13 CONDUCT OF OPERATIONS

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13.0 Conduct of Operations

Chapter 13, "Conduct of Operations," of this safety evaluation report (SER) describes the U.S. Nuclear Regulatory Commission (NRC) staff's review of Chapter 13, "Conduct of Operations," of Revision 0 to the U.S. Advanced Power Reactor 1400 (APR1400) Design Control Document (DCD), issued December 2014. This chapter provides the information related to the preparations and plans for the design, construction, and operation of the APR1400 plant. Its purpose is to provide adequate assurance that the combined license (COL) applicant establishes and maintains a staff of adequate size and technical competence and that operating plans followed by the licensee are adequate to protect public health and safety. The review focuses on the following aspects related to the organizational structure of the COL applicant: training, emergency planning (EP), plant procedures, and physical security, as the areas of review for which the staff needs to be able to reach a conclusion about the safe conduct of operations at an APR1400 reactor plant.

13.1 Organizational Structure of the Applicant

13.1.1 Introduction

The organizational structure of the applicant includes the corporate-level management and technical support organization, and the onsite operating organization of the applicant. The description of the management and technical support organization includes a description of the corporate or home office offsite organization, the functions, activities, and responsibilities of the offsite organization, and the number and qualifications of personnel. The description of the operating organization includes a description of the structure, functions, activities, and responsibilities of the onsite operating organization, established to safely operate and maintain the facility.

Activities of the corporate-level management and technical support organization, and the onsite operating organization, include facility design, design review, design approval, construction management, testing, and operation and maintenance of the plant.

13.1.2 Summary of Application

DCD Tier 1: There is no Tier 1 information associated with this section.

DCD Tier 2: In Design Control Document (DCD) Tier 2, Section 13.1, the applicant: (1) addresses the corporate-level management and technical support organization structure, positions, staffing, qualification requirements, and functional responsibilities in support of: (a) the design and construction of the facility, and (b) the onsite operating organization throughout the life of the plant; (2) addresses the onsite operating organization structure, positions, staffing, qualification requirements, and functional responsibilities in overseeing the safe operation of the facility; and (3) summarizes and lists the COL information items.

Inspection, test, analysis, and acceptance criteria (ITAAC): There are no ITAAC for this area of review.

Technical Specifications (TS): There are no TS for this area of review.

COL information or action items: See Section 13.1.5 of this SER for COL information items.

Technical Reports: There are no technical reports associated with this area of review.

Topical Reports: There are no topical reports associated with this area of review.

APR1400 Interface Issues identified in the DCD: There are no APR1400 interface issues associated with this area of review other than those discussed above.

Site Interface Requirements identified in the DCD: There are no site interface requirements associated with this area of review.

Cross-cutting Requirements (Three Mile Island [TMI], Unresolved Safety Issue [USI]/Generic Safety Issue [GSI], Op Ex: There are no cross-cutting requirements associated with this area of review.

Regulatory-Treatment-of Non-Safety Systems (RTNSS): There are no RTNSS issues for this area of review.

10 CFR 20.1406: There are no issues related to 10 CFR 20.1406, "Minimization of Contamination," for this area of review.

13.1.3 Regulatory Basis

Acceptability of the APR1400 DCD, Section 13.1, "Organizational Structure of Applicant," is based on meeting the relevant requirements of the following Commission regulations:

- 10 CFR 50.34, "Contents of Applications; technical information," (a) "Preliminary safety analysis report," paragraphs (6) and (9)
- 10 CFR 50.34(b), "Final safety analysis report," paragraphs (6)(i)-(iv)
- 10 CFR 50.34(f), "Additional TMI-related requirements," paragraph (3)(vii)
- 10 CFR 50.40, "Common standards," paragraph (b)
- 10 CFR 50.48, "Fire protection," paragraph (a)(1)(ii)
- 10 CFR 50.54, "Conditions of licenses," paragraphs (i)-(m)
- 10 CFR 50.71, "Maintenance of records, making of reports"
- 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"
- 10 CFR 52.47, "Contents of applications; technical information," paragraph (a)(7)
- 10 CFR 52.79, "Contents of applications; technical information in final safety analysis report," paragraphs, (26)-(28) and (29)(i)

Acceptance criteria for the review and evaluation of the corporate-level management and technical organizational structure is based on the guidelines of Three Mile Island (TMI) Action Plan Item I.B.1.2, originally described in NUREG-0694, "TMI-Related Requirements for New Operating Licenses."

Acceptance criteria for the review and evaluation of engineering expertise on shift is based on the Commission Policy Statement on Engineering Expertise on Shift (Generic Letter 86-04) and the guidelines of TMI Action Plan Item I.A.1.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements."

Acceptance criteria for the review and evaluation of the licensed operator license conditions are based on meeting 10 CFR 50.54(i)-(m) as they relate to manipulation of controls, the operator designated as at the controls of the facility, staffing requirements during facility operation, the responsibility for directing activities of licensed operators, and senior operator availability during reactor operations and other specific reactor conditions or modes of operation. In addition, staffing should follow the staff positions of TMI Action Plan Items I.A.1.1 and I.A.1.3 of NUREG-0737.

13.1.4 Technical Evaluation

In APR1400 DCD Tier 2, Section 13.1, "Organizational Structure of Applicant," the applicant stated that the combined license (COL) applicant is responsible for describing the corporate-level management and technical support organization, and the onsite operating organization. The staff determined this approach to be acceptable based on examination of COL Information Items 13.1(1) – 13.1(11) and the subsequent determination that all areas in Subsection I, "Areas of Review," of SRP 13.1.1, "Management and Technical Support Organization," and SRP 13.1.2 – 13.1.3, "Operating Organization," relevant to COL applicant submittals (i.e., those areas cited under elements (1) and (2) of the DCD Tier 2 paragraph in the Summary of Application section above) have been appropriately identified and sufficiently addressed, without the need to specify additional COL information items.

13.1.5 Combined License Information Items

In the APR1400 DCD Tier 2 Section 13.1, "Organizational Structure of the Applicant," the applicant stated the COL applicant is responsible for describing the corporate-level management and technical support organization, and the onsite operating organization. Section 13.1 contains eleven COL information items pertaining to the organizational structure of the applicant. The staff found all eleven COL information items to be acceptable on the basis of the determination described in Section 13.1.4 of this report.

COL 13.1(1) The COL applicant is to provide a description of the corporate or home office organization, its functions and responsibilities, and the number and the qualifications of personnel. The COL applicant is to be directed to activities such as the facility design, design review, design approval, construction management, testing, and operation of the plant.

COL 13.1(2) The COL applicant is to develop a description of experience in the design, construction, and operation of nuclear power plants and experience in activities of similar scope and complexity.

COL 13.1(3) The COL applicant is to describe its management, engineering, and technical support organizations. The description includes organizational charts for the current headquarters and engineering structure and any planned modifications and additions to those organizations to reflect the added functional responsibilities with the nuclear power plant.

COL 13.1(4) The COL applicant is to develop a description of the organizational arrangement. The description is to include organizational charts reflecting the current headquarters and engineering structure and any planned modifications and additions to reflect the added functional responsibilities associated with the addition of the nuclear plant to the applicant's power generation capacity. The

description shows how these responsibilities are delegated and assigned or expected to be assigned to each of the working or performance-level organizational units identified to implement these responsibilities. The description includes organizational charts reflecting the current corporate structure and the working- or performance-level organizational units that provide technical support for the operation.

COL 13.1(5) The COL applicant is to develop the description of the general qualifications in terms of educational background and experience for positions or classes of positions described in the organizational arrangement.

COL 13.1(6) The COL applicant is to develop a description of the structure, functions, and responsibilities of the onsite organization established to operate and maintain the plant.

COL 13.1(7) The COL applicant is to provide an organizational chart showing the title of each position, minimum number of persons to be assigned to duplicate positions, number of operating shift crews, and positions that require reactor operator and senior reactor operator licenses.

COL 13.1(8) The COL applicant is to provide organizational information such as the functions, responsibilities, and authorities of the plant position. The COL applicant is to develop a description of the line of succession of authority and responsibility for overall station operation in the event of unexpected temporary contingencies, and the delegation of authority.

COL 13.1(9) The COL applicant is to develop a description of the position titles, applicable operator licensing requirements for each, and the minimum numbers of personnel planned for each shift for all combinations of units proposed to be at the station in either operating or cold shutdown mode. The COL applicant is also to develop the description of shift crew staffing plans unique to refueling operations.

COL 13.1(10) The COL applicant is to provide a description of the education, training, and experience requirements for each management, operating, technical, and maintenance position in the operating organization.

COL 13.1(11) The COL applicant is to provide the qualification requirements of the initial appointees to plant positions for key plant managerial and supervisory personnel through the shift supervisory level.

13.1.6 Conclusion

In APR1400 DCD Tier 2, Section 13.1, “Organizational Structure of Applicant,” the applicant stated that the COL applicant is responsible for describing the corporate-level management and technical support organization and the onsite operating organization. The responsibilities of the COL applicant are identified in the eleven COL Information Items (COL 13.1(1) – 13.1(11)). The staff has reviewed APR1400 DCD Tier 2 Section 13.1, “Organizational Structure of Applicant,” and determined that this approach to describing the corporate-level management and technical support organization, and the onsite operating organization, is acceptable to meet the

requirements of 10 CFR 50.34, 10 CFR 50.40, 10 CFR 50.48, 10 CFR 50.54, 10 CFR 50.71, 10 CFR 50 Appendix B, 10 CFR 52.47, and 10 CFR 52.79.

