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LIST OF FIGURES

No table of figures entries were included in this chapter.

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13 CONDUCT OF OPERATIONS

13.0 Conduct of Operations

Conduct of operations provides information relating to the preparations and plans for design, construction, and operation of the U.S. EPR. Conduct of operations provides adequate assurance that a plant will establish and maintain a staff of adequate size and technical competence, and that operating plans are adequate to protect public health and safety. The conduct of operations consists of the following areas:

- Organizational Structure of Applicant (Section 13.1)
- Training (Section 13.2)
- Emergency Planning (Section 13.3)
- Operational Program Implementation (Section 13.4)
- Plant Procedures (Section 13.5)
- Security (Section 13.6)
- Fitness for Duty (Section 13.7)
- Cyber Security Program (Section 13.8)

The Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Final Safety Analysis Report (FSAR) incorporates by reference U.S. EPR FSAR Tier 2, Chapter 13, "Conduct of Operation," with supplementary information provided in Combined License (COL) FSAR Chapter 13 for each of the sections listed above. The staff notes that the Safety Evaluation Report (SER) for the U.S. EPR is not yet complete. .The staff issued RAI 222, Question 01-5 to track the ongoing review of the U.S. EPR design certification application. **RAI 222, Question 01-5 is being tracked as an open item.** The staff will update Chapter 13 of this report to reflect the final disposition of the design certification application

13.1 Organizational Structure of Applicant

13.1.1 Introduction

The organizational structure includes the design, construction, and preoperational responsibilities of the organizational structure. The management and technical support organization includes a description of the corporate or home office organization, its functions and responsibilities, and the number and qualifications of personnel. Its activities include facility design, design review, design approval, construction management, testing, and operation of the plant. The descriptions of the design and construction and preoperational responsibilities include the following:

- how these responsibilities are assigned by the headquarters staff and implemented within the organizational units

- the responsible working- or performance-level organizational unit
- the estimated number of persons to be assigned to each unit with responsibility for the project
- the general educational and experience requirements for identified positions or classes of positions
- early plans for providing technical support for the operation of the facility

This section also describes the structure, functions, and responsibilities of the onsite organization established to operate and maintain the plant.

13.1.2 Summary of Application

COL FSAR Section 13.1 incorporates by reference U.S. EPR FSAR Tier 2, Section 13.1, "Organizational Structure of Applicant." In addition, in COL FSAR Section 13.1, the COL applicant provided the following:

COL Information Item

The COL applicant provided additional information in COL FSAR Section 13.1 to address COL Information Item 13.1-1 from U.S. EPR FSAR Tier 2, Table 1.8-2, "U.S. EPR Combined License Information Items," as follows:

> A COL applicant that references the U.S. EPR design certification will provide site-specific information for management, technical support, and operating organizations.

The COL applicant addressed the COL information item by describing the organizational structure, functional responsibilities, and levels of authority and interfaces. The COL applicant also described the implementing documents which assign more specific responsibilities and duties, as well as defining the organizational interfaces. Additionally, the COL applicant stated that the organizational structure is consistent with the human system interface (HSI) design assumptions used in the design of the U.S. EPR as described in the U.S. EPR FSAR Tier 2, Chapter 18, "Human Factors Engineering."

Supplemental Information

The COL applicant provided a supplement to the U.S. EPR FSAR to include a summary description of the management and technical support organization, operating organization, and qualifications of nuclear plant personnel.

13.1.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the final safety evaluation report (FSER) related to the U.S. EPR FSAR.

The applicable regulatory requirements for review of COL FSAR Section 13.1 are as follows:

The relevant requirements of U.S. Nuclear Regulatory Commission (NRC) regulations for the organizational structure of the COL applicant, and the associated acceptance criteria, are specified in NUREG-0800, Sections 13.1.1 and 13.1.2 - 13.1.3. Review interfaces with other NUREG-0800 sections also can be found in NUREG-0800, Sections 13.1.1 and 13.1.2 - 13.1.3.

The applicable regulatory guidance for the organizational structure of the COL applicant is as follows:

- ANSI/ANS-3.1-1993, "American National Standard for Selection, Qualification, and Training of Personnel for Nuclear Power Plants," as endorsed and amended by NRC RG 1.8, "Qualification and Training of Personnel for Nuclear Power Plants."

The applicable regulations and regulatory guidance for the management, technical support, and operating organizations of the COL applicant are as follows:

1. Title 10 of the *Code of Federal Regulations* (10 CFR) 50.40(b), "Common Standards," as it relates to demonstrating (in conjunction with other reviews) that the COL applicant is technically qualified to engage in nuclear activities licensed under these regulations.

2. 10 CFR 50.54 (j),(k), (l),and (m), "Conditions of Licenses," as they relate to operator requirements during the operation of the facility, the responsibility for directing activities of licensed operators, and the senior operator availability during reactor operations and other specific reactor conditions or modes of operation.

The regulatory basis for review of the resolution to the COL Information Item 13.1-1 is based on meeting the qualification requirements in education and experience for those individuals described in American National Standards Institute/American Nuclear Society (ANSI/ANS)-3.1-1993 as endorsed and amended by Regulatory Guide (RG) 1.8, "Qualification and Training of Personnel for Nuclear Power Plants." In addition, the regulatory basis for acceptance of the resolution to this COL information item is satisfied based on following the guidance of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," (hereafter referred to as NUREG-0800 or the Standard Review Plan (SRP)), Chapter 13, "Conduct of Operations," Section 13.1.1, "Management and Technical Support Organization," and Sections 13.1.2 - 13.1.3, "Operating Organization."

The related acceptance criteria for review of this section of the COL FSAR are described in NUREG -0800, Section 13.1.1-3 and also in the regulatory requirements listed above.

13.1.4 Technical Evaluation

The staff reviewed COL FSAR Section 13.1 and checked the referenced design certification FSAR to ensure that the combination of the information in the U.S. EPR FSAR and the information in the COL FSAR represents the complete scope of required information relating to this review topic. The review confirmed that the information contained in the COL application and incorporated by reference addresses the required information relating to this section. U.S. EPR FSAR Tier 2, Section13.1 has been reviewed by the staff under Docket No. 52-020. The staff's technical evaluation of the information incorporated by reference related to organizational structure of the COL applicant has been documented in the staff safety evaluation report on the design certification application for the U.S. EPR.

The staff's review of the information contained in the COL FSAR is discussed as follows:

The staff reviewed conformance of COL FSAR Section 13.1 to the guidance in RG 1.206, "Combined License Applications for Nuclear Power Plants," Section C.III.1, Chapter 13, Section C.I.13.1, "Organizational Structure of Applicant." The staff finds that COL FSAR Section 13.1 appropriately incorporates by reference U.S. EPR FSAR Tier 2. Revision 1, Section 13.1. The staff is reviewing the U.S. EPR FSAR on Docket No. 52-020. The results of the staff's technical evaluation of the information related to this section to be incorporated by reference in the CCNPP Unit 3 FSAR will be documented in the staff's safety evaluation report on the design certification application for the U.S. EPR. The staff notes that the SER for the U.S. EPR is not yet complete.

COL Information Item

The staff reviewed COL Information Item 13.1 from U.S. EPR FSAR Tier 2, Table 1.8-2 included under COL FSAR Section 13.1.

COL Information Item 13.1 states:

> A COL applicant that references the U.S. EPR design certification will provide site-specific information for management, technical support, and operating organizations.

The COL applicant provided the following additional CCNPP site-specific information to resolve this COL information item. The COL applicant provided information as part of the COL FSAR to describe the organizational positions of a nuclear power station and owner/applicant corporations and associated functions and responsibilities. The position titles used in the text are generic and describe the function of the position. The COL applicant stated that COL FSAR Table 13.1-201, "Generic Position/Site Specific Position Cross Reference" provides a cross-reference to identify site-specific position titles.

The COL applicant added new sections and information related to the site-specific organizational structure to COL FSAR Section 13.1 beyond the structure given in RG 1.206. The new section titles and numbers are:

- Section 13.1.1, "Management and Technical Support Organization"
- Section 13.1.2,"Operating Organization"
- Section 13.1.3, "Qualifications of Nuclear Plant Personnel"
- Section 13.1.4, "References"
- Table 13.1-201, "Generic Position/Site Specific Position Cross Reference"
- Table 13.1-202, "Minimum Shift Crew Composition"

The staff has reviewed COL FSAR Section 13.1 and concludes that the management, technical support, and operating organizations, as described, are acceptable and meet the requirements of 10 CFR 50.40(b), as applicable. This conclusion is based on the following:

The COL applicant has described its organization for the management of, and its means of providing, technical support for the plant staff for the design, construction, and operation of the facility and has described its plans for managing the project and utilizing the nuclear steam supply system (NSSS) vendor and architect engineer (AE). These plans give adequate assurance that the COL applicant will establish an acceptable organization and that sufficient resources are available to provide offsite technical support and to satisfy the COL applicant's commitments for the design, construction, and operation of the facility.

The COL applicant has described the assignment of plant operating responsibilities; the reporting chain up through the chief executive officer; the functions and responsibilities of each major plant staff group; the proposed shift crew complement for single-unit or multiple-unit operation; the qualification requirements for members of its plant staff; and staff qualifications. Resumes for and/or other documentation of qualification and experience of initial appointees to appropriate management and supervisory positions will be available for review upon request after position vacancies are filled.

The COL applicant's operating organization is characterized as follows:

1. The COL applicant is technically qualified, as specified in 10 CFR 50.40(b), as applicable.

2. An adequate number of licensed operators will be available at all required times to satisfy the minimum staffing requirements of 10 CFR 50.54(j).

3. On-shift personnel are able to provide initial facility response in the event of an emergency.

4. Organizational requirements for the plant manager and radiation protection manager have been satisfied.

5. Qualification requirements and qualifications of plant personnel conform to the guidance of RG 1.8.

6. Organizational requirements conform to the guidance of RG 1.33.

These findings contribute to the staff's conclusion that the COL applicant complies with the requirements of 10 CFR 50.40(b), as applicable. That is, the COL applicant is technically qualified to engage in design and construction activities and to operate a nuclear power plant; that the COL applicant will have the necessary managerial and technical resources to support the plant staff in the event of an emergency; and that the COL applicant has identified the organizational positions responsible for fire protection matters and delegated the authorities to these positions to implement fire protection requirements.

The COL applicant added text to COL FSAR Section 13.1.1.5, "Qualifications," stating the qualifications of managers and supervisors of the technical support organization will meet the education and experience requirements described in ANSI/ANS-3.1-1993 and RG 1.8. The COL applicant also stated in COL FSAR Section 13.1.3.1, "Qualification Requirements" that the qualifications of managers, supervisors, operators, and technicians of the operating organization meet the qualification requirements in education and experience for those described in ANSI/ANS-3.1-1993 as endorsed and amended by RG 1.8.

In addition, COL FSAR Section 13.1.3.2, “Qualifications of Plant Personnel,” states that resumes and other documentation of the qualifications and experience of initial appointees to appropriate management and supervisory positions will be available for review after position vacancies are filled.

The COL applicant added COL FSAR Table 13.1-201, “Generic Position/Site Specific Position Cross Reference,” and Table 13.1-202, “Minimum Shift Crew Composition.” COL FSAR Table 13.1-201 describes the plant management, technical support, and plant operating organizations and provides a cross reference to identify the corresponding generic position titles. COL FSAR Table 13.1-202 describes the minimum composition of the operating shift crew for all modes of operation. Position titles, license requirements, and minimum shift manning for the various modes of operation are contained in Technical Specifications, administrative procedures, COL FSAR Table 13.1-201, and Table 13.1-202.

The staff reviewed the text added to COL FSAR Sections 13.1.1.4, 13.1.3.1, and 13.1.3.2 and concludes that the qualification requirements are acceptable and meet the requirements of 10 CFR 50.40(b), as applicable. This conclusion is based on the following:

The COL applicant has described its organization for the management of, and its means of providing, technical support for the plant staff for the design, construction, and operation of the facility and has described its plans for managing the project and utilizing the NSSS vendor and AE. These plans provide adequate assurance that the COL applicant will establish an acceptable organization and that sufficient resources are available to provide offsite technical support and to satisfy the COL applicant's commitments for the design, construction, and operation of the facility.

COL FSAR Section 13.1.2.2.1.4, “Training Manager,” describes the responsibilities of the site training manager relative to the site training programs required for the safe and proper operation and maintenance of the plant.

The staff reviewed COL FSAR Section 13.1.2.2.1.4 and concludes that the qualification requirements are acceptable and meet the requirements of 10 CFR 50.40(b), as applicable. This conclusion is based on the following:

The COL applicant has identified and functionally described the organizational groups responsible for implementing training. The COL applicant has described the responsibilities of the training manager for developing training programs for the safe and proper operation and maintenance of the plant, and the reporting responsibility and authority of the training manger appear to be independent from operating pressures.

13.1.5 Post Combined License Activities

There are no post COL activities related to this section.

13.1.6 Conclusions

The staff concludes that the information pertaining to COL FSAR Section 13.1 is within the scope of the design certification and adequately incorporates by reference Section 13.1 of the U.S. EPR FSAR, and is therefore acceptable.

The staff reviewed the information in the U.S. EPR FSAR on Docket No. 52-020. The results of the staff's technical evaluation of the information related to organizational structure of the COL applicant incorporated by reference in the COL FSAR have been documented in the staff's safety evaluation report on the design certification application for the U.S. EPR. The staff's SER on the U.S. EPR is not yet complete. The staff will update Section 13.1 of this report to reflect the final disposition of the U.S. EPR design certification application.

In addition, the staff has compared the additional COL information within the COL application to the relevant NRC regulations, acceptance criteria defined in NUREG-0800, Section 13.1, and other NRC RGs and concludes that the COL applicant complies with NRC regulations. The staff finds that the COL applicant has provided sufficient information for to satisfy the requirements of 10 CFR 50.40(b) and 10 CFR 50.54, as applicable.

13.2 Training

13.2.1 Introduction

The COL applicant's licensed operator and non-licensed training program, as described in the COL FSAR is reviewed in this section. COL FSAR Section 13.2 should contain the description and scheduling of the training program for reactor operators and senior reactor operators. The licensed operator training program also includes the re-qualification program as required in 10 CFR 50.54(i)(i-1) and 10 CFR 55.59, "Requalification." The non-licensed training program should cover non-licensed operators and plant staff.

13.2.2 Summary of Application

COL FSAR Section 13.2 incorporates by reference U.S. EPR FSAR Tier 2, Section 13.2. In addition, in COL FSAR Section 13.2, the COL applicant provided the following:

COL Information Item

The COL applicant provided additional information in COL FSAR Section 13.2 to address COL Information Item 13.2-1 as follows.

> A COL applicant that references the U.S. EPR design certification will provide site-specific information for training programs for plant personnel.

The COL applicant addressed this COL information item as follows.

The milestone schedule for licensed and non-licensed plant staff training is provided in COL FSAR Table 13.4-1, "Operational Programs Required by NRC Regulations and Program Implementation."

This COL information item is addressed by Nuclear Energy Institute (NEI) 06-13A, "Template for an Industry Training Program Description," 2009. NEI 06-13A and Appendix A (Cold License Training Plan) is incorporated by reference.

13.2.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the U.S. EPR FSAR.

In addition, the relevant requirements of NRC regulations for training, and the associated acceptance criteria, are given in NUREG-0800, Section 13.2.1 - 13.2.2, "Operating Organization," which states that a COL applicant that references the U.S. EPR design certification will provide site-specific information. Review interfaces with other SRP sections also can be found in NUREG-0800, Section 13.2.1-13.2.2.

The training and qualification requirements and guidance set forth in the following regulations and regulatory guides should be met or acceptable alternatives should be presented.

1. 10 CFR 50.54, "Conditions of licenses," Items i through m, as it relates to activities to be performed by licensed operators.

2. 10 CFR 55.4, "Definitions," 55.31, "How to apply," 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," and 10 CFR 55.59, "Requalification," as they relate to testing and qualification of licensed plant operators.

3. 10 CFR 50.34(f)(2)(i), as it relates to provision for a plant simulator.

Acceptance criteria adequate to meet the above requirements include:

1. RG 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," as it relates to personnel qualification and training.

2. RG 1.149, "Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations," as it relates to plant simulation facilities for the training of plant operators.

3. NUREG-0711, "Human Factors Engineering Program Review Model," as it relates to the evaluation of human factor engineering programs.

4. NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," as it relates to licensing examinations.

5. Training programs shall be developed, established, implemented, and maintained using a systems approach to training as defined by 10 CFR 55.4. Training program development will be evaluated by the staff using the guidance in NUREG-0711 and training program content, and effectiveness will be evaluated using NUREG-1220, "Training Review Criteria and Procedures."

6. Formal segments of the initial licensed operator training program should be substantially completed when the preoperational test program begins.

7. The number of persons trained in preparation for licensed operator and senior operator licensing examinations prior to criticality should be sufficient to ensure that applicable

regulatory requirements for shift staffing can be met from the time of initial fuel loading, with allowances for examination contingencies and the need to avoid planned overtime.

8. The licensed operator re-qualification training program should adequately implement the requirements of 10 CFR 55.59.

13.2.4 Technical Evaluation

The staff reviewed COL FSAR Section 13.2 and checked the referenced design certification FSAR to ensure that the combination of the information in the U.S. EPR FSAR and the information in the COL FSAR represents the complete scope of required information relating to this review topic. The review confirmed that the information contained in the COL application and incorporated by reference addresses the required information related to this section. U.S. EPR FSAR Tier 2, Section 13.2 has been reviewed by the staff under Docket No. 52-020. The staff's technical evaluation of the information incorporated by reference related to training has been documented in the staff safety evaluation report on the design certification application for the U.S. EPR.

The staff's review of the information contained in COL FSAR is discussed as follows:

COL Information Item

The staff reviewed COL Information Item 13.2-1 from U.S. EPR FSAR Tier 2, Table 1.8-2 included under COL FSAR Section 13.2.

> A COL applicant that references the U.S. EPR design certification will provide site-specific information for training programs for plant personnel.

This COL information item is addressed by NEI 06-13A, "Template for an Industry Training Program Description." NEI 06-13A is incorporated by reference with the following supplements. The milestone schedule for licensed and non-licensed plant staff training is provided in COL FSAR Table 13.4-1. The U.S. EPR FSAR includes provisions for a cold license training program.

In NUREG-0800, Section 13.2.1, the staff stated the COL application should contain the description of the training program for Reactor Operators (ROs) and Senior Reactor Operators (SROs). In the above COL information item, the COL applicant provided a complete generic training program description. In a September 7, 2007, letter to the Nuclear Energy Institute, the staff stated that NEI 06-13A, Revision 0, provided an acceptable template for describing licensed operator and non-licensed plant staff training programs. The COL applicant incorporated by reference NEI 06-13A, Revision 0. The staff concluded that the COL applicant has provided sufficient information to satisfy NUREG-0800, Section 13.2.1.

In NUREG-0800, Section 13.2.1, the staff stated that COL applicants should provide implementation milestones for the reactor operator and non-licensed plant staff training programs and for the reactor operator requalification program. In COL FSAR Table 13.4-1, the COL applicant identified those milestones. The staff finds this acceptable, because the COL applicant has provided implementation milestones, as required by NUREG-0800, Section 13.2.1. The staff concluded that the COL applicant has provided sufficient information to satisfy NUREG-0800, Section 13.2.1.

In NUREG-0800, Section 13.2.1, the staff stated that the training program for licensed operators should include the subjects in 10 CFR 55.31, 10 CFR 55.41, 10 CFR 55.43, 10 CFR 55.45, and RG 1.8, should also include provisions for upgrading licenses, and should be based on use of the systems approach to training (SAT) defined in 10 CFR 55.4. In supplemental information to the COL FSAR, the COL applicant stated that NEI 06-13A is incorporated by reference. NEI 06-13A stated that the training program for licensed operators is in accordance with, and includes the subjects in, 10 CFR Part 55, "Operators' Licenses," specifically 10 CFR 55.41, 10 CFR 55.43, 10 CFR 55.45, and RG 1.8, in Section 1.1, "Licensed Operator Training." NEI 06-13A also states that training programs are developed, established, implemented, and maintained using a SAT, as defined by 10 CFR 55.4, in Section 1, "Training Program Description." The staff finds this acceptable, because the COL applicant will include in the training programs those subjects that are required by regulation, and will base the training programs on SAT, as required by regulation, in accordance with NEI 06-13A. The staff concludes that the COL applicant has provided sufficient information to satisfy NUREG-0800, Section 13.2.1.

NEI 06-13A, Revision 0, did not address a cold license training plan. The COL applicant included supplemental information additional to NEI 06-13A, Revision 0, which did address cold license training. In these supplements, licensed operator training will be conducted in the construction phase, prior to initial commercial operation, to support preoperational testing and cold and hot functional activities, which addresses an issue that is not addressed in NEI 06-13A, Revision 0. However, NEI 06-13A, Revision 1 has been written with additional information that addresses cold license testing, though it has not yet been endorsed by the staff. Those portions of the cold license training plan that are included in NEI 06-13A, Revision 1, but that are either only partially or not addressed in the supplemental information, include eligibility requirements, licensed operator training and experience requirements, and crew experience requirements. In RAI 84, Question 13.02.01-1, the staff requested that the COL applicant address these differences between NEI 06-13A, Revision 1, and the added supplemental information. In a May 7, 2009, response to RAI 84, Question 13.02.01-1 the COL applicant stated that NEI 06-13A, Revision 1 will be incorporated by reference in the COL FSAR Chapter 13. The staff reviewed the suggested COL FSAR modifications and verified that NEI 06-13A, Revision 1, is incorporated by reference in the COL FSAR Chapter 13. The staff finds the COL applicant's May 7, 2009, response to RAI 84, Question13.02.01-1, acceptable since the COL applicant has provided sufficient information to meet the guidance of NUREG-0800, Section 13.2.1. Accordingly, RAI 84, Question 13.02.01-1 is resolved.

13.2.5 Post Combined License Activities

There are no post COL activities related to this section.

13.2.6 Conclusions

The staff reviewed the COL application and checked the referenced U.S. EPR FSAR. The staff's review confirmed that the COL applicant addressed the required information relating to training, and there is no outstanding information expected to be addressed in the COL FSAR related to this section.

The staff reviewed the information in the U.S. EPR FSAR on Docket No. 52-020. The results of the staff's technical evaluation of the information related to training incorporated by reference in the COL FSAR have been documented in the staff's SER on the design certification application

for the U.S. EPR. The staff's SER on the U.S. EPR is not yet complete. The staff will update Section 13.2 of this report to reflect the final disposition of the U.S. EPR design certification application.

In addition, the staff finds that the information presented within the COL FSAR is acceptable and meets the requirements of 10 CFR 50.54, and 10 CFR 50.34(f)(2)(i).

13.3 Emergency Planning

13.3.1 Introduction

This section addresses the plans, design features, facilities, functions, and equipment necessary for emergency planning (EP) that must be considered in a COL application. This includes both the COL applicant's onsite Emergency Plan and State and local offsite emergency plans, which the NRC and the Federal Emergency Management Agency (FEMA) evaluated to determine whether the plans are adequate, and that there is a reasonable assurance that they can be implemented. The plans shall be an expression of the overall concept of operation, describe the essential elements of advanced planning that have been considered, and the provisions that have been made to cope with radiological emergency situations.

13.3.2 Summary of Application

COL FSAR, Revision 8, Section 13.3 incorporates by reference U.S. EPR FSAR Tier 2, Revision 3, Section 13.3 with no EP-related departures.

In addition, in COL FSAR Section 13.3, the COL applicant provided the following:

COL Information Item

The COL applicant provided a complete and integrated Emergency Plan in the COL application, Part 5, "Emergency Plan," which addresses the COL Information Item in the U.S. EPR FSAR, which states:

> A COL applicant that references the U.S. EPR design certification will provide a site-specific emergency plan in accordance with 10 CFR 50.47 and 10 CFR 50 Appendix E.

The schedule for emergency planning implementation milestones is provided in COL FSAR Table 13.4-1.

COL application, Part 5, Revision 6, includes the following:

Onsite Emergency Plans

COL application, Part 5, includes the CCNPP Unit 3 Emergency Plan, which consists of a basic plan, a Unit annex for the proposed CCNPP Unit 3 nuclear reactor, and five appendices. The CCNPP Unit 3 annex provides specific details including a unit description (type of reactor, relationship to other units, special emergency equipment), shift staffing, Emergency Action Levels (EALs), and emergency facility locations. The five appendices provide additional

information regarding various aspects of the CCNPP Unit 3 Emergency Plan (e.g., Letters of Agreement and Evacuation Time Estimates).

Offsite Emergency Plans

COL application, Part 11H, "State and Local Emergency Plans," includes current State and local emergency planning documents.

ITAAC

COL application, Part 10, "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure," Revision 8, provides information regarding EP ITAAC. The ITAAC are evaluated in Section 13.3C.19 of this report.

License Conditions

- License Condition 1

The COL applicant proposed a license condition to incorporate the EP ITAAC identified in the COL application, Part 10, Appendix B Table 2.3-1.

- License Condition 6

The COL applicant proposed a license condition to provide a schedule to support the NRC inspection of operational programs, including EP.

- License Condition 8

The COL applicant proposed the following license condition:

> Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall submit a complete set of plant-specific Emergency Action Levels (EALs) for CCNPP Unit 3 in accordance with NEI [Nuclear Energy Institute] 99-01, Revision 5, to the NRC for confirmation at least 180 days prior to initial fuel load. The submitted EALs will be written with no deviations other than those attributable to specific U.S. EPR reactor design considerations.

13.3.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the Final Safety Evaluation Report (FSER) related to the U.S. EPR Standard FSAR and its supplements.

The applicable regulatory requirements and guidance for EP are as follows:

1 10 CFR 52.79(a)(21), "Contents of applications; technical information in final safety analysis report," and 10 CFR 52.79(a)(22)(i) require that the FSAR include emergency plans that comply with the requirements of 10 CFR 50.47, "Emergency plans," and 10 CFR Part 50, Appendix E and certifications from State and local governmental agencies with EP responsibilities. Under 10 CFR 50.47(a)(1)(ii), no initial COL under 10 CFR Part 52, "Licenses, certifications, and approvals for nuclear power plants" will be issued unless a finding is made by the NRC that there is reasonable assurance that

adequate protective measures can and will be taken in the event of a radiological emergency. In addition, under 10 CFR 50.47(a)(2), the NRC will base its finding on a review of the FEMA findings and determinations as to whether State and local emergency plans are adequate, and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the COL applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented.

2 The staff considered applicable requirements in10 CFR 52.77, "Contents of applications; general information"; 10 CFR 52.80, "Contents of applications; additional technical information"; 10 CFR 50.33(g), "Content of the application: general information"; and 10 CFR 100.21, "Non-seismic siting criteria," as they relate to emergency planning.

3 44 CFR Part 353, "Memorandum of Understanding (MOU) Between Federal Emergency Management Agency and Nuclear Regulatory Commission Relating to Radiological Emergency Planning and Preparedness," Appendix A, September 14, 1993, which states that FEMA is responsible for making findings and determinations as to whether offsite emergency plans are adequate and can be implemented. FEMA radiological emergency preparedness (REP) guidance documents provide guidance on various topics for use by State and local organizations responsible for radiological emergency preparedness and response. NUREG-0654/FEMA REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants," provides guidance to provide a basis for State and local governments to develop radiological emergency plans.

4 NUREG-0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plant," identifies NUREG-0554/FEMA-REP-1, Revision 1 and other related guidance that the staff considered during its review as they relate to emergency planning. The related acceptance criteria are identified in NUREG-0800, Section 13.3.II and the applicable regulatory guidance for reviewing emergency preparedness as an operational program is established in NUREG-0800, Section 13.4.

13.3.4 Technical Evaluation

The staff reviewed COL FSAR Section 13.3 and reviewed the referenced U.S. EPR FSAR to ensure that the combination of the U.S. EPR FSAR and the COL application represents the complete scope of information relating to this review topic. The NRC is reviewing the information in U.S. EPR FSAR Tier 2, Section 13.3 under Docket 52-020. The results of the staff's technical evaluation of the information related to EP, incorporated by reference in the COL FSAR, is documented in the staff Safety Evaluation Report (SER) on the design certification application for the U.S. EPR. The staff will update this section of the report to reflect the final disposition of the design certification application.

The staff reviewed the information in the COL FSAR:

COL Information Item

- COL Information Item13.3-1

The staff's evaluation related of COL Information Item 13.3-1 is addressed in Attachment 13.3A of this report.

The staff's review of the information provided in the COL application that is not part of the CCNPP Emergency Plan is addressed in Attachment 13.3B, "Emergency Planning Information in the Application," of this report. The staff's review of the CCNPP Emergency Plan is addressed in Attachment 13.3C, "Onsite Emergency Plan," of this report.

The staff reviewed the COL application against the generic EP ITAAC provided in NUREG-0800, Section 14.3.10, Table 14.3.10-1, "Emergency Planning-Generic Inspections, Tests, Analyses, & Acceptance Criteria (EP ITAAC)."

FEMA reviewed the emergency plans for the States of Maryland, Virginia, Delaware, and the District of Columbia, and the local government plans for Calvert, Dorchester, and St. Mary's counties in Maryland pursuant to 44 CFR Part 350, "Review and approval of State and local radiological emergency plans and preparedness," and provided its Interim Findings Report (IFR) for Reasonable Assurance, April 6, 2010. FEMA concluded that based on its thorough review of plans submitted, and the currently available offsite plans and procedures for the 16 kilometer (km) (10-mile (mi) Emergency Planning Zone (EPZ), as well as the 80 km (50 mi) Ingestion Pathway Zone, the offsite plans are adequate and there is reasonable assurance that the plans can be implemented with no corrections needed. The staff reviewed the FEMA report and based its overall reasonable assurance finding on the FEMA findings and determinations regarding offsite emergency planning in accordance with 10 CFR 50.47(a)(2).

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's revised CCNPP Unit 3 Emergency Plan addressing the open items detailed in this attachment and update Attachment 13.3C of this report. The staff is unable to make a determination whether the COL applicant's onsite emergency plan meets the standards in 10 CFR 50.47(b) and the requirements in 10 CFR Part 50, Appendix E.

Based on the IFR and the staff's updated evaluation detailed in Attachments 13.3A, 13.3B, and 13.3C of this report, and the open items detailed in these attachments, the staff is unable to make a determination whether there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. At this time, the staff is unable to make a determination whether the CCNPP Unit 3 Emergency Plan meets the requirements in 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v);10 CFR 50.34(f)(2); 10 CFR 50.47; 10 CFR Part 50, Appendix E; 10 CFR 52.77; 10 CFR 52.79(a)(21); 10 CFR 52.79(a)(22)(i); 10 CFR 52.80; and 10 CFR 52.81.

License Conditions

- License Condition 1

The COL applicant provided a license condition in COL application, Part 10, which will incorporate the ITAAC identified in the tables in Part 10, Appendix B. Part 10, Appendix B includes the EP ITAAC. The proposed text in License Condition 1 is evaluated in Chapter 1 of this report. The staff's evaluation of the EP ITAAC identified in COL application, Part 10, Appendix B, Table 2.3-1 is documented in Section 13.3C.19 of this report. The staff will include an Emergency Planning ITAAC in the license.

- License Condition 6

The COL applicant proposed a license condition to provide a schedule which supports NRC inspection of operational programs, including EP. Specifically, the COL applicant proposed, in part, the following:

> 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 13.4-1. 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.

The staff reviewed the above proposed license condition against the recommendations in SECY-05-0197; "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria [ITAAC]," as endorsed by the related Staff Requirements Memorandum (SRM), February 22, 2006. For additional details on the staff's evaluation of proposed License Condition 6, see Section 13.4.4 of this report. The staff concludes that this proposed license condition conforms to the guidance in SECY-05-0197, and is therefore acceptable.

- License Condition 8

The COL applicant proposed a license condition to provide a complete set of plant-specific Emergency Action Levels for CCNPP Unit 3. Specifically, the COL applicant proposed the following:

> Calvert Cliffs 3 Nuclear Project, LLC, and UniStar Nuclear Operating Services, LLC, shall submit a complete set of plant-specific Emergency Action Levels (EALs) for CCNPP Unit 3 in accordance with NEI 99-01, Revision 5, to the NRC for confirmation at least 180 days prior to initial fuel load. The submitted EALs will be written with no deviations other than those attributable to specific U.S. EPR reactor design considerations.

The staff's evaluation of the EALs is documented in Section 13.3C.4 of this report. As written, the staff concludes that this proposed license condition is not acceptable because it was not written in accordance with NEI 99-01, Revision 5 and does not identify specific deviations. **RAI 372, Question 13.03-54 is being tracked as an open item**.

13.3.5 Post Combined License Activities

The following COL information items in Table 13.3.5-1 of this report include the proposed combined license activities which the staff has evaluated in this report, but which will be completed following issuance of the license as discussed in the SER sections listed below.

Table 13.3.5-1 Post Combined License Activities

Item No.	Description	COL FSAR Section	COL SER Section
L.C. 13-1	The licensee shall perform and satisfy the ITAAC defined in COL Application, Part 10, Appendix B, Table 2.3-1.	13.3	13.3
L. C. 13-6	The licensee shall develop a schedule that supports planning for and conduct of NRC inspections of the operation programs list in CCNPP COL FSAR Table 13.4-1, "Operational Programs Required by NRC Regulations." This schedule must be available to the NRC staff no later than 12 months after issuance of the COL. The schedule shall be updated every 6 months until 12 months before scheduled fuel load, and every month thereafter until either the operational programs in COL FSAR Table 13.4-1 have been fully implemented. This schedule shall include a submittal schedule for the EP implementing procedures to the NRC consistent with Appendix E.V of 10 CFR Part 50.	13.3	13.3
L.C. 13-8	Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall submit a complete set of plant-specific Emergency Action Levels (EALs) for CCNPP Unit 3 in accordance with NEI 99-01 Revision 5 to the NRC for confirmation at least 180 days prior to initial fuel load. The submitted EALs will be written with no deviations other than those attributable to specific U.S. EPR reactor design considerations	13.3	13.3

13.3.6 Conclusion

The staff reviewed the COL application and checked the referenced design certification FSAR. The staff is reviewing the information in U.S. EPR FSAR Tier 2, Section 13.3 under Docket 52-020. The results of the staff's technical evaluation of the information related to EP, incorporated by reference in the COL FSAR, will be documented in the staff SER for the design certification application for the U.S. EPR. The staff will update this section of the report to reflect the final disposition of the design certification application. The staff's conclusions for Section 13.3, "Emergency Planning," are subject to the completion of the U.S. EPR SER, and successful closure of the open items identified in the attachments within this section of the report.

The ITAAC that are applicable to EP for CCNPP Unit 3 are addressed in Section 13.3C.19 of this report. Pursuant to 10 CFR 52.80(a), the COL application includes the proposed

inspections, tests, and analyses that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide 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 license, the provisions of the Atomic Energy Act of 1954 as amended, and NRC regulations.

FEMA has reviewed the emergency plans for the States of Maryland, Virginia, Delaware, and the District of Columbia, and the local government plans for Calvert, Dorchester, and St. Mary's counties in Maryland, pursuant to 44 CFR Part 350 and provided its Interim Findings Report for Reasonable Assurance, April 6, 2010. FEMA has concluded that based on its thorough review of plans submitted, and the currently available offsite plans and procedures for the 16 km (10 mi) Plume Exposure EPZ, as well as the 80 km (50 mi) Ingestion Exposure Pathway Zone, the offsite plans are adequate, and there is reasonable assurance that the plans can be implemented with no corrections needed. The staff reviewed the FEMA report and based its overall reasonable assurance finding on the FEMA findings and determinations regarding offsite emergency planning.

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's revised emergency plan addressing the open items discussed in Attachment 13.3C of this report. The staff is unable to make a final determination whether the COL applicant's onsite emergency plan meets the standards in 10 CFR 50.47(b) and the requirements in 10 CFR Part 50, Appendix E.

Additionally, based on the IFR and the staff's updated safety evaluation of emergency preparedness addressing those open items discussed in Attachments 13.3A, 13.3B, and 13.3C of this report, the staff is unable to make a determination whether there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency and that the CCNPP Unit 3 Emergency Plan meets the requirements in the following regulations and guidance documents:

- 10 CFR 50.33(g)
- 10 CFR 50.34(b)(6)(v)
- 10 CFR 50.34(f)(2)
- 10 CFR 50.47
- 10 CFR Part 50, Appendix E
- 10 CFR 52.77
- 10 CFR 52.79(a)(21)
- 10 CFR 52.79(a)(22)(i)
- 10 CFR 52.80
- 10 CFR 52.81

Attachment 13.3A – COL INFORMATION ITEMS, SUPPLEMENTAL INFORMATION ITEMS AND DEPARTURES

Introduction

This section addresses the COL information items associated with EP.

COL FSAR Section 13.3 does not include any EP-related supplemental information items or departures from the U.S. EPR certified design for the CCNPP Unit 3 site that must be addressed by the COL applicant.

13.3A.1 Regulatory Basis

The applicable regulatory requirements for COL Information Item 13.3-1 associated with EP are established in 10 CFR 50.33(g); 10 CFR 52.79(a)(17); 10 CFR 52.79(a)(21); 10 CFR 50.34(f)(2)(xxv); 10 CFR 50.47(b); 10 CFR Part 50, Appendix E; and the guidance provided in NUREG-0654/FEMA-REP-1, Revision 1, and Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements."

The guidance related to implementation milestones for the EP program is provided in the Sample FSAR Table 13.4-X, "Operational Programs Required by NRC Regulation and Program Implementation," in NUREG-0800.

13.3A.2 COL Information Items

Technical Information in the COL Application

COL FSAR Section 13.3, "Emergency Planning," incorporates by reference U.S. EPR FSAR Tier 2, Section 13.3, "Emergency Planning," with the following supplements:

- **COL Information Item 13.3-1 states:**

  A COL applicant that references the U.S. EPR design certification will provide a site-specific emergency plan in accordance with 10 CFR 50.47 and 10 CFR 50, Appendix E.

The COL applicant addressed COL Information Item 13.3-1 as follows:

> A comprehensive Emergency Plan is provided in COLA Part 5. The schedule for emergency planning implementation milestones is provided in Table 13.4-1.

Technical Evaluation

- COL Information Item 13.3-1

The staff reviewed the COL information item provided in COL FSAR Section 13.3 and Part 5, "Emergency Plan," of the COL application to ensure that information submitted by the COL applicant included a complete and integrated emergency plan. The staff finds the COL applicant's submittal of a complete and integrated onsite emergency plan for CCNPP Unit 3 acceptable because it meets the requirements of 10 CFR Part 50. Appendix E, and 10 CFR 52.79(a)(21).

The COL applicant provided acceptable milestones for EP program implementation in COL FSAR Table 13.4-1, "Operational Programs Required by NRC Regulations and Program Implementation," consistent with the requirements in 10 CFR Part 50, Appendix E and the acceptance criteria in NUREG-0800. The staff's evaluation of EP milestones to support issuance of 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," 10 CFR Part 40, "Domestic Licensing of Source Material"; and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," licenses is discussed in Section 1.5 of this report.

13.3A.3 Post COL Operating License Activities

There are no post COL activities related to this section.

13.3A.4 Conclusions

The staff reviewed the CCNPP Unit 3 COL application and the referenced design certification FSAR. The staff' confirmed that the COL applicant addressed the required information relating to EP, and there is no outstanding information expected to be addressed in the COL FSAR related to this section.

The staff compared the COL application COL information items to the applicable NRC requirements, acceptance criteria defined in NUREG- 0800, Section 13.3, and other regulatory guidance. The staff concludes that the COL applicant complies with the applicable regulatory requirements in the following regulations and guidance documents:

- 10 CFR 50.33(g)
- 10 CFR 52.79(a)(17)
- 10 CFR 52.79(a)(21)
- 10 CFR 50.34(f)(2)(xxv)
- 10 CFR 50.47(b)
- 10 CFR Part 50, Appendix E
- NUREG-0654/FEMA-REP-1, Revision 1
- NUREG-0737, Supplement 1
- NUREG-0800

The staff's conclusions regarding the acceptability of the EP implementation milestones provided in COL FSAR Table 13.4-1 are addressed in Section 13.4 of this report.

Attachment 13.3B – ADDITIONAL REQUIRED EMERGENCY PLANNING INFORMATION

Introduction

This section of the report includes the staff's evaluation of EP information that is required to be provided in the COL application, but does not address the COL applicant's plans for responding to a radiological emergency, which are evaluated in Attachment 13.3C of this report.

13.3B.1 Regulatory Basis

The applicable regulatory requirements for EP information are as follows:

- 10 CFR Part 50, Appendix E, Section I, "Introduction," as it relates to emergency planning, describes the EPZ.

- 10 CFR Part 50, Appendix E, Section E.III, "The Final Safety Analysis Report," as it relates to the requirement that the COL FSAR include plans to cope with emergencies.

- 10 CFR 52.79(a)(21), "Contents of the Applications; Technical Information in the Final Safety Analysis Report," and 10 CFR 50.34(b)(6)(v), "Contents of Applications; Technical Information," as they relate to the requirement that the COL FSAR include an onsite emergency plan that meets the requirements in 10 CFR 50.47 and 10 CFR Part 50, Appendix E.

- 10 CFR 50.33, "Content of the Application: General Information" and 10 CFR 52.77, "Contents of Applications; General Information," as they relate to the requirement, in part, the submittal of State and local emergency plans.

- 10 CFR 50.33(g), as it relates to the requirement, in part, of a description of the plume exposure pathway and the ingestion pathway EPZs. In addition, 10 CFR 50.47(c)(2), "Emergency Plans," states generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 16 km (10 mi) in radius and the ingestion pathway EPZ shall consist of an area about 80 km (50 mi) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway.

- 10 CFR 50.34(b)(6)(v), as it relates to the requirement that plans for coping with emergencies, which shall include the items specified in 10 CFR 50.34(h)(1)(i), Appendix E, and 10 CFR 52.79(a)(41) require that the COL application include an evaluation of the facility against NUREG-0800. NUREG-0800, Section 13.3 provides guidance for the review of onsite emergency plans for nuclear power plants. 10 CFR 50.34(h)(2) and (3) require that the evaluation identify and describe all differences from the NUREG-0800, Section 13.3 acceptance criteria and evaluate how the proposed alternatives to the NUREG-0800 acceptance criteria provide an acceptable method to comply with NRC regulations. Where differences exist, the evaluation should discuss how the proposed alternative provides an acceptable method to comply with

NRC regulations or portions thereof that underlie the corresponding NUREG-0800 acceptance criteria.

- 10 CFR 52.73, "Relationship to Other Subparts," states that the application for a COL may reference a standard design.

- 10 CFR 52.79(a)(22)(i) , "Contents of Applications: Technical Information in the Final Safety Analysis Report," as it relates to the requirement that certifications from State and local governmental agencies with EP responsibilities that: (1) The proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency.

- 10 CFR 52.81, "Standards for Review of Applications," states that COL applications will be reviewed according to the standards in 10 CFR Parts 50 and 100. The requirements of 10 CFR Part 100, "Reactor Site Criteria," Subpart B, "Evaluation Factors for Stationary Power Reactor Site Applications on or after January 10, 1997," are applicable. 10 CFR 100.1(c), "Reactor Site Criteria, Purpose," requires the identification of physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. In addition, 10 CFR 100.21(g) also requires that applications for site approval identify physical characteristics unique to the proposed site.

- 10 CFR 100.1(c) states siting factors and criteria are important in assuring that radiological doses from normal operation and postulated accidents will be acceptably low, that natural phenomena and potential man-made hazards will be appropriately accounted for in the design of the plant, that site characteristics are such that adequate security measures to protect the plant can be developed, and that physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans are identified.

- 10 CFR 100.21(g) states physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans must be identified.

13.3B.2 COL FSAR and Onsite Emergency Plan

Technical Information in the COL Application: 10 CFR Part 50, Appendix E, Section III (10 CFR 52.79(a)(21)) (10 CFR 50.34(b)(6)(v))

COL FSAR Section 13.3, "Emergency Planning," states in COL Information Item 13.3-1, in part, that a COL applicant that references the U.S. EPR design certification will provide a site-specific emergency plan in accordance with 10 CFR 50.47 and 10 CFR Part 50, Appendix E.

COL application, Part 5, "Emergency Plan," includes a complete and integrated emergency plan, which consists of a basic plan, a Unit annex for the proposed Unit 3 reactor, and five appendices. The Unit annex provides specific details for CCNPP Unit 3 including a unit description (type of reactor, relationship to other units, special emergency equipment), shift staffing, Emergency Action Levels, and emergency facility locations. The five appendices

provide additional detailed information regarding various aspects of the CCNPP Emergency Plan (e.g., Letters of Agreement and Evacuation Time Estimates).

Technical Evaluation: 10 CFR Part 50, Appendix E, Section III (10 CFR 52.79(a)(21)) (10 CFR 50.34(b)(6)(v))

The staff finds that the COL FSAR includes an emergency plan which meets the requirements in 10 CFR Part 50, Appendix E, Section III, 10 CFR 52.79(a)(21), and 10 CFR 50.34(b)(6)(v).

13.3B.3 Submittal of State and Local Emergency Plans

Technical Information in the COL Application: (10 CFR 50.33(g))

COL application, Part 11H, "State and Local Emergency Plans" includes State and County EP documents for:

- The State of Maryland
- The Commonwealth of Virginia
- The State of Delaware
- St. Mary's County, Maryland
- Dorchester County, Maryland
- Calvert County, Maryland
- The District of Columbia

Technical Evaluation: (10 CFR 50.33(g))

The COL applicant submitted offsite emergency plans for State and local governmental entities that are wholly or partially within the plume exposure pathway EPZ. These State and local governmental entities include: Maryland, Calvert County, Dorchester County, and St. Mary's County. The offsite emergency plans for the following State governments wholly or partially within the ingestion pathway EPZ were also submitted: Delaware, Maryland, Virginia, and the District of Columbia. The staff finds the submitted information acceptable and meets the requirements of 10 CFR 50.33(g).

13.3B.4 Description of the Emergency Planning Zone

Technical Information in the COL Application: (10 CFR Part 50, Appendix E, Section I (10 CFR 50.47(c)(2))

COL application, Part 5, Section I, "Introduction," states "The plume exposure EPZ for CCNPP Unit 3, shall be an area surrounding the site with a radius of about 16 km (10 mi). (Exact boundaries are determined in concurrence with State and local authorities)." COL application, Appendix 4, "Glossary of Terms and Acronyms," further defines the plume exposure pathway as the potential pathway of radioactive materials to the public through: (1) Whole body external exposure from the plume and from deposited materials, and (2) inhalation of radioactive materials. CCNPP Emergency Plan, Figure 1-2, "10 Mile (16 Kilometer) Emergency Planning

Zone," provides an illustration of the 16 km (10 mi) plume exposure pathway EPZ. The ingestion pathway EPZ for CCNPP Unit 3 shall be an area surrounding the site with a radius of about 50 miles (80 kilometers)." COL application, Appendix 4 further defines the ingestion pathway EPZ as the potential exposure pathway of radioactive materials to the public through consumption of radiologically contaminated water and foods such as milk or fresh vegetables. CCNPP Emergency Plan, Figure 1.3, "50-Mile (80 Kilometer) Emergency Planning Zone," provides an illustration of the 80 km (50 mi) ingestion exposure pathway EPZ. COL application, Part 5, contained an analysis, "CCNPP Unit 3 Impact to CCNPP Units 1 & 2 Emergency Preparedness Program Evaluation," that stated, in part, the offsite radiological consequences for the CCNPP Unit 3 design basis accident (DBA) are below those of the CCNPP Units 1 and 2 DBA. The limiting dose at the 16 km (10 mi) EPZ boundary for Unit 3, based on the worst case DBA, is .90 roentgen equivalent man (Rem) total effective dose equivalent (TEDE). Operation of the existing units will require maintaining the EPZs as currently established. As such, the existing 16 km (10 mi) and 80 km (50 mi) EPZs will be maintained and are applicable to CCNPP Unit 3.

Technical Evaluation: 10 CFR Part 50, Appendix E, Section) (10 CFR 50.47(c)(2))

The proposed CCNPP Unit 3 will be co-located with the currently operating CCNPP Units 1 and 2. CCNPP Unit 3 will use the existing plume and ingestion exposure pathway EPZs, which consist of an area about 16 km and 80 km (10 and 50 mi) in radius, respectively. The exact sizes and configurations of the EPZs surrounding CCNPP Unit 3 were determined in relation to the local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The staff finds the information provided in the CCNPP Unit 3 Emergency Plan regarding 16 km and 80 km (10 mi and 50 mi) EPZs acceptable since it meets the applicable requirements of 10 CFR Part 50, Appendix E, and 10 CFR 50.47(c)(2).

13.3B.5 Certifications from State and Local Governments

Technical Information in the COL application: (10 CFR 52.79(a)(22)(i)), COL application, Part 11H, "State and Local Emergency Plans," includes State and county letters of certification with:

- The State of Maryland
- The Commonwealth of Virginia
- The State of Delaware
- St. Mary's County, Maryland
- Dorchester County, Maryland
- Calvert County, Maryland
- The District of Columbia

Technical Evaluation: (10 CFR 52.79(a)(22)(i))

The COL applicant provided letters of certification from State and local governmental agencies with EP responsibilities; however, some of the letters did not specifically state that the proposed emergency plans are practicable as required by the regulations.

In RAI 299, Question 13.03-44, the staff requested that the COL applicant provide letters of certification from the State of Delaware, the District of Columbia, and local counties of St. Mary's, Dorchester, and Calvert, which state (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency. In a May 19, 2009, response to RAI 299, Question 13.03-44, the COL applicant provided revised letters of certification as requested by the staff. The staff finds the COL applicant's response acceptable because it meets the requirements identified in 10 CFR 52.79(a)(22)(i). The staff confirmed that CCNPP Unit 3 Emergency Response Plan, Revision 7 included the certifications provided in the response to RAI 299, Question 13.03-44. The staff considers RAI 299, Question 13.03-44 resolved.

13.3B.6 Evaluation against the Standard Review Plan

Technical Information in the COL Application: (10 CFR 52.79(a)(41)) (10 CFR 50.34(h)(1)(i)) (10 CFR 50.34(h)(2 and 3))

The initial COL application submittal did not include a documented review of the CCNPP Unit 3 Emergency Plan against the applicable portions of NUREG-0800, Section 13.3. In RAI 123, Question 13.03-5, the staff requested that the COL applicant provide an evaluation of the CCNPP Unit 3 Emergency Plan against the SRP. In an August 13, 2009, response to RAI 123, Question 13.03-5, the COL applicant included a table of comparison between the CCNPP Unit 3 Emergency Plan against NUREG-0800.

Technical Evaluation

The staff finds the COL applicant's August 13, 2009, response to RAI 299, Question 13.03-5 acceptable because it conforms to the guidance of NUREG-0800.

The staff reviewed the COL applicant's evaluation of the CCNPP Unit 3 Emergency Plan against the applicable portions of NUREG-0800, Section 13.3. The staff confirmed that there were no differences from the SRP acceptance criteria in NUREG-0800, Section 13.3. The staff finds this acceptable because it meets the requirements of 10 CFR 52.79(a)(41), 10 CFR 50.34(h)(1)(i), and 10 CFR 50.34(h)(2 and 3).

13.3B.7 Reference to a Standard Design

Technical Information in the COL Application: (10 CFR 52.73)

COL FSAR Section 13.3, "Emergency Planning," states that this section of the U. S. EPR FSAR is incorporated by reference.

Technical Evaluation

The staff finds that the U.S. EPR FSAR was incorporated by reference in the COL FSAR and the evaluation of any departures and supplements is addressed in Attachment 13.3A of this report. The staff finds this acceptable because it meets the requirements of 10 CFR 52.73.

13.3B.8 Impediments to the Development of Emergency Plans

Technical Information in the COL Application: (10 CFR 52.81) (10 CFR 100.1(c)) (10 CFR 100.21(g))

COL FSAR Section 2.2, "Nearby, Industrial, Transportation, and Military Facilities," concludes that based on the analysis of the effects of Design-Basis Events which describes the hazards surrounding the site in COL FSAR Chapter 2.0, "Site Characteristics," and COL FSAR Section 2.2, no impediment was noted to hamper, limit, or not allow an adequate physical security plan to be developed for CCNPP Unit 3. This conclusion does not exist in the COL FSAR for development of the CCNPP Unit 3 Emergency Plan. In addition, COL application, Part 5, Revision 8, includes an ETE (Revision 3), March 2011. ETE Report, Section 1.3, "Preliminary Activities," states, in part, that the entire highway system within the EPZ and for some distance outside was driven while characteristics of each section of the highway were recorded. These characteristics include unusual characteristics such as narrow bridges, sharp curves, poor pavement, flood warning signs, and inadequate delineations.

In RAI 372, Question 13.03-52, the staff requested that the COL applicant explain the significance of the unusual characteristics of the highway system identified within the EPZ and for some distance outside of the EPZ, and how these unusual characteristics impact access to or from the proposed CCNPP Unit 3 site. In addition, the staff requested that the COL applicant address whether any unusual characteristics unique to the proposed site could pose a significant impediment to the development of the CCNPP Unit 3 Emergency Plan.

Technical Evaluation: **(10 CFR 52.81) (10 CFR 100.1(c)) (10 CFR 100.21(g))**

The staff determined this section of the CCNPP Unit 3 Emergency Plan as unacceptable since the COL applicant did not adequately address whether any unusual characteristics unique to the proposed site could pose a significant impediment to the development of the CCNPP Unit 3 Emergency Plan pursuant to NRC regulations. In **RAI 372, Question 13.03-52, which is being tracked as an open item**, the staff requested that the COL applicant address this issue.

13.3B.9 Post Combined License Activities

There are no post COL activities related to this section of the report.

13.3B.10 Conclusions

The staff reviewed the EP information required by regulations in the COL application, but not required to be part of the CCNPP Unit 3 Emergency Plan provided in the COL application, Part 5. The staff will update the safety evaluation of emergency preparedness based on the COL applicant's revised emergency plan addressing the open item in RAI 372, Question 13.03-52. The staff is unable to make a determination that the information provided is acceptable and meets the applicable requirements in the applicable portions of 10 CFR Part 50, Appendix E as discussed above and the following regulations:

- 10 CFR 50.33
- 10 CFR 50.34(b)(6)(v)
- 10 CFR 50.34(f)(1), (2), and (3)
- 10 CFR 50.47 (c)(2)
- 10 CFR 52.73
- 10 CFR 52.77
- 10 CFR 52.79
- 10 CFR 52.81
- 10 CFR 100.1(c)
- 10 CFR 100.21(g)

Attachment 13.3C − Onsite Emergency Plan

Introduction

The staff evaluated emergency plans for CCNPP Unit 3 to determine whether the plans are adequate and there is reasonable assurance that the plans can be implemented. This attachment to the report provides the results of the staff's review of the onsite emergency plan for the addition of Unit 3 at the CCNPP site.

COL FSAR Section 13.3, "Emergency Planning," states that the CCNPP Unit 3, Emergency Plan is included in the COL application, Part 5. The onsite emergency plan includes a unit-specific annex and five appendices that provide additional detailed information for various aspects of the CCNPP Emergency Plan (e.g., Emergency Action Levels and Letters of Agreement).

In addition to the CCNPP Unit 3 Emergency Plan, the COL application, Part 5 addresses RG 1.206, "Combined License Applications for Nuclear Power Plants," evaluation criterion for multi-unit sites and includes an evaluation of the proposed CCNPP Unit 3 impact on the existing CCNPP Units 1 and 2 EP Program. This evaluation addresses the extent to which the existing site's emergency plan reflects the proposed CCNPP Unit 3, and states, in part, the following:

- The CCNPP Units 1 and 2 Emergency Plan does not take credit for any CCNPP Unit 3 equipment or personnel resources with regard to providing support to the existing program.
- The CCNPP Unit 3 Emergency Plan will have a separate Emergency Response Organization (ERO), EP staff, training program, EALs, equipment and facilities (Technical Support Center (TSC) and Operational Support Center (OSC)).

- CCNPP Units 1, 2, and 3 will share the Emergency Operations Facility (EOF), Joint Information Center (JIC), near-site assembly area, meteorological monitoring system, and Alert and Notification System (ANS).

The following section describes the staff's evaluation of the onsite emergency plan for the CCNPP Unit 3 site and parallels the planning standards in NUREG-0654/FEMA-REP-1. Compliance with the guidance in NUREG-0654/FEMA-REP-1 for each planning standard meets the requirements of 10 CFR 50.47(b).

13.3C.1 Assignment of Responsibility (Organizational Control)

13.3C.1.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(1) for assignment of responsibility, the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria[1] in NUREG-0654/FEMA-REP-1, Revision 1 (The bracketed, alphanumeric designations used throughout this Final Safety Evaluation Report (FSER) section identify the corresponding NUREG-0654/FEMA-REP-1 evaluation criteria used by the staff to determine compliance with 10 CFR 50.47(b)). The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Assignment of Responsibility (Organization Control)," 10 CFR Part 50, Appendix E. (Parentheses identify requirements in 10 CFR Part 50, Appendix E).

13.3C.1.2 Overall Response Organization

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section A.1.a)

This section of the report describes the COL applicant's overall response organization. CCNPP Unit 3 Emergency Plan, Section A.1, "Concept of Operations," provides a description of the Federal, State, and local government agencies that are part of the overall Emergency Response Organization (ERO). Federal agencies include the Nuclear Regulatory Commission, Department of Homeland Security (DHS), Federal Emergency Management Agency, Federal Radiological Preparedness Coordinating Committee (FRPCC), Department of Energy (DOE), Environmental Protection Agency (EPA), U.S. Coast Guard (USCG), U.S. Army Corps of Engineers, Federal Bureau of Investigation (FBI), National Weather Service (NWS), and the DOE Radiation Emergency Assistance Center/Training Site (REAC/TS). State agencies within the plume exposure pathway Emergency Planning Zone (EPZ) include the State of Maryland, Maryland Emergency Management Agency (MEMA), and Maryland Department of the Environment (MDE). Other State agencies within the ingestion exposure pathway EPZ include the State of Delaware, Commonwealth of Virginia, and District of Columbia. County agencies include Calvert, Dorchester, and St. Mary's in which the county Emergency Operations Centers (EOC's) serve as the primary coordinating center for local government response. In a November 19, 2009, response to RAI 155, Question 13.03-07(A), in part, the COL applicant identified counties within the ingestion exposure pathway EPZ and stated that the functions and responsibilities of agencies in each county that are responsible for emergency response are described in the Maryland and Commonwealth of Virginia emergency response plans. COL Application Part 5, Appendix 3, "Letters of Agreements (Certification Letters)," includes letters of

agreement with Calvert County Volunteer Fire & Rescue Association, Calvert Memorial Hospital, Attending Physicians, Delaware Geological Survey, St. Leonard Volunteer Fire Department and Rescue Squad, Solomon's Island Fire and Rescue, Calvert County Sheriff's Office, and Maryland State Police, which would provide support services for CCNPP in the event of an emergency. CCNPP Unit 3 Emergency Plan, Section B.8, "Industry/Private Support Organizations," identifies supporting industry and private organizations to include the Institute of Nuclear Power Operations, the Nuclear Energy Institute, American Nuclear Insurers, Ft. Smallwood (environmental monitoring services), and AREVA, which would assist in the overall emergency response effort at CCNPP, as requested.

10 CFR Part 50, Appendix E, Section IV.A.8

CCNPP Unit 3 Emergency Plan, Section A.1.2.a, "The State of Maryland," identifies that the Governor of Maryland serves as the primary spokesperson who makes final protective action recommendations (PARs). The Secretary - Maryland Department of the Environment has command authority of the radiological aspects of a nuclear incident and provides input to the Governor. The Maryland Emergency Management Agency (MEMA) coordinates response and recovery functions for all Federal, State, and private agencies and directs requests for assistance from counties to appropriate State and Federal agencies. In a November 19, 2009, response to RAI 155, Question 13.03-07(A), in part, the COL applicant proposed a revision to the CCNPP Unit 3 Emergency Plan which states that the coordination and responsibility for implementing protective actions is the responsibility of the Director of each county's (Calvert, Dorchester, and St. Mary's) Emergency Management Agency. Additional information regarding the specific authorities and functions of States or territories (State of Delaware, Commonwealth of Virginia, and District of Columbia) within the ingestion exposure pathway are located within their respective response plans.

Technical Evaluation: (Section A.1.a)

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-07(A) acceptable because the revisions conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 identifies counties that are part of the overall response effort within the ingestion exposure pathway EPZ. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

10 CFR Part 50, Appendix E, Section IV.A.8

The staff finds the additional information and textual revisions submitted in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03--07(A) acceptable because the information and revisions meet the requirements in 10 CFR Part 50, Appendix E.IV.A.8. The staff confirmed that Revision 7 of the CCNPP Unit 3 Emergency Plan incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-07(A). Therefore, the staff finds that the CCNPP Unit 3 Emergency Plan identifies the officials responsible for planning for, ordering, and controlling appropriate protective actions. The staff finds this acceptable because it meet the requirements in 10 CFR Part 50, Appendix E.IV.A.8 and, therefore, considers RAI 155, Question 13.03.-07(A) resolved.

13.3C.1.3 Concept of Operations

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section A.1.b)

This section of the report describes the COL applicant's concept of operations. CCNPP Unit 3 Emergency Plan, Section A.1 identifies organizations intended to be part of the overall emergency response for CCNPP and describes its relationship to the total response effort. Additional information regarding counties within the ingestion exposure pathway EPZ and their concept of operations is discussed in Section 13.3C.1.2 of this report. CCNPP Unit 3 Emergency Plan, Section A.2, "[State] and County Functions and Responsibilities," states that the State and counties have emergency response plans that specify the responsibilities and functions for the major agencies, departments, and key individuals of their emergency response organizations. In RAI 155, Question 13.03-07(A), in part, the staff requested that the COL applicant provide additional information related to the activities and responsibilities of States or territories (other than Maryland), county and private agencies, and utilities supporting emergency response for CCNPP Unit 3. In a November 19, 2009, response to RAI 155, Question 13.03-07(A), the COL applicant proposed additional language in the CCNPP Unit 3 Emergency Plan stating that functions and activities of agencies responsible for emergency response in the States of Delaware, Virginia, and Washington, DC within the ingestion exposure pathway EPZs are contained in their respective emergency response plans.

The relationships of these organizations are illustrated in Emergency Plan, Figure A-1, "Licensee Emergency Response Organization [ERO] Interrelationships," and Emergency Plan, Figure A-2, "Agency Response Organization Interrelationships." In RAI 155, Question 13.03-07(B)(1) and Question 13.03-07(B)(2), the staff requested that the COL applicant clarify the inconsistencies between the text in Emergency Plan, Section A, "Assignment of Responsibility," and Emergency Plan, Figure A-2, "Agency Response Organization Interrelationships," and provide revisions to both as necessary. In a November 19, 2009, response to RAI 155, Question 13.03-07(B)(1) and Question 13.03-07(B)(2), the COL applicant stated that Emergency Plan, Figure A-2 will be revised to include the Federal agencies of FEMA, EPA, and DOE.

10 CFR Part 50, Appendix E, Section III

COL FSAR Chapter 13.3, states that a comprehensive Emergency Plan is provided in COL application, Part 5. The schedule for EP implementation is provided in COL FSAR Table 13.4-1, "Operational Programs Required by NRC Regulations and Program Implementation." CCNPP Emergency Plan, Section A, "Assignment of Responsibility," describes the primary responsibilities and organizational control of organizations that will provide continuous response support during an emergency at the CCNPP site. Additional information related to emergency support was provided in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-07(A) as described in Section 13.3C.1.2 of this report.

Technical Evaluation: (Section A.1.b) (10 CFR Part 50, Appendix E, Section III)

The staff finds the additional information and textual revisions submitted in the COL applicant's November 19, 2009, response to RAI 155, Questions 13.03-07(A), 13.03-07(B)(1), and 13.03-07(B)(2) acceptable because the responses conform to the guidance in NUREG-0654/FEMA-REP-1 and meet the applicable requirements in 10 CFR Part 50, Appendix E. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated

the information and textual revisions provided in the November 19, 2009, response to RAI 155, Questions 13.03-07(A), 13.03-07(B)(1), and 13.03-07(B)(2). Therefore, the staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the COL applicant's operational role, concept of operations, and relationship to the total effort. The staff also finds the CCNPP Unit 3 Emergency Plan acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 and meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.1.4 Organizational Interrelationships

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section A.1.c)

Section 13.3C.1.3 of this report includes the COL applicant's information regarding Organizational Interrelationships.

Technical Evaluation: (Section A.1.c)

The staff's evaluation of acceptability for this section is addressed in Section 13.3C.1.3 of this report.

13.3C.1.5 Individual in Charge of Emergency Response

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section A.1.d)

This section of the report describes the individual in charge of an emergency response at CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section B.2, "Authority over the Emergency Response Organization," identifies the Shift Manager (Control Room (CR)), Emergency Plant Manager (TSC)-when activated) or Emergency Director (EOF)-when activated) as having overall authority and responsibility for coordinating emergency response activities. The succession of responsibility begins with the Shift Supervisor but ultimately rests with the Emergency Director. CCNPP Unit 3 Emergency Plan, Section B.3, "Criteria for Assuming Command and Control (Succession)," describes the transition of command and control between each onsite leader described above.

Technical Evaluation: (Section A.1.d)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies a specific individual by title that shall be in charge of the emergency response. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.1.6 24-Hour Response Capability

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section A.1.e)

This section of the report describes the COL applicant's 24-hour response capability. CCNPP Unit 3 Emergency Plan, Section A.4, "Continuous Coverage," states that CCNPP Unit 3 maintains 24-hour emergency response capability. The normal on shift organization is trained to initiate implementation of the CCNPP Unit 3 Emergency Plan, make initial accident assessment, classify the emergency, make notifications, initiate communication, and protection action recommendations, during the initial response and until augmented by the ERO. Procedures are in place to provide the capability of continuous (24-hour) operations. Emergency Plan, Tables B-1a, "Shift Emergency Response Organization," and B-1 b, "Minimum Staffing Requirements for the CCNPP Unit 3 ERO," and Emergency Plan, Section B.5.a.4,

"Emergency Communicators," and Annex outlines the on-shift and augmented staffing of the ERO, including the roles of communicators.

Technical Evaluation: (Section A.1.e)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for 24-hour per day emergency response, including 24-hour per day manning of communications links. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.1.7 Written Agreements

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section A.3)

This section of the report describes written agreements in place at CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section A.3, "Agreements in Planning Effort," states that written agreements establishing the concept of operations developed between the licensee and other support organizations having an emergency response role within the EPZs have been developed. The agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for exchange of information. Letters of Agreement with the private contractors and others who provide services in support of an emergency will be obtained. General agreements between government agencies and members of the nuclear industry exist. CCNPP Unit 3 Emergency Plan, Appendix 3, "Letters of Agreements (Certification Letters)," includes certification letters but all Letters of Agreement (LOAs) have not been finalized. Therefore, in RAI 155, Question 13.03-07(C), the staff requested that the COL applicant provide LOAs or propose an ITAAC for when the LOAs with all participating agencies (including medical providers) will be included in the CCNPP Unit 3 Emergency Plan. In a November 19, 2009, response to RAI 155, Question 13.03-07(C), the COL applicant proposed EP ITAAC 1.1 for COL application, Part 10, Table 2.3-1, to verify that LOAs will be provided to the NRC no later than 180 days prior to fuel loading. RAI 155, Question 13.03 07(C),

Technical Evaluation: (Section A.3)

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-07(C) acceptable because the additional information and textual revisions conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-07(C). The staff finds the CCNPP Unit 3 Emergency Plan with regards to written agreements acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

13.3C.1.8 Operations for a Protracted Period

This section of the report describes the COL applicant's ability to respond to operations over a protracted period of time.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section A.4)

CCNPP Unit 3 Emergency Plan, Section A.4, “Continuous Coverage,” states that the CCNPP Unit 3 site maintains a 24-hour emergency response capability. Additional information regarding operations for a protracted period is contained in Section 13.3C.1.6 of this report. The Emergency Director, located in the EOF, has the authority and responsibility for assuring continuity of resources (technical, administrative, and material) in the event of the activation of the ERO.

Technical Evaluation: (Section A.4)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for 24-hour per day emergency response, including 24-hour per day manning of communications links. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.1.9 Conclusions

Based on a review of the onsite emergency plan and annex as described above, the staff concludes that the information provided in CCNPP Unit 3 Emergency Plan is acceptable and meets the requirements of 10 CFR 50.47(b)(1) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard A and the applicable portions of 10 CFR Part 50, Appendix E, as described above.

13.3C.2 Onsite Emergency Organization

13.3C.2.1 Regulatory Basis

To determine whether the proposed CCNPP Unit 3 Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(2), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to the area of "Onsite Emergency Organization,” in 10 CFR Part 50, Appendix E.

13.3C.2.2 Normal Plant Operations Organization

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.A.1)

This section of the report describes the organization of the COL applicant’s normal plant operations in accordance with the applicable regulations. CCNPP Unit 3 Emergency Plan, Section B.1, “On-Shift Emergency Response Organization Assignments,” states that the normal plant personnel complement is established with the CCNPP Unit 3 Site Vice President having overall authority for site operations. The Site Vice President directs the site organization in the management of the various departments while the Shift Manager retains the responsibility for actual operation of plant systems. CCNPP Unit 3 Emergency Plan Annex, Section 2.1, “Normal Station Management Overview,” states that a detailed description of the UniStar Nuclear Operating Services, LLC, organizational structure are located in COL FSAR Section 13.1. CCNPP Unit 3 Emergency Plan, Section 2.2, “Normal Shift Staffing,” states that the makeup of the normal shift is controlled by the CCNPP unit’s Technical Specifications and 10 CFR 50.54(m). COL FSAR Section 13.1.2, “Operating Organization,” identifies

Figure 13.1-3, “UNE Corporate Organization,” which illustrates the authority and lines of communication for the CCNPP Unit 3 site organization. COL FSAR Section 13.1.2 states that CCNPP Unit 3 site organization includes operations, maintenance, radiological protection, chemistry, work management, engineering, training, and quality and performance improvement. This organization is responsible for operating and maintaining the plant, planning and scheduling work, radiation protection of plant personnel, controlling radiological releases, ensuring industrial safety, refueling, quality control and inspection of plant activities, and technical support of CCNPP Unit 3. CCNPP Unit 3 does not share operating staff with CCNPP Units 1 and 2. Roles and responsibilities of Operations’ personnel, including the Shift Technical Advisor, are described in Section B.1 of the plan. In addition, an estimate of the number of staff assigned to various groups for the key organization positions is provided in COL FSAR Table 13.1-1, “Generic Position/Site Specific Position Cross Reference,” and the organizational arrangement is provided in COL FSAR Figure 13.1-4, “UniStar Nuclear Operating Services, LLC Site Organization.”

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.A.1)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the normal plant operating organization as described above. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.2.3 Onsite Emergency Organization

This section of the report describes the COL applicant’s onsite emergency organization.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.1)
(10 CFR Part 50, Appendix E, Section IV.A.2.b)

CCNPP Unit 3 Emergency Plan, Section B, “Emergency Response Organization,” describes the onsite emergency organization, the key positions and associated responsibilities. CCNPP Unit 3 Emergency Plan, Section B.1 states there will be adequate personnel on shift at all time to provide an initial response to an emergency event. Section 2.3, “Shift Emergency Response Positional Responsibilities,” contains Table B-1a, “Shift Emergency Response Organization,” which identifies on-shift ERO positions required for minimum staffing and the major tasks assigned to each position. CCNPP Unit 3 Emergency Plan Annex Table B-1b, “Minimum Staffing Requirements for the CCNPP Unit 3 ERO,” identifies emergency positions required to augment on-site staff within 60-minutes, and shift complements required for full ERO augmentation of staffing. CCNPP Unit 3 Emergency Plan Annex, Figures B-1a, “Overall ERO Command Structure,” and B-1b, “Emergency Onsite Organization;” illustrates the organizational hierarchy of the onsite ERO. CCNPP Unit 3 Emergency Plan Annex, Section B.5, “Emergency Response Organization Positional Responsibilities,” provides a description of the onsite emergency organization with a discussion of plant emergency assignments.

In RAI 155, Questions 13.03-08(A)(1) through 13.03-08(A)(13), the staff requested that the COL applicant provide a resolution of discrepancies between CCNPP Unit 3 Emergency Plan, Figures B-1a, B-1b, B-1c, “Emergency Offsite Organization,” B-1d, “Emergency Public Information Organization,” and CCNPP Unit 3 Emergency Plan, Section B.5, including any potential impact to on-shift and augmented ERO staffing. In a November 19, 2009, response to RAI 155, Questions 13.03-08(A)(1) through 13.03-08(A)(13), the COL applicant clarified the staff’s questions and proposed revisions to the CCNPP Unit 3 Emergency Plan to resolve the

identified discrepancies. The staff finds the COL applicant's response acceptable because it resolved the figure inconsistencies.

Technical Evaluation: (Section B.1) (10 CFR Part 50, Appendix E, Section IV.A.2.b)

The staff's technical evaluation of minimum and augmented shift staffing for CCNPP Unit 3 is contained in Section 13.3C.2.7 of this report. The staff finds the additional information and textual revisions provided in the COL applicant's November 19, 2009, response to RAI 155, Questions 13.03-08(A)(1) through 13.03-08(A)(13) acceptable because they meet the requirements in 10 CFR Part 50, Appendix E, and conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that Revision 7 of the CCNPP Unit 3 Emergency Plan incorporated the information and textual changes provided in the response to RAI 155, Questions 13.03-08(A)(1) through 13.03-08(A)(13). Accordingly, the staff finds that the CCNPP Unit 3 Emergency Plan provides an adequate description of the onsite emergency organization of plant staff personnel for all shifts and its relation to the responsibilities and duties of the normal staff complement. The staff finds this acceptable because it meets the requirements of 10 CFR Part 50, Appendix E and conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.2.4 Designation of an Emergency Coordinator

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.2)

This section of the report describes the COL applicant's designation of an emergency coordinator. CCNPP Unit 3 Emergency Plan, Section B.1 states that the Shift Manager, acting as the interim Emergency Director, is responsible for taking immediate action during an emergency until relieved by the on-call ERO members. Immediate actions may include activation of the site ERO and NRC Emergency Response Data System (ERDS), event classification, issuing protective action recommendations (PARs), notification of offsite authorities (including NRC and State/local officials), and authorization of emergency exposure controls. CCNPP Unit 3 Emergency Plan, Section B.2, "Authority over the Emergency Response Organization," states the CCNPP Unit 3 Emergency Plant Manager in the TSC will relieve the Shift Manager of all command and control until the Emergency Director is ready to assume these duties once the EOF is activated. CCNPP Unit 3 Emergency Plan, Section B.2 also states that the Shift Manager, Emergency Plant Manager, or Emergency Director in command and control, has overall authority and responsibility for coordinating emergency activities.

Technical Evaluation: (Section B.2)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies a designated individual as emergency coordinator, that shall be on shift at all times, and that shall have the authority and responsibility to immediately and unilaterally initiate any emergency actions, including providing protective action recommendations to authorities responsible for implementing offsite emergency measures. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.2.5 Line of Succession for the Emergency Coordinator

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.3)

This section of the report describes the COL applicant's line of succession for the emergency coordinator. CCNPP Unit 3 Emergency Plan, Section 13.3C.2.4 provides a general discussion regarding the line of the succession for the Emergency Director which begins with the Shift Manager. CCNPP Unit 3 Emergency Plan, Section B.1 also states that in the absence or incapacitation of the Shift Manager, the line of succession is defined in the unit's operating procedures and EPIPs. CCNPP Unit 3 Emergency Plan, Section B.3, "Criteria for Assuming Command and Control (Succession)," states that succession for command and control begins with the Shift Manager and is then transferred to the CCNPP Unit 3 Emergency Plant Manager or Emergency Director. The Emergency Director is the final level of succession. Criteria have been established and must be met before command and control can be transferred, which include the following:

- Adequate staff levels are present in support of the non-delegable responsibilities.
- The staff has been fully briefed as to the status of the event and the currently proposed plan of action.
- A turnover between the individual relinquishing Command and Control and the individual assuming Command and Control has been made.

