specific startup administrative manual (SAM) (procedures), which includes administrative procedures and requirements that govern the activities associated with the plant ITP is to be provided to on-site NRC inspectors 60 days prior to their intended use.

Preoperational and Startup Test Procedures

During the post-licensing period, preoperational and startup test procedures will be subject to a license condition for NRC inspections to verify that the licensee implements the ITP. This process will allow for the performance of necessary plant as-built inspections and walk downs. The licensee will make available to on-site NRC inspectors preoperational and startup test procedures 60 days prior to their intended use.

Site-Specific Preoperational and Startup Test Procedures

During the post-licensing period, site-specific preoperational and startup test procedures will be subject to NRC inspections to verify that the licensee implements the ITP. This process will allow for the performance of necessary plant as-built inspections and walk downs. The licensee will make available to on-site NRC inspectors site-specific preoperational and startup test procedures 60 days prior to their intended use.

Power Ascension Test Phase Reports

In the Fermi 3 Combined License Application, Part 10, "ITAAC," Revision 3, dated February 2012, Section 3.2.4, the staff identified the following license condition:

Certain milestones in the startup testing phase of the ITP (e.g., pre-critical testing, criticality testing, and low-power testing) should be controlled through this license condition to ensure that the designated licensee management reviews, evaluates, and approves relevant test results before proceeding to the power ascension test phase. Accordingly, the licensee shall perform the following:

(a) Following completion of all pre-critical and criticality testing the licensee shall confirm that the test results are within the range of values predicted in the acceptance criteria in the facility's FSAR. Following these licensee confirmations; the licensee will conduct low-power tests and operate the facility at reactor steady-state core power levels not in excess of 5 percent power, in accordance with the conditions of the license.

(b) Following completion of all low-power testing the licensee shall confirm that the test results are within the range of values predicted in the acceptance criteria in the facility's FSAR. After completing and evaluating low-power test results, the licensee will conduct power ascension testing and will operate the facility at reactor steady-state core power levels not in excess of 100 percent power, in accordance with the conditions of the license.

The licensee is responsible for the review and evaluation of the adequacy of test results presented in the Power Ascension Test Phase reports, as well as final review of overall

test results in these reports. Test results, which do not meet acceptance criteria, are identified and corrective actions and retests are performed. The Power Ascension Test Phase reports shall be made available to on-site NRC inspectors.

Test Changes

In the Fermi 3 Combined License Application, Part 10, "ITAAC," Revision 3, dated February 2012, Section 3.2.5, the staff has identified following license condition which is related to NRC RAI 14.2-4:

> Within one month of any ITP changes described in the Fermi 3 FSAR, Section 14.2, the licensee shall evaluate these changes in accordance with the provisions of 10 CFR 50.59 or the change process defined in 10 CFR Part 52, Appendix [X], Section VIII, and report them in accordance with 10 CFR 50.59(d).

Operational Program Readiness

In the Fermi 3 Combined License Application, Part 10, "ITAAC," Revision 3, dated February 2012, Section 3.6, the staff has identified the following license condition which is related in part to STD COL 14.2-4-A:

> The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first. This schedule shall also address:
>
> (a) The implementation of site specific Severe Accident Management Guidance.
> (b) The spent fuel rack coupon monitoring program implementation.

14.2.6 Conclusions

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information, and no outstanding information is expected to be addressed in the COL FSAR related to this section. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix [X], Section VI.B.1, all nuclear safety issues relating to this section that were incorporated by reference have been resolved.

In addition, the staff concludes that the relevant information presented within the COL FSAR is acceptable and meets the 10 CFR 52.79(a)(28), Criterion XI of Appendix B to 10 CFR Part 50 along with the guidance in RGs 1.68 and 1.206. The staff has evaluated the STD COL items, EF3 COL items, STD SUP items, and EF3 SUP items identified for this subsection according to the relevant NRC regulations and acceptance criteria defined in NUREG-0800, Section 14.2 and finds that the applicant has satisfactorily addressed these items.