13.2 Training

13.2.1 Introduction

The purpose of this section is to provide assurance that the applicant analyzes job performance to design, develop, implement, and evaluate licensed and non-licensed staff training programs to establish and maintain a staff of sufficient size, ability, and technical competence to operate and maintain the facility and to protect public health and safety.

DCD Tier 1: There is no Tier 1 information associated with this section.

DCD Tier 2: In DCD Tier 2, Section 13.2, the applicant has summarized the description and schedule of the training program for licensed reactor operators and non-licensed plant staff that the COL applicant is required to provide to support APR1400 plant operations.

ITAAC: There are no ITAAC for this area of review.

TS: There are no TS for this area of review.

COL information or action items: See Section 13.2.5 of this SER for COL information items.

Technical Reports: There are no technical reports associated with this area of review.

Topical Reports: There are no topical reports associated with this area of review.

APR1400 Interface Issues identified in the DCD: There are no APR1400 interface issues associated with this area of review other than those discussed above.

Site Interface Requirements Identified in the DCD: There are no site interface requirements associated with this area of review.

Cross-cutting Requirements TMI, USI/GSI, Op Ex: There are no cross-cutting requirements associated with this area of review.

RTNSS: There are no RTNSS issues for this area of review.

10 CFR 20.1406: There are no issues related to 10 CFR 20.1406 for this area of review.

13.2.2 Summary of Application

In APR1400 DCD Tier 2 Section 13.2, “Training,” the applicant stated that the COL applicant is responsible for developing the description, content, and schedule of the site-specific training programs for licensed and non-licensed plant staff.

13.2.3 Regulatory Basis

Acceptability of the APR1400 DCD Tier 2, Section 13.2, "Training," is based on meeting the relevant requirements of the following Commission regulations:

- 10 CFR 19.12, "Instruction to Workers"
- 10 CFR 26.29, "Training"
- 10 CFR 50.34(a)(6) and (9)
- 10 CFR 50.34(b)(6)(i)-(iv)
- 10 CFR 50.34(f)(2)(i)
- 10 CFR 50.40(a) and (b)
- 10 CFR 50.48
- 10 CFR 50.54(a)(i-1)
- 10 CFR 50.120(b)(1)-(3)
- 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"
- 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities"
- 10 CFR 52.47(a)(7)
- 10 CFR 52.79(a)(14), (33), (34), (39), (40) and (44)
- 10 CFR 55.31(a)(4)-(5)
- 10 CFR 55.41, "Written Examination: Operators"
- 10 CFR 55.43, "Written Examination: Senior Operators"
- 10 CFR 55.45, "Operating Tests"
- 10 CFR 55.46, "Simulation Facilities"
- 10 CFR 55.59, "Requalification"

Acceptance criteria adequate to meet the above requirements include the following:

- RG 1.8, "Qualification and Training of Personnel for Nuclear Power Plants"
- RG 1.49, "Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations"
- NUREG-0711, "Human Factors Engineering Program Review Model"
- NUREG-1021, "Operator Licensing Examination Standards for Power Reactors"
- NUREG-1220, "Training Review Criteria and Procedures"

13.2.4 Technical Evaluation

In APR1400 DCD Tier 2, Section 13.2, "Training," the applicant stated that the COL applicant is responsible for developing the description, content, and schedule of the site-specific training programs for licensed and non-licensed plant staff. This is captured in COL Information Items 13.2(1) – 13.2(6), which are listed in Section 13.2.5 of this SER.

Regulatory Guide (RG) 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," provides guidance to nuclear power plant licenses regarding the qualifications and training for nuclear power plant personnel. The guidance in RG 1.8 will aid the licensee in establishing a training program which meets the requirements identified in Section 13.2.3 above. This guidance is acceptable to the NRC staff. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [light-water reactor] Edition" (SRP),

Chapter 13, "Conduct of Operations," Section 13.2.1, "Reactor Operator Requalification Program; Reactor Operator Training," and SRP Section 13.2.2, "Non-Licensed Plant Staff Training," both state that a licensee applicant should commit to RG 1.8, and NEI-06-13A, "Template for an Industry Training Program Description." NEI-06-13A provides more specific guidance to licensees regarding following RG 1.8 to meet applicable requirements. Both SRP sections also state that for design certification (DC) reviews, the training program development will be designated as a COL applicant action item. Because the applicable regulations listed above also apply to a license applicant and because any training program developed by the licensee will be site-specific, the DC applicant only needs to provide acceptable COL Information Items for NRC staff to find Section 13.2 acceptable.

The NRC staff reviewed COL Information Items 13.2(1), 13.2(5), and 13.2(6) and found them acceptable because they require the development of the description, schedules, and training program by the COL consistent with RG 1.8.

The NRC staff reviewed COL Information Item 13.2(2) and found it acceptable because it required the COL to develop a training program using the guidance of NEI 06-13A, which follows the guidance of RG 1.8 as discussed above.

The NRC staff reviewed COL Information Items 13.2(3) and 13.2(4) and found them inadequate because they failed to clearly commit to NEI 06-13A. To resolve this inconsistency, the staff issued Request for Additional Information (RAI) 485-8601, Question 13.02.01-1 (ML16138A348). In its response to RAI 485-8601, Question 13.02.01-1 (ML16175A684), the applicant confirmed that the licensed plant staff training program will be developed in accordance with NEI 06-13A and included its proposed markup of the DCD Section 13.2.3, "Combined License Information," and Table 1.8-2, "Combined License Information Items." The markups show that reference to NUREG-0800 will be replaced with a reference to NEI 06-13A in both COL items. The staff reviewed and determined that the applicant's response to the RAI and the proposed Tier 2 changes are acceptable. Therefore, **RAI 485-8601, Question 13.02.01-1, is being tracked as Confirmatory Item 13.02.01-1.**

As described above, the staff determined that this approach to developing licensed and non-licensed plant staff training programs, is acceptable. The staff has determined that the COL information items included (or proposed for Revision 1) in the APR1400 DCD adequately address the COL applicant actions pertinent to development of the site-specific training programs and that no additional COL information items are required in the DCD.

13.2.5 Combined License Information Items

APR1400 DCD Tier 2, Section 13.2, "Training," contains six COL information items pertaining to the development of the description, content, and schedule of the site-specific training programs for the COL applicant's licensed and non-licensed plant staff. The acceptability of the COL items are evaluated in Section 13.2.4 of this SER.

COL 13.2(1) The COL applicant is to develop the description and schedule of the training program for licensed reactor operators and non-licensed plant staff.

COL 13.2(2) The COL applicant is to develop the site-specific training program by using NEI 06-13A ["Template for an Industry Training Program Description"] as the template for the basic structure and content.

COL 13.2(3) The COL applicant is to provide a licensed plant staff training program in accordance with NUREG-0800, Section 13.2.1.I.3.

COL 13.2(4) The COL applicant is to provide a non-licensed plant staff training program in accordance with NUREG-0800, Section 13.2.2.I.3.

COL 13.2(5) The COL applicant is to develop training programs. The programs are to include a chart that shows the schedule of each part of the training program for each functional group of employees in the organization in relation to the schedule for preoperational testing, expected fuel loading, and expected time for examinations prior to plant criticality for licensed operators.

COL 13.2(6) The COL applicant is to determine the extent of the NRC guidance that is applicable to the facility training program or the justification of exceptions.

13.2.6 Conclusion

In APR1400 DCD Tier 2, Section 13.2, "Training," the applicant stated that the COL applicant is responsible for describing, developing, and documenting the training programs for licensed and non-licensed plant staff. This COL applicant responsibility is identified as six individual COL Information Items (COL 13.2(1) – 13.2(6)). The staff has reviewed APR1400 DCD Tier 2, Section 13.2, "Training," and determined that this approach to describing, developing, and documenting the training programs for licensed and non-licensed plant staff is acceptable to meet the requirements of 10 CFR 19.12, 10 CFR 26.29, 10 CFR 50.34, 10 CFR 50.40, 10 CFR 50.48, 10 CFR 50.54, 10 CFR 50.120, 10 CFR 50 Appendix B, 10 CFR 50 Appendix E, 10 CFR 52.47, 10 CFR 52.79, and 10 CFR 55.

13.3 Emergency Planning

13.3.1 Introduction

For a Design Certification (DC) application, the NRC staff's review of EP is conducted according to the requirements in 10 CFR 52.47 and 52.48, and addresses those design features, facilities, functions, and equipment that are technically relevant to the design, not site-specific, and affect some aspect of EP or the capability of a licensee to cope with plant emergencies. The review addresses design facilities such as a habitable technical support center (TSC) with adequate space, data retrieval capabilities and dedicated communications equipment, and an operational support center with adequate communications.

The review of ITAAC relating to EP is conducted and the results are provided within this section.

13.3.2 Summary of Application

DCD Tier 1: DCD Tier 1, Section 2.10, "Emergency Planning," addresses certain features of the APR1400 plant design that support EP and the capability of the licensee to cope with plant emergencies. DCD Tier 1, Section 2.7.3.1, "Control Room HVAC System," describes TSC habitability in support of personnel occupancy during plant accident conditions. DCD Tier 1, Section 2.6.9, "Communication Systems," describes non safety-related communication systems. DCD Tier 1, Table 2.10-1, "Emergency Planning ITAAC," describes ITAAC for EP. Additional

ITAAC that are associated with EP are included in Table 2.7.3.1-3, “Control Room HVAC System ITAAC,” and Table 2.6.9-1, “Communication Systems ITAAC.”