CCNPP Unit 3 Emergency Plan, Section B.5, "Operations Manager," states the Operations Manager can assume the responsibilities of the CCNPP Unit 3 Emergency Plant manager, until relieved by another qualified Plant manager, in the event they become incapacitated or can no longer fulfill designated responsibilities.

Technical Evaluation: (Section B.3)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies a line of succession for the Emergency Coordinator (Emergency Director) position, and identifies the specific conditions for higher level utility officials assuming this function. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.2.6 Responsibilities of the Emergency Coordinator

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.4)
(10 CFR Part 50, Appendix E, Section IV.A.2.c)

This section of the report describes the responsibilities of the emergency coordinator as presented in the COL applicant's CCNPP Unit 3 Emergency Plan. CCNPP Unit 3 Emergency Plan, Section B.5, "Emergency Response Organization Positional Responsibilities," outlines the authorities, responsibilities, and duties of the entire ERO, including the authorities of the Shift Manager, the CCNPP Unit 3 Emergency Plant Manager, and the Emergency Director responsible for command and control during an emergency. CCNPP Unit 3 Emergency Plan, Section B.4, "Non-Delegable Responsibilities," states that event classification, issuance of PARs, notification of offsite authorities (including NRC and State/local officials), and authorization of emergency exposure controls in excess of Federal limits are responsibilities that cannot be delegated.

10 CFR Part 50, Appendix E, Section IV.A.2.a

A description of the onsite ERO with a detailed discussion of the authorities, responsibilities, and duties of the individuals who will take charge during an emergency can be found in Sections 13.3C.2.3 through 13.3C.2.6 of this report.

Technical Evaluation: (Section B.4) (10 CFR Part 50, Appendix E, Section IV.A.2.c)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes the functional responsibilities assigned to the Emergency Coordinator (Emergency Director), and clearly specifies which responsibilities may not be delegated to other elements of the emergency organization. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. In addition, the CCNPP Unit 3 Emergency Plan identifies who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures. The staff also finds this acceptable because it meets the applicable requirements of 10 CFR Part 50, Appendix E.

10 CFR Part 50, Appendix E, Section IV.A.2.a

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the onsite emergency response organization with a detailed discussion of the authorities, responsibilities, and duties of the individual(s) that will take charge during an emergency. The staff finds this acceptable because it meets the applicable requirements in 10 CFR Part 50, Appendix E.

13.3C.2.7 On-shift and Augmentation Emergency Response Staff

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.5)

This section of the report describes the COL applicant's on-shift and augmentation emergency response staff. Section 13.3C.2.3 of this report includes CCNPP Unit 3 Emergency Plan, Tables B-1a and B-1b, which identify key positions or titles, and major tasks to be performed by on-shift ERO members and personnel that will augment (within 60-minutes of declaration) the on-shift staff in the event of an emergency. Major tasks include the notification of State, local, and Federal authorities, accident assessment (i.e., offsite dose assessment, chemistry, and onsite and offsite radiological surveys), technical engineering support, repair and corrective actions, in-plant protective actions, fire fighting, first aid and rescue operations, site access control and personnel accountability).

In RAI 155, Question 13.03-08(B) and in follow-up RAI 247, Question 13.03-42(A), the staff requested that the COL applicant justify the elimination of 30-minute augmented responders from CCNPP Unit 3 Emergency Plan, Table B-1b, and discuss how the major tasks would be performed by each responder prior to staff augmentation within 60 minutes. The staff also requested that the COL applicant provide a response time for the "Full Augmentation" of emergency staff as identified in CCNPP Unit 3 Emergency Plan, Table B-1b. In a November 19, 2009, response to RAI 155, Question 13.03-08(B), the COL applicant stated, in part, that industry experience has demonstrated that a 30 minute response is not practical and provided the following justification for elimination of its 30-minute responders:

- On-shift ERO staffing does not assign fire brigade or security personnel collateral ERO functions/responsibilities.

- The complement of CCNPP 60-minute responders is significantly larger than the NUREG-0654/FEMA-REP-1, Table B-1, 30 and 60 minute response complements combined (36 versus 26).

- The staffing model includes three additional on-call public information personnel (i.e., Company Spokesperson, Public Information Director, and JIC Director) required to respond when the ERO is activated.

- Full ERO staffing includes a minimum of 27 additional personnel above the shift and duty responders. NUREG-0654/FEMA-REP-1, Table B-1, has no such equivalent.

In the July 30, 2010, response to RAI 247, Question 13.03-42A, the COL applicant provided a summary explaining how each of the major tasks/functional areas would be covered, if needed, until augmented support has arrived. The COL applicant stated that the 30-minute gaps described below are only applicable to periods outside normal working hours during plant operation. The COL applicant also stated that sufficient personnel will be on site during normal working hours and outages to perform these functions with no delay in response and a significant reduction in the augmentation time. Additional justification for the elimination of 30-minute ERO responders is a follows:

- Current on-shift staffing includes a dedicated communicator for the Notification/Communication function. This position would be required to perform any additional notifications within the 30-minute gap prior to the arrival of the 60-minute response communications positions (4 total). It is not expected that the shift communicator will perform any additional tasks for this function following the completion of initial offsite notifications prior to being relieved by the 60-minute responders. The 30-minute delay in augmentation response for this function has little to no impact on the shift position.

- Qualified on-shift personnel perform offsite dose assessment as a collateral duty until 60-minute responders arrive. The use of computerized dose-assessment applications allows shift personnel to rapidly perform basic dose assessment calculations. It is extremely unlikely that a release of radioactivity would occur within the first 60 minutes of a declared event, although if one were to occur the function would be performed during the 30 minute gap by shift personnel until relieved. The 30-minute delay in augmentation response for this function has little to no impact on the shift position.

- Offsite and onsite surveys are not performed by on-shift personnel. It is extremely unlikely that a release of radioactivity would occur within the first 60 minutes of a declared event. The 30-minute gap in the ability to perform this function at the onset of an event is not considered significant and poses no threat to the ability to perform mitigating and protective actions. Operational actions (e.g., EOPs and AOPs) are not based on offsite survey results. Station protective actions such as “Remain Sheltered in Assembly Areas” or “Evacuate” are based on existing conditions rather than specific thresholds. The 30-minute delay in augmentation response for this function has little to no impact on the shift position.

- The function of performing in-plant surveys is provided by an on-shift RP Technician. Shift personnel are provided radiation worker training and qualifications, and are issued self reading dosimetry when entering radiation areas, greatly minimizing the need for

additional dedicated in plant radiation monitoring personnel. It is unlikely that fuel damage and/or the release of radioactivity in areas not covered by the radiation monitoring system could exist within the first 60 minutes of a declared event. The 30-minute gap in the ability to perform this function at the onset of an event is not considered significant and poses no threat to the ability to perform mitigating and protective actions. The 30-minute delay in augmentation response for this function has little to no impact on the shift position.

- The on-shift STA provides plant system engineering and technical support. The need for additional rapid support in the area of core/thermal hydraulics (customarily assigned core damage assessment tasks in the early stages of an event is no longer necessary (see documents on "Elimination of Requirements for a Post Accident Sampling System (PASS)"). The early availability of this function was based on the need to determine the extent of core damage for the purposes of classification and PAR development. Current NEI 99-01 EAL schemes do not contain EAL thresholds based on an amount of core damage. Since the underlying basis for the 30-minute response position no longer exists, there is no deviation in the 30-minute gap in response time for this function.

- Electrical maintenance activities that are part of the Repair and Corrective Action function are performed by on-shift personnel as a collateral duty. The basis of this function is to (1) delay system failure, (2) accomplish repairs of minor malfunction, and (3) initiate repairs of minor damage. This capability is typically provided by Auxiliary Operators cross-trained to perform equipment repair tasks, such as high voltage operator. Due to the sophistication of EOP and AOP actions, the predominant focus of operations during the onset of an event is to place the plant in a safe and stable condition. Electrical repair activities, two of the three bases functions, are typically not part of immediate actions and are not necessary for up to several hours depending on the event. The 30-minute gap in the augmentation of this function within the first hour of an event is not considered significant or necessary. The 30-minute delay in augmentation response for this function has little to no impact on the shift position.

- Instrument and Control (I&C) maintenance activities that are part of the Repair and Corrective Action function are performed by on-shift personnel as a collateral duty. The basis for this function is the same as the electrical maintenance function. This capability is typically provided by Auxiliary Operators cross-trained to perform equipment repair tasks as stated above.

- The function of In-plant Protective Actions and major task of Radiation Protection is performed as a collateral duty by an on-shift RP and Chemistry Technician trained to perform the applicable RP tasks. The bases of this function are to provide (1) access control, (2) RP coverage for repair, corrective actions, search and rescue, first aid, and firefighting, (3) personnel monitoring, and (4) dosimetry. Personnel monitoring is no longer a necessary specialized task as current technology utilized at plants includes numerous portal monitors and personnel training for self-monitoring. Dosimetry issuance and reading is no longer a necessary specialized task as current technology utilized at plants includes self-reading electronic dosimeters with dose and dose rate alarms, which shift personnel are trained to operate and use. With the availability and use of self-indicating/alarming dosimeters and personnel monitors, dedicated RP coverage for dispatched teams is no longer necessary in all cases and can be fulfilled by the on-shift personnel during the 30-minute gap in the unlikely event it is needed.

In RAI 155, Question13.03-08(C), the staff requested that the COL applicant explain how the ERO staffing levels were adequate to respond to issues related to the use of digital I&C and information technology equipment and systems in the plant, including those in the initial stage of an accident that require expertise to deal with issues in the I&C Service Center. In a November 19, 2009, response to RAI 155, Question 13.03-08(C)), the COL applicant stated that current requirements or guidance do not address additional on shift I&C positions, and that the CCNPP Unit 3 ERO staffing levels are consistent with existing regulatory requirements for operations shift staffing. In follow-up RAI 242, Question 13.03-40(B), the staff requested that the COL applicant provide additional justification for how CCNPP Unit 3 will be safely operated without available digital I&C skills on-shift or on-call. The staff also requested that the COL applicant discuss the engineering and safety basis for an emergency response without expertise of digital I&C either on-shift or on-call, or supplement the response staffing tables to show that expertise is available. In a July 30, 2010, response to follow-up RAI 242, Question 13.03-40(B), the COL applicant stated that the on-shift individual filling the on-shift ERO position for Electrical/I&C will be task qualified to perform emergency related work on digital I&C equipment.

In follow-up RAI 299, Question 13.03-43, the staff requested that the COL applicant revisit its proposal to eliminate 30-minute responders and additional justification provided in the July 30, 2009, response to follow-up RAI 247, Question 13.03-42(A), including the current level of on-shift staffing identified in CCNPP Unit 3 Emergency Plan, Table B-1a. In a May 19, 2011, response to follow-up RAI 299, Question 13.03-43, the COL applicant stated that a formal detailed analysis will be performed for the on-shift ERO personnel in accordance with the update to 10 CFR Part 50, Appendix E, Section IV.A.9. Until that time, the technical basis for the on-shift staffing will be associated with the on-shift staffing of NUREG-0654 and industry operating experience. The COL applicant also proposed the following changes to the CCNPP Unit 3 Emergency Plan Annex, Table B-1a:

- Include on-shift dose assessment as a major task for the RP Technician.
- Include an additional RP Technician to the on-shift staffing to perform the tasks of offsite and onsite surveys.
- Include an additional Mechanical Maintenance Technician to the on-shift staffing to perform the tasks of repair and corrective actions so that an Auxiliary Operator assigned to the primary function of plant operations will not be given the function of repair and corrective actions-Mechanical Maintenance as a collateral duty.
- Include an additional Electrical/I&C Technician to the on-shift staffing to perform the tasks of repair and corrective actions so that an Auxiliary Operator assigned to the primary function of plant operations will not be given the function of repair and corrective actions-Electrical/I&C as a collateral duty.

Technical Evaluation: (Section B.5)

The staff reviewed the information contained in CCNPP Unit 3 Emergency Plan, Section B.5 and Table B-1b, and CCNPP Unit 3 Annex, Section 2.3, “Shift Emergency Response Positional Responsibilities,” including Table B-1a, for its adequacy in specifying the positions or titles, and major tasks to be performed by personnel assigned to functional areas of CCNPP Unit 3 emergency response activities. In addition, the staff reviewed this information to ensure that specific assignments were made for all shifts and plant staff members, both onsite and offsite, and the on-shift capabilities could be augmented within a short period after declaration of an

emergency consistent with the guidance in NUREG-0654/FEMA-REP-1, Table B-1, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies.

In the CCNPP Unit 3 Emergency Plan, Table B-1b, the COL applicant proposed the elimination of 30-minute emergency responders with augmented staff available in 60 minutes as long as optimum travel conditions exist. This condition for achieving augmented staffing in 60 minutes is provided in a footnote to CCNPP Unit 3 Emergency Plan, Table B-1b. In RAI 155, Question 13.03- 8(B) and in follow-up RAI 247, Question 13.03-42(A), the staff requested that the COL applicant provide additional justification for the elimination of 30-minute responders in RAI 155, Question 13.03-08(B) and in follow-up RAI 247, Question 13.03-42(A). In a May 10, 2011, response to RAI 155, Question 13.03-08(B), the COL applicant did not provide sufficient justification as to how the functions and major tasks being performed by on-shift personnel were going to be accomplished with the elimination of 30-minute responders and staff augmentation not occurring until 60 minutes after an emergency declaration. In addition, the COL applicant's statement, in part, that industry experience has demonstrated that a 30-minute response time is not practical is contrary to the guidance provided in NUREG-0654/FEMA-REP-1. The staff finds the COL applicant's July 30, 2010, response to follow-up RAI 247, Question 13.03-42(A), acceptable, in part, since it states that sufficient personnel will be on site during normal working hours and outages to perform emergency functions with no delay in response to an emergency resulting in a significant reduction in augmentation time. However, in the July 30, 2010, response to follow-up RAI 247, Question 13.03-42(A), the COL applicant did not provide sufficient justification for the elimination of its 30-minute ERO responders. In that response, the COL applicant stated, in general, that it was extremely unlikely that a release of radioactivity would occur within the first 60 minutes of a declared event and that on-shift ERO personnel could continue to perform their specified functions during the 30-minute gap until augmented support staff arrived. In addition, the COL applicant characterized the elimination of 30-minute responders as having little to no impact on shift personnel. The staff notes that the COL applicant's July 30, 2010, response to follow-up RAI 247, Question 13.03-42(A) is contrary to the guidance in NUREG-0654/FEMA-REP-1. The staff finds the COL applicant's May 19, 2011, response to RAI 299, Question 13.03-43 acceptable, in part, since it provides for additional staffing on-shift and includes clarification of collateral duties for positions performing offsite dose assessment and repair and corrective actions. With regards to the major task of dose assessment, the COL applicant states, in part, that this task can assigned to an RP Technician who can also have collateral duties of in-plant surveys, access control, radiological coverage for dispatched response teams, personnel monitoring and dosimetry. In addition, the COL applicant stated, in part, that since operational and response procedures have not been developed at this time, the basis for determining that the RP Technician will not have competing priorities is that it meets the minimum shift staffing guidance in NUREG-0654/FEMA-REP-1. The staff concludes that the COL applicant's response to RAI 299, Question 13.03-43 is contrary to the guidance in NUREG-0654/FEMA-REP-1.

In follow-up RAI 372, Question 13.03-53, the staff requested that the COL applicant remove statements in its Emergency Plan and RAI responses that refer to the "likelihood of an event occurring," the "likelihood of a radiological release," and other references to an inability to augment staffing in 60 minutes due to weather conditions and traffic. These statements do not provide the staff with assurances that the minimum on-shift and augmented staffing committed to by the COL applicant meets its site-specific needs for responding to a nuclear power plant emergency at CCNPP Unit 3. **RAI 372, Question 13.03-53 is being tracked as an open item** to track the COL applicant's acceptable resolution of this question.

However, the COL applicant's July 30, 2010, response to RAI 242, Question RAI 13.03-40(B) identified on-shift personnel as being task-qualified to perform digital I&C emergency-related work on digital I&C equipment, and conforms to the requirements of 10 CFR Part 50, Appendix E.IV.A.5. Accordingly, the staff finds the COL applicant's response acceptable.

As a result of the open item associated with RAI 372, Question 13.03-53, the staff is unable to finalize its conclusion on this section. However, the staff finds that the CCNPP Unit 3 Emergency Plan specifies the positions or titles and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments were made for all shifts and for plant staff members, both onsite and away from the site. The staff finds this portion of the CCNPP Unit 3 Emergency Plan acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.2.8 Interfaces Between Functional Areas

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.6)

This section of the report describes the interfaces between functional areas as described in the COL applicant's CCNPP Unit 3 Emergency Plan. CCNPP Unit 3 Emergency Plan, Section B.6, "Emergency Response Organization [ERO] Block Diagram," and Figures B-1a, "Overall ERO Command Structure;" B-1b, "Emergency Onsite Organization;" B-1c, "Emergency Offsite Organization;" and B-1d, "Emergency Public Information Organization," specifies and illustrates, in block diagram form, the interface among functional areas of the stations emergency response activity (including the plant (onsite) ERO, the offsite ERO, and the Public Information ERO). Key positions of the ERO, along with the supporting positions assigned to interface with Federal, State, and local authorities, are included. Figure A-1, "Licensee Emergency Response Organization Interrelationships," specifies the location of the various ERO organizations (including the TSC, Operations Support Center (OSC), Control Room, EOF, and JIC). Section 13.3C.2.3 of this report provides additional information regarding inconsistencies that existed between Section B of the CCNPP Unit 3 Emergency Plan and associated figures and tables.

Technical Evaluation: (Section B.6)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately specifies the interfaces between and among the onsite functional areas of emergency activity, licensee headquarters support, local services support, and State and local government response organization. The interfaces were illustrated in a block diagram, and included the onsite TSC, OSC, and the COL applicant's EOF. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.2.9 Corporate Support

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.7)
(10 CFR Part 50, Appendix E, Section IV.A.3)

This section of the report describes the COL applicant's corporate support as contained in CCNPP Unit 3 Emergency Plan, Section B.7, "Corporate Emergency Response Organization," which states that corporate management personnel are part of the offsite ERO and Emergency Public Information Organization described in CCNPP Unit 3 Emergency Plan, Section B.5. In addition, the COL applicant stated that they will provide necessary company resources to aid

the site with logistics support for emergency personnel (i.e., procurement of transportation, communications, lodging, meals, and any other special needs to ensure ongoing staffing of emergency facilities), technical support for planning and reentry/recovery operations, interface with high-level governmental authorities, and assistance with the release of information to the news media during an emergency. CCNPP Unit 3 Emergency Plan, Section B.5.b, "Offsite Emergency Response Organization," states that the offsite ERO consists of site personnel (with some corporate support) who are involved with emergency response efforts operating out of the EOF. Corporate support is coordinated by the Technical Support Manager, Operations Advisor, and the Administrative Support Manager. CCNPP Unit 3 Emergency Plan, Table B-1b, "Minimum Staffing Requirements for the {CCNPP Unit 3} ERO," identifies who will augment plant staff to coordinate the responsibilities described above in this section of the report.

Technical Evaluation: (Section B.7) (10 CFR Part 50, Appendix E, Section IV.A.3)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately specifies the corporate management, administrative, and technical support personnel that will augment the plant staff during emergency events. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and the requirements of 10 CFR Part 50, Appendix E.

13.3C.2.10 Contractor and Private Organizations Support

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.8) (10 CFR Part 50, Appendix E, Section IV.A.5)

This section of the report describes the contractor and private organization support to for the COL applicant as provided in their emergency plan. CCNPP Unit 3 Emergency Plan, Section B.8, "Industry/Private Support Organizations," provides a description of organizations and services provided that may be called upon for assistance in the event of an emergency. Industry/private organizations available to provide services to CCNPP include the Institute of Nuclear Power Operations, Nuclear Energy Institute, American Nuclear Insurers, Fort Smallwood Radiological Environmental Monitoring Programs Laboratory, DOE Radiation Emergency Assistance Center/Training Site (REAC/TS), and AREVA Manufacturer Design and Engineering Support. CCNPP Unit 3 Emergency Plan, Section B.5 and Section 13.3C.2.7 of this report describe, by position and function to be performed, employees of the licensee with special qualifications for coping with emergency conditions that may arise (e.g., Digital I&C personnel.)

Technical Evaluation: (Section B.8) (10 CFR Part 50, Appendix E, Section IV.A.5)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately specifies the contractor and private organizations that may be requested to provide technical assistance to, and augmentation of, the ERO. The staff also finds that the CCNPP Unit 3 Emergency Plan adequately identifies, by position and function to be performed, other employees of the licensee with special qualifications for coping with emergency conditions that may arise or other persons with special qualifications, such as consultants, that are not employees of the licensee, and that may be called upon for assistance for emergencies. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements 10 CFR Part 50, Appendix E.

13.3C.2.11 Local Emergency Response Support

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section B.9) (10 CFR Part 50, Appendix E, Section IV.A.6)

This section of the report describes the local emergency response support available to the COL applicant as contained in their emergency plan. CCNPP Unit 3 Emergency Plan, Section B.9, "Supplemental Emergency Assistance to the ERO," and Appendix 3, "Letters of Agreements (Certification Letters)," state, in part, that the agreements are maintained with outside support agencies that provide assistance when called on during an emergency at CCNPP. These support agencies (identified in CCNPP Unit 3 Emergency Plan, Appendix 3) include the local services of law enforcement, fire protection, ambulance services, and medical and hospital support. CCNPP Unit 3 Emergency Plan, Section B.9 also states that these agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for the exchange of information. Transportation and treatment of injured site personnel, including those contaminated are described in CCNPP Unit 3 Emergency Plan, Section L, "Medical and Public Health Support." CCNPP Unit 3 Emergency Plan, Section B.2 states, in part, that counties have emergency response plans that specify the responsibilities and functions for the major agencies, departments, and key individuals of the ERO.

Technical Evaluation: (Section B.9) (10 CFR Part 50, Appendix E, Section IV.A.6)

The staff reviewed FEMA's IFR for reasonable assurance (RA), regarding the adequacy of offsite emergency response plans for local government authorities. By letter dated April 6, 2010, "Federal Emergency Management Agency's (FEMA) Interim Finding Report (IFR) for Reasonable Assurance (RA) of the Offsite Emergency Response Plans for the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License (COL) Application," FEMA stated, in part, that it has determined that based on its thorough review of plans submitted, and the currently available offsite plans and procedures for the 16.1 km (10 mi) EPZ, as well as the 80 km (50 mi) EPZ plans are adequate and there is reasonable assurance that the plans can be implemented with no corrections needed. In addition, FEMA states, in part, that each plan specifies the functions and responsibilities for major elements and key individuals of emergency response. Both the Maryland REP and county plans detail the legal basis for assigning local responsibility for emergency response. Written agreements are available from agencies and procedures from support organizations having an emergency response role with the EPZ are available.

The staff finds that the CCNPP Emergency Plan adequately identified, or provided reference to, the services to be provided by local agencies for handling emergencies (e.g., police, ambulance, medical, hospital, and fire-fighting organizations). The staff also finds that the CCNPP Emergency Plan adequately incorporates, or provides reference to, information about the emergency response roles of supporting organizations and offsite agencies. The staff finds that the information in the onsite emergency plan is sufficient to provide assurance of coordination among the support groups and with the licensee. The staff considers this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 and meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.2.12 Conclusions

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's revised CCNPP Unit 3 Emergency Plan addressing **RAI 372, Question 13.03-53 which is being tracked as an open item**, and its review of the onsite emergency plan for

onsite emergency organization as described above. The staff is unable to make a final determination whether the information provided in the CCNPP Unit 3 Emergency Plan is acceptable and meets the requirements of 10 CFR 50.47(b)(2) and complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard B and the applicable portions of 10 CFR Part 50, Appendix E as described above.

13.3C.3 Emergency Response Support and Resources

13.3C.3.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(3), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Emergency Response Support and Resources," 10 CFR Part 50, Appendix E.

13.3C.3.2 Person Authorized to Request Federal Support

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section C.1.a)

This section of the report identifies the person authorized to request Federal support as contained in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section C.1, "Federal Response Support and Resources," states that CCNPP Unit 3 Emergency Plan, Sections A and B identify the specific individuals by title who are authorized to request Federal assistance during an emergency. CCNPP Unit 3 Emergency Plan, Section B.5.a, "Plant Emergency Response Organization," states that the initial liaison with Federal, State, and local authorities is performed by the Plant ERO. CCNPP Unit 3 Emergency Plan, Section B.5.b.1, "Emergency Director," states that the Emergency Director is responsible to ensure Federal and other agencies remain cognizant of the emergency status. In RAI 155, Question 13.03-09(B), the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan who (by title) the licensee staff authorized to request Federal assistance. In a November 19, 2009, response to RAI 155, Question 13.03-09(B), the COL applicant stated that CCNPP Unit 3 Emergency Plan, Section B.5.b.a identifies the Emergency Director as responsible for requesting non licensee [including Federal] assistance when needed.

Technical Evaluation: (Section C.1.a)

The staff finds the clarification provided in the November 19, 2009, response to RAI 155, Question 13.03-09(B) acceptable since it conforms to the guidance in NUREG-0654/FEMA-REP-1. Accordingly, the staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses the person authorized to request Federal support. The staff considers this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.3.3 Expected Assistance from State, Local, and Federal Agencies

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section C.1.b) (10 CFR Part 50, Appendix E, Section IV.A.7)

This section of the report identifies the expected assistance from State, local, and Federal agencies based on information provided in the COL applicant's emergency plan for CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section A describes the licensee interactions with

Federal, State, and local organizations that will be providing assistance in an emergency and their responsibilities. CCNPP Unit 3 Emergency Plan, Section A.2 states that the State and counties have emergency response plans that specify the responsibilities and functions for the major agencies, departments and key individuals of their ERO. CCNPP Unit 3 Emergency Plan, Section C.1 states that assistance is available from Federal agencies through the National Response Framework with the NRC as the lead agency. CCNPP Unit 3 Emergency Plan, Section C.1.b states that Federal agencies that may provide assistance in direct support of the Licensee in the event of an accident are in CCNPP Unit 3 Emergency Plan, Section A. If needed, Federal resources are made available to the licensee in an expeditious and timely manner.

Technical Evaluation: (Section C.1.b) (10 CFR Part 50, Appendix E, Section IV.A.7)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies the assistance expected from appropriate State, local, and Federal agencies with responsibilities for coping with emergencies. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 and meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.3.4 Resources to Support the Federal Response

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section C.1.c)

This section of the report identifies the resources to support the Federal response based on information provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section C.1.c, "Federal Response Support and Resources," states that equipment and communications capabilities are available during emergency conditions to maintain a high level of response, interaction, and communication among key individuals during emergency conditions. The emergency facilities are able to accommodate Federal representatives with working areas provided for their use. The CCNPP Unit 3 Emergency Plan identifies the number of Federal representatives each emergency facility is able to accommodate. CCNPP Unit 3 Emergency Plan, Section F, "Emergency Communications," provides a detailed description of voice and data communications available to ensure a reliable and timely exchange of information with Federal response organizations.

Technical Evaluation: (Section C.1.c)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for incorporating the Federal response capability into its operation plan; including specific licensee, State and local resources available to support the Federal response. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.3.5 Representatives to Offsite Governments

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section C.2.b)

This section of the report for emergency preparedness describes the dispatch of a COL applicant representative to offsite governmental EOCs as contained in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section C.2, "Liaisons," states that accommodations have been provided for NRC, FEMA, and State(s) representatives in the EOF. CCNPP Unit 3 Emergency Plan, Section C.2 also states that if requested by State or local EOCs, licensee personnel may be assigned as technical liaisons. CCNPP Unit 3 Emergency

Plan, Section H.2, “Emergency Operations Facility (EOF),” states, in part, that the EOF was designed with consideration for coordination with Federal, State, and local organizations and is of sufficient size to accommodate State and local staff. CCNPP Unit 3 Emergency Plan, Section B.5.b.13, “EOC Communicator,” states that the Emergency Operations Center (EOC) Communicator has the responsibility of coordinating and dispatching EOC liaisons as needed.

Technical Evaluation: (Section C.2.b)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses the dispatch of a representative to principal offsite governmental EOCs. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.3.6 Radiological Laboratory Support

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section C.3)

This section of the report for emergency preparedness describes the radiological laboratory support as contained in the COL applicant’s emergency plan. CCNPP Unit 3 Emergency Plan, Section C.3, “Radiological Laboratories,” describes the onsite laboratory capabilities for chemical and radiological analysis as well as contracted/backup laboratory services. In RAI 155, Questions 13.03-09(C) and 13.03-13(D), the staff requested that the COL applicant provide additional information regarding the location, availability, and description of offsite radiological laboratory services in the CCNPP Unit 3 Emergency Plan. In addition, the staff requested that the COL applicant provide cooperative agreements for utilizing these services, as appropriate. In a November 19, 2009, response to RAI 155, Questions 13.03-09(C) and 13.03-13(D), the COL applicant stated that the CCNPP Unit 3 Emergency Plan will be revised to reflect the offsite laboratory capabilities that can be provided by CCNPP Units 1 and 2 in the event that the CCNPP Unit 3 laboratory is unavailable or the offsite monitoring and environmental sampling operation exceeds the CCNPP Unit 3 capacity during an emergency. The CCNPP Units 1 and 2 capabilities include the radionuclide identification in various sample media, including the analysis and measurement of samples taken within the plant site and offsite environment. In addition, the COL applicant stated that a fixed counting laboratory in the Fort Smallwood Road Shops Complex, maintained by Constellation Generation Group, can be utilized to assist with environmental analysis. The COL applicant provided a brief description of services offered by this lab and stated that the laboratory is available within 2 hours and includes the capability to process dosimetry, offer radiological environmental monitoring equipment and sample media, provide for radiological environmental consulting, or perform radiological environmental sampling, and analysis of soil, water, air, and vegetation. Outside analytical assistance may also be requested from State and Federal agencies. In a July 29, 2010, response to RAI 245, Question 13.03-41, the COL applicant committed to obtaining Letter of Agreement (LOA) with Constellation Power, Inc., for the services to be provided at the Fort Smallwood laboratory. The COL applicant proposed EP ITAAC 1.1 in Part 10, Table 2.3-1, of the COL application to verify that LOAs are provided to the NRC for all organizations listed in CCNPP Unit 3 Emergency Plan, Appendix 3, including Constellation Power, Inc., no less than 180 days prior to initial fuel load.

Technical Evaluation: (Section C.3)

The staff finds the proposed additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Questions 13.03-09(C), 13.03-13(D), and follow-up RAI 245, Question 13.03-41 acceptable since they conform to the guidance in NUREG 0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan,

Revision 7 incorporated the additional information and textual changes provided in the November 19, 2009, response to RAI 155, Questions 13.03-09(C), 13.03-13(D), and follow-up RAI 245, Question 13.03-41. Therefore, the staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies radiological laboratories and their general capabilities and expected availability to provide radiological monitoring and analyses services which can be used in an emergency. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

13.3C.3.7 Other Sources of Assistance

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section C.4)

This section of the report describes other sources of assistance for the COL applicant as provided in their emergency plan. CCNPP Unit 3 Emergency Plan, Section C.4, "Other Assistance," describes the assistance to be provided by Institute of Nuclear Power Operations (INPO) and American Nuclear Insurers (ANI). Through INPO, other companies operating nuclear facilities are available to provide certain types of assistance and support, including technicians, engineering and design consultation, whole body counting, and dosimetry evaluation/equipment. In addition, the COL applicant states that support is provided as specified in written agreements as identified by CCNPP Unit 3 Annex, Appendix 3 (e.g., Calvert Memorial Hospital and Solomon's Island Fire and Rescue).

Technical Evaluation: (Section C.4)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies the other sources of assistance expected to support any emergency response. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.3.8 Conclusions

Based on its review of the onsite Emergency Plan as described above for the emergency response support and resources, the staff concludes the information provided in the CCNPP Unit 3 Emergency Plan acceptable and meets the requirements of 10 CFR 50.47(b)(3) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard C and the applicable portions of 10 CFR Part 50, Appendix E, as described above.

13.3.C.4 Emergency Classification System

13.3C.4.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(4), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed CCPP Unit 3 Emergency Plan against applicable regulatory requirements related to the area of "Emergency Classification System," in 10 CFR Part 50, Appendix E.

13.3C.4.2 Emergency Classification System

Technical Information in the CCNPP Unit 3 Emergency Plan: (Sections D.1. and D.2) (10 CFR Part 50, Appendix E, Section IV.B, and 10 CFR Part 50, Appendix E, Section IV.C)

This section of the report describes the emergency classification system as contained in the COL applicant's emergency plan for CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section D, "Emergency Classification System," provides a description of the emergency classification and EAL scheme, which is based on plant systems, effluent parameters, and operating procedures.

CCNPP Unit 3 Emergency Plan Annex, Section 3, "Classification of Emergencies," states, in part, that the EAL scheme for CCNPP is based on NEI 99-01, "Methodology for Development of Emergency Action Levels," Revision 5, approved for use by the NRC or the most current endorsed version available at the time of the EAL submittal. The EALs will be written with no deviations other than those attributable to specific U.S. EPR reactor design considerations.

In RAI 81, Question 13.03-04 and follow-up RAI 155, Question 13.03-10, the staff requested that the COL applicant address its plans to finalize the CCNPP Emergency Classification and Action Level Scheme using specific NRC-endorsed guidance since certain aspects of the EAL scheme are not yet available until plant construction is complete (e.g., equipment set points). In a November 19, 2009, response to RAI 155, Question 13.03-10, the COL applicant withdrew its prior submittal and provided a revised overview of its emergency action level scheme including definitions of four emergency classifications (e.g., Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency), with a general list of licensee actions at each emergency classification level. In addition, the COL applicant proposed a License Condition to create a fully developed set of EALs in accordance with NEI 99-01, Revision 5, and submit to the NRC for confirmation at least 180 days prior to initial fuel load, which will include the following deviations:

- NEI 99-01 Revision 5 EALs (SU3, SA4 and SS6), loss of safety system annunciation/indication are not applicable to the U.S. EPR plant design and are therefore deleted.

- CCNPP will replace Initiating Conditions (ICs) for SA4 and SS6 in the final Emergency Action Level Bases Document for Unit 3. These ICs will be applicable to CCNPP Unit 3 Digital Instrumention and Controls (DI&C).

The EALs will reside in a technical basis document by which the COL applicant committed to control consistent with the CCNPP Unit 3 Emergency Plan pursuant to 10 CFR 50.54(q).

In follow-up RAI 242, Question 13.03-40 and follow-up RAI 299, Question 13.03-45, the staff requested that the COL applicant provide site-specific EALS representative of the U.S. EPR design, consistent with the format of NEI 99-01, Revision 5, for loss of digital I&C; provide additional justification to support its decision to delete the fission product barrier EAL initiating Condition 2.C; and revise its proposed License Condition to remove the language referring to deviations attributable to specific U.S. EPR reactor design considerations. In a July 30, 2010, response to RAI 242, Question 13.03-40, and in a May 19, 2011, response to RAI 299, Question 13.03-45, the COL applicant stated, in part, that U.S. EPR EALs will not be provided at this time but will be provided after COL approval and at least 180 days prior to initial fuel load. In addition, the COL applicant stated that the statement, "The submitted EALs will be written

with no deviations other than those attributable to specific U.S. EPR reactor design considerations," is contained in the CCNPP Emergency Plan Annex and remains correct and appropriate until the EALs are submitted and approved. The COL applicant provided additional justification for deletion of fission product barrier initiating Condition 2.C.

Technical Evaluation: (Sections D.1 and D.2) (10 CFR Part 50, Appendix E, Section IV.B and 10 CFR Part 50, Appendix E, Section IV.C)

The staff finds the COL applicant's definition of the four emergency classifications (NOUE, Alert, SAE, GE) introduced in CCNPP Unit 3 Emergency Plan, Section D acceptable because the definitions are consistent with the emergency classifications described in 10 CFR Part 50, Appendix E, and defined verbatim with the NRC-endorsed guidance in NEI 99-01, Revision 5, which includes security-based events. The staff finds the licensee actions listed for each emergency classification in CCNPP Unit 3 Emergency Plan, Section D acceptable because the actions conform to the guidance in Planning Standard D and NUREG-0654/FEMA-REP-1, Appendix 1. The staff finds the COL applicant's commitment to place the completed set of EALs in a technical basis document controlled pursuant to 10 CFR 50.54(q) in CCNPP Unit 3 Emergency Plan Annex, Section 3.2, "Maintenance of Emergency Action Levels," acceptable because it meets the requirement of 10 CFR 50.54(q).

Based on the COL applicant's April 14, 2009, responses to RAI 81, Question 13.03-4 and the November 19, 2009, response to RAI 155 Question 13.03-10, RAI 242, Question 13.03-40, and RAI 299, Question 13.03-45, the staff determined that the additional information, clarification, and textual revisions provided by the COL applicant are acceptable in part. However, the staff needs additional information regarding the COL applicant's deviations from NEI 99-01, Revision 5, specific to EALs associated with the loss of digital I&C and the deletion of fission product barrier initiating Condition 2.C. to complete its review of the CCNPP Unit 3 Emergency Plan, including Enclosure A (State and Local Government Agreement Documentation), Emergency Plan Annex, License Condition 8 related to EALs (Part 10 of the COL application) and EP ITAAC. **Follow-up RAI 372, Question 13.03-54 is being tracked as an open item**.

13.3C.4.3 Emergency Action Levels Review by State and Local Authorities

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.B)

This section of the report describes the review of emergency action levels by State and local authorities as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section D.3, "Offsite Classification System," states that the initial EALs will be discussed with and agreed upon by the State and local authorities and approved by the NRC. Thereafter, the content of the EALs shall be reviewed with the State and local authorities on an annual basis. In RAI 237, Question 13.03-39, the staff requested that the COL applicant obtain letters of certification from State and local governments within the Emergency Planning Zone to certify that the proposed set of EALs for CCNPP Unit 3 have been discussed with and agreed to by those governments, or propose a license condition that the EALs will have been discussed and agreed to by those governments prior to the first exercise and no later than 180 days prior to initial fuel load. In a May 19, 2010, response to RAI 237, Question 13.03-39, the COL applicant stated, in part, that consistent with 10 CFR Part 50, Appendix E, the EALs were discussed with the appropriate offsite agencies on November 29, 2007, and letters of certification affirming their review will be provided as COL application Part 5, Enclosure A. In follow-up RAI 372, Question 13.03-54, the staff requested that the COL applicant revise the proposed license

condition described in Section 13.3C.4.2 of this report to facilitate State and local government review and approval of the final EALs submitted to the NRC. **Follow-up RAI 372, Question 13.03-54 is being tracked as an open item**.

Technical Evaluation: **(10 CFR Part 50, Appendix E, Section IV.B)**

The staff finds the information provided in CCNPP Unit 3 Emergency Plan, Section D.3 acceptable because it requires the COL applicant to review the initial set of EALs with State and local government authorities and obtain their agreement with these EALs. In addition, the CCNPP Unit 3 Emergency Plan requires an annual review with State and local authorities. The staff finds this acceptable because it meets the requirements of 10 CFR Part 50, Appendix E.

Based on the COL applicant's May 19, 2010, response to RAI 237, Question 13.03-39, the staff determined that the additional information and textual revisions to the CCNPP Unit 3 Emergency Plan, including Enclosure A, are not acceptable. The initial set of EALs reviewed by the staff during the November 29, 2007, meeting between the COL applicant and State and local government officials were incomplete. Therefore, the letters provided by these government officials certifying their review and agreement of the CCNPP Unit 3 EALs is invalid. The staff needs additional information regarding the State and local governments review and agreement of the CCNPP Unit 3 EALs once the COL applicant has submitted all required information to the NRC, including its proposed deviations from NEI 99-01, Revision 5. At this time, the CCNPP Unit 3 Emergency Plan can be appropriately amended and the staff can continue its review.

13.3C.4.4 Conclusions

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's revised emergency plan addressing the open items in follow-up RAI 372, Question 13.03-54, for the emergency classification system discussed above. The staff is unable to make a final determination whether the CCNPP Unit 3 Emergency Plan, including Enclosure A, the CCNPP Unit 3 Emergency Plan Annex, Part 10 of the COL application (License Condition 8 and EP ITAAC), evaluated in Section 13.3C.19 of this report) and related documents identified above are acceptable and meet the requirements of 10 CFR 50.47(b)(4),conform to the guidance in NUREG-0654/FEMA-REP-1, Evaluation Criterion D, and meet the applicable portions of 10 CFR Part 50, Appendix E as described above.

13.3C.5 Notification Methods and Procedures

13.3C.5.1 Regulatory Basis

To determine whether the proposed CCNPP Unit 3 Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(5), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed CCNPP Unit 3 Emergency Plan against applicable regulatory requirements related to the area of "Notification Methods and Procedures," in 10 CFR Part 50, Appendix E and 10 CFR 50.72 (Parentheses identify other applicable regulatory requirements).

13.3C.5.2 Notification Procedures, Capabilities, and Agreements

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section E.1) (10 CFR Part 50, Appendix E, Section IV.D.1 and D.3)

This section of the report describes the notification procedures, capabilities, and agreements as contained in the COL applicant's CCNPP Unit 3 Emergency Plan. CCNPP Unit 3 Emergency Plan, Section E.1, "Bases for Emergency Response Organization Notification," states that the licensee, in cooperation with State and local authorities, has established mutually agreeable methods and procedures for notification of offsite response organizations consistent with the emergency classification and action level scheme. Additional information regarding the emergency classification and action level scheme is described in CCNPP Unit 3 Emergency Plan, Section D and Section 13.3C.4 of this report. Notifications to offsite agencies include a means to verify or authenticate such as the use of dedicated communications networks, verification code words, or providing call back verification phone numbers. CCNPP Unit 3 Emergency Plan, Section E.2, "Notification and Mobilization of Emergency Response Personnel," states, in part, that emergency implementing procedures are established for the notification of State/local agencies within 15 minutes of the initial emergency classification, an escalation in classification, the issuance or change of a protective action recommendation (PAR), or changes in radiological release status (occurring outside of an event classification or PAR notification), using a dedicated notification system or a commercial telephone line. CCNPP Unit 3 Emergency Plan, Section E.2.b.2 states that the State and local authorities are responsible for notification of the general public. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," indentifies procedure EP-AN-400, "Emergency Notifications." The COL applicant proposed EP ITAAC 3.1 to test that the means exists to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency.

Technical Evaluation: (Section E.1) (10 CFR Part 50, Appendix E, Section IV.D.1 and D.3)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately refers to procedures which describe mutually agreeable bases for notification of response organizations and conforms to the emergency classifications as set forth in NUREG-0654/FEMA-REP-1, Appendix 1, "U.S. Nuclear Regulatory Commission Emergency Action Level Guidelines for Nuclear Power Plants." These procedures include the means for verification of messages. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements in 10 CFR Part 50, Appendix E. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

13.3C.5.3 Notification and Activation of the Emergency Response Organization

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section E.2) (10 CFR Part 50, Appendix E, Section IV.C)

This section of the report describes the notification and activation of the emergency response organization as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section E.2, "Notification and Mobilization of Emergency Response Personnel," states the State/local agencies are notified within 15 minutes of an emergency event using a dedicated notification system or a commercial telephone line as backup. Onsite personnel are notified over the public address (PA) system. The COL applicant proposed EP ITAAC 3.2 to test that both primary and back-up means exist to notify emergency response personnel.

Technical Evaluation: (Section E.2) (10 CFR Part 50, Appendix E, Section IV.C)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses procedures to alert, notify, and mobilize emergency response personnel. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements in 10 CFR Part 50, Appendix E. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

13.3C.5.4 Initial Message Content to Offsite Response Organizations

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section E.3) (10 CFR Part 50, Appendix E, Section IV.A.4 and IV.C)

This section of the report describes the initial message content to offsite response organizations as contained in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section E.3, "Initial Notification Message," states that contents of the initial notification message form transmitted during a classified emergency includes, among other items, the event classification, whether a release is taking place, potentially affected populations and areas, and whether protective measures may be necessary. CCNPP Unit 3 Emergency Plan, Section E.3 also states that the licensee, in conjunction with State and local authorities, have established the notification form contents.

Technical Evaluation: (Section E.3) (10 CFR Part 50, Appendix E, Section IV.A.4 and IV.C)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes the contents of the initial emergency messages to be sent from the plant. These messages contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary. The staff finds this acceptable because it meets the requirements of 10 CFR Part 50, Appendix E, and conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.5.5 Follow-up Messages to Offsite Response Organizations

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section E.4)

This section of the report describes the follow-up message content to offsite response organizations as contained in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section E.4, "Follow-up Messages," states follow-up notifications are provided to State authorities on a prearranged frequency and to the NRC Operations Center within 1 hour of new significant information. CCNPP Unit 3 Emergency Plan, Section E.4 also includes a list of follow-up message contents consistent with NUREG-0654, Evaluation Criterion E.4.

Technical Evaluation: (Section E.4)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for follow-up messages from the facility to offsite authorities. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.5.6 Notification of the Public

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section E.6)

This section of the report describes notification of the public as contained in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section E.6, "Notification of the Public," describes the capabilities for prompt notification of the general public within the Plume Exposure Pathway emergency planning zone (EPZ). It consists primarily of the Public Alert and Notification System (PANS) and the Emergency Alert System (EAS). The PANS consists of fixed sirens and "may" also include Tone Alert Radio, Reverse 911 calling, and vehicles with public address systems. In RAI 372, Question 13.03-55, the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan whether the capability to alert the public of an emergency at CCNPP Unit 3 exists and will be implemented through the use of tone alert radios, reverse 911 calling, and vehicles with public address systems, in addition to a system of fixed sirens. The EAS is a network of local radio stations. COL application, Part 5, "CCNPP Unit 3 Impact to CCNPP Units 1 & 2 Emergency Preparedness Program Evaluation," states that all units will share the Alert and Notification System (ANS). The COL applicant proposed EP ITAAC Acceptance Criteria 3.3 to confirm the means to notify and provide instructions to the populace within the plume exposure EPZ.

Technical Evaluation: (Section E.6)

Based on the staff's review of the CCNPP Unit 3 Emergency Plan, the staff needs additional information from the COL applicant to clarify whether other means to alert the public of an emergency exists and are being implemented in addition to a series of fixed sirens within the 16-km (10-mi) Plume Exposure Pathway EPZ. Therefore, in RAI 372, Question 13.03-55, staff requested that the COL applicant address this issue. **RAI 372, Question 13.03-55 is being tracked as an open item**.

As a result of the open item in RAI 372, Question 13.03-55 discussed above, the staff is unable to finalize its conclusions on this section. However, the staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes administrative and physical means, and the time required to notify and provide prompt instructions to the public in the plume exposure pathway EPZ. The staff finds this acceptable because it conforms to the guidance of NUREG 0654/FEMA-REP-1. The staff evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

13.3C.5.7 Written Messages to the Public

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section E.7)

This section of the report describes written messages to the public as contained in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section E.7, "Notification of the Public," states that the EAS messages for the public, which have been developed by respective States, are consistent with the licensee's classification scheme and are included in State emergency plans. These draft messages contain instructions with regard to specific protective actions to be taken by occupants and visitors of affected areas. The messages may include instructions/directions to the public for sheltering, evacuation, or ad-hoc respiratory protection.

Technical Evaluation: (Section E.7)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes written messages intended for the public. In particular, draft messages to the public providing

instructions with regard to specific protective actions to be taken by occupants of affected areas were prepared. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.5.8 Notification of the NRC

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.A.4, 10 CFR 50.72(a)(3), and 10 CFR 50.72(c)(3))

This section of the report describes notification of the NRC as contained in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section E, "Notification Methods and Procedures," discusses exchanges of information (including offsite dose projects and PARs) with offsite authorities. CCNPP Unit 3 Emergency Plan, Section E.2.b.2, "Nuclear Regulatory Commission (NRC)," states that the NRC Operations Center is notified immediately after State and local notifications and within 1 hour of the time of initial classification, escalation, termination, or entry into the recovery phase. CCNPP Unit 3 Emergency Plan, Section E.4, "Follow-up Messages," states that, if requested, the licensee will maintain an open, continuous communications channel with the NRC Operations Center.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.A.4, 10 CFR 50.72(a)(3))

The staff finds that the CCNPP Unit 3 Emergency Plan states that the licensee will notify the NRC immediately after notification of the appropriate State or local agencies and no later than 1 hour after the time the licensee declares one of the Emergency Classes. The staff finds this acceptable because it meets the requirements in 10 CFR 50.72(a)(3) and 10 CFR Part 50, Appendix E.

(10 CFR 50.72(c)(3))

The staff finds that the CCNPP Unit 3 Emergency Plan states that, with respect to the telephone notifications made under 10 CFR 50.73(a) and (b), in addition to making the required initial notification, adequate provisions have been made that upon request of the NRC an open and continuous communication channel with the NRC will be maintained. The staff finds this acceptable because it meets the requirements in 10 CFR 50.72(c)(3).

13.3C.5.9 Conclusions

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's revised emergency plan addressing the open item in RAI 372, Question 13.03-55, and the staff's review of the CCNPP Unit 3 Emergency Plan. The staff is unable to make a final determination whether the information provided in the CCNPP Unit 3 Emergency Plan regarding notification methods and procedures is acceptable, meets the requirements of 10 CFR 50.47(b)(5), conforms to the guidance in NUREG-0654/FEMA-REP-1, Evaluation Criterion E, the applicable portions of 10 CFR Part 50, Appendix E, and meets the requirements of 10 CFR 50.72(a)(3) and (c)(3) as described above.

13.3C.6 Emergency Communications

13.3C.6.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(6), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed CCNPP Unit 3 Emergency Plan against applicable regulatory requirements related to the area of "Emergency Telecommunications," in 10 CFR Part 50, Appendix E, and Generic Letter (GL) 91-14.

13.3C.6.2 Content of the Emergency Communications Plan

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.1.a)

This section of the report describes the content of the emergency communications plan as provided in the COL applicant's emergency plan. The emergency communications systems and aspects of the dedicated offsite notification system and local commercial telephone system are described in the subsections which follow.

CCNPP Unit 3 Emergency Plan, Section F.1, "Communications/Notifications," describes the emergency communications system. Normal and dedicated telephone lines, microwave and fiber-optic voice channels, cell phones, satellite phones, base and mobile radio units, and computer peripherals are examples of identified communications systems. CCNPP Unit 3 Emergency Plan, Section F.1 also states that the Control Room, TSC, and EOF have the capability to make initial notifications to State and local warning points and Emergency Operations Centers (EOCs) 24-hours per day through use of a dedicated offsite notification system. Backup alternate notification methods include facsimile and commercial telephone lines. COL FSAR Section 9.5.2, "Communication System," discusses backup power, including an uninterruptible power supply system, for communications systems. CCNPP Unit 3 Emergency Plan, Figure F-1, "Notification Scheme (For Full Augmentation)," identifies notification paths and titles of individuals responsible for sending and receiving notifications from the licensee to Federal, State, and local emergency response organizations.

Technical Evaluation: (Section F.1.a)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses communication plans for emergencies provides for 24-hour per day notification to and activation of the State/local emergency response network; and at a minimum, a telephone link and alternate, including 24-hour per day manning of communications links that initiate emergency response actions. The staff considers these actions acceptable because they conform to the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.1.b)

CCNPP Unit 3 Emergency Plan, Section F.1, "Communications/Notifications," identifies the dedicated offsite notification system and local commercial telephone system as communication systems established to ensure reliable and timely exchange of information between the site CR, TSC, EOF, and State and local agencies within the EPZs.

Technical Evaluation: (Section F.1.b)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses provisions for communications with State and local governments within the EPZs. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA–REP-1.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.1.c)

CCNPP Unit 3 Emergency Plan, Section F.1, "Communications/Notifications," identifies the local commercial telephone system, Emergency Response Data System (ERDS), Emergency Notification System (ENS), and Health Physics Network (HPN) as communication systems established to ensure reliable and timely exchange of information between the CCNPP Unit 3 site's CR, TSC, and EOF, and Federal EROs. In RAI 155, Question 13.03-11(A), the staff requested that the COL applicant address the provisions for communication with Federal EROs other than the NRC, such as the U.S. Coast Guard, in the CCNPP Unit 3 Emergency Plan. In a November 19, 2009, response to RAI 155, Question 13.03-11(A), the COL applicant stated that CCNPP Unit 3 Emergency Plan, Section F.1 will be revised to state that commercial lines are used for non-dedicated communications to offsite groups and organizations.

Technical Evaluation: (Section F.1.c)

The staff finds the additional information and textual revisions submitted in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-11(A) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that the CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-11(A). Accordingly, the staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses provisions for communications as needed with Federal emergency response organizations. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.1.d)

CCNPP Unit 3 Emergency Plan, Section F.1.b-d.6, "Monitoring Team Communications," states that a separate communication system allows communications between monitoring team mobile units and the site's CR, TSC, and EOF. Backup communications for monitoring teams are through use of commercial cell phones. Site radios, pagers, and public address system may also be used. The COL applicant proposed EP ITAAC 4.1 to test the capabilities that verify the means exist for communications among the CR, TSC, OSC, EOF, principal State and local EOCs, and radiological field assessment teams.

Technical Evaluation: (Section F.1.d)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the communication plans that included provisions for emergency communications between the nuclear facility and the EOF, State and local EOCs, and radiological monitoring teams. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.1.e)

CCNPP Unit 3 Emergency Plan, Section F.1, "Communications/Notifications," states the automated ERO notification system, consisting of a computer with the capability to initiate and receive telephone calls and activate pagers, is used to rapidly notify ERO members. Implementing procedures include actions should the ERO notification system fail. In RAI 155, Question 13.03-11(B), the staff requested that the COL applicant provide a procedure title in CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654."

In a November 19, 2009, response to RAI 155, Question 13.03-11(B), the COL applicant stated that the procedure that includes actions during an ERO notification system failure is, "EP-AN-400, Emergency Notification." The procedure is referenced in CCNPP Unit 3 Emergency Plan, Appendix 2.

Technical Evaluation: (Section F.1.e)

The staff finds the clarification provided in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-11(B) acceptable because it conforms to the guidance in NUREG-0654/FEMA–REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the emergency communication plans that include provision for alerting or activating emergency personnel in each response organization. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.1.f)

CCNPP Unit 3 Emergency Plan, Section F.1, "Communications/Notifications," identifies the local commercial telephone system, ERDS, ENS, and HPN as communication systems established to ensure reliable and timely exchange of information between the CCNPP Unit 3 site's CR, TSC, and EOF and the NRC. CCNPP Unit 3 Emergency Plan, Evaluation Criteria F.1.d above discusses communications among monitoring team mobile units and the CR, TSC, and EOF. The COL applicant proposed EP ITAAC 4.2 to test the communications capabilities from the CR, TSC, and EOF to the NRC headquarters and regional office EOCs (including establishment of the ERDS (or its successor system) between the onsite computer system and the NRC Operations Center).

Technical Evaluation: (Section F.1.f)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the communication plans for emergencies and addresses provisions for communication by the licensee with NRC headquarters and NRC Regional Office Emergency Operations Centers and the EOF and radiological monitoring team assembly area. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.E.9 (a-d))

CCNPP Unit 3 Emergency Plan, Section F.1, "Communications/Notifications," identifies the dedicated offsite notification system and local commercial telephone system as communication systems established to ensure reliable and timely exchange of information between the CCNPP Unit 3 site's CR, TSC, and EOF and State and local warning points within the EPZs 24 hours per day. COL FSAR Section 9.5.2, "Communication System," discusses backup power, including an uninterruptible power supply system, for communications systems. CCNPP Unit 3 Emergency Plan, Section F.1 also identifies the local commercial telephone system, ERDS, ENS, and HPN as communication systems established to ensure reliable and timely exchange of information between the site's CR, TSC, and EOF and Federal EROs. In RAI 155, Question 13.03-11(A), the staff requested that the COL applicant provide additional information related to provisions for communication with Federal EROs. In a November 19, 2009, response to RAI 155, Question 13.03-11(A), the COL applicant stated that CCNPP Unit 3 Emergency

Plan, Section F.1 will be revised to state that commercial lines are used for non-dedicated communications to offsite groups and organizations.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.E.9 (a-d))

The staff finds the additional information and textual revisions submitted in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-11(A) acceptable because it meets the requirements described in 10 CFR Part 50, Appendix E. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 adequately states that at least one onsite and one offsite communications systems exist, and that each system has a backup power source. The staff finds this acceptable because it meets the requirements described in 10 CFR Part 50, Appendix E.

In addition, the COL applicant's communication plans have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication. Consistent with the function of the governmental agency, these arrangements include:

1. Provisions for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly.

2. Provisions for communications with Federal EROs. Such communications systems shall be tested annually.

3. Provisions for communications among the nuclear power reactor control room, the onsite TSC, and the EOF; and among the nuclear facility, the principal State and local EOCs, and the field assessment teams. Such communications systems shall be tested annually.

4. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite TSC, and the EOF. Such communications shall be tested monthly.

The staff finds these provisions for onsite and offsite communications acceptable because they meet the requirements in 10 CFR Part 50, Appendix E.

Technical Information in the CCNPP Unit 3 Emergency Plan: (GL 91-14)

CCNPP Unit 3 Emergency Plan, Section F.1, "Communications/Notifications," describes the emergency telecommunication systems (ETS) to include the ENS, HPN, and the ERDS. In a July 30, 2010, response to follow-up RAI 247, Question 13.03-42(B), and taking into consideration various aspects of RAI 155, Question 13.03-11(C), the COL applicant stated, in part, that the FTS includes the ENS HPN RSCL, PMCL, ERDS, MCL, and LAN access circuits, which are known collectively as the ETS. The COL applicant also agreed to revise the CCNPP Unit 3 Emergency Plan to include this information with a description of each communication link and its function.

Technical Evaluation: (GL 91-14)

Based on the COL applicant's July 30, 2010, response to follow-up RAI 247, Question 13.03-42(B), and considering various aspects of the November 19, 2009, response to

RAI 155, Question 13.03-11(C), the staff finds the additional information and textual revisions submitted in July 30, 2010, response to RAI 247, Question 13.03-42(B) acceptable because they conform to the guidance GL 91-14. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the July 30, 2010, response to RAI 247, Question 13.03-42(B). The staff finds that CCNPP Unit 3 Emergency Plan adequately includes provisions for communications with the NRC. The staff finds this acceptable because it meets the guidance in GL 91-14.

13.3C.6.3 Communications with Medical Facilities

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.2)

This section of the report describes communications with medical facilities as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section F.2, "Medical Communications," states that commercial telephone is used for communications with the primary and backup medical hospitals and transportation services.

Technical Evaluation: (Section F.2)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately ensures that a coordinated communication link exists for fixed medical support facilities and ambulance service(s). The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.6.4 Periodic Testing of the Emergency Communications System

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section F.3)

This section of the report describes the periodic testing of the emergency communications system as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section F.3, "Communications Testing," states that minimum siren tests are conducted weekly for silent tests, quarterly and during preventative maintenance for growl or equipment tests and annually for full volume tests. Communication drills are conducted according to CCNPP Unit 3 Emergency Plan, Section N.2.a criteria. CCNPP Unit 3 Emergency Plan, Section N.2.a, "Drills," discusses periodic testing (monthly, quarterly and annual tests) of the entire emergency communications system. CCNPP Unit 3 Emergency Plan, Section E.6, "Notification of the Public," indicates that the locally operated Public Alert and Notification System periodic testing meets or exceeds the FEMA guidance. A maintenance program is also implemented, consistent with FEMA requirements (FEMA-REP-10). COL application, Part 5, "CCNPP Unit 3 Impact to CCNPP Units 1 & 2 Emergency Preparedness Program Evaluation," states that the Alert and Notification System will be shared by all units.

Technical Evaluation: (Section F.3)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the conduct of periodic testing of the entire emergency communications system. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.6.5 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding emergency communications is acceptable and meets the requirements of 10 CFR 50.47(b)(6) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard F, the applicable portions of 10 CFR Part 50, Appendix E, and the guidance in GL 91-14 as described above.

13.3C.7 Public Education and Information

13.3C.7.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(7), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed CCNPP Unit 3 Emergency Plan against applicable regulatory requirements related to the area of "Public Education and Information," in 10 CFR Part 50, Appendix E.

13.3C.7.2 Content of Public Information

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.1)

This section of the report describes how the COL applicant would notify the general public of an emergency and what actions they should take. CCNPP Unit 3 Emergency Plan, Section G.1, “Public Information Publication,” describes the Emergency Public Information Publication that addresses how the general public is notified and what their actions should be in an emergency. A general description of the content of the public information publication is provided, including educational information, evacuation routes, shelter areas, information for the disabled, contact information, and radio and television frequencies providing event information. Annual distribution of the publication is made to residents within the plume exposure EPZ. Signs, access to the publication, and other measures direct transient populations to the telephone directory or other local emergency information.

Technical Evaluation: (Section G.1)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. Means to accomplish this dissemination are also adequately described. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.7.3 Distribution and Maintenance of Public Information

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.2)
(10 CFR Part 50, Appendix E, Section IV.D.2)

This section of the report describes the frequency in which the general public located within the plume exposure pathway would receive public information materials from the COL applicant. CCNPP Unit 3 Emergency Plan, Section G.1, “Public Information Publication,” describes the Emergency Public Information Publication that addresses how the general public is notified and what their actions should be in an emergency. A general description of the content of the public

information publication is provided, including educational information, evacuation routes, shelter areas, information for the disabled, contact information, and radio and television frequencies providing event information. Annual distribution of the publication is made to residents within the plume exposure EPZ. Signs or other measures direct transient populations to the telephone directory or other local emergency information. CCNPP Unit 3 Emergency Plan, Section G.2, "Public Education Materials," also discusses the use of the Public Alert and Notification System (PANS).

Technical Evaluation: (Section G.2) (10 CFR Part 50, Appendix E, Section IV.D.2)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes a public information program that provides the permanent and transient population within the plume exposure EPZ an adequate opportunity to become aware of the information annually. The program includes provision for written material that is available to residents during an emergency. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1, and meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.7.4 Points of Contact for the News Media

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.3.a)

This section of the report describes the points of contact and physical locations for use by the news media during an emergency as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section G.3, "Media Accommodations," describes the role of the communications and public affairs group as being the initial body that will handle public and media inquires until the JIC is activated. CCNPP Unit 3 Emergency Plan, Section G.3 describes the role of the Public Information ERO as having the responsibility and authority to issue news releases to the public. CCNPP Unit 3 Emergency Plan, Section B.5.c, "Public Information Emergency Response Organization," lists the responsibilities and staff make up of the Public Information ERO. The Public Information ERO operates under the Company Spokesperson who reports to the Emergency Director. CCNPP Unit 3 Emergency Plan, Section B.5.c also states that the Public Information ERO operates out of JIC. In RAI 155, Question 13.03-12, the staff requested that the COL applicant describe in the CCNPP Unit 3 Emergency Plan the physical location of the JIC and any other locations for use by the news media during an emergency. In a November 19, 2009, response to RAI 155, Question 13.03-12, the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section G.3.a.2 to include a statement that the JIC is located next to the EOF about 19.3 km (12 mi) from the CCNPP Unit 3 site, in Calvert Industrial Park, Skipjack Road at Hallowing Point Road.

Technical Evaluation: (Section G.3.a)

The staff finds the additional information and textual revisions submitted by the COL applicant in the November 19, 2009, response to RAI 155, Question13.03-12 acceptable because the additional information and textual changes conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the November 19, 2009, response to RAI 155, Question 13.03-12. Accordingly, the staff finds that the CCNPP Unit 3 Emergency Plan adequately designates the points of contact and physical locations for use by news media during an emergency and that the CCNPP Unit 3 Emergency Plan also describes space which may be used for a limited number of the news media at the EOF. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.7.5 Space for News Media

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.3.b)

This section of the report describes the space available for use by the news media during an emergency as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section G.3, "Media Accommodations," states the JIC includes appropriate seating and equipment, including lighting, visual aids, and telephone lines, to accommodate a limited number of news media. The COL applicant proposed EP ITAAC 5.1 to ensure that the licensee has provided adequate space for a limited number of news media.

Technical Evaluation: (Section G.3.b)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes space which may be used by the news media at the emergency operations facility and is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.7.6 Designated Spokesperson

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.4.a)

This section of the report describes the COL applicant's designation of a spokesperson during an emergency as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section G.4, "Coordination of Public Information," states that the Company Spokesperson is the primary spokesperson and has access to necessary information. CCNPP Unit 3 Emergency Plan, Section B.5.c, "Public Information Emergency Response Organization," describes the role of the Company Spokesperson. The Company Spokesperson reports to the Emergency Director.

Technical Evaluation: (Section G.4.a)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies a spokesperson that has access to all necessary information. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.7.7 Timely Exchange of Information

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.4.b)

This section of the report describes the COL applicant's arrangements for the timely exchange of information as provided in their emergency plan. CCNPP Unit 3 Emergency Plan, Section G.4, "Coordination of Public Information," states that Federal, State, local, and licensee personnel coordinate information for timely and periodic news briefings. The JIC staff responds to public and news media calls and conducts news briefings.

Technical Evaluation: (Section G.4.b)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes established arrangements for timely exchange of information among designated spokespersons. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.7.8 Rumor Control

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.4.c)

This section of the report describes the COL applicant's coordinated arrangements for dealing with rumors as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section G.4, "Coordination of Public Information" states that rumors or misinformation are to be identified during an emergency by the media/rumor control monitors. CCNPP Unit 3 Emergency Plan, Section B.5.c, "Public Information Emergency Response Organization," describes the role of the Rumor Control Staff. The Rumor Control Staff duties include reviewing rumors, documenting rumors, and informing media monitoring staff of misinformation rumors.

Technical Evaluation: (Section G.4.c)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes coordinated arrangements for dealing with rumors. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.7.9 Annual Media Orientation

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section G.5)

This section of the report describes the COL applicant's program to acquaint the news media with CCNPP Unit 3 Emergency Plan. CCNPP Unit 3 Emergency Plan, Section G.5, "Media Orientation," states CCNPP Unit 3 offers programs (at least annually) to acquaint news media with the CCNPP Unit 3 Emergency Plan, information concerning radiation, and points of contact for release of public information during an emergency.

Technical Evaluation: (Section G.5)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes coordinated programs that will be conducted at least annually to acquaint news media with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.7.10 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding public education and information is acceptable and meets the requirements of 10 CFR 50.47(b)(7) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard G and the applicable portions of 10 CFR Part 50, Appendix E, as described above.

13.3C.8 Emergency Facilities and Equipment

13.3C.8.1 Regulatory Basis

To determine whether the proposed CCNPP Unit 3 Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(8), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed CCNPP Unit 3 Emergency Plan against applicable regulatory requirements related to the area of "Emergency Facilities and Equipment," in 10 CFR Part 50, Appendix E; 10 CFR 50.34; and 10 CFR 50.72. In addition, the staff evaluated the proposed

CCNPP Unit 3 Emergency Plan against the guidance in NUREG-0737, "Clarification of TMI Action Plan Requirements," Supplement 1.

Technical Support Center

13.3C.8.2 Technical Support Center Functions

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.1) (10 CFR Part 50, Appendix E, Section IV.E.8) (NUREG-0737, Section 8.2.1.a)

This section of the report describes the COL applicant's establishment of a Technical Support Center as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.1.b, "Technical Support Center (TSC)," states that site management, technical, and engineering support personnel respond to a TSC that is activated for use during emergency situations. TSC functions, when activated, include:

1. Support for the Control Room's emergency response activities
2. Performance of non-delegable functions when in Command & Control
3. Continued evaluation of event classification
4. Assessment of plant status and potential offsite impact
5. Coordination of emergency response actions
6. Notification of appropriate corporate and site management
7. Notification and update the NRC via the ENS, including activation of the ERDS

The COL applicant proposed EP ITAAC 6.1 to verify that the licensee has established a TSC, which maintains habitability during normal, off-normal, and emergency conditions, and to test the capabilities of the TSC.

Technical Evaluation: (Section H.1) (10 CFR Part 50, Appendix E, Section IV.E.8) (NUREG-0737, Section (8.2.1.a]

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC functions. The staff finds this acceptable because the CCNPP Unit 3 Emergency Plan conforms to the guidance in NUREG-0654/FEMA-REP-1 and NUREG-0737, Supplement 1, and meets the applicable requirements of 10 CFR Part 50, Appendix E.

13.3C.8.3 TSC Location

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.b) (10 CFR 50.34(f)(2)(xxv))

This section of the report describes the location of the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.B, "Technical Support Center," states that the TSC is located on the Control Room's floor level outside the MCR and has a separate access. The TSC is within the Safeguards Building and is protected against radiological hazards, internal and external missiles, and seismic activity. The TSC is the onsite

location utilized to support the CR for assessment of plant status and potential offsite impact, and for implementation of emergency actions. TSC provides technical data and information to the EOF. CCNPP Unit 3 Emergency Plan, Section B.3, "Criteria for Assuming Command and Control (Succession)," the Shift Manager is relieved of Command and Control as soon as possible after the declaration of an Alert (or higher classification if Alert not declared). Command and Control may be transferred directly to the Emergency Director, or transferred to the Emergency Plant Manager on an interim basis." The COL applicant proposed EP ITAAC 6.1.2 and 6.1.3 to verify that the CCNPP Unit 3 TSC is located on the same floor level as the CR in the Safeguards Building within the CR envelope.

Technical Evaluation: (NUREG-0737 Section 8.2.1.b) (10 CFR 50.34(f)(2)(xxv))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC location. The staff finds this acceptable because the CCNPP Unit 3 Emergency Plan meets the applicable regulatory guidance in NUREG-0654/FEMA-REP-1, and NUREG-0737, Supplement 1, and meets the applicable requirements of 10 CFR Part 50, Appendix E.

13.3C.8.4 TSC Staffing Requirements, Size, and Equipment

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.c and j)

This section of the report describes TSC staffing requirements, size, and equipment as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.B, "Technical Support Center," states, in part, that the TSC is sized to provide working space for 25 personnel (5 NRC personnel) at 6.97 sq meters (sq m) (75 square feet (sq ft))/person (minimum size of 174.2 sq m (1875 sq ft)) and equipment. CCNPP Unit 3 Emergency Plan, Section H.1.b, "Technical Support Center (TSC)," states, in part, that the CCNPP Unit 3 site has established a TSC for use during emergency situations by CCNPP Unit 3 site management, technical and engineering support personnel sized to accommodate 25 personnel and supporting equipment. CCNPP Unit 3 Emergency Plan, Table B-1b, "Minimum Staffing Requirements for the CCNPP Unit 3 [Emergency Response Organization] ERO," lists the emergency positions that will be filled when the TSC is activated. CCNPP Unit 3 Emergency Plan, Section H.4, "Activation," states that the plans and procedures are in place to ensure timely activation of its emergency response facilities. A goal of 60 minutes for minimum staffing of the TSC, following the declaration of an Alert or higher emergency classification, has been established for the ERO personnel. TSC staffing concerns (e.g., elimination of 30-minute responders) are addressed in Section 13.3C.2.7 of this report.

Technical Evaluation: (NUREG-0737, Section 8.2.1.c and j)

The staff reviewed the COL applicant's May 19, 2011, response to RAI 299, Questions 13.03-43(a) through 13.03-43(c)(2) in Section 13.3C.2.7 discussed above and finds them acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 299, Questions 13.03-43(a) through 13.03-43(c)(2). Accordingly, the staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC staffing, size, and equipment. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.5 TSC Structure

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.d)

This section of the report describes the structure of the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.B, "Technical Support Center," states that the TSC is located on the Control Room's floor level outside the MCR and has a separate access, which is located in the fully hardened Safeguards Building. The TSC is protected against radiological hazards, internal and external missiles, and seismic activity. Also, this arrangement ensures suitable ambient environmental conditions. This section does not specify whether construction is in accordance with the uniform building code. Therefore, in RAI 155, Question 13.03-13(A), the staff requested that the COL applicant clarify that the TSC is built in accordance with the Uniform Building Code. In a November 19, 2009, response to RAI 155, Question 13.03-13(A), the COL applicant stated that the TSC will be built in accordance to NUREG-0696 and will meet the radiation protection standards as stated in CCNPP Unit 3 Emergency Plan Annex 1, Section 4.1.B.

Technical Evaluation: (NUREG-0737, Section 8.2.1.d)

The staff finds the additional information and textual revision to the CCNPP Unit 3 Emergency Plan clarification's provided by the COL applicant in the November 19, 2009, response to RAI 155, Question 13.03-13(A) acceptable because it conforms to the guidance in NUREG-0737, Supplement 1. The staff verified that CCNPP Unit 3 Emergency Plan, Revision 7 includes a statement that the TSC is built in accordance with the applicable uniform building codes. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC structure. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.6 TSC Environmental Controls

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.e)

This section of the report describes the environmental controls in the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.B, "Technical Support Center," states that the TSC arrangement ensures suitable ambient environmental conditions. The TSC has the same protection from radiological hazards, seismic, and other dangers as the CR. Additional information related to the environmental controls in the TSC can be found in U.S. EPR FSAR Tier 2, Section 9.4.

Technical Evaluation: (NUREG-0737, Section 8.2.1.e)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC environmental controls. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.7 TSC Radiological Protection

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.f)

This section of the report describes the radiological protection available for workers in the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.B, "Technical Support Center," states the TSC has the same protection from radiological hazards, including direct radiation and airborne radioactivity under accident conditions as the Control Room. In RAI 155, Question 13.03-13(A)(1), the staff requested that the COL applicant state that the TSC will meet the requirements in the U.S. EPR FSAR design certification for the TSC or verify that any person working in the TSC would not exceed 50 mSv (5 rem) whole body, or its equivalent to any part of the body, for the duration of the accident. In a November 19, 2009, response to RAI 155, Question 13.03-13(A)(1), the COL applicant stated that the TSC will be built in accordance to NUREG-0696 and will meet the radiation protection standards as stated in CCNPP Unit 3 Emergency Plan Annex 1, Section 4.1.B. Additional information related to the TSC habitability is provided in U.S. EPR FSAR Tier 2, Sections 6.4 and 15.0.3.

10 CFR Part 50, Appendix E, Section IV.E.1

CCNPP Unit 3 Emergency Plan, Section K.2, "Emergency Radiation Protection Program," states that personnel radiological monitoring equipment is provided at the site for all personnel during emergency conditions. CCNPP Unit 3 Emergency Plan, Section K.3, "Personnel Monitoring," discusses the use of Thermoluminescent Dosimeter (TLD) badges and personal self-reading dosimeters for emergency personnel and the capability of measuring exposures on a real time basis. Additional information related to equipment at the CCNPP Unit 3 site for personnel monitoring is discussed in Section 13.3C.11.1 of this report.

Technical Evaluation: (NUREG-0737, Section 8.2.1.f) (10 CFR Part 50, Appendix E, Section IV.E.1)

The staff finds the clarification's provided in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-13(A)(1) acceptable. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC radiological protection. The staff finds this acceptable because it meets the applicable regulatory guidance to NUREG-0737, Supplement 1, and 10 CFR Part 50, Appendix E.