14.3 Inspections, Tests, Analyses, and Acceptance Criteria

14.3.1 Introduction

Section 14.3 of the FSAR, discusses the criteria and methodology for selecting the SSCs to be included in the ITAAC. This section includes the definitions and general provisions, design descriptions, ITAAC, significant site parameters, and significant interface requirements in order to determine whether the resultant ITAAC are adequate to verify that a facility referencing the ESBWR design has been constructed and will be operated in compliance with the design certification and applicable regulations.

14.3.2 Summary of Application

Part 10 of the Fermi 3 COLA, Revision 4 includes the entire set of ITAAC which consists of four parts; Design Certification ITAAC, Emergency Planning ITAAC, Physical Security ITAAC, and Site-Specific ITAAC. The Tier 1 Design Certification ITAAC have been incorporated by reference in Part 10, Section 2.1, “Design Certification ITAAC”, of the Fermi 3 COL FSAR, Revision 4. The NRC staff’s finding related to Design Certification ITAAC incorporated by reference is in NUREG–1966.

The Emergency Planning ITAAC are presented in Part 10, Section 2.3, “Emergency Planning ITAAC”, of the Fermi 3 COL FSAR, Revision 4, and listed in Table 2.3-1, “ITAAC For Emergency Planning”. Evaluations of these ITAAC are contained in FSER Chapter 13.0, “Conduct of Operations”, Section 13.3, “Emergency Planning.” and discussed below regarding the evaluation of STD COL 14.3-1-A.

The Tier 1 Physical Security ITAAC for systems within the scope of the DCD are incorporated by reference in Part 10, Section 2.2, “Physical Security ITAAC”, of the Fermi 3 COL FSAR, Revision 4 and the NRC staff’s findings related to this information incorporated by reference is in NUREG-1966. In addition, the evaluation of the Site-Specific Physical Security ITAAC that have been identified by the applicant in Part 10, Subsection 2.2.1, “Site Specific Physical Security ITAAC”, of the Fermi 3 COL FSAR, Revision 4 and listed in Table 2.2.1-1, “ITAAC for the Site-Specific Security System,” can be found in FSER Chapter 13.0, “Conduct of Operations”, Section 13.6, “Physical Security”, and 13.6A, “Site-Specific ITAAC for Physical Security.”

The Site-Specific ITAAC for site-specific systems that were not evaluated in the referenced DCD are presented by the applicant in Part 10, Section 2.4 “Site-Specific ITAAC,” of the Fermi 3 COL FSAR, Revision 4. The evaluations of these ITAAC are discussed below under the evaluation of STD COL 14.3-2-A.

Section 14.3, of the Fermi 3 FSAR, Revision 4, incorporates by reference Section 14.3 of the ESBWR DCD, Revision 9. In addition, the Fermi 3 FSAR, Revision 4, Section 14.3, provides the following:

COL Items

- STD COL 14.3-1-A Emergency Planning (EP) ITAAC

The applicant provided information regarding their Emergency Planning ITAAC based on industry guidance.

- STD COL 14.3-2-A Site-Specific ITAAC

The applicant provided information regarding their Site-Specific ITAAC for systems not evaluated in the DCD.

- EF3 COL 14.3A-1-1 Schedule for Design Acceptance Criteria (DAC) ITAAC Closure

The applicant provided a DAC ITAAC closure schedule.

14.3.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG–1966, the FSER related to the certified ESBWR DCD. In addition, the acceptance criteria associated with the relevant requirements of the Commission regulations for seismic classification are given in Section 14.3 of NUREG-0800.

The applicable regulatory requirements and guidance for the inspections, tests, analysis, and acceptance criteria are as follows:

- 10 CFR 52.79(d)(2), “Contents of applications, technical information in final safety analysis report”, as it relates to requiring the COL applicant to demonstrate in the FSAR that the design meets the interface requirements established under 10 CFR 52.47, “Contents of applications; technical information.”

- 10 CFR 52.80,“Contents of applications, additional technical information”, as it relates to requiring the COL application to contain the proposed inspections, tests, and analyses, including those (a) that are applicable to emergency planning; (b) that the licensee shall perform; and (c) that meet necessary and sufficient acceptance criteria to provide a reasonable assurance that if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the COL, the provisions of the Atomic Energy Act, and the Commission’s rules and regulations.