DCD Tier 2: The applicant has provided a Tier 2 design description in DCD Section 13.3, summarized here in part, as follows:

In DCD Section 13.3, the applicant stated that EP is the responsibility of the COL applicant. However, design features, facilities, functions, and equipment necessary for EP are considered in the design bases for the standard plant. Interfaces of these features with site-specific designs and site parameters are the responsibility of the COL applicant. The following EP features are considered in the design bases for the standard plant:

- The TSC:

  The TSC is an onsite facility that provides plant management and technical support to the plant operations personnel during emergency conditions. The applicant included descriptions of the location, size, structural requirements, environmental controls, installed radiological protection and monitoring equipment, voice communication and data display systems and how human factors engineering is used.

- Operations Support Center (OSC):

  The OSC is an onsite facility that is separated from the main control room (MCR) and the TSC. The applicant included a description of the location, size, structural requirements and communication systems.

- The Emergency Operations Facility (EOF):

  The EOF supports the management of the licensee emergency response such as coordination with Federal, State, and local officials, coordination of radiological and environmental assessments, and determination of recommended public protective actions. The EOF is a licensee-controlled and operated offsite support center.

- The Emergency Response Data System (ERDS):

  The ERDS is a real-time electronic data transmission system linked to the NRC Headquarters Operation Center that provides plant parameters from the onsite computer system. It allows the NRC to provide advice and support to the licensee, Federal, State, and local authorities.

- Near-Term Task Force Recommendation (NTTF) 9.3 – Emergency Plan (Post-Fukushima Accident):

  Design features are incorporated into the onsite plant communication system to enhance emergency preparedness for a Beyond Design-Basis External Event associated with a simultaneous loss of all alternating current (ac) power and the loss of the ultimate heat sink.

- The Safety Parameter Display System (SPDS):

  The SPDS provides a display of plant parameters that an operator in the MCR, TSC and EOF can use to assess the safety status of the APR1400.

- Decontamination Facilities:

  Decontamination facilities are provided to remove or reduce radioactive contaminants from plant equipment, protective clothing and personnel, and they are located in the compound building for personnel decontamination and in the hot machine shop for equipment decontamination. More information for the decontamination facilities can be found in Section 12.3, "General Arrangement Design Features – Personnel decontamination and change areas," in the DCD and in this SER.

- Post-Accident Sampling System (PASS):

  The PASS provides the capability to sample and analyze liquid and gaseous samples following an accident. It is fully described in Section 9.3.2, "Process and Post-Accident Sampling Systems," and Section 12.3, "General Arrangement Design Features – Personnel decontamination and change areas,' in the DCD and in this SER.

- Additional descriptions of EP related design features are located in the following DCD Tier 2 sections:

  - Section 2.3, "Meteorology"
  - Section 6.4, "Habitability Systems"
  - Section 7.5.1.5, "Safety Parameter Display System"
  - Section 7.5.1.6, "Information Systems Associated with the Emergency Response Facility and Emergency response Data System"
  - Section 7.7.1.4, "Information Processing System"
  - Section 7.9, "Data Communication Systems"
  - Section 8.1, "Electric Power – Introduction"
  - Section 8.3, "Onsite Power Systems"
  - Section 9.4.1, "Control Room HVAC System"
  - Section 9.5.2, "Communication Systems"
  - Section 12.3.1, "Facility Design Features"
  - Section 12.3.4, "Area Radiation and Airborne Radioactivity Monitoring Instrumentation"

- Section 12.4.1, “Dose Assessment and Minimization of Contamination”
- Section 15.6.5, “Loss-of Coolant Accidents Resulting from Spectrum of Postulated Piping Breaks within the Reactor Coolant Pressure Boundary-Radiological Consequences – Technical Support Center Consequence Model”
- Section 18.0 “Human Factors Engineering”

The staff’s evaluation of these additional DCD sections is addressed in the respective sections of this report.

ITAAC: DCD Tier 1, Section 2.10, Table 2.10-1, and Tier 2 Section 14.3.2.10, “ITAAC for Emergency Planning,” describes various design-related aspects of EP ITAAC, and it states that the ITAAC for EP are provided in accordance with the requirements of 10 CFR 52.47(b), and are consistent with the applicable generic ITAAC in Table C.II.1-B1 of Appendix C.II.1-B to Regulatory Guide (RG) 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition).” In addition, the COL applicant will provide proposed ITAAC for the facility’s EP not addressed in the DCD, in accordance with RG 1.206, as appropriate. (See COL Information Item 14.3(3), addressed below in Section 13.3 (E)). These ITAAC provide for verifying the following:

- Location and size of the as-built TSC.
- Habitability of the TSC.
- Means of communications among the MCR, the TSC, and the EOF.
- A data communication system to provide plant data exchange among the MCR TSC and the EOF.
- The ERDS.
- Location of the OSC.
- Means of communications among the MCR, TSC and OSC.

Additional DCD Tier 2 information relating to EP is provided in Section 1.8, “Interfaces with Standard Designs” (including Table 1.8-2); Section 1.9.6, “Conformance with Post-Fukushima NRC Recommendations and Requirements”; Table 1.9-8, “APR1400 Strategies for Addressing Tier 1, 2 and 3 NTTF Recommendations”; Section 7.5, “Information Systems Important to Safety”; Section 9.4.1, “Control Room HVAC System”; Section 9.5.2, “Communication Systems”; and Section 13.3, “Emergency Planning.”

TS: TS 5.4.1.b, (under “Procedures,”) provides the requirement to have written emergency operating procedures established, implemented and maintained to conform to the guidance in NUREG-0737, Supplement 1 to NUREG-0737 and the requirements in General Letter (GL) 82-33, “Supplement 1 to NUREG-0737 – Emergency Response Capability.” TS 5.5.3, “Post-Accident Sampling,” provides the requirement to ensure the capability to obtain and analyze samples of reactor coolant, radioactive gases, and particulates in the plant’s gaseous effluents and containment atmosphere, under accident conditions.

COL Information or Action Items: See Section 13.3.5 below.

Technical Report: There is no technical report associated with this area of review.

Topical Report: There is no topical report associated with this area of review.

APR1400 Interface Issues Identified in the DCD: Tier 2 Table 1.8-1, "Index of System, Structure, or Component Interface Requirements for APR1400," identifies the EOF description as a conceptual design interface in accordance with 10 CFR 52.47(a)(24).

Site Interface Requirements Identified in the DCD: There are no site interface requirements associated with this area of review.

Cross-cutting Requirements TMI, USI/GSI, Op Ex: Regarding TMI Action Plan Item I.D.2, "Plant-safety-parameter Display Console" and TMI Action Plan Item III.A.1.2, "Upgrade Emergency Support Facilities," there are no USI or GSI or OP Ex cross-cutting requirements for this area of review, as addressed by 10 CFR 52.47(a)(21) and (a)(22), respectively. In relation to Tier 2, Section 13.3, Tier 2; Table 1.9.3-2 identifies TMI-related requirements 10 CFR 50.34(f)(2)(iv) and (f)(2)(xxv), which reflect TMI Action Plan Items I.D2 and III.A.1.2, respectively. NUREG-0696, "Functional Criteria for Emergency Response Facilities," includes the TSC and OSC requirements in TMI Items III.A.2(1) and (2), respectively, such that compliance with NUREG-0696 will resolve TMI Items II.A.1.2(1) and (2).

RTNSS: There is no RTNSS issue for this area of review.

10 CFR 20.1406: There is no issue related to 10 CFR 20.1406 for this area of review.

Conceptual Design Information (CDI): There is no CDI associated with this area of review.

13.3.3 Regulatory Basis

The relevant requirements of the Commission's regulations for EP and the associated acceptance criteria are given in Section 13.3 of NUREG-0800, the Standard Review Plan (SRP). Acceptance criteria are based on meeting the relevant requirements of the following Commission regulations:

- 10 CFR 50.33, 50.34, 50.47, 100.1, 100.3, 100.20, and 100.21(g), as they relate to EP and preparedness.
- 10 CFR Part 50, Appendix E, as it relates to EP and preparedness and the ERDS.
- 10 CFR 52.47 and 52.48, as they relate to EP information submitted in a standard DC application.
- 10 CFR 52.47(b)(1), which requires a DC application to include the proposed ITAAC that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a plant that incorporates the DC is built and will operate in accordance with the DC, the provisions of the Atomic Energy Act of 1954, as amended, and the NRC's regulations.

- 10 CFR 50.72(a)(3)-(4), 50.72(c)(3), and 73.71(a), as they relate to notification of the NRC for an emergency class declaration, ERDS notification, and requirements for reporting safeguards events and maintaining an open emergency notification system (ENS) line.

Specific SRP acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above, can be found in Part II of Section 13.3 of NUREG-0800.

13.3.4 Technical Evaluation

13.3.4.1 Technical Support Center

The staff reviewed the information in the DCD for conformance with applicable standards and requirements identified in NUREG-0800, Section 13.3. DCD Tier 1, Section 2.10, "Emergency Planning," Tier 2, Chapter 13.3, "Emergency Planning," and other DCA chapters listed in Section 13.3.2 of the SER describe the mission, major tasks and design features of the TSC for the APR1400 standard design.