13.3C.8.8 TSC Communications

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.g)

This section of the report describes the communications available in the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.1.b, "Technical Support Center (TSC)," and CCNPP Unit 3 Emergency Plan Annex, Section 4.1.B, "Technical Support Center," state that the TSC provides reliable communications to the CR, the EOF, the principal State and local EOCs, the monitoring teams, and a general line throughout the site in accordance with the requirements of 10 CFR Part 50, Appendix E: Section (E)(9)(d). Communications will also be established with NRC Headquarters and the appropriate Regional Office Operations Center, from the CR, TSC, and EOF in accordance with

10 CFR Part 50, Appendix E, Section (E)(9)(d).

Technical Evaluation: NUREG-0737, Section 8.2.1.g)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC communications. The staff finds this acceptable because it meets the applicable regulatory guidance in to NUREG-0737, Supplement 1.

13.3C.8.9 TSC Data Collection, Storage, and Analysis

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.h)

This section of the report describes the Data Collection, Storage, and Analysis functions of the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.1.b, "Technical Support Center (TSC)," states the TSC has the capability to record and display vital plant data in real time, using the SPDS. CCNPP Unit 3 Emergency Plan Annex, Section 4.2 "Assessment Resources," describes the instrumentation used to collect and analyze radiological, meteorological, fire, and plant specific data. CCNPP Unit 3 Emergency Plan Annex, Section 4.2.D, "Unit Specific Station Parameter Monitoring System," states that a process and information system provides access to information necessary to monitor the state of the plant in all states, including accident conditions. COL FSAR Section 7.5, "Information Systems Important to Safety," states that monitored variables are based on the guidance provided by RG 1.97, Revision 4, which endorses Institute of Electrical and Electronic Engineers (IEEE) Standard (Std) 497-2002, "IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations," with certain clarifying regulatory positions. A methodology to select the accident monitoring variables is presented in COL FSAR Section 7.5.2.2.1. The incorporation of the system parameters into the various instruments and controls is also discussed in COL FSAR Section 7.5. CCNPP Unit 3 Emergency Plan, Section H.5.a, "Meteorological Instrumentation," states that a meteorological monitoring station is located near the site for display and recording of wind speed, wind direction, and ambient and differential temperature for use in making offsite dose projections. Meteorological information is available in the CR, TSC, and EOF through a plant computer system and can be remotely interrogated. CCNPP Unit 3 Emergency Plan, Section H.8, "Meteorological Monitoring," states that additional capabilities are available to obtain representative current meteorological information from other sources, such as the National Weather Service (NWS).

Technical Evaluation: (NUREG-0737, Section 8.2.1.h)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC functions of Data Collection, Storage, and Analysis. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.10 TSC Human Factors Engineering

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.h and k)

This section of the report describes the TSC Human Factors Engineering functions of the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.1.b, "Technical Support Center (TSC)," states that the TSC has the capability to

record and display vital plant data to be used to monitor the state of the plant including accident conditions. U.S. EPR FSAR Tier 2, Section 18.0," Human Factors Engineering [HFE]," describes the technical HFE program for the U.S. EPR design. U.S. EPR FSAR Tier 2, Section 18.1.1.3, "Applicable U.S. EPR Facilities," states that the Human Factors Engineering program scope includes the design of the Main Control Room, the TSC, and the remote shutdown station (RSS).

Technical Evaluation: (NUREG-0737, Section 8.2.1.h and k)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC Human Factors Engineering functions. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.11 TSC Plant Records

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.2.1.i)

This section of the report describes the Plant Records functions of the TSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.1.b, "Technical Support Center (TSC)," states that the TSC has access to a complete set of as-built drawings and other records, including general arrangement diagrams, Piping and Instrumentation Diagrams (P&IDs), and the electrical schematics.

Technical Evaluation: (NUREG-0737, Section 8.2.1.i)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the TSC Plant Records function. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.12 TSC Activation

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.4)

This section of the report describes the timely activation of the TSC and response facilities as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.4, "Activation," discusses the activation of the licensees' response facilities. CCNPP Unit 3 Emergency Plan, Section H.4 states the licensee has put into place plans and procedures to ensure timely activation (goal of 60-minutes) of its emergency response facilities (ERFs), including the TSC. The Shift Manager (as Interim Emergency Director) will initiate a call-out in accordance with the implementing procedures. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," identified activation and operation procedures for the TSC, OSC, EOF, and JIC by title and number.

Technical Evaluation: (Section H.4)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for timely activation and staffing of the facilities and centers described in the CCNPP Unit 3 Emergency Plan. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

Operations Support Center

13.3C.8.13 Operations Support Center Functions

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.1) (NUREG-0737, Section 8.3.1.a)

This section of the report describes the COL applicant's establishment of an Operations Support Center as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.1.c, "Operations Support Center (OSC)," states that each unit has established an OSC onsite where CCNPP Unit 3 site support personnel report and are dispatched during an emergency. Each OSC is activated when the TSC is activated, but need not remain activated at the Alert level if the Emergency Plant Manager determines it to be unnecessary. At the Site Area and General Emergency levels, an OSC is activated at all times. The OSC maintains an inventory of respirators, protective clothing, flashlights, and portable survey instruments and communication links to the CR and TSC. Disciplines reporting to the OSC include, but are not limited to:

1. Operating personnel not assigned to the CR
2. Radiation Protection Personnel
3. Chemistry Personnel
4. Maintenance Personnel (mechanical, electrical, and I&C)

Technical Evaluation: (Section H.1) (NUREG-0737, Section 8.3.1.a]

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the OSC functions. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1 and conforms to the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.8.14 OSC Location

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.3.1.b) (10 CFR 50.34(f)(2)(xxv))

This section of the report describes the location of the OSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.C, "Operations Support Center," states that the OSC is located in the Access Building within the protected area separate from CR and TSC. The OSC is where support personnel report and are dispatched in support of emergency operations.

Technical Evaluation: (NUREG-0737, Section 8.3.1.b) (10 CFR 50.34(f)(2)(xxv))

The staff finds that the CCNPP Unit 3 Emergency Plan identifies an assembly point for support personnel to facilitate performance of support functions and tasks. The staff finds this acceptable because it conforms to the guidance described in NUREG-0737, Supplement 1 and 10 CFR 50.34.

13.3C.8.15 OSC Coordination Activities

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.3.1.a)

This section of the report describes the OSC Coordination Activities functions as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.9, "Operations Support Center Capabilities," states that the OSC provides a staging area for personnel and an area for coordination and planning. The OSC, or locations near the OSC, maintains a supply of plant maintenance parts and equipment; radiation protection equipment and supplies; repair team equipment; first aid and medical treatment equipment and supplies; and, reliable voice communications with CR, TSC, and EOF. CCNPP Unit 3 Emergency Plan, Section H.1.c, "Operations Support Center (OSC)," states that personnel report to and are dispatched from the OSC in support of emergency operations.

Technical Evaluation: (NUREG-0737, Section 8.3.1.a)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the OSC Coordination Activities functions. The staff finds this acceptable because it conforms to the regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.16 OSC Communications

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.3.1.c)

This section of the report describes the communications available in the OSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.1.c, "Operations Support Center (OSC)," states that the OSC has established communication links with the CR and the TSC. CCNPP Unit 3 Emergency Plan, Figure F-2, "ERF Communications Matrix," shows the OSC communication interfaces. Evaluation of the communication systems is discussed in Section 13.3C.6 of this report.

Technical Evaluation: (NUREG-0737, Section 8.3.1.c)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the OSC communications. The staff finds this acceptable because it meets the applicable regulatory guidance in NUREG-0737, Supplement 1.

13.3C.8.17 OSC Activation and Staffing

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.4)

This section of the report describes the activation and staffing of the OSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.4, "Activation," discusses the activation of the licensees' response facilities. CCNPP Unit 3 Emergency Plan, Section H.4 states the licensee has put into place plans and procedures to ensure timely activation of its ERFs, including the OSC. A goal of 60 minutes for minimum staffing of the OSC, following the declaration of an Alert or higher emergency classification, has been established for the ERO personnel. The Shift Manager (as Interim Emergency Director) will initiate a call-out in accordance with the implementing procedures. CCNPP Unit 3 Emergency

Plan, Appendix 2, “Procedure Cross-Reference to NUREG-0654,” identified activation and operation procedures for the TSC, OSC, EOF, and JIC by title and number.

Technical Evaluation: (Section H.4)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for timely activation and staffing of the emergency facilities and centers. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.8.18 OSC Capacity and Supplies

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.9)

This section of the report describes the capacity and supplies available in the OSC as provided in the COL applicant’s emergency plan. CCNPP Unit 3 Emergency Plan, Section H.9, “OSC Capabilities,” states that the OSC has sufficient respiratory protection gear, potassium iodide (KI), protective clothing, and other health physics equipment and supplies. CCNPP Unit 3 Emergency Plan, Section H.9 also states that the OSC provides area for coordinating, planning, and staging of personnel. Additional space to accommodate additional personnel is discussed. CCNPP Unit 3 Emergency Plan, Section H.1.c, “Operations Support Center (OSC),” discusses activation and staffing and states that emergency personnel will be dispatched from the OSC to support emergency operations. CCNPP Unit 3 Emergency Plan, Section H.1.c, also states that a limited inventory of supplies, including respirators, protective clothing, flashlights, and portable survey instruments are kept for the OSC. In RAI 155, Question 13.03-13(E), the staff requested that the COL applicant clarify the inconsistencies between types and quantities (sufficient vs. limited) of supplies maintained for the OSC. In a November 19, 2009, response to RAI 155, Question 13.03-13(E), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section H.1.c to clarify that supplies maintained in the OSC are sufficient and not limited. CCNPP Unit 3 Emergency Plan, Section F.1.b-d, “Communications/Notifications,” discusses communications equipment for personnel in the OSC. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.C, “Operations Support Center,” states that the OSC is located in the Access Building. The COL applicant proposed EP ITAAC 6.1.7 and 6.1.8 to verify that the licensee has established an onsite OSC and to test its capabilities.

Technical Evaluation: (Section H.9)

The staff finds the additional information and textual revisions submitted in the COL applicant November 19, 2009, response to RAI 155 CCNPP Unit 3 Emergency Plan, Question 13.03-13(E) acceptable because the information and revisions conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-13(E). Accordingly, the staff finds the CCNPP Unit 3 Emergency Plan adequately describes the OSC capacity and supplies. This staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

Emergency Operations Facility

13.3C.8.19 Emergency Operations Facility Functions

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.2) (10 CFR Part 50, Appendix E, Section IV.E.8) (NUREG-0737, Section 8.4.1.a)

This section of the report describes the COL applicant's establishment of an Emergency Operations Facility Center as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.2, "Emergency Operations Facility (EOF)," states that the EOF is the location where the ERO manages, evaluates, and coordinates the overall activities during an emergency. The EOF is activated, at a minimum, on declaration of an Alert or higher classification and provides for:

1. Management of overall emergency response

2. Coordination of radiological and environmental assessments

3. Determination of recommended public protective actions

4. Management of recovery operations

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

CCNPP Unit 3 Emergency Plan, Section B.5.b, "Offsite Emergency Response Organization," states that the Emergency Director assumes command and control within the EOF. Other EOF staff and their roles in the ERO are also discussed. COL Application Part 5, "CCNPP Unit 3 Impact to CCNPP Units 1 & 2 Emergency Preparedness Program Evaluation," Section 3, "Multi-Unit Site Considerations," states that the existing EOF for Units 1 and 2 will also be used for CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section H.2 also states that the EOF technical data system receives, processes, and displays information sufficient to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition. The EOF is equipped with reliable voice communications capabilities to the TSC, CR, NRC, and State and local EOCs. The COL applicant proposed EP ITAAC 6.2 to verify that the licensee has established an EOF and to test its capabilities.

Technical Evaluation: (Section H.2) (10 CFR Part 50, Appendix E, Section IV.E.8) (NUREG-0737, Section 8.4.1.a)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes the EOF functions. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA--REP-1, NUREG-0737, Supplement 1, and the requirements of 10 CFR Part 50, Appendix E. Simultaneous activation of the EOF for an emergency involving existing CCNPP Units 1 and 2 is discussed in Section 13.3C.8.28, "EOF Human Factors," of this report.

13.3C.8.20 EOF Location

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.b) (10 CFR 50.34(f)(2)(xxv))

This section of the report describes the EOF location as provided in the COL applicant's emergency plan. COL application, Part 5, "CCNPP Unit 3 Impact to CCNPP Units 1 & 2 Emergency Preparedness Program Evaluation," Section 3, "Multi-Unit Site Considerations," states that the existing EOF for CCNPP Units 1 and 2 will also be used for CCNPP Unit 3. In

RAI 155, Question 13.03-13(B) staff requested that the COL applicant revise CCNPP Unit 3 Emergency Plan to include the name of the facility and its physical location in relation to the CCNPP Unit 3. In a November 19, 2009, response to RAI 155, Question 13.03-13(B), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section H.2 to include a statement that the EOF is located about 19.3 km (12 mi) from the site, in Calvert Industrial Park, Skipjack Road at Hallowing Point Road. In RAI 155, Question 13.03-13(B)(2), the staff requested that the COL applicant provide additional information related to radiation protection features for the EOF. In the November 19, 2009, response, to RAI 155, Questions 13.03-13, the COL applicant stated that no radiation protection features are designed into the EOF because it is outside the plume exposure pathway EPZ.

Technical Evaluation: (NUREG-0737, Section 8.4.1.b) (10 CFR 50.34(f)(2)(xxv))

The staff finds the additional information and proposed textual revisions to the CCNPP Unit 3 Emergency Plan provided in the November 19, 2009, response to RAI 155, Questions 13.03-13(B) and 13.03-13(B)(**2)** acceptable since they conform to the guidance in NUREG-0737, Supplement 1. In a November 19, 2009, response to RAI 155, Question 13.03-13(B), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section H.2 to include the location of the existing EOF. **RAI 155, Question 13.03-13(B) is being tracked as a confirmatory item** to ensure the proposed revision of the CCNPP Unit 3 Emergency Plan is made in the plan.

13.3C.8.21 EOF Size

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.c)

This section of the report describes the size of the EOF as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.2, "Emergency Operations Facility (EOF)," states that the EOF can accommodate about 50 people. COL application Part 5, Section 3, "Multi-Unit Site Considerations," states that the existing EOF for CCNPP Units 1 and 2 will also be used for CCNPP Unit 3. A drill will be conducted to demonstrate the ability to support a concurrent event. This drill will evaluate the adequacy of space, furnishing, and shared resources to ensure response functions are not degraded when responding to a concurrent event. The COL applicant proposed EP ITAAC 6.2.2.1 to 6.2.2.4 to demonstrate that the EOF size is adequate for a combined use if concurrent events are declared at CCNPP Units 1, 2, and 3. In addition, the COL applicant proposed a drill requiring mobilization and response activities of both EROs prior to operation of CCNPP Unit 3.

Technical Evaluation: (NUREG-0737, Section 8.4.1.c)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes the EOF size requirements. The staff finds this acceptable because it conforms to the guidance in NUREG-0737, Supplement 1.

13.3C.8.22 EOF Structural Capabilities

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.d)

This section of the report describes the structural capabilities of the EOF as provided in the COL applicant's emergency plan. COL application, Part 5, Section 3, "Multi-Unit Site Considerations," states that the existing EOF for CCNPP Units 1 and 2 will also be used for CCNPP Unit 3. In a November 19, 2009, response to RAI 155, Question 13.03-13(A), the COL applicant also stated that the EOF has been built to State and local building requirements.

Technical Evaluation: (NUREG-0737, Section 8.4.1.d)]

The staff finds the clarification's provided in the November 19, 2009, response to RAI 155, Question 13.03-13(A) acceptable. The staff finds the CCNPP Unit 3 Emergency Plan adequately describes the EOF structural capabilities. The staff finds this response acceptable because it conforms to the guidance in NUREG-0737, Supplement 1.

13.3C.8.23 EOF Environmental Requirements

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.e)

This section of the report describes the environmental requirements for the EOF as provided in the COL applicant's emergency plan. The CCNPP Unit 3 Emergency Plan did not contain any information to address the EOF environmental requirements identified in the cited regulatory guidance. Therefore, in RAI 155, Question 13.03-13(B)(3) the staff requested that the COL applicant clarify that the EOF is environmentally controlled to provide room air temperature, humidity, and cleanliness appropriate for personnel. In a November 19, 2009, response to RAI155, Question 13.03-13(B)(2), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section H.2 to include a statement that the EOF is environmentally controlled.

Technical Evaluation: (NUREG-0737, Section 8.4.1.e)

The staff finds the additional information and textual -revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-13(B)(3), acceptable because it conforms to the guidance in NUREG 0737,-Supplement 1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the November 19, 2009, response to RAI 155, Question 13.03-13(B)(3). The staff finds the CCNPP Unit 3 Emergency Plan adequately describes the EOF environmental habitability. The staff finds this acceptable because it conforms to the guidance in to NUREG-0737, Supplement 1.

13.3C.8.24 EOF Voice and Data Communications and Information Collection

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.f)

This section of the report describes the EOF voice communications capabilities as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.2, "Emergency Operations Facility (EOF)," states that the EOF is equipped with reliable voice communications capabilities to the TSC, CR, NRC, and State and local EOCs. In addition, the EOF has facsimile and computer transmission capabilities.

Technical Evaluation: (NUREG-0737, Section 8.4.1.f)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes the EOF voice and data communications and information collection requirements. The staff finds this acceptable because it conforms to the guidance in NUREG-0737, Supplement 1.

13.3C.8.25 EOF Information Storage and Analysis

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.g)

This section of the report describes the EOF information storage and analysis capability as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.2, "Emergency Operations Facility (EOF)," states that the EOF is equipped to gather and display data needed to analyze and exchange information on plant conditions with the CCNPP site. The EOF technical data system receives, processes, and displays information sufficient to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition. CCNPP Unit 3 Emergency Plan, Section H.5, "Monitoring Equipment Onsite," describes meteorological, radiation monitoring, and fire protection monitoring systems available in the EOF. In RAI 155, Question 13.03-13(B)(1), the staff requested that the COL applicant provide additional information related to the equipment to gather and display data. In a November 19, 2009, response to RAI 155, Question 13.03-13(B)(1), the COL applicant referenced CCNPP Unit 3 Emergency Plan, Section H.5.c. Additional discussion regarding the EOF's capability to display RG-1.97 PAM Type A-E variables is contained in Sections 13.3C.8.29, "EOF Human Factors," and 13.3C.9.3, "Capability to Continuously Assess an Accident," of this report.

Technical Evaluation: (NUREG-0737, Section 8.4.1.g)

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question 13.03-13(B)(1) acceptable because it conforms to the guidance in NUREG-0737, Supplement 1. Additional staff evaluation regarding the EOF's capability to display RG 1.97 PAM Type A-E variables is contained in Section 13.3C.9.3, "Capability to Continuously Assess an Accident," of this report. The staff finds the CCNPP Unit 3 Emergency Plan adequately describes the EOF information storage and analysis requirements. The staff finds this acceptable because it conforms to the guidance in NUREG-0737, Supplement 1.

13.3C.8.26 EOF Plant Records

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.h)

CCNPP Unit 3 Emergency Plan, Section H.2, "Emergency Operations Facility (EOF)," states that access to plant records, procedures, and emergency plans needed for effective management of emergency response resources are readily available via hard copy or electronically, in the EOF.

Technical Evaluation: (NUREG-0737, Section 8.4.1.h)

This section of the report describes access to plant records in the EOF as provided in the COL applicant's emergency plan. The staff finds the CCNPP Unit 3 Emergency Plan adequately

describes the EOF plant records requirements. The staff finds this acceptable because it conforms to the guidance in NUREG-0737, Supplement 1.

13.3C.8.27 EOF Industrial Security

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG- 0737, Section 8.4.1.j)

This section of the report describes industrial security of the EOF for CCNPP Unit 3 as provided in the COL applicant's emergency plan. COL application, Part 5, Section 3, "Multi-Unit Site Considerations," states, in part, that the existing EOF for CCNPP Units 1 and 2 will also be used for CCNPP Unit 3. In RAI 155, Question 13.03-13(B)(4), the staff requested that the COL applicant provide a summary of the EOF security measures to exclude unauthorized personnel when it is active and maintaining readiness when it is idle. In a November 19, 2009, response to RAI 155, Question 13.03-13(B)(4), the COL applicant stated that access control to the EOF is maintained by the Administrative Support Manager when the facility is activated. Incoming personnel that do not have an access badge are required to show their ID at the entrance window and once authorized for entry, the door is electronically unlocked. The EOF remains locked when it is inactive and is monitored by the Security Operations Center. Additionally, access to the area surrounding the EOF is restricted by a locked gate.

Technical Evaluation: (NUREG-0737, Section 8.4.1.j)

The COL applicant is proposing to use the existing EOF for CCNPP Units 1, 2, and 3. In a November 19, 2009, response to RAI 155, Question 13.03-13(B)(4), the COL applicant clarified the security provisions used to control unauthorized access to the EOF, and maintain its readiness when idle, which conforms to the guidance in NUREG-0737, Supplement 1. The staff considered a presumption of adequacy for the existing facility as it pertains to industrial security. The staff finds the industrial security provisions for the EOF described above acceptable since they conform to the guidance in NUREG-0737, Supplement 1.

13.3C.8.28 EOF Human Factors

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0737, Section 8.4.1.k)

This section of the report describes the EOF Human Factors considerations for the EOF as provided in the COL applicant's emergency plan. COL FSAR Section 18.1.1.3, "Applicable U.S. EPR Facilities," states that modifications to the existing EOF will be consistent with the HFE Program described in U.S. EPR FSAR Tier 2, Chapter 18 and NUREG-0696. Modifications will be evaluated using the U.S. EPR HFE Design Implementation process described in U.S. EPR FSAR Tier 2, Chapter 18.

COL application, Part 5, Section 3, "Multi-Unit Site Considerations," states that the existing EOF for CCNPP Units 1 and 2 will also be used for CCNPP Unit 3. Commitments made by the COL applicant in this evaluation that address EOF Human Factors are as follows:

- A human factors evaluation will be performed to ensure that the shared systems used for event assessment are appropriately designed to distinguish CCNPP Unit 3 from CCNPP Units 1 and 2.

- A task analysis will be performed to ensure communications, accommodations and administrative resources in the EOF are appropriately laid out to support CCNPP Unit 3 response requirements and address any impacts to the existing CCNPP Units.

- Facility layout and furnishings will be evaluated and modified to the extent necessary to allow for combined use if concurrent events are declared at CCNPP Units 1, 2, and 3, and activation of both EROs is required.

- A drill requiring mobilization and response activities of both EROs will be conducted prior to operation of CCNPP Unit 3 to demonstrate the ability of all utility emergency facilities to support a concurrent event. This drill will evaluate the adequacy of space, furnishing, communications, monitoring systems, and shared resources to ensure response functions for either unit are not degraded (in capability or timeliness) when responding to a concurrent event.

In RAI 299, Question 13.03-4**7**, the staff requested that the COL applicant proposed a License Condition, or ITAAC, to address the commitments made in the COL applicant's "Multi-Unit Site Consideration Analysis" (stated above, in part) as they pertain to the shared use of the EOF with CCNPP Units 1 and 2. The COL applicant proposed EP ITAAC 6.2.2 to ensure that the HFE program design requirements for CCNPP Unit 3 are incorporated in the EOF. In a May 19, 2009, response to RAI 299, Question 13.03-47, the COL applicant committed to include the three remaining Acceptance Criteria from CCNPP Unit 3 Impact to CCNPP Units 1 and 2 Evaluation to the existing human factors EP ITAAC that already exists (ITAAC Table 2.3-1, Item 6.2.2) as follows:

> Item 6.2.2: A task analysis will be performed to ensure communications, accommodations and administrative resources in the EOF are appropriately laid out to support Unit 3 response requirements and address any impacts to the existing Units.
>
> Item 6.2.3: Facility layout and furnishings will be evaluated and modified to the extent necessary to allow for combined use if concurrent events are declared at Units 1, 2, and 3, and activation of both EROs is required.
>
> Item 6.2.4: A drill requiring mobilization and response activities of both EROs will be conducted prior to operation of Unit 3 to demonstrate the ability of all utility emergency facilities to support a concurrent event. This drill will evaluate the adequacy of space, furnishing, communications, monitoring systems, and shared resources to ensure response functions for either unit are not degraded (in capability or timeliness) when responding to a concurrent event.

Technical Evaluation: (NUREG-0737, Section 8.4.1.k)

The staff's evaluation of the EOF human factors analysis is provided in Section 18.2, "Human Factors Engineering," of this report. The staff finds the additional information and textual revisions submitted in the May 19, 2011, response to RAI 299, Question 13.03-47 acceptable because they conform to the guidance in NUREG 0737, Supplement 1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporates the information and textual changes provided in the May 19, 2011, response to RAI 299, Question 13.03-47. The staff finds this acceptable because it conforms to the guidance in NUREG-0737, Supplement 1.

13.3C.8.29 EOF Activation and Staffing

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.4) (NUREG-0737, Section 8.4.1.j)

This section of the report describes the activation and staffing of the EOF as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.4 states the licensee has put into place plans and procedures to ensure timely activation of its ERFs, including the EOF. A goal of 60 minutes for minimum staffing of the EOF, following the declaration of an Alert or higher emergency classification, has been established for the ERO personnel. The Shift Manager (as Interim Emergency Director) will initiate a call-out in accordance with the implementing procedures. The ERO augmentation process identifies personnel capable of fulfilling the specific response functions that are identified in CCNPP Unit 3 Emergency Plan Unit 3 Annex, Tables B-1a and CCNPP Unit 3 Emergency Plan, Table B-1b. Additional information regarding staffing is provided in Section 13.3C.2.7 of this report. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," identified activation and operation procedures for the TSC, OSC, EOF, and JIC by title and number.

Technical Evaluation: (Section H.4) (NUREG-0737, Section 8.4.1.j)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes staffing and activation of the EOF. The staff finds this acceptable because it conforms to the guidance in NUREG-0654-FEMA/REP-1 and NUREG-0737, Supplement 1.

Other Emergency Facilities and Equipment

13.3C.8.30 Onsite Monitoring System

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.5)

This section of the report describes the onsite monitoring systems as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.5, "Monitoring Equipment Onsite," states that instrumentation for seismic monitoring, radiation monitoring, fire protection, and meteorological monitoring is available onsite. Geophysical monitors, radiological monitors and sampling, process monitors, and fire detection systems are described. Additional information related to onsite monitoring systems is provided in COL FSAR Section 11.5, "Process and Effluent Radiological Monitoring and Sampling Systems," and CCNPP Unit 3 Emergency Plan Annex, Section 4.2, "Assessment Resources." CCNPP Unit 3 Emergency Plan Annex, Section 4.2.C, "Onsite Fire Detection Instrumentation," states the plant fire alarm system meets the requirements of National Fire Protection Association standards and is provided in areas that contain safety-related components and systems per RG 1.189. Additional information related to fire protection systems are provided in COL FSAR Appendix 9.A, "Fire Protection Analysis," which incorporates U.S. EPR FSAR Tier 2, Section 9.5.1, "Fire Protection System," by reference and COL FSAR Section 9.B, "Fire Protection Analysis Plant Specific Supplement." COL application, Part 5, Section 3, "Multi-Unit Site Considerations," states that the existing meteorological monitoring system for CCNPP Units 1 and 2 will be used for CCNPP Unit 3.

Technical Evaluation: (Section H.5)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes onsite monitoring systems. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.8.31 Provisions to Acquire Data from Offsite Sources

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.6)

This section of the report describes the COL applicant's provisions to acquire data from offsite sources as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section H.6, "Monitoring Equipment Offsite," describes provisions to acquire data from, and have access to, offsite sources of monitoring and analysis equipment. Equipment includes geophysical monitors, radiological monitors and sampling, and laboratory facilities. CCNPP Unit 3 Emergency Plan, Section H.6.b, "Radiological Environmental Monitors and Sampling," states, in part, that the licensee has an extensive offsite environmental monitoring program to provide data on measurable levels of radiation and radioactive materials in the environs. The program includes the use of fixed continuous air samplers; routing sampling of ground and surface water, milk, and fish; and a fixed TLD monitoring network, including dosimeters and TLDs placed near fixed air sampler locations. CCNPP Unit 3 Emergency Plan, Section H.6.c, "Laboratory Facilities," provides a description as to how CCNPP Unit 3 would obtain outside analytical assistance, which may be requested from Federal and State agencies, or contracted laboratories. Additional information regarding offsite radiological laboratories and their capabilities in support of an emergency at CCNPP Unit 3 can be provided in Section 13.3C.3.6 of this report.

Technical Evaluation: (Section H.6)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions to acquire data from, or for emergency access to, offsite monitoring and analysis equipment. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.8.32 Offsite Radiological Monitoring Equipment

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.7)

This section of the report describes the availability of offsite radiological monitoring equipment in the vicinity of CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section H.7, "Offsite Monitoring Equipment Storage," states that a supply of emergency equipment such as portable survey, counting, air sampling instruments, and other radiological monitoring and supplies is maintained in sufficient quantity to meet the initial requirements for two Environmental Monitoring Teams. Additional equipment is available from other licensee generating sites, vendors, industry, and offsite response organizations during subsequent phases of an emergency.

Technical Evaluation: **(Section H.7)**

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the offsite radiological monitoring equipment in the vicinity of the nuclear facility. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.8.33 Meteorological Instrumentation

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.8)

This section of the report describes the ability of CCNPP Unit 3 to obtain meteorological information from other sources. CCNPP Unit 3 Emergency Plan, Section H.8, "Meteorological Monitoring," states that instrumentation for continuous reading of the wind speed, wind direction, air temperature, and delta air temperature is installed and maintained on a meteorological tower on the site. Additional capabilities are available to obtain representative current meteorological information from other sources, such as the NWS. COL application, Part 5, Section 3, "Multi-Unit Site Considerations," states that the existing meteorological monitoring system for CCNPP Units 1 and 2 will also be used for CCNPP Unit 3. The CCNPP Unit 3 site meteorological monitoring station is described in CCNPP Unit 3 Emergency Plan, Section H.5.a.1, "Meteorological Instrumentation." Additional information related to meteorological instrumentation is provided in COL FSAR Section 2.3.3, "Onsite Meteorological Measurement Program."

Technical Evaluation: (Section H.8)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the meteorological instrumentation and procedures and provisions to obtain representative current meteorological information from other sources. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.8.34 Inspection/Inventory of Emergency Equipment

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.10)

This section of the report describes the COL applicant's provisions to inspect, inventory and operationally check emergency equipment at CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section H.10, "Facility and Equipment Readiness," discusses inspection, inventory, and operational checks of emergency facility and equipment. Emergency equipment and supplies are inventoried on a quarterly basis and after each use in an emergency or drill. Sufficient reserves of instruments/equipment are maintained for replacement during calibration or repair. Calibration of equipment is conducted at intervals recommended by the supplier of the equipment, at a minimum. Operational checks of instruments and equipment are conducted during inspections. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," includes facility and equipment procedures by title and number.

Technical Evaluation: (Section H.10)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the provisions to inspect, inventory and operationally check emergency equipment/instruments at least once each calendar quarter and after each use. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.8.35 Emergency Kits

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.11)

This section of the report describes the COL applicant's ability to describe emergency kits by general use category. CCNPP Unit 3 Emergency Plan, Section H.10, states that there are sufficient replacement instruments and equipment for those removed from emergency kits. CCNPP Unit 3 Emergency Plan**,** Section H.11, "General Use Emergency Equipment," and CCNPP Unit 3 Emergency Plan, Table H-1, "Typical Emergency Equipment," discuss the typical emergency equipment available within each emergency facility. Other equipment is described in various sections of the CCNPP Unit 3 Emergency Plan.

Technical Evaluation: (Section H.11)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the emergency kits. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.8.36 Location to Coordinate Field Monitoring Data

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section H.12)

This section of the report describes the central point used for the receipt and analysis of field monitoring data and coordination of sample media. CCNPP Unit 3 Emergency Plan, Section H.12, "Collection Point for Field Samples," states that the onsite chemistry lab is the central point for the receipt and analysis of radiological field monitoring samples. CCNPP Unit 3 Emergency Plan, Section C.3, "Radiological Laboratories," states the onsite laboratory is the central point for receipt and analysis of all onsite samples. In RAI 372, Question 13.03-56, the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan the central location for the receipt and analysis of all field monitoring data (onsite and offsite) and coordination of sample media.

Technical Evaluation: (Section H.12)

The staff determined that the CCNPP Unit 3 Emergency Plan appears to be unclear with regard to a central point designated by the COL applicant (the onsite chemistry lab), for the receipt and analysis of all field monitoring data (onsite and offsite) and coordination of sample media. Therefore, in RAI 372, Question 13.03-56, the staff requested that the COL applicant clarify this issue. Accordingly, except for the open item in RAI 372, Question 13.03-56, requesting that the CCNPP Unit 3 Emergency Plan adequately establish a central point, the onsite chemistry lab, for the receipt and analysis of all field monitoring data and coordination of sample media, the staff finds this section acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1. **RAI 372, Question 13.03-56 is being tracked as an open item.**

13.3C.8.37 Facilities and Supplies for Emergency Medical Treatment

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.E.4)

This section of the report describes the first aid and medical treatment equipment available in the OSC as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan,

Section H.9, “OSC Capabilities,” states that an assortment of first aid and medical treatment equipment and supplies is maintained in the OSC. CCNPP Unit 3 Emergency Plan Annex, Section 4.1.F, “First Aid,” states that the First Aid station located in the Access Building facilitates medical treatment. Additional information related to first aid is discussed in CCNPP Unit 3 Emergency Plan, Section L, “Medical and Public Health Support.” In RAI 155, Question 13.03-17(A), the staff requested that the COL applicant provide additional information related to the location of first aid supplies and equipment. In a November 19, 2009, response to RAI 155, Question 13.03-17(A), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section L.2 to identify implementing procedure EP-AN-903, “Maintenance of Emergency Response Facilities,” as the source of this information.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.E.4)

In Section 13.3C.12.2 of this report, the staff evaluated the additional information and textual revisions submitted in the COL applicant’s November 19, 2009, response to RAI 155, Question 13.03-17(A) and finds them acceptable because they meet the requirements in 10 CFR Part 50, Appendix E. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-17(A). Accordingly, the staff finds the CCNPP Unit 3 Emergency Plan adequately describes the facilities and medical supplies at the site for appropriate emergency first aid treatment. The staff finds this acceptable because it meets the governing requirements provided in 10 CFR Part 50, Appendix E.

13.3C.8.38 Maintenance of Emergency Equipment and Supplies

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.G)

This section of the report describes the maintenance of emergency equipment and supplies as provided in the COL applicant’s emergency plan. CCNPP Unit 3 Emergency Plan, Section H.10, “Facility and Equipment Readiness,” discusses inspection, inventory, and operational checks of emergency facility and equipment. Emergency equipment and supplies are inventoried on a quarterly basis and after each use in an emergency or drill. Sufficient reserves of instruments/equipment are maintained for replacement during calibration or repair. Calibration of equipment is conducted at intervals recommended by the supplier of the equipment, at a minimum. Operational check of instruments and equipment are conducted during inspections. CCNPP Unit 3 Emergency Plan, Section P.4, “Emergency Plan and Agreement Revisions,” states that an annual review is conducted for the CCNPP Unit 3 Emergency Plan, its CCNPP Unit 3 Emergency Plan Annex, and supporting agreements. Implementing procedures are reviewed every 2 years and revised concurrently with the CCNPP Unit 3 Emergency Plan. CCNPP Unit 3 Emergency Plan, Section P.9, “Audit/Assessment of the Emergency Preparedness Program,” states that the licensee coordinates an independent review of the CCNPP Unit 3 emergency program to examine conformance with 10 CFR 50.47, 10 CFR 50.54, and 10 CFR Part 50, Appendix E at least every 12 months. The review includes the CCNPP Unit 3 Emergency Plan, implementing procedures and practices, training, readiness testing, equipment, and interfaces with State and local governments.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.G)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the provisions to ensure that the emergency plan, and its implementing procedures, and emergency equipment

and supplies are maintained up-to-date. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.8.39 ERDS Description, Testing, and Activation

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section VI)

This section of the report describes ERDS, its testing and activation, as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section F.1.b-d.5, "Emergency Response Data System (ERDS)," states that the ERDS supplies the NRC with selected plant data points via modem at approximately one minute intervals. CCNPP Unit 3 Emergency Plan, Section H.10, "Facility and Equipment Readiness," states that facilities and equipment are inspected and inventoried according to emergency preparedness procedures. CCNPP Unit 3 Emergency Plan Annex 2, "Procedure Cross-Reference to NUREG-0654," lists procedures for equipment operation and facility maintenance. The CCNPP Unit 3 Emergency Plan does not discuss maintenance of the ERDS. CCNPP Unit 3 Emergency Plan, Section N.2, "Drills," states that notifications are made to the NRC and others and that computer and critical communications equipment is functionally tested quarterly. In RAI 155, Question 13.03-13(F)(1), the staff requested that the COL applicant discuss the compatibility of the ERDS link control and data transmission with the NRC receiving system. In RAI 155, Question 13.03-13(F)(2), the staff requested that the COL applicant discuss the software and hardware maintenance of the ERDS. In a November 19, 2009, response to RAI 155, Question 13.03-13(F)(1) and Question 13.03-13(F)(2), the COL applicant stated that CCNPP Unit 3 will meet the requirements of 10 CFR Part 50, Appendix E.VI and 10 CFR Part 50, Appendix E.VI.3 as they relate to ERDS compatibility and maintenance. The COL applicant proposed EP ITAAC 4.2.3 to demonstrate that the means exists to transfer data between ERDS and the NRC Operations Center.

(10 CFR 50.72(a)(4))

CCNPP Unit 3 Emergency Plan, Section F.1.5, "ERDS," states the ERDS is activated as soon as possible but not later than one hour after declaration of an alert, site area emergency, or general emergency.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section VI} (10 CFR 50.72(a)(4))

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Questions 13.03-13(F)(1) and 13.03-13(F)(2) acceptable. Therefore, the staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the ERDS, as a direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected parameters. The staff finds this acceptable because it meets the requirements provided in 10 CFR Part 50, Appendix E. The staff also finds that the CCNPP Unit 3 Emergency Plan adequately describes the activation of ERDS and, therefore, meets the regulatory requirements in 10 CFR 50.72(a)(4).

13.3C.8.40 Conclusions

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's revised emergency plan addressing the open item related to RAI 372,

Question 13.03-56, the confirmatory item related to RAI 155, Question 13.03-13(B). The staff is unable to make a final determination whether the information provided in the CCNPP Unit 3 Emergency Plan regarding emergency facilities and equipment is acceptable and meets the requirements of 10 CFR 50.47 (b)(8), because it complies with the guidance in NUREG-064/FEMA-REP-1, Evaluation Criterion H. and meets the applicable requirements of 10 CFR Part 50, Appendix E, and NUREG-0737, Supplement 1, as described above.

13.3C.9 Accident Assessment

13.3C.9.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(9), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Accident Assessment" in 10 CFR Part 50, Appendix E and 10 CFR 50.34.

13.3C.9.2 Initiating Conditions for Emergency Classes

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.1)

This section of the report describes the plant system and effluent parameter values characteristic of a spectrum of accidents as identified by the COL applicant in their emergency plan. CCNPP Unit 3 Emergency Plan, Section I.1, “Accident Assessment,” states that plant system and effluent parameter values are used to determine accident severity and emergency classification, if needed. Specific plant system parameters that characterize an EAL are presented in the EAL Technical Basis document described in Section 13.3C.4 of this report. In RAI 155, Question 13.03-14(A), the staff requested that the COL applicant provide a specific reference to the EAL Technical Basis document in the CCNPP Unit 3 Emergency Plan. In a November 19, 2009, response to RAI 155, Question 13.0314(A), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Appendix 1 to include a reference to the EAL Technical Basis document. Additional information regarding initiating conditions for emergency classes is provided in Section 13.3C.4 of this report.

Technical Evaluation: (Section I.1)

The staff finds the additional information and textual revisions submitted by the COL applicant in the November 19, 2009, response to RAI 155, Question 13.03-14(A) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-14(A). The staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and accidents, and identifies the plant parameter values or other information which correspond to the initiating conditions for each emergency class. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.9.3 Capability to Continuously Assess an Accident

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.2)
(10 CFR 50.34(f)(2)(xvii))

This section of the report describes the COL applicant's capability to continuously assess an accident. COL FSAR Section 13.3 incorporates by reference the U.S. EPR FSAR Tier 2, Section 13.3, "Emergency Planning," and its supplements. U.S. EPR FSAR Tier 2, Section 13.3 states that data communications within the TSC are provided through the PICS, which is described in U.S. EPR FSAR Tier 2, Section 7.1.1.3.2. This non-safety-related digital I&C system provides a screen-based interface capable of monitoring plant parameters during normal, off-normal, and emergency conditions. The PICS electronically provides CR safety parameter information to the TSC, and the NRC through ERDS. The PICS provides a display of Type A-E post-accident monitoring (PAM) variables. Safety-related information systems are described in detail in COL FSAR Section 7.5, with accident monitoring systems described in COL FSAR Section 7.5.1.2 and information systems provided in ERFs described in COL FSAR Section 7.5.1.3.

COL FSAR Section 7.5.2.2.1, "Conformance with Regulatory Guide (RG) 1.97 and BTP 7-10," incorporates by reference this section of the U.S. EPR FSAR which provides a preliminary list of PAM variables in COL FSAR Table 7.5.1, "Initial Inventory of Post-Accident Monitoring Variables." The final list of PAM variables is addressed in COL FSAR Section 7.5.2.2.1 by the following License Condition:

> Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC, shall update the initial inventory list of accident monitoring variables in Table 7.5-1, with a final list upon completion of the emergency operating and abnormal operating procedures prior to fuel loading.

CCNPP Unit 3 Emergency Plan, Section H.1.C, "Process Monitors," states, in part, that the Safety Parameter Display System (SPDS) provides a display of plant parameters from which the safety status of operation may be assessed in the CR, TSC, and EOF. SPDS and other display systems in the TSC and EOF promote the exchange of information between these facilities and the CR, assisting the ERO in the decision making process.

CCNPP Unit 3 Emergency Plan, Section I.2, "Onsite Accident Assessment Capabilities," states that resources are available to provide initial and continuing information for accident assessment throughout the course of an event. These resources include: Plant parameter display systems, liquid and gaseous sampling system, Area and Process Radiation Monitoring Systems, and Accident Radiation Monitoring Systems. The Accident Radiation Monitoring System includes high range containment radiation monitors.

CCNPP Unit 3 Emergency Plan, Section H.5.b.1, "The Radiation Monitoring System (RMS)," states that in-plant iodine and particulate monitoring results are available in the CR, TSC, and EOF. Radiation monitors are located at selected onsite areas. When radiation levels increase above a pre-set level, an alarm sounds in the CR. Some radiation monitors also alarm at the monitor's location. CCNPP Unit 3 Emergency Plan, Section H.5.b.1 also provides a description of its three subcomponents (i.e., Area Radiation and Continuous Air Monitors (ARMs and CAMs), Process Radiation Monitors (PRMs), and accident/high-range radiation monitors) and their capabilities to measure and/or monitor in-plant and containment exposure rates, airborne particulate and iodine concentrations at various locations within the operating area, and radioactive noble gas, iodine, and particulate concentrations in plant effluent and other gaseous and fluid streams. The high range instruments are used to track radiation levels under accident

or post-accident conditions (e.g. containment high range radiation monitors). Additional information regarding the RMS capabilities and design are located in Section 12.3 of this report and the COL FSAR.

CCNPP Unit 3 Emergency Plan, Section H.5.b.2, "Liquid and Gaseous Sampling Systems," states that sampling systems are installed or could be modified to permit reactor coolant and containment atmosphere sampling even under severe accident conditions. Additional information regarding liquid and gaseous sampling capabilities is located in COL FSAR Section 9.3, "Process Auxiliaries," and Section 9.3.2, "Process Sampling Systems," of this report. Discussion of the sampling systems that will be used for CCNPP Unit 3, including the severe accident sampling system and the hydrogen monitoring system, are also provided in COL FSAR Section 9.3.2. In a July 30, 2010, response to follow-up RAI 247, Question 13.03-42(C), the COL applicant stated, in part, that in U.S.EPR FSAR Tier 2, Section 12.3.5.2, "Post –Accident Access to Radiological Vital Areas," the design of the U.S. EPR allows access to the post-LOCA sampling room in the Fuel Building with each task resulting in less than 5 Rem TEDE in accordance with 10 CFR 50.34(F)(2)(vii), 10 CFR Part 50, Appendix A GDC 19 "Control Room," and NUREG-0737, Section II.B.2. In addition, the COL applicant stated that contingency procedures to obtain and analyze highly radioactive liquid and gaseous samples will be written and maintained outside the EP Program, within the Radiation Protection or Chemistry departments.

CCNPP Unit 3 Emergency Plan, Section I.5, "Meteorological Information," states that local meteorological data is available from an onsite meteorological tower. The data available includes wind speed, wind direction, temperature, and delta temperature. This data is used by the site ERO and provided to the State, and NRC to enable near real-time predictions of the atmospheric effluent transport and diffusion. Meteorological data is available in the CR, TSC, and EOF. Additional information regarding the availability of meteorological instrumentation onsite and backup capabilities using the NWS (or regional forecasters) for accident assessment purposes can be found in Sections 13.3C.8.33 and 7.5, "Information Systems Important to Safety," of this report, and Sections A.1.a.1.i, "Federal Agencies,: and CCNPP Unit 3 Emergency Plan, Section H.5.a.1, "Meteorological Instrumentation." In RAI 155, Question 13.03-14(D), the staff requested that the COL applicant clarify the 24 hours per day/7 days per week (24/7) availability of the NWS. In a November 19, 2009, response to RAI 155, Question 13.03-14(D), the COL applicant stated that the NWS forecast is available 24 hours per day/7 days per week (24/7) at the forecast.www.weather.gov website. The COL applicant committed to include this statement in CCNPP Unit 3 Emergency Plan, Section A.1.a.1.i. COL FSAR Section 7.5 incorporates by reference U.S. EPR FSAR Tier 2, Section 7.5 supplemented with the following CCNPP Unit 3 site-specific post-accident monitoring variables: ESWS Cooling Tower Basin Level, Meteorological Monitoring System (MMS) Wind Speed – 10 and 60 meters, MMS Wind Direction 10 and 60 meters, and MMS Vertical Temperature Difference between 10 and 60 meters. CCNPP Unit 3 Impact to CCNPP Units 1 & 2 Emergency Preparedness Program Evaluation, Section 2, "Statement of Intent," states that meteorological tower instrumentation will be shared by all units, to include CCNPP Units 1 and 2.

The COL applicant proposed EP ITAAC 7.1 to demonstrate that the means exists to provide initial and continuing radiological assessment throughout the course of an accident.

Technical Evaluation: (Section I.2) (10 CFR 50.34(f)(2)(xvii))

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-14(D) and the July 30, 2010, response to follow-up RAI 247, Question 13.03-42(C) acceptable because they meet the requirements in 10 CFR Part 50, Appendix E, and conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-14(D). Therefore, the staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the methods of making initial and continuing assessment of plant conditions through the course of an accident. The staff find this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 and meets the requirements of 10 CFR 50.34(f)(2)(xvii).

13.3C.9.4 Capability to Determine Source Term

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.3.a) (10 CFR Part 50, Appendix E, Section IV.E.2)

This section of the report describes the COL applicant's methods and techniques to determine the source term as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section I.3, "Source Term Determination," states that source term (or core damage) estimations are used for accident evaluation. Assessment methodologies are intended to provide a rapid best-estimate of core damage. The methods are stated to be valid at any time following an accident. During planning, core damage considerations are used for EAL Initiating Conditions and as thresholds for declaring a General Emergency. Methods used to determine the amount or types of core damage are also described. CCNPP Unit 3 Emergency Plan, Appendix 2 indicates that procedure EP-AN-500, "Core Damage Assessment," is to be implemented at CCNPP Unit 3. The COL applicant proposed EP ITAAC 7.2 to demonstrate that the means exist to determine the source term of releases of radioactive material based on plant system parameters and effluent monitors.

Technical Evaluation: (Section I.3.a) (10 CFR Part 50, Appendix E, Section IV.E.2)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes methods and techniques to be used to determine the source term of releases of radioactive material within plant systems based on plant system parameters and effluent monitors. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.9.5 Capability to Determine the Magnitude of a Radiological Release

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.3.b) (10 CFR Part 50, Appendix E, Section IV.B)

This section of the report describes the COL applicant's capability to determine the magnitude of a radiological release as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section I.3, "Source Term Determination," states that core damage estimates help to determine the potential quality and/or quantity of source term available for release in support of projected offsite doses and protective action recommendations. CCNPP Unit 3 Emergency Plan, Section I.4, "Effluent Monitor Data and Dose Projection," states that radiological instrumentation readings will be incorporated into the dose assessment performed

by the ERO. The methods include using plant effluent monitors and system flow rates, a variety of containment failures or leak rates in conjunction with available source term estimates, sampling of the release point, and field monitoring data. The COL applicant proposed EP ITAAC 7.2 to demonstrate that the means exist to determine the magnitude of releases of radioactive material based on plant system parameters and effluent monitors.

Technical Evaluation: (Section I.3.b) (10 CFR Part 50, Appendix E, Section IV.B)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes methods and techniques to be used tp determine the magnitude of releases of radioactive material within plant systems based on plant system parameters and effluent monitors. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.9.6 Relationship Between Effluent Monitors and Exposure

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.4)
(10 CFR Part 50, Appendix E, Section IV.A.4; 10 CFR Part 50, Appendix E, Section IV.B)

This section of the report describes the COL applicant's ability to establish the relationship between effluent monitors and exposures as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section I.4, "Effluent Monitor Data and Dose Projection," states that monitored effluent points and system flow rates, release point samples, monitoring team data, and meteorological information will be used to estimate doses by computer methods. The methods used to project offsite doses are included. The computer applications are evaluated against the Environmental Protection Agency, EPA-400 plume exposure protective action guidelines (PAGs) for the early phase of an accident to determine the necessity for offsite protection action recommendations (PARs). In RAI 372, Question 13.03-57, the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan whether the computerized dose assessment program results are evaluated against EPA-400 to determine whether PARs are necessary. In RAI 372, Question 13.03-57, the staff also requested that the COL applicant provide additional information in the CCNPP Unit 3 Emergency Plan about the specific computerized dose assessment program or platform and its suitability for the CCNPP Unit 3 site (consistent with the guidance in NUREG-0654/FEMA-REP1, Appendix 2 – pp 2-2 & 2-3) to be used by dose assessment personnel. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," cross-references accident assessment planning standards with EP-AN-500, "Core Damage Assessment," and EP-AN-510, "Dose Assessment," as well as "position specific details provided in the facility procedures EP-AN-2xx series." In RAI 372, Question 13.03-57, the staff requested that the COL applicant provide a brief summary of the content of the CCNPP Unit 3 Emergency Plan implementing procedures to be used for dose assessment referenced in the CCNPP Unit 3 Emergency Plan, including Appendix 2. The COL applicant proposed EP ITAAC 7.3 to demonstrate that the impact of a radiological release to the environment is able to be assessed by utilizing the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions.

Technical Evaluation: (Section I.4) (10 CFR Part 50, Appendix E, Section IV.A.4; 10 CFR Part 50, Appendix E, Section IV.B)

The staff needed additional information from the COL applicant to complete its review regarding dose assessment. Therefore, in RAI 372, Question 13.03-57, the staff requested that the COL applicant address this issue.

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's response to RAI 372, Question 13.03-57, and based on the staff's review of the relationship between effluent monitoring readings and personnel exposures, to make a final determination whether the CCNPP Unit 3 Emergency Plan adequately establishes the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions, conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the applicable requirements in 10 CFR Part 50, Appendix E.

13.3C.9.7 Meteorological Information

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.5)

This section of the report describes the COL applicant's capability of acquiring and evaluating meteorological information as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section I.5, "Meteorological Information," states that meteorological data from the onsite tower is available onsite in the CR, TSC, and EOF and provided to the State and NRC. CCNPP Unit 3 Emergency Plan, Section H.5.a.1, "Meteorological Instrumentation," states that the information is transferred onsite by means of the plant computer system. In RAI 155, Question 13.03-14(F), the staff requested that the COL applicant clarify how meteorological data will be provided to the State(s). In a November 19, 2009, response to RAI 155, Question 13.03-14(F), the COL applicant stated that meteorological data is part of the information included in the notification to the State described in CCNPP Unit 3 Emergency Plan, Section E.3 and Section 13.3C.5.3 of this report. The COL applicant proposed EP ITAAC 7.4 to test the capability that the means exists to acquire and evaluate meteorological data/information. Additional information regarding meteorological instrumentation and capabilities is located in Sections 2.3.3, "Onsite Meteorological Measurement Program," and 13.3C.9.3 of the report. Also, additional information on meteorological post-accident monitoring variable is provided in Section 7.5, "Information Systems Important to Safety," of this report.

Technical Evaluation: (Section I.5)

Staff finds the additional information provided in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-14(F) acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the capability of acquiring and evaluating meteorological information. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.9.8 Projecting Dose When Instrumentation is Inoperable

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.6)

This section of the report describes the COL applicant's ability to determine the release rate and projected dose if instrumentation is inoperable as provided in the COL applicant's emergency

plan. CCNPP Unit 3 Emergency Plan, Section I.6, "Unmonitored Release," states that dose projections can be made during a release from samples in cases where effluent monitors are off-scale or inoperative, or when the release occurs by an unmonitored path. When samples are not available, default isotopic mixes can be specified for dose projection estimation. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," identifies a dose assessment procedure by title and number.

Technical Evaluation: (Section I.6)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes the methodology to determine the release rate/projected doses if the instrumentation used for assessment are off-scale or inoperable. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.9.9 Field Monitoring Capability

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.7)

This section of the report describes the COL applicant's capability and resources for field monitoring as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section I.7, "Onsite and Offsite Monitoring," states that the licensee has the ability to measure air samples and measure gamma dose rates for airborne and liquid releases. This section also states that the capability to take offsite soil, water, and vegetation samples would be provided by either the Monitoring Teams or a contracted vendor. Sampling is conducted at both predetermined locations and those identified during and after a release. CCNPP Unit 3 Emergency Plan, Section H.6.b, "Radiological Environmental Monitors and Sampling," states that fixed continuous air samplers, a fixed TLD monitoring network, and routine sampling of water, milk, and fish are included in the licensee's offsite environmental monitoring program. CCNPP Unit 3 Emergency Plan, Section H.7, "Offsite Monitoring Equipment Storage," indicates that supplies for two field teams are available.

Technical Evaluation: (Section I.7)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the capability and resources for field monitoring within the plume exposure emergency planning zone. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.9.10 Capability to Rapidly Assess Radiological Hazards

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.8)

This section of the report describes the COL applicant's capability to rapidly assess radiological hazards as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section I.8, "Monitoring Teams," states, in part, that the licensee monitoring teams are dispatched when radioactive material may be released from the plant. Monitoring teams are composed of two individuals that collect radiological survey and sample data, which is used to define affected area boundaries, assess magnitude, and verify or modify PARs. Data from teams are transmitted to the emergency facilities. This capability is available onsite 24 hours a day. In a November 19, 2009, response to RAI 155, Question 13.03-14(G), the COL applicant stated, in part, that CCNPP Unit 3 Emergency Plan, Table B-1b specifies a 60-minute response time for field monitoring team personnel and deployment of teams will be done at the discretion

of the Environmental Assessment Director based on plant conditions. In follow-up RAI 299, Question 13.03-48, the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan how the capability to conduct offsite surveys and sampling is available 24 hours a day, when CCNPP Unit 3 Emergency Plan, Table B-1a does not specify any on-shift ERO responders as performing this activity. In a May 19, 2011, response to follow-up RAI 299, Question 13.03-48, the COL applicant provided clarification regarding the capability to conduct offsite environmental survey and sampling 24 hours per day using existing on-shift resources as discussed in CCNPP Unit 3 Emergency Plan, Section I.8.

CCNPP Unit 3 Emergency Plan, Section B.5.b.6, "Environmental Assessment Director," provides a discussion regarding the establishment of, and maintaining contact with Monitoring Teams, including the coordination and transfer of direction when Monitoring Teams are initiated under the Radiation Controls Coordinator in the TSC. In addition, the Environmental Assessment Director is responsible for documenting Monitoring Team data. CCNPP Unit 3 Emergency Plan, Section F.1.b-d.6, "Monitoring Team Communications," discusses communication resources available to the Monitoring Teams. The COL applicant proposed EP ITAAC 7.5 to ensure a test will be performed of the capabilities to make rapid assessments of actual or potential magnitude and locations of radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times.

Technical Evaluation: (Section I.8)

The staff finds the COL applicant's May 19, 2011, response to follow-up RAI 299, Question 13.03-48 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the COL applicant's May 19, 2011, response to RAI 299, Question 13.03-48. The staff is addressing concerns regarding dose assessment capabilities in Section 13.3C.9.6 of this report. The staff cannot make a final determination for this section of the report consistent with the guidance in NUREG-0654/FEMA-REP-1 until an acceptable resolution to RAI 372, Questions 13.03-57, is received. **RAI 372 Questions 13.03-57**, **is being tracked as an open item**.

13.3C.9.11 Capability to Measure Radioiodine Concentrations in Air

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.9)

This section of the report describes the COL applicant's capability to measure radioiodine concentrations in air as provided in the COL applicant's emergency plan CCNPP Unit 3 Emergency Plan, Section I.9, "Iodine Monitoring," indicates that monitoring equipment has the capability to detect and measure radioiodine concentrations as low as 1E-07 microcuries per cubic centimeter (µCi/cc) in the field. Teams are instructed to move to low background areas to minimize the chance of interference from noble gases. The COL applicant proposed EP ITAAC 7.6 to ensure a test will be performed of the capabilities to detect and measure radioiodine concentrations in air in the plume exposure emergency planning zone (EPZ), as low as 10^{-7} µCi/cc under field conditions.

Technical Evaluation: (Section I.9)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as

10^{7} µCi/cc under field conditions. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.9.12 Means to Relate Various Parameters to Dose Rates

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section I.10)

This section of the report describes the COL applicant's means to relate various parameters to dose as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section I.10, "Dose Estimates," states that procedures exist for the correlation of air activity levels to dose rate for "key isotopes." In RAI 155, Question 13.03-14(H), the staff requested that the COL applicant provide a discussion regarding the key isotopes and a summary of the provisions to estimate integrated dose from the projected and actual dose rates and compare these estimates with the protective action guides be included in the CCNPP Unit 3 Emergency Plan. In a November 19, 2009, response to RAI 155, Question 13.03-14(H), the COL applicant stated that, as discussed in COL application Part 10, ITAAC, Table 2.3-1, key isotope and dose estimating information will be contained in implementing procedures that will be submitted no less than 180 days prior to fuel loading. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," identifies a dose assessment procedure by title and number. The COL applicant proposed EP ITAAC 7.7 to ensure a test will be performed of the capabilities to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA PAGs.

Technical Evaluation: (Section I.10)

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question 13.03-14(H) acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes and gross radioactivity measurements. The CCNPP Unit 3 Emergency Plan also adequately describes provisions for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.9.13 Conclusions

The staff will update the safety evaluation of emergency preparedness based on the COL applicant's response to the open issues in RAI 372, Question 13.03-57, and the staff's review of the CCNPP Unit 3 Emergency Plan as described above for Accident Assessment. The staff is unable to make a final determination whether the information provided in the CCNPP Unit 3 Emergency Plan regarding accident assessment is acceptable and meets the requirements of 10 CFR 50.47(b)(9) complies with the guidance in NUREG-0654/FEMA-REP-1, Evaluation Criterion I, and meets the applicable portions of 10 CFR Part 50, Appendix E, and 10 CFR 50.34 as described above.

13.3C.10 Protective Response

13.3C.10.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(10), the staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

13.3C.10.2 Warning Onsite Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.1.a-d)

This section of the report describes the COL applicant's means and time required to warn onsite personnel as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.1, "Notification of Onsite Personnel," states that all personnel within the Protected Area are notified by recognizable alarms and/or public address announcements within 15 minutes of the initial classification or escalation of an emergency. Announcements include emergency classification and actions to be taken by Emergency Response Organization, non-ERO, contractor personnel, and visitors. In RAI 155, Question 13.03-15(A), the staff requested that the COL applicant provide an explanation of the provisions to notify personnel in high noise areas and outbuildings and people outside of the Protected Area but within the Owner Controlled Area (OCA). In a November 19, 2009, response to RAI 155, Question 13.03-15(A), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section J.1 to include notification provisions for personnel in high noise areas and in outbuildings and OCA areas. CCNPP Unit 3 Emergency Plan, Section J.2, "Evacuation Locations," states that site visitors follow their escorts. The COL applicant proposed EP ITAAC 8.1 to ensure a test will be performed to confirm the capabilities to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator.

Technical Evaluation: (Section J.1.a-d)

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-15(A) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-15(A). The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes the means and time required to warn or advise onsite individuals and individuals who may be in areas controlled by the operator, including employees not having emergency assignments, visitors, contractor and construction personnel, and other persons who may be in the public access areas on or passing through the site or within the owner controlled area. The staff finds this acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.3 Evacuation Routes for Onsite Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.2)

This section of the report describes the COL applicant's provisions for evacuation routes and for transportation of onsite individuals as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.2, "Evacuation Locations," states that if a site evacuation is required, non-essential personnel are directed to pre-designated assembly areas or to immediately evacuate the site. Visitors to the site will assemble with and follow the instructions of their escorts. Non-essential personnel within the PA will assemble with, and follow, the

instructions of their escorts. Personal transportation (if available) will normally be used and established evacuation routes will be followed. Personnel without transportation will be identified and provided transportation as necessary. CCNPP Unit 3 Emergency Plan, Section J.4, "Evacuation," states that the site has identified locations that serve as assembly areas and offsite locations for non-essential personnel. Implementing procedures describe equipment, supplies and general operation of these facilities. Evacuation shall commence in accordance with site procedures as directed by the Emergency Plan Manager (EPM) or designee unless severe weather conditions threaten safe transport. The initiation of a site evacuation will be reported to the appropriate State/local agency. Site assembly areas and evacuation routes (primary and alternate) are described in the CCNPP Unit 3 Emergency Plan Annex (Annex), Sections 5.1, "Unit Assembly Areas," and 5.2, "Unit Evacuation Routes." CCNPP Unit 3 Emergency Plan, Figures 1.1, "Map of Site and Surrounding Area," and 1.2, "10-Mile (16 Kilometer) Emergency Planning Zone," illustrate the main ingress/egress route and alternate evacuation routes for the CCNPP Unit 3 site. In RAI 155, Question 13.03-15(B), the staff requested that the COL applicant identify the location of offsite relocation areas in the CCNPP Unit 3 Emergency Plan and obtain letters of agreement, if needed, if these areas are not under the COL applicant's control. In a November 19, 2009, response to RAI 155, Question 13.03-15(B), the COL applicant stated that if a site evacuation is performed at a General Emergency when there are radiological contamination concerns, personnel and vehicles would be monitored and decontaminated at the Farm Demo Building prior to being instructed to follow EPZ evacuation instructions and proceed to reception centers established for the general public. CCNPP ETE Report, Figure 10-1, "General Population Reception Centers," identifies general population reception centers to be used by evacuating non-essential personnel.

Technical Evaluation: (Section J.2)

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question 13.03-15(B) acceptable since it provides clarification regarding the location for non-essential personnel to assemble offsite should decontamination be necessary, and conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for evacuation routes and transportation for onsite individuals to some suitable offsite location. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.4 Radiological Monitoring of Onsite Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.3)

This section of the report describes the COL applicant's capability to provide for radiological monitoring of people evacuated from the site as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.3, "Radiological Monitoring of Evacuees," states that personnel will be monitored by the portal monitors as they exit the Protected Area(s). Portable friskers will be used in the Assembly Areas or, if evacuees are sent offsite, they will be advised of offsite monitoring locations on an as needed basis. CCNPP Unit 3 Emergency Plan Section B.5.a.11, "Radiation Controls Coordinator [RCC]," states that the RCC is responsible to coordinate the Monitoring Teams until the EOF Radiological Assessment group is staffed. Once the EOF is staffed, the control of the monitoring teams can be passed to the EOF Environmental Assessment Director.

Technical Evaluation: (Section J.3)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for radiological monitoring of people evacuated from the site. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.5 Evacuation of Non-essential Onsite Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.4)

This section of the report describes the COL applicant's capability to evacuate onsite non-essential personnel as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.4, "Evacuation," states that non-essential staff will be called to Assembly Areas and/or sent offsite for evacuation. Monitoring is to occur at the Assembly Area. CCNPP Unit 3 Emergency Plan, Section K.5, "Contamination and Decontamination," indicates that normal decontamination areas will be used, and that temporary decontamination areas can also be set up. In CCNPP Unit 3 Emergency Plan Annex, Section 5.1, "Unit Assembly Areas," four Assembly Areas are indicated at the: (1) Access Building: (2) Radiation Protection Lab area; certain areas of the (3) Radioactive Waste Processing Building; and (4) Switchgear Building.

Technical Evaluation: (Section J.4)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for the evacuation of onsite non-essential personnel, including the capability for decontamination. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.6 Onsite Personnel Accountability

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.5)

This section of the report describes the COL applicant's capability to account for onsite non-essential personnel as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.5, "Accountability," states, in part, that when accountability of unit personnel is determined to be necessary by the Shift Manager or Emergency Plant Manager, all personnel within the affected unit protected area shall be accounted for and the names of missing individuals (if any) are determined within 30 minutes. Should missing personnel be identified, search and rescue operations are initiated. The COL applicant states that accountability is performed in conjunction with assembly, and is required to be initiated whenever a Site Area Emergency or higher classification is declared. Accountability within the Protected Area is maintained throughout the course of the event, unless specifically terminated by the Emergency Plant Manager. The movement of personnel for the purposes of accountability may be delayed for health and safety reasons, such as severe weather conditions or security concerns. CCNPP Unit 3 Emergency Plan, Section B.5.a, "Plant Emergency Response Organization," indicates that the Emergency Plant Manager at the TSC oversees the accountability processes at the Assembly Areas.

Technical Evaluation: (Section J.5)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for a capability to account for all individuals onsite at the time of the emergency and ascertain the names of

missing individuals within 30 minutes of the start of an emergency, and account for all onsite individuals continuously thereafter. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.7 Protection for Personnel Remaining or Arriving Onsite

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.6.a-c)

This section of the report describes the provisions for those onsite during an emergency as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.6, "Provisions for Onsite Personnel," states that the licensee maintains an inventory of respiratory protection equipment, anti-contamination clothing, and potassium iodide (KI) for use by emergency workers, if needed. Conditions where use is warranted is provided in CCNPP Unit 3 Emergency Plan, Sections J.6.a, "Use of Respirators;" J.6.b, "Use of Protective Clothing;" and J.6.c, "Use of Potassium Iodide (KI)." Radiation protection procedures describe criteria for issuance of the respirators and anti-contamination clothing. KI is recommended when thyroid doses are projected to be greater than 0.5 Sv (50 Rem) Committed Effective Dose Equivalent (CEDE). CCNPP Unit 3 Emergency Plan Section J.6.c indicates that, "The station(s) are responsible for maintaining a supply of KI at their respective site." In RAI 155, Question 13.03-15(D), the staff requested that the COL applicant identify the location of the KI supply to be used by onsite personnel and the individual responsible for maintenance and distribution of KI. In a November 19, 2009, response to RAI 155, Section 13.03-15(D), the COL applicant stated that the specific KI storage locations and instructions for distribution will be included in implementing procedures. In addition, the COL applicant identified the Emergency Preparedness Manager as responsible for maintenance and readiness of the KI and the Emergency Plant Manager or Emergency Director as having responsibility for approval of issuing KI.

Technical Evaluation: (Section J.6.a-c)

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question 13.03-15(D**)** acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for individual respiratory protection, use of protective clothing, and use of radio-protective drugs (e.g., individual thyroid protection). The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.8 Recommending of Protective Actions

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.7)

This section of the report describes the COL applicant's mechanism for recommending protective actions to the appropriate State and local authorities as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.7, "Mechanisms for Implementing Protective Action Recommendations [PARs]," discusses mechanisms to recommend protective actions to State and local authorities. PARs are developed by evaluating plant conditions, projected dose and dose rates, and/or field monitoring data and providing the data to offsite agencies responsible for implementing protective actions. The individual in Command and Control (Shift Manager, Emergency Plant Manager, or Emergency Director) approves PARs prior to providing them to the offsite agencies. CCNPP Unit 3 Emergency Plan, Section E.2.b, "Offsite," states that PAR notifications to State and local are made within

15 minutes. CCNPP Unit 3 Emergency Plan, Section D.2, "Emergency Action Levels [EALs]," states that EALs listed in the CCNPP Unit 3 Emergency Plan Annex are developed in accordance to RG 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," and NEI guidance. CCNPP Unit 3 Emergency Plan, Section J.6.c, "Use of Potassium Iodide (KI)," discusses the process to recommend its use based on values in, EPA-400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents." Supplies of KI are maintained at the station(s). The Emergency Plant Manager or Emergency Director is responsible for approval and issuing KI. CCNPP Unit 3 Emergency Plan, Section J, "Protective Response," discusses how to evaluate the need for and initiate a PAR. In RAI 155, Question 13.03-15(E), the staff requested that the COL applicant provide additional information related to relaxing and extending PARs. In a November 19, 2009, response to RAI 155, Question 13.03-15(E), the COL applicant stated that PARs are not relaxed until recovery has been initiated. The COL applicant also explained the process of assessing, developing and notification of PARs, and changes to PARs. The COL applicant committed to include a clarifying statement in CCNPP Unit 3 Emergency Plan, Section J.10 regarding retaining areas previously recommended for evacuation when new PARs are issued for wind shifts. CCNPP Unit 3 Emergency Plan, Section J.10.m, "Implementation of Protective Action Recommendations," discusses both sheltering and evacuation as part of their PARs. The criteria for advising each are indicated in this section and in CCNPP Unit 3 Emergency Plan, Figure J-1.

Technical Evaluation: (Section J.7)

The staff finds the additional information and textual revisions submitted by the COL applicant in the November 19, 2009, response to RAI 155, Question 13.03-15(E) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the November 19, 2009, response to RAI 155, Question 13.03-15(E). The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes a mechanism for recommending protective actions to the appropriate State and local authorities. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.9 Evacuation Time Estimates

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.8)

This section of the report describes the COL applicant's analysis of evacuation time estimates as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section J.8, "Evacuation Time Estimates (ETEs)," states that an independent report of time estimates for resident and transient population evacuations was prepared. The CCNPP Unit 3 Emergency Plan also states that the ETEs for the plume exposure EPZ are in CCNPP Unit 3 Emergency Plan, Appendix 5. CCNPP Unit 3 Emergency Plan, Appendix 5 only references the ETE Report (August 30, 2002 version) and states, "The results are provided separately in Part 11 COL application." A 2002 ETE report was provided in COL application, Part 05, "Emergency Plan." The COL applicant subsequently submitted a report, "Calvert Cliffs Nuclear Power Plant, Development of Evacuation Time Estimates," April 2008 (ETE Report), and the "Addendum to Calvert Cliffs Nuclear Power Plant, Development of Evacuation Time Estimates," August 2008. In RAI 155, Question 13.03-15(F), the staff requested that the COL applicant clarify the location of the referenced ETE report and revise the CCNPP Unit 3 Emergency Plan

accordingly. In a November 19, 2009, response to RAI 155, Question 13.03-15(F), the COL applicant stated, in part, that the ETE is in the COL application, Part 5.

Technical Evaluation: (Section J.8)

The staff's evaluation of the Evacuation Time Estimate (ETE) report is addressed in Section 13.3C.18 of this report. The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question 13.03-15(F) acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides time estimates for evacuation within the plume exposure EPZ. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.10 Plans to Implement Protective Measures

This section of the report describes the COL applicant's plans to implement protective measures for the plume exposure pathway including providing maps showing evacuation routes and areas, the population distribution and the means to notify the population and to protect those with impaired mobility, providing evacuation time estimates and identifying impediments to evacuation, identifying relocation centers and a means of relocation, controlling access to evacuated areas, and identifying the bases for the choice of recommended protective actions.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.10.a)

CCNPP Unit 3 Emergency Plan, Section J.10.a, "Implementation of Protective Action Recommendations," states that public evacuees leave the site on designated evacuation routes. CCNPP Unit 3 Emergency Plan, Figure 1-2, "10-Mile (16 Kilometer) Emergency Planning Zone," provides a map of regional evacuation areas in the 16.1 km (10 mile) EPZ. In RAI 155, Question 13.03-15(G), the staff requested that the COL applicant provide official maps and information, including NUREG-0654, Table J-1 or equivalent information, be provided in the CCNPP Unit 3 Emergency Plan. If they are contained in other documents, a reference to their location would be sufficient. In a November 19, 2009, response to RAI 155, Question 13.03-15 (G), the COL applicant stated, in part, that official maps and information on the locations of offsite centers are contained in State and county plans. The Offsite Dose Calculation Manual includes the pre-selected radiological sampling and monitoring points.

Technical Evaluation: (Section J.10.a)

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question13.03-15(G) acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses evacuation routes, evacuation areas, pre-selected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.10.b)

A 2008 ETE provided in COL application, Part 05, "Emergency Plan," provided population distribution information in map and sector formats.

Technical Evaluation: (Section J.10.b)

The staff finds that the CCNPP Unit 3 Emergency Plan includes figures that adequately show population distribution around the nuclear facility. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.10.c)

CCNPP Unit 3 Emergency Plan, Section J.1, "Notification of Onsite Personnel," states that ERO, non-ERO, contractor personnel, and visitors are notified by alarms and the plant Public Address System for emergencies. In addition, personnel within the owner controlled areas are notified for site evacuations or as otherwise deemed appropriate. CCNPP Unit 3 Emergency Plan, Section E.6, "Notification to the Public," describes the means for notifying the general public. CCNPP Unit 3 Emergency Plan, Section G.1, "Public Information Publication, discusses how the transient population is notified.

Technical Evaluation: (Section J.10.c)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the means to notify all segments of the transient and resident population. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section J.10.m)

CCNPP Unit 3 Emergency Plan, Section J.10.m, "Implementation of Protective Action Recommendations," states EPA 400-R-92-001, the NRC Response Technical Manual (RTM-96), and NUREG-0654, Supplement 3 are used as the basis for PARs for the general public for incidents involving actual, potential, or imminent releases of radioactive material to the atmosphere. Plant-based and dose-based PARs are discussed. Shelter and evacuation are discussed as a part of the plant-based PARs. CCNPP Unit 3 Emergency Plan, Figure J-1, "Generic PAR Flowchart," indicates established PARs to declare of a General Emergency.

Technical Evaluation: (Section J.10.m)

The staff finds that the CCNPP Unit 3 Emergency Plan includes the basis for recommended protective actions for the plume exposure pathway during emergency conditions. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.10.11 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding protective response is acceptable and meets the requirements of 10 CFR 50.47(b)(10) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard J, as described above.