- 52.99(a), “Inspection During Construction”, as it relates to ITAAC completion schedule

- RG 1.206, Section C.II.1 as it relates to COL ITAAC and Section C.III.5 as it relates to Design Acceptance Criteria.

14.3.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 14.3 of the certified ESBWR DCD. The staff reviewed Section 14.3 of the Fermi 3 COL FSAR, Revision 4, and checked the referenced ESBWR DCD to ensure that the combination of the information in the ESBWR DCD and the information in the Fermi 3 COL FSAR, Revision 4, appropriately represents the complete scope of information relating to this review topic.[1] The staff’s review confirmed that the information contained in the application and the information incorporated by reference address the relevant information related to this section.

The staff reviewed the information in the Fermi 3 COL FSAR, Revision 4, as follows:

COL Items

- STD COL 14.3-1-A Emergency Planning (EP) ITAAC

The NRC staff evaluation for STD COL 14.3-1-A, “Emergency Planning ITAAC,” is addressed in Section 13.3, “Emergency Planning,” of Chapter 13, “Conduct of Operations,” of the Fermi 3 SER. The staff’s evaluation found that the information provided to address this COL item was acceptable. Therefore, for the purposes of this Chapter 14 SER evaluation, the staff finds that the applicant has addressed STD COL 14.3-1-A.

- STD COL 14.3-2-A Site-Specific ITAAC

The selection criteria and methodology provided in this section of the referenced DCD were utilized as the site-specific selection criteria and methodology for ITAAC. These criteria and methodology were applied to those site-specific (SS) systems that were not evaluated in the referenced DCD. In Subsection 14.3.9 of the Fermi 3 COL FSAR, the applicant states that the selection criteria and methodology provided in Subsection 14.3 of the referenced DCD were utilized as the site-specific selection criteria and methodology for ITAAC. These criteria and methodology were applied to those site-specific (SS) systems that were not evaluated in the referenced DCD. If a site-specific system described in the FSAR does not meet an ITAAC selection criterion, then the applicant includes just the system title and the statement “No entry for this system”. The Fermi 3 COL application Part 10, Section 2.4 addresses the site-specific ITAAC for the following structures, systems, and components (SSCs).

[1] See “*Finality of Referenced NRC Approvals*,” in SER Section 1.2.2, 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.

2.4.1 ITAAC for Backfill Under Seismic Category I Structures

In Revision 3 of Part 10, "ITAAC", of the Fermi 3 COL FSAR, the applicant identified the following for the system listed above:

- ITAAC for Backfill Under Seismic Category I Structures

  Not applicable since no compactable backfill will be placed under Fermi 3 Seismic Category I structures.

In RAI 02.05.04-40 the staff requested the applicant to provide an ITAAC to ensure that the concrete fill placed underneath any Category I structures to a thickness of greater than 5 feet, meets the design, construction and testing of applicable ACI standards. In the applicant's response dated February 16, 2012 (ML12052A031), the applicant has proposed the following changes to Part 10 of their application regarding this issue:

- ITAAC for Fill Concrete Under Seismic Category I Structures

  Compactable backfill will not be placed under Fermi 3 Seismic Category I structures. ITAAC for fill concrete placed under Seismic Category I structures to a thickness greater than 5 feet are provided in Table 2.4.1-1

Additionally, in the RAI response, the applicant provided proposed Table 2.4.1-1, which gives the details of their proposed ITAAC for this item. The review of these proposed ITAAC changes are included in the staff's SER for Section 2.5.4 accordingly. For the purposes of this SER section, the applicant's proposed revisions to their application for this item will be tracked as **Confirmatory Item 14.3-1**.

2.4.2 ITAAC for Backfill Surrounding Seismic Category I Structures

In Revision 3 of Part 10, "ITAAC", of the Fermi 3 COL FSAR, the applicant identified the following for the system listed above:

- ITAAC for Backfill Surrounding Seismic Category I Structures

  The site parameter values in the Referenced DCD Tier 2, Table 2.0-1 for compactable backfill surrounding the embedded walls of Fermi 3 Seismic Category I structures are not applicable, as discussed in FSAR Subsection 2.5.4 and Subsection 3.7.2. Therefore, no ITAAC are necessary for compactable backfill surrounding the embedded walls of Fermi 3 Seismic Category I structures.