The TSC is an onsite facility that provides plant management and technical support to the plant operations personnel during emergency conditions. The physical description of the location and size of the TSC is provided in Section 13.3 of the DCD, and the physical description, location and scaled size are illustrated in Figure 1.2-17 (withheld) and Figure 6.4-1. The TSC is within a two-minute walk from the MCR in the auxiliary building and is within the control room envelope (CRE). The TSC is sized to provide working space of approximately 7 square meters (75 square feet) per person to avoid crowding and designed to accommodate a minimum of 25 people, including five NRC staff members, as well as TSC equipment and storage of plant records and historical data.

The TSC protects personnel from direct, airborne, in-plant radiological hazards under accident conditions to the same degree as the MCR personnel. The CRE maintains control room habitability during normal, off-normal and emergency conditions. More information about the CRE and the control room heating, ventilation and air condition (HVAC) system and the staff's evaluations can be found in Sections 6.4.2 and 9.4.1, respectively, in the DC application and in this SER.

The technical data displays and plant records are available in the TSC to assist in the diagnosis of abnormal plant conditions and any significant release of radioactivity to the environment. The TSC relieves the reactor operators of peripheral duties and communications not related directly to reactor systems manipulations during emergency conditions. The TSC is the primary onsite communications center during emergency conditions. The TSC technical data system receives, stores, processes and displays plant information to perform the TSC functions. The data available in the TSC are sufficient for plant management, engineering and technical personnel assigned to the TSC to aid the MCR operators in emergency conditions. The TSC provides land-line, cellular and satellite communication capabilities, including telephones and facsimile machines.

According to Section 2.6 of NUREG-0696, the purpose of the TSC is to provide direct management and technical support to the control room during an accident. Section II.B.2 of NUREG-0737 states that any area which will, or may, require occupancy to permit an operator to aid in the mitigation of, or recovery from, an accident is designated as a "vital area." The

control room and TSC must be included among those areas to which access is considered vital after an accident. Further, the design dose rate for personnel in a vital area should be such that doses do not exceed the guidelines of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," Section 2, Criterion 19, during an accident. General design criterion (GDC) 19 requires that radiation protection be adequate to ensure that the dose to personnel does not exceed 0.05 Sieverts (Sv) (5 roentgen equivalent in man (rem)) whole body, or its equivalent to any part of the body, for the duration of the accident. In addition, Subsection 8.2.1.f of Supplement 1 to NUREG-0737, states that the TSC will be provided with radiological protection and monitoring equipment necessary to assure that radiation exposure to any person working in the TSC would not exceed 0.05 Sv (5 rem) whole body, or its equivalent to any part of the body, for the duration of the accident. These guidelines form the basic radiological habitability criteria for the TSC.

The applicant proposed EP ITAAC in DCD Tier 1, Table 2.10-1, "Emergency Planning ITAAC," relating to the TSC to verify the as-built size and location of the TSC. The staff reviewed the TSC-associated ITAAC and evaluated them against the EP ITAAC in Table 14.3.10-1 in NUREG-0800, Section 14.3.10. The staff has determined that the ITAAC are consistent with the content and intent of the respective generic ITAAC. See Table 13.3-1, "Emergency Planning ITAAC," for the relationship between the proposed ITAAC and the generic ITAAC. Since the MCR and TSC use the CRE HVAC and the TSC ventilation is not designed to be isolated from the MCR ventilation, the staff determined that the design meets the TSC habitability acceptance Criterion 8.1.3 from NUREG-0800, Table 14.3.10-1.

CRE HVAC ITAAC related to the TSC habitability requirement for GDC 19 are located in DCD Tier 1, Table 2.7.3.1-3, "Control Room HVAC System ITAAC."

Backup power to the CRE HVAC system components and instruments is provided by the respective Class 1E division as described in Table 2.7.3.1-1, "Control Room HVAC System Components List," and Table 2.7.3.1-2, "Control Room HVAC System Instruments List."

The staff evaluated the backup power supplies to the plant process computer and Instrument & Control (I&C) systems. The means of supplying backup power to the TSC SPDS displays and lighting were not apparent in the application. In RAI 67-8019, Question 13.03-1, (Agencywide Documents Access and Management System (ADAMS) Accession Number ML15192A001), the staff asked the applicant to describe the backup power sources to the plant computer system, SPDS, and TSC displays and lighting or provide a reason why the description is not necessary. In its response to Question 13.03-1 (ML15244B372), the applicant described the backup power supplies as being integral to the TSC console. The TSC console has two independent onsite, ac power supplies, a normal source and an alternate source. The normal source is supplied through an ungrounded uninterruptible power supply. If power is lost through the normal source, the TSC console load is automatically transferred to the alternate battery back-up source without interruption in order to maintain continuity of TSC functions and to immediately resume data acquisition, storage, and display of TSC data in the event of a loss of power. The staff evaluated the RAI response and the information contained in Section 7.5.2.1, "Accident Monitoring Instrumentation," of the submitted APR 1400 DCD application and finds it acceptable because it conforms to the guidance in NUREG-0696. The staff's complete evaluation of safety related display information associated with the APR1400 design is contained in Section 7.5, "Information Systems Important to Safety," of this SER.

The staff concludes that the information provided in the application and the applicant's response to Question 13.03-01, pertaining to the TSC, is consistent with the guidance identified in NUREG-0654, NUREG-0696, NUREG-0737, and NUREG-0800. The staff also determined that the information contained in the DC application meets the applicable requirements of 10 CFR 50.34(f)(2)(xxv), 10 CFR 50.47(b)(8) and (11), and Subsections IV.E.3 and IV.E.8 of Appendix E to 10 CFR Part 50.

13.3.4.2 Operations Support Center

DCD Tier 1, Section 2.10, "Emergency Planning," and Tier 2, Section 13.3, "Emergency Planning" describe the mission and major tasks of the OSC for the APR1400 standard design.

The OSC is an onsite facility that is separated from the MCR and the TSC. It is located in the compound building. Direct communications with the MCR and TSC are established so that personnel assigned to respond to the OSC can be assigned support duties for emergency operations.

The applicant proposed EP ITAAC in DCD Tier 1 Table 2.10-1, "Emergency Planning ITAAC," relating to the OSC to verify the as-built location of the OSC and the means to communicate with the MCR and the TSC. The staff reviewed the OSC-associated ITAAC and evaluated them against the EP ITAAC in Table 14.3.10-1 in NUREG-0800, Section 14.3.10. The staff has determined that the OSC-associated ITAAC are consistent with the content and intent of the respective generic ITAAC. See Table 13.3-1, "Emergency Planning ITAAC," for the relationship between the proposed ITAAC and the generic ITAAC.

Because the information provided in the DCD pertaining to the OSC is consistent with the guidance identified in RG 1.101, NUREG-0654, NUREG-0696 and NUREG-0800, the staff determined that the application meets the applicable requirements of 10 CFR 50.34(f)(2)(xxv), 10 CFR 50.47(b)(8) and (11), and Subsections IV.E.3 and IV.E.8 of Appendix E to 10 CFR Part 50.

13.3.4.3 Emergency Operations Facility

DCD Tier 2, Section 13.3, "Emergency Planning," describes the mission and major tasks of the EOF for the APR1400 standard design.

The EOF supports the management of the licensee emergency response such as coordination with Federal, State, and local officials, coordination of radiological and environmental assessments, and determination of recommended public protective actions.

The EOF is a licensee-controlled and operated offsite support center. The primary functions of the EOF are as follows:

a. Management of overall licensee emergency response.

b. Coordination of radiological and environmental assessment.

c. Determination of recommended public protective actions.

d. Coordination of emergency response activities with Federal, State, and local agencies.

The EOF is staffed to manage licensee resources and to provide continuous evaluation and coordination of licensee activities during and after an accident.

The EOF technical data system is designed to receive, store, process, and display information in order to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition. Data on the general condition of the plant are available for display in the EOF.

The applicant has identified COL Information Item 7.5(2) to have the COL applicant provide a description of the site-specific EOF. See Section 13.3.5 below.

The staff concludes that the information provided in the DCD pertaining to the EOF is consistent with the guidance identified in RG 1.101 and NUREG-0696. As such, the staff determined that this information meets the applicable requirements of 10 CFR 50.34(f)(2)(xxv), 50.47(b)(8) and (11), and Subsections IV.E.3 and IV.E.8 of Appendix E to 10 CFR Part 50.

13.3.4.4 Emergency Response Data System

DCD Tier 2, Section 13.3, "Emergency Planning," describes the ERDS for the APR1400 standard design.

DCD Tier 2, Chapter 7, "Instrumentation and Controls," Section 7.1, "Introduction," states that the design of the accident monitoring instrumentation system conforms to NRC RG 1.97, Revision 4, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants."

DCD Tier 2, Chapter 7, Section 7.1.1.5.f, "Information Systems Associated with the Emergency Response Facilities (ERF) and the Emergency Response Data System (ERDS)," states that the ERDS system is designed to transmit the set of variables from the plant to the NRC in accordance with Supplement 1 of NUREG-0737 and NUREG-0696. NUREG-0696 states that the data set available to the TSC data system must be complete enough to permit accurate assessment of the accident without interfering with the control room emergency operations. DCD Tier 2, Table 7.5-1, "Accident Monitoring Instrumentation Variables," provides the post-accident monitoring (PAM) variables that are important to safety and are needed to mitigate the consequences of anticipated operating occurrences and postulated accidents. These PAM variables, which are displayed in the Main Control Room, are derived from the Type A, B, C, D and E variables specified in and using the guidance of RG 1.97. The staff's complete evaluation of the design of the APR1400 information systems important to safety is provided in section 7.5 of this SER.