13.3C.11 Radiological Exposure Control

13.3C.11.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(11), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

13.3C.11.2 Onsite Exposure Guidelines

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.1.a-g)

This section of the report describes the COL applicant's establishment of onsite exposure guidelines consistent with EPA protective action guidelines as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section K.1, "Emergency Exposure Guidelines," states that exposure guidelines are consistent with the Emergency Worker and Lifesaving Activity Protective Action Guidelines set forth in EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents,"(EPA 400). In emergency situations, exposures will be justified if the maximum risks or costs to others that are avoided by their actions outweigh the risks to which the workers are subjected. The Emergency Worker Dose Limits are 50 mSv (5 Rem) TEDE for all activities; 100 mSv (10 Rem) TEDE for protecting valuable property; 250 mSv (25 Rem) TEDE for lifesaving or protection of large populations; and above 250 mSv (25 Rem) TEDE only on a voluntary basis to persons fully aware of the risks involved.

Technical Evaluation: (Section K.1.a-g)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes onsite exposure guidelines that are consistent with the guidance in EPA-400-R-92-001 for removal of injured persons, undertaking corrective actions, performing assessment actions, providing first aid, performing personnel decontamination, providing ambulance service, and providing medical treatment services. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.11.3 Onsite Radiation Protection Program

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.2)

This section of the report describes the COL applicant's onsite radiation protection program to be implemented during emergencies as provided in the COL applicant's emergency plan CCNPP Unit 3 Emergency Plan, Section K.1, "Emergency Exposure Guidelines," states the Emergency Plant Manager is the individual responsible for authorizing personnel emergency exposure levels set forth in EPA 400. CCNPP Unit 3 Emergency Plan, Section K.2, "Emergency Radiation Protection Program," discusses radiation protection guidelines during an emergency. Guidelines include: Volunteers that would be considered first; declared pregnant individuals limits; maintaining emergency doses received as low as reasonably achievable; full awareness of the risks before volunteers exceed a dose of 0.25 Sv (25 Rem) TEDE; maintaining exposure accountability and personnel radiological monitoring equipment; obtaining entry permission; and, surveying for habitability. CCNPP Unit 3 Emergency Plan, Appendix 2, "Procedure Cross-Reference to NUREG-0654," includes procedure EP-AN-620, "Emergency Exposure Controls."

Technical Evaluation: (Section K.2)

Additional information regarding the onsite radiological protection program is located in Section 12.5, "Operational Radiation Protection Program" of this report. The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides an onsite radiation protection program to be implemented during emergencies, including methods to implement exposure guidelines. The staff finds this acceptable because it conforms to the guidance of NUREG-0654/FEMA-REP-1

13.3C.11.4 Capability to Determine Dose Received by Emergency Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.3.a) (10 CFR Part 50, Appendix E, Section IV.E.1)

This section of the report describes the COL applicant's capability to determine the doses received by emergency personnel involved in an accident as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section K.3.a, "Personnel Monitoring," states emergency workers will receive TLD badges and personal self-reading dosimeters on a real time basis. Emergency processing of TLDs on a 24-hour per day basis exists. In RAI 155 Question 13.03-16(A), the staff requested that the COL applicant include the 24-hour TLD processing organization name in the CCNPP Unit 3 Emergency Plan. In a November 19, 2009, response to RAI 155, Question 13.03-16(A) the COL applicant committed to include a statement in CCNPP Unit 3 Emergency Plan, Section K.3.a to refer to CCNPP Unit 3 Emergency Plan, Section B.8.d for TLD laboratory information. Additional information regarding the use of an offsite laboratory to process emergency dosimetry is provided in Section 13.3C.3.6 of this report.

Technical Evaluation: (Section K.3.a) {10 CFR Part 50, Appendix E, Section IV.E.1)

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-16(A), acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1 and meets the requirements of 10 CFR Part 50, Appendix E. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the November 19, 2009, response to RAI 155, Question 13.03-16(A). The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any radiological emergency. The staff finds this acceptable because it conforms to the guidance of NUREG-0654/FEMA-REP-1 and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.11.5 Dose Records for Emergency Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.3.b)

This section of the report describes the COL applicant's capability to maintain dose records for emergency workers involved in an accident as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section K.3.b, "Personnel Monitoring," states emergency worker dose records are maintained in accordance with the emergency and radiological protection procedures. CCNPP Unit 3 Emergency Plan, Section K.3.b also states that TLDs may be processed with increased periodicity. In RAI 155, Question 13.03-16(B)(1), the staff requested that the COL applicant provide additional information regarding arrangements for alternative access to dose records when accident conditions do not allow normal access. In a November 19, 2009, response to RAI 155, Question 13.03-16(B), the COL applicant stated that alternative access to dose records would be discussed in implementing procedures. The COL applicant's July 30, 2010, response to follow-up RAI 247, Question 13.03-42E included reference to EPIP-AN-620, "Emergency Exposure Controls," listed in CCNPP Unit 3 Emergency Plan, Appendix 2, which provides instruction on the process and activities of radiological exposure control. In RAI 155, Question 13.03-16(B)(2), the staff requested that the COL applicant clarify how emergency doses are recorded; whether dose limits are included as occupational exposure in accordance with 10 CFR 20.1201(a); or are doses treated as a

once-in-a-lifetime exposure and not included as stated in EPA 400-R-92-001. In a November 19, 2009, response to RAI 155, Question 13.03-16(B)(2), the COL applicant stated that during a declared event, exposure will initially be accounted for as normal occupational exposure. Emergency worker exposures beyond occupational limits will be accounted for in accordance with EPA-400, as stated in CCNPP Unit 3 Emergency Plan, Section K.1.

Technical Evaluation: (Section K.3.b)

The staff finds the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-16(B)(1) and July 30, 2010, response to follow-up RAI 247, Question 13.03-42E acceptable, since they describe an EPIP in the CCNPP Unit 3 Emergency Plan that includes details for alternate access to dose records when accident conditions do not allow normal access. This conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that procedure EP-AN-620 as discussed above is included in CCNPP Unit 3 Emergency Plan, Appendix 2. The staff finds the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-16(B)(2) acceptable since it provided clarification of how emergency worker doses are recorded, which conforms to the guidance of NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for maintaining dose records for emergency workers involved in any radiological emergency. The staff finds this is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.11.6 Decontamination Action Levels

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.5.a)

This section of the report describes the COL applicant's emergency action levels for determining the need for decontamination as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section K.5.a, "Contamination Limits," states, in part, that normal plant contamination control criteria will be followed during emergency conditions. Limits may be modified by the Radiation Protection Manager when warranted. In RAI 155, Question 13.03-16(C), the staff requested that the COL applicant provide additional information regarding action levels for determining the need for decontamination and contamination control criteria for returning areas and items to normal use in the CCNPP3 Emergency Plan. In a November 19, 2009, response, the COL applicant stated, in part, that station Radiation Protection procedures will include provisions for onsite contamination and decontamination control measures to be used for area access control; equipment, supplies, and instruments; and personnel (including wounds). These procedures will specify levels by which decontamination needs to be performed, including the use of decontaminants for expected contamination types. The COL applicant committed to including this information in CCNPP Unit 3 Emergency Plan, Section K.5.a.

Technical Evaluation: (Section K.5.a)

The staff finds the additional information and textual revisions submitted in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-16(C) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the November 19, 2009, response to RAI 155, Question 13.03-16(C). The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses decontamination action levels. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.11.7 Decontamination Facilities and Supplies

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.5.b) (10 CFR Part 50, Appendix E, Section IV.E.3)

This section of the report describes the COL applicant's means for radiological decontamination of emergency personnel, facilities and supplies as provided in the COL applicant's emergency plan.

CCNPP Unit 3 Emergency Plan, Section K.5.b, "Contamination Control Means," discusses decontamination of personnel and emergency vehicles and the control of shower and sink drain waste. Decontamination areas, showers, supplies, and equipment were also mentioned. COL application, Part 5, CCNPP Unit 3 Emergency Plan Annex, Section 4.1.E, "Decontamination Facilities," identified the Access Building as the location for the personnel decontamination. In RAI 155, Question 13.03-16(D), the staff requested that the COL applicant provide additional information on the decontamination of personnel wounds, types of decontamination supplies, a reference to decontamination procedures; and a summary of this information in the CCNPP Unit 3 Emergency Plan. In a November 19, 2009, response to RAI 155, Question 13.03-16(D), the COL applicant committed to revise CCNPP Unit 3 Emergency Plan Annex, Section 4.1.E to include a statement that implementing procedures contain information related to inventory lists, instructions for the decontamination facility and decontamination waste disposal activities.

Technical Evaluation: (Section K.5.b) (10 CFR Part 50, Appendix E, Section IV.E.3)

The staff finds the additional information and textual revisions submitted in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-16(D) acceptable because they meet the requirements in 10 CFR Part 50, Appendix E and conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-16(D). The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses decontamination of emergency personnel and equipment. The staff finds CCNPP Unit 3 Emergency Plan, Section 2.K.5.b acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and the requirements of 10 CFR Part 50, Appendix E.

13.3C.11.8 Onsite Contamination Control

This section of the report describes the COL applicant's onsite contamination control measures as provided in the COL applicant's emergency plan.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.6.a)

CCNPP Unit 3 Emergency Plan, Section K.6.a, "Contamination Control Measures," states that area access control includes identifying and restricting contaminated areas and monitoring personnel, supplies, instruments, equipment, and vehicles leaving contaminated areas to ensure contamination levels are acceptable. Additional information regarding provisions for area access control can be found in Section 13.3C.11.6 of this report.

(CCNPP Unit 3 Emergency Plan, Section K.6.b)

CCNPP Unit 3 Emergency Plan, Section K.6.b, "Contamination Control Measures," states that measures will be taken to control onsite access to potentially contaminated potable water and

food supplies. In addition, eating, drinking, smoking, and chewing are prohibited in all site emergency response facilities until habitability surveys indicate that such activities are permissible.

(CCNPP Unit 3 Emergency Plan, Section K.6.c)

CCNPP Unit 3 Emergency Plan, Section K.6.c, "Contamination Control Measures," states that plant procedures contain the criteria for returning areas and items to normal use when contamination levels are returned to acceptable levels. Additional information related to these criteria is contained in Section 13.3C.11.6 of this report.

Technical Evaluation: (Section K.6.a-c)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses onsite contamination control. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.11.9 Capability to Decontaminate Relocated Onsite Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section K.7)

This section of the report describes the COL applicant's capability to decontaminate relocated onsite personnel as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section K.7, "Decontamination of Relocated Personnel," states that evacuated nonessential onsite personnel are monitored to determine the need for decontamination. The CCNPP Unit 3 Emergency Plan also states that provisions for extra clothing and decontaminates suitable for the type of contamination expected, with particular attention given to radioiodine contamination of the skin, exist.

Technical Evaluation: (Section K.7)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the capability for decontaminating relocated onsite personnel, including provisions for extra clothing and decontaminants suitable for the type of contamination expected. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.11.10 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding radiation exposure control is acceptable and meets the requirements of 10 CFR 50.47(b)(11) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard K and the applicable portions of 10 CFR Part 50, Appendix E, as described above.

13.3C.12 Medical and Public Health Support

13.3C.12.1 Regulatory Basis

To determine whether the proposed CCNPP Unit 3 Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(12), the staff evaluated the CCNPP Unit Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The

staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Medical and Public Health Support," in 10 CFR Part 50, Appendix E.

13.3C.12.2 Onsite Medical Services

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section L.2) (10 CFR Part 50, Appendix E, Section IV.E.5)

This section of the report describes the COL applicant's onsite medical services as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan Section L.2, "Onsite First Aid Capability," states that first aid supplies and equipment for treatment of contaminated injured are maintained. In RAI 155, Question 13.03-17(A), the staff requested that the COL applicant revise the CCNPP Unit 3 Emergency Plan to include a discussion, list, or reference to where the first aid supplies and equipment information is located. In a November 19, 2009, response, the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section L.2 to include a statement that implementing procedure EP-AN-903, "Maintenance of Emergency Response Facilities," includes information related to first aid supplies and equipment inventory. CCNPP Unit 3 Emergency Plan, Section L.2 states site personnel (at least two per shift) are trained and qualified to administer first aid. The functions of site personnel in handling onsite injured people are also listed in CCNPP Unit 3 Emergency Plan, Section L.2. Radiation Protection personnel perform or assist with decontamination of injured persons. Contaminated injured persons requiring more professional care are transported to a dedicated facility.

Technical Evaluation: (Section L.2) (10 CFR Part 50, Appendix E, Section IV.E.5)

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-17(A), acceptable because they meet the requirements in 10 CFR Part 50, Appendix E. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the November 19, 2009, response to RAI 155, Question 13.03-17(A). The staff finds the CCNPP Unit 3 Emergency Plan adequately describes arrangements made for the services of physicians and other medical personnel qualified to handle radiation emergencies onsite. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, and it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.12.3 Offsite Medical Services

The following sections of this report describe the COL applicant's arrangements for local and backup hospital and medical services and the arrangements for transporting victims of radiological emergencies to medical support facilities as provided in the COL applicant's emergency plan.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section L.1) {10 CFR Part 50, Appendix E, Section IV.E.7)

CCNPP Unit 3 Emergency Plan, Section L.1, "Offsite Hospital and Medical Services," states that the licensee shall assist local hospitals by ensuring hospital support personnel are trained on the nature of radiological emergencies, diagnosis and treatment, and follow-up medical care according to the standards of the FEMA Guidance Memorandum MS-1, "Medical Services." CCNPP Unit 3 Emergency Plan, Section L.3, "Medical Service Facilities," states that the licensee maintains an agreement with local hospitals and physicians trained in radiological

emergency response. A team of physicians, nurses, health physicists, and necessary support personnel are on-call to provide assistance at the Calvert Memorial Hospital (CMH), or at the accident site. In RAI 299, Question 13.03-49, the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan, which hospital and medical transportation service (other than CMH and Calvert County Volunteer Fire and Rescue) provide backup emergency services and transportation for potentially contaminated personnel in the event of an emergency. In addition, the staff requested that the COL applicant provide Letters of Agreement for any hospitals, and transportation services, described in response to this question. In a May 19, 2011, response to RAI 299, Question 13.03-49, the COL applicant stated that Letters of Agreement will be obtained no less than 180 days prior to fuel load as established in ITAAC Table 2.3.1, Section 9.0, Medical and Public Health Support. CCNPP Unit 3 Emergency Plan, Appendix 3 includes reference to letters of agreement for "Attending Physicians", CMH, and Calvert County Volunteer Fire and Rescue, which support an emergency at CCNPP Unit 3.

(CCNPP Unit 3 Emergency Plan, Section [L.4) (10 CFR Part 50, Appendix E, Section IV.E.6)

CCNPP Unit 3 Emergency Plan, Section L.4, "Medical Transportation," states that arrangements for 24-hour service for prompt ambulance transport of persons with injuries involving radioactivity to designated hospitals are confirmed by LOAs. In RAI 155, Question 13.03-17(B)(1), the staff requested that the COL applicant clarify that arrangements with support organizations include the transport of radiologically contaminated injured patients to medical support facilities. In a November 19, 2009, response to RAI 155, Question 13.03-17(B)1, the COL applicant referred to its October 19, 2009, response to RAI 153, Question 14.03.10-1, which proposed EP ITAAC 9.2 to verify that LOAs to transport victims of radiological accidents, including contaminated injured individuals, from the site to offsite medical support facilities, as established in CCNPP Unit 3 Emergency Plan, Appendix 3, are submitted to the NRC no less than 180 days prior to fuel load. In a November 19, 2009, response to RAI 155, Question 13.03-17(B)(2), the COL applicant stated that CMH is specified as the medical service facility in the CCNPP Unit 3 Emergency Plan and under agreement to receive CCNPP Unit 3 radiologically contaminated injured persons.

Technical Evaluation: (Section L.1) (10 CFR Part 50, Appendix E, Section IV.E.7)

The staff finds the clarification provided in the May 19, 2009, response to RAI 299, Question 13.03-49 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 and the regulatory requirements of 10 CFR Part 50, Appendix E. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 299, Question 13.03-49. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes arrangements made for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, and it conforms to the guidance in NUREG-0654/FEMA-REP-1.

(CCNPP Unit 3 Emergency Plan, Section L.4) (10 CFR Part 50, Appendix E, Section IV.E.6)

The staff finds the additional information provided in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-17(B)(2) acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the applicable requirements in 10 CFR Part 50, Appendix E. The COL applicant's November 19, 2009, response to RAI 155,

Question 13.03-17(B)(1) refers to EP ITAAC 9.2, which the COL applicant proposed to ensure that LOAs for transportation of potentially contaminated individuals from CCNPP Unit 3 during an emergency are available prior to fuel load. The intent of EP ITAAC is to provide placeholders at the COL stage for those aspects of the emergency planning program that cannot reasonably be provided prior to the physical construction of the proposed reactor. The staff finds that it is reasonable (and necessary) for the COL applicant to obtain a LOA from medical service providers acknowledging their intent to provide medical service at the COL stage in support of the proposed reactor, which describes the commitment and details associated with transporting victims of radiological accidents to medical support facilities. The staff requested this information in RAI 299, Question 13.03-49 as described above.

13.3C.12.4 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding radiation exposure control is acceptable and meets the requirements of 10 CFR 50.47(b)(11) because it complies with the guidance in Evaluation Criterion L of NUREG-0654/FEMA-REP-1,and the applicable portions of 10 CFR Part 50, Appendix E, as described above.

13.3C.13 Recovery and Reentry Planning and Post-Accident Operations

13.3C.13.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(13), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Recovery and Reentry Planning and Post-Accident Operations," in 10 CFR Part 50, Appendix E.

13.3C.13.2 Plans and Procedures for Reentry and Recovery

Technical Information in the CCNPP Unit 3 Emergency Plan: (CCNPP Unit 3 Emergency Plan Section M.1) {10 CFR Part 50, Appendix E, Section IV.H)

This section of the report describes the COL applicant's general plans and procedures for reentry and recovery into an evacuated area as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section M.1, "Reentry and Recovery," discusses conditions for reentry and recovery, including consideration for both existing and potential conditions inside affected areas; identifies general evaluation criteria for entering into termination/recovery; discusses the recovery organization, including position specific duties; and, discusses notifications and total population exposure calculations. Appendix 2, "Procedure Cross-Reference to NUREG-0654," identifies a reentry and recovery procedure by name and number. CCNPP Unit 3 Emergency Plan, Section M.1 also states that reentry is divided into two separate categories, reentry during the emergency phase and reentry during the recovery phase. A list of considerations, including required protective measures, is identified for planning any reentry. CCNPP Unit 3 Emergency Plan, Section J, "Protective Response," discusses how to evaluate the need for, and initiate a protective action recommendation (PAR). In RAI 155, Question 13.03-15(E), the staff requested that the COL applicant provide additional information related to relaxing and extending PARs. In a November 19, 2009,response, the COL applicant stated that PARs, once made, are not relaxed until the emergency state has been terminated

and recovery has been initiated per the CCNPP Unit 3 Emergency Plan. The COL applicant also explained the process to assess and develop PARs, including the notification of PARs and any changes. The COL applicant committed to include a clarifying statement in CCNPP Unit 3 Emergency Plan, Section J.10 regarding retaining areas previously recommended for evacuation when new PARs are issued for wind shifts, which is a current integrated practice with the State of Maryland.

Technical Evaluation: (Section M.1) (10 CFR Part 50, Appendix E, Section IV.H)

The staff finds the additional information and textual revisions submitted in the COL applicant's November 19, 2009, response to RAI 155, Question 13.03-15(E) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-15(E). The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes general plans and procedures for reentry and recovery and describes the means by which decisions to relax protective measures are reached. This process considers both existing and potential conditions. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and the applicable requirements in 10 CFR Part 50, Appendix E.

13.3C.13.3 Recovery Organization

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section M.2)

This section of the report describes the COL applicant's recovery organization as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section M.2, "Recovery Organization," states that the basic framework for the recovery organization is the Recovery Manager (filled by the Emergency Director), the Recovery Plant Manager (filled by the Plant Manager or designee), the Recovery Offsite Manager (filled by a senior Emergency Preparedness of Regulatory Affairs individual or designee), and the Company Spokesperson (filled by a senior management individual). Additional staff included in the recovery organization may include recovery supervisors from identified technical areas. CCNPP Unit 3 Emergency Plan, Section M.1, "Reentry and Recovery," states that the Recovery Manager, in coordination with the recovery organization managers, authorizes reentry activities during the recovery phase.

Technical Evaluation: (Section M.2)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides the position/title, authority, and responsibilities of individuals that will fill key positions in the facility recovery organization. The organization includes technical personnel with responsibilities to develop, evaluate, and direct recovery and reentry operations. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.13.4 Recovery Operations Initiation

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section M.3)

This section of the report describes the COL applicant's means to inform the response organizations of the initiation of a recovery operation as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section M.3, "Recovery Phase Notifications,"

states, in part, that all members of the ERO are informed of the decision to enter the recovery phase, and instructed of the Recovery Organization and its responsibilities as they pertain to the recovery effort. In RAI 155, Question 13.03-18, the staff requested that the COL applicant describe the means to inform members of the response organizations that a recovery operation is to be initiated. In a November 19, 2009, response to RAI 155, Question 13.03-18, the COL applicant stated that ERO members will be notified of event termination by the PA, facility announcements, broadcast pager, or phone calls as defined in implementing procedures. In a July 30, 2011, response to follow-up RAI 247, Question 13.03-42F, the COL applicant stated that EPIP EP-AN-800, "Reentry and Recovery," provides instruction on the process and activities of recovery and reentry planning, including post-accident operations, and is listed in CCNPP Unit 3 Emergency Plan, Appendix 2.

Technical Evaluation: (Section M.3)

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question 13.03-18 and the July 30, 2011, response to follow-up RAI 247, Question 13.03-42(F) acceptable since they identify an EPIP provided in CCNPP Unit 3 Emergency Plan, Appendix 2 that includes provisions to inform the response organizations that a recovery operation is to be initiated. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses the means to inform members of the ERO that a recovery operation is to be initiated, and of any changes in the organizational structure that may occur. The staff also finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.13.5 Methods to Estimate Total Population Exposure

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section M.4)

This section of the report describes the COL applicant's method for periodically estimating total population exposure as provided in the COL applicant's emergency plan. CCNPP Unit 3 Emergency Plan, Section M.4, "Total Population Exposure," states that a method to estimate the total population exposure resulting from an accident has been developed; that data is collected in cooperation with State and Federal agencies and that total population exposure is determined through a variety of procedures. Sources of data include: Environment monitoring TLDs; bioassay; release rates and meteorology; and monitoring of food, water, and ambient dose rates. Environmental sampling will be coordinated with State efforts and shared with the other agencies.

Technical Evaluation: (Section M.4)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately establishes a method to periodically estimate total population exposure. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.13.6 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding recovery and reentry planning and post accident operations is acceptable and meets the requirements of 10 CFR 50.47(b)(13) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard M, and the applicable portions of 10 CFR Part 50, Appendix E as described above.

13.3C.14 Exercises and Drills

Sections 13.3C.14.2 through 13.3C.14.18 of this report describes the COL applicant's plans to conduct periodic exercises to evaluate major portions of their emergency response capabilities and to conduct drills to maintain key skills and to correct identified deficiencies as provided in the COL applicant's emergency plan.

13.3C.14.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(14), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Exercises and Drills," in 10 CFR Part 50, Appendix E.

13.3C.14.2 Emergency Preparedness Exercise Purpose and Content

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.1.a)

CCNPP Unit 3 Emergency Plan, Section N.1, "Exercises," states that offsite response exercises are conducted according to FEMA guidance and 10 CFR Part 50, Appendix E requirements. Full participation exercises test the major elements of onsite and offsite emergency plans and includes mobilization of State, local, CCNPP Unit 3, and other personnel and resources. Simulated offsite radiological releases provide sufficient magnitude to warrant response by offsite authorities for exercises involving partial or full participation by offsite agencies. The COL applicant proposed EP ITAAC 10.1 to ensure a full participation exercise (test) will be conducted within the specified time periods of 10 CFR Part 50, Appendix E.

Technical Evaluation: (Section N.1.a)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately states that the exercises will test the integrated capability and the major elements of the emergency plans and preparedness program. In addition, the emergency preparedness exercise will, as appropriate, simulate an emergency that results in offsite radiological releases which would require response by offsite authorities and that exercises will be conducted as set forth in the NRC and FEMA rules. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this report.

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.1.b)

CCNPP Unit 3 Emergency Plan, Section N.1, "Exercises," states that exercises are designed to evaluate the ability of participating organizations to implement a coordinated response to emergency conditions. Exercises are conducted so all major elements of the emergency preparedness program are demonstrated under various weather conditions at least once in each 6-year period. An off-hour exercise between 6:00 p.m. and 4:00 a.m. will be conducted during the 6 year period. Qualified personnel from the licensee, Federal, State, or local governments will be invited to observe and critique exercises as appropriate. In States with more than one site, the State may rotate participation in the ingestion pathway portion of the exercise from site to site. CCNPP Unit 3 Emergency Plan, Section N.2.f, "Augmentation Drills," discusses unannounced drills. The COL applicant proposed EP ITAAC 10.2 to ensure an off-hours/unannounced drill will be conducted prior to full power operation to test mobilization of

the onsite ERO. In RAI 299, Question 13.03-50, the staff requested that the COL applicant revise EP ITAAC 10.2 to eliminate the phrase, "prior to full power operation." In a May 19, 2011, response, the COL applicant committed to remove this statement from EP ITACC 10.2.

Technical Evaluation: (Section N.1.b)

The staff finds the textual revisions submitted in the November 19, 2009, response to RAI 299, Question 13.03-50, acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 299, Question 13.03-50. The staff finds that the CCNPP Unit 3 Emergency Plan adequately states that exercises will include mobilization of State and local personnel and resources adequate to verify the capability to respond to an emergency event. In addition, the CCNPP Emergency Plan adequately describes provisions for a critique of the biennial exercise by Federal and State observers/evaluators. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.14.3 Emergency Preparedness Exercises

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.F.2)

CCNPP Unit 3 Emergency Plan, Section N.1, "Exercises," states that exercises are conducted at the CCNPP Unit 3 site to test the adequacy of timing and content of implementing procedures and methods; to test emergency equipment and communication networks; and to ensure that emergency personnel are familiar with their duties. CCNPP Unit 3 Emergency Plan, Section O.4.b, "Personnel Responsible for Accident Assessment," states that classroom and simulator training is provided to licensed operators.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.2)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for the conduct of emergency preparedness exercises and specifies that exercises test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public notification system, and ensure that emergency organization personnel are familiar with their duties. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.14.4 Full Participation Exercise before Fuel Load

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.F.2.a)

CCNPP Unit 3 Emergency Plan, Section N.1, "Exercises," states, in part, that full participation exercises will be conducted to test the major observable portions of the onsite and offsite emergency plans and mobilization of State, local, and licensee personnel and other resources in sufficient numbers to verify the capability to respond to the accident scenario. In proposed EP ITAAC 10.1, the COL applicant commits to conducting a full participation exercise with the specified time periods of 10 CFR Part 50, Appendix E. Specific criteria include the offsite exercise objectives being met with no uncorrected deficiencies.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.2.a)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for the conduct of a full-participation exercise before fuel load. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.14.5 Onsite Biennial Exercise

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.F.2.b)

CCNPP Unit 3 Emergency Plan, Section N.1, states that exercises are conducted biennially. During off-years, exercises/drills will be conducted to demonstrate at least two facilities and two functions of either management and coordination of emergency response, accident assessment, protective action decision-making, or plant system repair and corrective actions. Off-year exercises are designed to be more mechanistically and operationally realistic so players can focus on the outcome of the scenario without demonstrating objectives for core damage and the release of radioactivity.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.2.b)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately states that an exercise of its onsite Emergency Plan will be conducted every 2 years and adequately describes actions that will be taken to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.14.6 Offsite Biennial Exercise

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.F.2.c)

CCNPP Unit 3 Emergency Plan, Section N.1, states that appropriate offsite State and local authorities physically and actively participate in full participation exercises. CCNPP Unit 3 Emergency Plan, Section N.1 also states that CCNPP Unit 3 is located adjacent to other licensees and shares most of the elements defining co-located licensees. As a co-located licensee, CCNPP Unit 3 will conduct a biennial exercise of its onsite Emergency Plan; participate quadrennially in an offsite biennial full or partial participation exercise; and between participation in offsite full or partial exercises, EP activities and interactions with offsite authorities will be conducted to test and maintain interface among the affected State and local authorities and the licensee.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.2.c)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately states that offsite plans for each site will be exercised biennially with full participation by each offsite authority having a role under the CCNPP Unit 3 Emergency Plan. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.14.7 Ingestion Pathway Exercise with the State

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.F.2.d)

CCNPP Unit 3 Emergency Plan, Section N.1, states that the State(s) may participate in the ingestion pathway portion of exercises at least once each 6-year period. States with more than one site can rotate ingestion pathway participation from site to site.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.2.d)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes how the licensee will coordinate with the State(s) to integrate Ingestion Pathway exercises into the biennial exercise program. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.14.8 Enabling Local and State Participation in Drills

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.F.2.e)

CCNPP Unit 3 Emergency Plan, Section N.3, “Conduct of Drills and Exercises,” states that any State or local government located within the plume exposure pathway EPZ may participate in CCNPP Unit 3 drills when requested.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.2.e)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes how the licensee will enable any State or local government located within the plume exposure pathway EPZ to participate in the licensee’s drills when requested by such State or local government. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.14.9 Remedial Exercises

Technical Information in the CCNPP Unit 3 Emergency Plan: (Appendix E, Section IV.F.2.f}

CCNPP Unit 3 Emergency Plan, Section N.5, “Resolution of Drill and Exercise Findings,” states, in part, that remedial exercises will be held if the CCNPP Unit 3 Emergency Plan is not satisfactorily tested during the biennial exercise. In RAI 155, Question 13.03-19(B), the staff requested that the COL applicant provide additional information regarding the extent of State and local participation for remedial exercises. In a November 19, 2009, response to RAI 155, Question 13.03--19(B), the COL applicant stated that the extent of play for State and local participants for remedial exercises is based on the type of deficiency identified, and will be determined on a case-by-case basis between the offsite agency and FEMA. In addition, the COL applicant stated that CCNPP Unit 3 will provide necessary support to meet re-demonstration requirements for the specific deficiency.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.2.f)

The staff finds the additional information provided by the COL applicant in a November 19, 2009, response to RAI 155, Question 13.03-19(B) acceptable since it meets the applicable

requirements in 10 CFR Part 50, Appendix E. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes how remedial exercises will be conducted if the CCNPP Unit 3 Emergency Plan is not satisfactorily tested during the biennial exercise. The staff finds this acceptable because it meets the requirements in 10 CFR Part 50, Appendix E.

13.3C.14.10 Drills

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.2)

CCNPP Unit 3 Emergency Plan, Section N.2, "Drills," states that drills are designed to test, develop, and maintain the proficiency of emergency responders. CCNPP Unit 3 Emergency Plan, Section O.2, "Functional Training of the ERO," states, in part, that in addition to general and specialized classroom training, members of the ERO receive periodic performance based emergency response training using various methods. The CCNPP Unit 3 Emergency Plan further describes a drill as being one method of performance based training, and includes the following definition: A drill is a supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation. Drills described in CCNPP Unit 3 Emergency Plan, Section N are a part of training. These drills allow each individual to demonstrate the ability to perform their assigned emergency functions. During drills, on-the-spot correction of erroneous performance may be made and a demonstration of the proper performance offered by the Controller.

Technical Evaluation: (Section N.2)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes how a drill is a supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.14.11 Communications Drills

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.2.a) (10 CFR Part 50, Appendix E, Section IV.E.9 (b))

CCNPP Unit 3 Emergency Plan, Section N.2.a, "Communication Drills," states that communication drills with State and local governments are conducted monthly. Communication drills with Federal emergency response organizations (e.g., NRC and FEMA) and States within the ingestion pathway EPZ are conducted quarterly. The ENS and HPN notification to the NRCOC is demonstrated monthly. Communication drills between the plant, State, and local EOCs, and monitoring teams are conducted annually. CCNPP Unit 3 Emergency Plan, Section N.2.a also states each of these drills includes provisions to ensure that all participants in the test are able to understand the content of the messages. All communication systems discussed in CCNPP Unit 3 Emergency Plan, Section F are tested annually.

Technical Evaluation: (Section N.2.a) (10 CFR Part 50, Appendix E, Section IV.E.9 (b))

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes how communications with Federal, State and local governments in the plume exposure pathway EPZ will be tested. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and the requirements of 10 CFR Part 50, Appendix E.

13.3C.14.12 Fire Drills

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.2.b)

CCNPP Unit 3 Emergency Plan, Section N.2.b, "Fire Drills," states that fire drills are conducted according to the CCNPP Unit 3 Fire Protection Plan and/or site procedures. The Fire Protection Program is discussed in the COL FSAR Section 9.5.1.6.2, "Fire Protection Program." COL FSAR Table 9.5-1, "Fire Protection Program Compliance with Regulatory Guide 1.189," states that the CCNPP Unit 3 site conforms to RG 1.189 Section C.3.5.1.4, "Performance Assessment/Drill Criteria," which states that the Fire Brigade will drill at least quarterly. One annual drill will be unannounced and one drill will be on a back shift. All brigade members participate in at least two drills per year. Drills are based on prepared drill and tabletop guides and are critiqued by knowledgeable plant staff to ensure that fire response objectives are being met. An independent reviewer will participate at least once every 3 years.

Technical Evaluation: (Section N.2.b)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes how fire drills will be conducted. The staff finds this acceptable because it conforms to the guidance in NUREG 0654/FEMA-REP-1.

13.3C.14.13 Medical Emergency Drills

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.2.c)

CCNPP Unit 3 Emergency Plan, Section N.2.c, "Medical Emergency Drills," states a medical emergency drill, involving a simulated contaminated individual, is conducted annually. The drill will contain provisions for participation by local support services organizations such as ambulance and hospital support. Offsite portions of the medical drill may be performed as part of the required biennial exercise.

Technical Evaluation: (Section N.2.c)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes that a medical emergency drill involving a simulated contaminated individual includes provisions for participation by the local support services agencies (i.e., ambulance and offsite medical treatment facility) will be conducted annually. In addition, the staff finds the CCNPP Unit 3 Emergency Plan adequately describes that the offsite portions of the medical drill may be performed as part of the required biennial exercise. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.14.14 Radiological Monitoring Drills

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.2.d)

CCNPP Unit 3 Emergency Plan, Section N.2.d, "Radiological Monitoring Drills," states that onsite and offsite radiological monitoring drills are conducted annually. These drills include collection and analysis of sample media and provisions for communications and recordkeeping. CCNPP Unit 3 Emergency Plan, Section N.3, "Conduct of Drills and Exercises," states that State and local governments can participate in CCNPP Unit 3 drills and exercises when requested.

Technical Evaluation: (Section N.2.d)

The staff finds the CCNPP Unit 3 Emergency Plan adequately describes how radiological monitoring drills (onsite and offsite) will be conducted annually; State and local governments are invited to participate when requested. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.14.15 Health Physics Drills

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.2.e)

CCNPP Unit 3 Emergency Plan, Section N.2.e, "Health Physics Drills," states that health physics drills are conducted semiannually, and involve a response to and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements within the plant. A demonstration of the sampling system, capabilities, or the core damage assessment objectives are conducted at least annually. In RAI 155, Question 13.03-19(A), the staff requested that the COL applicant clarify whether health physics drills will include liquid samples with actual elevated radiation levels and address the use of the post-accident sampling system (PASS); and provide an explanation of the provisions for including State and local response agencies in the drills. In a November 19, 2009, response to RAI 155, Question 13.03-19(A), the COL applicant stated that CCNPP Unit 3 does not rely on a PASS and health physics drills will not include liquid samples with actual elevated radiation levels. Some scenarios may include ad hoc sampling during the recovery phase. Most drills will use parameters rather than sample activity to assess core damage. The COL applicant further stated that State and local response agencies are not included in semi-annual health physics drills. In a July 30, 2010, response to follow-up RAI 247, Question 13.03-42(C), in part, the COL applicant stated that the CCNPP Unit 3 Emergency Plan, Section N.2.e, includes an annual requirement to conduct a health physics drill that demonstrates sample system capabilities when simulated conditions allow and the demonstration of other methods of core damage assessment when sampling would be prohibited.

Technical Evaluation: (Section N.2.e)

The staff finds the additional information provided in the November 19, 2009, response to RAI 155, Question 13.03-19(A) and the July 30, 2010, response to follow-up RAI 247, Question 13.03-42(C) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1. The staff finds the CCNPP Unit 3 Emergency Plan adequately describes how health physics drills will be conducted. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.14.16 Conduct of Drills and Exercises

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.3.a-f)

CCNPP Unit 3 Emergency Plan, Section N.3, "Conduct of Drills and Exercises," states that advance knowledge of the scenario is minimized to allow free play. A scenario package or lesson plan is developed for each emergency preparedness exercise or drill conducted and includes: The basic objective(s); appropriate evaluation criteria; date(s), time period, place(s), and participating organizations; the simulated events; a master scenario events list; a narrative summary describing the conduct of the scenario; and a list of qualified participants. CCNPP Unit 3 Emergency Plan, Section N.3 also states that a package will be distributed to the

controllers and evaluators that will include the scenario, a list of performance objectives, and a description of the expected responses prior to the drill or exercise.

Technical Evaluation: (Section N.3.a-f)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes how exercises and drills will be carried out to allow free play for decision-making and to meet the exercise objectives. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.14.17 Observing, Evaluating, and Critiquing Drills and Exercises

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.4) (10 CFR Part 50, Appendix E, Section IV.F.2 (g))

CCNPP Unit 3 Emergency Plan, Section N.1, "Exercises," states that qualified personnel from Federal, State, or local governments may observe and critique exercises. CCNPP Unit 3 Emergency Plan, Section N.4, "Critique and Evaluation," states drill and exercise performance objectives are evaluated against measurable demonstration criteria. A critique is conducted as soon as possible following the conclusion of each drill or exercise. A formal written report is prepared.

Technical Evaluation: (Section N.4) (10 CFR Part 50, Appendix E, Section IV.F.2(g))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions for official observers from Federal, State, or local governments to observe, evaluate, and critique the required exercises. The staff finds this acceptable because it conforms to the applicable requirements in 10 CFR Part 50, Appendix E, and the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.14.18 Means to Correct Areas Needing Improvement

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section N.5)

CCNPP Unit 3 Emergency Plan, Section N.4, "Critique and Evaluation," states that the critique and evaluation process, which includes performance objectives and measurable criteria, is used to identify areas of the emergency preparedness program that require improvement. CCNPP Unit 3 Emergency Plan, Section N 5, "Resolution of Drill and Exercise Findings," states that the Emergency Preparedness Manager is responsible for evaluation of recommendations and comments to determine which items will be incorporated into the program or require corrective actions, and for the scheduling, tracking, and evaluation of the resolution to the items. CCNPP Unit 3 Emergency Plan, Section P.3, "Responsibility for Development and Maintenance of the Plan," states that the Emergency Preparedness Manager is responsible for documentation and resolution of adverse conditions found in the emergency preparedness program in accordance with the licensee Corrective Action Program.

Technical Evaluation: (Section N.5)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes a means to evaluate observer and participant comments on areas that need improvement, including emergency plan procedural changes, and for assignment of responsibility to implement

corrective actions. The CCNPP Unit 3 Emergency Plan also establishes management control used to ensure that corrective actions are implemented. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.14.19 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding exercises and drills is acceptable and meets the requirements of 10 CFR 50.47(b)(14) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard N, and the applicable portions of 10 CFR Part 50, Appendix E as described above.

13.3C.15 Radiological Emergency Training

Sections 13.3C.5.2 through 13.3C.5.16 of this report describes radiological emergency response training for the onsite and offsite emergency response organization, first aid and rescue teams, accident assessment teams, radiological monitoring and analysis personnel, fire-fighting teams, repair and damage control teams, local emergency management personnel, medical support personnel, headquarters support personnel, security personnel, training on the transmittal of emergency information, and retraining as provided in the COL applicant's emergency plan.

13.3C.15.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(15), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Radiological Emergency Training" in 10 CFR Part 50, Appendix E.

13.3C.15.2 Training for Offsite Emergency Organizations

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.1.a)

CCNPP Unit 3 Emergency Plan, Section O.1, "Assurance of Training," describes the training, qualification, and requalification activities for individuals responding during an emergency. Annual training, or documentation of an annual written offer to train, is provided to non-licensee organizations that may respond during a nuclear plant emergency (e.g., local law enforcement, firefighting, medical services, transport of injured, etc.).

Technical Evaluation: (Section O.1.a)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the site-specific emergency response training to be provided for offsite emergency organizations that may be called upon to provide assistance in the event of an emergency. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.15.3 Onsite Emergency Response Organization Training

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.2)

CCNPP Unit 3 Emergency Plan, Section O.2, "Functional Training of the ERO," describes methods for training including classroom, familiarization sessions, walkthroughs, and drills.

Drills demonstrate the ability of the ERO to perform their assigned emergency functions and provide on-the-spot correction of erroneous performance, including a demonstration of the proper performance offered by the Controller. Training for on-shift emergency response personnel is conducted annually.

Technical Evaluation: (Section O.2)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the training program for members of the onsite emergency organization. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1.

13.3C.15.4 First Aid and Rescue Team Training

Technical Information in the CCNPP Unit 3 Emergency Plan: (Sections O.3 and O.4.f) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(vi))

CCNPP Unit 3 Emergency Plan, Section O.3, "First Aid Response," states that the licensee approved first aid program training is provided to selected personnel. In RAI 155, Question 13.03-20, the staff requested that the COL applicant provide additional information on the First Aid program training, including its equivalency to the Red Cross Multi-Media training. In a November 19, 2009, response, the COL applicant committed to revise CCNPP Unit 3 Emergency Plan, Section O.3 to include a statement that individuals assigned to first aid teams will receive training equivalent to the Red Cross Multi-Media first aid training course.

Technical Evaluation: (Sections O.3 and O.4.f) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(vi))

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-20 acceptable because they meet the requirements in 10 CFR Part 50, Appendix E and conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 3 incorporated the information and textual changes provided in the response to RAI 155, Question 13.03-20. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes specialized initial training for first aid and rescue teams. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.5 Training Program to Implement the CCNPP Unit 3 Emergency Plan

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4) (10 CFR Part 50, Appendix E, Section IV.F.1)

CCNPP Unit 3 Emergency Plan, Section O.4, "Emergency Response Organization Training Program," states that ERO personnel responsible to implement the CCNPP Unit 3 Emergency Plan receive specialized training. All personnel receive knowledge and/or performance based training initially and retraining thereafter on an annual basis. The training program is developed based on the requirements of 10 CFR Part 50, Appendix E and position specific responsibilities as defined in the CCNPP Unit 3 Emergency Plan. On-shift personnel perform emergency response activities as an extension of their normal duties and receive duty specific training annually. Additional Emergency Preparedness information is provided as part of the Site General Employee Training (GET). New ERO personnel participate in an initial overview course

that familiarizes them with the CCNPP Unit 3 Emergency Plan by providing information related to: (1) Planning Basis; (2) Emergency Classifications; (3) ERO and Responsibilities; (4) Call-out of ERO; (5) Emergency Response Facilities (ERFs); (6) Communications Protocol/Emergency Public Information; and, (7) Offsite Organizations.

Technical Evaluation: (Section O.4) (10 CFR Part 50, Appendix E, Section IV.F.1)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the training program to instruct and qualify personnel that will implement the emergency response plan. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.6 Training for Emergency Response Organization Directors

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.a) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(i))

CCNPP Unit 3 Emergency Plan, Section O.4.a, "Directors, Managers and Coordinators within the ERO," states that personnel indentified in the CCNPP Unit 3 Emergency Planning Telephone Directory as ERO Directors, Managers, and Coordinators receive position specific training in accordance with the approved ERO training program. The training program includes: Notification; emergency classification; protective action recommendations; EALs; emergency exposure control; and accident assessment sufficient to classify an event and to mitigate the consequences. All personnel receive knowledge and/or performance based training initially and retraining thereafter on an annual basis.

Technical Evaluation: (Section O.4.a) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(i))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes specialized initial and periodic refresher training for personnel identified as emergency response organization managers. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.7 Training for Accident Assessment Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.b) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(ii))

CCNPP Unit 3 Emergency Plan, Section O.4.b, "Personnel Responsible for Accident Assessment," states that skills and knowledge necessary to perform plant stabilization and mitigation duties are normal functions of operational positions. Personnel in these positions use normal operating procedures to perform power changes and shutdowns of the reactor. Licensed Operators receive routine classroom and simulator training to ensure proficiency. CCNPP Unit 3 Emergency Plan, Section O.4.b.1, "Active Senior Licensed Control Room Personnel," states that the training program for control room personnel receive annual training in event classification; PARs; radioactive release rate determination; the use of the notification form; use of the State and local notification system; Federal, State, and local notification procedures; and, procedures for activating onsite and offsite EROs. CCNPP Unit 3 Emergency Plan, Section O.4.b.2, "Core Damage Assessment Personnel," states that personnel responsible for performing core damage assessment receive annual classroom and hands-on training in instrumentation and equipment, isotopic assessment and interpretation, and

computerized core damage assessment methodology and/or proceduralized assessment methods. All personnel receive knowledge and/or performance based training initially and retraining thereafter on an annual basis.

Technical Evaluation: (Section O.4.b) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(ii))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes specialized initial and periodic refresher training for personnel responsible for accident assessment, including control room shift personnel. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.8 Training for Radiological Monitoring and Analysis Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.c) (10 CFR Part 50, Appendix E, Section IV.F.1 (b)(iii))

CCNPP Unit 3 Emergency Plan, Section O.4.c, "Radiological Monitoring Teams and Radiological Analysis Personnel," states that the offsite radiological monitoring team members will receive training in accordance with the approved training program. The training program includes classroom and hands-on-training in equipment and equipment checks, communications, and plume tracking. Personnel monitoring team members receive classroom and hands-on-training in personnel monitoring equipment and techniques and decontamination techniques for personnel and vehicles. Dose assessment training includes computerized dose assessment, PARs, monitoring team interface, protective action guidelines with plume exposure doses, and basic meteorology. All personnel receive knowledge and/or performance-based training initially and retraining thereafter on an annual basis.

Technical Evaluation: (Section O.4.c) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(iii))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses the specialized initial and periodic refresher training for radiological monitoring and analysis personnel. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.9 Training for Fire Fighting Teams

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.d) (10 CFR Part 50, Appendix E, Section IV.F.1 (b) (iv))

CCNPP Unit 3 Emergency Plan, Section O.4.d.3, "Fire Control Teams (fire brigades)," states that fire brigade members are considered primary members of rescue teams and receive training defined by the Licensee Fire Protection Program, which includes rescue of personnel from hazardous environments. All personnel receive knowledge and/or performance based training initially and retraining thereafter on an annual basis. U.S. EPR FSAR Tier 2, Section 9.5.1.6.3, "Fire Protection Training and Personnel Qualifications," describes necessary training for fire brigade members.

Technical Evaluation: (Section O.4.d) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(iv))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the specialized initial and periodic refresher training for firefighting personnel. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.10 Training for Repair and Damage Control Teams

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.e) (10 CFR Part 50, Appendix E, Section IV.F.1 (b)(v))

CCNPP Unit 3 Emergency Plan, Section O.4.e, "Repair Teams," states that operations, maintenance, and radiation protection personnel receive specific training to respond to normal and abnormal plant operations. Operations personnel are trained to: (1) Recognize and mitigate degrading plant conditions; (2) isolate damaged or malfunctioning equipment and fluid leaks; and, (3) minimize transients. Maintenance personnel receive job-specific training for troubleshooting and repair of electrical, mechanical, or instrumentation systems. Radiation Protection personnel are trained to assess the radiological hazards and instruct personnel on appropriate protective clothing requirements, respiratory protection requirements, stay times, and other protective actions. All personnel receive knowledge and/or performance based training initially and retraining thereafter on an annual basis. Fifty percent of personnel that respond to the Operations Support Center (OSC) as damage control team members are required to be qualified in the use of respiratory protection equipment.

Technical Evaluation: (Section O.4.e) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(v))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the initial and periodic refresher training for repair and damage control teams. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.11 Training for Local Emergency Management Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.g) (10 CFR Part 50, Appendix E, Section IV.F.1)

CCNPP Unit 3 Emergency Plan, Section O.4.g, "Local Support Service Personnel," states that local support service personnel are invited annually to receive training described in CCNPP Unit 3 Emergency Plan, Section O.1.a and O.1.b, "Assurance of Training." Training is designed to familiarize non-licensee organizations, such as local law, fire, or medical support, with potential problems encountered in an emergency, notification procedures, and their expected roles. The non-licensee organizations will also receive site-specific emergency response training and be instructed as to the identity of those persons in the onsite organization that will control their support activities.

Technical Evaluation: (Section O.4.g) (10 CFR Part 50, Appendix E, Section IV.F.1)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the initial training for local support services/emergency service personnel. The staff finds this acceptable because

it conforms to the guidance described in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.12 Training for Medical Support Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.h) (10 CFR Part 50, Appendix E, Section IV.F.1 (b)(vii))

CCNPP Unit 3 Emergency Plan, Section O.4.h, "Medical Support Personnel," states onsite medical personnel are trained initially and annually thereafter to handle contaminated victims and hospital interface. Offsite ambulance and hospital personnel are also offered annual training.

Technical Evaluation: (Section O.4.h) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(vii))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the initial and periodic refresher training for medical support personnel. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.13 Training for Headquarters Support Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.i) (10 CFR Part 50, Appendix E, Section IV.F.1 (b)(viii))

CCNPP Unit 3 Emergency Plan, Section O.4.i, "Public Information Personnel," states that training is provided initially and annually thereafter for corporate and station personnel responsible for disseminating emergency public information and responding to media and public information requests.

Technical Evaluation: (Section O.4.i) (10 CFR Part 50, Appendix E, Section IV.F.1(b)(viii))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the initial and periodic refresher training for corporate support personnel that disseminate emergency public information. The staff finds this acceptable because it conforms to the guidance described in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.14 Training Related to the Transmitting Emergency Information

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.4.j)

CCNPP Unit 3 Emergency Plan, Section O.4.j, "Communications Personnel," states ERO personnel are trained in communications protocol during an initial Emergency Response Overview Course. Personnel using specialized communications equipment and those responsible for notification of offsite agencies receive initial and annual requalification training.

Technical Evaluation: (Section O.4.j)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses the specialized initial and periodic refresher training described for emergency communicators. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.15.15 Training for Security Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR Part 50, Appendix E, Section IV.F.1(b)(ix))

CCNPP Unit 3 Emergency Plan, Section O.4.d.2, "Security Personnel," states that security personnel are trained initially and annually thereafter as defined by the GET and the CCNPP Unit 3 Security Plan. CCNPP Unit 3 Emergency Plan, Section O.5.c, "General Employee Training (GET)," states all unescorted and badged personnel will receive initial and annual requalification training on the basic elements of the CCNPP Unit 3 Emergency Plan that includes: Alarms and their meanings; assembly areas; evacuation procedures; special precautions; and the purpose of the CCNPP Unit 3 Emergency Plan. The Security Plan is submitted as a separate licensing document and is categorized as Security Safeguards Information and withheld from public disclosure pursuant to 10 CFR 73.21.

Technical Evaluation: (10 CFR Part 50, Appendix E, Section IV.F.1 (b)(ix))

The staff finds that the CCNPP Unit 3 Emergency Plan adequately addresses the initial and periodic refresher training described for security personnel. The staff finds this acceptable because it meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.16 Retraining of Emergency Response Personnel

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section O.5) (10 CFR Part 50, Appendix E, Section IV.F.1)

CCNPP Unit 3 Emergency Plan, Section O.5, "General, Initial, and Annual Training Program Maintenance," states that the responsibility to train and retrain personnel belongs to the station departments and Emergency Preparedness. CCNPP Unit 3 Emergency Plan, Section O.5.a, "Responsibilities for Emergency Preparedness," states that Emergency Preparedness is responsible to schedule and conduct training, ensure attendance, keep training records, verify records are current, and prepare and review instructional material every 2 years. CCNPP Unit 3 Emergency Plan, Section O.5.a, "Responsibilities for Plant ERO Personnel," states that emergency support personnel retraining will use approved lesson plans. An annual review of assembly areas, ERF assignment, potential hazards, and anticipated actions are performed as part of a continued training program. CCNPP Unit 3 Emergency Plan, Section O.5.b, "Initial and Requalification ERO Training," provides the process used to ensure that personnel remain proficient in their duties. This includes retraining when necessary or once per year and participation in drills and exercises. CCNPP Unit 3 Emergency Plan, Section O.5.c, "General Employee Training (GET)," states that all unescorted and badged personnel will receive initial and annual requalification training on the basic elements of the CCNPP Unit 3 Emergency Plan that includes: Alarms and their meanings; assembly areas; evacuation procedures; special precautions; and the purpose of the CCNPP Unit 3 Emergency Plan.

Technical Evaluation: (Section O.5) (10 CFR Part 50, Appendix E, Section IV.F.1)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the provisions to retrain personnel with emergency response responsibilities. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, and meets the requirements of 10 CFR Part 50, Appendix E.

13.3C.15.17 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding radiological emergency training is acceptable and meets the requirements of 10 CFR 50.47(b)(15) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard O, and the applicable portions of 10 CFR Part 50, Appendix E, as described above.

13.3C.16 Responsibility for the Planning Effort

Sections 13.3C.5.2 through 13.3C.5.16 of this report describes radiological emergency response training for the onsite and offsite emergency response organization, first aid and rescue teams, accident assessment teams, radiological monitoring and analysis personnel, fire-fighting teams, repair and damage control teams, local emergency management personnel, medical support personnel, headquarters support personnel, security personnel, training on the transmittal of emergency information, and retraining as provided in the COL applicant's emergency plan.

13.3C.16.1 Regulatory Basis

To determine whether the proposed Emergency Plan met the applicable regulatory requirements in 10 CFR 50.47(b)(16), the staff evaluated the CCNPP Unit 3 Emergency Plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Responsibility for the Planning Effort," in 10 CFR Part 50, Appendix E.

13.3C.16.2 Training for Personnel Responsible for Planning Effort

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.1)

CCNPP Unit 3 Emergency Plan, Section P.1, "Emergency Preparedness Staff Training," states that at least once per calendar year the emergency preparedness staff is involved in either: Training courses specific or related to emergency preparedness; observation of or participation in drills and/or exercises at other stations; participation in industry review and evaluation programs; or, participation in regional or national emergency preparedness seminars, committees, workshops, or forums.

Technical Evaluation: (Section P.1)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes the training that will be provided for individuals responsible for the planning effort. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.3 Person Responsible for Emergency Planning

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.2)

CCNPP Unit 3 Emergency Plan, Section P.2, "Authority for the Emergency Preparedness Effort," states that the Site Vice President shall have overall responsibility to issue and control the CCNPP Unit 3 Emergency Plan and activities associated with emergency preparedness at CCNPP Unit 3. CCNPP Unit 3 Emergency Plan, Section P.2 also states, in part, that these individuals are assigned the responsibility for overall implementation of the Licensee Emergency

Plan and CCNPP Unit 3 Emergency Plan Annex. In RAI 155, Question 13.03-21, the staff requested that the COL applicant clarify the meaning of "these individuals" and revise the CCNPP Unit 3 Emergency Plan if necessary. In a November 19, 2009, response, the COL applicant committed to remove the statement from CCNPP Unit 3 Emergency Plan, Section P.2.

Technical Evaluation: (Section P.2)

The staff finds the additional information and textual revisions submitted in the November 19, 2009, response to RAI 155, Question 13.03-21, acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1 and meets the requirements of 10 CFR Part 50, Appendix E. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the November 19, 2009, response to RAI 155, Question 13.03-21. Accordingly, the staff finds that the CCNPP Unit 3 Emergency Plan adequately identifies the individual, by title, with the overall authority and responsibility for radiological emergency response planning. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.4 Designation of an Emergency Planning Coordinator

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.3)

CCNPP Unit 3 Emergency Plan, Section P.3, "Responsibility for Development and Maintenance of the Plan," states that the Emergency Preparedness Manager is responsible for the development and updating of emergency plans, implementing procedures and administrative documents, and coordination of these plans with offsite agencies.

Technical Evaluation: (Section P.3)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately designates an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.5 Update and Maintenance of the CCNPP Unit 3 Emergency Plan

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.4) (10 CFR Part 50, Appendix E, Section IV.G)

CCNPP Unit 3 Emergency Plan, Section P.4, "Emergency Plan and Agreement Revisions," states that the CCNPP Unit 3 Emergency Plan, its CCNPP Unit 3 Emergency Plan Annex, and supporting Agreements are reviewed annually. Implementing procedures are reviewed every 2 years and revised concurrently with the CCNPP Unit 3 Emergency Plan. The annual review/update includes appropriate changes identified during audits, assessments, training, drills, and exercises.

Technical Evaluation: (Section P.4) (10 CFR Part 50, Appendix E, Section IV.G)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes provisions to update the CCNPP Unit 3 Emergency Plan and agreements as needed, and review and certify the CCNPP Unit 3 Emergency Plan to be current on an annual basis. In addition, the updating provisions described, take into account changes identified by drills and exercises. The staff

finds this acceptable because it to the guidance in NUREG-0654/FEMA-REP-1, and meets the applicable requirements in 10 CFR Part 50, Appendix E.

13.3C.16.6 Distribution of Emergency Plans

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.5)

CCNPP Unit 3 Emergency Plan, Section P.5, “Emergency Plan Distribution,” states that Emergency Plan manuals, the Unit Annex, and implementing procedures are controlled and distributed, as necessary, to the emergency response facilities and selected Federal, State, and local agencies, and other appropriate locations requiring them. Revisions include the use of revision bars and individual page identifications (i.e. section of the plan, revision number, date of revision, etc.).

Technical Evaluation: (Section P.5)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes that the emergency response plan and approved changes to the CCNPP Unit 3 Emergency Plan will be forwarded to all organizations and appropriate individuals with responsibility for implementation of the CCNPP Unit 3 Emergency Plan. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.7 Supporting Plans

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.6)

CCNPP Unit 3 Emergency Plan, Section P.6, “Supporting Emergency Response Plans,” lists other plans that support the CCNPP Unit 3 Emergency Plan. This section references emergency response plans for the States of Maryland and Delaware, the Commonwealth of Virginia, and the District of Columbia; Calvert County, Dorchester County, and St. Mary's County; NUREG-1471, US Nuclear Regulatory Commission, “Concept of Operations: NRC Incident Response;” the Department of Energy, Region 1, “Radiological Assistance Plan;” INPO Emergency Resources Manual; the National Response Plan and Calvert Cliffs Nuclear Power Plant Unit 3 Security Plan.

Technical Evaluation: (Section P.6)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes emergency response plans that support the CCNPP Unit 3 Emergency Plan and their sources. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.8 CCNPP Unit 3 Emergency Plan Implementing Procedures

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.7)

CCNPP Unit 3 Emergency Plan, Appendix 2, “Procedure Cross-Reference to NUREG-0654,” provides a list of implementing and administrative procedures by title and number. Procedures are cross-referenced to the CCNPP Unit 3 Emergency Plan by planning standard.

Technical Evaluation: (Section P.7)

The staff finds that the CCNPP Unit 3 Emergency Plan includes a listing of the procedures, by titles that are required to implement the CCNPP Unit 3 Emergency Plan. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.9 Table of Contents and Cross-Reference Table

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.8)

CCNPP Unit 3 Emergency Plan, Section P.8, "Cross Reference to Planning Criteria," states that the CCNPP Unit 3 Emergency Plan table of contents is formatted the same as NUREG-0654/FEMA-REP-1. CCNPP Unit 3 Emergency Plan, Appendix 1, "References," provides a cross-reference to references used and applicable regulations including 10 CFR Part 50, Appendix E.

Technical Evaluation: (Section P.8)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides a Table of Contents and a Cross Reference Table to facilitate the use of the CCNPP Unit 3 Emergency Plan. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.10 Annual Independent Review of the CCNPP Unit 3 Emergency Plan

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.9)

CCNPP Unit 3 Emergency Plan, Section P.4, "Emergency Plan and Agreement Revisions," states that the CCNPP Unit 3 Emergency Plan, its CCNPP Unit 3 Emergency Plan Annex, and supporting agreements are reviewed annually. Implementing procedures are reviewed every 2 years and revised concurrently with the CCNPP Unit 3 Emergency Plan. CCNPP Unit 3 Emergency Plan, Section P.9, "Audit/Assessment of the Emergency Preparedness Program," states that an independent review of the Emergency Preparedness Program is conducted at least every 12 months. The review includes Emergency Plan, implementing procedures and practices, training, readiness testing, equipment, and interfaces with State and local governments. The Emergency Preparedness Manager ensures that findings with offsite interfaces are reviewed with the appropriate agencies and receive written notification of the performance of the audit. Documentation and resolution of findings is conducted in accordance with the licensee Corrective Action Program. Audit records are maintained for at least 5 years.

Technical Evaluation: (Section P.9)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes arrangements for and the conduct of independent reviews of the emergency preparedness program at least every 12 months. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1.

13.3C.16.11 Quarterly Update of Emergency Telephone Numbers

Technical Information in the CCNPP Unit 3 Emergency Plan: (Section P.10)

CCNPP Unit 3 Emergency Plan, Section P.10, "Maintenance of Emergency Telephone Directory," states that Emergency Response Organization and support personnel names and phone numbers will be reviewed and updated at least quarterly.

Technical Evaluation: (Section P.10)

The staff finds that the CCNPP Unit 3 Emergency Plan adequately provides for updating telephone numbers in emergency procedures at least quarterly. The staff finds this acceptable because it conforms to the guidance provided in NUREG-0654/FEMA-REP-1.

13.3C.16.12 Conclusions

The staff concludes that the information provided in the CCNPP Unit 3 Emergency Plan regarding the responsibility for EP is acceptable and meets the requirements of 10 CFR 50.47(b)(16) because it complies with the guidance in NUREG-0654/FEMA-REP-1, Planning Standard P, and the applicable portions of 10 CFR Part 50, Appendix E, as described above.

13.3C.17 Security-Based Event Considerations

This section of the report describes security-based event considerations for the CCNPP Unit 3 facility. Sections 13.3C.17.2 through 13.3C.17.8 of this report describe security-based emergency classifications and emergency action levels, NRC notification of a security event, onsite protective measures, emergency response organization augmentation, potential vulnerabilities from nearby hazardous facilities, dams, and other sites, security-based drills and exercises, and emergency preparedness and response to a security event.

13.3C.17.1 Regulatory Basis

NUREG-0800, Chapter 13.3, "Emergency Planning," specifies that COL applicants address the Commission orders issued February 25, 2002, as well as any subsequent NRC guidance, to determine what security-related aspects of emergency planning and preparedness are to be addressed in the emergency plan.

The Commission Orders issued February 25, 2002, and security-related enhancements identified in NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," identify the following areas to be addressed in the COL application, Emergency plan, or emergency plan implementing procedures:

1. Security-based Emergency Classification Levels and Emergency Action Levels - The emergency plan includes EALs to ensure that a site-specific, security event results in an emergency classification declaration of at least a notification of unusual event. The classification scheme should also reflect the strategy for escalation to a higher-level event classification.

2. NRC Notifications - Notification procedures allow for NRC notification of safeguards events immediately after notification of local law enforcement agencies, or within about 15 minutes of the recognition of a security-based threat.

3. Onsite Protective Measures - Consideration has been given to a range of protective measures for site workers, as appropriate, during a security-based event (e.g., evacuation of personnel from target buildings, site evacuation by opening security gates, dispersal of licensed operators, sheltering of personnel in structures away from potential site targets, and arrangements for accounting for personnel after attack).

4. Emergency Response Organization Augmentation - Emergency Response Facilities and Alternative Facilities have been identified to support the rapid response from ERO members to mitigate site damage from a security-based event once the site is secured. The alternative facilities could likely be located outside of the protected area and should include the following characteristics: accessible even if the site is under threat or actual attack; communication links with the Emergency Operations Facility, Control Room and plant security; the capability to perform offsite notifications; and the capability for engineering assessment activities, including damage control team planning and preparation. The alternative facility should also be equipped with general plant drawings and procedures, telephones, and computer links to the site.

5. Potential Vulnerabilities from Nearby Hazardous Facilities, Dams, and other Sites - The potential effect has been determined on the plant, onsite staffing and augmentation, and onsite evacuation strategies from damage to nearby hazardous facilities, dams, and other nearby sites, in consideration of a security-based event.

6. Drills and Exercises - Emergency Preparedness drill and exercise programs maintain the key skills necessary for mitigating security-based events. The Emergency Response Organization demonstrates security-based EP program activities under the schedule as committed to in their emergency plans.

7. Emergency Preparedness and Response to a Security-based Event - Onsite staffing, facilities, and procedures are adequate to accomplish actions necessary to respond to a security-based event, and the emergency plan and/or procedures reflect the site-specific needs.

13.3C.17.2 Security-Based Emergency Classification and Emergency Action Levels

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0800)

Emergency classification and action levels for security or hostile action based events are included in the EALs addressed in Section 13.3C.4 of this report.

Technical Evaluation: (NUREG-0800)

The staff's evaluation of the CCNPP Unit 3 emergency classification and action level scheme is included in Section 13.3C.4 of this report.

13.3C.17.3 NRC Notification

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0800)

NRC notification is addressed in Section 13.3C.5.8 of this report. In a March 9, 2010, response to RAI 212, Question 13.03-37, the COL applicant stated that the information contained in CCNPP Unit 3 Emergency Plan, Section E.2.b.2 regarding notification to the NRC for a

classified emergency (including security conditions or hostile actions) is consistent with the existing regulation and compatible with the language of NRC Bulletin 2005-02. In follow-up RAI 299, Question 13.03-46(1), the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan whether notifications to the NRC are made immediately after notification of local law enforcement agencies, or within about 15 minutes of the recognition of a security-based threat, consistent with the guidance in NRC Bulletin 2005-02. In a May 19, 2011, response to follow-up RAI 299, Question 13.03-46(1), the COL applicant stated that the NRC notification will be made immediately after State and local agency notifications, which are to be made within 15 minutes. Notification requirements are addressed in CCNPP Unit 3 Emergency Plan Section 13.3C.5.8, Notification to the NRC."

Technical Evaluation: (NUREG-0800)

The staff's evaluation notification requirements are addressed in Section 13.3C.5.8, "Notification to the NRC," of this report. The staff finds the clarification provided by the COL applicant in the May 19, 2011, response to follow-up RAI 299, Question 13.03-46(1) acceptable because it conforms to the guidance in NUREG-0800 and NRC Bulletin 2005-02.

13.3C.17.4 Onsite Protective Measures

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0800)

CCNPP Unit 3 Emergency Plan, Section J.4, "Evacuation," states that evacuation is the primary protective action anticipated for onsite personnel who do not have emergency assignments. Evacuation shall commence in accordance with site procedures as directed by the Emergency Plant Manager (EPM) or designee unless a security threat is in progress, which would have an adverse impact on the personnel while leaving the site. Section 13.3C.10.6 of this report provides additional information regarding the accountability of personnel within the protected area within 30 minutes of an emergency announcement, or its delay when the health and safety of personnel could be in jeopardy (e.g., during a security event). In RAI 148, Question 13.03-06, the staff requested that the COL applicant discuss whether the EPM can direct protective measures (other than site evacuation) to include:

- make evacuation of personnel from areas and buildings perceived as high-value targets
- site evacuation by opening, while continuing to defend, security gates
- dispersal of key personnel
- on-site sheltering
- staging of emergency response organization personnel in alternate locations pending restoration of safe conditions
- implementation of accountability measures following restoration of safe conditions

In an October 19, 2009, response to RAI 148, Question 13.03-06, the COL applicant stated, in part, that the onsite staffing, facilities, and procedures will be adequate to accomplish actions necessary in response to a security event, and the CCNPP Unit 3 Emergency Plan and/or procedures reflect the specific site needs. In addition, the COL applicant stated that the EPM can utilize judgment to direct other protective measures if personnel assembly, accountability,

and evacuation result in undue hazards to site personnel. In a May 7, 2010, response to follow-up RAI 232, Question 13.03-38(B), the COL applicant stated, in part, that further specific detail with regards to the above bullets are appropriate for EPIPs, which have not yet been developed for CCNPP Unit 3. However, EP ITAAC contained in COL application, Part 10, Table 2.3-1 include criteria to confirm that each of the implementing procedures for the CCNPP Unit 3 Emergency Plan, as specified in CCNPP Unit 3 Emergency Plan, Appendix 2, are submitted to the NRC no less than 180 days prior to fuel load. In follow-up RAI 299, Question 13.03-46(2), the staff requested that the COL applicant incorporate its response to RAI 148, Question 13.03-6, in part, into the CCNPP Unit 3 Emergency Plan with examples of other protective measures (consistent with NRC Bulletin 2005-02), the EPM may select in lieu of evacuating personnel from the protected area, or provide reference in the CCNPP Unit 3 Emergency Plan to where this information is contained (e.g., Security Contingency Plan or EPIPs). In a May 19, 2011, response to follow-up RAI 299, Question 13.03-46(2), the COL applicant stated, in part, that instructions for protective response, including non-security event and security event protective actions, which include assembly, accountability, and evacuation (local area, protected area and site) are provided in EP-AN-610, "Onsite Protective Actions," as listed in CCNPP Unit 3 Emergency Plan, Appendix 2.

Technical Evaluation: (NUREG-0800)

The staff finds the clarification provided in the May 19, 2011, response to follow-up RAI 299, Question 13.03-46(2) acceptable because it conforms to the guidance in NUREG-0800 and NRC Bulletin 2005-02. The staff finds the CCNPP Unit 3 Emergency Plan adequately describes onsite protective measures necessary to respond to a security event. The staff finds this acceptable because it meets the guidance in NUREG-0800.

13.3C.17.5 Emergency Response Organization Augmentation

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0800)

CCNPP Unit 3 Emergency Plan, Section H.1.d, "Alternate Mustering Facility," describes a near site location that has been identified and equipped for security and other events that may prevent response of the ERO to the primary ERFs. In RAI 212, Question 13.03-35, the staff requested that the COL applicant describe in the CCNPP Unit 3 Emergency Plan, or provide reference to where this information is contained, an alternative facility to support rapid response to a hostile-action event. The alternative facility should include the following characteristics:

- Accessibility even if the site is under threat or attack
- Communication links with the EOF, CR, and Security
- Capability to notify offsite response organizations if the EOF is not performing this action
- Capability for engineering and damage control teams to begin planning mitigating actions (e.g., general drawings and system information)

In a March 9, 2010, response to RAI 212, Question 13.03-35, the COL applicant stated that offsite assembly areas are positioned North and South of the station to protect arriving personnel from hostile action at the site. The COL applicant referenced the alternate mustering facility as described above and stated that LOAs have been obtained (included in CCNPP Unit 3 Emergency Plan, Appendix 3) consistent with CCNPP Units 1 and 2, to establish St. Leonard

Volunteer Fire Department and Rescue Squad, and Solomon's Island Fire and Rescue, as alternate mustering locations for ERO responders. In addition, the COL applicant stated that if the decision is made to establish an OSC and/or a TSC away from the CCNPP site, then the ERO at the assembly areas will be directed to the EOF to conduct response activities from that location. The EOF meets the attributes for the alternate facility described in NRC Bulletin 2005-02 as stated above. In follow-up RAI 299, Question 13.03-46(3), the staff requested that the COL applicant clarify whether the size of the EOF is sufficient to support its staff's response to an emergency as an alternate location for the OSC and/or TSC, while also activating as an EOF. In a May 19, 2011, response to follow-up RAI 299, Question 13.03-46(3), the COL applicant clarified the size of the EOF, and its equipment, being sufficient to support response to an emergency as an alternate location for the OSC and/or TSC, as well as an EOF.

Technical Evaluation: (NUREG-0800)

The staff finds the additional information and textual revisions submitted in the March 9, 2010, response to RAI 212, Question 13.03-35 and the clarification provided in the May 19, 2011, response to follow-up RAI 299, Question 13.03-46(3), acceptable because they meet the requirements in 10 CFR Part 50, Appendix E, and conform to the guidance in NUREG-0654/FEMA-REP-1. The staff confirmed that CCNPP Unit 3 Emergency Plan, Revision 7 incorporated the information and textual changes provided in the response to RAI 212, Question 13.03-35. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes onsite protective measures, including ERO augmentation, necessary to respond to a security event. The staff finds this acceptable because it meets the guidance in NUREG-0800.

13.3C.17.6 Potential Vulnerabilities from Nearby Hazardous Facilities, Dams, and Other Sites

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0800)

In RAI 148, Question 13.03-06, in part, the staff requested that the COL applicant clarify whether the CCNPP Unit 3 Emergency Plan reflects the effect on the plant from a security event that causes damage to nearby facilities and takes into consideration onsite staffing and augmentation, and onsite evacuation strategies from this event. In addition, the staff requested that the COL applicant clarify whether onsite staffing, facilities, and procedures are adequate to accomplish actions necessary in response to a security event. In an October 19, 2009, response to RAI 148, Question 13.03-06, the COL applicant stated that the CCNPP Unit 3 Emergency Plan utilizes NEI 99-01, Revision 5, EALs that consider the impact of a confirmed security condition as defined in the CCNPP Unit 3 Security Contingency Plan (SCP). The COL applicant stated that the SCP evaluation reflects the effect on the plant from a security event that causes damage to nearby facilities and will communicate such effects, including recommended actions, to the Shift Supervisor (Shift Manager). In addition, the COL applicant provided reference to the CCNPP Unit 3 Emergency Plan description of alternate mustering facilities consistent with the information provided in Section 13.3C.17.5 of this report. The COL applicant stated that a site evacuation will be performed in accordance with site procedures unless a security threat would compromise the safety of personnel leaving the CCNPP site. The COL applicant further stated that onsite staffing, facilities, and procedures will be adequate to accomplish actions necessary in response to a security event, and the CCNPP Unit 3 Emergency Plan and/or procedures reflect the specific site needs. The COL applicant provided

additional discussion regarding the protection of onsite personnel consistent with the information in Section 13.3C.17.4 of this report.

Technical Evaluation: (NUREG-0800)

The staff finds the COL applicant's October 19, 2009, response to RAI 148, Question 13.03-06, acceptable because it conforms to guidance in NUREG-0800 and NRC Bulletin 2005-02 regarding the potential effect on the plant, onsite staffing and augmentation, an onsite evacuation from damage to nearby hazardous facilities. The staff finds that the CCNPP Emergency Plan adequately describes the assessment of other nearby hazards that could potentially affect the safety of the CCNPP facility and its personnel. The staff finds this acceptable because it conforms to the guidance in NUREG-0800 and NRC Bulletin 2005-02.

13.3C.17.7 Security-Based Drills and Exercises

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0800)

CCNPP Unit 3 Emergency Plan, Section N.1 states, in part, that exercises are conducted to ensure that all major elements of the CCNPP Unit 3 Emergency Plan and preparedness program are demonstrated at least once in each 6-year period. In RAI 232, Question 13.03-38(A), the staff requested that the COL applicant clarify in the CCNPP Unit 3 Emergency Plan whether drills and exercises are conducted for a security-based event. In a May 7, 2010, response, in part, the COL applicant restated CCNPP Unit 3 Emergency Plan, Section N.1 as described above, providing additional clarification that the existing wording of CCNPP Unit 3 Emergency plan complies with current regulation and meets the intent of NRC Bulletin 2005-02. The CCNPP Unit 3 Emergency Plan will be revised as necessary when changes to the current regulations are enacted.

Technical Evaluation: (NUREG-0800)

The staff finds the COL applicant's May 7, 2010, response to RAI 232, Question 13.03-38(A), acceptable because it affirms that exercises will be conducted consistent with the guidance provided in NUREG 2005-02. The staff finds this acceptable because it conforms to the guidance in NUREG-0800. The staff finds that the CCNPP Unit 3 Emergency Plan adequately describes a drill and exercise program that includes the practical application of response to security-based events consistent with the guidance in NUREG-0800 and NRC Bulletin 2005-02.