During the review of the staff's SER for Section 2.5.4, in RAI 02.05.04-39 the staff requested for the applicant to address why they deemed no ITAAC were necessary for backfill surrounding seismic category I structures. In the applicant's response dated February 16, 2012 (ML120520154), the applicant has proposed the following changes to Part 10 of their application regarding this issue:

- ITAAC for Backfill Surrounding Seismic Category I Structures

  The ITAAC for compacted backfill surrounding the embedded walls of Seismic Category I structures is provided in Table 2.4.2-1

Additionally, in the RAI response, the applicant provided proposed Table 2.4.2-1, which gives the details of their proposed ITAAC for this item. The review of these proposed ITAAC changes are included in the staff's SER for Section 2.5.4 accordingly. For the purposes of this SER section, the applicant's proposed revisions to their application will item be tracked as **Confirmatory Item 14.3-2**.

2.4.3 ITAAC for Plant Service Water System (Portion Outside the Scope of the Certified Design)

In COL Part 10, Section 2.4.3, the applicant has identified interface requirements and site-specific ITAAC for this system. In the staff's SER for Section 9.2.1, the staff reviewed the plant service water system against selection criteria in SRP Section 14.3. The staff concludes that the applicant has satisfactorily addressed the interface requirement and site-specific ITAAC for this system.

2.4.4 Circulating Water System (Portion Outside the Scope of the Certified Design)

In COL Part 10, Section 2.4.4, the applicant states that for the circulating water system there are no site-specific ITAAC entries for this system. The staff reviewed the circulating water system against selection criteria in SRP Section 14.3. The staff concludes that the circulating water system does not perform a safety-related function and is not considered a system "important to safety" therefore, as-built verification, i.e., site-specific ITAAC, is not required.

2.4.5 Station Water System (Including Intake Structure and Servicing Equipment)

COL Part 10, Section 2.4.5 the applicant states that for the station water system there are no site-specific ITAAC entries for this system. In the staff's SER for Section 9.2.10, the staff reviewed the station water system against selection criteria in SRP Section 14.3. The staff concludes that the station water system does not perform a safety-related function and is not considered a system "important to safety"; therefore, as-built verification, i.e., site-specific ITAAC, is not required.

2.4.6 Yard Fire Protection System (Portions Outside the Scope of the Certified Design)

In COL Part 10, Section 2.4.6, the applicant states that for the yard fire protection system there are no entries for site-specific ITAAC. The staff reviewed the yard fire protection system against selection criteria in SRP Section 14.3. The staff concludes that the yard fire protection system does not perform a safety-related function and is not considered a system "important to safety"; therefore, as-built verification, i.e., site-specific ITAAC, is not required.

2.4.7 Potable & Sanitary Water Systems

In COL Part 10, Section 2.4.7, the applicant states that for the potable & sanitary water system there are no site-specific ITAAC entries for this system. In the staff's SER for Section 9.2.4, the staff reviewed the potable & sanitary water systems against selection criteria in SRP Section 14.3. The staff concludes that the potable & sanitary water systems do not perform a

safety-related function and are not considered a system “important to safety”; therefore, as-built verification, i.e., site-specific ITAAC, is not required.

2.4.8 Offsite Power Systems

In COL Part 10, Section 2.4.8, the applicant has identified interface requirements and site-specific ITAAC for this system. The interface requirements specified come directly from DCD Tier 1, Section 4.2. On February 24, 2009, in RAI 14.03.06-1 (ML090540582), the staff requested for the applicant to develop an ITAAC based on these interface requirements. On March 25, 2009 (ML091060495), the applicant responded to this RAI and provided an ITAAC which is now Table 2.4.8-1 in Part 10 of the Fermi 3 COL Revision 4. In addition, the applicant further described their responses to RAI 14.03.06-1 regarding this issue in their August 29, 2009 response to RAI 08.02-8 (ML0924504830). As discussed in the staff’s SER for Section 8.2, the staff has found that the proposed ITAAC for this system will ensure that each as-built offsite circuit has sufficient capacity and capability. The staff reviewed the offsite power system against selection criteria in SRP Section 14.3. The staff concludes that the applicant has satisfactorily addressed the interface requirement and site-specific ITAAC for this system.