DCD Tier 2, Chapter 7, Section 7.5.1.5, "Safety Parameter Display System," and Section 7.5.1.6, "Information Systems Associated with the Emergency Response Facility and Emergency Response Data System," provide details about the two systems including the ERDS transmitting information to the NRC in accordance with NUREG-0696.

The normal and alternate sources of power are discussed in Chapter 8 and evaluated in Section 13.3.4.6 below.

The applicant proposed EP ITAAC in DCD Tier 1 Table 2.10-1, "Emergency Planning ITAAC," relating to providing a port for the ERDS. The staff reviewed the ERDS ITAAC and evaluated it against the EP ITAAC in Table 14.3.10-1 in NUREG-0800, Section 14.3.10, and it has been

determined that the ERDS ITAAC is consistent with the content and intent of the respective generic ITAAC. See Table 13.3-1, "Emergency Planning ITAAC," for the relationship between the proposed ITAAC and the generic ITAAC.

The staff concludes that the ERDS meets the requirements in 10 CFR Part 50, Appendix E, Section VI.

13.3.4.5 NTTF Recommendation 9.3

DCD Tier 2, Section 13.3, "Emergency Planning," describes the voice and data communication system for the APR1400 standard design.

A voice and data communication system establishes the interface and link with the TSC and the EOF and allows data exchange with the plant.

DCD Tier 2, Section 19.3.2.6, "Recommendation 9.3 – Emergency Plan," describes the design features incorporated into the APR1400 design to enhance emergency preparedness for a Beyond Design-Basis External Event (BDBEE). The APR1400 design includes additional power sources for the wireless communication system and provides for a satellite communication link, with roof-mounted antenna and transceiver.

COL applicants that construct an APR1400 are responsible for COL Information Item 19.3(8), which includes addressing the enhancements of the communication system and assessing the communication systems. Applicants are also responsible for COL Information Item 19.3(9), which includes conducting a staffing evaluation of the proposed unit(s) in response to the provisions of Recommendation 9.3, as depicted in Enclosure 5 to SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," dated February 2012 (ML120690347) and NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communication Capabilities," Revision 0, Nuclear Energy Institute, dated May 2012 (ML12125A412). Section 13.3.5 of this SER identifies the COL information items related to these actions.

The staff determined that the APR1400 design provides for enhanced onsite communications and adequately describes normal and backup power supplies which would be used during an emergency event to ensure communications are maintained during a large scale natural event. The staff also determined that the appropriate provisions are in place within the DCD to ensure that the referencing COL applicant will provide a detailed analysis of the communication capabilities and an analysis of the on-site and augmented staffing capabilities for response to multi-unit beyond design basis events. This information is consistent with NTTF Recommendation 9.3 and therefore, is acceptable.

The staff's complete evaluation of BDBEE is contained in Section 19.3 of this SER.

13.3.4.6 Safety Parameter Display System

DCD Tier 2, Section 13.3, "Emergency Planning," describes the SPDS for the APR1400 standard design.

Section 7.1.1.5, “Information Systems Important to Safety,” and Section 7.5.1.2, “Inadequate Core Cooling Monitoring Instrumentation,” describe the data gathering, processing and transmitting equipment and the SPDS. The SPDS functions are implemented in the safety parameter display and evaluation system+ (SPADES+), which is designed to meet the criteria for SPDS in NUREG-0696 and Supplement 1 of NUREG-0737.

Section 7.5.1.5, “Safety Parameter Display System,” and Section 7.5.1.6, “Information Systems Associated with the Emergency Response Facility and Emergency Response Data System,” provide details about the two systems including the ERDS transmitting information to the NRC in accordance with NUREG-0696.

Section 8.3.2.1.1, “Non-Class 1E 120 Vac Instrumentation and Control Power System,” describes that the non-Class 1E 120 Vac power system supplies continuous, reliable and regulated AC power to the plant non-safety related I&C equipment, information processing system (IPS), and process-component control system (P-CCS), all of which require uninterruptable AC power for operation.

The SPDS in the MCR functions during all events expected to occur during the life of a plant, taking into account the human-system interface.

Duplication of the SPDS displays in the TSC and the EOF improves the exchange of information between these facilities and the MCR and assists corporate and plant management in the decision-making process.

The applicant proposed an EP ITAAC in DCD Tier 1 Table 2.10-1, “Emergency Planning ITAAC,” relating to the SPDS to verify the as-built capability to provide plant data exchange among the MCR, TSC and EOF. The staff reviewed the SPDS ITAAC and evaluated it against the EP ITAAC in Table 14.3.10-1 in NUREG-0800, Section 14.3.10. The staff has determined that the SPDS ITAAC is consistent with the content and intent of the respective generic ITAAC. See Table 13.3-1, “Emergency Planning ITAAC,” for the relationship between the proposed ITAAC and the generic ITAAC.

The staff concludes that the information provided in the DCD pertaining to the SPDS is consistent with the guidance identified in RG 1.101, NUREG-0696, and NUREG-0737. As such, the staff determined that this information meets the requirements of 10 CFR 50.34(f)(2)(iv).

13.3.4.7 Decontamination Facilities

DCD Tier 2, Section 13.3, “Decontamination Facilities,” describes the purpose and locations of the decontamination facilities for the APR1400 standard design.

Decontamination facilities are provided to remove or reduce radioactive contaminants from plant equipment, protective clothing, and personnel. Personnel decontamination areas are located in the compound building, and equipment decontamination facilities are located in the hot machine shop. Hot laundry facilities are located in the compound building. Personnel and equipment decontamination facilities are described in Section 12.3.

The staff concludes that the information provided in the application pertaining to the decontamination rooms is consistent with the guidance identified in RG 1.101 and NUREG-0696. As such, the staff determined that this information meets the applicable requirements of 10 CFR 50.47(b)(8) and Subsection IV.E.3 of Appendix E to 10 CFR Part 50.

13.3.4.8 Post-Accident Sampling System

The PASS is designed to take reactor coolant samples for boron concentration and total dissolved gas measurements within 8 hours and 24 hours, respectively, after plant shutdown. Reactor coolant and containment atmosphere samples for radiological measurements can be obtained within 24 hours after plant shutdown. These features are consistent with the recommendations in SECY-93-087.

The PASS is provided for emergency response and is addressed in Subsection 9.3.2 and Section 12.3. The system provides the capability to take reactor coolant and containment atmosphere samples for the analyses identified above. These analyses are performed either continuously or by grab sample and analysis. Backup grab samples are provided for any online monitoring capability consistent with NUREG-0737, Item II.B.3, Clarification (8). Under the accident conditions, liquid samples are directed to the holdup volume tank (HVT), while containment air samples are directed back to containment atmosphere.

Provisions are made for dilution of liquid and gas grab samples for subsequent laboratory analysis. Dilution of the liquid and gas grab samples is performed either at the sampling station or in the laboratory, whichever leads to simpler equipment consistent with ALARA [As Low As Reasonably Achievable] practices. Collection and dilution of the post-accident samples is performed remotely to the maximum extent feasible.

All remotely operated valves for post-accident sampling have reliable power supplies and reset features that allow reopening of the valves after containment isolation without clearing the isolation signal for other containment isolation valves. Individual valve reset features are provided to allow opening of individual sampling valves after system reset. Valves inaccessible during an accident are environmentally qualified to provide reasonable assurance of operability under accident conditions.

The staff concludes that the information provided in the application pertaining to PASS is acceptable and meets evaluation criterion I.2 of NUREG-0654 pertaining to the applicant's capability to continuously assess an accident. Therefore, the information provided meets the applicable requirements of 10 CFR 50.47(b)(8), (9), and (11).

13.3.4.9 ITAAC

The staff reviewed the ITAAC relating to EP, which are provided in DCD Tier 1, Section 2.6.9, "Communication Systems," Section 2.7.3.1, "Control Room HVAC System," and Section 2.10, "Emergency Planning," against the applicable requirements and guidance identified above in Section 13.3.3. The ITAAC consist of six individual Design Commitments included in the respective DCD Section ITAAC tables identified above, in Section 13.3.2). In addition, the staff reviewed various design-related aspects of EP included in DCD Tier 2, Section 1.8, Section 1.9, Section 7.5, Section 9.4, Section 9.5.2, Section 13.3, and Section 14.3.2.10.

Section 13.3 of NUREG-0800, states in part, that for a DC application, the review only addresses those design features, facilities, functions, and equipment that are technically relevant to the design and are not site-specific, and which affect some aspect of EP or the capability of a licensee to cope with plant emergencies. There is no minimum amount of design-related EP for the proposed reactor that must be addressed in the application. The applicant may choose the extent to which EP features are included in the application to be

reviewed as part of the certified design. Section 14.3.10 of NUREG-0800, Table 14.3.10-1, "Emergency Planning – Generic Inspections, Tests, Analyses, & Acceptance Criteria (EP ITAAC)," provides examples of acceptable generic EP ITAAC that may be used, to the extent they are relevant to a specific application.

In addition, the staff determined that the proposed six ITAAC are technically relevant to the design and are not site-specific. Pursuant to 10 CFR 52.80(a)(2), at the COL application stage, these DCD ITAAC (contained in the certified design) must apply to those portions of the facility design which are approved in the DC. Table 13.3-1 contains a complete list of these EP ITAAC.

Because the ITAAC are technically relevant to the design and not site-specific, and are consistent with the generic EP ITAAC in Table 14.3.10-1 in Section 14.3.10 of NUREG-0800, the staff determined that that the application meets the applicable requirements of 10 CFR 52.47(b)(1).