13.3C.17.8 Emergency Preparedness and Response to a Security-Based Event

Technical Information in the CCNPP Unit 3 Emergency Plan: (NUREG-0800)

Sections 13.3C.2 and 13.3C.8 of this report contain information regarding the onsite and offsite EROs described in the CCNPP Unit 3 Emergency Plan, including the identification of minimum on-shift and augmented staffing levels which would support activation of the ERO and associated ERFs in the event of a declared security-based event at the CCNPP Unit 3 site.

In addition, Sections 13.3C.17.2 thru 13.3C.17.7 of this report, as discussed above, includes additional information regarding the COL applicant's ability to classify an emergency based on a security-related event; make an accelerated notification to the NRC; provide for protection of onsite ERO responders; assemble the augmented ERO staff at an alternate facility in support of

rapid response should unsafe site conditions exist; and practice the ERO's response to a security-related event.

CCNPP Unit 3 Emergency Plan, Appendix 2 contains a listing of EPIPs that encompass the spectrum of response activities associated with EP and Security (non-safeguards) at the CCNPP Unit 3 site.

Technical Evaluation: (NUREG-0800)

The staff finds that the CCNPP Unit 3 Emergency Plan describes the onsite staffing, facilities, and procedures to accomplish actions necessary to respond to a security-based event.

13.3C.17.9 Conclusions

The staff concludes that the CCNPP Unit 3 Emergency Plan adequately addresses the preparation and response to security-based events program. The staff finds this acceptable because it meets the guidance in NUREG-0800.

13.3C.18 Evacuation Time Estimate Analysis

The CCNPP Unit 3 Emergency Plan includes an analysis of the time required to evacuate the plume exposure pathway EPZ. The reports, "Calvert Cliffs Nuclear Power Plant, Development of Evacuation Time Estimates," April 2008, (ETE Report) and, "Addendum to Calvert Cliffs Nuclear Power Plant, Development of Evacuation Time Estimates," August 2008, (ETE Report Addendum) were provided as separate documents in the COL application as Enclosures 2 and 3. The Pacific Northwest National Laboratory and the Sandia National Laboratory assisted the staff in performing a technical review of the ETE Report and Addendum. The ETE Report and Addendum includes analyses and responses to questions that provide the basis for the staff's conclusions as to the adequacy of its content and conformity with to NUREG-0654/FEMA-REP-1, Revision 1, Appendix 4.

13.3C.18.1 Regulatory Basis for the ETE Analysis

The staff considered the following regulatory requirements and guidance in the review of the ETE analysis:

- 10 CFR 52.79(a)(21) refers to 10 CFR Part 50, Appendix E, Section IV, "Content of Emergency Plans," as it relates to the requirement that the nuclear power reactor operating license applicant provide an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations.

The staff evaluated the ETE Report and Addendum against NUREG-0654/FEMA-REP-1, Appendix 4, "Evacuation Time Estimates within the Plume Exposure Pathway Emergency Planning Zone." NUREG-0654/FEMA-REP-1, Appendix 4 includes detailed guidance that the staff used to determine if the ETE analysis meets the applicable regulatory requirements in 10 CFR Part 50, Appendix E.

13.3C.18.2 Introductory Materials Related to the ETE Report

Technical Information in the ETE Report: (Appendix 4, Section I)

ETE Report, Section 1, "Introduction," provides a general overview of the ETE study conducted for CCNPP in Calvert County, MD. ETE Report, Table 1-1, "ETE Study Comparisons," provides a summary of the comparison between the previous ETE study and the August 2008 revision. In RAI 156, Question 13.03-30(B), the staff requested that the COL applicant clarify when the ETE Report will be revised to include information provided in the April 2008 ETE Report and the August 2008 Addendum. In a December 18, 2009, response to RAI 156, Question 13.03-30(B), the COL applicant provided the revised ETE Report. The two snow scenarios that were provided in the ETE Report Addendum will be incorporated within the body of the updated ETE Report. The ETE Report Addendum also presents the ETE for closure of the Thomas Johnson Bridge and three new regions (15, 16, and 17), which represent the evacuation of St. Mary's County (Zone 6 and 7), and Dorchester County (Zone 8). These findings will be included in the revised ETE Report, Appendix I. In RAI 156, Question 13.03-31(A), the staff requested that the COL applicant update ETE Report, Table 1-1 to include new assumptions and conclusions that were provided in the COL applicant's responses to previous NRC questions, as appropriate. In a February 12, 2010, response, the COL applicant stated that ETE Report, Table 1-1 will be updated to include these new assumptions and conclusions. ETE Report, Figure 1-1, "Calvert Cliffs Nuclear Plant Site Location," shows the CCNPP within the 3.2, 8.0, and 16.1 km (2, 5, and 10 mi) rings, and includes county boundaries, towns and communities, bodies of water, and State and rural roads. ETE Report, Figure 1-2, "CCNPP Link-Node Analysis Network," provides a link-node representation of the physical highway network developed using Geographical Information Software (GIS) mapping software and observations obtained from the field survey.

ETE Report, Section 2, "Study Estimates and Assumptions," provides the basis for the population data estimates used in the ETE. These assumptions are also summarized within the Executive Summary. Population estimates are based on the 2000 U.S. Census projected out to 2008. County-specific projections are based on estimates of the average annual growth rate for 2000 to 2010 provided by the Maryland Department of Planning, Planning Data Services. Estimates of employees commuting to work are based on employment data provided by county emergency management officials. Special facility populations are based on data provided by county emergency management officials, company websites, telephone calls to employers, data provided in the 2002 ETE Report, and the State Journey-to-Work census data. Vehicle occupancy factors are based on a statistical analysis of data acquired from a telephone survey. Additional assumptions regarding the development of population estimates, including pass-through populations and regional employees, are provided in ETE Report, Section 3, "Demand Estimation," and ETE Report, Appendix E, "Special Facility Data." Assumptions about transit-dependent and special populations are provided in ETE Report, Section 8, "Transit-Dependent and Special Facility Evacuation Time Estimates," and ETE Report, Appendix E. Development of trip generation times from survey responses is described in ETE Report, Section 5, "Estimation of Trip Generation Times."

Seven methodological assumptions used in the development of the ETE are provided in ETE Report, Section 2.2, "Study Methodological Assumptions." Evacuation time is defined as the time elapsed from the advisory to evacuate until the region is clear. An Evacuation Region is defined as a group of zones. The regions are defined as specified in NUREG/CR-6863. Fourteen Evacuation Regions have been developed for the CCNPP ETE Report. Additional regions (15, 16, and 17) were provided in Enclosure 3, "Addendum to Calvert Cliffs Nuclear Power Plant Development of Evacuation Time Estimates," August 2008. The new Regions are

shown graphically in ETE Report Figures 1 through 3 of Annex-4. In RAI 156, Question 13.03-23(A), the staff requested that the COL applicant provide additional information in the ETE report related to page numbering within the Addendum in Enclosure 3 to the August 2008 ETE Report. In a December 18, 2009, response, the COL applicant stated that the page numbering should be "Addendum [page#]." The ETE Report Addendum will be incorporated into Appendix I in a revised ETE Report. Voluntary and shadow evacuations are considered as a potential impediment to overall evacuation as depicted in ETE Report, Figure 2-1, "Voluntary Evacuation Methodology." A total of 12 evacuation scenarios that represent different seasons, time of day, day of week, and weather were considered. Two special event scenarios that include the peak construction period for a new unit at the CCNPP site and the air show at Patuxent Naval Air Base were considered. A description of these scenarios is provided in a table on ETE Report, page 2-3.

Ten study assumptions used as the basis for the ETE are provided in ETE Report, Section 2.3, "Study Assumptions." The study assumes that everyone will evacuate according to assigned routes. Schools are to be notified in advance of the general population, if possible, and are given priority for use of transportation resources. Buses not being used for school evacuation will be used to transport those without access to private vehicles that have not received rides from neighbors. Traffic control points and access control points will be establish to aid the flow of traffic out of the plume exposure pathway EPZ and prevent access after the 90 minute mobilization period. In RAI 81, Questions 13.03-04(G)(2) and 13.03-04(G)(3) the staff requested that the COL applicant provide additional information related to the timeframe to establish access control points (ACP's) and traffic control points (TCPs) and staffing. In an April 14, 2009, response to RAI 81, Questions 13.03-04(G)(2) and 13.03-04(G)(3), the COL applicant stated that the timeframe will depend on available personnel resources. In RAI 156, Question 13.03-33(D) the staff requested that the COL applicant provide information on the availability of personnel to staff the traffic control points. In a December 18, 2009, response to RAI 156, Question 13.03-33(D), the COL applicant stated that the actual availability of personnel varies with the region to be evacuated. The respective counties will make the determinations on staffing needs. ETE Report, Section 2.3 also states that adverse weather is considered as part of this study. In RAI 155, Question 13.03-12(A), and RAI 156, Questions 13.03-30(A), 13.03-30(C), and 13.03-31(C), the staff requested that the COL applicant provide additional information related to adverse weather scenarios. The COL applicant stated that the revised ETE Report will be submitted to the NRC by February 19, 2010, to include two additional adverse weather (snow) scenarios (13 and 14) as discussed in the December 18, 2009, response to RAI 156, Question 13.03-30(B). The COL applicant also stated that the text in ETE Report, Section 7.4 will be revised to instruct the user to use the ETE from Scenarios 4 and 9 in the event it rains during the evening scenarios in the summer or winter, respectively.

An outline of the approach to estimating the ETE is presented with a link-node map (Figure 1-2, "CCNPP Link-Node Analysis Network"). Details of the link-node map are presented in ETE Report, Appendix K, "Evacuation Roadway Network Characteristics." The Integrated Dynamic Network Evacuation (IDYNEV) System was used to analyze the highway network to determine routes used for evacuation and estimate evacuation times. A description of the IDYNEV System and associated sub-models is provided in ETE Report, Section 1.3 subsection, "Analytic Tools." The IDYNEV system consists of several submodels: A macroscopic traffic simulation model; an intersection capacity model; and a dynamic, node-centric routing model that adjusts the "base" routing in the event of an imbalance in the levels of congestion on the outbound links. Another model of the IDYNEV System is the traffic assignment and distribution model, which

integrates an equilibrium assignment model with a trip distribution algorithm to compute origin-destination volumes and paths of travel designed to minimize travel time. A discussion of algorithms used is provided in detail in ETE Report, Section 4, "Estimation of Highway Capacity." In RAI 155, Question 13.03-08, the staff requested that the COL applicant provide additional information related to algorithms used to calculate ETEs. In a November 19, 2009, response to RAI 155, Question 13.03-08, the COL applicant stated that IDYNEV System would replace the NETVAC2 computer model used in the previous ETE Study. A discussion of the algorithms within the model and the standard parameters used in the analysis was included. The response discussed the iterative procedure to adjust green times at traffic signals such that competing approaches dissipate at comparable times stating this approach does not optimize, but applies reasonable service through the intersections. However, the ETE modeling effort given in the 2008 ETE Report does not rely on traffic control and does not utilize actual green time for signals in place within the plume exposure pathway EPZ. In RAI 156, Question 13.03-24(A), the staff requested that the COL applicant provide additional information regarding the effect on the ETE if "green time" for signals does not support dissipation of competing approaches at comparable times. In a December 18, 2009, response to RAI 156, Question 13.03-24(A), the COL applicant provided additional information related to their method for estimating the ratio of "green time" to cycle length. The COL applicant further stated that that modeling does not rely on the manual control by traffic guides at TCPs but does consider installed controls. Also, the "actual green time" is variable with respect to when the evacuation takes place because the signal timing changes with time of day and timing plans change over time.

Technical Evaluation: (Appendix 4, Section I)

The staff finds the clarifications and additional information and textual revision provided in responses to the following questions acceptable because they meet the requirements of 10 CFR Part 50, Appendix E.IV, and the guidance in NUREG-0654/FEMA-REP-1, Appendix 4.

- RAI 81, Questions 13.03-04(G)(2), 13.03-04(G)(3), April 14, 2009, response
- RAI 155, Question 13.03-08, November 19, 2009, response
- RAI 156, Questions 13.03-23(A), 13.03-24(A), 13.03-30(A), 13.03-30(B), 13.03-30(C), 13.03-31(A), 13.03-31(C), and 13.03-33(D), December 18, 2009, response

The staff confirmed that the changes proposed in the questions listed above have been incorporated into the CCNPP ETE Report, Revision 2, which closed the RAIs. The staff finds that the CCNPP ETE Report includes a map showing the proposed site and plume exposure pathway EPZ, as well as transportation networks, topographical features, and political boundaries. Also, the boundaries of the plume exposure pathway EPZ, in addition to the evacuation subareas within the plume exposure pathway EPZ, are based on factors such as current and projected demography, topography, land characteristics, access routes, and jurisdictional boundaries. The staff finds that the information provided in the Introductory Materials of the CCNPP ETE Report meets the requirements of 10 CFR Part 50, Appendix E.IV and the guidance in NUREG-0654/FEMA-REP-1, Appendix 4.

13.3C.18.3 Demand Estimation

Technical Information in the ETE Report: (Appendix 4, Section II)

Permanent residents, transients, and employees make up the general population. Vehicles traveling through the plume exposure pathway EPZ (external-external trips) are assumed to continue to enter during the first 90 minutes following the advisory to evacuate. Subsequently, none enter and those remaining will evacuate with the general population. ETE Report, Section 3, "Demand Estimation," provides an estimate of demand expressed in terms of people and vehicles. The permanent resident population was projected out to 2008 by using the latest census data and county specific growth rates obtained from the Maryland Department of Planning website updated October 2007. In RAI 156, Questions 13.03-22(B) and 13.03-22(C), the staff requested that the COL applicant clarify how the permanent resident population values, based on county specific growth rates, for the eight Zones listed in ETE Report, Table 3-1 and used in the 2013 extrapolation were determined. In a December 18, 2009, response to RAI 156, Question 13.03-22, the COL applicant provided the method to calculate the average annual growth rates for the affected counties and the results of those calculations. Based on information obtained in a telephone survey, the permanent resident average household size is estimated at 2.80 persons and 1.46 evacuating vehicles per household. Estimates of the permanent resident population and their vehicles are presented for each Zone in ETE Report, Table 3-2, "Permanent Resident Population and Vehicles by Zone," and by polar coordinate representation in ETE Report, Figure 3-2, "Permanent Resident by Sector," and ETE Report, Figure 3-3, "Permanent Resident Vehicles by Sector." ETE Report, Figure F-1, "CCNPP Household Size," indicates that there are 2.8 people/household and ETE Report, Figure F-2, "CCNPP Vehicle Availability," in ETE Report, Appendix F, "Telephone Survey," indicates that there are 2.3 vehicles/household. The vehicle values listed in ETE Report, Table 3-2 do not equate to the number of vehicles per zone. The values listed in ETE Report, Table 3-2 appear to be the number of evacuating vehicles per zone (1.46 evacuating vehicles/household). In RAI 156, Question 13.03-25(A), the staff requested that the COL applicant clarify the 2008 vehicle data given in ETE Report, Table 3-2. In a December 18, 2009, response, the COL applicant stated that ETE Report, Table 3-2 reflects the number of evacuating vehicles, as opposed to the total number of vehicles. The title of ETE Report, Table 3-2 will be revised to state, "Permanent Resident Population and Evacuating Vehicles by Zone," for clarification.

Transients are defined as a portion of the population that are not permanent residents that enter the EPZ for certain activities. Transients may stay for less than one day or remain for an extended period of time in apartments, camping facilities, hotels, or motels. The CCNPP EPZ includes parks, museums, recreation centers, campgrounds, a sports complex, and a historical site. There are also ten hotels, six bed and breakfast lodges, and one cabin facility. Additional information related to recreation and lodging facilities, including maps of their location, can be found in ETE Report, Appendix E, "Special Facility Data." The transient population is estimated to be 4640 persons as presented in ETE Report, Table 3-3, "Summary of Transients by Zone." Estimates of the transient population and their vehicles are presented by polar coordinate representation in ETE Report, Figures 3-4, "Transient Population by Sector," and ETE Report, Figure 3-5, "Transient Vehicles by Sector." The value for the assumed number of people per transient vehicle was not provided. In RAI 156, Question 13.03-26(A), the staff requested that the COL applicant provide the value assumed for the number of people per transient vehicle evacuating. In a December 18, 2009, response, the COL applicant provided the methodology to estimate the number of transients per vehicle evacuating. The COL applicant also committed to revise the text in ETE Report, Section 3 and the footnote to the "Calvert Cliffs EPZ: Recreational Areas" table to clarify these estimates.

The CCNPP site is located between the Chesapeake Bay to the east and the Patuxent River to the West making boating a major recreational activity. In the November 19, 2009, response to RAI 155, Question 13.03-09, regarding double counting, the COL applicant stated that all people visiting the marinas within the plume exposure pathway EPZ are assumed to be plume residents to avoid the possibility of double counting. Visitors to other recreational areas and those staying in overnight lodging facilities are assumed to be transients. In RAI 156, Question 13.03-23(E), the staff requested that the COL applicant provide the basis for these assumptions. In a December 18, 2009, response to RAI 13.03-23(E), the COL applicant stated that sampling phone calls made to marinas indicated that about 75 percent of boaters are transients. The rest are considered to be residents. In either case, the impact to the ETE will be minimal due to the small number of boaters. In RAI 148, Questions 13.03-06(A)(1), 13.03-06(A)(2), 13.03-06(A)(3), and RAI 156, Question 13.03-23(F), the staff requested that the COL applicant provide additional information related to the evacuation of boaters. In the December 18, 2009, response to RAI 156, Question 13.03-23, the COL applicant stated that the footnote and the table on ETE Report, page E-12 will be revised to clarify that the marina population is assumed to be 25 percent EPZ residents. To avoid double counting, EPZ residents are not included in the transient population numbers. In RAI 156, Questions 13.03-23(D)(1) and 13.03-23(D)(2), the staff requested that the COL applicant provide additional information related to the evacuation of boaters and the assumptions used to determine mobilization times for loading boats at the boat ramps. The staff also requested that the COL applicant clarify whether the trip generation time includes residents returning home to drop off the boat, pack, and evacuate. In a December 18, 2009, response to RAI 156, Question 13.03-23, the COL applicant provided estimates of the time required for boaters to mobilize and evacuate. Based on this information the COL applicant concluded that boater mobilization time distributions do not exceed those identified in ETE Report, Table 5-1. The COL applicant stated the estimates provided in the ETE Report for the population are still valid.

In the ETE Report, page E-8, the table, “Calvert Cliffs: Recreational Areas,” states that 11 of 19 recreational areas do not have population or vehicle information. ETE Report, Section 3, subsection, “Transient Population,” states that recreational data for ETE Report, Appendix E was obtained from the 2002 ETE Report. In RAI 156, Question 13.03-23(C), the staff requested that the COL applicant discuss why the recreational data from the 2002 ETE Report was used instead of updating to year 2008. In a December 18, 2009, response to RAI 156, Question 13.03-23(C), the COL applicant stated that the data in ETE Report, Appendix E has been updated to 2009 data. The transient population discussion on ETE Report, page 3-8; Figures 3-4, 3-5, E-2, and E-3; Tables 3-3, 7-1A through 7-1D, and tables on page E-8, E-10, and E-12, will be revised to reflect this change. In RAI 156, Question 13.03-26(H), the staff requested that the COL applicant provide additional information related to the assumptions used for recreational areas where population and vehicle data were not available. In a December 18, 2009, response to RAI 156, Question 13.03-26(H), the COL applicant stated that the “Calvert Cliffs EPZ: Recreational Areas,” and “Calvert Cliffs EPZ: Lodging,” tables and ETE Report, Figures E-2 and E-3 have been updated and will be included in a future ETE Report. The revised ETEs were provided in the December 18, 2009, response to RAI 156, Question 13.03-23(C).

Employees that commute to jobs within the plume exposure pathway EPZ are assumed to evacuate along with the permanent resident and transient populations. Vehicle occupancy of 1.03 obtained from the telephone survey is applied for the employee population. The employee population is estimated to be 1,454 persons as presented in ETE Report, Table 3-4, “Summary of non-EPZ Employees by Zone.” Estimates of the employee population and their vehicles are

presented by polar coordinate representation in ETE Report, Figure 3-6, "Employee Population by Sector," and ETE Report, Figure 3-7, "Employee Vehicles by Sector." The major employers in the EPZ are listed in ETE Report, Appendix E along with a map of their location. In RAI 156, Question 13.03-26(F), the staff requested that the COL applicant clarify whether there are any major employers present in Dorchester County within the plume exposure pathway EPZ. In a February 18, 2009, response to RAI 156, Question 13.03-26(F), the COL applicant stated that there are currently no major employers in Dorchester County within the plume exposure pathway EPZ. In RAI 148, Questions 13.03-06(G), RAI 156, Questions 13.03-26(G)(1), and 13.03-26(G)(2), the staff requested that the COL applicant include CCNPP and Dominion Cove Point liquefied natural gas (LNG) Shipping Terminal in the list of Major Employers and update the employee estimates accordingly. In the December 18, 2009, response to RAI 156, Question 13.03-26, the COL applicant stated that this data was previously unavailable and will be included in the revised ETE Report to be submitted by February 19, 2010. ETE Report, Figures 3-6 and 3-7; and the table on page E-6 will be revised based on this update. Revised ETEs that incorporate this data were provided in the COL applicant's December 18, 2009, response to RAI 156, Question 13.03-23.

The percentages of employees that evacuate from within the plume exposure pathway EPZ but live outside that evacuate are given for each of the 12 scenarios in Table 6-3, "Percent of Population Groups Evacuating for Various Scenarios." In RAI 156, Question 13.03-26(D), the staff requested that the COL applicant clarify the actual percentage of CCNPP employees expected to evacuate during an emergency. In a December 18, 2009, response to RAI 156, Question 13.03-26(D), the COL applicant stated that based on information provided by Constellation Energy, 558 of the 833 employees reside outside the EPZ. The percentage of employees living outside the EPZ presented in the ETE Report is accurate. Scenarios 6 and 7 assume 100 percent evacuation while Scenarios 1, 2, and 11 assume 96 percent. In RAI 156, Question 13.03-26(C), the staff requested that the COL applicant clarify why Scenarios 6 and 7 in ETE Report, Table 6-3 state that a different percentage of employees that live outside of the plume exposure pathway EPZ will evacuate when compared to Scenarios 1, 2, and 11. In a December 18, 2009, response to RAI 156, Question 13.03-26(C), the COL applicant stated that Scenarios 1, 2, and 11 assume that 6 percent of the workforce is taking leave for summer, thus the total number of employees is 94 percent of the winter weekday value. In follow-up RAI 247, Question 13.03-42(G) the staff requested that the COL applicant include this assumption in the ETE Report. In a July 30, 2010, response to follow-up RAI 247, Question 13.03-42(G), the COL applicant proposed to add this assumption to the ETE report, including clarification of the "employees" footnote in Table 6-3.

Two special event scenarios, Scenarios 11 and 12 were included in the ETE Report. Scenario 11 represents the peak construction period during a typical summer, midweek, midday, under good weather conditions. Construction workers are considered to be onsite during a normal shift hours of 7:30 a.m. to 4:00 p.m. Unistar Nuclear estimates the peak construction period will begin in 2013. The workforce will include 3940 employees working in 3 shifts and 2120 vehicles. The scenario also includes 363 new employees for CCNPP Unit 3 and 750 additional workers during the outage. The combined staff accounts for an additional 2821 vehicles. The permanent resident and the shadow populations were also extrapolated out to 2013.

The second special event scenario, Scenario 12, is based on a typical summer weekend, mid-day with good weather. ETE Report, Section 3 subsection, "The Air show at the Naval Air Base," states the Patuxent Naval Air Station (NAS) air show occurs every other year. The COL

applicant's October 19, 2009, response to RAI 148, Questions 13.03-06(B)(1), 13.03-06(B)(2), and 13.03-06(B)(3) states that the air show is a semi-annual event. In RAI 156, Question 13.03-25(B), the staff requested that the COL applicant clarify the frequency of the air show. In a December 18, 2009, response to RAI 156, Question 13.03-25(B), the COL applicant clarified that the air show occurs every other year. An average occupancy of 2.3 people per vehicle is assumed based on a study developed for a similar event in Seabrook, NH. The overall event results in a loading of 43,480 vehicles on the local roads and highways. Maps of the area surrounding the CCNPP site show that part of the Naval Base is within the plume exposure pathway EPZ. In RAI 156, Questions 13.03-25(C)(1) and 13.03-25(C)(2) the staff requested that the COL applicant clarify whether any individuals from the NAS are included in the ETE analysis. In a December 18, 2009, response to RAI 156, Questions 13.03-25(C)(1) and 13.03-25(C)(2), the COL applicant stated that a portion of the NAS is within the 16-km (10-mi) radius but outside the EPZ. The NAS and its population groups are not included in the ETEs. The ETE Report assumes 75 percent of the residents within the plume exposure pathway EPZ and the shadow area will attend this event. Residents are loaded at the base and only the remaining 25 percent are loaded within the plume exposure pathway EPZ and shadow area to avoid double counting. In RAI 156, Question 13.03-26(B), the staff requested that the COL applicant provide additional information related to the impact on the ETE for Scenario 12 on the values assumed for the resident and shadow populations that will attend the air show. In a December 18, 2009, response to RAI 156, Question 13.03-26(B), the COL applicant stated that ETE Report, Appendix I includes a sensitivity study conducted to determine this effect. The COL applicant committed to replace ETE Report, Table I-4 with the Table 1 and 2 (I-4A and I-4B) provided in this response for clarification. The text will also be revised to identify ETE Report, Table I-4 as a source for ETE estimates for the sensitivity study.

Special facilities are defined as schools, daycare centers, hospitals and other medical care facilities, and correctional institutions. Population estimates for special facilities and people without personal vehicles are provided in Section 8, "Transit-Dependent and Special Facility Evacuation Time Estimates." There are no medical facilities within the plume exposure pathway EPZ but there are four nursing homes/senior centers. There are also nine elementary schools, three middle schools, and two schools/academies. School enrollment and bus runs required for evacuation and provided in ETE Report, Table 8-2, "School Population Demand Estimates. The table, "Calvert Cliffs: Day Care Facilities," indicates that there are 17 daycare facilities within the plume exposure pathway EPZ. Enrollment data was only available for one facility. In RAI 156, Question 13.03-27(D), the staff requested that the COL applicant provide the assumptions used determine the demand estimates for the other daycare centers. In a December 18, 2009, response to RAI 156, Question 13.03-27(D), the COL applicant stated that daycare facilities are included in the general population numbers because it is assumed that parents will pick up daycare children before evacuating. Therefore, enrollment numbers are not necessary for estimating transit resources and evacuation times. ETE Report, Section 8.2, "School Population –Transit Demand," states that students will not be picked up until they arrive at host schools listed in ETE Report, Table 8-3, "Host Schools." Bus capacity is 70 for primary schools and 50 for middle schools. CCNPP staff will evacuate in private vehicles unless accompanying students. The ETE Report recommends that counties institute a procedure to contact schools early to determine transportation needs. Schools are given priority for the use of county buses in the event of an emergency.

Telephone survey results (reported in ETE Report, Appendix F) are used to estimate the portion of the population requiring transit service. The transit-dependent population includes persons in households without vehicles and persons in households whose vehicles are unavailable at the

time of evacuation due to commuter use. The ETE Report estimates that 980 people need transportation assistance requiring 33 bus runs. ETE Report, Table 8-1, "Transit Dependent Population Estimates," assumes 50 percent of people would ride-share. The second column heading in ETE Report, Table 8-1 is, "2007 EPZ Population," the population value is stated as 55,205. In RAI 156, Question 13.03-27(A), the staff requested that the COL applicant clarify whether the "EPZ Population" value given in ETE Report, Table 8-1 is for 2007 or 2008. In a December 18, 2009, response to RAI 156, Question 13.03-27(A), the COL applicant stated that the second column heading in ETE Report, Table 8-1 will be revised to read, "2008 EPZ Population." ETE Report, Section 8, "Transit-Dependent and Special Facility Evacuation Time Estimates," states that transit service may be needed for residents, employees, and transients. In RAI 156, Question 13.03-26(E), the staff requested that the COL applicant clarify whether employees and transients were considered to need transit service. In a December 18, 2009, response to RAI 156, Question 13.03-26(E), the COL applicant stated that this estimate does not include employees or transients and the text will be revised for clarification. ETE Report, Section 8-4, "Evacuation Time Estimates for Transit –Dependent People," states that based on discussions with the EPZ counties, there are sufficient bus resources to evacuate the schools in a single wave. In RAI 123, Questions 13.03-05(A)(4), 13.03-05(A)(5), and RAI 156, Question 13.03-27(B), the staff requested that the COL applicant provide additional information regarding transportation resources and the use of a second wave of evacuation. In a December 18, 2009, response to RAI 156, Question 13.03-27, the COL applicant referenced its November 19, 2009, response to RAI 155, Question 13.03-07(A)(1), as stating that the ETE Report estimate is overstated in that no allowance is made for those high school students that drive to school. Representatives from St. Mary's County and Calvert County have also confirmed schools can be evacuated in a single wave. For reference purposes, ETE Report, Tables 8-5A and 8-5B will be revised to show a second wave ETE for all schools should a second wave be necessary.

ETE Report, Section 8.3, "Special Facility Demand," states that special facility data was obtained through telephone calls and internet searches. The ETE Report estimates that 103 individuals will need to be evacuated from special facilities. The two senior centers in the plume exposure pathway EPZ do not have overnight accommodations and only a few individuals will require transportation assistance. The ETE Report assumes all 59 seniors in the facilities will require transportation assistance. As shown in ETE Report, Table 8-4, "Special Facility Transit Demand," five buses and two wheel chair vans are need to evacuate special facilities. In RAI 123, Question 13.03-05(A)(2) and RAI 156, Question 13.03-27(E), the staff requested that the COL applicant provide additional information regarding the use of special needs resident registration cards. In an August 13, 2009, response to RAI 123, Question 13.03-05(A)(2), and a December 18, 2009, response to RAI 156, Question 13.03-27(E), the COL applicant provided additional information related to the evacuation of homebound special needs population based on communications with the local counties. The COL applicant committed to adding a new subsection titled, "Evacuation of Homebound Special Needs Population," into the revised ETE Report to be submitted to the NRC by February 19, 2010.

The total number of people expected to evacuate for each scenario and their associated vehicles are discussed in ETE Report, Section 6, "Demand Estimation for Evacuation Scenarios." The CCNPP plume exposure pathway EPZ includes 14 Regions consisting of eight zones with boundaries along major roads or rivers. The boundary definitions are provided in ETE Report, Appendix L, "Zone Boundaries." Evacuation will be performed by regions that include multiple zones. A description of the evacuation regions and their associated zones is

provided in ETE Report, Table 6-1, "Description of Evacuation Regions." A description of the evacuation scenarios is provided in ETE Report, Table 6-2, "Evacuation Scenario Definitions." The percentage of population groups expected to evacuate for each scenario is described in ETE Report, Table 6-3, "Percentage of Population Groups Evacuating for Various Scenarios." ETE Report, Table 6-4, "Vehicle Estimates by Scenario," lists the vehicle estimates for all population groups by scenario. In RAI 156, Questions 13.03-22(A)(1) and, Question 13.03-22(A)(2), the staff requested that the COL applicant clarify whether all populations estimates, with the exception of Scenario 11, have been extrapolated to the year 2008. The staff also requested that the COL applicant provide the permanent resident population value extrapolated to the year 2013 that supports Scenario 11. In a December 18, 2009, response to RAI 156, Questions 13.03-22(A)(1) and 13.03-22(A)(2), the COL applicant stated that the permanent resident and shadow populations are extrapolated to 2008 from the Census 2000 numbers. The transient population is updated as discussed in the December 18, 2009, response to RAI 156, Questions 13.03-23(C) and 13.03-26(H). Employee numbers represent the data available in 2008-2009 from: The county offices of emergency management; county websites; employer websites; and telephone conversations with employers; and are not extrapolated. The COL applicant also provided ETE Report, Table 1, "Estimated Permanent Resident Population in 2013," and committed to it in a future ETE Report.

Technical Evaluation: (Appendix 4, Section II)

The staff finds the clarifications, additional information, and textual revisions provided in the response to the following questions acceptable because they meet the requirements of 10 CFR Part 50, Appendix E.IV, and the guidance in NUREG-0654/FEMA-REP-1, Appendix 4. The staff confirmed that the changes proposed in the responses to the questions below have been incorporated into the CCNPP Evacuation Time Estimate, Revision 2.

- RAI 123, Questions 13.03-05(A)(2), 13.03-05(A)(4), 13.03-05(A)(5), August 13, 2009, response
- RAI 148, Questions 13.03-06(A)(1), 13.03-06(A)(2), 13.03-06(A)(3), 13.03-06(B)(1), 13.03-06(B)(2), 13.03-06(B)(3), 13.03-06(G), October 19, 2009, response
- RAI 155, Question 13.03-09, November 19, 2009, response
- RAI 156, Questions 13.03-22(A)(1), 13.03-22(A)(2), 13.03-22(B), 13.03-22(C), 13.03-23(C), 13.03-23(D)(1), 13.03-23(D)(2), 13.03-23(E), 13.03-23(F), 13.03-25(A), 13.03-25(B), 13.03 25(C)(1), 13.03-25(C)(2), 13.03-26(A), 13.03-26(B), 13.03-26(D), 13.03-26(E), 13.03 26(F), 13.03-26(G)(1), 13.03-26(G)(2), 13.03-26(H), 13.03-27(A), 13.03-27(B), 13.03 27(D), and 13.03-27(E), December 18, 2009, response

The staff finds the additional information and textual revisions submitted in the July 30, 2010, response to follow-up RAI 247, Question 13.03-42(G) acceptable, considering various aspects of RAI 156, Question 13.03-26(C), because they meet the requirements of 10 CFR Part 50, Appendix E.IV, and conforms to the guidance in NUREG-0654/FEMA-REP-1, Appendix 4. The staff confirmed that ETE Report, Revision 3 incorporated the information and textual changes provided in the July 30, 2010, response to RAI 247, Question 13.03-42(G). The staff finds the ETE Report, Section II acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 Appendix 4, Section II.

13.3C.18.4 Traffic Capacity

Technical Information in the ETE Report: (Section III of Appendix 4, Section III)

ETE Report, Section 4, "Estimation of Highway Capacity," describes the process used to determine vehicle capacities for roadways in the transportation network. The methods used are generally taken from the Highway Capacity Manual published by the Transportation Research Board of the National Research Council. ETE Report, Figure 1-2, "CCNPP Link-Node Analysis Network," shows the 709 links and 409 nodes in the analysis network for CCNPP cited in ETE Report, Table 1-1. ETE Report, Appendix K, "Evacuation Roadway Network Characteristics," includes a table of evacuation roadway network characteristics, which includes 480 upstream and downstream nodes, length, number of full lanes, saturation flow rate, and free flow speed. The link and node characteristics cannot be referenced to any specific roadway because they are not referenced on a map or in the ETE Report text. Therefore, in RAI 156, Questions 13.03-29(A)(1) and 13.03-29(A)(2), the staff requested that the COL applicant provide an accurate number of links and nodes included in the CCNPP traffic analysis network and an annotated map or maps that include the nodes identified in ETE Report, Appendix K. In a December 18, 2009, response to RAI 156, Questions 13.03-29(A)(1) and 13.03-29(A)(2), the COL applicant provided a discussion of the links and nodes shown in ETE Report, Figure 1-2. The COL applicant also stated that the table in ETE Report, Appendix K details the properties of the 574 links that connect the 422 "internal" nodes and does not include entry and exit links. The number of links declared in ETE Report, Table 1-1 will be changed to 574 for consistency. ETE Report, Figure 1-2 will also be divided into several figures and included in ETE Report, Appendix K. The title of ETE Report, Appendix K will be changed to, "Evacuation Roadway Network." The reference to Figure 1-2 in Section 1.3 in the ETE Report will be revised to reference Figures K-1 through K-14.

ETE Report, Section 4 states that the two-lane roadway capacity is 1700 passenger cars per hour (pc/hr) as identified in Chapter 20 of the Highway Capacity Manual (HCM). The HCM identifies these capacities for 'ideal conditions' such as 3.7 m (12 ft) widths and 1.8 m (6 ft) shoulders. In RAI 156, Question 13.03-29(E), the staff requested that the COL applicant clarify whether the field survey confirmed that lane and shoulder widths meet the conditions for "ideal." In a December 18, 2009, response to RAI 156, Question 13.03-29(E), the COL applicant stated field surveys confirmed that evacuation routes were of good quality and could service 1700 pc/hr. Measurements of lane and shoulder widths were estimated based on visual observation and recorded images and were considered appropriate for estimating the capacity. The COL applicant identified some two lane roadways in ETE Report, Appendix K that were inadvertently assigned a saturation flow rate of 1800 or 1900 vehicles per hour. These will be reduced to 1700 vehicles per hour and the ETE Report will be updated as discussed in the COL applicant's December 18, 2009, response to RAI 156, Question 13.03-23. ETE Report, Section 4 subsection, "Capacity Estimation Along Sections of Highway," indicates that roadways with adverse geometrics are characterized by lower free-flow speeds and lane capacities. However, no data is provided regarding unusual roadway characteristics. Therefore, in RAI 156, Question 13.03-29(C) the staff requested that the COL applicant clarify whether any roadway sections with unusual characteristics were identified. In a December 18, 2009, response to RAI 156, Question 13.03-29(C), the COL applicant stated that the roadways are of good quality and do not have any unusual characteristics that would decrease the saturation flow rate below 1700 pc/hr. Links passing through residential areas are assigned low free flow speeds as inputs to the DYNEV model to reflect their lower operating speeds. ETE Report, Section 4 also states that a reduction factor of (R=0.85) was used to estimate service volume

under congestion conditions. In RAI 156, Question 13.03-29(F), the staff requested that the COL applicant provide additional information to clarify whether the reduction factor was applied to all roadways. In a February 12, 2010, response, the COL applicant stated that the reduction factor is only applied under congested conditions as discussed in ETE Report, Section 4.

ETE Report, Section 9, Traffic Management Strategy," presents a traffic control and management strategy that is designed to expedite the movement of evacuating traffic. The traffic management strategy is based on a field survey of critical locations, computer analysis of evacuation traffic flow, and consultation with emergency management and enforcement personnel, and prioritization of TCPs. ETE Report, Appendix G, "Traffic Management," provides a description of TCPs and ACPs and provides maps of their location within the plume exposure pathway EPZ. In RAI 155, Questions 13.03-16(A)(1) and 13.03-16(A)(2) the staff requested that the COL applicant provide additional information related to TCPs and ACPs. In a November 19, 2009, response to RAI 156, Questions 13.03-16(A)(1) and 13.03-16(A)(2), the COL applicant stated that the ETE calculations do not rely upon traffic control measures in ETE Report, Appendix G. The COL applicant conservatively assumes that capacity estimates provided in ETE Report, Appendix K, "Evacuation Roadway Network Characteristics," are not enhanced or compromised by TCPs. In RAI 156, Question 13.03-33(B), the staff requested that the COL applicant clarify in the ETE Report whether the data provided on TCPs and ACPs is used for ETE calculations. In a December 18, 2009, response to RAI 156, Question 13.03-33(B), the COL applicant stated that Study Assumption 6 in the ETE Report, Section 2.3 will be revised to state that the manning of TCPs may expedite evacuation traffic operations relative to existing controls; however, calculation of ETE does not rely on any expedited operations.

ETE Report, Section 10, "Evacuation Routes," illustrates the emergency evacuation routes for the three counties surrounding the CCNPP site. Evacuation routes provide for evacuation first to the plume exposure pathway EPZ boundary and then to reception centers. The TRAD model was used to determine routes that would minimize exposure to risk by balancing traffic demand relative to road capacity. Evacuation routes were also developed to minimize travel outside the plume exposure pathway EPZ and relate traffic volume to reception center capacity. ETE Report, Figures 10-2 through 10-4 show the evacuation route maps for Zones 1 through 8. In RAI 156, Question 13.03-28(A), the staff requested that the COL applicant provide a map that includes evacuation routes with their route numbers, zone numbers, sectors, and quadrant boundaries. In a December 18, 2009, response to RAI 156, Question 13.03-28(A), the COL applicant stated that ETE Report, Figures 10-2 through 10-4 will be revised to include sector and quadrant boundaries. ETE Report, Section 7.2, "Patterns of Traffic Congestion During Evacuation," identifies areas of traffic congestion that arise for the case when the entire plume exposure pathway EPZ (Region R03) is advised to evacuate during the summer, weekend, and midday period under good weather. ETE Report, Figures 7-3 through 7-6 identify areas of congestion at 1.5, 3.0, 4.5, and 5.5 hours after the advisory to evacuate for Scenario 1.

In RAI 155, Questions 13.03-11(D), 13.03-16(A)(3) and RAI 156, Questions 13.03-28(B)(1), 13.03-28(B)(2), and 13.03-29(G), the staff requested that the COL applicant provide additional information related to evacuation routing and congestion in the CCNPP EPZ during evacuation. In a November 19, 2009, response to RAI 155, Questions 13.03-11(D), 13.03-16(A)(3); a December 18, 2009, response to RAI 156, Questions 13.03-28(B)(1), 13.03-28(B)(2), and 13.03-29(G), the COL applicant stated that since the 2008 ETE Report was prepared, a new connector to southbound Route 2/4 in Lusby, MD had been constructed. Sensitivity Studies to explore use of the new connector were conducted. This new connector resulted in a lower ETE

for the general population in all cases. The ETE will be updated using these new simulation files and the ETE Report will be revised as discussed in the December 18, 2009, response to RAI 156, Question 13.03-23. The COL applicant also committed to include the results of the sensitivity study for use of the Thomas Johnson Memorial Bridge for contra-flow traffic in ETE Report, Appendix I. The ETE is lower compared to the base case by approximately 1 hour and 15 minutes. The COL applicant also committed to adding the table, "Average Delay for Selected Roadways in the CCNPP EPZ," and replacing Figures 7-3 through 7-6 in the ETE Report, with revised figures. These changes will be incorporated into the revised ETE Report to be submitted to the NRC by February 19, 2010.

Technical Evaluation: (Section III of Appendix 4, Section III)

The staff finds the clarifications, additional information, and textual revisions provided in response to the following questions acceptable because they meet the requirements of 10 CFR Part 50, Appendix E.IV, and conform to the guidance in NUREG-0654/FEMA-REP-1, Appendix 4.

- RAI 155, Questions 13.03-11(D), 13.03-16(A)(1), 13.03-16(A)(2), 13.03-16(A)(3), November 19, 2009, response

- RAI 156, Questions 13.03-28(A), 13.03-28(B)(1), 13.03-28(B)(2), 13.03-29(A)(1), 13.03-29(A)(2), 13.03-29(C), 13.03-29(E), 13.03-29(F), 13.03-29(G), and 13.03-33(B), February 12, 2009, response

The staff confirmed that the changes proposed in the above listed responses have been incorporated into CCNPP ETE, Revision 2, which closed the RAIs. The staff finds that the CCNPP ETE Report adequately describes the highway capacity estimates. The staff confirmed that the changes proposed in the above listed responses have been incorporated into CCNPP ETE, Revision 2. The staff finds that the CCNPP ETE Report adequately describes the highway capacity estimates. The staff finds this acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Appendix 4, Section III.

13.3C.18.5 Analysis of Evacuation Times

Technical Information in the ETE Report: (Appendix 4, Section IV)

The plume exposure pathway EPZ includes Calvert County, St. Mary's County, and Dorchester County in Maryland. Estimates of evacuation time are provided for resident and transient populations. ETE Report, Sections 4, 5, and 6 describe the methods used to estimate the evacuation times. ETE Report, Section 4, "Estimation of Highway Capacity," describes how data collected during field surveys of the transportation network were combined with methods suggested in the 2000 HCM. ETE Report, Section 5, "Estimation of Trip Generation Time," provides estimates of the four different distributions of elapsed times associated with mobilization activities undertaken by the public to prepare for the evacuation trip. The elapsed time associated with each activity is represented as a statistical distribution reflecting differences between members of the public. The quantification of these activity-based distributions relies largely on the results of a telephone survey contained in ETE Report, Appendix F, "Telephone Survey."

ETE Report, Section 5, Subsection, "Distribution No. 2, Prepare to Leave Work: Activity 2 ->3," indicates 115 minutes elapsed time is needed for 100 percent of the workers to prepare to

leave. However, ETE Report, Figure F-10, “Time Required to Prepare to Leave Work/School,” indicates 140 minutes for 100 percent to prepare to leave work/school. Therefore, in RAI 156, Questions 13.03-24(B)(1) and 13.03-24(B)(2), the staff requested that the COL applicant clarify which value was used for time to prepare to leave work/school in the ETE calculations and make any necessary changes. In a December 18, 2009, response to RAI 156, Questions 13.03-24(B)(1) and 13.02-24(B)(2), the COL applicant stated that the value provided on page F-9 is inaccurate and will be changed to 115 minutes in a revision to the ETE Report. Additional data points after the 100 percent point in ETE Report, Figure F-10 will also be removed for clarification. ETE Report, Subsection, “Distribution No. 3, Travel Home: Activity 3 ->4,” indicates 120 minutes is needed for 100 percent of the workers to prepare to leave. However, ETE Report, Figure F-11, “Work to Home Travel Time,” in ETE Report, Appendix F states that “nearly all” commuters can arrive home after 120 minutes. Therefore, in RAI 156, Questions 13.03-24(C)(1) and 13.03-24(C)(2), the staff requested that the COL applicant clarify whether 120 minutes was assumed in calculations for 100 percent of commuters to reach home. In a December 18, 2009, response to RAI 156, Questions 13.03-24(C)(1) and 13.03-24(C)(2), the COL applicant stated that the 120 minutes reported in ETE Report, Distribution No. 3 and ETE Report, Figure 11 is correct. To clarify this, the additional data points after the 100 percent point will be removed from ETE Report, Figure F-11. The word “nearly” will also be deleted from the statement on page F-9. In ETE Report, Figure 5-1, “Events and Activities Preceding the Evacuation Trip,” transients are shown to receive notification, become aware, and evacuate. However, those in hotels may need or desire to return to gather their belongings. In RAI 156, Question13.03-32(A), the staff requested that the COL applicant discuss the effect on the ETEs if transients return to their hotel to prepare to evacuate. In a December 18, 2009, response to RAI 156, Question 13.03-32(A), the COL applicant stated that transients are estimated to start their evacuation trip within 2 hours after the advisory. While transients returning to their hotel is not discussed specifically, the estimated trip generation times take this possibility into account.

ETE Report, Section 6, “Demand Estimation for Evacuation Scenarios,” defines the various evacuation cases for which time estimates were made; a case is a combination of a scenario and a region. A scenario is a combination of circumstances, including time of day, day of week, season, and weather conditions. Scenarios define the number of people in each of the affected population groups and their respective mobilization time distributions. A region is defined as a grouping of contiguous evacuation PAZs, which forms either a “keyhole” sector-based area, or a circular area within the plume exposure pathway EPZ, that must be evacuated in response to a radiological emergency. ETE Report, Table 6-1, “Description of Evacuation Regions,” provides a description of the zones that will be evacuating for each of the 14 Regions. The August 2008 Addendum to the ETE Report contained 3 new Regions (15, 16, and 17) included in Tables 4-1A and 4-1B. In RAI 156,Question 13.03-31(B), the staff requested that the COL applicant provide an update to ETE Report, Table 6-1 that includes information on Regions 15 through 17 as presented in the August 2008 Addendum. The staff also requested that the COL applicant provide additional information to clarify the impact of adding voluntary and shadow evacuations to the ETEs for the three newly added Regions which only includes resident, transient, and employees who reside outside the plume exposure pathway EPZ In a December 18, 2009, response to RAI 156, Question 13.03-30(B), the COL applicant stated that evacuation of Zones 15 through 17 were calculated at the specific requests of St Mary's and Dorchester Counties and are not integrated into the procedures used to calculate the ETE for the other Regions. These ETE results will be included separately as a sensitivity study to the revised ETE Report, Appendix I, as described in the December 18, 2009, response to RAI 156, Question 13.03-30(B). The data associated with the three added Regions only includes

resident, transient, and employees who reside outside the plume exposure pathway EPZ data. No voluntary or shadow evacuations were considered for these cases. In a December 18, 2009, response to RAI 156, Question 13.03-31, the COL applicant stated that the additional ETE are calculated at the request of St Mary's and Dorchester Counties and are not required by NUREG-0654 or NUREG/CR-6863. Shadow evacuations were not considered since they were custom cases designed to suit the needs of the counties. Reception centers are shown on maps in ETE Report, Section 10, "Evacuation Routes." The assumptions on evacuation are based on simultaneous evacuation of inner and outer sectors.

A summary of the ETE is provided in ETE Report, Section 7, "General Population Evacuation Time Estimates (ETE)." These results cover 14 regions within the CCNPP plume exposure pathway EPZ and the 12 evacuation scenarios discussed in ETE Report, Section 6. The evacuation times are presented for 14 evacuation regions and 12 scenarios in ETE Report, Appendix J, "Evacuation Time Estimates for All Evacuation Regions and Scenarios and Evacuation Time Graphs for Region R03, for all Scenarios." Results are presented for 50, 90, 95, and 100 percent of the population. Results are provided for good and adverse conditions. The two special event scenarios are also included. The methodology for the general population uses distribution functions and figures describing the time distribution of evacuating vehicles follow the format of NUREG-0654, Appendix 4, Figure 4. ETE Report, Section 7, "General Population Evacuation Time Estimates," states that balancing the vehicle demand from Zone 3 in the northbound and southbound directions on Route 2/4 results in a significant decrease in the ETE as demonstrated in the sensitivity study in ETE Report, Appendix I, "Evacuation Sensitivity Studies." Although this routing moves some of the evacuees closer to CCNPP, the risk of exposure is minimized. Appendix I states the existing emergency plans for CCNPP suggest people in Zone 3 evacuate southbound along Maryland Route 2/4. In RAI 156, Question 13.03-33(A)(1), the staff requested that the COL applicant explain why the 10-hour and 50-minute ETE values identified in ETE Report, Table I-3, "Evacuation Time Estimates for Modified Routing for Zone 3," are not used as the expected ETE when the sensitivity analysis was developed using the existing emergency management plans. In a December 18, 2009, response to RAI 156, Question 13.03-33(A)(1), the COL applicant stated that the sensitivity study preceded the final runs showing that the ETE could be shortened significantly if Zone 3 evacuees traveled both northbound and southbound as presented in ETE Report, Chapter 7 and ETE Report, Appendix J. The directional arrows on the nodal network map indicate travel in both directions for the entire length of Route 2/4. As a result, Table I-3 is correctly labeled as a sensitivity case study. In RAI 156, Question 13.03-33(A)(2), the staff requested that the COL applicant clarify whether local authorities have agreed to evacuate people northbound and southbound. In a December 18, 2009, response to RAI 156, Question 13.03-33(A)(2), the COL applicant stated that the draft ETE Report was submitted to the counties and comments were received in February 2008. There were no adverse comments regarding the routing of evacuees. In RAI 156, Question 13.03-29(B), the staff requested that the COL applicant discuss why Route 265 to Route 264, which moves evacuees away from the plant, is not used. In a December 18, 2009, response to RAI 156, Question 1313.03-29(B), the COL applicant stated that the GIS street map shape file provided to them was incorrect. There is not a through road west because there is no bridge at this location. The COL applicant further stated that ETE Report, Figure 1-2 will be updated and replaced by the figures discussed in the December 18, 2009, response to RAI 156, Question 13.03-29(A)(2).

ETE Report, Section 7.3, "Evacuation Rates," states that some evacuees may delay or lengthen their mobilization activities and evacuate at a later time. The evacuation estimates do not account for these "stragglers." However, the Executive Summary, states the planning basis will

yield an ETE, measured as the elapsed time from the advisory to evacuate until the last vehicle exits the impacted region. The ETE Report also assumes 100 percent of the people within the impacted region. ETE Report, Section 7.4, “Guidance on Using ETE Tables,” identifies the contents of ETE Report, Table 7-1D as the elapsed time required for 100 percent of the population within a region to evacuate. In RAI 156, Questions 13.03-25(D)(1), 13.03-25(D)(2), and 13.03-25(D)(3), the staff requested that the COL applicant provide the additional information related to the number of people estimated to evacuate. In a December 18, 2009, response to RAI 156, Questions 13.03-25, the COL applicant stated that it is standard practice to perform an "outlier analysis" to identify data points which are not representative of the sampled population. In the case of ETE Report, Section 5, the ETE data points beyond (4 x standard deviation), or 107 minutes were removed. The estimate of the mobilization time is modified to account for outliers, not the number or percentage of people evacuating.

ETE Report, Section 8, “Transit-Dependent and Special Facility Evacuation Time Estimates,” discusses evacuation plans for schools, residents without vehicles, and special care facilities. These groups are expected to merge with general evacuation traffic following notification and mobilization. Separate estimates of population size and necessary transportation were made for schools, special facilities and the transit-dependent populations. Mobilization of drivers and students has been built into the total evacuation times as described in ETE Report, Figure 8-1, “Chronology of Transit Evacuation Operations.” The estimated time to evacuate schools within the plume exposure pathway EPZ is provided in ETE Report, Table 8-5A, “School Evacuation Time Estimates-Good Weather,” and ETE Report, Table 8-5B, “School Evacuation Time Estimates-Rain.” Evacuation of the transit-dependent population is described in ETE Report, Section 8.4, “Evacuation Time Estimates for Transit-Dependent People.” A description of transit dependent bus routes and their travel time are provided in ETE Report, Table 8-6, “Summary of Transit Depend Bus Routes.” The routes are also depicted in ETE Report, Figure 8-2, “Proposed Transit Dependent Bus Routes.” In RAI 156, Question 13.03-27(C), the staff requested that the COL applicant provide route numbers for roads shown on the map in ETE Report, Figure 8-2. In a December 18, 2009, response to RAI 156, Question 13.03-27(C), the COL applicant stated that route numbers are not included because the buses will travel the same route, as indicated by ETE Report, Table 8-6 and ETE Report, Figure 8-2. The curved arrows in ETE Report, Figure 8-2 represent the deviations from the main route in order to pick up people within the population centers. The ETEs for the transit dependent population are provided in ETE Report, Table 8-7A, “Transit Dependent Evacuation Time Estimate- Good Weather,” and ETE Report, Table 8-7B, “Transit Dependent Evacuation Time Estimate- Rain.” Evacuation of other special facilities is given the same consideration as schools with the exception of increased loading time. ETE Report, Section 8.4, subsection, “Evacuation of Ambulatory Persons from Special Facilities,” states that return trips from host schools to the special facility in the plume exposure pathway EPZ take about 15 minutes of additional inbound travel time. However, ETE Report, Table 8-5A, “School Evacuation Time Estimates – Good Weather,” indicates that most host schools are more than 64.4 km (40 mi) from the plume exposure pathway EPZ boundary. Therefore, in RAI 156, Questions 13.03-32(B)(1) and 13.03-32(B)(2), the staff requested that the COL applicant provide additional information on the host schools. In a December 18, 2009, response to this RAI, the COL applicant stated that ETE Report, Section 8 will be revised to include calculations and additional text for clarification of second wave of evacuation.

Technical Evaluation: (Appendix 4, Section IV)

The staff finds the clarifications, and additional information provided in the responses to the following questions acceptable, which closed the response to the RAI, because they meet the requirements of 10 CFR Part 50, Appendix E.IV, and the guidance in NUREG-0654/FEMA-REP-1, Appendix 4.

- RAI 156, Questions 13.03-23(B), 13.03-24(B)(1), 13.03-24(B)(2), 13.03-24(C)(1), 13.03-24(C)(2), 13.03-25(D)(1), 13.03-25(D)(2), 13.03-25(D)(3), 13.03-27(C), 13.03-29(A)(2), 13.03-29(B), 13.03-31(B), 13.03-32(A), 13.03-32(B)(1), 13.03-32(B)(2), 13.03-33(A)(1), and 13.03-33(A)(2), dated December 18, 2009, which are discussed above

The staff confirmed that the changes proposed in the above responses have been incorporated into Evacuation Time Estimate, Revision 2. The staff finds that the CCNPP ETE Report provides evacuation time estimates for the evacuation of the general public. Each evacuation time estimate quantifies the aggregate evacuation time estimated for the population within one of the 14 Evacuation Regions to completely evacuate from that Region, under the circumstances defined for one of 12 Evacuation Scenarios. Separate evacuation time estimates are calculated for transit-dependent evacuees, including school children. An acceptable variant of the NUREG-0654 format is used for the presentation of the evacuation times in ETE Report, Appendix J.

Distribution functions for notification of the various categories of evacuees were developed. The distribution functions for the action stages after notification predict what fraction of the population will complete a particular action within a given span of time. There are separate distributions for auto-owning households, school population, and transit-dependent populations. These times are combined to form the trip generation distributions.

On-road travel and delay times are calculated. An estimate of the time required to evacuate a particular segment of the non-auto-owning population dependent upon public transportation is developed, in a manner similar to that used for the auto-owning population.

13.3C.18.6 Other Requirements

Technical Information in the ETE Report: (Appendix 4, Section V)

ETE Report, Section 12, “Confirmation Time,” states Calvert, St. Mary’s, and Dorchester Counties may use their own procedures for confirmation of evacuation. However, an alternative process uses a stratified random sample and a telephone survey and was projected to take 7.5 hours to complete. In RAI 156, Question 13.03-34(A), the staff requested that the COL applicant clarify whether Calvert, St. Mary’s, and Dorchester Counties have evacuation confirmation plans and whether these counties have agreed to use the proposed alternative process or their own process. In a December 18, 2009, response to this RAI, the COL applicant stated that this approach was provided to meet the guidance in NUREG-0654, Appendix 4.V, which requires the time for confirmation be estimated. The decision to adopt this approach resides with the counties and is not required in the ETE Report.

The Executive Summary states the telephone survey instrument was reviewed and modified by State and county personnel prior to the telephone survey. The traffic management plan will also be reviewed by the State and local law enforcement personnel. The November 19, 2009,

response to RAI 155, Question 13.03-17 indicated that the traffic management plan has not yet been reviewed by State and local authorities. In RAI 156, Question 13.03-33(C), the staff requested that the COL applicant clarify when the State and local authorities will review and comment on the CCNPP traffic management plan. In a December 18, 2009, response to RAI 156, Question 13.03-33(C), the COL applicant stated that the draft ETE Report was submitted to the counties in February 2008 with some comments received. There were no adverse comments regarding the traffic management plan.

Technical Evaluation: (Appendix 4, Section V)

The staff finds the clarifications provided in the February 12, 2010, response to RAI 156, Questions 13.03-33(C) and 13.03-34(A) acceptable because they meet the requirements of 10 CFR Part 50, Appendix E.IV and the guidance in NUREG-0654/FEMA-REP-1, Appendix 4. The staff finds that the ETE Report provides the time required for confirmation of evacuation was estimated. In addition, the development of the ETE Report was coordinated with emergency planners from the Calvert, St. Mary's, and Dorchester Counties who are involved in emergency response for the site. The information provided in the ETE Report with regard to other requirements meets the requirements of 10 CFR Part 50, Appendix E.IV, and the guidance in NUREG-0654/FEMA-REP-1, Appendix 4.

13.3C.18.7 Conclusions

The staff concludes on the basis of its review of the analysis of the CCNPP Unit 3 ETE Report that the ETE Report conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1. The ETE Report is acceptable and meets the applicable requirements of 10 CFR Part 50, Appendix E.

13.3C.19 Inspection, Test, Analysis, and Acceptance Criteria

13.3C.19.1 Regulatory Basis

The staff considered the following regulatory requirement and guidance in the evaluation of the information in the COL application related to EP ITAAC:

1. 10 CFR 52.80(a), as it relates to the requirement that a COL application contain the proposed inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will be operated in conformity with the combined license, the provisions of the Atomic Energy Act of 1954, and NRC and regulations.

2. NUREG-0800, Table 14.3.10-1, "Emergency Planning Generic Inspections, Tests, Analyses, and Acceptance Criteria," as it relates to overall emergency preparedness licensing requirements.

13.3C.19.2 Proposed Emergency Planning ITAAC

Technical Information in the CCNPP Unit 3 Emergency Plan: (10 CFR 52.80(a))

In COL application, Part 10, "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure," Table 2.3-1, "Emergency Preparedness Inspections, Tests, Analyses, and Acceptance Criteria," the COL applicant proposed EP ITAAC to address those elements of the CCNPP Unit 3 Emergency Plan that cannot be completed during the COL application review phase.

In the December 19, 2008, response to RAI 27, Question 13.03-1 (ITAAC-1), the COL applicant proposed a revision to EP ITAAC Acceptance Criteria 3.1 in ETE Report, Table 2.3-1 to address the communication capabilities of the OSC.

In RAI 27, Question 13.03-1 (ITAAC-2), the staff requested that the COL applicant clarify the acceptance criteria pertaining to offsite exercise objectives and provide onsite exercise objectives consistent with the approved guidance in RG 1.206 regarding ITAAC. In a December 19, 2009, response to RAI 27, Question 13.03-1 (ITAAC-2), the COL applicant acknowledged that it must conduct FEMA-evaluated exercises with evaluation criteria acceptable to FEMA, and State and local jurisdictions. In addition, the COL applicant stated that offsite exercise objectives must be met or deficiencies addressed prior to operation above 5 percent power. The COL applicant also proposed onsite exercise objectives to ensure that a comprehensive test COL Emergency Plan is performed.

In RAI 153, Question 14.03.10-1, RAI 154, Question 14.03.10-2, and RAI 172, Question 14.03.10-3, the staff requested that the COL applicant address whether additional ITAAC should be included for various programs (i.e., Radiation Exposure Control, Medical Service and agreements, and Emergency Plan Distribution) already in place at Units 1 and 2. In a November 19, 2009, response to RAI 172, Question 14.03.10-3, the COL applicant stated, in part, that medical agreements have been obtained for CCNPP Unit 3 and will be included in the CCNPP Unit 3 Emergency Plan. The COL applicant proposed an ITAAC to verify that these agreements are incorporated into EP Appendix 3 and available for execution, as well as an ITAAC to ensure that EP documents (Emergency Plan and associated procedures) are distributed to the appropriate controlled distribution locations independent of CCNPP Units 1 and 2. In a November 19, 2009, response to RAI 172, Question 14.03.10-3, the COL applicant stated that provisions for radiological exposure control are contained in EP Section K, which addresses the demonstration criteria in NUREG-065/FEMA-REP-1, and there is no need to develop ITAAC for this area.

Technical Evaluation: (10 CFR 52.80(a))

The staff reviewed the COL applicant's submittal of EP ITAAC contained in COL application, Part 10, Table 2.3-1 against the generic EP ITAAC contained in NUREG-0800 for adequacy. In RAI 72, Questions 13.03-1, RAI 153, Questions 14.03-1, RAI 154 Question 14.03-2, and RAI 172, Question 14.03-3, the staff requested that the COL applicant address whether additional ITAAC should be included for various programs (i.e., Radiation Exposure Control, Medical Service and agreements, and Emergency Plan Distribution. In a December 19, 2008, response to RAI 27, Question 13.03-1, and RAI 153, Questions14.03-1, RAI 154 Question 14.03-2, and RAI 172, Question 14.03-3, the COL applicant addressed these questions as discussed above. The staff finds the COL applicant's responses to these questions acceptable because they conform to the guidance in NUREG-0800 and meet the requirements of 10 CFR 52.80(a). The staff confirmed that the COL applicant's response to

RAI 27, Question 13.03-1 (ITAAC 1 and 2) has been incorporated into the CCNPP Unit 3 Emergency Plan.

13.3C.19.3 Conclusions

The staff concludes that the CCNPP Unit 3 COL application provides EP ITAAC consistent with NUREG-0800, Table 14.3.10-1, and meets the requirements of 10 CFR 52.80(a).

13.4 Operational Programs

13.4.1 Introduction

In SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," October 28, 2005, the staff detailed its plan for reviewing operational programs in a COL application. The Commission approved the NRC staff's plan in the related Staff Requirements Memorandum, February 22, 2006. Although numerous programs support the operation of a nuclear power plant, SECY-05-0197 focused on those programs that meet the following three criteria:

1. required by regulation

2. reviewed in a COL application

3. inspected to verify program implementation as described in the FSAR

The programs that meet the above criteria are collectively referred to as "operational programs" and most are identified in SECY-05-0197.

13.4.2 Summary of Application

COL FSAR, Revision 7, Section 13.4 incorporates by reference U.S. EPR FSAR Tier 2, Revision 2, Section 13.4, "Operational Program Implementation."

In addition, in COL FSAR Section 13.4 and in Part 10 of the COL application, "Proposed License Conditions (Including ITAAC)," the COL applicant provided the following:

COL Information Item

The COL applicant provided additional information in COL FSAR Section 13.4 to address COL Information Item 13.4-1 from U.S. EPR FSAR Tier 2, Table 1.8-2 as follows:

> A COL applicant that references the U.S. EPR design certification will provide site-specific information for operational programs and schedule for implementation.

License Conditions

- COL application, Part 10, Appendix A, License Condition 3, "Operational Program Implementation"

- COL application, Part 10, Appendix A, License Condition 6, “Operational Program Readiness”

Both license conditions are related to COL FSAR Table 13.4-1, “Operational Programs Required by NRC Regulations and Program Implementation.” License Condition 3 addresses implementation milestones for those operational programs whose implementation is not addressed in the regulations. License Condition 6 includes the timing of information related to operational programs to support NRC inspection activities.

13.4.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the U.S. EPR FSAR.

In addition, the regulatory basis for acceptance of the supplementary information presented in this COL application is identified in the individual chapters of this report that address the evaluations of the specific operational programs, which are itemized in the next section, as clarified by the regulatory guidance in SECY-05-0197 and RG 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition),” June 2007.

13.4.4 Technical Evaluation

The staff reviewed COL FSAR Section 13.4 and checked the referenced design certification FSAR to ensure that the combination of the information in the U.S. EPR FSAR and the information in the COL FSAR represents the complete scope of information relating to this review topic. The staff confirmed that the information contained in the COL application and incorporated by reference addresses the required information relating to this section. U.S. EPR FSAR Tier 2, Section 13.4 has been reviewed by the staff under Docket No. 52-020. The staff’s technical evaluation of the information incorporated by reference related to operational programs has been documented in the staff safety evaluation report on the design certification application for the U.S. EPR.

The staff reviewed the information contained in the COL FSAR:

COL Information Item

COL Information Item 13.4‑1

The COL applicant provided supplemental information by adding the following statement to COL FSAR Section 13.4.

> Operational programs are specific programs that are required by NRC regulations. Table 13.4- lists each operational program, the regulatory source for the program, the section of the FSAR in which the operational program is described, and the associated implementation milestone(s).

The COL applicant proposed the following license conditions in COL application, Part 10, Appendix A.

License Conditions

License Condition 3, “Operational Program Implementation”

> The licensee shall implement the programs or portions of programs identified in Table 13.4-1 on or before the associated milestones indicated in the table.

License Condition 6, “Operational Program Readiness”

> 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 program in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.

The staff’s review of the acceptability of the supplemental information added by COL Information Item 13.4-1 and the proposed license conditions is based on four considerations. The first consideration is the acceptability of the individual operational programs, including the implementation of the different phases of these operational programs. The second consideration is whether the COL applicant correctly identified those operational programs whose implementation requirements are not addressed in the regulations and, therefore, need to be included in License Condition 3. The third consideration is whether the COL applicant correctly specified in License Condition 6 the timing of information related to operational programs to support NRC inspection activities. The fourth consideration is whether the list of operational programs in COL FSAR Table 13.4-1 is complete.

With regard to the first consideration, the sections referenced in COL FSAR Table 13.4-1 address the staff’s evaluation of the individual operational programs. For each of these operational programs, the staff has either concluded that the COL applicant has satisfied the applicable regulatory guidance (including the implementation requirements when specified in the regulations), or the staff’s review is still ongoing as described in the associated sections of this report.

With regard to the second consideration, the staff verified that those operational programs, whose implementation requirements are not specified in the regulations, are captured in License Condition 3.

With regard to the third consideration, the staff compared License Condition 6 to the recommended license condition in SECY-05-0197 related to the timing of information to support NRC inspection activities of operational programs. The staff finds that the COL applicant used language similar to the recommended license condition specified in SECY-05-0197 to develop License Condition 6. The staff notes that License Condition 6 addresses additional scheduler requirements that are not related to the operational programs evaluated in this section of the report and, therefore, are not evaluated in this section of the report.

With regard to the fourth consideration, the staff compared the operational programs provided by the COL applicant in COL FSAR Table 13.4-1 to the operational programs specified in SECY-05-0197. The staff finds that the COL applicant included all the operational programs specified in SECY-05-0197, including the two operational programs (Motor-Operated Valve

Testing Program and the Safeguards Contingency Program) added by the NRC to the list of operational programs provided by the NEI in its August 31, 2005, letter,

The staff concludes that the additional information provided by the COL applicant in COL FSAR Section 13.4, in conjunction with the conditions specified in COL FSAR, Part 10, Appendix A, License Conditions 3 and 6, comply with the applicable guidance in SECY-05-0197.

13.4.5 Post Combined License Activities

U.S. EPR FSAR Tier 2, Table 1.8-2 contains COL information items that the COL applicant is required to address. The following COL information items in Table 13.4.4-1 of this report include the proposed combined license activities that the staff has evaluated in this report, but which will be completed following issuance of the license as discussed in the sections listed below.

Table 13.4.4-1 Post Combined License Activities

Item No.	Description	COL FSAR Section	COL SER Section
L.C. 13-3	Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall implement the programs or portions of programs identified in FSAR Table 13.4-1 on or before the associated milestones in FSAR Table 13.4-1.	13.4	13.4.4
L.C. 13-6	Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC 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 13.4-1. 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.	13.4	13.4.4

13.4.6 Conclusions

The staff reviewed the COL application and checked the referenced U.S. EPR FSAR. The staffs' review confirmed that the COL applicant addressed the required information relating to

operational programs, and there is no outstanding information expected to be addressed in the COL FSAR related to this section.

The staff reviewed the information in the U.S. EPR FSAR on Docket No. 52-020. The results of the staff's technical evaluation of the information related to the operational programs incorporated by reference in the COL FSAR have been documented in the staff's SER on the design certification application for the U.S. EPR. The staff's SER on the U.S. EPR is not yet complete. The staff will update Section 13.4 of this report to reflect the final disposition of the U.S. EPR design certification application.

The staff concludes that the relevant information presented in the COL FSAR is acceptable based on the regulatory guidance in SECY-05-0197, in conjunction with the applicable regulations specified in the individual sections of this report that evaluated each of the operational programs discussed above. The staff based its conclusion on the following:

- COL FSAR Section 13.4, as related to operational programs, is acceptable, because each operational programs in COL FSAR Table 13.4-1 is acceptable, as noted in other sections of this report and in Section 13.4.4 above. In addition, the COL applicant used the guidance in SECY-05-0197 and RG 1.206 to verify the completeness of the COL applicant's list of operational programs.

13.5 Plant Procedures

13.5.1 Introduction

A COL applicant that references the U.S. EPR design certification will provide site-specific information for developing and maintaining administrative, operating, emergency, maintenance, and other operating procedures.

13.5.2 Summary of Application

COL FSAR Section 13.5, incorporates by reference U.S. EPR FSAR Tier 2, Section 13.5, "Plant Procedures"

In addition, in COL FSAR Section 13.5, the COL applicant provided the following:

Interface Requirements

COL FSAR Section 13.5.2 contains information related to the following plant interfaces that will be addressed in the COL designs as discussed in COL FSAR Table 1.8-1, "FSAR Sections that Demonstrate Conformance to U.S. EPR FSAR Interface Requirements," Item 13-1:
Site-specific information for administrative, operating, emergency, maintenance, and other operating procedures.

COL Information Item

The COL applicant provided additional information in COL FSAR Section 13.5 to address COL Information Item 13.5-1 from the U.S. EPR FSAR Tier 2, Table 1.8-2 as follows.

A COL applicant that references the U.S. EPR design certification will provide site-specific information for administrative, operating, emergency, maintenance, and other operating procedures.

The COL applicant addressed this COL information item as follows:

COL FSAR Section 13.5.2 describes the administrative and operating procedures that the operating organization (plant staff) uses to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. Activities affecting quality shall be prescribed by and conducted in accordance with approved procedures. Procedures are developed consistent with guidance in the U.S. EPR FSAR Tier 2, Section 18.8.

Supplemental Information

The COL applicant provided supplemental information describing the administrative and operating procedures that the operating organization (plant staff) uses to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. The COL applicant states that activities affecting quality are to be prescribed by and conducted in accordance with approved procedures.

13.5.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the U.S. EPR FSAR.

In addition, the relevant requirements of NRC regulations for plant procedures, and the associated acceptance criteria, are specified in NUREG-0800, Section 13.5.2.1, "Operating and Emergency Operating Procedures." Review interfaces with other SRP sections also can be found in these sections of NUREG-0800.

1. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," Criteria V and VI as they relate to the establishment of criteria for development, approval, and control of procedures for all activities affecting quality

2. 10 CFR 50.34(a)(6) and (10) and 10 CFR 50.34(b)(6)(iv) and (v), as they relate to operating procedures to be used in the control room and locally in the plant.

The related acceptance criteria include but are not limited to the following:

1. NUREG-0711, "Human Factors Engineering Program Review Model," Chapter 9, "Element 8 Procedure Development," as it relates to a systems approach to training.

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." (Emergency Operating Procedures only), as it relates to requirements for procedures for plant transients and accidents.

3. NUREG-0737, "Clarification of TMI Action Plan Requirements," Supplement 1, Items I.C.1 and I.C.9, "Requirements for Emergency Response Capability," Item 7,

Subsections 7.1 and 7.2, “Upgrade of Emergency Operating Procedures.” (Emergency Operating Procedures only), as it relates to plant emergency response capability.

4. NUREG-0800, Appendix A, Section 13.5.2.1, “Guidelines for the Evaluation of Procedures Generation Packages,” (Emergency Operating Procedures only), as it relates to review procedures for emergency operations procedures.

5. NUREG-0899, “Guidelines for the Preparation of Emergency Operating Procedures,” August 1982, as it relates to the preparation of emergency operating procedures.

6. NUREG-1358, “Lessons Learned From the Special Inspection Program for Emergency Operating Procedures,” conducted March - October 1988, as it relates to the development of emergency operating procedures.

7. NUREG-1358, “Lessons Learned from the Special Inspection Program for Emergency Operating Procedures,” Supplement 1, 1992, as it relates to the development of emergency operating procedures.

8. RG 1.33, Revision 2, “Quality Assurance Program Requirements (Operation),” as it relates to the preparation of procedures.

9. American Nuclear Society (ANS) 3.2-1994, “Administrative Controls and Quality Assurance for the Operational Phase of NPPs” (American Nuclear Society, 1994), as it relates to the preparation of procedures.

13.5.4 Technical Evaluation

The staff reviewed COL FSAR Section 13.5 and considered the referenced U.S. EPR FSAR sections. The staff confirmed that the information contained in the COL application and incorporated by reference addresses the relevant information related to this section.

The staff reviewed the information contained in COL FSAR Section 13.5.