2.4.9 Communication Systems (Emergency Notification System)

In COL Part 10, Section 2.4.9, the applicant states that the site-specific ITAAC for this system is addressed in Table 2.3-1, Topic 6.0, Emergency Communications. The complete review of the applicant’s site-specific emergency plan ITAAC is contained in SER Section 13.3. Based on that evaluation, the staff has found that the applicant has satisfactorily addressed the site-specific ITAAC for this system.

2.4.10 Makeup Water System

In COL Part 10, Section 2.4.10, the applicant states that for the makeup water system there are no site-specific ITAAC entries for this system. In the staff’s SER for Section 9.2.3, the staff reviewed the makeup water system against selection criteria in SRP Section 14.3. The staff concludes that the makeup water system does not perform a safety-related function and is not considered a system “important to safety”; therefore, as-built verification, i.e., site-specific ITAAC, is not required.

2.4.11 deleted

In order to be consistent with the ESBWR DCD, on July 29, 2009 the staff issued RAI 14.03.07-1 (ML09210072) requesting for the applicant to update this section to no longer refer to the use of a mobile liquid waste management system. Per the applicant’s RAI response dated September 24, 2009 (ML092720656), the applicant has deleted this section accordingly. The staff finds that this issue has been resolved and this RAI 14.03.07-1 is closed.

2.4.12 deleted

In order to be consistent with the ESBWR DCD, on July 29, 2009 the staff issued RAI 14.03.07-2 (ML09210072) requesting for the applicant to update this section to no longer refer to the use of a mobile solid waste management system. Per the applicant’s RAI response dated September 24, 2009 (ML092720656), the applicant has deleted this section accordingly. The staff finds that this issue has been resolved and RAI 14.03.07-2 is closed.

2.4.13 Hydrogen Water Chemistry System

In COL Part 10, Section 2.4.13, the applicant states that for the hydrogen water chemistry system (HWCS) there are no site-specific ITAAC entries for this system. Staff reviewed the HWCS against selection criteria in SRP Section 14.3. The staff concludes that the HWCS does not perform a safety-related function and is not considered a system "important to safety"; therefore, as described in ESBWR DCD Table 14.3-1, Revision 9, an ITAAC is not required for this system.

2.4.14 Meteorological Monitoring System

In COL Part 10, Section 2.4.14, the applicant states that for the meteorological monitoring system there are no site-specific ITAAC entries for this system. The staff reviewed the meteorological monitoring system against selection criteria in SRP Section 14.3. The staff notes that there are several emergency plan ITAACs in COL Part 10, Section 2.3 that require the acquisition and evaluation of meteorological data. The staff concludes that additional site-specific ITAAC are not required for the meteorological monitoring system.

Based on the NRC staff evaluation of the information provided by the applicant related to the Site-Specific ITAAC cited above, the NRC staff deems the information to meet the requirements in 10 CFR 52.79(d)(2), 52.80(a) and the acceptance criteria in NUREG-0800, Chapter 14.3, "Inspections, Tests, analyses, and Acceptance Criteria." In addition, the staff has reviewed the applicant's information to address COL Item 14.3-2-1 and found that it is acceptable and meets the relevant requirements and the guidance set forth in RG 1.206, Section C.II.1.

- EF3 COL 14.3A-1-1 Schedule for Design Acceptance Criteria (DAC) ITAAC Closure

DCD Appendix 14.3A "Design Acceptance Criteria ITAAC Closure Process", sets forth three options for closing DAC ITAAC. The applicant has chosen the third option which entails resolution through DAC ITAAC after COL issuance. COL Item 14.3A-1-1 requires the applicant to provide a DAC ITAAC closure schedule and also identify whether the standard approach will be used. The applicant has not chosen to use the standard approach by identifying this item as EF3 COL 14.3A-1-1.