Table 13.3-1
Emergency Planning ITAAC

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria	NUREG-0800 Section 14.3.10 Acceptance Criteria
1. The TSC has at least 200 square meters of floor space.	1. Inspection and analysis of the TSC will be performed.	1. A report exists and concludes that TSC has at least 200 square meters of floor space.	*8.1.1 The TSC size is consistent with NUREG-0696.
2. The TSC is located adjacent to the MCR in the auxiliary building.	2. Inspection and analysis of the TSC will be performed.	2. The TSC is close to the MCR, and the walking distance from the TSC to the MCR does not exceed two minutes.	*8.1.2 The TSC is close to the MCR, & the walking distance from the TSC to the MCR does not exceed two minutes.
3. The means exists for communications among the MCR. The TSC, the EOF, principal State and local emergency operations centers (EOCs) and radiological field assessment teams.	3. A test of the communication systems will be performed.	3. Communications are established among the MCR, the TSC, the EOF, principal State and local EOCs, and radiological field assessment teams.	*6.1 Communications are established among the control room, TSC, EOF, principal State and local EOCs, and radiological field assessment teams.

4. The means exists for communications from the MCR, TSC, and EOF to the NRC headquarters and regional office EOCs (including establishment of the Emergency Response Data Systems (ERDS between the onsite computer system and the NRC Operations Center.)	4. A test of the communication systems will be performed.	4. Communications are established from the MCR, the TSC, and the EOF to the NRC headquarters and regional office EOCs, and an access port for ERDS is provided.	*6.2 Communications are established from the control room, TSC and EOF to the NRC headquarters and regional office EOCs, and an access port for ERDS [or its successor system] is provided.
5. The OSC is located in the compound building, separate from the MCR and the TSC.	5. Inspection of the location of the OSC will be performed.	5. The OSC is located in the compound building, separate from the MCR and the TSC.	*8.1.6 The OSC is located onsite, separate from the control room and TSC.
6. The OSC has equipment for voice communication with the MCR and the TSC.	6. An inspection of the OSC will be performed, including a test of the equipment for voice communications.	6. The OSC communications equipment is installed, and voice transmission and reception are accomplished.	*8.1.7 OSC communications equipment is installed, and voice transmission and reception are accomplished.

* The original numbering of the Acceptance Criteria is retained in this column to provide a direct reference to the application materials.

13.3.4.10 COL Information Items

Within DCD Tier 2 Section 13.3, the applicant provided information related to those aspects of emergency planning that are non-site-specific emergency planning features and technically relevant to the design (i.e., facilities and equipment). However, programmatic aspects of emergency planning and preparedness are the responsibility of a COL applicant that references the certified standard design. In DCD Section 13.3, the applicant stated that the COL applicant will address most aspects of emergency planning and identified six programmatic EP responsibilities as COL Information Items. These COL Information Items are identified below in Section 13.3.5, "Combined License Information Items." The NRC staff reviewed COL Information Items 13.3(1)-13.3(6) and found them to be in conformance with the regulatory standards set forth in 10 CFR 50.47(b) and 10 CFR Part 52, and with the guidance in RG 1.101, as well as RG 1.206. Therefore, the proposed COL Information Items are acceptable.

13.3.5 Combined License Information Items

APR1400 DCD Tier 2, Section 13.3, "Emergency Planning," contains six COL information items pertaining to certain design features, facilities, functions, and equipment necessary for EP. The acceptability of the COL items are evaluated in Section 13.3.4 of this SER.

COL 13.3(1) The COL applicant referencing the APR1400 DC is to develop interfaces of design features with site-specific designs and site parameters.

COL 13.3(2) The COL applicant is to develop a comprehensive emergency plan. The plan is developed as a physically separate document and includes copies of letters of agreement (or other certifications) from State and local governmental agencies with EP responsibilities.

COL 13.3(3) The COL applicant is to address an emergency classification and action level scheme as required by 10 CFR 50.47(b) (4).

COL 13.3(4) The COL applicant is to develop the security-related aspects of an emergency plan.

COL 13.3(5) The COL applicant is to develop an emergency plan for a multi-unit site depending on the location of the new reactor relative to an operating reactor site with an existing emergency plan.

COL 13.3(6) The COL applicant is to develop EP ITAAC.

13.3.6 Conclusion

On the basis of its review, as described above, the staff concludes that the applicant has adequately addressed the EP design-related features and generic issues for the APR1400 standard plant. Therefore, the information is acceptable and meets the applicable requirements listed in Section 13.3.3 of the SER.

13.4 Operational Program Implementation

13.4.1 Introduction

NRC Commission Paper, SECY-05-0197 (October 28, 2005), "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," described the NRC staff's plan for reviewing operational programs in a COL application. The NRC staff requested the Commission to approve the plan to require the COL to provide descriptions of operational programs in the COL applications. In SRM-SECY-05-0197 (February 22, 2006), the Commission approved the staff's request. In approving this approach, the DC applicant was relieved of the burden of describing operational programs which only the COL applicant could describe. As a result, NRC guidance states that the DCD should include a COL Information Item directing the COL applicant to develop operational programs in accordance with SECY-05-1997.

13.4.2 Summary of Application

In Section 13.4 of the APR1400 DCD, the applicant stated that the development of operational program descriptions and implementation schedules is the responsibility of the COL applicant.

13.4.3 Regulatory Basis

As discussed in SECY-05-0197, 10 CFR 52.79, "Contents of applications; technical information," subsection 52.79(b) requires a COL applicant to provide an application containing the technically relevant information required of applicants for an operating license by 10 CFR 50.34. SECY 05-0197 goes on to state that these requirements include the submission of information on operational programs. There is no similar requirement or expectation on a DC applicant. Therefore, there is no regulatory basis to require a DC applicant to describe operational programs.

13.4.4 Technical Evaluation

Since there is no requirement for a description, there is no technical evaluation necessary.

13.4.5 Combined License Information Items

The following are the COL information item numbers and descriptions associated with Section 13.4 and Table 1.8-2 of the DCD.

COL 13.4(1) The COL applicant is to develop operational programs and provide schedules for implementation of the programs, as defined in SECY-05-0197. The COL applicant is to provide commitments for the implementation of operational programs that are required by regulation. In some instances, the programs may be implemented in phases, where practical, and the applicant is to include the phased implementation milestones.

COL 13.4(2) The COL applicant is responsible for developing a leakage monitoring and prevention program for the systems, as specified in Subsection 5.5.2 in Chapter 16 Technical Specifications. The leakage monitoring and prevention program is to provide suitable methods and acceptance criteria as defined in NUREG-0737 Item III.D.1.1.

The staff determined that these COL information items are acceptable because the DC applicant appropriately directs the COL applicant to develop operational programs as described in SECY-05-0197.

13.4.6 Conclusion

There are no operational program requirements to be evaluated. The COL information items which were provided are appropriate and acceptable.

13.5 Plant Procedures

13.5.1 Introduction

Plant procedures include: (1) administrative procedures that provide for administrative control over safety-related activities for the operation of the facility, (2) operating and emergency operating procedures used to ensure that routine operating, off-normal (i.e., abnormal), and emergency activities are conducted in a safe manner, and (3) procedures for "other" safety-related plant operating activities not procedurally covered under the operating or emergency operating procedure programs, including related maintenance activities.

The staff reviews the application to: (1) evaluate the acceptability of COL information items pertaining to COL applicant descriptions of plant procedures, (2) evaluate the acceptability of COL information items pertaining to the COL applicant's program for development and implementation of plant procedures, and (3) evaluate the technical adequacy of the APR1400 generic technical guidelines (GTGs) and determine their acceptability as a basis for development of COL applicant plant-specific technical guidelines (P-STGs).

13.5.2 Summary of Application

Procedure development is not within the scope of the APR1400 DC application. This responsibility resides with the COL applicant. The DCD Tier 2, Revision 0, Section 13.5, addresses the basic approach to procedure development, and describes and lists the COL information items. The applicant did not initially submit the APR1400 GTGs, hereafter referred to as the APR1400 Emergency Operating Guidelines (EOGs), with the DC application. The APR1400 EOGs were provided in the response to RAI 11-7889, Question 13.05.02.01-1, dated June 15, 2015 (ML15166A302).

Technical Reports:

The APR1400 specific design features were incorporated into the analyses for the operational transients and accidents that were used for the EOGs. The technical report for the analyses is:

- KEPCO E&C/ND/TR/11-005, "Best Estimate Analyses for the Operational Transients and Accidents for APR1400 Emergency Operating Guidelines."

13.5.3 Regulatory Basis

The relevant requirements for the Commission regulations for Plant Procedures, and the associated acceptance criteria, are identified, in part, in Sections13.5.1.1, "Administrative Procedures – General," and Section 13.5.2.1, "Operating and Emergency Operating Procedures," of NUREG-0800.

The applicable regulatory requirements for Plant Procedures are as follows:

- 10 CFR 50.34(a)(6) and (10)
- 10 CFR 50.34(b)(6)(ii), (iv), and (v)
- 10 CFR 50.34(f)(2)(ii)
- 10 CFR 50.40(a)

- 10 CFR 50, Appendix B
- 10 CFR 52.47(a)(8) and (9)
- 10 CFR 52.79(a)(17), (27), (29)(i), and (29)(ii)

The related acceptance criteria are as follows:

- RG 1.33, "Quality Assurance Program Requirements (Operation)," Revision 3.

- ANSI/ANS 3.2-2012, "Managerial, Administrative, and Quality Assurance Controls for Operational Phase of Nuclear Power Plants," Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors."

- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 13, "Conduct of Operations," Section 13.5.1.1, "Administrative Procedures – General," Subsection II, "Acceptance Criteria," Revision 1.

- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 13, "Conduct of Operations," Section 13.5.2.1, "Operating and Emergency Operating Procedures," Subsection II, "Acceptance Criteria," Revision 2.

- NUREG-0737, "Clarification of TMI Action Plan Requirements," Item I.C.1, "Guidance for the Evaluation and Development of Procedures for Transients and Accidents," 1980.

- NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability," Item 7, "Upgrade Emergency Operating Procedures (EOPs)," 1983.

- NUREG-0899, "Guidelines for the Preparation of Emergency Operating Procedures," 1982.

13.5.4 Technical Evaluation

This section presents:

- An evaluation of the acceptability of the COL information items for Plant Procedures.

- An evaluation of the technical adequacy of the APR1400 EOGs and determination of their acceptability for use in the development of COL applicant P-STGs.

13.5.4.1 COL Information Items

Procedure development is identified as a COL applicant responsibility in Section 13.5 of the DCD. A COL applicant referencing the APR1400 certified design will be required to submit the site-specific information described in the COL information items, at the COL stage.

COL 13.5(1):

SRP Section 13.5.1.1, Subsection I, states that the SAR should describe procedures that provide for administrative control over safety-related activities for the operation of the facility, and contain a target date for their completion. SRP Section 13.5.2.1, Subsection I, states that the SAR should describe operating procedures that will be used by the operating organization to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner, and include preliminary schedules for their preparation. In Revision 0 of the APR1400 DCD, COL Information Item 13.5(1) required the COL applicant to provide descriptions of Plant Procedures and a schedule for the preparation of Administrative Procedures only. COL Information Item 13.5(1) did not properly specify the requisite information to be submitted in the SAR regarding the descriptions of Plant Procedures or schedule direction. Therefore, the staff issued RAI 112-8015, Questions 13.05.02.01-2 and 13.05.02.01-3 (ML15295A375), to address these issues.

In its revised response to RAI 112-8015, Question 13.05.02.01-2 (ML16064A421), the applicant modified COL Information Item 13.5(1) to enhance the descriptions of and clarify the distinction between the Administrative and Operating Procedures. In its revised response to RAI 112-8015, Question 13.05.02.01-3 (ML16109A212), the applicant further modified COL Information Item 13.5(1) to require the COL applicant to provide a description of the nature, content, and development process for the Administrative and Operating Procedures, including preliminary schedules for preparation and target dates for completion. The staff determined that the applicant's revised responses to both questions and the associated FSAR markups are acceptable. Verification that the specified changes have been properly incorporated into Revision 1 of the APR1400 DCD and is being tracked as a confirmatory item.

COL 13.5(2):

SRP Section 13.5.1.1, Subsection II, provides the technical rationale for application of SRP acceptance criteria to establishment of a program for development and implementation of the Administrative Procedures. In Revision 0 of the APR1400 DCD, COL Information Item 13.5(2) requires the COL applicant to develop a description of administrative procedures. This version of COL Information Item 13.5(2) was both inaccurate and redundant, requiring information similar to that specified in COL Information Item 13.5(1). There is no COL information item in the DCD to provide a program for development and implementation of the Administrative Procedures, comparable to COL Information Item 13.5(5) for the EOPs. Therefore, the staff issued RAI 112-8015, Question 13.05.02.01-4 (ML15295A375) to address this issue.

In its revised response to RAI 112-8015, Question 13.05.02.01-4 (ML16109A212), the applicant modified COL Information Item 13.5(2) to require the COL applicant to provide a program for development and implementation of the Administrative Procedures. The staff determined that the applicant's revised response to this question and the associated FSAR markups are acceptable. Verification that the specified changes have been properly incorporated into Revision 1 of the APR1400 DCD and is being tracked as a confirmatory item.

COL 13.5(3):

SRP Section 13.5.2.1, Subsection I.1, states that the SAR should: (1) describe the different classifications of procedures the operators will use in the control room and locally in the plant, (2) identify the group within the operating organization responsible for maintaining the procedures, and (3) describe the general format and content of the different classifications.

COL Information Item 13.5(3) in Revision 0 of the APR1400 DCD requires the COL applicant to meet all three criterion. Accordingly, the staff determined that COL Information Item 13.5(3) is acceptable.

COL 13.5(4):

SRP Section 13.5.2.1, Subsection I.2, states that the staff will review the applicant's program for development and implementation of the Operating Procedures. In Revision 0 of the APR1400 DCD, COL Information Item 13.5(4) only required the COL applicant to provide a program for development of the Operating Procedures. The implementation aspect of the program was not addressed. Therefore, the staff issued RAI 112-8015, Question 13.05.02.01-5 (ML15295A375), to address this issue.

In its revised response to RAI 112-8015, Question 13.05.02.01-5, dated April 18, 2016 (ML16109A212), the applicant modified COL Information Item 13.5(4) to require the COL applicant to provide a program for development and implementation of the Operating Procedures. The staff determined that the applicant's revised response to this question and the associated FSAR markups are acceptable. Verification that the specified changes have been properly incorporated into Revision 1 of the APR1400 DCD is being tracked as a confirmatory item.

COL 13.5(5):

SRP Section 13.5.2.1, Subsection I.3, states that the staff will review the applicant's program for development and implementation of the EOPs. COL Information Item 13.5(5) in Revision 0 of the APR1400 DCD requires the COL applicant to provide a program for development and implementation of the EOPs. Accordingly, the staff determined that COL Information Item 13.5(5) is acceptable.

COL 13.5(6):

As stated in RG 1.33, "Quality Assurance Program Requirements (Operation)," Revision 3, the requirements included in ANSI/ANS 3.2-2012, "Managerial, Administrative, and Quality Assurance Controls for Operational Phase of Nuclear Power Plants," are acceptable to the staff and provide an adequate basis for complying with the requirements of Appendix B to 10 CFR Part 50. ANSI/ANS 3.2-2012 requires the preparation of many procedures to carry out an effective quality assurance program. Appendix A of ANSI/ANS 3.2-2012, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," provides guidance to ensure the minimal procedure coverage for other plant operating activities (i.e., operating activities not procedurally covered under the operating or emergency operating procedure programs), including related maintenance activities. In Revision 0 of the APR1400 DCD, COL Information Item 13.5(6) required the COL applicant to provide procedural coverage for these other types of safety-related activities.

In its revised response to RAI 112-8015, Question 13.05.02.01-5, dated April 18, 2016 (ML16109A212), the applicant made significant enhancements to COL Information Item 13.5(6) that were not the result or subject of a staff-initiated RAI. The enhancements were incorporated on the basis of changes made to COL Information Item 13.5(7) requiring the establishment of a program for development and implementation of procedures for operating activities not procedurally covered under the operating or emergency operating procedure programs, including related maintenance activities. The enhancements ensure the consistency and

accuracy of COL information items. The staff determined that the enhancements to COL Information Item 13.5(6), in the applicant's revised response to RAI 112-8015, Question 13.05.02.01-5, and the associated FSAR markups are acceptable. Verification that the specified changes have been properly incorporated into Revision 1 of the APR1400 DCD is being tracked as a confirmatory item.

COL 13.5(7):

SRP Section 13.5.2.1, Subsection I.1.B, identifies Operating Procedure classifications. Procedures that provide instructions for shutdown operations fall under the General Plant Procedures classification of the Operating Procedures. Subsection I.1.B describes General Plant Procedures as "Procedures that provide instructions for the integrated operations of the plant, e.g., startup, shutting down, shutdown, power operation and load changing, process monitoring, and fuel handling." In Revision 0 of the APR1400 DCD, COL Information Item 13.5(7) required the COL applicant to provide a program for developing Shutdown Procedures. The DC applicant appeared to make an intentional distinction between the Operating Procedures and Shutdown Procedures. It was unclear whether the reference to Shutdown Procedures was intended to identify a set of shutdown procedural instructions other than what is presently described in SRP Section 13.5.2.1, Subsection I.1.B. Therefore, on July 24, 2015, the staff issued RAI 112-8015, Question 13.05.02.01-5 to address this issue (ML15295A375).

In its revised response to RAI 112-8015, Question 13.05.02.01-5, dated April 18, 2016 (ML16109A212), the applicant acknowledged that Shutdown Procedures belong to the specific classification of Operating Procedures described as General Plant Procedures in SRP Section 13.5.2.1, Subsection I.1.B, and that a dedicated COL information item for the Shutdown Procedures was not warranted. The applicant modified COL Information Item 13.5(7) by deleting the requirement pertaining to Shutdown Procedures and replacing it with a requirement for COL applicants to provide a program for development and implementation of procedures for "other" safety-related plant operating activities (i.e., operating activities not procedurally covered under the operating or emergency operating procedure programs), including related maintenance activities. The staff determined that the applicant's revised response to this question and associated FSAR markups are acceptable. Verification that the specified changes have been properly incorporated into Revision 1 of the APR1400 DCD is being tracked as a confirmatory item.