The staff reviewed COL FSAR Section 13.5 and checked the referenced design certification FSAR to ensure that the combination of the information in the U.S. EPR FSAR and the information in the COL FSAR represents the complete scope of required information relating to this review topic. The review confirmed that the information contained in the COL application and incorporated by reference addresses the required information relating to this section. U.S. EPR FSAR Tier 2, Section 13.5 has been reviewed by the staff under Docket No. 52-020. The staff’s technical evaluation of the information incorporated by reference related to plant procedures has been documented in the staff safety evaluation report on the design certification application for the U.S. EPR.

The staff’s review of the information contained in the COL FSAR is discussed as follows:

COL Information Item

The staff reviewed COL Information Item 13.5-1 from U.S. EPR FSAR Tier 2, Table 1.8-2 included under COL FSAR Section 13.5.

COL Information Item 13.5-1 states:

A COL applicant that references the U.S. EPR design certification will provide site-specific information for administrative, operating, emergency, maintenance, and other operating procedures.

COL FSAR Section 13.5.4 describes the administrative and operating procedures that the operating organization (plant staff) uses to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. Activities affecting quality shall be prescribed by and conducted in accordance with approved procedures. Procedures are developed consistent with guidance in the U.S. EPR FSAR Tier 2, Section 18.8.

In NUREG-0800, Section 13.5.2.1, the staff described the operating procedures that will be used by the plant staff to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. The COL applicant should describe the different classifications of procedures the operators will use in the control room and locally in the plant for plant operations, and identify the group within the operating organization responsible for maintaining the procedures. In COL FSAR Section 13.5.2, the COL applicant classified the procedures as system operating, general plant, off-normal operating, emergency operating, alarm response, and operations surveillance procedures. The plant manager was identified as responsible for procedure maintenance. The staff concluded that the COL applicant has provided sufficient information to satisfy NUREG-0800, Section 13.5.2.1.

The COL applicant also should describe its program for developing operating procedures. In COL FSAR Section 13.5.2, the COL applicant described its plant operating procedures development plan, its scope and the methods and criteria for development, verification and validation, implementation, maintenance, and revision of its procedures. This plan will be applied to system operating, general plant, off-normal operating, emergency operating, alarm response, and operations surveillance procedures. In addition, this plan will be applied to plant radiation protection, emergency preparedness, instrument calibration and testing, chemistry, radioactive waste management, maintenance, modifications, material control, and plant security procedures. The staff concluded that the COL applicant has provided sufficient information to satisfy NUREG-0800, Section 13.5.2.1.

The COL applicant also should describe its program for developing emergency operating procedures (EOP's), and include plant-specific technical guidelines, a plant-specific writer's guide, a description of the program for verification and validation of EOP's, and a description of the program for training operators on EOP's. In COL FSAR Section 13.5.2, the COL applicant described its EOP development program, and included plant-specific technical guidelines, a plant-specific writer's guide, a description of the program for verification and validation of EOP's, and a description of the program for training operators on EOP's. The staff concluded that the COL applicant has provided sufficient information to meet the guidance of NUREG-0800, Section 13.5.2.1.

13.5.5 Post Combined License Activities

There are no post COL activities related to this section.

13.5.6 Conclusions

The staff reviewed the COL application and checked the referenced design certification FSAR. The staff's review confirmed that the COL applicant addressed the required information relating

to plant procedures, and there is no outstanding information expected to be addressed in the COL FSAR related to this section.

The staff reviewed the information in the U.S. EPR FSAR on Docket No. 52-020. The results of the staff's technical evaluation of the information related to plant procedures incorporated by reference in the COL FSAR have been documented in the staff's SER on the design certification application for the U.S. EPR. The staff's SER on the U.S. EPR is not yet complete. The staff will update Section 13.5 of this report to reflect the final disposition of the U.S. EPR design certification application.

In addition, the staff concludes that the relevant information presented within the COL FSAR is acceptable and meets the guidance of NUREG-0800, Section 13.5.2.1. The staff finds that the COL applicant has provided sufficient information to satisfy the requirements of 10 CFR 50.34 and 10 CFR Part 50, Appendix B with respect to plant procedures.

13.6 Security

13.6.1 Introduction

The COL applicant described the physical protection program for meeting NRC regulations of 10 CFR Part 73, "Physical Protection of Plants and Material." This part of the regulations requires protection against the design-basis threat (DBT) of radiological sabotage, with a high assurance that activities involving special nuclear material (SNM) are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety.

The physical protection program includes the design of a physical protection system that integrates engineered systems, operations requirements, and management systems (i.e., controls and processes) to ensure that the capabilities to detect, assess, communicate, interdict, and neutralize the threat of radiological sabotage are maintained at all times. The COL applicant incorporated by reference the U.S. EPR standard design that includes designs of engineered physical security systems and features within the nuclear islands and structures, as described in U.S. EPR FSAR Tier 1 and Tier 2 and referenced technical reports.

The COL applicant submitted security plans, consisting of the CCNPP Unit 3 Physical Security Plan (PSP), Training and Qualification Plan (T&QP), and Safeguards Contingency Plan (SCP), within Part 8 of the COL application, and the technical report CCNPP Unit 3 Security Assessment, which describes the site-specific portions of the physical protection system and the security operational programs that are outside the scope of the U.S. EPR standard design. The CCNPP Unit 3 Security Assessment incorporates by reference the AREVA Technical Report (TR) ANP-10295, "U.S. EPR Security Design Features," and TR ANP-10296, "Design Features That Enhance Security." The information incorporated by reference and specific information in the COLA establish the design and licensing bases for how the COL applicant will meet the performance and prescriptive requirements of 10 CFR Part 73. The design bases, consisting of required security functions and performance of engineered PPS or features credited in providing detection, assessments, communications, delays, and response, provide the required design commitments and acceptance criteria that are verified through the inspections, tests, analyses, and acceptance criteria (ITAAC) for physical security.

13.6.2 Summary of Application

The COL applicant describes the design of a physical protection system, engineered security systems and features, and elements of physical security programs in the following sections of the COLA and referenced technical reports:

Part 2, COL FSAR: Chapter 13, "Conduct of Operations," incorporates by reference the U.S. EPR FSAR and provides the following supplemental information in COL FSAR Section 13.1, "Organization Structure of Applicant"; Section 13.4, "Operational Program Implementation"; Section 13.5, "Plant Procedures"; Section 13.6, "Security"; and Section 13.7, "Fitness for Duty." COL FSAR Table 13.4-1, "Operational Programs Required by NRC Regulations and Program Implementation," Item 15 establishes the milestones for implementing the security plans (PSP, T&QP, and SCP).

COL FSAR Section 13.1 describes the design and construction responsibilities, engineering, UniStar (the COL applicant) reactor project consortium, protection of sensitive information technology, corporate organization and key positions (e.g., Vice President—Technical Support), operating organization, generic functional positions, and estimated staffing) related to security. COL FSAR Figure 13.1-4, "UniStar Nuclear Operations Services, LLC Site Organization," shows the management organization for CCNPP Unit 3. COL FSAR Table 13.1-1, "Generic Position/Site Specific Position Cross Reference," provides the numbers of full-time equivalent staffing for security manager, first line supervisor, and security officers for the design review, construction, preoperational, and operational phases of CCNPP Unit 3.

COL Information Items

The COL applicant provided additional information in COL FSAR Section 13.6 to address COL Information Item 13.6-2 from U.S. EPR FSAR Tier 2, Table 1.8-2 as follows:

- COL Information Item 13.6-2: A COL applicant that references the U.S. EPR design certification will provide a security plan to the NRC to fulfill the requirements of 10 CFR 52.79(a)(35).

The COL applicant provided additional information in COL FSAR Section 13.6 to address COL Information Item 13.6-1 from U.S. EPR FSAR Tier 2, Table 1.8-2 as follows:

- COL Information Item 13.6-1: A COL applicant that references the U.S. EPR design certification will provide a site-specific security assessment that adequately demonstrates how the performance requirements of 10 CFR 73.55(a) are met for the initial implementation of the security program.

The COL applicant provided additional information in COL FSAR Section 13.6 to address COL Information Item 13.6-3 from U.S. EPR FSAR Tier 2, Table 1.8-2 as follows:

- COL Information Item 13.6-3: A COL applicant that references the U.S. EPR design certification will provide a security program, through the PSP and supporting documents, such as the vital equipment list and the vital areas list that incorporates the security features listed in the U.S. EPR FSAR Tier 2, Section 13.6.

The COL applicant provided additional information in COL FSAR Section 13.6 to address COL Information Item 13.6-4 from U.S. EPR FSAR Tier 2, Table 1.8-2 as follows:

- COL Information Item 13.6-4: A COL applicant that references the U.S. EPR design certification will provide a cyber security plan consistent with 10 CFR 73.54.

Part 7, Departures and Exemptions Requests: The COL applicant did not request departures or exemptions from the descriptions of engineered PPS and/or aspects related to physical security in the U.S. EPR FSAR or to NRC regulatory requirements related to physical security. The COL applicant stated that the departures or exemptions it did request do not relate to security and do not otherwise pertain to the common defense and security. The requested departures and exemptions will not endanger the common defense and security.

Part 8, Security Plan: The Security Plan consists of three parts: The PSP, T&QP, and SCP. The Security Plan incorporates by reference the CCNPP Unit 3 Security Assessment that provides descriptions of the design and performance of engineered PPS and the design of a physical protection system that is protecting against the DBT.

Part 10, Physical Security ITAAC: COLA Part 10 describes the site-specific ITAAC for physical security, along with other safety systems and hardware ITAAC. The COL applicant incorporated by reference the physical security ITAAC that are identified and described in the U.S. EPR FSAR to verify the design, construction, and installation of the engineered PSS, hardware, and features that are required to implement the physical protection program and the protection of CCNPP Unit 3 against the DBT. COL FSAR Table 13.4-1,"Operational Programs Required by NRC Regulations and Program Implementation," Item 19 establishes a license condition that addresses the initial test program, which includes the implementation of the initial test program described in COL FSAR Section 14.2, "Initial Plant Test Program," which addresses physical security ITAAC. COLA Part 10, Section 5, "Security Plan Revision," proposed license condition requires the licensee to fully implement and maintain in effect the provisions of the Security Plan, which consists of the PSP, T&QP, and SCP, and "continuing until all nuclear fuel is permanently removed from the site.

The COL applicant also proposes a license condition in Part 10 of the COL application regarding security plan revisions and implementation of the security plan in accordance with SECY-05-0197 as follows:

> Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC, shall fully implement and maintain in effect the provisions of the Security Plan, which consists of the physical security plan, security personnel training and qualification plan, safeguards contingency plan and the cyber security plan, and all amendments made pursuant to the authority of 10 CFR 50.90, 50.54(p), 52.97, and the relevant portions of Part 52 for the U.S. EPR Design Certification after rulemaking when nuclear fuel is first received onsite, and continuing until all nuclear fuel is permanently removed from the site.

13.6.3 Regulatory Basis

The following establishes the regulatory basis for security:

1. In 10 CFR Part 52, "Licenses, Certifications, and Approvals," Subpart C, "Combined Licenses," 10 CFR 52.79(a)(35)(i), (ii), and (iv), as it relates to the requirement that information submitted for a COL include a description of how the COL applicant will meet the requirements of 10 CFR Part 73 and a description of the implementation of the PSP.

2. 10 CFR 52.79(a)(36)(i) through (iv), as it relates to the requirement that the COL application describe the implementation of an SCP in accordance with the criteria in 10 CFR Part 73, Appendix C, "Nuclear Power Plant Safeguards Contingency Plans," and must contain a T&QP in accordance with 10 CFR Part 73, Appendix B, "General Criteria for Security Personnel."

3. 10 CFR 52.79, "Contents of applications; technical information in final safety analysis report," as it relates to the requirement that the COLA contain an FSAR, which describes the facility, presents the design bases and the limits on the facility's operation, and includes a safety analysis of the structures, systems, and components (SSCs) and of the facility as a whole. The information provided to the NRC by the COL applicant must be complete and accurate, and the COL applicant will notify the NRC of information that the COL applicant, licensee, or holder has identified as having a significant implication for public health and safety or the common defense and security as required by 10 CFR 52.6, "Completeness and Accuracy of Information."

4. 10 CFR Part 73 establishes performance and prescriptive requirements that, when adequately met, must achieve a high assurance that activities involving SNM are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety. The key requirements include 10 CFR 73.55(b)(3)(i), which requires a COL applicant to provide the capabilities to detect, assess, interdict, and neutralize the DBT and maintain such capabilities at all times, and 10 CFR 73.55(b)(4), which requires a COL applicant to analyze and identify site-specific conditions, including target sets, that may affect the specific measures needed to implement the requirements of 10 CFR Part 73 and account for conditions in the design of the physical protection program.

The licensing requirement of 10 CFR Part 52 specifies that a COL applicant must describe how it will meet the requirements of 10 CFR Part 73 that are applicable to nuclear power plants (i.e., a utilization facility) and requires that the COL applicant protect Safeguards Information (SGI) in accordance with the requirements of 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Regulatory guidance, technical reports, and accepted industry codes and standards that contain acceptance criteria adequate to meet the regulatory requirements include, but are not limited to, the following:

1. RG 5.7, "Entry/Exit Control for Protected Areas, Vital Areas, and Material Access Areas," Revision 1, May 1980, as it relates to physical security.

2. RG 5.12, "General Use of Locks in the Protection and Control of Facilities and Special Nuclear Materials," November 1973, as it relates to physical security.

3. RG 5.44, "Perimeter Intrusion Alarm Systems," Revision 3, October 1997, as it relates to physical security.

4. RG 5.62, "Reporting of Safeguards Events," Revision 1, November 1987, as it relates to physical security.

5. RG 5.65, "Vital Area Access Controls, Protection of Physical Security Equipment, and Key and Lock Controls," September 1986, as it relates to physical security.

6. RG 5.66, “Access Authorization Program for Nuclear Power Plants,” Revision 1, July 2009, as it relates to physical security.

7. RG 5.68, “Protection against Malevolent Use of Vehicles at Nuclear Power Plants,” August 1994, as it relates to physical security.

8. RG 5.74, “Managing the Safety/Security Interface,” March 2009, as it relates to physical security.

9. RG 5.75, “Training and Qualification of Security Personnel at Nuclear Power Reactor Facilities,” June 2009, as it relates to physical security.

10. RG 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition),” June 2007, as it relates to physical security.

The following guidance documents contain safeguards or security-related information, or both, and are not publicly available:

1. RG 5.69, “Guidance for the Application of Radiological Sabotage Design-Basis Threat in the Design, Development, and Implementation of a Physical Security Protection Program that Meets 10 CFR 73.55 Requirements,” June 2006

2. RG 5.76, “Physical Protection Programs at Nuclear Power Reactors,” July 2009

3. RG 5.77, “Insider Mitigation Program,” March 2009

4. RG 5.81, “Target Set Identification and Development for Nuclear Power Reactors,” September 2010

5. NUREG/CR-6190, “Update of NUREG/CR-6190 Material to Reflect Postulated Threat Requirements,” March 27, 2003

6. NEI 03-12, Revision 6, “Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, [and Independent Spent Fuel Installation Security Program],” March 2009

13.6.4 Technical Evaluation

The staff reviewed the proposed physical protection system design, operational requirements, and management system for the physical protection program of CCNPP Unit 3. The staff’s technical review included the design of security SSCs that are within the scope of the COLA, to determine whether the COL applicant satisfied the applicable requirements of 10 CFR Part 73. The staff finds that the descriptions of engineered PSS and features are within the scope of the U.S. EPR standard design certification, as described in U.S. EPR FSAR (Tier 1 and Tier 2), are considered final and are not subject to further technical review.

For the engineered PSS or features that are within the scope of the COLA, the staff’s review consisted of determining whether the COL applicant provided adequate and reasonable descriptions of the designs and performance requirements, with supporting technical bases for engineered systems and features relied on to meet the performance requirements to protect against the DBT and to meet the applicable requirements in 10 CFR Part 73. The staff also

reviewed COL information items from the U.S. EPR FSAR to determine whether the COL applicant addressed the specific actions or designs of engineered physical security systems and operational requirements and programs.

The staff reviewed the COL applicant's plans to meet the required objective of high assurance of adequate protection against the DBT and to meet applicable requirements specified in 10 CFR 73.55(a), "Introduction," through 10 CFR 73.55(r), "Alternative Measures," and other applicable sections of 10 CFR Part 73 for licensing a utilization facility under 10 CFR Part 52. The staff reviewed the design of the physical protection system and the integration of engineered and operational requirements to determine whether it provided high assurance of adequate protection against radiological sabotage. The staff's regulatory determination is based on the docketed information. The staff reviewed the COLA in accordance with applicable regulatory requirements and staff guidance contained in RG 1.026 and NUREG-0800, Section 13.6.1, "Physical Security—Combined License and Operating Reactors."

The COL applicant did not submit detailed implementation procedures and is not required to do so in accordance with 10 CFR 73.55(c)(7)(iv). The COL applicant did not request, or include in the COLA, the plans to use mixed-oxide fuel assemblies containing up to 20 weight percent of plutonium oxide. The physical protection requirements of 10 CFR 73.55(l) for a utilization facility using mixed-oxide fuel assemblies are not applicable.

On June 28–30, 2010, the staff conducted a licensing audit, at the UniStar Nuclear Energy facility at Lusby, MD, to review the CCNPP Unit 3 COLA. The audit scope included a review of the COL applicant's supporting documentation related to a systematic evaluation or analysis that establishes the design and technical bases for the engineered, administrative, and management controls. These controls consist of a physical protection system that provides the capabilities for detection, assessment, communications, and response (i.e., interdiction and neutralization), along with operational requirements and a management system (i.e., security programs and procedures) for the protection of CCNPP Unit 3. The audit included the review of information to support the COL applicant's licensing basis for the proposed physical protection of nuclear operations.

The staff conducted a follow-up licensing audit on November 9–10, 2011, at the UniStar Nuclear Energy facility in Rockville, MD, concerning new information provided on the docket. The follow-up audit was limited to the COL applicant's response and changes submitted on July 29, 2011, to staff RAI No. 272, Question No. 13.06.01-19. The scope of the audit included the review of supporting information for the descriptions and representations contained in the CCNPP Unit 3 Security Assessment related to target set analysis and results.

For security reasons, the staff review did not include the following application information on meeting NRC orders, which are applicable only to currently operating reactor licensees, or are not required to meet regulatory requirements for physical protection. Accordingly, the staff did not consider the following in the technical review for the security licensing basis for CCNPP Unit 3:

- The information submitted in CCNPP Unit 3 Security Assessment Section 7, "Large Fire and Explosion Mitigating Actions," is not subject to the security technical review of the COL applicant's planned physical protection program for the proposed CCNPP Unit 3. The brief discussion in CCNPP Unit 3 Security Assessment Section 7 relates to U.S. EPR design and evaluations for large fires and explosions. The information

submitted to the NRC in March 2011 explains how the COL applicant plans to comply with and address the requirements of 10 CFR 50.54(hh).

- CCNPP Unit 3 Security Assessment, Appendix A, "Interim Compensatory Measures," presents information related to (1) waterborne threat, (2) vehicle bomb attack threat, (3) insider threat, (4) external land-based assault threat, and (5) mitigative measures. In addition, the COL applicant submitted information related to NRC orders that require interim compensatory measures (ICMs) at operating reactors after the events of September 11, 2001. The ICM order is not applicable to COL applicants, and it is not a part of the regulatory requirements or included in the regulatory basis for technical review. The COL applicants are not subject to the ICM and other requirements in NRC orders (e.g., DBT). In 2009, the agency codified the requirements imposed by NRC orders, along with operating experiences, in a final rule revising 10 CFR Part 73 to make the appropriate requirements imposed by orders generically applicable to all applicants and licensees.

- The CCNPP Unit 3 Security Assessment, Appendix C, "Conceptual Designs," Section C.10, "Design Features for Defensive Enhancements," describes information on (1) remote weapon (rifle) platforms, (2) communications and security power connectivity for potential expansion to remote weapons, (3) remote weapon (close quarter) platforms, and (4) remote weapon clusters replacing bullet-resistant enclosures (BREs). In the CCNPP Unit 3 Security Assessment, Section C.4.1, "Weapon System Enhancement Capability," the COL applicant stated that "[w]hile not required to meet high assurance, these locations may require additional tactical reinforcement should the DBT change in the future. The expansion of the defensive posture to meet future changes in the DBT may involve additional remote weapons as discussed in Section C.10." The COL applicant does not rely on the descriptions of design features in Section C.10 for meeting the current regulatory requirements, as the current plans or licensing basis for CCNPP Unit 3 does not include the use of remote weapons, and Title 10 of the CFR does not currently include provisions for enhanced weapons.

The scope of the security licensing review does not include the information described above (the CCNPP Unit 3 Security Assessment, Section 7, Appendix A, and a portion of Appendix C,) that duplicates information revised and submitted to address requirements that are not security-related to physical protection requirements and information not applicable to the COL applicant's request for security licensing of CCNPP Unit 3. The staff's security technical evaluations and determinations described within this report do not address the adequacy or provide a regulatory determination of the adequacy of these subjects as described in the three bulleted items in the paragraph above.

13.6.4.1 *Physical Protection*

13.6.4.1.1 Physical Security Plans

In accordance with the requirements of 10 CFR 52.79(a)(35), (a)(36), and (a)(44), the COL applicant submitted a PSP, an SCP, a TQ&P, a cyber security plan, and a description of the FFD program for how the COL applicant will meet the applicable requirements of 10 CFR Part 73 and 10 CFR Part 26, "Fitness for Duty," for the protection of CCNPP Unit 3. The plans contain descriptions required by 10 CFR 73.55(c) through 10 CFR 73.55(d), including associated subsections. The "security plans" include descriptions of how the COL applicant

plans to (1) meet and implement applicable regulatory requirements that address site-specific conditions; (2) maintain and implement the security plans and provide and plan for training and qualification of security personnel; (3) implement predetermined security responses (i.e., defensive or protective strategies); (4) establish and maintain a security organization; (5) establish security implementing procedures and a management system (i.e., controls and processes) for developing, implementing, revising, approving, and overseeing procedures for conducting security operations; (6) apply equipment, technology, and administrative controls to achieve performance objectives to protect against the DBT; and (8) protect digital computers, communication systems, and networks.

COL FSAR Chapter 1, "Introduction and General Description of the Plant," references the U.S. EPR standard design for the principal design and operating characteristics for CCNPP Unit 3. COL FSAR Section 13.6, references COLA Part 8 for the descriptions of the COL applicant's licensing basis that establishes a physical protection program. This includes the design of a physical protection system, along with a description of a security organization that has as its objective providing high assurance that activities involving SNM are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety. The COL FSAR describes how the COL applicant will meet the applicable requirements of 10 CFR Part 73.

In COLA Part 8, the COL applicant submitted the Security Plan (consisting of the PSP, T&QP, and SCP) in accordance with the requirements of 10 CFR 52.79(a)(35), 10 CFR 52.(a)(36), and 10 CFR 52.(a)(44). The COL applicant indicated in COL FSAR Section 13.6 that the Security Plan also fulfills the applicable requirements of 10 CFR Part 26 and 10 CFR Part 73 and will be maintained in accordance with the requirements of 10 CFR 52.98, "Finality of Combined Licenses; Information Requests." Since the Security Plan contains SGI, the COL applicant requested that the plans be withheld from public disclosure in accordance with 10 CFR 73.21. The COL applicant submitted TR-ANP-10295, "CCNPP Unit 3 Security Assessment," which contains results of security evaluations, assessments, and analyses, and the proposed designs of PSSs and their configurations, with Part 8 of the COL application, to demonstrate how it will meet the performance requirements of 10 CFR 73.55(b). The CCNPP Unit 3 Security Assessment is also protected in accordance with the requirements of 10 CFR 73.21.

The COL applicant further stated in COL FSAR Section 13.6 that the "U.S. EPR security related technical reports are provided in addition to the Security Plan and site specific Security Assessment…. A security program is provided through the PSP and supporting documents such as the vital equipment list and vital areas that incorporates the security features given in the U.S. EPR FSAR Tier 2, Section 13.6."

The COL applicant's Security Plan format and content conform to the industry guideline in NEI 03-12, Revision 6, which describes the organization, management systems, and controls that include training, qualification, planning for security contingencies, general application of engineered systems, conduct of operations, and use of procedures.

PSP Section 14.1, "Access Authorization and Fitness for Duty," describes the FFD program required by 10 CFR Part 26. In addition, the COL applicant submitted a cyber security plan to meet the requirements of 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks," under COLA Part 11L.

The staff notes that the COL applicant submitted the CCNPP Unit 3 Security Plan (i.e., the PSP, T&QP, and SCP), the CCNPP Unit 3 Security Assessment, and COL FSAR Chapter 13,

Sections 13.1, 13.5, and 13.6, which describe the organizational structures, security programs, engineered and administrative controls, and management system to satisfy the requirements of 10 CFR 73.55(c) through 10 CFR 73.55(d).

In accordance with 10 CFR 73.55(c)(2), the COL applicant has requested withholding from public disclosure information related to physical protection that is SGI, security-related information, or propriety information, in accordance with 10 CFR 73.21 and 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

The staff finds the following:

- In COL FSAR Chapter 13, Sections 13.1 and 13.6, the Security Plan (PSP, T&QP, and SCP), the CCNPP Unit 3 Security Assessment, and the Cyber Security Plan, the COL applicant provided acceptable descriptions of its plans for meeting and implementing applicable NRC requirements that address site-specific conditions, including the plans for implementing and maintaining a physical protection program; training and qualification of security personnel; implementing predetermined security contingency responses; establishing and maintaining a security organization and conducting operations with security implementing procedures; establishing management systems for developing, implementing, revising, approving, and overseeing procedures; applying equipment and technology and operational controls to meet performance objectives; and protecting digital computer and communication systems and networks.

- COL FSAR Chapter 13, Figure 13.1-3, "UNE [Unistar Nuclear Energy, LLC] Corporate Organization," shows an organizational structure and lines of communications for managing the conduct of nuclear and nonnuclear operations of CCNPP Unit 3. CCNPP Unit 3 does not share the organization or operations with currently operating CCNPP Units 1 and 2. The security organization is within the authority of the Vice President of Regulatory Affairs and is independent of the Vice President of Operations Support, who has management responsibility for plant operations or power generation.

- The COL applicant also incorporated by reference the designs and information contained in the U.S. EPR FSAR, which includes the design-basis descriptions of the physical security systems, to indicate how the COL applicant will meet the requirements of 10 CFR 73.55(a)(1) and 10 CFR 73.55(a)(2).

- The COL applicant meets the requirements of 10 CFR 73.55(c) through 10 CFR 73.55(d) and 10 CFR 73.55(a)(1), (a)(2), and (a)(3) by describing its plans to meet, maintain, and implement applicable NRC revised requirements stated in these sections in security plans, TRs, and the U.S. EPR FSAR that have been incorporated by reference.

- The requirements of 10 CFR 73.55(a)(5) and 10 CFR 73.55(a)(6) are not applicable to this COL applicant (i.e., UniStar is referencing a design certification after 2009).

- The COL applicant protected SGI and complies with the requirements of 10 CFR 73.55(c)(2).

13.6.4.1.2 Physical Facility Layout

In accordance with 10 CFR Part 73, Appendix C, Section II.B.3(b), in PSP Section 1.1, the COL applicant provided descriptions and illustrations of the site, plant, and facilities. The COL applicant described the physical structures and their locations at the site, including descriptions of the protected area and descriptions of the site in relation to nearby towns, roads, and other environmental features important to coordinating offsite responses. The plant layout identifies the main and alternate entry routes for offsite responders. The COL applicant indicated that plant operating procedures will describe the locations for marshaling and coordinating response activities.

AREVA's TR ANP-10295, which is incorporated by reference, provides design requirements for the U.S. EPR standard plant described in COL FSAR Section 13.6. Information on the physical structures and representation of the engineered physical security systems and features for the U.S. EPR standard design is provided in the CCNPP Unit 3 Security Assessment, Section 2.0, "Plan Layout," and Section 3.0, "Design Improvements over Past Generation." Specifically, the physical facility layout related to security is captured in Figure 2.1-1, "Site Layout"; Figure 2.1-2, "Layout of Key Structures"; Figure 2.1-3, "Nuclear Island Layout"; Figure 2.3-1, "Vital Islands"; Figure 2.3-2, "Vital Islands within the Nuclear Island"; and Figure 3.2-1, "Original Standard EPR PA versus Revised PA." Figure 2.3-3, "Interconnections between Vital Islands within Nuclear Island," illustrates the limited number of passageways that provide connections or crossover points between buildings. By design, AREVA enhanced the U.S. EPR standard plant for implementation of the internal security response to defend the plant by areas.

In addition to describing the plant layout, the CCNPP Unit 3 Security Assessment, Appendix F, "Site Specific Differences and Deviations," discussed site-specific conditions and addressed the differences between the site's specific plant layout and the layout presented in the U.S. EPR standard design (i.e., AREVA TR ANP-10295). The following summarizes the COL applicant's descriptions of site-specific conditions considered in developing security measures and security plans:

- The orientation of CCNPP Unit 3 differs from the U.S. EPR standard plant north. The plant north is equivalent to the plant east as shown in Appendix F, Figure F.1-1, "Calvert Cliffs Nuclear Plant Unit 3."

- Appendix F, Section F.2, "Topographic Impacts," described the site-specific topographical features and Figures F.2-1 through F.2-6 show site conditions. The site-specific topographical differences consist of a drop in terrain at the northeast and a drop on the Chesapeake Bay side of the proposed site. The physical configurations for site drainage ditches that affect the visual lines of sight are considered in the design requirements of engineered PSS for assessment and response.

- Appendix F, Section F.3, "Impact on Analysis by Topographic Features," discussed the effect of terrain at the site versus the relative level or flat terrain assumed in the U.S. EPR standard design and concludes that transit time assumptions for the security personnel and the adversary remain valid and continue to be conservative.

- Appendix F, Section F.4, "Drainage Ditch Impacts," described the mitigation of site-specific features of the drainage system required to meet State and Federal environmental regulations. Figure F.4-3, "Drainage Ditch Cross-Section." In this section, the COL applicant described how it will protect against and mitigate potential

adversary pathways. Section F.5, “Drainage Pipe Crossing under PA,” discussed the underground pathways and explains how buried storm water drainage piping will be designed, configured, and protected.

- In Appendix F, Sections F.6, “Railroad Access,” F.7, “Alternate Vehicle Access Point,” F.8, “OCA Monitoring of Intake Structures,” F.9, “OCA Monitoring of Cooling Towers,” F.10, “Minimization of Staff in Protected Areas,” F.11, “Natural Protective Geographic Features,” F.12, “DC Load Shedding,” and F.13, “Vehicle Bomb Threat,” the COL applicant described plans for addressing site-specific conditions for railroad access, determining primary and alternate vehicle access points, monitoring the intake structure and cooling towers, minimizing staff in the PA, describing natural geographic features, and identifying plant vehicle access routes. The COL applicant described the security measures that mitigate site conditions as described in the sections above.

The COL applicant provided additional information on CCNPP Unit 3 COL FSAR Chapter 1, Section 1.2, “Introduction and General Description of the Plant,” which described the plant location and the layout of the nuclear island and plant structures, and includes site descriptions, an area and site map, and figures showing the surrounding areas within a radius of 16.1 to 80.5 km (10 to 50 mi).

The staff finds the following:

- The COL applicant adequately described the facility physical layout in PSP Section 1.1, which is supplemented by the COL FSAR, the CCNPP Unit 3 Security Assessment, and AREVA TR ANP-10295. The COL applicant included and considered site conditions in the proposed security measures for meeting regulatory requirements.

- The COL applicant adequately described the physical structures and locations of CCNPP Unit 3 and the site in relation to nearby towns, roads, and other environmental features important to the coordination of response operations. The COL applicant described the main and alternate entry routes for law enforcement assistance and the plans for establishing control points for marshaling and coordinating response activities in the site-specific law enforcement response plan. The COL applicant did not identify topographical features for the proposed CCNPP Unit 3 site (Figure F.2-1, “Non-Standard Topography, not otherwise mitigated”), which will be based on the U.S. EPR standard design. The CCNPP Unit 3 site-specific topography is adequately represented by the COL applicant’s design of a physical protection system for defending against the DBT for radiological sabotage.

- The COL applicant adequately demonstrated that site-specific conditions cause no differences or deviations that affect the results or conclusions of review of the U.S. EPR standard design. The COL applicant described the design and programmatic requirements to mitigate site conditions and demonstrated that the site conditions do not present an impediment to the development of security plans or measures. The COL applicant complied with 10 CFR 52.17(a)(1)(x), which requires that information demonstrate that site characteristics are such that adequate security plans and measures can be developed.

- The COL applicant’s Security Plan meets the requirements for content of a PSP; and the facility layout and descriptions in the PSP, the CCNPP Unit 3 Security Assessment, and

the COL FSAR are acceptable to meet the requirements of 10 CFR Part 73, Appendix C, Section II.B.3(b) for a description of the physical layout of CCNPP Unit 3.

- The COL applicant submitted information describing the site characteristics and security-specific information in COLA Parts 2, 8, and 10 and in the CCNPP Unit 3 Security Assessment; has demonstrated that the site characteristics do not result in impediments to developing security plans and measures necessary to meet the regulatory requirements for the protection of CCNPP Unit 3; and meets the requirements of 10 CFR 52.17(a)(1)(x), which requires that information demonstrate that site characteristics are such that adequate security plans and measures can be developed for the siting of a nuclear power plant.

13.6.4.1.3 General Performance Objectives and Requirements

In COLA PSP, Part 8, Section 2, the COL applicant stated that the CCNPP Unit 3 security programs and organization have the following objective:

> The security program design shall incorporate supporting processes such that no single event can disable the security response capability because of defense-in-depth principles including diversity and redundancy. The physical protection systems and programs described herein are designed to protect against the DBT of radiological sabotage in accordance with the requirements of 10 CFR 73.55(a) through (r) or equivalent measures that meet the same high assurance objectives provided by paragraph (a) through (r) to satisfy the requirement of 10 CFR 73.55(b)(1).

In the CCNPP Unit 3 Security Assessment, the COL applicant described how it achieves the objective of high assurance through the integration of systems, technologies, programs, equipment, and administrative and management controls and the design of a physical protection system that provides detection, assessment, communication, response (i.e., interdiction, and neutralization) functions to protect against the DBT for radiological sabotage, in accordance with the requirements of 10 CFR 73.55(b)(2) through (4). The following sections and appendices of the CCNPP Unit 3 Security Assessment described the design of a physical protection system for achieving the performance objectives stated in 10 CFR 73.55(b)(2) through (4), along with meeting prescriptive design and operational requirements:

- Section 3, “Design Improvements Over Past Generations”
- Section 4, “Physical Security Design Features”
- Section 5, “Threat Evaluations”
- Section 6, “Security Effectiveness”
- Appendix B, “Exterior Defensive Strategy and Analysis”
- Appendix C, “Interior Defensive Strategy and Analysis”
- Appendix D, “Conceptual Designs”
- Appendix E, “Standard NRC Scenarios”

- Appendix F, “Site Specific Differences and Deviations”

The COL applicant discussed the considerations for security in the design of the U.S. EPR standard plant and described the design improvements for security in CCNPP Unit 3 Security Assessment, Section 3.0.

In CCNPP Unit 3 Security Assessment, Section 6.1, “Target Set Analysis,” the COL applicant described its process, analysis, and identification of target sets that must be protected to prevent the occurrence of radiological sabotage. The COL applicant incorporated by reference the target set information for the U.S. EPR standard plant described in AREVA TR ANP-10295, without departures. The target sets are based on safety functions provided by combinations of safety-related and non-safety-related systems that, if unavailable, could lead to radiological sabotage. These systems must be protected to meet the performance objective and requirements of 10 CFR 73.55(b).

The information contained in AREVA TR ANP-10295, Section 11.0, “Target Sets,” and Appendix F, “Target Sets,” for the standard U.S. EPR design, is incorporated by reference. Subsequent sections of this safety evaluation report (SER) discuss the staff evaluation and determination related to identified target sets for the U.S. EPR standard design and the process applied to identify target sets.

To achieve the objective of high assurance of the required protection, the COL applicant designed a physical protection system, with assurance of reliability and availability and defense in-depth to perform security functions that protect CCNPP Unit 3 against threats up to and including the DBT. The DBT adversary characteristics addressed are those described in RG 5.69.

The COL applicant described the design of the engineered physical security systems in CCNPP Unit 3 Security Assessment, Section 4.0, “Physical Security Design Features.” The security design features included the following: PA physical barrier and isolation configurations, vehicle barrier systems (VBSs), intrusion detection systems (IDSs), external surveillance systems, interior surveillance systems, exterior walls, interior and exterior doors, access control, blast- and/or bullet-resistant enclosures, security lighting, power supplies, security computers, central alarm station (CAS) and secondary alarm station (SAS), security communications, and internal delay features. The reliability and availability of detection, assessment, communication, and delay functions addressed in CCNPP Unit 3 Security Assessment, Section 4 are considered in the designs and configurations of engineered physical security systems, including redundancies of systems providing security functions, such that a single failure does not degrade the overall capabilities to perform intended security functions with defense in depth. The security response to interdict or neutralize DBT adversaries included layered defenses that are integrated with and rely on the PSS to achieve the objective of high assurance of protection. The following are the key security functions in meeting the performance and prescriptive requirements of 10 CFR 73.55(b)(1) through (b)(4):

- Detection: The COL applicant’s design of the physical protection system included engineered IDS that can detect and provide alarms upon attempted or actual penetration of the PA and vital area (VA) boundaries (e.g., perimeter, vital island, and structures (i.e., the power block), access points, and openings), to alert and initiate preplanned security responses from manned-fixed and/or unmanned-fixed locations. The operations requirements for security patrols and surveillances of plant areas and the staffing of

alarm stations are provided and integrated with the engineered PSS to achieve a high assurance of capabilities to detect malevolent acts.

- Assessment: The COL applicant's design included cameras, closed-circuit television (CCTV), video capture, and low-light technologies for assessment, monitoring, and surveillance capabilities that are relied on and facilitate the ability of security responders (e.g., CAS/SAS and security responders) to assess threat conditions in the exterior areas of the PA and structures and the interior areas within the nuclear island and structures. The visual assessment and surveillance capabilities are designed to facilitate and enhance the ability of security personnel and responders to identify threats and monitor exterior and interior plant areas for command and control and to implement the required security response (e.g., deployment, relocation, interdiction, and neutralization). The design of the assessment, monitoring, and surveillance systems included redundancies for capabilities to cover all plant areas designated as the owner-controlled area (OCA), PA, and VAs. The COL applicant's planned operations requirements for patrol and surveillance of plant areas are integrated with and rely on engineered physical security systems and technologies to provide the assessment capabilities needed to achieve a high assurance of assessing threats upon the detection and alarm of an intrusion.

- Communication: The COL applicant's design included multiple communication systems to provide redundancies, diversity, and independence for reliable communications. These capabilities are required to initiate and maintain command and control of security response and the initiation and coordination of assistance from offsite local law enforcement agencies (LLEAs).

- Delays: The COL applicant designed passive and active physical barriers that are configured to provide capabilities to stop DBT vehicle bomb threats and to delay persons traveling by foot or on all-terrain vehicles from the PA towards the vital island and structures. The design of physical barriers includes passive engineered systems, which include crediting of structural wall, floor, and ceiling constructions and limiting the size of penetrations and active barriers (such as hardened doors, deployable gates, and turnstiles) that require adversaries to use explosives and/or mechanically defeat and bypass the barriers (which results in delay) to gain access into areas within the nuclear island and structures. The analysis and resulting delay times of physical barriers (described in the CCNPP Unit 3 Security Assessment and TR ANP-10295) are integral to planned operational security response (e.g., prepositioned, deployment, and/or redeployment of security responders) to achieve a high assurance of the capabilities to interdict and neutralize threats.

- Response (Interdiction and Neutralization): The COL applicant designed fixed, hardened positions (i.e., blast and/or bullet resistant) and deployable fighting positions to protect security responders and provide a tactical advantage to the security responders in performing interdiction and neutralization. The protected fighting positions are configured to establish overlapping fields of fires, such that the unavailability of a single fighting position (i.e., a security responder) does not result in loss of the capabilities for interdiction and neutralization. The design of multiple fighting positions is configured to cover all portions of the plant areas, as shown in Figure 6.4-3, "External Defensive Positions, Normal Defender Placement and Potential Relocations," and Figures 6.4-5, 6.4-8, 6.4-11, and 6.4-14, "Depth of Coverage," of the vital island and structures. This

establishes a defense in depth for exterior overlapping fields of fire, thus ensuring that a single failure (i.e., the unavailability of a security responder) will not result in any areas of the plant being unprotected. In CCNPP Unit 3 Security Assessment, Section 6.5, "Internal Defensive Strategy," the COL applicant anticipated adversaries entering the nuclear island and structures and described interior security responses (defensive strategies), including plans for relocations and timeline analyses, to establish a layered protection to achieve the objective of high assurance of interdicting and neutralizing threats. The COL applicant's operational requirements for trained, qualified, and properly equipped security responders to take predeployed positions or to deploy to defensive fighting positions integrate engineered and administrative controls and defense in depth for the capabilities to perform key security functions required for interdiction and neutralization.

The subsequent sections of this report discuss the staff evaluations and determinations of the COL applicant's design and performance requirements for the engineered PSS or features of the physical protection system that meet performance and/or prescriptive regulatory requirements.

In CCNPP Unit 3 Security Assessment, Section 5.0, "Threat Evaluations," the COL applicant evaluated land and waterborne vehicle bombs and insider threats. In CCNPP Unit 3 Security Assessment, Section 6.0, "Security Effectiveness," the COL applicant described and documented the evaluations of the operational security responses, based on postulated bounding attack scenarios, and established key technical assumptions and the licensing basis for operational requirements for preplanned external and internal security responses. The physical protection system integrates engineered (i.e., systems, technologies, equipment) and administrative (personnel and procedures) controls to provide protection so as to achieve the objective of high assurance that nuclear operations and activities are not inimical to the common defense and security, and do not constitute an unreasonable risk to public health and safety.

CCNPP Unit 3 Security Assessment, Sections 6.4, "External Defensive Strategy," and CCNPP Unit 3 Security Assessment, Section 6.5 described the COL applicant's operational requirements for security responders to interdict and neutralize DBT adversaries and threats. The COL applicant's analyses and technical assumptions for defense in depth in security responses are described in CCNPP Unit 3 Security Assessment, Section 6.3, "Evaluation of Defensive Strategy under Simulated Attacks." The specific details of the security designs and program for implementing physical protection of CCNPP Unit 3 are SGI and/or security-related information, which is protected from public disclosure in accordance with the requirements of 10 CFR 73.21 and is withheld in accordance with 10 CFR 2.390. The following summarizes the information provided in CCNPP Unit 3 Security Assessment, Section 6:

- Section 6.2, "Vulnerability Analysis," and Section 6.3 documented the COL applicant's methods and approaches to analyses, selections of postulated bounding scenarios, conduct of analysis, technical assumptions, and analysis and identification of the effects of site-specific conditions of the proposed CCNPP Unit 3. In Section 6.1, "Target Set Analysis," the COL applicant's analysis postulated bounding attack scenarios that consider the locations of what must be protected (i.e., target sets) and the characteristics of the adversaries and proposes a physical protection system design that established layers of protection to deny access to areas within the nuclear islands and structures to protect target sets.

- Section 6.3 documented the COL applicant's selection of scenarios, technical assumptions, operational security response requirements, and performance capabilities. Table 6.3-1, "Defensive Personnel," established the operational requirements for the minimum number of armed security responders and their initial assigned fixed or no fixed locations within the PA for a security response to protect against the DBT. The minimum required security staffing in Table 6.3-1 also identified the staffing required for continuous manning of the CAS and SAS and for relieving security personnel in assigned posts, insider mitigation, and specific plant conditions.

- Section 6.4 described the qualitative and quantitative evaluations, including tabletop exercises (or what-if evaluations), computation of lines of sight for overlapping fields of fire, and postulated bounding attack scenarios. Appendix B, "Exterior Defensive Strategy and Analysis," provided additional details of the COL applicant's analysis and technical assumptions, which form the licensing basis for operational security responses to interdict and/or neutralize DBT adversaries at the PA and the plant areas between the PA and VA. The COL applicant described a layered protection that establishes the operational responses by security responders, with opportunities to interdict and/or neutralize adversaries at the PA barriers (i.e., after detection), the intermediate plant areas between the PA barriers, and the exterior physical barriers of the vital island and vital structures.

- Section 6.5 documented the COL applicant's analysis, technical assumptions, and the resulting internal defensive strategy or security responses required to protect areas within the vital islands and structures that contain target sets. Appendix C, "Interior Defensive Strategy and Analysis," documented the COL applicant's analysis and application of engineered physical security systems and features the U.S. EPR standard design to protect the nuclear island and structures. The internal operational security response included layered protection or a security response that credits the physical configurations of the U.S. EPR standard design, which limits access pathways between the vital island and structures, to establish denial of areas by security responders. The internal operational security responses apply the engineered physical security systems and features (e.g., defensive positions, doors, gates, and other delay features) of the U.S. EPR standard design.

Additional supporting details of the staff's determination and conclusions appear in subsequent sections of this report for each part of the COL applicant's proposed physical protection system. In summary, the staff finds the following:

- In COLA, PSP Part 8, Section 2, the COL applicant established as its objective the provision of high assurance of the security of activities involving SNM such that they are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety. The COL applicant stated that the CCNPP Unit 3 security programs and organization have as their objective that "the security program design shall incorporate supporting processes such that no single event can disable the security response capability because of defense-in-depth principles including diversity and redundancy, to meet the requirements of 10 CFR 73.55(b)(1) and (b)(2)." The COL applicant provided design and operational requirements and management systems for a physical protection program that included the key security-significant functions of detection, assessment, communication, and response for protecting against the DBT for radiological sabotage.

- The COL applicant described and designed a physical protection system that integrates engineered systems and operational requirements, along with management systems to establish the capabilities to detect, assess, communicate, interdict, and neutralize threats up to and including the DBT to support the achievement of the objective of high assurance. The COL applicant addressed defense in depth of protection by providing redundancies, diversity, and independence of the engineered physical security systems and by establishing layered operational security responses to interdict and neutralize DBT adversaries in exterior and interior plant areas, to achieve the objective of high assurance of security.

- The COL applicant analyzed and identified site-specific conditions, including a reasonable identification of target sets (e.g., systems and functions) that must be protected, and considered their effects on the physical protection measures needed to implement the requirements of 10 CFR Part 73. The COL applicant documented and accounted for these conditions in the design of the physical protection system. The physical protection system described the integration of the engineered physical security systems and the operational requirements that will be relied on to meet the performance and prescriptive requirements for a physical protection program, which will be provided and maintained for the protection of nuclear operations and activities at CCNPP Unit 3, in accordance with the requirements of 10 CFR 73.55(b)(3)(i) through (3)(ii).

- The COL applicant provided a licensing basis, as described in the Security Plans, the CCNPP Unit 3 Security Assessment, and the security design features of the U.S. EPR standard design, which established how the COL applicant will meet the performance requirements of 10 CFR 73.55(b). Subsequent sections of this report provide additional discussions of how the COL applicant plans to meet relevant performance and prescriptive regulatory requirements for security, as well as the staff's evaluations of these plans.

13.6.4.1.4 Performance Evaluation Program

The COL applicant described the management system for a performance evaluation program (PEP) to evaluate the performance and effectiveness of the CCNPP Unit 3 security program in PSP Section 3, "Performance Evaluation Program," and T&QP Section 4, "Performance Evaluation Program." The following is a summary of the COL applicant's standards and criteria and procedure requirements to implement the PEP:

- Security force tactical response drills and force-on-force (FOF) exercises are conducted.

- Drills, exercise, and training simulate, as closely as practicable, realistic conditions to evaluate security responders' performance of duties and responsibilities.

- The scope of the response drills includes specific training, individual or programmatic elements of the security programs, and evaluations of specific portions of the response strategy to protect against the DBT.

- Critiques of failures, deficiencies, or other findings made in the drills and exercises are documented.

- Results that adversely affect or decrease security are entered into the site's corrective action program (CAP).

- Documentation of drills and exercise results are protected as SGI.
- Scenario standards and criteria for drills and annual FOF exercises are documented.
- Drills and exercises (1) involve the total number of armed responders (ARs) and armed security officers (ASOs) identified in the PSP, (2) minimize artificialities, (3) use systems and methods that simulate the realities of armed engagement, and (4) will be credible, realistic, and challenging to the security response and capabilities.
- Multiple scenarios are developed and documented for tactical drills and exercises that test and challenge components of the physical protection program, with variations of target sets or combinations of target sets, equipment, response, and tactics.
- The COL applicant indicated that the PEP is designed to ensure the following:
- At least one quarterly tactical response drill and at least one FOF are conducted annually.
- The drill and exercise adversary force replicates the adversarial characteristics of the DBT.
- Protective strategies are evaluated through tactical response tabletop demonstrations.
- Drill and exercise controllers are trained and qualified, with skills and knowledge required to conduct drills and exercises.

In PSP Section 17, "Review, Evaluation and Audit of the Physical Security Program," the COL applicant presented additional information on the management system (i.e., processes and controls) for reviews, evaluations, and audits that complement the PEP. The COL applicant's independent security program review to meet the requirements of 10 CFR 73.55(m)(i) through 10 CFR 73.55(m)(iii) included the following:

- Independent review of the physical protection program occurs 12 months following initial implementation and at least every 24 months thereafter.
- Reviews included the implementation and effectiveness of security programs, security plans, and implementing procedures; management of the safety/security interface; the testing, maintenance, and calibration program; and offsite LLEA assistance and response.
- Reviews are conducted as necessary but no longer than 12 months after changes occur in personnel, procedures, equipment, or facilities that could adversely affect the safety/security interface.
- Results and recommendations are documented and provided to plant/corporate management overseeing day-to-day plant operations and are maintained auditable and ready for inspections.
- Findings resulting from independent reviews are entered into the CCNPP Unit 3 CAP.

In accordance with the requirements of 10 CFR 73.55(c)(7), the COL applicant's plans included establishing a management system for the development, implementation, revision, and oversight of security procedures described in PSP Section 4.1, which applies to all elements of the CCNPP Unit 3 physical protection program. The requirements for the conduct of operations, including implementation of the physical protection program, are in accordance with COL FSAR Section 13.5, "Plant Procedures," which applies to the development and use of procedures to manage and control the conduct of nuclear and nonnuclear operations at CCNPP Unit 3.

The staff finds the following:

- The COL applicant's descriptions of the PEP addressed all prescriptive requirements of 10 CFR Part 73, Appendix B, Sections VI.C(3)(a) through (m). Specifically, the COL applicant's PEP included procedures for the conduct of tactical drills and FOF exercises demonstrating both security responder performance of assigned duties and responsibilities and skills, knowledge, and abilities under simulated conditions in accordance with Section VI.C(3)(a) through (3)(e). The PEP also included the scope of tactical drills for training, documentation of post-exercise critiques and findings, application of the plant CAP, and protection of resulting SGI, in accordance with Section VI.C(3)(f) through (3)(j).

- The COL applicant adequately described a PEP that includes plans to evaluate and challenge the minimum total of ARs and ASOs. The evaluation included the review of performance and implementation of response duties and responsibilities under scenarios that account for site conditions, minimize artificialities, and provide credible and challenging scenarios to the security response organization to demonstrate the capability to integrate engineered and administrative controls to effectively interdict and neutralize DBT adversaries, in accordance with the requirements of 10 CFR Part 73, Appendix B, Section VI.C(3)(k).

- The COL applicant identified the minimum frequency for drills and exercises as indicated in 10 CFR Part 73, Appendix B, Section VI.C(3)(l)(1) including crediting the NRC triennial exercise as an annual exercise. The criteria in 10 CFR Part 73, Appendix B, Section VI.C(3)(l)(2) through (m)(3) are the required standards and criteria for implementing the CCNPP Unit 3 security PEP. They required the program to replicate adversarial characteristics of the DBT, use tabletop exercises to demonstrate and evaluate security response, provide qualified and trained drill and exercise controllers, meet required safety controls, and develop and document multiple scenarios that test and challenge the physical protection system, including engineered PSS and equipment, security responders, and implementing procedures.

- The COL applicant adequately described how the PEP will be established and maintained to evaluate and demonstrate performance of the physical security program required by 10 CFR 73.55(b)(6). The COL applicant satisfied the requirements of 10 CFR 73.55(b)(6) by describing a PEP that includes the prescriptive requirements of 10 CFR Part 73, Appendix B, Section VI(C)(3)(a) through (3)(m). The PEP, as described, meets the regulatory requirements stated above and conforms to applicable guidance in RG 5.76 and NUREG-0800, Section 13.6.1.

- The COL applicant's independent security program review incorporated the prescriptive requirements stated in 10 CFR 73.55(m)(i) through (m)(iii). The proposed management

system for the independent security program review meets the regulatory requirements of 10 CFR Part 73, 10 CFR Part 50, Appendix B, 10 CFR 73.55(m)(i) through 10 CFR 73.5(m)(iii) and also conforms to applicable guidance in RG 5.76 and SRP Section 13.6.1.

13.6.4.1.5 Security Organization, Personnel Qualification, Training, and Equipment

In PSP Section 4, "Security Organization Management," Section 5, "Qualification for Employments in Security," Section 6, "Training of Facility Personnel," Section 7, "Security Personnel Training," Section 8, "Local Law Enforcement Liaison," and Section 9, "Security Personnel Equipment," the COL applicant described the security organization; management systems; minimum staffing with authority to direct security activities; training and qualification; equipment; knowledge, skills, and abilities of personnel; and the physical attributes to perform security duties and assignments, in accordance with 10 CFR 73.55(d)(1) through (d)(3). The COL applicant indicated that the objective of the security organization is to protect against the DBT for radiological sabotage and establish a security organization that implements and oversees the physical protection program in accordance with regulatory requirements.

Security Organization and Management System: In PSP Section 4.1, "Security Organization Management," the COL applicant stated that "the security organization is staffed, with appropriately trained, qualified in accordance with the T&QP, and equipped personnel, in a command and control structure with administrative controls and procedures, to provide a comprehensive response to threats against the facility up to and including the DBT." The COL applicant indicated that a proprietary security force, which may occasionally be supplemented with contracted security personnel, will protect the CCNPP Unit 3. PSP Section 4.1 described the following specific security staffing for the organization and the command and control structure, along with the roles and responsibilities of individuals who oversee and implement the physical protection program:

- Security Manager
- Supervisor Security Access
- Security Shift Supervisor
- Armed Response Team Leader
- Armed Responder
- Armed Security Officer
- Alarm Station Operator
- Unarmed Individuals
- Security Instructor

Examples of key responsibilities described in PSP Section 4.1 for individuals within the security organization include the following: Overall implementation of the organization's objective to protect against the DBT and to ensure the security of plant operations; development and approval of implementing procedures; management systems for reporting and records; liaison

with offsite agencies; equipment and maintaining readiness of security capabilities; authorizing access; FFD; overseeing shift conduct of security duties according to procedures; ensuring adequate qualified responders and security personnel; and monitoring on-duty security force members for FFD.

The COL applicant described the security contingency response roles and responsibilities for members of the security organization in SCP Section 3 (the responsibility matrix), SCP Section 4.1.1 (duties and communications), and SCP Section 4.1.2 (chain of command and authority). The COL applicant indicated that the details for implementing the security organization, structure, and duties of security personnel or other assigned security functions described above will be established in detailed plant procedures for implementing requirements and conducting operations. The COL applicant did not specifically indicate in the COL application that non-security personnel will be assigned or are assigned to perform duties and responsibilities indicated in the PSP and SCP to implement the physical protection program.

In PSP Section 4.1, the COL applicant indicated that at least one full-time, dedicated Security Shift Supervisor who has the authority for command and control of all security operations is on site at all times. In addition, the minimum security staffing (this information is not SGI) required by 10 CFR 73.55(d)(2)(ii) is described in the staffing matrix for plant operations, COL FSAR Table 13.1-1. COL FSAR Section 13.1, "Organization Structure of Applicant," and COL FSAR Section 13.4, "Operational Programs," provided supplemental information on the overall plant organization. COL FSAR Figure 13.1-3 depicted the management chain of authority and lines of communications within the site organization.

COL FSAR Section 13.5, "Plant Procedures," described the operational and management requirements applicable to the implementation of the physical protection program. COL FSAR Section 13.6, "Physical Security," incorporates Part 8, "Security Plans." In PSP Section 18, "Response Requirements," the COL applicant established the minimum combination of ARs and ASOs that constitutes the total minimum security staffing for implementing predetermined security responses. CCNPP Unit 3 Security Assessment, Section 6.3, provided the COL applicant's licensing basis supporting the minimum number of ARs and ASOs, and Table 6.3-1, "Defensive Personnel," identified the defensive positions of security responders and described their locations. The COL applicant also included, in CCNPP Unit 3 Security Assessment, Table 6.3-1, the minimum staffing required for the CAS and SAS, including additional ARs designated as "rotation," or "relieved from post." The COL applicant indicated that the proposed CCNPP Unit 3 organization does not share security responders with CCNPP Units 1 and 2, which are in a separate PA.

In PSP Section 8, the COL applicant described the management system for liaison with local, State, and Federal law enforcement agencies (LEAs). The management system included (1) documentation of agreements, (2) methods and protocols, (3) command and control structures, (4) planned marshaling locations, (5) response capabilities (including specialized equipment), and (6) periodic safety- and security-related training for offsite law enforcement assistance. The COL applicant stated that appropriate plant operating and emergency response procedures and a law enforcement response plan will document response protocols.

Pre-employment Qualification of Security Personnel: To meet the requirement of 10 CFR 73(d)(3)(i) for pre-employment qualification, including a management system (i.e., controls and processes) for records and requirement for requalification, in PSP Section 5, "Qualification for Employment in Security," the COL applicant referenced the T&QP descriptions

of how employment qualification will be established with standards that meet the prescriptive requirements in 10 CFR Part 73, Appendix B. The COL applicant established employment qualifications for security personnel that included the following: (1) Employment suitability and qualification; (2) physical qualification; (3) physical examination; (4) medical examination; (5) psychological qualification and examination; (6) documentation; and (7) physical requalification. T&QP Sections 2.1 through 2.7 describe the criteria for employment suitability qualifications.

Training and Qualification To Perform Assigned Duties and Responsibilities: PSP Section 6, "Training of Facility Personnel," references the descriptions contained in the T&QP for meeting 10 CFR 73(d)(3)(ii) for the training, qualification, and periodic requalification requirements for individuals implementing the physical protection program. The COL applicant's T&QP described the following: (1) Duty training; (2) on-the-job training; (3) critical task matrix; (4) initial training and qualification; (5) written examination; (6) hands-on performance demonstration; (7) continued training and qualification; (8) annual written examination; and (9) demonstration of knowledge, skills, and abilities. The COL applicant described required weapons training and qualifications that include firearms training, weapons qualification, tactical weapons qualification, firearm qualification course, course of fire, firearm requalification, weapons and personnel equipment maintenance, and training program documentation for security personnel. T&QP Sections 3.1 through 3.8 described the training program and program elements for ensuring training and qualifications to perform assigned duties and responsibilities, as stated above.

Equipment To Perform Assigned Duties: The COL applicant described how security personnel will be equipped to perform assigned duties in PSP Section 9, "Security Personnel Equipment." The equipment for security personnel included armament, ammunition, communication, and personnel protective equipment to ensure that security responders are capable of performing their assigned duties and responsibilities for security functions as described in the CCNPP Unit 3 security plans. In T&QP Section 3.7, the COL applicant described the minimum equipment provided to meet the prescriptive requirements of 10 CFR Part 73, Appendix B, Sections VI.G.2(b) and 2(c) for weapons and personnel equipment.

The staff finds the following:

- The COL applicant reasonably described its plans for establishing a security organization and management system to oversee and implement the CCNPP Unit 3 physical protection program. The framework for the organizational structures and management systems as described establishes the following: (1) The organizational objectives to protect the plant against threats up to and including the DBT for radiological sabotage; (2) the command and control structure for the conduct of security program and operations; (3) roles and responsibilities, including those during contingency response; and (4) the required staffing for implementing the physical protection program. The descriptions of the security organization and management systems establish a minimum of one security staff member who has the authority and responsibility to oversee the implementation, at all times, in accordance with 10 CFR 73.55(d)(2)(ii). In addition, the COL applicant's security organization and management system for overseeing security operations are incorporated in COL FSAR Chapter 13, which establishes the overall organizational structure and management systems for conducting operations that ensure the security of the proposed CCNPP Unit 3.

- The COL applicant reasonably described how it will qualify and train security staff that is assigned duties and responsibilities to satisfy the requirements of 10 CFR 73.55(d)(3)(i) and 10 CFR 73.55(d)(3)(iii). The management system for qualification and training includes program elements, standards and criteria for pre-employment qualification, management process and controls for initial and continued training and periodic requalification, and qualification and training on weapons and tactical response. As described in the security plans, the COL applicant's proposed qualification and training, for the assurance of security personnel to implement a physical protection program, meet the prescriptive requirements in 10 CFR Part 73, Appendix B, Section VI for employment suitability; training and qualifications; and weapons training, qualification, and requalification. The staff finds that the criteria for an operating power reactor in 10 CFR Part 73, Appendix B, Section VI appropriately address and satisfy the criteria established in Sections I through IV of Appendix B for a 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," Category III SNM license, which is further addressed in technical review that is beyond the scope of the 10 CFR Part 52 review of a COL.

- The COL applicant reasonably described how it will equip security personnel to perform assigned duties. Specifically, the COL applicant described in the Security Plan the specific equipment that complies with the prescriptive requirements of 10 CFR Part 73, Appendix B, Sections VI.G.2(b) and 2(c) as the minimum required weapons and personnel equipment for duties and responsibilities within the security organization to implement the physical protection program.

- In the Security Plan and the COL FSAR, the COL applicant, adequately described how the security organization, management systems, qualifications, training, equipment, and minimum staffing will be established to meet requirements in 10 CFR 73.55(d)(1) through 10 CFR 73.55(d)(3). On the basis that the COL applicant adequately addressed how it will meet the prescriptive requirements of 10 CFR 73.55(d) and conform to the applicable guidelines in NUREG-0800, Section 13.6.1, the staff finds that the COL applicant meets the requirements of 10 CFR 73.55(d).

13.6.4.1.6 Physical Barriers

In PSP Section 11, "Physical Barriers," and CCNPP Unit 3 Security Assessment, Section 4.0, "Physical Security Design Features," and Appendix D, "Conceptual Designs," the COL applicant described the physical barriers that are part of the integration of engineered and administrative controls and management system for implementing a physical protection program, in accordance with the requirements of 10 CFR 73.55(e) and 10 CFR 73.55(b). The COL applicant incorporated, by reference, the physical barrier designs and features required by the U.S. EPR standard design, incorporating the U.S. EPR FSAR and referencing TR ANP-10295. The U.S. EPR FSAR and referenced TR ANP-10295 that described the security systems and hardware, along with their design bases, are within the scope of the design certification, and these security systems and hardware are not subject to further technical review. However, subject to staff technical review under the COLA are the descriptions of how the COL applicant plans to apply the physical barrier systems described in the U.S. EPR standard design and the integration of physical barrier systems with the proposed site conditions to protect against threats, up to and including the DBT, so as to perform security functions for implementing the physical protection program or operational requirements to support access control, and to implement security responses.

Design, Construction, Installation, and Maintenance of Physical Barrier Systems: In PSP Section 11.1, "Owner Controlled Area (OCA) Barriers," Section 11.2, "Vehicle Barriers," Section 11.3, "Protected Area Barriers," Section 11.4, "Vital Area Barriers," Section 11.6, "Delay Barriers," and Section 12, "Security Posts and Structures," provided general descriptions of physical barrier systems and features for the proposed design, construction, installation, and analyses of physical barriers that will meet the requirements of 10 CFR 73.55(e). The COL applicant's CCNPP Unit 3 Security Assessment supplemented the general descriptions in the PSP with specific details on the proposed design, construction, and installation, along with supporting analyses to established design bases for physical barrier systems. The design of the physical barrier systems addressing site-specific conditions is described in the CCNPP Unit 3 Security Assessment, Section 4.1, "Site Layout and Protected Area Boundary," Section 4.2, "Vehicle Barrier System," Section 4.6, "Exterior Walls," Section 4.7, "Interior and Exterior Doors," Section 4.8, "Access Controls," Section 4.9, "Bullet Resistant Enclosure," and Section 4.15, "Internal Delay Features." The COL applicant incorporated by reference the analyses and design descriptions for construction, installation, and analyses for physical barriers in TR ANP-10295, Section 3.0, "Bullet Resistant Walls, Floors, and Ceilings"; Section 4.0, "Vehicle Barrier System"; Section 7.0, "Delay Features"; Appendix E, "Internal Delay Features"; and Appendix H, "Breaching of Exterior Walls." The discussion below included the COL applicant's designs of physical barrier systems and how they are integrated into the OCA, PA, and VA of CCNPP Unit 3 to provide security-significant functions of delay, access controls, protection against exploitation of openings, to achieve deterrence, and to implement security responses, in accordance with the requirements of 10 CFR 73.55(e)(3)(i) through 10 CFR 73.55(e)(3)(iii).

Owner-Controlled Area and Barriers: PSP Section 11.1, "Owner Controlled Area (OCA) Barriers," and Figure 1.1-1, "Site Area Map," depicted the CCNPP Unit 3 OCA. PSP, Section 1.1.1 stated that OCA barriers are not employed at CCNPP Unit 3. The site area, which is configured with a Main Entrance Facility, with vehicle checkpoints for normal vehicle access and alternate OCA access routes with active and passive vehicle barriers are existing access controls established for the OCA for the CCNPP Units 1 and 2. These barriers also serve as OCA access control for the proposed CCNPP Unit 3. The CCNPP Unit 3 Security Assessment, Appendix B, Section B.5.4, "OCA Camera System," identified a camera system for surveillance of the OCA fence and the VBS to satisfy the requirements of 10 CFR 73.55(i)(5)(ii) for continuous surveillance, observation, and monitoring. In CCNPP Unit 3 Security Assessment, Appendix F, Sections F.8 through F.9 (titles of sections are intentionally not stated because they contain security-related information), the COL applicant provided specific video surveillance capabilities of CCNPP Unit 3 plant areas to assess unusual or unauthorized activities. The COL applicant did not establish and does not plan to address the requirements for searches of vehicles or personnel as access control measures at access points into the OCA.

The staff finds the following:

- The COL applicant did not specifically credit the availability of an OCA vehicle entry checkpoint or the barriers on the access point to the perimeter of the OCA as a vehicle control measure described in 10 CFR 73.55(e)(6) or (e)(10) that is designed to satisfy the physical protection program requirements of 10 CFR 73.55(b) to protect against the DBT. The regulatory requirements of 10 CFR 73.55(e)(6), as stated, do not require a COL applicant or a licensee to establish physical barriers and controls meeting the requirement of 10 CFR 73.55(e)(10) at the perimeter access points of the OCA . The proposed security measures or controls at the OCA are acceptable.

- The COL applicant established an OCA boundary with security measures to control normal and alternate vehicle access into the OCA and has satisfied the requirement of 10 CFR 73.55(e)(6).

Waterborne Vehicle Explosive Threat and Barrier Systems: The COL applicant addressed the requirements of 10 CFR 73.55(e)(10)(ii) in the CCNPP Unit 3 Security Assessment, Section 5, "Threat Evaluations," CCNPP Unit 3 Security Assessment, Section 5.1, "Vehicle and Waterborne Bombs," and PSP Section 11.2.3, "Waterborne Threat Measures."

- The COL applicant stated that analysis of the potential DBT for radiological sabotage considered the blast effects on personnel, equipment, and systems necessary to prevent significant core damage and spent fuel sabotage from a waterborne vehicle bomb for CCNPP Unit 3 located adjacent to a navigable waterway.

- The COL applicant determined that the waterborne threat adversary characteristics described in RG 5.69 and RG 5.76 do not adversely affect or pose a threat to the safety or security of operations (e.g., adequate core cooling, response personnel, CAS and SAS functions).

- PSP Section 11.2.3 described the specific assumptions for the availability of independent and spatially diverse locations of systems that provide safety functions of reactor operations, which allowed the COL applicant to conclude that the threat of waterborne vessels with adversary characteristics described in RG 5.69 does not pose risks or vulnerabilities that require security measures on the waterways (e.g., detection, physical barriers).

- The COL applicant stated that the individual structures are placed sufficiently far inside the VBS, with required safe standoff distances, and determined that the waterborne threat would not adversely affect equipment needed for safe-shutdown capability with adequate core cooling, response force personnel, and either the CAS or SAS functions.

- In PSP Section 11.2.3, "Waterborne Threat Measures," the COL applicant established operational requirements that included deploying buoys, markers, or other equipment, in accordance with the requirement of 10 CFR 73.55(e)(10)(ii)(A. Specifically, buoys are deployed on the major waterway (i.e., the Chesapeake Bay) that is adjacent to the site boundary of the currently operating nuclear power plants, CCNPP Units 1 and 2, and the proposed CCNPP Unit 3.

The staff finds the following:

- The site characteristics and location of CCNPP Unit 3, as indicated by the COL applicant in PSP Figure 2.1-1, "Site Area Map," showed distances of greater than 243.8 m (800 ft) from the nearest viable navigable major waterways for the DBT adversary characteristics for waterborne vehicles. The site characteristics and configuration of CCNPP Unit 3 as described in COL FSAR Chapter 2, "Site Characteristics," and referenced TRs do not identify or show viable waterways in the proximity or penetrating the proposed locations of the VBS (i.e., within the analyzed minimum required safe standoff distance for protection against the DBT vehicle bomb).

- The CCNPP Unit 3 nuclear island and structures are within a VBS. The VBS is located at a minimum safe standoff distance that protects against explosive effects from

three times the largest DBT vehicle bomb, which is the licensing basis for the protection of the CCNPP Unit 3 nuclear island and structures against the DBT land-based vehicle bombs. The waterborne explosive threat is bounded by blast analysis and supporting evaluations for a land-based explosive (i.e., required safe standoff distance) and is based on the key assumption that there is a lack of water pathways associated with the site characteristics of the proposed location of CCNPP Unit 3 (i.e., the horizontal separation distance to the nearest navigable body of water as described exceeds that of the location of the proposed VBS). The COL applicant's requirement to protect against a larger than DBT explosive quantities provided defense-in-depth protection against potential blast effects beyond the current requirement of the DBT land or waterborne vehicle bombs.

- The COL applicant adequately analyzed and appropriately determined that the waterborne threat as described in RG 5.69 and RG 5.76 does not adversely affect or pose a threat to security or safety of operations (e.g., vital equipment, target sets, or response force personnel). The COL applicant's determination that CCNPP Unit 3 does not require additional measures to restrict waterway approaches, deploy buoys, markers, or other equipment in accordance with the requirement of 10 CFR 73.55(e)(10)(ii) is acceptable. The COL applicant has adequately addressed the requirements of 10 CFR 73.1(a)(1)(iv) and meets the requirements of 10 CFR 73.55(e)(10)(ii)(A) and 10 CFR 73.55(e)(10)(ii)(B).

Land-Based Vehicle Explosive Threat and Barrier Systems:

- In CCNPP Unit 3 Security Assessment, Section 4.2, "Vehicle Barrier System," the COL applicant described a VBS that encircles the PA to control access of vehicles, providing an active vehicle denial barriers and personnel access points to maintain integrity of the PA boundary during ingress and egress of personnel and vehicles. The VBS is located at a standoff distance that is sufficient to (1) prevent damage to equipment for safe operations or shutdown of the plant, and (2) provide assurance of survival of critical operations and the security response force in accordance with the requirements in 10 CFR 73.55(i)(A).

- The specific design and performance requirements for the VBS (passive and active barrier and configuration) at the main PA access portal, including required security personnel oversight of the access areas, are provided in the CCNPP Unit 3 Security Assessment, Appendix B, Section B.5.3, "Vehicle Barrier System and Vehicular Access Areas," Section D.2, "Conceptual Design—Vehicle Barrier System," and Figure D.2-1, "Vehicle Barrier System." CCNPP Unit 3 Security Assessment, Section F.7, "Alternate Vehicle Access Point," described the alternate vehicle access point location and configurations provided for vehicle search and active and passive VBS, and the intended purpose and operations. The design of the VBS included provisions for a secondary power source, or means of mechanical or manual operation in the event of a power failure, to ensure that the active barrier can be placed in the denial position to prevent unauthorized vehicle access, in accordance with requirements of 10 CFR 73.55(e)(10)(i)(B).

- PSP Section 14.4.1, "Vehicle Barrier System Access Control Points," described the operational controls for vehicle access at the VBS control points. They included establishment of procedures for access and search, conduct of search, minimum posting

of security personnel, and normal denial position of the VBS. The COL applicant also specifically stated, in PSP Section 11.2, that the concept of channeling barriers is not applied for protection against DBT vehicle bombs.

- The site description and PSP Section 1.1, "Facility Physical Layout," indicated that rail access is not provided or is not available to or through the proposed PA for CCNPP Unit 3.

- The COL applicant incorporated by reference the blast analysis results contained in AREVA TR ANP-10295, Section 4, "Vehicle Barrier System (VBS)," which established the licensing basis for protection of the structures containing safety systems and equipment necessary for the safety of nuclear operations and activities. The information incorporated by reference included the VBS design basis and assumptions of three times the explosive quantities of the DBT adversary characteristics for a vehicle bomb, and blast calculations for demonstrating that structures and systems (e.g., nuclear island, isolated vital islands, Reactor Building, external equipment doors) are not affected by resulting overpressures and effects. The resulting required minimum safe standoff distances (equal or greater) for the installation of the VBS that must be provided to prevent penetration of a DBT vehicle bomb are described in TR ANP-10295, Section 4.6, "Blast Standoff Distances," and depicted in TR ANP-10295, Figure 4.1, "Minimum Standoff Distances." The staff finds the U.S. EPR FSAR information incorporated by reference adequate during the technical review for design certification of the U.S. EPR standard plant, and this information is not subject to further technical review.

- PSP Section 11.2, "Vehicle Barriers," and PSP Sections 11.2.1 and 11.2.2 established the required protection against the DBT vehicle bombs, as described in RG 5.69, for the TNT-equivalent quantities, the size and weight of delivery vehicles, and the traveling speed, that will be protected by the design, construction, and configuration of the VBS. The COL applicant benchmarked the analyzed required minimum safe standoff distances with evaluations to demonstrate the safety margin provided by considering an explosive in quantities three times that of the characteristic DBT vehicle bomb described in RG 5.69. The analysis and result for the required minimum safe standoff distance to protect equipment needed for safe-shutdown functions described in the U.S. EPR FSAR are incorporated by reference. This information established the design basis for the configuration and location to construct and install the VBS.

- The COL applicant referenced NUREG/CR-6190 and NUREG/CR-4250, "Vehicle Barriers: Emphasis on Natural Features," issued July 1985, for the design, construction, and installation of the passive components of the VBS. The COL applicant also described the specific design, construction, and configurations of the manmade passive barrier in the CCNPP Unit 3 Security Assessment, which are consistent with types of passive barriers acceptable as components of a VBS. The COL applicant did not describe the use of natural, topographical features (rocks, ditches, embankments) or other manmade barriers (jersey barriers, bollards) as a part of the perimeter VBS outside the PA for protection against the DBT.

The staff finds the following:

- The proposed location of the VBS that will protect CCNPP Unit 3 against the DBT vehicle bomb is established by a blast analysis for the U.S. EPR standard plant contained in AREVA TR ANP-10295, which is incorporated by reference.