In order to address the closure schedule for DAC ITAAC, the applicant provided additional commitments in their application. However, based on Revision 2 of the application, the staff noted that the risk-significant piping packages completion schedule did not support closure of the DAC ITAAC on a system basis and the current proposed position did not meet 10 CFR 52.99(a). In RAI 14.03.03-1 (ML102590195) dated September 16, 2010, the staff requested for the applicant to provide an acceptable alternative or clarify the applicant's position to support closure of DAC ITAAC. In the applicant's responses dated October 19, 2010 (ML102940218) and June 15, 2012 (ML12170A664), the applicant proposed revisions to their commitments. The staff finds that the applicant has adequately addressed the issues pertaining to RAI 14.03.03-1, and this RAI is closed. In addition, the staff has found that the applicant's proposed revisions to their commitments for the DAC ITAAC closure schedule are satisfactory and they will be tracked as **Confirmatory Item 14.3-3**. These commitments are listed below in Post Combined License Activities.

The staff has reviewed the applicant's information to address COL Item 14.3A-1-1 and found that it is acceptable, because it meets the relevant requirements of 10 CFR 52.99(a) and the guidance set forth in RG 1.206, Sections C.II.1 and C.III.5.

14.3.5 Post Combined License Activities

As discussed above, the applicant has proposed the following commitments in this section:

COM 3.10-003:

Detroit Edison shall submit to the NRC, no later than 1 year after issuance of the combined license or at the start of construction as defined in 10 CFR 50.10(a), whichever is later, its implementation schedules for completing of the following ITAACs. Detroit Edison shall submit updates to the ITAAC schedules every 6 months thereafter and, within 1 year of its scheduled date for initial loading of fuel, shall submit updates to the ITAAC schedules every 30 days until the final notification is provided to the NRC under paragraph (c)(1) of this section.

- COM 14.3-001:

  For piping DAC ITAAC; (1) The ASME Code design reports for safety-related piping packages and (2) The as-designed Pipe Break Analysis Report will be completed per ESBWR DCD ITAAC Table 3.1-1 for all the applicable systems in order to support closure of the Design Acceptance Criteria ITAAC. Information will be made available for NRC review, inspection, and audit on a system basis. Information will be made available to the NRC to facilitate reviews, inspections, and audits throughout the process.

- COM 14.3-002:

  For human factors engineering DAC, HFE Design Acceptance Criteria ITAAC consists of a series of results summary reports which verify that the specific associated Design Commitment is met. The summary reports will be made available at each stage for NRC review, inspection, and audit on an element by element basis. Information (procedures and test programs) will be made available to the NRC to facilitate reviews, inspections, and audits throughout the process.

- COM 14.3-003:

  For instrumentation and controls DAC, the set of ESBWR digital I&C Design Acceptance Criteria ITAAC establishes a phased Design Acceptance Criteria ITAAC closure process. Procedures and test programs necessary to demonstrate that the Design Acceptance Criteria ITAAC requirements are met will be used at each phase to certify to the NRC that the design is in compliance with the certified design. Information will be made available for NRC review, inspection, and audit on a system basis. Information will be made available to the NRC to facilitate reviews, inspections, and audits throughout the process.

14.3.6 Conclusion

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that, with the exception of Confirmatory Items 14.3-1, 14.3-2 and 14.3-3, the applicant has addressed the required information, and no outstanding information is expected to be addressed in the COL FSAR related to this section. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix [X], Section VI.B.1, all nuclear safety issues relating to this section that were incorporated by reference have been resolved.

In addition, the staff concludes that the relevant information presented within the COL FSAR is acceptable and meets the requirements of 10 CFR 52.79(d)(2), 52.80, 52.99(a) and the guidance in RG 1.206, Sections C.II.1 and C.III.5. The staff has evaluated STD COL 14.3-1-A, STD COL 14.3-2-A, and EF3 COL 14.3A-1-1 according to the relevant NRC regulations and

acceptance criteria defined in NUREG-0800, Section 14.3 and finds the applicant has satisfactorily addressed these items.