13.5.4.2 APR1400 EOGs

NUREG-0737, Item I.C.1, and NUREG-0737, Supplement 1, Item 7, both require: (1) the preparation of technical guidelines for development of the emergency operating procedures, and (2) submittal of the technical guidelines to the NRC for review. The applicant initially did not submit APR1400 EOGs (generic technical guidelines) with the DC application. Therefore, on May 15, 2015, the staff issued RAI 11-7889, Question 13.05.02.01-1 to address this issue (ML15155B335). In its response to RAI 11-7889, Question 13.05.02.01-1 (ML15166A302), dated June 15, 2015, the applicant provided the APR1400 EOGs. The response states: (1) that the EOGs are based on the Combustion Engineering (CE) GTGs, with significant safety deviations identified and evaluated to develop the APR1400 EOGs, and (2) that the APR1400 specific design features were incorporated into the analyses for the operational transients and accidents used for the EOGs. Given that the applicant used approved CE Owners' Group GTGs as the basis for its EOGs, the major portion of the review of these technical guidelines has been accomplished generically. Therefore, the staff's review of the APR1400

EOGs, which included SRP Chapter 15, "Transient and Accident Analyses," review interface support, focused largely on the evaluation of the identified safety-significant deviations to assess the technical adequacy of the EOGs and determine their acceptability for use in the development of COL applicant P-STGs; the guidelines from which the plant-specific EOPs are developed.

The APR1400 EOGs have been developed as a generic technical guideline applicable to all APR1400 reactors. The APR1400 EOGs were developed by incorporating APR1400 design-specific information into the latest version of CEN-152, the CE Owners' Group GTGs. CEN-152 has been reviewed and approved by the staff. The staff reviewed the technical report entitled "Best Estimate Analyses for the Operational Transients and Accidents for the APR1400 EOGs," and the response to RAI 11-7889, Question 13.05.02.01-1, which included the EOGs for the APR1400, the EOG Writer's Guide, and the significant safety deviation document. The staff determined that the applicant's response to RAI 11-7889, Question 13.05.02.01-1, is complete in that it provided sufficient detail and information for the staff to make the determination that the APR1400 EOGs are adequate and acceptable for use in developing the COL applicant's P-STGs. Therefore, RAI 11-7889, Question 13.05.02.01-1 is closed. The staff's acceptance of the APR1400 EOGs is based on the following:

(1) The EOGs retain the structural format and event mitigation strategies of CEN-152. The EOGs contain the Standard Post-Trip Actions (SPTAs), Diagnostic Actions (DAs), Optimal Recovery Guidelines (ORGs), and Functional Recovery Guidelines (FRGs). The ORGs (event specific guidance) include the procedural guidance for Reactor Trip (RT) Recovery, Loss-of-Coolant Accident (LOCA), Steam Generator Tube Rupture (SGTR), Excess Steam Demand, Loss-of-All Feedwater (LOAF), Loss-of-Offsite Power (LOOP), and Station Blackout (SBO). The FRGs (event diagnosis not possible or ORG actions not sufficient) address the safety functions of Reactivity Control, Maintenance of Vital Auxiliaries (Vital ac and dc power sources), RCS Inventory Control, RCS Pressure Control, RCS and Core Heat Removal, Containment Isolation, Containment Temperature and Pressure Control, and Containment Combustible Gas Control.

(2) The EOGs have been modified to reflect the APR1400 design, including design features such as:

- Four Safety Injection (SI) pumps (instead of the two High Pressure and two Low Pressure SI pumps in existing CE plants) with Direct Vessel Injection (DVI) vice RCS cold leg injection.

- Additional Auxiliary Feedwater pumps (two 100 percent capacity turbine-driven pumps and two 100 percent capacity motor-driven pumps).

- In-Containment Refueling Water Storage Tank (IRWST); provides water collection, delivery, storage, and heat sink functions inside containment during normal and accident conditions.

- Pressurizer Pilot-Operated Safety Relief Valves (POSRVs) (instead of the Pressurizer Primary Safety Valves (PSVs) in existing CE plants) which, in addition to providing overpressure protection of the RCS, can also be manually actuated for rapid depressurization for post-accident bleed-and-feed operations in the event of a LOAF.

- Interchangeability of Containment Spray System (CSS) and Shutdown Cooling System (SCS) pumps.

- Capability of the CSS to provide a backup to the SCS for cooling of the IRWST during post-accident bleed-and-feed operations using the SI System and Pressurizer POSRVs.

- Shutdown Cooling System with RCS return flow through the DVI nozzles vice the RCS cold legs.

- Additional onsite emergency ac power source capabilities (four safety-related emergency diesel generators).

(3) APR1400 specific design features have been incorporated into the analyses for the operational transients and accidents that were used for the EOGs. The technical report for the analyses, KEPCO E&C/ND/TR/11-005, "Best Estimate Analyses for the Operational Transients and Accidents for APR1400 Emergency Operating Guidelines," provides the results of realistic transient analyses for the following events categorized in the Optimal Recovery Guidelines of the APR1400 EOGs:

- RT
- LOCA
- SGTR
- Main Steam Line Break
- LOAF
- LOOP
- SBO

Realistic transient analyses of typical events and accidents for the APR1400 assume that all modeled equipment, including NSSS control systems (non-safety I&C systems) and plant protection systems (safety I&C systems), function as designed, without operator mitigating actions. Sequence of event analyses do not consider single active failure for each system relied upon to function for a particular event. In addition, multiple system failures are not considered in the transient analyses. The staff's review of the technical report determined that the simulation results for each event is reasonable on the basis that transient plant response descriptions and plots/trends of key plant parameters aptly characterize the plant's response to systems which function or actuate per design as part of an event-specific mitigation strategy. Therefore, the staff determined that the technical report, number KEPCO E&C/ND/TR/11-

005, is adequate and acceptable for use in the preparation and development of the APR1400 EOGs.

13.5.5 Combined License Information Items

The APR1400 DCD Tier 2, Revision 0, Section 13.5, contains seven COL information items pertaining to Plant Procedures. COL information item numbers and descriptions are also cited in Table 1.8-2 of the DCD. The COL information items presented in the following table will be reflected in Revision 1 of the DCD. The staff determined that COL Information Item 13.5(3) and COL Information Item 13.5(5) in Revision 0 of the DCD, are acceptable. COL Information Item 13.5(1), COL Information Item 13.5(2), COL Information Item 13.5(4), COL Information Item 13.5(6), and COL Information Item 13.5(7) will be revised as indicated in the FSAR markup of the applicable RAI question response. Verifications will be performed to confirm that the specified FSAR markup changes have been properly incorporated into Revision 1 of the DCD.

APR1400, Section 13.5, "Plant Procedures – Combined License Information Items	
COL 13.5(1)*	The COL applicant is to describe the administrative and operating procedures. Administrative procedures provide for administrative control over safety-related activities for the operation of the facility. Operating procedures are used to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. The COL applicant is to provide a description of the nature, content, and development process for the administrative and operating procedures, including preliminary schedules for preparation and target dates for completion (Reference 1 through 3).
COL 13.5(2)**	The COL applicant is to provide a program for developing and implementing administrative procedures.
COL 13.5(3)#	The COL applicant is to describe the different classifications of procedures the operators use in the MCR and locally in the plant for plant operations. The COL applicant is to identify the group within the operating organization responsible for maintaining the procedures and describe the general format and content of the different classifications.
COL 13.5(4)***	The COL applicant is to provide a program for developing and implementing operating procedures.
COL 13.5(5)#	The COL applicant is to provide a program for developing and implementing emergency operating procedures.
COL 13.5(6)***	The COL applicant is to describe the procedures that provide coverage for other safety-related plant operating activities (i.e., operating activities not procedurally covered under the operating or emergency operating procedure programs), including related maintenance activities. The COL applicant is to provide a description of the nature, content, and development process for the maintenance and other operating procedures, including preliminary schedules for preparation and target dates for completion. In addition, the COL applicant is to describe how these procedures are classified, describe the general format and content of the various classifications, and identify the group(s) within the operating organization responsible for performing and maintaining the procedures.
COL 13.5(7)***	The COL applicant is to provide a program for developing and implementing procedures that provide coverage for other safety-related plant operating activities (i.e., operating activities not procedurally covered under the operating or emergency operating procedure programs), including related maintenance activities.

Original wording from Revision 0 of DCD Tier 2, Chapter 13.
* New wording provided in revised response to RAI 112-8015, Question 13.05.02.01-3.
** New wording provided in revised response to RAI 112-8015, Question 13.05.02.01-4.
*** New wording provided in revised response to RAI 112-8015, Question 13.05.02.01-5.

13.5.6 Conclusion

Review of the APR1400 DCD Tier 2, Chapter 13, Section 13.5, “Plant Procedures,” consisted of: (1) an evaluation of the acceptability of seven COL information items, and (2) an evaluation of the technical adequacy of the APR1400 EOGs and determination of their acceptability for use in the development of COL applicant P-STGs. The staff determined that two of the seven COL information items are acceptable. The remaining five COL information items require modification and have been identified as confirmatory items in Revision 1 of the DCD. The APR1400 EOGs have been developed as a generic technical guideline applicable to all APR1400 reactors. The staff determined that the APR1400 EOGs are adequate and acceptable for use in developing the COL applicant P-STGs on the basis that: (1) the EOGs retain the structural format and event mitigation strategies of CEN-152, (2) the EOGs have been modified to reflect the APR1400 specific design features, (3) APR1400 specific design features have been incorporated into the transient analyses for events categorized in the Optimal Recovery Guidelines of the APR1400 EOGs, and (4) transient analyses results are provided in APR1400 technical report KEPCO E&C/ND/TR/11-005, which has been reviewed by the staff and determined to be acceptable for use in the development of the APR1400 EOGs. Therefore, the staff concludes that Section 13.5 of the DCD meets the applicable requirements of 10 CFR 50.34, 10 CFR 50.40, 10 CFR 50 Appendix A, 10 CFR 52.47, and 10 CFR 52.79.