- The June 28–30, 2010, staff audit determined that the COL applicant's evaluations included a benchmarking of the resulting analysis incorporated by reference. The COL applicant applied acceptable methodology for blast analysis and applied the quantity of explosive described in RG 5.69. The COL applicant demonstrated the adequacy between the required safe standoff distance for the DBT explosive based on the TNT equivalent quantity of the DBT vehicle bombs and the conservative parameter of three times the required TNT quantities of vehicle bomb analyzed and applied as a standard design in TR ANP-10295. The COL applicant confirmed that the proposed location of the VBS at the required minimum safe standoff distance, which is incorporated by reference, is bounding to protect the nuclear island and structures for the CCNPP Unit 3, (i.e., U.S. EPR standard plant).

- The COL applicant's engineering evaluations and calculations captured the technical bases, methodologies, and key assumptions that accounted for blast effects on nonstructural elements (e.g., doors, windows, equipment hatches, missile doors, or other penetrations) and potential effects from the postulated DBT explosive threat. The staff finds that the supporting blast analyses and evaluations are documented to show that a blast analysis had been performed, and the analysis supports the conclusions indicated in the CCNPP Unit 3 COLA, Part 8, security plans, and referenced technical report.

- Under the site-specific conditions described and proposed for configurations of CCNPP Unit 3, the COL applicant did not identify provisions required by 10 CFR 73.55(e)(10)(i)(D) for security measures addressing rail access through the PA (e.g., train derailer, a removed section of track, or restricted access to railroad sidings and periodic surveillance). This prescriptive requirement is not applicable.

- The COL applicant's operational requirements included periodic surveillance and observation of the VBS and barrier systems to detect tampering and degradation to maintain intended functions, in accordance with 10 CFR 73.55(e)(10)(i)(A) and 10 CFR 73.55(e)(10)(i)(C).

- The COL applicant adequately analyzed the DBT land-based vehicle bomb threat as described in RG 5.69 to ensure that it does not adversely affect or pose a threat to security for the safety of nuclear operations (e.g., vital equipment, specific areas designated as vital, target sets, or response force personnel). The COL applicant established and credits a VBS to protect against the land-based vehicle explosive threat, in accordance with the requirements of 10 CFR 73.55(e)(10)(i)(A) through 10 CFR 73.55(e)(10)(i)(D).

Protected Area Barrier Systems, Isolation Zone, and Security Features: The COL applicant addressed the requirements of 10 CFR 73.55(e)(8)(i) and (8)(i)(A) in the descriptions of the PA in PSP Section 11.3, "Protected Area Barriers," and PSP Figure 2.1-5, "Protected Area Layout,", and CCNPP Unit 3 Security Assessment, Section 4.1, "Site Layout and Protected Area Boundary," and CCNPP Unit 3 Security Assessment, Appendix D, "Conceptual Designs,

Physical Security Design Features." In addition, the COL applicant incorporated by reference the U.S. EPR standard design, including the design of exterior security lighting in AREVA TR ANP-10295, Section 2.2.1, "Exterior Sizing Assumptions," and the design features for surveillance and monitoring of the PA in AREVA TR ANP-10295, Section 8.0, "Surveillance and Monitoring."

In CCNPP Unit 3 Security Assessment, Section 4.0, "Physical Security Design Features," and various other sections, the COL applicant described the design and layout of the PA and associated engineered physical systems to limit access of personnel, vehicles, and material into the PA. Specifically, the COL applicant illustrated the design of physical barrier systems in CCNPP Unit 3 Security Assessment, Appendix D, Figure D.1-1, "Site Layout"; Figure D.1-2, "Protected Area Perimeter Concept"; Figure D.1-3, "Drainage System Access Denial Concept"; Figure D.1.4, "Drainage Outfall Access Denial Concept"; Figure D.1.5, "Underground Drainage System Access Denial Concept"; and Figure D.2-1, "Vehicle Barrier System." These figures established the layout of the PA and provide the design and configuration requirements of physical barriers, such as delay fences, gates, and bollards, rocks and razor-wire barrier systems for PA penetrations (e.g., piping, aboveground and underground drainage systems) and the VBS. The figures depicted the design and integration of various physical barriers with other engineered PSS, such as perimeter lighting, IDS, and assessment/surveillance cameras. The following summarizes the descriptions of engineered PSS and features that are integrated to establish the PA boundary and are within the PA boundary.

Protected Area Boundary Overview:

- In CCNPP Unit 3 Security Assessment, Section 4.1, the COL applicant stated:

  [a] PA boundary is established in order that security response force personnel have the capacity to detect, identify and engage potential land-based adversaries prior to entry into the vital areas. Additional delay fencing is used within the Protected Areas to provide additional delay or funneling of an adversary force. Buildings have been located as to create a corridor of overlapping field of fire from the permanent defensive positions. Entrances to the structures have been located to provide multiple overlapping fields of fire and provide with appropriate delay features.

- In PSP Section 11.3, the COL applicant identified the required delay time (intentionally not stated in this report) and a minimum height for the PA fence, in accordance with guidance provided in NRC Regulatory Issue Summary (RIS) 2003-06, "High Security Protected and Vital Area Barrier/Equipment Penetration Manual," March 20, 2003, and RG 5.69, Appendix C. The COL applicant identified two specific buildings within the PA that will be a part of the PA boundary (i.e., integral to the PA barrier).

- The minimum distance [intentionally not stated], based on analysis, from the location of any vital structure (i.e., power block structures) to the PA fence is identified in CCNPP Unit 3 Security Assessment, Section 3.3.14, "Increase Distances from Detection to Structure." The COL applicant stated that the minimum distance, coupled with delay features, provided "a much longer and more effective engagement of adversaries by security staff."

- CCNPP Unit 3 Security Assessment, Section 5.5, "Engagement Zone," established key assumptions for the minimum required time for security responders to interdict and

neutralize adversaries, which begins, and credits the availability of intrusion detection, at the PA boundary.

Protected Area Perimeter Intrusion Detection System, Assessment, and Surveillance System:

The COL applicant proposed the design and configuration of the PA that included IDS adjacent to the PA boundary for detecting an unauthorized attempt of or actual entry through the PA barriers. The COL applicant indicated that the designs of physical security systems in the PA include fully independent and redundant perimeter detection systems, CCTV systems with video capture capabilities, a communication system, and power supplies. The design and performance requirements specify that at least one IDS, one data communications channel, and one CCTV remain functional upon failure of one power supply train. The CCNPP Unit 3 Security Assessment, Section D.3, "Conceptual Design—Intrusion Detection System," described the design basis, consisting of design and performance requirements and intended security functions, and included details of system components of the IDS in the PA, detection sensitivity and test requirements, system redundancy for reliability of detection, environmental condition requirements, and site-specific factors. CCNPP Unit 3 Security Assessment, Figure D.3-1, "Protected Area Perimeter Concepts," depicted the design and configurations for the IDS relative to locations of PA physical barrier systems.

The COL applicant indicated that the CCTV system and network for exterior surveillance are designed with the capability to remotely monitor the PA boundary from multiple locations. The design and performance requirements include the capability to perform assessment and surveillance of the PA access points, VA access points, the VBS, and areas within the perimeter of the PA. The COL applicant indicated that surveillance information is provided to security responders in defensive positions to enhance the capability to detect and respond to threats. CCNPP Unit 3 Security Assessment, Section D.4, "Conceptual Design—External Surveillance System," incorporates by reference the design requirements contained in TR ANP-10295, Section 8, "Surveillance and Monitoring," Section 8.1, "External Surveillance," and Section 8.3, "Safety-Related Areas outside the PA." The COL applicant described the areas to be monitored (i.e., where surveillance cameras must be placed) in CCNPP Unit 3 Security Assessment, Section D.4, and included the design requirements for system redundancy, camera resolution, information displayed, frequency of displays, recording of information, and specific system criteria (e.g., internal protocol, separation of primary and secondary systems, separate monitor/work stations, video system components, and system permission and restrictions). CCNPP Unit 3 Security Assessment, Figure D.4-1, "CCTV System Concepts," showed the detailed design and configuration of the CCTV system. The COL applicant's design descriptions in CCNPP Unit 3 Security Assessment, Section 4.4, "External Surveillance Systems," and Section 4.3, "Intrusion Detection System," established the capabilities of the CCTV system and the IDS, including monitoring and intrusion detection of unattended openings, in accordance with the requirements of 10 CFR 73.55(i)(5)(iii). In addition, CCNPP Unit 3 Security Assessment, Appendix B, Section B.5.4, "OCA Camera System," identified design and performance requirements that include the capability for camera systems to provide surveillance of the OCA and the VBS for CCNPP Unit 3 to satisfy the requirements of 10 CFR 73.55(i)(5)(ii).

PSP Section 15, "Surveillance Observation and Monitoring," described operational requirements that rely on the availability of the CCTV system to achieve surveillance, observation, and monitoring to identify and respond to unauthorized and/or suspicious activities. PSP Section 15.1, "Illumination," described requirements for illumination of a minimum of 2.2 lux (0.2 ft-candles) and high-intensity lighting of isolation and exterior areas of the PA for lighting

levels sufficient to detect persons by direct observation or CCTV. PSP Section 15.2, "Surveillance Systems," also described the operational requirements for security personnel to apply engineered systems and technologies for observation, surveillance, and assessment functions in protecting CCNPP Unit 3. PSP Section 15.3, "Intrusion Detection Equipment," established operational requirements that credit the availability of the IDS to initiate a security response after intrusion alarm annunciation and assessment at the CAS and SAS.

Protected Area Perimeter Isolation Zone:

The CCNPP Unit 3 Security Assessment, Appendix D, Figure D.3-1, also provided the design and configuration of the isolation zones that establish the clear areas on either sides of the PA perimeter barrier systems for security observations and assessment. The design descriptions included the size of the isolation zone, which is at least 6.1m (20 ft), with demarcation of the boundary of the isolation zone on either side of the PA fence, along the entire PA perimeter. CCNPP Unit 3 Security Assessment, Appendix D, Figure D.1-2, "Protected Area Perimeter Concept," provided a plan view showing the design and configuration of the isolation zone and the interface with the PA fence, nuisance fence, and VBS.

In PSP Section 11.3, "PA Barrier," the COL applicant and showed in a detailed plan view in CCNPP Unit 3 Security Assessment, Figure 2.1-1, "Site Layout," that the areas within the designated isolation zone will be cleared of obstructions adjacent to either side of the PA perimeter IDS and physical barriers.

In PSP Section 11.3, the COL applicant also indicated where two buildings are integral to the PA barrier (i.e., walls and roof), the design requirement for these buildings included physical protection features to ensure the capabilities for detection, assessment, observation, and surveillance that defend against potential exploitation of structures and openings. The COL applicant stated that, in these areas and on unattended openings that intersect the PA boundary, there is not an isolation zone (i.e., a clear area of at least 6.1 m (20 ft)). Also, the COL applicant indicated that parking facilities are located outside of the isolation zone and exterior to the PA barriers.

Physical Barriers to Protect Penetrations into the Protected Area:

The COL applicant described the barrier systems for protection of openings, including those underground, that penetrate the plane of the PA perimeter barriers in CCNPP Unit 3 Security Assessment, Figure D.1-3, "Drainage System Access Denial Concept," Figure D.1.4, "Drainage Outfall Access Denial Concept," and D.1.5, "Underground Drainage System Access Denial Concept." The COL applicant established the design and configuration requirements of the methods for protecting penetrations into the PA (e.g., piping, aboveground and underground drainage systems). In CCNPP Unit 3 Security Assessment, Section 3.3.12, the COL applicant indicated that the design of the U.S. EPR standard plant isolates and removes utility access tunnels entering the nuclear island with buried pipes and cables.

Protected Area Delay Barriers:

In COL FSAR Section 13.6, the CCNPP Unit 3 Security Assessment, and PSP Part 8, Section 11.6, the COL applicant provided the following information on physical barrier designs and performance requirements at and within the PA boundary for the control of access and delay of adversaries, respectively, for the required security response:

- CCNPP Unit 3 Security Assessment, Section B.4.4, “External Delay Features,” described the perimeter delay fences that will be located within the PA to provide the minimum time needed for performance of assessment and communications functions to alert security responders to interdict and neutralize adversaries. The COL applicant established a key licensing basis for a specific minimum time (intentionally not stated in this report) from the time of detection at the PA perimeter to initiation of the security response. The objective and security function of delay fencing are to increase adversary task times and allow appropriate time and opportunity for security responders to interdict and neutralize the DBT adversaries. The design for placement of the delay barriers included considerations to minimize lines of sight that negatively affect direct observation and bullet trajectory that are not addressed by elevated firing positions for operational requirements.

- The COL applicant described in CCNPP Unit 3 Security Assessment, Section 3.3.14, “Increase Distances from Detection to Structures,” and Section 3.3.15, “Additional Deployable Delay Features in the Safeguards Buildings 2/3,” the design and configurations of additional physical barriers that provided the necessary delay times required for security response to perform required interdiction and neutralization.

- In addition, in CCNPP Unit 3 Security Assessment, Section 4.15, “Internal Delay Features,” the COL applicant described the physical barriers that are within the vital island and structures that provide the functions of delay. CCNPP Unit 3 Security Assessment, Appendix D, Section D.13, “Conceptual Design—Internal Delay Features,” and Figure D.1-1, “Conceptual Design-Site Layout and Protected Areas,” described and showed the designs, configurations, and locations of the delay barrier systems (i.e., delay fences, gates and bollards, PA fence).

- In CCNPP Unit 3 Security Assessment, Section D.14, “Conceptual Design—External Delay Features,” the COL applicant described the specifics for the delay fences and barriers inside the PA perimeter, before the boundaries of the vital island and structures. This section established the design basis and technical assumptions for required minimal delay time [intentionally not stated] and performance of delay features against DBT adversary characteristics of vehicles and hand-carried explosives.

- In CCNPP Unit 3 Security Assessment, Section D.15, “Personnel Access Facility,” the COL applicant described the design and performance requirements of the Personnel Access Facility (PAF) located at the PA perimeter for control of personnel entry into and exit from the PA. The PAF is designed to provide a continuous barrier for the PA. The specific details described include: The applications of physical barrier systems (i.e., control of personnel ingress and egress, and physical delay); bullet-resistant design of the access control point in the PAF, and controls and measures for PA perimeter lockdown; layout of access portal to address tailgating, needed accommodation of visitors and handicapped processing, collection of picture badges, search trains and throughput capabilities, control of access to the second floor of the PAF, and layering of access controls; open floor plan for observations of activities; and elimination of concealment areas. Along with discussions of how the PAF will be designed and constructed to be integrated with the PA barrier, CCNPP Unit 3 Security Assessment, Figure D.15-1, “Personnel Access Facility Conceptual Layout,” illustrated a floor plan of the PAF for the separations between the PA and the OCA. The COL applicant stated

that the PAF operates in conjunction with the vehicle search areas (i.e., "sally port") in that personnel control is through the PAF.

- In CCNPP Unit 3 Security Assessment, Section D.15, the COL applicant described how the design and planned operations of the sally port adjacent to the PAF will provide vehicle access to the PA. The design descriptions in CCNPP Unit 3 Security Assessment, Section D.2, "Conceptual Design-Vehicle Barrier System," included the specific design and performance characteristics for the intended functions of the sally port. The descriptions included the following: Multiple layered barriers at the sally port; configuration of the VBS to contain vehicles during searches; design of passive barriers; and interlocking operations of active barrier systems. CCNPP Unit 3 Security Assessment, Section F.7 and Figure F.7-1, "Alternative Vehicle Access Portal," described and showed the alternative vehicle access point into the PA. The interior vehicle delay fence design and performance requirements, shown in CCNPP Unit 3 Security Assessment, Figure D.2-3, described the design requirements and performance capable of preventing penetration of the DBT vehicle with the minimum foot-pounds of force (intentionally not stated because of security-related information).

- The COL applicant incorporated by reference information contained in AREVA TR ANP-10295 on the physical barrier designs and configurations, including their locations. These barriers provide the delay functions within the interior of the vital islands and structures. In CCNPP Unit 3 Security Assessment Appendix E, "Internal Delay Features," descriptions of delay barriers in the U.S. EPR standard design are incorporated by reference. The adequacy of information related to the design and performance requirements in TR ANP-10295 for these delay features is addressed in the FSAR for the certification of the U.S. EPR and is not subject to further technical review.

- In CCNPP Unit 3 Security Assessment, Section 4.8, "Access Control," and Section D.5, "Conceptual Design—Access Control System," the COL applicant described the PAF (i.e., personnel and vehicle access portal) for entry/exit and emergency exits for personnel. The staff findings regarding access control are documented in subsequent sections of this report.

Vital Areas and Barriers:

The COL applicant described how it will meet the requirements of 10 CFR 73.55(e)(9) for VAs in CCNPP Unit 3 Security Assessment PSP Section 11.4, "Vital Area Barriers," Section 14.5, "Vital Area Access Controls," Section 4, "Physical Security Design Features," and Section 2.3, "Vital Areas." The COL applicant incorporated by reference the U.S. EPR FSAR that contains information on vital equipment and VAs described in AREVA TR ANP-10295, Section 1, "Vital Equipment and Vital Area," and Appendix A, "Vital Equipment List." CCNPP Unit 3 Security Assessment Sections F.8 and F.9 indicate whether certain SSCs performing safety functions are not considered vital.

In TR ANP-10295 Section 1 incorporated by reference, the COL applicant stated:

> [t]he vital areas are developed from areas containing the component listed in the Vital Equipment List and other areas required to be Vital Area, such as Central Alarm Station (CAS), Secondary Alarm Station (SAS), and Security Secondary Power Supply. The list of locations was further reviewed to determine what level of compartmentalization was indicated. Because of the diverse locations of

safety-related equipment within the [intentionally not stated], a philosophy of vitalizing at the building perimeter was determined to be most effective.

The specific VAs for the U.S. EPR standard design, as determined above, are given in TR ANP-10295, Section 1 and shown in TR ANP-10295, Figure 1-1, "Vital Area Perimeter," which is incorporated by reference. TR ANP-10295 also introduced the concept of vital islands within the U.S. EPR nuclear island in TR ANP-10295, Figure 1-2, "Vital Islands within Nuclear Island," to establish physical protection features and credit the structural constructions and configurations of the nuclear island and structures to restrict (i.e., delay) access by buildings (i.e., areas). In accordance with 10 CFR 73.55(e)(9)(ii) and (9)(iv), TR ANP-10295, Figure 1-2 showed that all designated VAs are located within the boundary of the proposed PA. The COL applicant did not identify any site-specific vital equipment or VAs in the COLA.

AREVA TR ANP-10295, Section 1, "Vital Equipment and Vital Areas," and TR ANP-10295, Appendix A, "Vital Equipment List," identified a list of safety-related SSCs meeting the definition of vital equipment for the U.S. EPR standard design. The vital equipment for the U.S. EPR standard design is identified in TR ANP-10295, Section A.6, "Vital Equipment List," which provided the descriptions of systems (or VAs), a unique numerical identifier for the safety-related SSCs, the building, and room locations, based on available information for the U.S. EPR standard design certification. The COL applicant specifically identified the main control room (MCR), the spent fuel pool, and the CAS and SAS as VAs, in accordance with the prescriptive requirements of 10 CFR 73.2, "Definitions," and 10 CFR 73.55(e)(9)(v)(A) through (v)(D). In addition, TR ANP-10295, Appendix A, Section A.6 identified the locations of secondary power supply systems for safety-related systems and security alarm annunciation equipment and non-portable communications as VAs, in accordance with the requirements of 10 CFR 73.55(e)(9)(vi)(A) and (vi)(B). The staff finds the U.S. EPR standard design certification, which is incorporated by reference, adequate (i.e., complete and accurate) and is not subject to further technical review.

The COL applicant has not identified, based on site-specific information, additional SSCs considered vital or identified as vital equipment that are not located within the designated PA and VAs with the two physical barriers, in accordance with 10 CFR 73.55(e)(9)(i).

In PSP Part 8, Section 11.2.3, "Waterborne Threat Measures," the COL applicant indicated that independent, spatially diverse safety systems for maintaining core cooling are located within structures that are interior to a continuous VBS that provides the minimum required safe standoff distance to protect CCNPP Unit 3 against the DBT waterborne threat. The COL applicant concluded and established as a part of the licensing basis that the intake structures for the operations of the U.S. EPR in the standard plan do not perform functions that require them to be designated as vital equipment.

AREVA TR ANP-10295, incorporated by reference, described the following design and performance requirements for the construction and installation of systems providing physical protection and access control for the designated VAs:

- Unoccupied VAs are locked and alarmed with IDSs that annunciate at the CAS and SAS, in accordance with 10 CFR 73.55(e)(9)(iii).

- VA access portals and emergency exits are alarmed and annunciate at the CAS and SAS, in accordance with 10 CFR 73.55(e)(9)(ii).

- The design and performance requirements for the VA access portals and emergency exits are provided in the CCNPP Unit 3 Security Assessment, Section 4.7, “Interior and Exterior Doors”; Section 4.8, “Access Control”; Appendix B, Sections B.4.4.2, “Emergency Exit Design,” and B.4.4.3, “Exterior Perimeter Lockdown”; and Appendix D, Section D.5, “Conceptual Design – Access Control Systems.”

- The COL applicant described the analysis and assumptions for the resulting VA access in the CCNPP Unit 3 Security Assessment, Section 3.3.8, “Enhancement of Blast Resistant Doors,” and Section 3.3.17, “Limiting Access/Mobility in Annulus.” The design and performance requirements for the protection of openings that exceed a minimum dimension, as stated in CCNPP Unit 3 Security Assessment, Section 1.0, include physical barriers (e.g., embedded bars, grates, smaller diameter pipe) to deny access, locks, intrusion detection, limiting one cross-sectional physical dimension to less than 15.2 cm (6 in.), or monitoring with IDS or by visual observation. Penetrations, such as heating, ventilation, and air conditioning openings, are located at specific heights above ground level and are designed with an access control device to delay access. External equipment doors are hardened with aircraft impact capabilities equivalent to the thickness of external walls to delay access.

- The design for the emergency exits is described in CCNPP Unit 3 Security Assessment, Appendix B, Section B.4.4.2, “Emergency Exit Design,” and depicted in CCNPP Unit 3 Security Assessment, Figure B.4-16, “Emergency Exit Design.” All VA emergency exits are configured with physical barriers and doors to provide delay of access during security events and normal operations. The exits have the capability to control ingress and egress, and system designs account for the loss of primary and backup power. The COL applicant described the design requirements for the capabilities to control, configure, and lock emergency exits and deploy other delay barriers (e.g., doors, mall gates, turbine grating, dropdown gates, grenade netting) in CCNPP Unit 3 Security Assessment, Sections B.4.4.3, “Exterior Perimeter Lockdown,” and B.4.4.4, “Interior Lockdown.” In CCNPP Unit 3 Security Assessment, Section D.13, “Conceptual Design—Internal Delay Features,” the COL applicant established the specific minimum delay and deployment times associated with a specific delay system to establish the design bases, performance requirements, and intended security functions.

- The bullet-resistant design to meet 10 CFR 73.55(e)(5) for the enclosure (walls, floors, and ceilings) for the MCR, CAS, and SAS is incorporated by reference and is as described in TR ANP-10295, Sections 3.1 through 3.3. The design included physical features and configurations of bullet-resistant capabilities to protect openings penetrating the BRE, such as heating, ventilation, and air conditioning penetrations.

In COLA PSP Part 8, Section 11.4, the COL applicant described the following for designated VAs, including the last access control functions: (1) Entries into the VAs are restricted by physical barriers and only authorized individuals may enter; (2) access portals through these areas are equipped with locking and alarm devices; and (3) the reactor control room, CAS, SAS, and the location where the last access control function for access to the PA is performed are designated as vital, and the walls, floor, ceiling, doors, and any windows in the walls and doors for VAs will be bullet resisting.

The staff finds the following:

- The proposed design and configurations for the PA, as described, provide a continuous barrier system that meets the regulatory requirement of 10 CFR 73.55(e) to (1) limit access to only those personnel, vehicles, and materials required to perform official duties; (2) channel personnel, vehicles, and materials to the access control portals; and (3) establish additional physical barriers at the PA, in addition to the designated VA barriers, to have in place the two barriers required for protection of vital equipment.

- The proposed designs of the physical barrier systems comply with the definition of physical barriers in 10 CFR 73.2. The PA boundary, as configured with the PA barrier and VBS, limits access and channels personnel, vehicles, and material to designated access control portals (main or alternate), in accordance with requirements of 10 CFR 73.55(e)(8)(i)(A) through 10 CFR 73.55(e)(8)(i)(B).

- The COL applicant established the PA barrier, separated from the designed VA physical barrier, in accordance with the requirements of 10 CFR 73.55(e)(8)(i)(C). The configuration of the PA shown in CCNPP Unit 3 Security Assessment, Appendix D, Figure D.1-1 depicted a separated PA barrier from the designated VAs and the configurations of the physical barriers and does not indicate that any portions of the physical barrier systems in the PA are a part of the VA physical barrier systems. The VA barriers established for the U.S. EPR standard design and the PA physical barriers combine to satisfy the requirement of 10 CFR 73.55(e)(9)(i) that access to any vital equipment is by passage through two physical barriers.

- The COL applicant incorporated by reference the design and performance requirements described in AREVA TR ANP-10295, Sections 3.1 through 3.3 and Figures 3.1 through 3.3, for the U.S. EPR standard design for meeting 10 CFR 73.55(e)(5), that require BREs for the MCR, CAS, and SAS.

- The COL applicant adequately analyzed site-specific conditions to establish the specific use, type, functions, and placement of physical barriers at and within the PA boundary that are needed to satisfy all the prescriptive requirements identified in 10 CFR 73.55(e). The PA barriers as described are integral to the design of the physical protection system that protects CCNPP Unit 3 against the DBT in accordance with the requirements of 10 CFR 73.55(b).

13.6.4.1.7 Target Sets

The COL applicant described the process that is used to identify target sets, the conduct of site-specific analyses, and the method used to determine target set equipment and elements, in accordance with the requirements of 10 CFR 73.55(f), in TR ANP-10295, Section 11.5, “Target Set Equipment,” and the CCNPP Unit 3 Security Assessment, Section 6.1, “Target Sets.” CCNPP Unit 3 Security Assessment, Sections 6.1.1 through 6.1.4 contain the descriptions of the method and process applied to analyze and develop target sets and the resulting identified target sets that must be protected to prevent radiological sabotage in accordance with the requirement of 10 CFR 73.55(b)(4). The COL applicant incorporated by reference the information contained in TR ANP-10295, Section 11.0, “Target Sets,” and Appendix F, “Target Sets,” to establish the licensing basis for meeting 10 CFR 73.55(f) and to identify what must be protected to satisfy the performance requirements of 10 CFR 73.55(b).

Process for Identifying Target Sets: In CCNPP Unit 3 Security Assessment, Section 6.1.1, "Development Methodology," the COL applicant stated that "target identification is the basis for physical protection system design" and focuses on "what to protect," while the physical protection system design addresses "how to protect." The COL applicant described the following process used in the development and identification of target sets in CCNPP Unit 3 Security Assessment, Sections 6.1.2 through 6.1.5:

- Section 6.1.2, "Methodology for Development of Target Sets," establishes a process for target identification that includes three elements (i.e., specification of undesirable consequences, selection of target identification process, and target identification) to determine SSCs or combinations (target sets) that must be protected to meet the performance objectives of the physical protection system. The process identified as its overall objective to protect against radiological releases that result in threats to public health and safety because of exposure to radiation (i.e., radiological sabotage as defined in 10 CFR 73.2) from significant core damage or loss of spent fuel sabotage and to protect SSC functions that prevent the undesirable consequences.

- Section 6.1.3, "Expert Panel Selection," and Section 6.1.4, "Target Set Development," described the process, which includes establishing a panel consisting of experts to identify safety functions and equipment that must be protected. The core areas of expertise identified include design and system engineering, security, emergency preparedness, nuclear operations, licensing, probabilistic risk assessment (PRA), and engineering integration. In the target set analysis, the expert panel considered the results from PRA, results of U.S. EPR risk assessment information (as described in Section 6.1.2.2), and safety-related and plant system designs and operations of reactors (e.g., loss of offsite power, flooding, fire, diesel generators, redundant systems). The COL applicant indicated that the target set development and analysis process incorporates the guidance in RG 5.81.

- Section 6.1.5, "Assumptions," established assumptions applied in the identification process. These included evaluating loss of offsite power, multiple safety divisions, and operation and shutdown conditions of the U.S. EPR to determine the potential for radiological consequences that would lead to radiological sabotage. The identification process evaluated and included SSCs that if destroyed, changed, disabled, or operated in unintended fashion could result in failure to perform the intended safety functions that could result in core damage. Examples of SSCs analyzed to identify target sets included systems functions related to core cooling, power supply, safety barrier systems, and supporting engineered systems and controls and administrative controls (potential mitigating or recovery actions by operators).

Target Sets for CCNPP Unit 3: In Section 6.1.4, "Target Set Development," the COL applicant stated:

> "Target Identify," states that "Upon further review, combination of specific components within the relative small cross-sections of SSC listed above were grouped into logical set format in accordance with general guidance provided in NEI 03-11 (Reference 17 [of CCNPP Unit 3 Security Assessment])." These target sets are provided in Appendix F of AREVA technical report ANP-10295, "U.S. EPR Security Design Features" (Reference 27 [of CCNPP Unit 3 Security Assessment]).

The COL applicant adopted in whole, based on analysis with consideration of site-specific conditions and applications of the process described above, and incorporated by reference, the information related to target sets for the U.S. EPR standard design described in AREVA TR ANP-10295, Appendix F. CCNPP Unit 3 Security Assessment, Sections 6.1.2 through 6.1.4 described the process that was applied for target set development, validation, and revalidation, with the expert panel and the information and insights from analysis of design, systems, and operations for safety, including safe-shutdown equipment and PRA for all reactor operational modes.

In RAI 272, Question 13.06.01-19, the staff requested that the COL applicant provide additional information describing the analysis of target sets and results of the determination of safety functions and systems (e.g., front-line and supporting systems) that must be protected against the DBT for radiological sabotage so as to meet the performance-based requirements of 10 CFR 73.55(b). The additional information requested included descriptions of assumptions, ways in which the results are bounding, and the locations of the target sets.

In a July 29, 2011, response to RAI 272, Question 13.06.01-19, the COL applicant indicated that a multi-disciplinary team systematically developed and analyzed target sets based on the source document of the U.S. EPR FSAR. The source documents included the vital equipment list, safety-related component list, Level 1 PRA success criteria, and system and component dependencies of the U.S. EPR FSAR, and described how these elements were used in the analysis to identify systems and operator actions for key safety functions that, if maintained or available, prevent sequences of events leading to core damage. The COL applicant considered how the identified target sets are bounding, the time to core damage, the systems dependencies, and the operator actions that are credited.

The COL applicant revised CCNPP Unit 3 Security Assessment, Appendix G, “Target Sets,” and documented the resulting target sets in which considers site-specific conditions. CCNPP Unit 3 Security Assessment, Appendix G, Section G.1, “Target Set Preparation,” described how a team of subject matter experts developed the target sets by using a process to conform to RG 5.81. The team used the key safety functions provided in RG 5.81 with information contained in the U.S. EPR PRA (e.g., success criteria, systems dependencies) and applied this information to identify a comprehensive set of equipment necessary to reach and maintain a safe configuration that precludes core damage (i.e., the uncovering and heatup of the reactor core leading to oxidation and severe fuel damage). The COL applicant applied the Modular Accident Analysis Program (MAAP) code for determining core damage from a loss of combinations of systems and equipment. CCNPP Unit 3 Security Assessment, Appendix G, Section G.2, “Operator Actions,” identifies eight operator actions (intentionally not stated in this report due to security-related information) needed. CCNPP Unit 3 Security Assessment, Table G-1, “Target Sets,” identified the combinations of equipment and systems leading to core damage for specific modes of reactor operation. The combinations of systems and equipment addressed (1) loss of heat removal capabilities for operations and shutdown with steam generator (SG) available, (2) loss of heat removal capabilities for shutdown and vented SG not available, (3) loss of control of common system area, (4) loss of control stations, and (5) loss of spent fuel pool cooling. The list of target sets (1 through 6) described postulated adversary actions (e.g., obtaining access and disabling combinations of equipment), combinations of target set equipment, locations of equipment, credited operator actions, and estimated time to reactor core or spent fuel pool damage.

Based on the staff's review of new information indicated in response to the RAI and the new information submitted on the docket in CCNPP Unit 3 Security Assessment (Appendix G), the staff conducted a follow-up licensing audit on November 9–10, 2011. Although during the audit, the staff noted that the COL applicant had detailed documentation and had conducted a systematic analysis, additional descriptions of process and analysis were needed on the docket to allow the staff to determine the completeness of target sets. Therefore, in follow-up RAI 338, Questions 13.06-23 and 13.06-24, the staff requested that the COL applicant describe and clarify operator actions, assumptions, and analysis related to the target sets identified in CCNPP Unit 3 Security Assessment, Appendix G. Additional information is needed to adequately describe the target analysis and results concerning which safety functions and systems must be protected.

In a July 31, 2013, response to RAI 338, Questions 13.06-23 and 13.06-34, the COL applicant revised the CCPNPP Unit 3 Security Assessment, Appendix G, to provide additional information describing operator actions related to identified target sets in RAI 338, Question 13.06-23. The COL applicant revised the following, along with an additional section that specifically addressed operational requirements to preclude adversary interference:

- Section G.2.1, "Identified Operator Actions," to address the following: (1) operator actions required for identified target sets; (2) application of criteria of RG 5.81, "Target Set Identification and Development for Nuclear Power Reactors," for crediting operator actions; (3) applicability of AREVA TR ANP-10295, Appendix C, "Operator Actions Benefitting Security"; (4) operator actions related to support systems performing safety functions; (5) timing and continued need for operator actions; (6) significance of each operator action for each target set; (7) required time for operator action and ineffectiveness; (8) estimated time to core damage or spent fuel pool sabotage for identified target sets; and (i) specified operator actions associated with target sets.

- Section G.7, "Front Line System Dependencies," and Table B.3, same title, to illustrate systems supporting front-line systems that were considered in determining target sets and describe actions taken to preclude adversary interference with prudent operator actions.

- Sections G.2.2.1, "Operator Movement Prior to Adversary Presence," and G.2.2.2, "Operator Actions after Restoring of Free Movement," to describe routes the operator would take to accomplish tasks and required engineered, administrative, and management controls. Described operational requirements for security escort team, exterior defender relocation routes, defensive configuration after relocation, route taken by escorted operators) for security to reestablish safe travel routes at specified time.

The staff finds that CCNPP Unit 3 Security Assessment, Revision 7, Appendix G, adequately described the COL applicant's licensing basis and assumptions for operator actions related to identified combinations of target sets. The staff considers the open item tracked by RAI 338, Question 13.06-23 resolved.

In the July 31, 2012, response to RAI 388 Question 13.06-34, the COL applicant revised the CCNPP Unit 3 Security Assessment, Appendix G, to address additional information related to the depth and completeness of target sets analysis. The COL applicant described application of U.S. EPR PRA – Internal Fires Report, modeling of fire scenarios, considerations of PRA accident sequence and event tree, and reference to U.S. EPR FSAR Tier 2 in the analysis of

safety functions provided by Main Steam Relief Isolation and Control valves and initiating events from Interfacing System Loss of Cooling Accident outside containment. The COL applicant revised the CCNPP Unit 3 Security Assessment, Appendix G, to include the following additional information and clarification:

- Section G.1, to clarify that systems and subsystems used in target sets are consistent with the vital equipment listing found in AREVA TR ANP-10295P, Appendix A

- Table G-2, "Comparison of PRA Core Damage Sequence and Target Set," to identify differences and provide the basis for excluding initiating events based on Operator Action C.2

- Section G.2.1, "Identified Actions," to clarify intended operator actions

- Section G.6, "Comparison of Target Sets to PRA Failure Sequences," to demonstrate whether target sets identified in Table G-1 address all core damage combinations of failure sequences from initiating events of the U.S. EPR standard design PRA were considered

- Section G.4, "Effects of Planned Maintenance," to describe availability of multiple safety trains and significance of trains out of services for maintenance to multiple layered of safety systems

- Section G.5, "Comparison of Vital Equipment List Elements and Target Sets Elements," to provide a summary of result from the process to determined the vital equipment omitted from the target sets and the target set elements that were not listed as vital equipment and identify the reasons for any differences

The revised CCNPP Unit 3 Security Assessment captured, in summary, the target set analysis detailed in supporting document (i.e., 51-9036187-002, "Target Set Analysis") to demonstrate the completeness of the COL applicant's target sets analysis. The staff finds that the COL applicant adequately addressed RAI 388, Question 13.06.24. Accordingly, the staff considers the open item tracked by RAI 338, Question 13.06-24 resolved.

The COL applicant indicated in PSP Section 11.5, "Target Set Equipment," that target set equipment contained within the PA or VA is identified and accounted for in the site protective strategy, in accordance with requirements of 10 CFR 73.55(f)(3). The COL applicant did not identify any specific target set systems or elements in the COLA (i.e., Parts 2 and 8, the referenced CCNPP Unit 3 Security Assessment, or the TR incorporated by reference (ANP-10295)) that are located outside the proposed PA or a designated VA.

In COL FSAR Part 2, Chapter 13.0, "Conduct of Operations," and Section 13.1.2.2.1.6, "Other Programmatic Reviews and Controls," the COL applicant indicated that programmatic controls and processes (such as plant operations review committees, plant review boards, safety review committees, work planning and controls, corrective action and reporting programs) included the review of proposed changes to the facility as described in the COL FSAR, to ensure that safety issues and issues involving physical protection, including the safety/security interface, are appropriately addressed.

The staff finds the following:

- The COL applicant's process applied to develop and identify target sets conforms to the method of analysis (i.e., Steps 1 through 5) guidance provided in RG 5.81 and conforms to NUREG-0800, Section 13.6.1. In part, 10 CFR 73.55(f)(4) requires a licensee to implement a process for overseeing and managing changes to the identified equipment and systems affecting the licensee's protective strategy, and this process is addressed by the COL applicant's plans for meeting the requirements of 10 CFR 73.58, "Safety/Security Interface Requirements for Nuclear Power Reactors," for managing the safety interface. The staff concludes that the COL applicant described a process for development and identification of target sets in accordance with the requirements of 10 CFR 73.55(f)(1) through 10 CFR 73.55(f)(4).

- The identified target sets and safety functions, with the identification of primary and support systems, as indicated in CCNPP Unit 3 Security Assessment, Appendix G, Section 6.1.4 are sufficiently complete and accurate. The COL applicant adequately identified what the design of a physical protection system must protect to achieve the objective of a high assurance for the protection against the DBT for radiological sabotage (i.e., to prevent core damage and spent fuel pool sabotage).

13.6.4.1.8 Security Posts and Structures

The COL applicant described defensive equipment and fighting positions in CCNPP Unit 3 Security Assessment, Section 4.9, "Bullet Resistant Enclosure," which included the design and locations of BREs to provide security responders the ability to covertly move from BRE to BRE, limited effectiveness of suppressive fire, elevation and overhang for full visual and armament coverage of the exterior of buildings, and protected and controlled access. The design and performance requirements of BREs are described in the CCNPP Unit 3 Security Assessment, Section D.7, "Conceptual Design—BRE," of Appendix D, "Conceptual Design of Security Systems." The COL applicant described the design of BREs including the following:

- height above grade
- overhang for visual coverage of the exterior of buildings
- interior access with access control devices
- approximate structure weight
- incorporation into existing building structures where practical
- suppression resistance (e.g., orientation of firing ports)
- variety of firing ports available to responder
- shot locations identification system

Additionally, CCNPP Unit 3 Security Assessment, Figure D.7-1, "BRE Concept [exterior view, floor plan]," Figure D.7-2, "Defender Engagement from Multiple Firing Port," Figure D.7-3, "Suppression Angle," and Figure D.7-4, "Horizontal Port," depict the BRE design. CCNPP Unit 3 Security Assessment, Section 3.3.5, "Embedded Bullet Resistant Enclosure," described how the BREs are incorporated into the nuclear island and structures to minimize exposure and allow for covert movement of security responders and protect against adversary suppressive

fire. The BRE design included physical and access control features to restrict access only to authorized individuals.

The COL applicant described the licensing and design bases for the placement of defensive positions for security responders to perform duties to interdict and neutralize the DBT. Specific information on how the CCNPP unit will be protected, such as the number of security responders, their locations, the minimum time for initiating response, times for travel, delay times of barriers, travel distances, postulated pathways, postulated attack scenarios, overlapping fields of fire, assumptions for neutralization, and relocation times, is SGI and is intentionally omitted from the discussions below.

- CCNPP Unit 3 Security Assessment, Section 5.5, "Engagement Zone," described the design of an engagement zone that provides a minimum time required for adversary travel from the point of detection (i.e., the perimeter assessment and IDS or PAIDS) to the nuclear island and structures. The key assumption of a specified time (intentionally not mentioned in this report) is based on crediting interior delay fence and transit times over a specific distance based on an adversary's rate of travel. CCNPP Unit 3 Security Assessment, Figure 5.5-1, "Engagement Zone," shows the engagement zone and key assumptions.

- CCNPP Unit 3 Security Assessment, Section 6.3, "Evaluation of Defensive Strategy under Simulated Attack," Section 6.3.3, "Assumptions," includes descriptions of specific bounding times and rates of travel for adversaries over level surfaces and stairs (ascend/descend), delay of barriers, specific required time from alarm notification, deployment, and target acquisition for security responders in BREs, and travel times for security responders. CCNPP Unit 3 Security Assessment, Table 6.3-1, "Defensive Personnel," provided specific defensive positions and descriptions for security personnel (alarm station operators, ARs, ASOs) and their responsibilities and functions at the designated locations.

- CCNPP Unit 3 Security Assessment Section 3.3.4, "Design Concepts for Minimizing of Insider Impact," and CCNPP Unit 3 Security Assessment, Section 4.1, "Site Layout and Protected Area Boundary," established the design and locations of BREs that have the capability to monitor appropriate perimeter cameras of responsible areas within the OCA and PA, and establishes the location and design of BREs for the capability to provide overlapping fields of fire by security responders to interdict and neutralize adversaries. The design and licensing bases included the technical assumption that "one location failing to respond will not invalidate the overall defensive strategy" for the operational requirements to provide defense in depth.

The COL applicant incorporated by reference the information described in AREVA TR ANP-10295, Appendix D, "Internal Defensive Positions," and TR ANP-10295, Appendix E, "Internal Delay Features," for the design, configurations, and locations of BREs and deployable fighting positions and the physical barrier systems provided for delays, which are incorporated by reference as a part of the U.S. EPR standard design.

The CCNPP Unit 3 Security Assessment, Appendix B, "Exterior Defensive Strategy and Analysis," in Sections B.5.1 through B.5.10, established the design and performance requirements and security functions of the nuisance fence, PA fence, VBS and vehicle access areas, OCA cameras, external camera systems, IDS, and external lighting that are integral to

the BRE placements, with surveillance, communication, and adversary location systems for interdiction and neutralization. The delay features are integrated to provide adequate time for security responders, and the design of BREs and fighting positions are provided for preplanned interdiction and neutralization of adversaries with layered defense to protect CCNPP Unit 3. In PSP Section 12, the COL applicant also stated that security posts and structures are qualified to a level commensurate with their use within the site protective strategy and that these positions are constructed of bullet-resisting materials.

The staff finds the following:

- The COL applicant adequately described the design, configuration, and location of BREs that are relied on and are integral to implementing a security response in accordance with 10 CFR 73.55(k) to interdict and neutralize threats up to and including the DBT.

- The COL applicant analysis and design basis included considerations of security responders' task times (e.g., travel time, communications, assessment, acquiring targets) to implement responsibilities and perform duties. The analysis considered and provided time margins for uncertainties associated with human performance error and/or possible equipment malfunctions (e.g., weapon jam, communications failure), including the unavailability of a security responder in the most effective position for postulated intrusion scenarios.

- The availability of security posts and structures (e.g., BREs, fighting positions) that protect security responders and provide tactical advantage (e.g., protect cover) is a key assumption of the physical protection system that has as its objective a high assurance of the availability of security responders and the capability to interdict and neutralize adversaries.

- The COL applicant described the licensing and design bases for security posts and structures that are required and equipment relied on to implement the operational security response in accordance with 10 CFR 73.55(k)(2) and to achieve the objective of high assurance of protection in accordance with 10 CFR 73.55(b)(4).

13.6.4.1.9 Access Controls System of Personnel, Vehicles, and Material

In PSP Section 13, "Access Control Devices," and Section 14, "Access Requirements," the COL applicant described an access control system that consists of engineered and operational controls and a management system in accordance with the requirements of 10 CFR 73.55(g)(1) for the control of personnel, vehicles, and material at each control point.

In CCNPP Unit 3 Security Assessment, Section D.6, "Conceptual Design—Access Control System," the COL applicant included the use of access portals (e.g., doors, gates, turnstiles) in conjunction with physical barriers for physical controls and access authorization and monitoring systems to ensure that only authorized persons are allowed access into the PA and VA. The COL applicant indicated the following:

- Security portals control access into VAs. Increased levels of restrictions are established for selected critical locations [intentionally not stated] within the VA. Security monitored access portals into VAs are restricted and are locked and alarmed, with required positive identification and access authorization.

- Control systems for personnel entry and exit access into the PA included devices such as keycards, biometric readers, turnstiles, and use of photo identification badges. The emergency exits from the PA and VAs are alarmed and annunciate at the CAS and SAS, along with position sensor, locking, and access control systems.

CCNPP Unit 3 Security Assessment, Section 4.6, "Exterior Walls," Section 4.7, "Interior and Exterior Doors," Section 4.8, "Access Control," and Section 4.15, "Internal Delay Features," described the design of physical barriers that provide control and limit access. Additional details for the designs of engineered PSS for access controls are described in CCNPP Unit 3 Security Assessment, Appendix B, Section B.4.4.2, "Emergency Exit Design"; Section B.4.4.3, "Exterior Perimeter Lockdown"; and Section B.4.4.4, "Interior Lockdown."

CCNPP Unit 3 Security Assessment, Sections 4.1 through 4.8 also included descriptions of the design and configurations of engineered physical security systems providing access controls that address designs and configurations of the PA boundary, VBS, IDS, external and internal surveillance systems, exterior walls, interior and exterior doors, and access control systems. This report has previously discussed the designs and locations of physical barriers (e.g., walls, doors, PA and VA penetrations, VBS) and IDSs that are relied on and are integral to controlling access to the PA and the VA, and these barriers are not further discussed in this section.

The access controls for vehicles are provided by a VBS as described in the CCNPP Unit 3 Security Assessment, Section 4.2 and CCNPP Unit 3 Security Assessment, Appendix D.2, "Conceptual Design—Vehicle Barrier System," which incorporates by reference AREVA TR ANP-10295, Section 4.0, "Vehicle Barrier System." In summary, the designs and intended functions of the VBS are to protect the vital island and structures that contain target set elements that must remain functioning to prevent radiological sabotage. The location of the VBS is such that target sets cannot be made unavailable or nonfunctional by an explosion of the analyzed maximum bounding vehicle bomb at the VBS. The blast analyses support the location of the VBS at the minimum required safe standoff distance established for the U.S. EPR standard plant, based on the structural response to the overpressures from the maximum bounding vehicle bomb. The COL applicant incorporated by reference the U.S. EPR FSAR Tier 1 and Tier 2, which include the requirements and assumptions of the blast analyses for the U.S. EPR standard plant, in whole, without departure. The U.S. EPR FSAR Tier 1 and Tier 2 and supporting information, which have been certified as a standard design, are not subject to additional staff technical review. The COL applicant's operational requirements for searches of vehicles for DBT bombs and unauthorized material entering the PA are discussed with access requirements in Section 13.6.4.1.12 of this report.

Access Control Devices (Locks and Keys Control and Accountability): In PSP Section 13.2.1, "Security-Related Locks," and Section 13.2.2, "Access Control Device Changes," the COL applicant described the operational requirements and management systems for the control of security locks, and the associated changes to and replacement of access control devices and the accountability and inventory control process, and the required criteria for change controls for security locks. The COL applicant described the use of procedures to produce, control, and recover keys, locks, and combinations for integrity of access controls. The COL applicant indicated the following measures: (1) Store security locks, cores, and tumblers in secured security containers; (2) limit access control devices and information to individuals who have unescorted access authorization and require access to perform official duties and responsibilities; (3) implement compensatory measures and corrective actions for a compromise of established controls; (4) retrieve and change passwords, combinations, locks, and keys

(within a specific time) upon revocation of individual unescorted access; (5) record changes to access control devices; (6) account for and control keys, locks, and combinations and changes through a key inventory control process and issue keys and locks to PA or VA access portals only to authorized individuals; and (7) account for keys, locks, and cores at least annually. Implementing procedures will describe in detail the specific process and operational requirements for key and lock accountability, including inventory controls.

In addition, in PSP Section 13.1, the COL applicant indicated that locking devices included various types of tamper-resistant, security-related locks. The PA and VA portals are equipped with locking devices (e.g., specific pin chambers, padlocks constructed of hardened metal, and electronic-type locks).

In PSP Section 13.2.1, the COL applicant indicated that access authorization personnel who require passwords or combinations to perform their assigned duties meet the requirements of 10 CFR 73.56(k)(2) in lieu of 10 CFR 73.55(g)(6)(i)(A), in accordance with the exception stated in 10 CFR 73.55(g)(6)(iii). The requirements of 10 CFR 73.56(k)(2) state that any individual who is responsible for managing any authorization databases that contain files, records, and personal information must be determined to be trustworthy and reliable, in accordance with the requirements of 10 CFR 73.56(k)(2)(i) through (ii).

Photo Identification Badge System: PSP Section 14.3 Part 10 described the operational requirement to use a picture badge system for entry control at the PA and VA. The COL applicant indicated that the operational requirements and management system consist of the following: (1) All individuals allowed unescorted access to the PA or VAs possess identification badges; (2) identification badges are displayed while individuals are inside the PA and VA; (3) badges are deactivated when unescorted access is revoked; (4) when not in use, badges may be removed from the PA by authorized holders, but a process exists to deactivate the badge upon exit; (5) positive confirmation will be made of an individual's identity and authorization for unescorted access before entry into the PA; and (6) records are maintained to include the name and areas to which unescorted access is granted for all individuals to whom photo identification badges have been issued, to comply with 10 CFR 73.55(g)(6)(ii)(A) through (ii)(C). The COL applicant stated that the use of the picture badge system will be described in facility procedures (e.g., an operational requirement that all individuals in the PA and VA clearly display badges).

In CCNPP Unit 3 Security Assessment, Section D.15, "Personnel Access Facility," the COL applicant described the design and performance requirements for the PAF to provide and achieve the functions of confirming approval for access using personnel identification (e.g., picture badge, key cards, biometrics) before authorizing access control into the PA.

In CCNPP Unit 3 Security Assessment, Section 6.4.6.11, "Scenario 23—Badging Process," the COL applicant discussed the methods employed to address the passive insider threat related to badging and described key controls and capabilities when the badging center is not manned and functional. This section identified the design of system interfaces with key physical protection system [intentionally not stated] to prevent unauthorized activities related to badging and biometric data.

Visitors and Escorts: The COL applicant addressed the operational requirements of 10 CFR 73.55(g)(7), for the control of visitors and the requirements of 10 CFR 73.55(g)(8) for escorts in PSP Section 14.4.5, "Protected Area Access Controls," and PSP Section 14.4.6,

"Escort and Visitor Requirements." The COL applicant indicated that it will apply the following controls and processes for visitors and escorts, through implementing procedures:

- Confirm the identity of visitors, maintain a visitor control register, issue badges for visitors. Screen individuals to establish trustworthiness and reliability in accordance with the method described in RG 5.66, Revision 1.

- Provide escorts for the control of visitors, including escort training, communications, and maximum escort ratios. The training requirements for escorting visitors include the responsibilities for communications and criteria for the ratio of escorts to visitors. The management system includes procedures and processes that establish operational requirements that all escorts are trained to perform escort duties in accordance with site requirements. All visitors wear a badge clearly indicating that an escort is required.

PSP Sections 14.4.3 through 14.4.5 addressed the operational escort requirements of 10 CFR 73.55(g)(8). The COL applicant included criteria and measures for the escort of vehicles (e.g., searches, exit and reentry into the PA, emergency response vehicles under emergency conditions) and escort of plant personnel and emergency responders. The COL applicant indicated that the operational requirements associated with escorts of vehicles or personnel include controls and measures such as observations and communications and that plant procedures will describe the conduct of escorts.

Vital Area Access Controls: PSP Section 14.5 described features for VA access controls. The COL applicant indicated that all unoccupied VAs are locked and protected by an active intrusion alarm system. The PSP described operational requirements for locking and controlling the VAs. An access authorization system included controls to limit unescorted access in the PA and VAs. In accordance with 10 CFR 73.56(j), the COL applicant's operation requirements and process for access authorization into the VA included establishing, implementing, and maintaining a list of individuals who are authorized to have unescorted access to specific nuclear power plant VAs during nonemergency conditions. The list included only those individuals who have a continued need for access to those specific VAs to perform their duties and responsibilities and must include approval by a cognizant licensee manager or supervisor responsible for directing the work activities of the individual who is granted unescorted access to each VA, with update and re-approval no less frequently than every 31 days. The COL applicant plans to establish details of VA access control measures and operational requirements in implementing procedures.

The COL applicant's operational requirements included control of access into VAs based on a predetermined access authorization list in accordance with 10 CFR 73.55(g)(4). In response to a site-specific credible threat or other credible information, the COL applicant described plans to implement measures (e.g., two-person and line-of-sight rules) for access to a VA, to ensure that no individual can access a VA alone.

The staff finds the following:

- The COL applicant adequately described engineered physical security systems and hardware for access control systems that include card readers, gates and turnstiles, positive identification, keycard locking system, biometrics readers, remote overrides and control, locking devices, and detection and alarm capabilities. The COL applicant adequately described operational requirements for an access control system that includes identification and authorization check, entry to control point, weapon search,

explosive/incendiary device search, badge exchange (if use), and denial and notification. Subsequent sections of this report present the staff's determination and conclusions on operational requirements for conducting searches. The COL applicant met the requirements of 10 CFR 73.55(g)(i)(A).

- The COL applicant identified management controls, processes, and criteria for security locks, keys, combinations, passwords, and associated changes, replacements, and compromise or possible compromise of access control devices and accountability and inventory control to meet regulatory requirements. The COL applicant provided adequate measures for meeting the requirements of 10 CFR 73.55(g)(6)(i)(B) through 10 CFR 73.55(g)(6)(i)(D).

- The COL applicant's compliance with the requirements of 10 CFR 73.56(k)(2) serves as the basis for the exception allowed in 10 CFR 73.55(g)(6)(iii) and 10 CFR 73.55(g)(6)(i)(A). The COL applicant's operational requirements included establishing controls that any individual responsible for managing any databases that contain files, records, and personal information has been determined to be trustworthy and reliable, in accordance with the requirements of 10 CFR 73.56(k)(2)(i) through (2)(ii). The COL applicant also established operational requirements that individuals are subject to an access authorization program that meets the requirements of 10 CFR 73.56(k); or the licensee, COL applicant, and contractor or vendor determines that the individual is trustworthy and reliable based on an evaluation that meets the requirements of 10 CFR 73.56(d)(1) through 10 CFR 73.56(d)(6) and 10 CFR 73.56(e), and either a local criminal history review and evaluation as specified in 10 CFR 73.56(k)(1)(ii) or a criminal history check that meets the requirements of 10 CFR 73.56(d)(7).

- The COL applicant met the requirements of 10 CFR 73.56(j) with operational requirements and management controls for access authorization, including establishing, implementing, and maintaining a list of individuals who are authorized to have unescorted access to specific nuclear power plant VAs during nonemergency conditions. The operational requirements included listing only individuals who have a continued need for access to VAs to perform their duties and responsibilities. The management system also included the approval by a cognizant licensee manager or supervisor responsible for directing the work activities of the individual who is granted unescorted access to each VA, with update and re-approval no less frequently than every 31 days.

- The COL applicant adequately described how physical security systems and operational requirements will provide the control of visitors and escorts of visitors to meet the requirements of 10 CFR 73.55(g)(6) through 10 CFR 73.55(g)(8). The COL applicant adequately described how it will establish management systems that meet the requirements of 10 CFR 73.55(g)(4) for access to the VAs.

13.6.4.1.10 Access Authorization and Fitness for Duty

In PSP Section 14, "Access Requirements," the COL applicant addressed 10 CFR 73.55(b)(7), which requires establishing, maintaining, and implementing an access authorization program in accordance with 10 CFR 73.56, "Personnel Access Authorization Requirements for Nuclear Power Plants." The COL applicant stated that "[t]he Access Authorization Program implements regulatory requirements utilizing the provisions in RG 5.66, {Revision 1}, Nuclear Power Plant Access Authorization Program." RG 5.66 describes methods and approaches acceptable for

meeting the requirements of 10 CFR 73.56, which includes the following elements for an access authorization program:

- general requirements for unescorted access
- elements of unescorted access authorization levels
- background investigation
- employment, education, military, and criminal history verifications
- character and reputation checks
- verification of identity
- credit history reviews
- psychological evaluation
- evaluation criteria for unescorted access authorization
- access authorization review process
- transfer and reinstatement of access
- behavioral observation program
- contractor and vendor screening during cold shutdown
- evaluations, audits, and records

Section 13.7, of this report, "Fitness for Duty," addresses the staff's technical review and determination of how the COL applicant plans to meet FFD requirements.

The staff finds the following:

- The COL applicant adequately described how it will meet the requirements for access authorization of 10 CFR 73.56, through the operational requirements that apply and implement methods that conform to guidance described in RG 5.66, Revision 1.
- The COL applicant adequately described the licensing basis for how the access authorization program in PSP Section 14.1, "Access Authorization and Fitness for Duty," will satisfy and meet the requirements of 10 CFR 73.55(b)(7) and 10 CFR 73.56.

13.6.4.1.11 Insider Mitigation Program

CCNPP Unit 3 Security Assessment and the PSP describe the COL applicant's integration of physical protection systems with operational requirements to meet the requirements of 10 CFR 73.55(b)(9) for protection against the insider threat. The following sections of the CCNPP Unit 3 Security Assessment described the insider mitigation program (IMP), which credits availability of the PSSs and their intended functions:

- In CCNPP Unit 3 Security Assessment, Section 3.3.4, “Design Concepts for Minimizing of Insider Impact,” the COL applicant described the following: (1) Redundancy of CAS and SAS for redundant alarm, communications, and video capture capabilities; (2) locations’ specific, independent, capability to monitor perimeter cameras covering the OCA and PA; (3) elimination of a single-point system failure that could disable security functions; (4) provisions for overlapping fields of fire; and (5) CCTV coverage of the interior of the vital island and structures, including passageways to limit opportunities of insider threats to security functions and the capabilities and detection of possible insider actions.

- In CCNPP Unit 3 Security Assessment, Section 2.3, “Vital Area,” the COL applicant established the design requirements for physical barriers, access control systems, and monitoring by video surveillance of pathways, and the integration of systems with operational requirements that include direct observations by security responders of a single normally used entry point and overlapping observations and fields of fire of VA entry points by security responders in multiple BREs.

- In CCNPP Unit 3 Security Assessment, Section 5.2, “Insider Threat,” the COL applicant evaluated and considered insider threats in establishing the design of a physical protection system and controls (e.g., access controls, surveillance, monitoring) that are integral to the operational requirements to provide high assurance for the mitigation of an insider threat.

In PSP Section 14.2, the COL applicant referenced RG 5.77 as the licensing basis to meet operational requirements for the IMP. The COL applicant described how the IMP will be established, maintained, and implemented based on RG 5.77, including requirements to perform operations tours and security patrols of vital and target-set areas, use of tamper indication devices to identify and address actual or suspected tampering, operational and security responses to tampering events using plant procedures, prevention, and mitigation of insiders using administrative and engineered controls (security patrols and surveillances), minimum frequencies for patrols and inspections, and remote monitoring of target sets and for unauthorized personnel and activities. To meet the requirements of 10 CFR 73.55(b)(9), the COL applicant applied the guidance in RG 5.77 on the following operational requirements related to access controls, fitness for duties, and behavior observations:

- establishing critical group
- initial security determination
- drug and alcohol testing
- psychological assessment and medical evaluations
- annual reviews by immediate supervisor
- periodic reinvestigation of security determination
- access to VA
- physical protection measures (e.g., training, patrols, access controls, tamper indications)

PSP Part 8, Section 14.2, indicated that access authorization, behavioral observation, insider mitigation, and FFD processes are important components of the integrated protective strategy. These processes provided high assurance that individuals with access to the facility are trustworthy and reliable and do not constitute an unreasonable risk to the health and safety of the public, including a potential to commit radiological sabotage.

The staff finds the following:

- The COL applicant adequately described how it will meet the requirements for an IMP in 10 CFR 73.55(b)(9), through the integration of engineered PSS and operational requirements that apply accepted methods described in RG 5.77. In CCNPP Unit 3 Security Assessment, Sections 2.3, 3.3.4, and 5.3, and PSP Section 14.3, the COL applicant adequately identified and described the integration of the physical security, access control, behavior observation, and operational requirements that establish the licensing basis for implementing the IMP.

- The COL applicant adequately described how it will meet the requirements of 10 CFR 73.55(b)(9) and established the operational requirements that integrate key elements of the CCNPP Unit 3 physical protection program. These requirements provide assurance of the ability to prevent, detect, mitigate, and respond to potential insider threats.

13.6.4.1.12 Search Program

- The COL applicant described how the engineered and operational controls will be provided for searches of personnel, vehicles, and material in accordance with the requirements of 10 CFR 73.55(h), “Search Program.” The operational requirements for searches before access into the PA are described below:

- In PSP Section 14.4, “Searches, the COL applicant described the search process for vehicle, personnel, and materials. All personnel, vehicles, and materials entering the PA are searched for prohibited items or other contraband. The search process is conducted by qualified security personnel and specifically trained non-security personnel and uses technology. Procedures will describe and implement the details of the search process.

- In CCNPP Unit 3 Security Assessment, Section 4.8, “Access Controls,” the COL applicant identified engineered systems for searching personnel, such as x-rays, metal detectors, and explosive detectors. In CCNPP Unit 3 Security Assessment, Section D.6, “Conceptual Design—Access Control System,” and CCNPP Unit 3 Security Assessment, Section D.15, “Personnel Access Facility,” the COL applicant described the design and configurations of the engineered systems that will be applied to searches for weapons, explosives, and incendiary devices and for control of personnel (e.g., explosive detectors, access control features). The access control and searches included personnel in vehicles using the vehicle access portal (also called a sally port), and the search of personnel before they enter the PA.

- In PSP Section 14.4, the COL applicant established the operational requirements for searching for explosives, firearms, incendiary devices, and other contraband that are prohibited inside the PA. The operational requirements included the following: (1) Searches conducted by security personnel or other trained plant personnel or appropriate technology; (2) implementation of response actions (e.g., lockdown) for a

suspected or confirmed attempt to introduce prohibited items; and (3) plant procedures to detail the conduct of searches.

- In PSP Section 14.4.1, "Vehicle Barrier System Access Control Point," the COL applicant described the operational requirements for searching vehicles at the vehicle access portals. These requirements included (1) plant procedures for searches, including areas of a vehicle to be searched for prohibited items, specific areas of visual inspections, and size or quantities of explosives; (2) the minimum number of security personnel required for searching vehicles; (3) oversight capabilities for monitoring the search process and initiating a response to unauthorized activities; (4) control measures for vehicle access points where no searches are being performed; and (5) posting of security officers when active VBSs are in denial position.

- PSP Section 14.4.2, "PA Package and Material Searches," described the operational requirements for searches of packages and material before their passage into the PA. These requirements included (1) establishing plant procedures for conducting searches, (2) using electronic equipment and persons to conduct searches, and (3) setting criteria for completing searches allowing passage of material into the PA (e.g., physical search or special purpose detector search; items that cannot be searched using electronic equipment; observation; and control measures of material, unloading restrictions, escort of transport vehicle, seal and tamper indications, restriction of access). The COL applicant plans to implement search requirements of packages and material using operating procedures that detail searches of packages and material, including bulk materials. The COL applicant's operational requirements included implementation of procedures for controlling packages and materials previously searched and use of tamper-indicating seals by personnel trained in accordance with the T&QP.

- In PSP Section 14.4.3, "PA Vehicle Searches," the COL applicant addressed operational requirements for searches and security measures during plant emergencies for emergency response vehicles needing to enter the PA. In addition, the COL applicant established operational requirements for trained ASOs, continuous observations, and communications that must be met before authorized vehicles and personnel are allowed to exit and reenter the PA.

- PSP Section 14.4.4, "PA Personnel Search," described the operational requirements and management controls for the search of personnel before entry into the PA. The operational requirements described include (1) search of personnel using equipment or by physical pat-down, (2) searches related to law enforcement personnel and emergency responders, (3) individuals with authority under emergency conditions, and (4) specific criteria and measures applied during emergency conditions.

- PSP Section 14.4.5, "PA Access Controls," addresses and establishes operational requirements for vehicle access into the PA and includes security measures required for a vehicle not driven by an individual with unescorted access, hazardous material, and specific purpose vehicles (e.g., forklifts, riding lawnmowers, scissor lifts).

- The COL applicant does not plan to establish or credit searches of vehicles at the OCA to deter, detect, or prevent the introduction of firearms, explosives, incendiary devices, or other items that could be used to commit radiological sabotage. Accordingly, the

requirements established by 10 CFR 73.55(h)(2) for OCA searches (10 CFR 73.55(h)(2)(ii) through (2)(v)) do not apply to the operations of CCNPP Unit 3.

The staff finds the following:

- The COL applicant adequately described how the search program, in accordance with the requirements of 10 CFR 73.55(h)(1), will be established to detect, deter, and prevent the introduction of firearms, explosives, incendiary devices, or prohibited (other) items into the PA. The COL applicant described engineered and operational controls, along with a management system, for searching individuals, vehicles, and material at access control points before they access the PA.

- The COL applicant planned for searches at the PA and did not credit searches at the OCA for individuals, vehicles, or material. The requirements of 10 CFR 73.55(h)(2)(i) through 10 CFR 73.55(h)(2)(v) do not apply to CCNPP Unit 3. Accordingly, the COL applicant established engineered systems, operational requirements, and a management system that provides assurance that implementation of the search program will meet the requirements in 10 CFR 73.55(h)(3)(i) through10 CFR 73.55(h)(3)(viii).

- The COL applicant adequately described the operational requirements and management controls that integrate engineered physical security systems and the operational requirements implementing a search program that satisfies the requirements of 10 CFR 73.55(h)(1) through 10 CFR 73.55(h)(h)(3).

13.6.4.1.13 Illumination

The regulation in 10 CFR 73.55(i)(1) requires IDSs that satisfy the design requirements of 10 CFR 73.55(b) and provide, at all times, the capability to detect, assess, and respond to unauthorized persons and suspicious activity and facilitate the effective implementation of the protective strategy. The COL applicant described the following engineered PSS and operational requirements for illumination to achieve the capabilities for detection and assessment security functions:

In CCNPP Unit 3 Security Assessment, Section 4.10, the COL applicant incorporated by reference the design of the security lighting, described in AREVA TR ANP-10295, Section 2.2, “Security Lighting.” The U.S. EPR FSAR addresses the requirements of 10 CFR 73.55(i)(6)(i) through 10 CFR 73.55(h) 10 CFR 73.55(h)(j)(6)(iii) for the interior and exterior lighting of the plant for illumination necessary to perform the security functions of detection, assessment, interdiction, and neutralization. The U.S. EPR FSAR included the design basis for the power supply required to provide a minimum illumination of 2.2 lux (0.2 ft-candles) in the isolation zones and within areas of the PA to meet 10 CFR 74.55(i)(6)(ii). The interior illumination is as described in the U.S. EPR FSAR Tier 2, Chapter 2, Section 2.2.2, and interior illumination credits the availability of emergency lighting and power supply. The design and performance requirements of the security lighting system for illumination have been reviewed and are not subject to further technical review.

In CCNPP Unit 3 Security Assessment, Appendix D, Section D.8, “Conceptual Design—Security Lighting,” the COL applicant indicated that the security lighting system design is as described in AREVA TR ANP-10295, Section 2.2, “Security Lighting,” to provide illumination necessary for security responders to perform required functions. The descriptions in CCNPP Unit 3 Security Assessment, Section D.8 for the design and performance requirements for security lighting

included redundancy of power supply, uninterruptible power supply (UPS), diesel generators as a backup electrical power supply for defense in depth, controls for security lighting in the access-controlled area, control circuit power failure, and security/safety management of changes affecting security lighting equipment. CCNPP Unit 3 Security Assessment, Figure D.8-1, "BRE Lighting Concept," depicts the design of the typical lighting for a BRE. CCNPP Unit 3 Security Assessment, Figure D.8-2, "Exterior High Mast Lighting Concept," shows the layout for the design of high mast lighting, BRE base lighting, and wall-mounted local lighting for illumination of the PA and areas within the PA.

The COL applicant addressed the requirement of 10 CFR 73.55(i)(6)(iii) in PSP Section 15.1, "Illumination," and considered the question of whether low-light technology may supplement the required facility illumination for security. The COL applicant specifically stated:

> …other standard technologies such as thermal and/or low-light camera, night vision scopes, and thermal or low-light weapon sighting systems will be employed to supplement and enhance the ability to maintain detection and assessment capabilities, and to execute the protective strategy at all times, particularly in the event of loss or degradation of site lighting. These accepted practices and methods are not alternative measures under the intent of 10 CFR 73.55(r).

In PSP Section 15.1, the COL applicant indicated that all affected areas of the site have lighting capabilities that provide the minimum illumination required, including lighting that illuminates the PA isolation zones and exterior areas of the PA at a level sufficient to detect a person by direct observation or CCTV to initiate and perform a security response. The COL applicant included operational requirements for applying technology using fixed and no fixed low-light-level cameras or alternative technological means of augmenting illumination and requirements for temporary compensatory measures for the loss of lighting.

The staff finds the following:

- The COL applicant adequately described the design and performance requirements of the plant security lighting system for the isolation zones and exterior areas of CCNPP Unit 3 for protection against the DBT, in accordance with the requirements of 10 CFR 73.55(i)(6)(i). The design and performance requirements of the plant lighting system for the PA and isolation zones will provide a minimum of 2.2 lux (0.2 ft-candles), as prescribed in 10 CFR 73.55(i)(6)(ii).

- The COL applicant adequately described how the interior plant lighting system will provide the illumination required to perform security functions (e.g., detection, surveillance, assessment, neutralization). The interior plant lighting system is capable of providing a minimum illumination of 10.76 lux (1 ft-candle), which exceeds the minimum required illumination in 10 CFR 73.55(i)(6)(ii) for physical protection. The COL applicant also adequately described the design requirements that address the reliability of power supply for the detailed design of the interior and exterior lighting system.

- The COL applicant plans to use low-light technology, as described in PSP Part 8, Section 15.1 and CCNPP Unit 3 Security Assessment, Section 4.1. The staff determined that the use of low-light technology supplements or augments the availability of required illumination by regulation and is not considered a replacement for or an

alternative acceptable for meeting the prescriptive requirements of 10 CFR 73.55(i)(6)(ii) for illumination.

- The COL applicant adequately described the design and operational requirements for illumination and meets the requirements of 10 CFR 73.55(6)(i) through (6)(iii) for plant lighting systems (interior and exterior).

13.6.4.1.14 Security Power Systems

The COL applicant described the security power supply in CCNPP Unit 3 Security Assessment, Section 3.3.2, "Fault Tolerant Security Power Supply." The design consisted of redundant and independent power trains to support the continuity of operations for PSS (e.g., keycard doors, IDS, exterior lighting, CCTV, communications). The COL applicant incorporated by reference the information on security power presented in AREVA TR ANP-10295, Section 2.1, "Security System Power."

CCNPP Unit 3 Security Assessment, Appendix D, Section D.8, "Conceptual Design-Security Lighting," provided design descriptions and required configurations for the security lighting. These included redundancy of primary power supply, UPS, and secondary power supply (i.e., diesel generators) to address the reliability and availability of illumination for performing security functions. CCNPP Unit 3 Security Assessment, Figure D.8-1, "BRE Lighting Concept," depicts the typical design for lighting provided for a BRE, along with the minimum design requirement of two trains of power supply to ensure that loss of a single train of power does not cause total loss of illumination. The COL applicant stated that security responders are equipped to perform the task of neutralization in the event of loss of illumination.

In CCNPP Unit 3 Security Assessment, Appendix D, Section D.9, "Conceptual Design—Security Power System," the COL applicant described the design and performance requirements for the power supply of normal security lighting, redundancy of power supply, and minimum lighting load per train (supported by analysis of power sizing in AREVA TR ANP-10295). The design bases and assumptions for the sizing requirements included (1) CAS and SAS load, (2) normal security lighting, (3) power train, (4) UPS batteries for CAS and SAS, (5) UPS for transition to secondary diesel power, and (6) secondary diesel power supply (including fuel supply and location). The design descriptions include performance requirements to prevent single failure (i.e., under a single act), including protection of the enclosure housing the security power system to minimize the effect of explosion or fire and bullet resistant, by locations and construction. The COL applicant included design and performance requirements for detailed sizing of the power supply in CCNPP Unit 3 Security Assessment, Figure D.9-1, "Security Power Concept," which depicts the design of the security power system and components (e.g., backup power; UPS; physical subsystem interfaces, such as communications, security central processing unit; IDS; doors; defensive positions; and cameras).

In CCNPP Unit 3 Security Assessment Section 3.3.18, "Ability to Promptly Extinguish External Lighting," the COL applicant described design capabilities that include the control of external plant lighting. Specifically, the plant lighting capability is readily available to respond to a specific threat that may require extinguishing lights or a blackout of plant lighting.

The staff finds the following:

- The COL applicant adequately described a design security power supply that includes redundancy and independence of systems for power to physical security systems

(e.g., access controls, IDSs, assessment, lighting, communications). The COL applicant incorporated by reference the design of the security power system described in AREVA TR ANP-10295. The design and performance requirements for security lighting and power are adequately described for the detailed design in CCNPP Unit 3 Security Assessment, Appendices D.8 and D.9, respectively.

- The COL applicant adequately described the design of the power supply for the reliability and availability of the plant lighting systems and met the requirements of 10 CFR 73.55(6)(i) through 10 CFR 73.55(6)(iii).

13.6.4.1.15 Intrusion Detection and Assessment Systems

In the CCNPP Unit 3 Security Assessment and PSP, the COL applicant described the design and performance requirements for the intrusion detection and assessment systems to meet the prescriptive requirements of 10 CFR 73.55(i) and the requirements of 10 CFR 73.55(b) to protect against the DBT for radiological sabotage. Specifically, the COL applicant described the design and performance requirements of the IDS in CCNPP Unit 3 Security Assessment, Section 4.3, "Intrusion Detection System." CCNPP Unit 3 Security Assessment, Appendix D, Section D.3, "Conceptual Design—Intrusion Detection System," provides additional information on the detailed design of the IDS.

The COL applicant's design of the IDS included the capabilities of alarms in the CAS and SAS, with video information displayed for the alarm station operators. A design consisting of a combination of systems for intrusion detection and video surveillance capabilities ensures the redundancy of the IDS. The COL applicant considered the possible effects of environmental conditions, such as adverse weather, and provided system redundancy to maintain the availability of detection functions. The towers and mounting of IDS components will be designed to withstand high wind. The design included redundant capabilities such that failures of power supply, digital communications, IDS subsystems, and the perimeter assessment system do not result in the loss of complete security functions or capabilities to provide detection and assessment.

CCNPP Unit 3 Security Assessment, Figure D.3-1, "Protected Area Perimeter Concept," depicted the layout and configurations of the components for the perimeter assessment and IDS for the detailed design and integration with other PSS (i.e., PA fence, intrusion detection, nuisance fences, VBS, lighting, and cameras). The design and configurations of the PA perimeter consisted of the following: (1) An isolation zone to the interior of the PA fence; (2) PA fence of a specific height with razor wire; (3) mast post or tower for cameras, lighting, and other components; (4) IDS at a specific distance to the exterior of the PA fence; (5) nuisance fence with razor wire; and (6) a VBS at a specific distance from the nuisance fence.

The COL applicant referenced guidance provided in RG 5.44 for the capability to detect penetration and attempted penetration of the PA barriers, including guidance on the performance testing of the IDS to ensure the reliability of detection capabilities (e.g., an individual of minimum weight as a minimum standard for detecting penetration or attempted penetration).

CAS and SAS: In CCNPP Unit 3 Security Assessment, Section 4.12, "Security Computer System," the COL applicant described the CAS and SAS computer systems that independently support the security functions of access controls and monitoring, alarm indications and assessment, reporting and recording of all alarm points (e.g., intrusions, tamper, trouble

conditions), and interfaces with CCTV systems. CCNPP Unit 3 Security Assessment, Appendix D, Section D.10, "Conceptual Design—Security Computer Systems," described the design and performance interfaces of the security computers. Section 4.13, "Alarm Stations (CAS and SAS)," described the locations of the CAS and SAS, the design requirements for construction of walls, floors, ceilings, doors, windows, and penetrations to be bullet resistant so as to protect security equipment and personnel. In Section 4.12, the COL applicant also described the redundancy of the power supply, monitoring of physical security subsystems (detectors, CCTV), and primary and secondary functions of the CAS and SAS.

In PSP Section 15.4, the COL applicant described the intended operations and security functions of the CAS and the SAS. The COL applicant indicated in the PSP that the alarm stations are equipped such that no single act will disable both alarm stations. The COL applicant also established, as a key operational requirement, that each alarm station is to be properly manned and that no activities are permitted that would interfere with the operator's ability to execute assigned duties and responsibilities.

Surveillance, Observation, and Monitoring Systems: The COL applicant described how it meets the requirements of 10 CFR 73.55(i)(5)(i) through 10 CFR 73.55(i)(5)(vii) in the following sections of the CCNPP Unit 3 Security Assessment: Section 3.3.7, "Passageway Monitoring System"; Section 4.4, "External Surveillance System"; and Section 4.5, "Internal Surveillance Systems." Section 4.13, "Alarm Stations (CAS and SAS)," described the capability of observing and monitoring systems.

In PSP Section 15.2, the COL applicant indicated that surveillance is accomplished by human observations (i.e., operational requirements) and technology (i.e., crediting engineered physical protection systems). Engineered surveillance security systems included a variety of cameras, video displays, and annunciation systems that are designed to provide capabilities that assist security personnel and armed security responders in observing, detecting, and assessing alarms and possible unauthorized activities. Certain engineered PSS are able to provide real-time and recorded playback of recorded video images. The COL applicant's operational requirements included establishing specifics for conducting surveillance and applying engineered PSS in facility implementing procedures.

In CCNPP Unit 3 Security Assessment, Sections 4.4 and 4.5, the COL applicant described the surveillance systems for monitoring external and internal areas. The design for surveillance systems for monitoring the external areas of the nuclear island and structures is described in CCNPP Unit 3 Security Assessment, Appendix D.4, "Conceptual Design—External Surveillance System," and the design of the internal surveillance systems for areas within the structures is found in CCNPP Unit 3 Security Assessment, Appendix D.5, "Conceptual Design—Internal Surveillance System." The external surveillance system is designed in accordance with AREVA TR ANP-10295, Sections 8.0, 8.1, and 8.3, which are incorporated by reference. The descriptions included the purpose and intended functions, locations monitored, locations displayed, components used, redundancy, camera resolution, information displayed, display frequencies, information recording, and other criteria. CCNPP Unit 3 Security Assessment, Figure D.4-1, "CCTV System Concept," showed and indicated the design and performance of the CCTV system and interfaces with other PSS.

External Surveillance Systems: The external surveillance systems for security response are described in CCNPP Unit 3 Security Assessment, Section 4.4, "External Surveillance Systems," with descriptions for the detailed design of the systems in CCNPP Unit 3 Security Assessment,

Section D.4, “External Surveillance Systems.” The external assessment systems consist of the CCTV network to provide remote video monitoring of the PA (e.g., perimeter intrusion detection and assessment system, access points of PA and VA, areas between PA and VA barriers, VBS). The systems are interconnected to communicate information to appropriate defensive positions for security response. CCNPP Unit 3 Security Assessment, Appendix D.4 described the system components of the CCTV, which include the following: (1) Monitored areas; (2) display locations; and (3) system components (e.g., pan/tilt/zoom cameras, fixed low-light cameras, thermal imaging, monitors at the CAS and SAS, and BREs). The COL applicant identified key design requirements (e.g., switching systems, monitors, cable types, video feeds, security computer connections to the CCTV, alarm indications, power trains, camera controls, CAS and SAS monitoring) for redundancy, which include a combination of cameras to provide the capability to detect an individual under no-light conditions that may be encountered within a 24-hour day. The design and performance requirements included resolution of cameras and the information displayed for alarms, minimum frequency for display of video information, recording capabilities, primary and secondary system functions, monitoring workstations, and system permission and restrictions. A system diagram in CCNPP Unit 3 Security Assessment, Figure D.4.1, “CCTV System Concept,” depicted the design of the CCTV system.

Internal Surveillance Systems: The COL applicant described the interior surveillance system for monitoring interior areas of the structures, including access points, equipment, passageways, and areas, in CCNPP Unit 3 Security Assessment, Section 4.5, “Internal Surveillance Systems,” and CCNPP Units 3 Security Assessment, Appendix D, Section D.5, “Internal Surveillance Systems.” The designs for the components of the CCTV and included (1) monitored areas, (2) display locations, and (3) system components (e.g., pan/tilt/zoom cameras, fixed low-light cameras, thermal imaging, monitors at the CAS, SAS). The design of the internal surveillance system is similar to that of the external surveillance system, in that the COL applicant identified the same key design requirements (e.g., switching systems, monitors, cable types, video feeds, security computer connections to the CCTV, alarm indications, power trains, camera controls, CAS and SAS monitoring), and the design included a combination of cameras so that an individual can be detected 24 hours a day, including under no-light conditions. The design and performance requirements included the resolution of cameras and the information displayed for alarms, minimum frequency for display of video information, recording capabilities, primary and secondary system functions, monitoring workstations, and system permission and restrictions.

The COL applicant provided general information in PSP Section 15.3, “Intrusion Detection Equipment,” Section 15.4, “Central Alarm Station (CAS) and Secondary Alarm Station (SAS) Operations,” and Section 15.2, “Surveillance Systems,” related to the IDS, CAS/SAS, and surveillance systems for detection and assessment for areas in the PA and VA. The requirements of 10 CFR 73.55(i)((3)(iv), which establish design requirements that the transmission lines to alarm system annunciators be tamper indicating and self-checking, are identified as design requirements for the proposed IDS. In PSP Section 15.4, the COL applicant established the operational requirements for continuous staffing of both the CAS and SAS and the responsibilities of the alarm station operator to perform security functions to assess and initiate response to all alarms and to conduct operations according to plant procedures. The COL applicant’s specific operational controls for alarm stations include the requirements prescribed in 10 CFR 73.55(i)(4)(ii)(B) through 10 CFR 73.55(i)(4)(ii)(G). The COL applicant also captured key requirements that no activities are permitted within either alarm station that would interfere with an alarm station operator’s ability to perform assigned duties, in accordance with 10 CFR 73.55(i)(4)(ii)(C) and the operational restrictions described in 10 CFR 73.55(i)(4)(ii)(F) and 10 CFR 73.55(i)(4)(ii)(G) for conducting security operations.

The staff finds the following:

- The COL applicant's description of the design for the IDS adequately addressed the prescriptive requirements in 10 CFR 73.55(i)(1) through 10 CFR 73.55(i)(4), along with the integration of engineered physical security systems to perform detection and assessment functions with operational requirements to initiate and coordinate security response to an alarm, summon offsite assistance, and provide command and control for security response.

- The COL applicant's design and operational requirements for the CAS and the SAS, as described, are redundant and independent to ensure that the alarm stations are equipped such that no single act will disable both alarm stations and to ensure the continuity of the intended security functions. The COL applicant satisfactorily described how it will meet the requirements of 10 CFR 73.55(i)(1) through 10 CFR 73.55(i)(4) for CCNPP Unit 3.

- The COL applicant adequately described the design and performance requirements to meet the prescriptive requirements of 10 CFR 73.55(i)(5)(i) through 10 CFR 73.55(i)(5)(vii), addressing assurance of the assessment, surveillance, and observation capabilities and the monitoring functions for internal and external plant areas.

- The COL applicant adequately described how it will meet the prescriptive requirements of 10 CFR 73.55(i)(1) through 10 CFR 73.55(i)(5) through the design and performance of engineered PSS and operational requirements for high assurance of intrusion detection and assessment capabilities. The COL applicant satisfied the requirements of 10 CFR 73.55(b) for physical protection against the DBT, which require reliable and available detection and assessment capabilities for intended security functions.

13.6.4.1.16 Security Patrols

The COL applicant established operational requirements for security patrols in PSP Section 15.5, "Security Patrols." The COL applicant described the operational requirements for security personnel to conduct security patrols to meet the prescriptive requirements for armed patrols of the OCA, PA, and VA. Specifically, in PSP Section 15.5.1, "Owner Controlled Area (OCA) Surveillance and Response," the COL applicant described how security patrols will be conducted in the OCA based on appropriate methods that include (1) minimum staffed continuous security patrol with contingency weapons, (2) a continuously staffed security patrol combined with surveillance systems, and (3) remote surveillance equipment with deployment of security responders to challenge unauthorized individual(s), to meet the requirements of 10 CFR 73.55(i)(5)(ii).

In PSP Section 15.5.2, "Protected and Vital Areas," the COL applicant described the operational requirements that will be implemented, using plant procedures, for armed security patrols of the external areas of the PA, the PA barriers, and the PA and VA access portals. These patrols are intended to detect and deter unauthorized activities by personnel and/or vehicles. The COL applicant identified the minimum frequencies for armed security patrols of the VA per shift for security operations. The COL applicant described the observations for the detection of tampering in PSP Section 14.2, "Insider Mitigation Program," and facility procedures, which include the requirements of 10 CFR 73.55(i)(5)(vii) for training to recognize obvious indications of tampering, minimum time for surveillance of identified stand-alone target sets, and application

of video surveillance by trained and qualified personnel in the CAS and SAS in lieu of security patrols (i.e., as allowed by 10 CFR 73.55(i)(5)(ii)).

In PSP Section 14.2, "Insider Mitigation Program," the COL applicant stated its plans to apply engineered PSS for internal surveillance with the capabilities of video capture cameras and monitoring from the CAS and SAS for certain plant areas (intentionally not stated in this report) in lieu of security patrols for detecting unauthorized activities in accordance with 10 CFR 73.55(i)(5)(ii). This regulation allows continuous surveillance, observation, and monitoring responsibilities to be performed by security personnel during continuous patrols, through use of video technology, or by a combination of both.

The staff finds the following:

- The COL applicant adequately described the operational program requirements for security personnel to conduct security patrols of systems, equipment, and areas of safety and security significance to detect intruders, identify obvious indications of tampering, and provide deterrence. The COL applicant's operational requirements adequately described how armed security patrols provide observations and conduct surveillance of plant external areas, including requirements for training and plant procedures, to meet the prescriptive requirements of 10 CFR 73.55(i)(5)(iii) through 10 CFR 73.55(i)(5)(viii).

- The operational requirements for security patrols complement the required engineered PSS and associated operators to provide continuous surveillance, observation, and monitoring of CCNPP Unit 3, in accordance with 10 CFR 73.55(i)(5)(i) and 10 CFR 73.55(i)(5)(ii). The operational requirements for security patrols, as described, are integral to providing defense in depth for the reliability and availability of capabilities to detect and initiate security response to achieve the objective of a high assurance of protection against the DBT, in accordance with the requirements of 10 CFR 73.55(b)(3(ii).

13.6.4.1.17 Communications

For the implementation of the CCNPP Unit 3 physical protection program, the COL applicant incorporated by reference the security communication system designs and performance requirements described in AREVA TR ANP-10295 for the U.S. EPR FSAR. CCNPP Unit 3 Security Assessment, Section 4.14, "Security Communication System," described the site-specific information related to the design of the required security communications functions. The COL applicant described the communication systems, which include dedicated, wireless, encryptions, hard-wired, and phone lines. The systems for security communications provide redundancies and diverse communications equipment for assurance of communications among the CAS, SAS, MCR, fixed posts, mobile patrols, and offsite LLEAs.

PSP Section 15, "Communications," described how the COL applicant will meet the operational requirements for security communications, in accordance with the requirements of 10 CFR 73.55(j)(1) through 10 CFR 73.55(j)(6). Specifically, in PSP Section 16.1, "Notifications (Security Contingency Event Notification)," and PSP Section 16.2, "System Description," the COL applicant described the following factors in meeting regulatory requirements:

- Notify operations, onsite security response staff, and offsite support agencies.

- Issue timely notifications to responding agencies to assist.

- Follow procedures for security communications on site and off site.

- Continuously man the CAS, and ensure that at least one other location has at least two independent methods of communications to contact offsite LLEAs.

- Equip all on-duty ARs, ASOs, and watch persons with the capability to maintain continuous communications.

- Identify plant areas where communications may be interrupted or unavailable and ensure that these areas have alternative communication measures or are addressed by predetermined actions in plant procedures.

- Ensure that all personnel performing escorts (personnel or vehicles) have the capability to maintain timely communications.

In PSP Section 16.2, the COL applicant described the operational requirements for establishing and maintaining security communication for security response. The communication systems included hard-wired and alternative communication systems for performing intended security functions, and security personnel are supplied with communication equipment for maintaining continuous communications with the CAS and SAS. All personnel and vehicles are equipped with communications equipment to ensure the capability of continuous communications. Continuous communications are available among the CAS, SAS, and MCR, in accordance with regulatory requirements. The COL applicant indicated that the detailed security communications protocols will be described in implementing procedures.

CCNPP Unit 3 Security Assessment, Appendix D.12 contained the design descriptions of the security communication systems. It included the design and performance requirements for security communication functions, systems components, power supplies, and system redundancies for security communications. CCNPP Unit 3 Security Assessment, Figure D.12-1 provided a design of the security communication systems that implements the detailed design.

The staff finds the following:

- The COL applicant's design of the communication systems adequately addresses the prescriptive design and operational requirements specified in 10 CFR 73.55(j)(1) through 10 CFR 73.55(j)(6). The design provided communication capabilities required for security responses, including initiating assessment, coordinating security responses to alarms and intrusions, summoning offsite assistance, and ensuring command and control of security contingency response.

- The design and operational requirements for communications, as described, are redundant, diverse, and independent to ensure the availability of a means of communication and required systems and equipment to perform security functions.

- The COL applicant adequately described how it will meet the requirements of 10 CFR 73.55(j)(1) through 10 CFR 73.55(j)(6) for CCNPP Unit 3 and satisfied the requirements of 10 CFR 73.55(b) for a physical protection system that, in part, includes a high assurance of communication capabilities for implementing a security response for the protection against the DBT for radiological sabotage.

13.6.4.1.18 Security Program Reviews, Evaluations, and Audits

The COL applicant described the operational requirements for conducting reviews, evaluations, and audits of the physical protection program to meet the requirements of 10 CFR 73.55(m) in PSP Section 17, "Review, Evaluation and Audit of the Physical Security Program." The description of operational requirements and the management system for reviews, evaluations, and audits included the following:

- Each element of the CCNPP Unit 3 physical protection program is reviewed at a minimum frequency of 24 months, with the initial review of each element within 12 months of original implementation, or when a change in personnel, procedures, equipment, or facilities occurs that could have a potentially adverse effect on security.

- Reviews are conducted as necessary based on site-specific analysis assessments or other performance indicators.

- Individuals independent of the security program conduct the reviews.

- The scope of the review includes security plans, implementing procedures, and local law enforcement agreements or commitments.

- Results of reviews are presented to senior management above the level of the security manager and findings must be entered in the site CAP.

- The COL applicant indicated that program review included, at a minimum, audits of the effectiveness of the physical protection program; cyber security plans; implementing procedures; safety/security interface activities; the testing, maintenance, and calibration program; and response commitments by local, State, and Federal law enforcement authorities.

- The results and recommendations of the physical protection program reviews and findings on whether the physical protection program is currently effective and any actions taken as a result of recommendations from prior program reviews are documented in a report to plant management and to appropriate corporate management at least one level higher than that having responsibility for the day-to-day plant operation. The COL applicant indicated that these reports are maintained in an auditable form and kept for inspection.

The staff finds the following:

- The COL applicant adequately described operational requirements and the management system for the performance of program reviews, evaluations, and audits, including frequencies and the process for correcting identified deficiencies or issues, to ensure independent review of the effectiveness of the CCNPP Unit 3 physical protection program.

- The COL applicant meets the prescriptive requirements of 10 CFR 73.55(m) that the licensee conduct reviews, evaluations, and audits to ensure the effectiveness of the CCNPP Unit 3 physical protection program in meeting regulatory requirements and achieving the high assurance objectives of protection against the DBT.

13.6.4.1.19 Response Requirements

The regulations in 10 CFR 73.55(k) require the establishment and maintenance of a properly trained, qualified, and equipped security force to interdict and neutralize threats up to and including the DBT defined in 10 CFR 73.1, "Purpose and Scope," to prevent significant core damage and spent fuel sabotage.

In PSP Section 18, "Response Requirements," the COL applicant indicated that the security response to threats consists of an integrated response organization (both on site and off site) as outlined in the SCP. An armed response team is established and maintained, as described in the PSP and the CCNPP Unit 3 Security Assessment, and includes the use of engineered PSS and trained, qualified, and equipped individuals to interdict and neutralize threats up to and including the DBT defined in 10 CFR 73.1. The PSP, along with the T&QP, described the responsibilities, training, equipment, and minimum required numbers of security responders available at all times to implement the physical protection system as designed to achieve the objective of high assurance of protection against the DBT. In PSP Section 18, the COL applicant described operational requirements for security response that included establishing and maintaining a threat warning system that specifies protective measures and actions to be taken in response to a heightened security threat. Also, the COL applicant identified the operational requirements for establishing implementing plant procedures that detail the operational requirements for security contingency response and the threat warning system.

The CCNPP Unit 3 Security Assessment described the COL applicant's licensing basis for how the design of the physical protection system will provide an integrated engineered PSS and administrative controls (i.e., security responders) for the security responses necessary to protect CCNPP Unit 3 against the DBT. In the CCNPP Unit 3 Security Assessment, the COL applicant presented the following information on the design and license bases for the physical protection system to achieve the performance objectives stated in 10 CFR 73.55(b)(2) through 10 CFR 73.55(b)(4). This information includes how the COL applicant plans to meet prescriptive design and operational requirements:

- CCNPP Unit 3 Security Assessment, Section 4, "Physical Security Design Features," described the design bases for the engineered PSS, features, and configurations credited to provide detection, assessments, communications, delays, and response to threats up to and including the DBT. The systems and design features described include the PA boundary, VBS, IDS, external and internal surveillance systems, exterior and VA walls, interior and exterior doors, access controls, BREs, security lighting, power supplies, security computers, alarm stations, communication systems, and internal delay features that are relied on to initiate and ensure reliability and availability of a physical protection system to perform intended security response functions (i.e., to interdict and neutralize threats).

- In CCNPP Unit 3 Security Assessment, Section 5, "Threat Evaluations," the COL applicant described the evaluations of threats that included vehicle and waterborne bombs, insider threats, and engagement zones. The COL applicant evaluated and established required protection against explosive threats based on the assumptions of three times the TNT equivalent explosive quantities of the DBT as its licensing basis for protection of CCNPP Unit 3. CCNPP Unit 3 Security Assessment, Figure 5.1-1, "Equipment Provided with Blast Protection," depicted the vital island and structures that are evaluated in developing blast protection. CCNPP Unit 3 Security Assessment,

Figure 5.1-2, “Equipment Standoff Distance Design Basis with Additional Margin—(intentionally not stated because of security-related information) Pound Vehicle Bomb,” depicted the minimum required safe standoff distance for protection of the vital island and structures. The results of the evaluations demonstrated the protection of ARs (i.e., located at BREs) with required minimum safe standoff distance against the explosive effects of a DBT vehicle bomb, coordinated attack. In CCNPP Unit 3 Security Assessment, Section 5.3, “Insider Threat,” the COL applicant considered potential threats based on assumptions of a violent active insider with overt attack and an active insider with the intent to disable multiple trains of a system providing critical safety functions. This section also described the integration of access and physical control measures to mitigate insider threats. CCNPP Unit 3 Security Assessment, Section 5.5, “Engagement Zones,” established the licensing basis for the sufficient time necessary for security response based on time of detection of intrusion at the PA and time to travel to the exterior of the nuclear island and structures. CCNPP Unit 3 Security Assessment, Figure 5.5-1, “Engagement Zone,” established the perimeter areas within the PA that are designed with a specific time that credits distance and delay barriers that must be overcome by DBT adversaries to access the nuclear island and structure, to allow for the required time to initiate a security response; to perform tasks, such as assessment and acquiring targets; and to interdict and neutralize threats.

- CCNPP Unit 3 Security Assessment, Section 6, “Security Effectiveness,” described the following key subjects for the physical protection of CCNPP Unit 3: analysis of target sets, including the identification and development process; vulnerability analysis; evaluation of defensive strategy; external defensive strategy; internal defensive strategy; and evaluation of combined internal and external strategy. The COL applicant described the process used to identify target sets and the results (i.e., what must be protected). The staff’s review of target sets has been previously discussed in this report. The COL applicant considered, analyzed, and evaluated the adversarial characteristics of the DBT in accordance with RG 5.69 and postulated bounding physical assault scenarios. CCNPP Unit 3 Security Assessment, Section 6.3, “Evaluation of Defensive Strategy Under Simulated Attacks,” described the selection of pathways, available security responders, and technical assumptions for the postulated bounding DBT attack scenarios. The key assumptions included the required response times, including the consideration of the time required to initiate response for pre-positioned security responders in designated BREs (e.g., alert, position, target acquisitions) and the deployment of security responders to defensive positions. CCNPP Unit 3 Security Assessment, Table 6.3-1, “Defensive Personnel,” establishes the number of responders, including their location and functions, available for responding to threats.

- In CCNPP Unit 3 Security Assessment, Section 6.4, “External Strategy,” the COL applicant described the evaluation and resulting external defensive strategy for protection of the areas within the PA between the PA boundary and the exterior of the vital island and structures. The COL applicant also considered and described twenty-three postulated security scenarios. CCNPP Unit 3 Security Assessment, Figure 6.4-1, “Scenarios Utilizing Red and Blue Point Entry,” and Figure 6.4.-2, “Scenarios Utilizing Green Points of Entry and Exterior Only Scenarios,” provided an overview of bounding physical attack scenarios. The remaining scenarios considered threats or exploitation of the physical protection system by means of waterborne transport, waterborne vehicle bomb, theft of spent fuel, standalone vehicle bombs, insider, deceit, unattended opening, and badging process. CCNPP Unit 3 Security

Assessment, Section 6.4.4, “Comparison of Standard NRC Scenarios to EPR Scenarios,” compared the completed scenarios with staff guidance on the minimum types of scenarios that should be considered in evaluations and analyses. The design of multiple fighting positions is configured to cover all portions of the plant areas, as analyzed and shown in CCNPP Unit 3 Security Assessment, Figure 6.4-3, “External Defensive Positions, Normal Defender Placement and Potential Relocations.” CCNPP Unit 3 Security Assessment, Figures 6.4-4, 6.4-7, 6.4-10, and 6.4-13, all titled “Repositioned Defender Placement,” showed the repositioning of security responders for postulated bounding physical assault scenarios. The “Depth of Coverage” and “Cumulative Probability of Kills” in these figures established the defense in depth for the overlapping fields of fire that ensure that a single failure (i.e., unavailability of a security responder) will not result in an exterior area or portion of the nuclear island and structures of the plant being unprotected by security responders. CCNPP Unit 3 Security Assessment, Figures 6.4-5, 6.4-6, 6.5-8, 6.4-9, 6.4-11, 6.4-12, 6.4-14, and 6.4-15 depicted the COL applicant’s evaluations and analysis. The COL applicant provided additional details related to evaluation, analysis, and design of the physical protection system. These details, given in CCNPP Unit 3 Security Assessment, Appendix B, “Exterior Defensive Strategy and Analysis,” addressed the reliability and availability of the security response required for the exterior area of the nuclear island and structures to defend against the DBT.

- In CCNPP Unit 3 Security Assessment, Section 6.5, “Internal Defensive Strategy,” the COL applicant described assumptions, interior defensive protective strategy (i.e., security response), and internal relocation times, to demonstrate how the COL applicant plans to achieve the high assurance objective for interdiction and neutralization of postulated adversaries who access the vital island and structures through mechanical and explosive breaching of walls, doors, and penetrations. The internal defensive strategy is based on layered protection within the nuclear island and structures that takes advantage of the design of the U.S. EPR standard plant. The standard plant provided spatial separations and redundancies of four sets of reactor safety trains, and limited access points and passageways into and between buildings, which allowed the COL applicant to apply layered protection of areas within the nuclear island and structures (i.e., concept of vital islands and structures). CCNPP Unit 3 Security Assessment, Section 6.5.2 described the number of security responders and assumptions for deployment and relocations, and the reliance on engineered PSS (e.g., fixed and deployable defensive positions, mall gates, and hardened doors, as incorporated by reference for the U.S. EPR standard design) required for implementing the internal defensive security response. The COL applicant indicated that, similar to the external security response, the interior defensive protective strategy is to contain adversaries to an area and to interdict and neutralize adversaries before they reach or complete tasks to disable safety functions for a complete target set. The COL applicant also described the bounding assumptions for adversary task times and security response times, and documented the available margin for initial and redeployment of security responders for implementing the internal defensive strategy. The COL applicant provided additional details related to evaluation, analysis, and design of a physical protection system for the required external defensive protective strategy to protect against the DBT in CCNPP Unit 3 Security Assessment, Appendix C. CCNPP Unit 3 Security Assessment, Figures C.6-1, “RED Zone Pathways and Intercept Points,” C.7-1, “BLUE Zone, Pathways and Intercept Points,” and C.8-1, “GREEN Zone, Pathways and Intercept Points,” illustrated the physical pathway connections available between the

vital island and structures, the defensive positions that protect pathways to allow security responders to interpose between areas containing target set equipment, and security responders to relocate for implementing the interior defensive protective strategy.

In addition, the COL applicant stated the following in the CCNPP Unit 3 Security Assessment for establishing security responses to achieve the functions of interdiction and neutralization:

- Section 6.4.5, "Results of External Evaluation (Scenarios 1–12)," summarized the results as follows: "the external defensive strategy alone is sufficient to provide high assurance in 10 of twelve scenarios; External defensive strategy combined with internal defensive strategy as explained in Appendix C is sufficient to provide high assurance in the remaining two scenarios."

- Section 6.5.3, "Results of Interior Evaluation," summarized the results as follows: "Interior defensive strategy as explained in Appendix C is sufficient to provide high assurance in the scenarios where adversaries are anticipated in the Vital Areas; In all cases, the time for adversaries to breach and enter the structure is longer than the interior relocation times for the defenders; Analysis indicates that there is no pathway that gives the adversaries numerical and tactical advantage over the defenders. This results in high assurance that defenders will be in position to intercept and neutralize adversaries upon entry into the vital areas."

- In Section 6.6, "Evaluation Combined Internal Plus External Strategy," the COL applicant indicated that "[t]he analysis demonstrates that by providing diversified and redundant vital equipment, hardened structures, providing internal delay and detection features, by forcing intruders to perform multiple tasks in order to breach the vital area, and by providing responders with harden defensive positions in which to engage intruders, the Calvert Cliffs Nuclear Power Plant Unit 3 security design and response force actions are sufficient to prevent to radiological sabotage." The COL applicant further stated that "[t]herefore, the physical protection plan is considered to meet the performance objective of 10 CFR Part 73 by providing a high level of assurance of protection against radiological sabotage."

- The COL applicant's operational requirements for trained, qualified, and properly equipped security responders to pre-deploy or deploy to engineered defensive positions provide the integration of engineered and operational requirements to establish the defense in depth for the capabilities to perform key security response functions required for interdiction and neutralization. The COL applicant plans to train qualified security personnel in accordance with the requirements of 10 CFR Part 73, Appendix B, to ensure adequate implementation of the operational response requirements. Also, in the SCP, the COL applicant described the operational requirements for implementing security response in accordance with the requirements of 10 CFR Part 73, Appendix C for security contingency. The operational requirements included establishing detailed plant procedures for implementing security responses on site and for requests for offsite assistance that include reconstituting the armed response personnel and LLEA through pre-established agreements (i.e., a memorandum of agreement or understanding).

The staff finds the following:

- In PSP Section 18, the COL applicant established operational requirements for meeting performance and prescriptive regulatory requirements. Specifically, the COL applicant established, along with descriptions of security responses in the CCNPP Unit 3 Security Assessment, the minimum number of required onsite security responders that must be available at all times to implement the component of a physical protection system for security response to achieve interdiction and neutralization threats up to and including the DBT.

- In PSP Section 2, the COL applicant established as its objective to provide high assurance of the security of activities involving SNM such that they are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety, thereby meeting the requirement of 10 CFR 73.55(b)(1) and 10 CFR 73.55(b)(2).

- The physical protection system, as described, has integrated engineered PSS and operational requirements to establish the capabilities to detect, assess, communicate, interdict, and neutralize threats up to and including the DBT. The COL applicant provided a physical protection system for achieving the objective of high assurance. The COL applicant addressed defense in depth of protection through providing redundancies, diversity, and independence of engineered PSS and operational requirements to detect, assess, communicate, interdict, and neutralize threats. The COL applicant established layered protection (i.e., external and internal of the nuclear island and structures) to interdict and neutralize DBT adversaries exterior and interior to CCNPP Unit 3 areas, as described in the CCNPP Unit 3 Security Assessment, thereby achieving a denial of access to the nuclear island and structures and to target sets, through the security responses with the capabilities to interdict and neutralize adversaries performing or completing tasks that could lead to core damage and spent fuel sabotage.

- The COL applicant adequately described in the PSP and the CCNPP Unit 3 Security Assessments how it will meet the requirement of 10 CFR 73.55(k), including operational requirements that establish and maintain a properly trained, qualified, and equipped security force to interdict and neutralize threats up to and including the DBT.

13.6.4.1.20 Maintenance, Testing, and Calibration

The COL applicant described the operational requirements and management system for meeting the requirements of 10 CFR 73.55(n) in PSP Section 20, “Maintenance, Testing, and Calibration.” The COL applicant described the following for the maintenance, testing, and calibration (MT&C) of engineered PSS, including secondary power supply and UPS, relied on to protect CCNPP Unit 3:

- Plant procedures for conducting MT&C required for systems operability and performance

- Systems and equipment that are excluded because of safety hazards or radiation restrictions, and the conduct of MT&C

- Trained and qualified personnel

- Records and retention of results and conduct of MT&C

- Procedures for documenting findings, problems, and deficiencies in accordance with the CCNPP Unit 3 CAP

In PSP Section 20.1, "Intrusion Detection and Access Control Equipment," the COL applicant described the MT&C for IDS and access control systems and components. The frequencies for testing of the systems and components are identified as a minimum of at least once every 7 days and before returning to service after repair or being inoperative. The IDS is tested in accordance with RG 5.44, Section C.3, "Recommended Testing Procedures," based on Testing Options I and II. RG 5.44 includes guidance for types of perimeter intrusion alarm systems and testing that provides acceptable approaches for meeting regulatory requirements. The testing requirements are to be captured in plant procedures for conducting MT&C. PSP Section 21, "Compensatory Measures," described the compensatory measures for inoperable or unavailable physical protection system.

In PSP Section 20.2, "Search Equipment," the COL applicant described the operational requirements for the MT&C for systems that are credited for searching persons, vehicles, and material. The MT&C of engineered security systems include equipment such as x-rays, metal detectors, explosive detectors, or other systems relied on to perform search functions. The COL applicant indicated that the calibration required for systems and equipment that are relied on for searches will be established and performed in accordance with manufacturer specifications and plant standards. Plant procedures will establish and control the detailed implementation requirements for operations and maintenance of search equipment.

The COL applicant described the MT&C requirements applicable to communication systems and equipment, in accordance with 10 CFR 73.55((n)(5), which includes a frequency of testing of not less than once during each security work shift. The MT&C requirement includes all communications systems and equipment relied on for communications between the CAS and SAS and security personnel identified in the PSP. In addition, systems and equipment for primary and backup communications between the CAS and SAS and the MCR and offsite LEAs are tested not less than once each day, along with MT&C required to maintain assurance that systems and equipment are operable.

The staff finds the following:

- The COL applicant adequately described a management system for the MT&C of physical protection systems (e.g., IDS, access control systems, secondary power supply and UPS, search equipment, communications equipment) to ensure operability for intended security functions. The management system includes the use of plant procedures to establish, maintain, and control operational requirements that include minimum frequencies and application of manufacturing requirements for MT&C and establishing and retaining records of the conduct and results of MT&C.

- The management system for MT&C adequately addresses how the physical protection system and features credited to provide capabilities and functions of a physical protection system are maintained, tested, and calibrated to ensure the operability, reliability, and availability of systems and components to protect CCNPP Unit 3. The system satisfies the requirements of 10 CFR 73.55(n).

13.6.4.1.21 Compensatory Measures

The COL applicant is required by 10 CFR 73.55(o) to establish criteria and controls appropriate to compensate for degradation or inoperability of physical protection systems and equipment relied on to protect CCNPP Unit 3. In PSP Section 21, the COL applicant described the following operational requirements for compensatory measures, including how they are established and what controls will be provided, to maintain an appropriate level of protection during corrective actions to recover from degradation or inoperability of physical protection systems:

- Apply compensatory measures for failure of access control, alarm, communications, assessment, and physical barrier systems.
- Assess and investigate to determine the nature of failure or degradation.
- Notify the occurrence of failure or degradation (i.e., CAS and SAS, Security Shift Supervisor, and all on-duty security personnel) to initiate corrective actions.
- Train and qualify security personnel providing compensatory measures to provide the equivalent level of protection.
- Establish criteria for circumstances and minimum times (intentionally not stated in this report) to implement equivalent compensatory measures for detection.

In the PSP, the COL applicant described the following criteria and standard requirements for compensatory measures:

- Section 21.1, “Protected Area Physical Barrier,” described the compensatory measures and minimum time for implementation of measures for monitoring and controlling access at the degraded barrier.
- Section 21.2, “Vital Area Barrier,” described operational requirements for compensating for degradation of VA barriers that provide security measures and controls for affected exterior VA barriers at ground level and other locations.
- Section 21.3, “Perimeter Intrusion Detection Alarm System,” described the operational requirements to compensate for failure or degradation of detection capabilities. The operational requirements include time criteria for implementing security measures to establish continuous detection capabilities using a combination of engineered and administrative controls for the affected area, thereby providing detection functions that would not decrease in effectiveness.
- Section 21.4, “PA Lighting,” described the operational requirements to compensate for the failure or degradation of minimum design illumination levels necessary for IDS alarm assessment or monitoring of the exterior of the VA and required times for implementing security measures. The COL applicant described security measures that include temporary lighting and increased security measures for overseeing the affected plant area.
- Section 21.5, “Vital Area Portal Alarms,” described the operational requirements for security measures for failure or degradation of VA access portal alarms and the required

times for implementing security measures. The COL applicant's descriptions of security measures include operational and engineered controls for increased monitoring and surveillance of affected areas and physical controls of affected VA access doors.

- Section 21.6, "Closed Circuit Television/Non-Fixed Camera System," and Section 21.7, "Play-Back/Recorded Video System," described the operational requirements to compensate for the failure or degradation of the capabilities of the plant security CCTV, non-fixed cameras, and video recording and playback systems and time to implement security measures. The compensatory measures included the use of available CCTV and non-fixed cameras to provide assessment, monitoring, or surveillance of affected administrative controls.

- Section 21.8, "Security Computer System," described the operational requirements for implementing compensatory measures to address the loss of security functions affecting perimeter IDSs, VA portals and barriers, CCTV, non-fixed camera systems for assessment, monitoring, or surveillance. The specific time criteria for implementing security measures are established, consistent with those previously described in Sections 2.14, 2.15, and 2.16.

- Section 21.9, "PA Controlled Device (i.e., Turnstile System)," described the operational requirements for implementing compensatory security measures for inoperable PA personnel access control devices, including physically securing the barrier system, use of another functioning access control system, and specific time criteria to provide an equivalent level of access controls.

- Section 2.10, "Vehicle Barrier System," described the operational requirements for implementing compensatory measures for the failure or degradation of the VBS to perform its intended functions because of planned or unplanned degradation of design capabilities and functions. The operational requirements described included a minimum time for implementing certain requirements after initial discovery and the provision of equivalent protection. The COL applicant also described a maximum time within which equivalent protection must be provided and maintenance of such capability.

- Section 2.12, "Other Security Equipment," indicated that equipment that is essential for effective implementation of the protective strategy but is not specifically included in the descriptions of operational requirements to compensate for failures or degradations of systems or functions in Sections 21.1 through 21.10 and 21.11, is compensated for by security measures that provide equivalent capabilities.

The staff finds the following:

- The COL applicant described operational requirements and a management system for compensatory measures that adequately address the prescriptive requirements in 10 CFR 73.55(o), to establish criteria and controls appropriate to compensate for degradation or inoperability of physical protection systems and equipment relied on to protect CCNPP Unit 3.

- In PSP Section 21 and its subsections, the COL applicant adequately described how compensatory measures will be established and what engineered and/or administrative or operational controls will be provided to maintain an equivalent level of protection

during corrective actions to recover from degradation or inoperability of physical protection systems.

- The COL applicant adequately described how it will meet the requirements of 10 CFR 73.55(o) for the physical protection of CCNPP Unit 3 and provided assurance that adequate compensatory measures will be established when a system degradation or inoperability is identified, thereby continuing to satisfy the regulatory requirements of 10 CFR 73.55.

13.6.4.1.22 Records

The COL applicant included the following operational requirements and management system to establish, maintain, and retain records to meet the requirements of 10 CFR 26.417; 10 CFR 73.55(q); 10 CFR 73.56(k) and (o); 10 CFR Part 73, Appendix B, Section VI.H, and 10 CFR Part 73, Appendix C, Section II.C; and 10 CFR 73.70:

- Records are legible, stored, and kept available for examination.
- Records include all pertinent information (e.g., signatures, initials, stamps).
- Computer-generated records include microfilm, discs, tapes, and other electronic media.
- Controls are established to safeguard against tampering and loss of records.
- Records are maintained for at least 3 years after the record is superseded.
- Records include the contracted security force relied on to implement the CCNPP Unit 3 physical protection program for the duration of the contract.

In the PSP, the COL applicant identified the following types of records to be established and maintained:

- Access authorization (Section 22.1)
- Suitability, physical, and psychological qualification personnel records (Section 22.2)
- PA and VA access records (Sections 22.3.1 through 22.3.3)
- VA access transactions (Section 22.3.3)
- Vitalization and devitalization (Section 22.3.4)
- VA access list (Section 22.3.5)
- Security patrols, inspections, and tests (Section 22.3.6)
- Maintenance (Section 22.3.7)
- CAS and SAS alarms, events, and communications (Section 22.3.8)
- Local law enforcement liaison

- Audits and reviews
- Access control devices
- Training and qualifications
- Firearms tests and maintenance
- Engineering analyses for VBS

The types of information for records include, as applicable, the following: Names, dates, and times; purposes of visits; employment affiliations; citizenships; individual visited; time and date of entry and exit; vehicle and driver identifications; access logs and card reader information; vitalization and devitalization; access authorization review list (including duration for reviews conducted); security patrols, inspections, and tests; maintenance of physical protection systems (e.g., IDS, access controls, barriers, lighting, communications); CAS and SAS alarms, trouble conditions, communications, and system information; local law enforcement response plans; independent reviews and audits; names with access to keys, combinations, and related-security devices for PA and VA access and lock change out or rotations; security personnel training and qualifications; testing and maintenance of firearms; and engineering analysis for design of VBS.

The staff finds the following:

- The COL applicant adequately described, as discussed above, how operational requirements and a management system are established to meet the requirements for establishing and maintaining records required for implementation of the CCNPP Unit 3 physical protection program.
- The COL applicant adequately described the licensing basis for how records are established, maintained, and retained to meet the operational and management controls requirements of 10 CFR 26.417; 10 CFR 73.55(q); 10 CFR 73.56(k) and 10 CFR 73.56(o); 10 CFR 73.70; 10 CFR Part 73, Appendix B, Section B.VI.H; and 10 CFR Part 73, Appendix C, Section II.C.

13.6.4.1.23 Digital Systems Security

In PSP Part 8, Section 23, the COL applicant stated that security digital systems are governed by operational requirements and a management system described in the CCNPP Unit 3 Cyber Security Plan, which addresses how the requirements of 10 CFR 73.54 will be met and maintained to protect digital systems against possible cyber threats. The COL applicant stated that cyber attacks were considered during the development and identification of target sets. The COL applicant submitted the Calvert Cliffs 3 Nuclear Power Plant, LLC, Cyber Security Plan in COLA Part 11L, and the staff's review of the Cyber Security Plan appears in Section 13.8 of this report.

13.6.4.1.24 Temporary Suspension of Security Measures

The COL applicant described the following operational requirements and management system for temporary suspension of security measures, in accordance with the requirements of 10 CFR 73.55(p), 10 CFR 50.54(x), and 10 CFR 50.54(y):

- The conditions for suspension and restoration are limited to emergency conditions, or are required for the protection of public health and safety, and no immediate apparent actions can provide adequate or equivalent protection. Measures are to be restored as soon as practical.

- The authority to suspend security measures is given to the CCNPP Unit 3 Emergency Director or designee with required approval from a licensed Senior Reactor Operator. Management controls for authority to initiate suspension of security measures in the event of the unavailability of two identified individuals are established based on criteria of knowledge of circumstance surrounding the emergency and/or immediate life-threatening situations.

- The temporary suspension of security measures must be reported in accordance with 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," which also fulfills reporting in accordance with 10 CFR 73.71, "Reporting of Safeguards Events" (i.e., the reporting is not duplicated).

The COL applicant described the following in PSP Section 24.2, "Suspension of Security Measures during Severe Weather or Other Hazardous Conditions":

- The conditions for suspensions are limited to circumstances of weather conditions that are imminent, severe, and hazardous to the health and safety of security personnel, and no other immediate apparent actions can provide adequate or equivalent protection. Measures are required to be restored as soon as practical.

- The Manager of Nuclear Security, or the Security Shift Supervisor with required approval from a licensed Senior Reactor Operator, has the authority to suspend security measures under severe weather.

- The reporting of the temporary suspension of security measures caused by weather is made to the NRC Operations Center, as soon as possible. The notification of the applicable NRC Regional Office and the notification of restoration of suspended security measures are made as soon as practical.

The staff finds the following:

- The COL applicant adequately described how operational requirements and management system are established for meeting the requirements for temporary suspension of security measures under unique circumstances for the implementation of the CCNPP Unit 3 physical protection program.

- The COL applicant adequately described the licensing basis for how temporary suspension of security measures is established and implemented to meet the operational and management control requirements of 10 CFR 73.55(p).

13.6.4.1.25 Special Situations Affecting Security

The COL applicant described operational requirements and management systems (i.e., controls) for security during expected refueling and major maintenance of reactor systems. In PSP Section 19.1, "Refueling/Major Maintenance," the COL applicant described the management controls and operational requirements for temporarily devitalizing VAs. VAs may

be devitalized either because the functional capabilities of equipment in the affected VA are provided by redundancy of vital equipment, or the functional capabilities are no longer required to maintain safe shutdown or spent fuel pool cooling, and the requirements of 10 CFR 50.65(a)(4) for assessment of risks are satisfied, thus ensuring adequate safety and security.

The COL applicant described how procedures will control the process and operational requirements for revitalizing a VA. The procedures included (1) conduct of the search of the affected VA by security, maintenance, and operations personnel looking for tampering, damaged equipment, improperly positioned valves, and other abnormal conditions; (2) verification of VA barrier integrity and access control features; and (3) conduct of the required operability tests of systems and equipment before revitalizing an area to be fully operational and checks on the readiness of equipment. These procedures are intended to meet the requirements of 10 CFR 73.55(n)(8).

The COL applicant considered security measures that may be needed during plant construction and maintenance activities that may affect physical protection systems (e.g., delay barriers, IDS, CCTV, lighting) and stated that, under such circumstances, security measures that provide an equivalent level of protection are implemented in accordance with plant procedures and management controls.

The staff finds the following:

- The COL applicant adequately described how operational requirements and management controls are established to address devitalizing and revitalizing VAs.

- The COL applicant adequately described the licensing basis for meeting the requirements of 10 CFR 73.55(n)(8).

13.6.4.1.26 Appendix A, Glossary of Terms and Acronyms

The definitions in PSP Appendix A, “Glossary of Terms and Acronyms,” conform to the industry guidance of NEI 03-12, Revision 6. The staff reviewed PSP Appendix A and finds it complies with the definitions of 10 CFR 73.2 and conforms to the guidance in RG 5.76.

13.6.4.1.27 Management of Safety/Security Interface

The regulation in 10 CFR 73.58 requires that each operating nuclear power reactor licensee with a license issued under 10 CFR Part 50 or 10 CFR Part 52 shall comply with and address management of the safety and security interface for the conduct of operations at a nuclear power plant. In COL FSAR Chapter 13.0, “Conduct of Operations,” Section 13.1.2.2.1.6, “Other Programmatic Reviews and Controls,” the COL applicant stated:

> Programmatic controls and processes (such as plant operations review committees, plant review boards, safety review committees, work planning and controls, corrective action and reporting programs, etc.) are established to assess and manage potential adverse safety and security issues and trends to ensure that emergent and planned operations or activities are identified, reviewed, approved, monitored, and documented as appropriate. These programmatic controls include reviews of proposed changes to the facility as described in the FSAR; reviews of violations, deviations, and reportable events;

> results of investigations; review of corrective actions; and reviews of audits to ensure that safety issues and issues involving physical protection, including the safety/security interface, will be appropriately addressed. ("Managing the Safety/Security Interface," RG 5.74, NRC, June 2009)

In RAI 189, Question 13.06-1, the staff requested that the COL applicant clarify how management systems are provided for meeting the requirements of 10 CFR 73.58 to manage the safety/security interface. In a March 23, 2010, response to RAI 189, Question 13.06-1, the COL applicant further clarified that the new FSAR section "allows a more broad application of the new requirements of 10 CFR 73.58 rather than relying on the Independent Review Committee (IRC) alone to carry the responsibility for the safety/security interface, which will involve many plant organizations." In addition, the COL applicant stated:

> FSAR Section 13.1.2.2.1.6 will ensure that committees established to perform safety reviews will also consider physical security concerns for activities that include but are not limited to: reviews of corrective action program, investigations and corrective actions, reporting programs, work planning and controls, engineering design, configuration management, review and audit programs, project management, and maintenance activities programs.
> A reference to Regulatory Guide 5.74 is also added to FSAR Section 13.1.4.

RG 5.74 describes a method or approach acceptable for assessing and managing changes to safety and security activities so as to prevent or mitigate potential adverse effects that could negatively impact either plant safety or security. RG 5.74 provides guidance for addressing the requirements of 10 CFR 73.58(b) and 10 CFR 73.58(c), which states that a licensee must review planned and emergent changes and activities to identify any potential adverse impact of these changes or activities on safety and security before implementation, and that requires the establishment of controls and processes for managing the interface between safety and security

In CCNPP Unit 3 Security Assessment, Section D.8, "Conceptual Design—Security Lighting," the COL applicant specifically stated:

> The U.S. EPR plant's capability to manage safety/security interface is consistent with Regulatory Guide 5.74, 'Managing the Safety/Security Interface.' The safety and security program activities are managed such that there is no adverse impact on the safety and security activities should plant changes (planned or unplanned) affect the security lighting equipment. Plant processes and procedures provide for effective communications between the operations, emergency planning and security staffs should the security lighting system be actuated inadvertently or intentionally, or fail.

The staff finds the following:

- The COL applicant described the management controls (i.e., the plant's conduct of operations and infrastructure systems and processes that will be applied and relied on) for managing the safety/security interface for the CCNPP Unit 3 plan which will be performed during the conduct of operations. The proposed management controls conform to those described in RG 5.76.

- The COL applicant adequately described the licensing basis for how it plans to meet the requirements for managing the safety/security interface of 10 CFR 73.58.

13.6.4.1.28 Summary of the Physical Security Plan Review

The staff concludes that the COL applicant met the requirements of Subpart C of 10 CFR Part 52, 10 CFR 52.79(a)(35)(i), 10 CFR 52.79(a)(35)(ii), and 10 CFR 52.79(a)(35)(iv), which require that information submitted for a COL include a description of how the COL applicant will meet the requirements of 10 CFR Part 73 and a description of the implementation of the PSP.

As described in Sections 13.6.4.1.1 through 13.6.4.1.2 of this report, the staff finds that the COL applicant adequately described in COL FSAR Chapter 13.6, Part 8 (PSP), the referenced CCNPP Unit 3 Security Assessment, the U.S. EPR FSAR, and AREVA TR ANP-10295) how it will meet the performance and prescriptive requirements of 10 CFR Part 73 for the license of a nuclear power reactor. Specifically, the COL applicant described the licensing basis that integrates the design of engineered physical security system, operational requirements, and management systems for a physical protection program required for the adequate protection of CCNPP Unit 3. The staff also finds that the COL applicant descriptions and information on CCNPP Unit 3 physical protection program, submitted on the docket, conform to acceptance criteria in NUREG-0800, Section 13.6.1, and are therefore acceptable.

The staff finds that if the facility is adequately designed, constructed, installed, maintained, and implemented as described, then the PSP and the referenced CCNPP Unit 3 Security Assessment and AREVA TR ANP-10295 satisfy the requirement for achieving the objective of high assurance for protection of CCNPP Unit 3 against threats, including the DBT for radiological sabotage, and that activities involving SNM are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety.

The staff concludes that the COL applicant has met applicable standards and requirements of 10 CFR Part 73 and NRC regulations, and there is reasonable assurance that the facility will be constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act of 1954, as amended, and NRC regulations. The staff concludes that the issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

13.6.4.2 *Appendix B, Training and Qualification Plan*

13.6.4.2.1 Introduction

CCNPP Unit 3 COLA Part 8 includes the TQ&P, which describes how the COL applicant will meet, maintain, and implement the requirements, standards, and criteria set forth in 10 CFR Part 73, Appendix B and 10 CFR 73.55(c)(4). In 10 CFR 52.79(a)(35)(i) and 10 CFR 52.79(a)(35)(ii), Subpart B, “Standard Design Certifications,” require that information submitted for a COL include how the COL applicant will meet the requirements of 10 CFR Part 73 and describe the implementation of the PSP. In the introduction, 10 CFR Part 73, Appendix B states, “applicants and power reactor licensees subject to the requirement of § 73.55 shall comply only with the requirements of section VI of this appendix.”

In CCNPP Unit 3 COLA Part 8, the COL applicant submitted a T&QP that describes how operational requirements and a management system (controls, processes, and procedures) are established to meet the requirements of 10 CFR Part 73, Appendix B and maintained a plan that describes security personnel training and qualifications to perform assigned security duties. The COL applicant indicated that the objective of the T&QP is to ensure that members of the

security organization, and all others who have duties and responsibilities in implementing the operational security requirements to protect the nuclear facility, are properly selected, trained, equipped, tested, and qualified. The COL applicant indicated that the training and qualification program simulates, as closely as practicable, the specific conditions under which the individual is required to perform assigned duties and responsibilities, no individuals may perform any security function or return to security duty until that individual satisfies the training and qualification requirements, and deficiencies identified during the administration of T&QP requirements are documented in the site's CAP, consistent with site procedures.

The COL applicant's licensing basis, along with the design bases for the engineered physical security system, for the capabilities of security personnel credited to perform security functions to achieve the objective of high assurance of protection of CCNPP Unit 3 against the threat up to and including the DBT for radiological sabotage, is described in COL FSAR Chapter 13.6, "Physical Security"; PSP Part 8; the CCNPP Unit 3 Security Assessment; the U.S. EPR FSAR; and AREVA TR ANP-10295.

13.6.4.2.2 General Requirement, Employment Suitability and Qualification

The COL applicant described how it will meet the requirements for employment suitability and qualification criteria of 10 CFR Part 73, Section VI(A) through VI(B). In T&QP Section 1, "Introduction," the COL applicant stated, "[t]he objective of the plan is to provide a mechanism to ensure that members of the security organization can be trained, equipped, and qualified to assure that they will perform their duties and carryout responsibilities in the most efficient and effective manner. The training and qualification program simulates, as closely as practicable, the specific conditions under which the individual is required to perform assigned duties and responsibilities." The COL applicant also stated, "[n]o individuals may perform any security function, assume any security duties or responsibilities, or return to security duty, until that individual satisfies the training and qualification requirements in this plan…." The COL applicant indicated that deficiencies identified during the administration of the training and qualification program are included in the site's CAP and procedures.

The COL applicant described the following operational requirements and management system (i.e., management controls or processes) for meeting and implementing prescriptive requirements for suitability for employment, and physical and psychological qualifications for proprietary or contract security personnel:

Suitability: In T&QP Section 2.1, "Employment Suitability and Qualification," the COL applicant described the prerequisites for suitability and qualification for employment, in accordance with the prescriptive requirements in 10 CFR Part 73, Appendix B, Section VI.B.1(a) and 10 CFR Part 73, Appendix B, Section VI.B.1.(b). The operational requirements and management controls include (1) the prerequisites for minimum education, (2) restrictions of convicted felons (i.e., have no felony convictions that involve a weapon or that reflect on the individual's trustworthiness or reliability), (3) an individual in armed capacity is not disqualified from possessing or using firearms or ammunition in accordance with applicable State and Federal law (to include 18 U.S. Code (U.S.C.) 922, "Unlawful Acts"), and (4) minimum age requirements. In T&QP Section 2.6, "Documentation," the COL applicant indicated operational requirements and a management system that establish records for the qualification of each individual to perform assigned duties by a qualified training instructor and approval of the qualification by a security supervisor (i.e., the supervisor must attest to the individual's qualification), in accordance with the requirement of 10 CFR Part 73, Appendix B,

Section VI.B.1(b). The records for training and qualifications are managed and retained as described in PSP Section 22, "Records."

Physical Qualifications: In T&QP Section 2.2, "Physical Qualifications," the COL applicant stated, "[i]ndividuals whose duties and responsibilities are directly associated with the effective implementation of the Commission-approved security plans, licensee protective strategy, and implementing procedures, may not have any physical condition that would adversely affect their performance of assigned security duties and responsibilities." All individuals who are assigned security positions in T&QP Table 1, "Critical Task Matrix," are required to pass physical examinations and meet physical requirements (e.g., vision, hearing, medical conditions, addiction, others) to demonstrate the necessary physical qualifications before the assignment of duties.

In T&QP Section 2.3, "Physical Examination," the COL applicant described the operational requirements and management system for conducting physical examinations for armed and unarmed individuals assigned security duties. In addition, the required physical examination is limited to physical attributes necessary to perform the specific security functions of other individuals not assigned to the security organization, but who perform security assignments (e.g., watchman-type duties, material searches, vehicle escort duties, and others that implement the physical protection program). The specific criteria or standards for physical examination for vision, hearing, existing medical conditions, addiction, and other physical requirements are described in T&QP Section 2.3 and included those specified in 10 CFR Part 73, Appendix B, Section VI.B.2(a) through 10 CFR Part 73, Appendix B, Section VI.B.2(f). The COL applicant stated, "[p]hysical examinations are administered by a licensed health professional with the final determination made by a licensed physician to verify the individual's physical capacity to perform assigned duties and responsibilities."

Psychological Qualifications: In T&QP Section 2.5.1, "General Psychological Qualification," the COL applicant stated:

> [i]ndividuals whose security tasks and jobs are directly associated with the effective implementation of the security plan and protective strategy shall demonstrate mental alertness and the capability to exercise good judgment, implement instructions, assimilate assigned security tasks, and possess the acuity of senses and ability of expression sufficient to permit accurate communication by written, spoken, audible, visible, or other signals required by assigned job duties.

The criteria and standard described include those specified in 10 CFR Part 73, Appendix B, Section VI.B.3(a). The COL applicant indicated that operational requirements for psychological qualifications are applicable to all individuals whose security tasks and jobs are directly associated with the implementation of the security plan and protective strategy.

T&QP Section 2.5.2, "Professional Psychological Examination," establishes the management system for professional psychological examination. It requires that "[a] licensed psychologist, psychiatrist, or physician trained in part to identify emotional instability determines that armed members of the security organization and alarm station operators have no emotional instability that would interfere with the effectiveness performance of assigned duties and responsibilities." Similarly, a person professionally trained to identify emotional instability is required to determine whether an unarmed individual has emotional instability that would interfere with the effective performance of assigned duties and responsibilities.

Medical Examinations and Physical Fitness Qualifications: T&QP Section 2.4, "Medical Examinations and Physical Fitness Qualifications," requires that armed members of the security organization be subject to a medical examination to determine the individual's fitness to participate in physical fitness tests, with written certification from the licensed physician that no medical conditions were disclosed in the examination that would preclude an individual's ability to participate in the fitness test or meet the physical fitness attributes or objectives of their assigned duties. The COL applicant indicated that before assignment, armed members of the security organization demonstrate physical fitness for assigned duties by performing a practical physical fitness test that considers conditions such as strenuous activity, physical exertion, levels of stress, and exposure to environmental conditions. The COL applicant described the physical fitness test and included examples of test performance objectives (e.g., strength, endurance, agility), in accordance with prescriptive requirements in 10 CFR Part 73 Appendix B, Section VI.B.4(a) and 10 CFR Part 73 Appendix B, Section VI.B.4(b). In T&QP Section 2.6, "Documentation," the COL applicant established the operational requirements that the individual's qualification be recorded by a qualified training instructor and retained records be based on personal observations, input from other qualified training organization personnel, and medical, psychological, or other qualified professionals.

Physical Requalification: In T&QP Section 2.7, "Physical Requalification," the COL applicant required, at a minimum, the requalification of security personnel (armed and unarmed) to demonstrate the capability to meet physical requirements. The required frequency for physical requalification is at least annually. Requalifications are documented by a qualified training instructor and attested to by a security supervisor, in accordance with requirements of 10 CFR Part 73, Appendix B, Section VI.B.5.

The staff finds the following:

- The COL applicant adequately described the operational requirements and management system to establish general requirements for training and qualification, specific suitability criteria for employment or assignment to the security organization (i.e., education, criminal background, and age), and documentation. These requirements and controls are in accordance with prescriptive requirements in 10 CFR Part 73, Appendix B, Section VI.A, 10 CFR Part 73, Appendix B, Section VI.B(1)(a), and 10 CFR Part 73, Appendix B, Section VI.B(1)b).

- The COL applicant adequately described the operational requirements and management system for physical qualifications (vision, hearing, existing medical conditions, addictions, other physical requirements), psychological qualifications, medical examinations, and physical fitness qualifications that apply to members of the security organization, as prescribed in 10 CFR Part 73, Appendix B, Section VI.B(2) through 10 CFR Part 73, Appendix B, Section VI.B(4). The operational requirements and management system included the qualifications of individuals conducting physical and psychological examinations, the determination, and the documentation required for assurance that individuals are medically and physically fit to perform assigned duties as members of the CCNPP Unit 3 security organization. In addition, the COL applicant adequately described how it will meet the prescriptive requirements of 10 CFR Part 73, Appendix B, Section VI.B.5 for the physical requalification of armed and unarmed security personnel.

- The operational requirements and management system adequately address how the COL applicant plans to provide assurance of the suitability, the physical and psychological qualifications, the conduct of medical examinations and physical fitness for qualification, and the physical requalification requirement for members of the security organization who are relied on to perform security duties and implement responsibilities for the protection of CCNPP Unit 3. The COL applicant's requirements and management system meet the prescriptive training and qualification requirements specified in 10 CFR Part 73, Appendix B, Section VI.A through 10 CFR Part 73, Appendix B, Section VI.B. The operational requirements and management system conform to guidance provided in RG 5.75 and NUREG-0800, Section 13.6.1.

13.6.4.2.3 Individual Training and Qualification

In T&QP Section 3, "Individual Training and Qualification," the COL applicant stated, "[a] performance based training program is used based on Systematic Approach to Training (SAT) methodology provided in RG 5.75, "Training and Qualification of Security Personnel at Nuclear Power Reactor Facilities." The COL applicant described the following elements for meeting the requirements for duty training, on-the job-training, and the performance evaluation program:

- Duty Training: T&QP Section 3.1, "Duty Training," establishes operational requirements for all personnel who are assigned security-related duties. Individuals must be trained and qualified to perform assigned duties and responsibilities to ensure that each individual possesses the minimum knowledge, skills, and abilities required to effectively carry out those assigned duties and responsibilities. These include knowledge, skills, and abilities identified in the T&QP, which establishes the minimum critical tasks in Table 1, "Critical Tasks Matrix." The operational requirements described include training of each individual before assignment of duties and responsibilities for implementing security plans. The operational requirements also include the training and qualifications on the use of all equipment or devices required to effectively perform all assigned duties and responsibilities.

- On-the-Job Training: In T&QP Section 3.2, "On-The-Job Training," the COL applicant stated that the performance standards and criteria of on-the-job training ensure that each individual demonstrates the knowledge, skills, and abilities needed to effectively carry out assigned duties. Before individuals are assigned contingency duties, they are required to complete a minimum of 40 hours of on-the-job training. The on-the-job training is documented by a qualified training instructor and attested to by a security supervisor. The on-the-job training for contingency response, activities, and drills includes hands-on application of knowledge, skills, and abilities related to (1) response team duties, (2) use of force, (3) tactical movement, (4) cover and concealment, (5) defensive positions, (6) fields of fire, (7) redeployment, (8) communications (primary and alternate), (9) use of assigned equipment, (10) target sets, (11) tabletop drills, (12) command and control duties, and (13) licensee protective strategy, as specified in 10 CFR Part 73, Appendix B, Section VI.C(2)(c)(1) through VI.C(2)(c)(13).

- Critical Task Matrix: In T&QP Table 1, the COL applicant provided a critical matrix that addresses the means through which each individual who is required to perform security-related duties within the security organization will demonstrate the critical tasks applicable to their duty position. The critical matrix includes the following positions:

Watchperson, ASO, AR, Alarm Security Operator, Response Team Leader, and Security Shift Supervisors. The matrix specifies tasks consisting of critical administrative tasks; visitor access control; control of personnel entering the PA and VAs; personnel, material, and vehicle searches; escort; security patrols; communication systems; perimeter security; testing of IDSs; compensatory measures; area searches; response to PA and VA alarms; use of force; CAS and SAS functions; operating surveillance and assessment equipment; security response implementing protective strategy against radiological sabotage; physical fitness; response to bomb, hostage, and civil disturbance; less than lethal response; proficiency with weapons; and use of protective equipment. The critical task matrix list establishes who must be trained and/or qualified in the performance of tasks and the frequencies of required training. The tasks that the COL applicant required for members of the security organization, as given, and the performance and frequencies of tasks, conform to guidance in RG 5.75, which describes approaches and methodologies that the staff finds acceptable for the training and qualification of security personnel at nuclear power reactor facilities.

- Initial Training and Qualification and Requalification: In T&QP Section 3.4, "Initial Training and Qualification Requirements," the COL applicant described the operational requirements for how individuals are trained and qualified before they perform security-related duties within the security organization. Individuals are required to meet the minimum qualifying standards in T&QP Section 3.4.1, "Written Examination," and T&QP Section 3.4.2, "Hand-On Performance Demonstration." The standards included the following for implementing training and qualifications:

  - *Written Examinations*: T&QP Section 3.4.1 established the requirements that individuals assigned security duties must demonstrate the required knowledge for their duties (including indications of tampering on safety and security equipment and systems) by completing a written exam with a minimum score of 80 percent. The exam is administered before assignment of security duties.

  - *Hands-on Performance Demonstration*: T&QP Section 3.4.2 indicated that armed and unarmed individuals must demonstrate the ability to perform their assigned duties and responsibilities through a practical hands-on demonstration of required tasks. The hands-on demonstration ensures that theory and associated learning objectives for each required task are considered and that each individual demonstrates the knowledge, skills, and abilities required to effectively perform the task.

- Continued Training and Qualification and Requalification: The COL applicant described the following operational requirements and management system for meeting the requirements for duty qualification and requalification prescribed in 10 CFR Part 73, Appendix B, Section VI.D:

  - T&QP Section 3.5, "Continuing Training and Qualification," described the operational requirements and management controls for the requalification of security personnel to ensure that each individual is trained and qualified. The process includes operational requirements that annual requalification must be completed up to 3 months before or 3 months after the scheduled date, and the subsequent annual training must be scheduled 12 months from the previously scheduled date rather than on the date the training was actually completed.

- In T&QP Section 3.5.1, "Annual Written Examination," the COL applicant established the requirement for an annual written exam that demonstrates knowledge, skills, and abilities to carry out assigned duties and responsibilities as an armed member of the security organization. The written examination, at a minimum, included (1) role of security personnel, (2) use of deadly force, (3) protection of safeguards information, (4) authority of private security personnel, (5) authority to arrest and detain, (6) search of individuals and seizure of property, (7) offsite law enforcement response, (8) adversary characteristics and tactics, and (9) security response tactics for deployment and engagement. The COL applicant established the criteria or standard that individuals must demonstrate knowledge of these elements with a minimum passing score of 80 percent.

- T&QP Section 3.5.2, "Demonstration of Knowledge, Skills and Abilities," described the requirements for an individual to demonstrate knowledge, skills, and abilities in accordance with a SAT program, which conforms to guidance provided in RG 5.75. The COL applicant stated, "[t]he hands-on performance demonstration ensures that theory and associated learning objectives for each required task are considered and that each individual demonstrates the knowledge, skills, and abilities required to effectively perform the tasks." The COL applicant required that knowledge, skills, and abilities be demonstrated annually, with the exceptions to be determined by supporting analysis with the SAT program. The qualification of each individual must be documented by a qualified training instructor and approved (i.e., attested to) by a security supervisor, in accordance with the requirements of 10 CFR Part 73, Appendix B, Section VI.D.2(a) and 10 CFR Part 73, Appendix B, Section VI.D2(b).

- Weapons Training and Qualification: T&QP Section 3.6.1, "General Firearm Training," established operational requirements that armed members of the security organization be trained and qualified by a certified firearms instructor for the use and maintenance of each assigned weapon, to include, but not be limited to, marksmanship, assembly, disassembly, cleaning, storage, handling, clearing, loading, unloading, and reloading. The firearms instructors are certified by a national or state-recognized entity, and the certification specifies that the weapon types are certified to the standards of the certifying national or State entity, and the period between recertifications does not exceed 3 years. The required firearms familiarization training is conducted annually, with participation in weapons range activities at least every 4-month periodicity. Firearms familiarization included at a minimum the following skills and abilities related to weapons: (1) Assembling and disassembling; (2) cleaning and storage; (3) combat day and night firing; (4) safety, (5) clearing, loading, and unloading; (6) firing under stress; (7) zeroing and sighting; (8) target identification and engagement; (9) weapon malfunctions; (10) cover and concealments; and (11) weapon familiarization, in accordance with requirements in 10 CFR Part 73, Appendix B, Section VI.E.1(d)(1) through 10 CFR Part 73, Appendix B, Section VI.E.1(d)(11). The operational requirements also include training for the use of deadly force. In T&QP Section 3.6.2, "General Weapon Qualification," the COL applicant stated, "all armed personnel are qualified and re-qualified with assigned weapons. The results of weapon qualification and requalification must be documented and retained as records." In T&QP Section 3.6.1, the COL applicant stated that "[w]eapons training for armed security officers is conducted at least every 4-month periodicity. Performance may be conducted

up to five weeks before to five weeks after the schedule date. The next scheduled date is 4 months from the original scheduled date."

- Tactical Weapons Qualification: T&QP Section 3.6.3, "Tactical Weapons Qualification," described the operational requirements for a tactical qualification course of fire that will be used to assess armed security force personnel's knowledge, skills, and abilities to use assigned weapons in tactical situations, and to ensure their proficiency and ability to perform required duties and responsibilities as ARs. The qualification requirements consisted of performance criteria that address tactical use of weapons in carrying out assigned duties. The requirements are the following: (1) Combined use of handgun and shoulder-fired weapon; (2) firing from defensive positions; (3) engaging targets under stress and physical demand; (4) tactics involving the use of cover and concealment; (5) transitions of weapons; (6) recovery of weapon malfunctions; (7) safe handling of weapons during course of fire; (8) use of personnel protective equipment and engaging multiple targets; (9) use of non-dominant hand; and (10) minimum number of rounds to engage targets.

- Firearms Qualification Courses: T&QP Section 3.6.4, "Firearm Qualification Course," established the operational requirements for armed security personnel to be qualified in the use of firearms annually through daylight, night, and tactical firearms qualification courses for each weapon assigned, in accordance with the prescriptive requirements of 10 CFR Part 73, Appendix B, Section VI.F.3(a) through 10 CFR Part 73, Appendix B, Section VI.F.3(b). The required standard for qualification is an accumulated total of 80 percent of the maximum obtainable score.

- Courses of Fire: 10 CFR Part 73, Appendix B, Section VI.F.4 establishes requirements for courses of fire for armed security personnel. In T&QP Section 3.6.4.1, the COL applicant required the use of firearms qualification courses accepted by law enforcement or equivalent nationally recognized organizations to ensure that armed members of the security organization are properly trained and qualified. The firearm courses are specific to the weapons assigned (i.e., contingency weapons and handguns), as indicated in PSP Section 9.0, "Security Personnel Equipment." The COL applicant indicated that operational requirements for training and qualification are limited to assigned weapons, and the course of fire related to a shotgun or enhanced weapon is not applicable for an assigned weapon or authorized for possession and use, respectively, for the conduct of security operations.

  The CCNPP Unit 3 Security Assessment provided the COL applicant's licensing basis for the reliability and availability of security responders to interdict adversaries and their capability to neutralize those adversaries. Specific licensing basis assumptions are described in CCNPP Unit 3 Security Assessment Appendix B.3.7, "Engagement Evaluation Technique," Table B.3-2, "Probability of Neutralization," and Figure B.3-2, "Probability of Neutralization by Range." Appendix B, Section B.4.2, "Overlapping Field of Fire," described the range or distances that must be bounded by a course of fire, as represented by defensive positions indicated in Figures B.4-11 through B.4-13. These figures showed the normal positioning of security responders for perimeter protection and their relocations to optimize coverage of overlapping fields of fire between the PA and outer boundary of the nuclear island and structures to neutralize adversaries. The COL applicant's assumptions for the capabilities to neutralize adversaries, such as the application in NEI 05-05, "Controller Responsibilities Guideline," Table A-1 must be

achieved and demonstrated through courses of fire using assigned weapons. The CCNPP Unit 3 Security Assessment description of the physical protection system incorporates by reference guidance in RG 5.75, the U.S. Department of Energy (DOE) standard STD-1171-2009, "Safeguards and Security Functions Area Qualification Standard," May 2009, and DOE M470.4-3, "Protective Force" (see CCNPP Unit 3 Security Assessment, Section 10, "References.") This guidance applies to implementing training and qualification program elements (e.g., procedures and lists of course references for target criteria, target movement, target scoring, physiological and psychological stress, environmental conditions, sample size and field test data, pursuit and friendly fire).

- Firearms Requalification: T&QP Section 3.6.5, "Firearms Requalification," establishes the operational requirement that armed members of the security organization are requalified at least annually with each weapon assigned, using the courses of fire meeting the operational and management controls described in the T&QP.

- Weapons, Personal Equipment and Maintenance: In T&QP Section 3.7, "Weapons, Personnel Equipment, and Maintenance," the COL applicant indicated that personnel are provided with weapons and personnel equipment necessary to meet and implement the security plans and the CCNPP Unit 3 protective strategy. The COL applicant indicated that PSP Section 9.0, "Security Personnel Equipment," describes the equipment assigned and provided to security personnel. Maintenance is performed in accordance with the management system described in PSP Section 20, "Maintenance, Testing, and Calibration" (e.g., trained and qualified personnel, procedures, records, corrective actions). The COL applicant's management system for MT&C addresses how the COL applicant's plans for the MT&C of engineered PSS ensure the operability, reliability, and availability of systems and components to perform design and intended security functions that are relied on to protect CCNPP Unit 3. The management system satisfies the requirements of 10 CFR 73.55(n).

Documentation: T&QP Section 3.8, "Documentation," the COL applicant indicated that records are established and retained in accordance with PSP Section 22, "Records." In the PSP, the COL applicant included the operational requirements and management system to establish, maintain, and retain records to meet the prescriptive requirements of 10 CFR 26.417; 10 CFR 73.55(q); 10 CFR 73.56(k), and 10 CFR 73.56(k)(o); 10 CFR 73.70; 10 CFR Part 73, Appendix B, Section VI.H; and 10 CFR Part 73, Appendix C, Section II.C. The staff evaluation and finding for record are as previously discussed in Section 13.6.4.1.22 of this report. Specifically, the staff concludes that the COL applicant adequately described the licensing basis for how records are established, maintained, and retained to meet the prescriptive requirements.

The staff finds the following:

- The COL applicant adequately described operational requirements and a management system for meeting and implementing training and qualification requirements for (1) duty training; (2) on-the-job training; (3) duty qualification and requalification; (4) weapons training; (5) weapons qualification and requalification; (6) weapons, personnel equipment and maintenance; and (7) records, in accordance with requirements in 10 CFR Part 73, Appendix B, Section VI.C.1, 10 CFR Part 73, Appendix B, Section VI.C.2, and

10 CFR Part 73, Appendix B, Section VI.D through 10 CFR Part 73, Appendix B, Section VI.H.

- The COL applicant adequately described how it will provide training and qualification for weapons use, in accordance with 10 CFR Part 73, Appendix B, Section VI.E(1)(b), 10 CFR Part 73, Appendix B, Section VI.E(1)(c), and 10 CFR Part 73, Appendix B, Section VI.E(1)(d). The COL applicant adequately addressed and included an operational requirements and management system for (1) firearms instructors, (2) firearm familiarization, and (3) proficiency in the use of assigned weapons through firearms qualification courses of fire. The training and qualification are significant to the successful performance of assigned security duties, with assigned personnel equipment and weapons, and under expected site conditions (e.g., low lighting, elevated firing positions, range or distance bounding of fields of fire). Training and qualification contribute to achieving the objective of a high assurance of security responses to interdict and neutralize the threats up to and including the DBT. The COL applicant also adequately addressed operational requirements and the management system required for maintenance of firearms to ensure the reliability and availability of weapons, along with accounting for assigned weapons and munitions necessary for the reliability of neutralization.

- The management controls for MT&C required by 10 CFR 73.55(n) are applied and adequately address COL applicant's plans for ensuring operable, reliable, and available firearms and personnel equipment or systems and components that are relied on for the physical protection program. The COL applicant established operational requirements and a management system to satisfy the requirements of 10 CFR Part 73, Appendix B, Section VI.G.3.

- The COL applicant adequately described the licensing basis for how personnel performing security functions will be trained and qualified in accordance with the requirements of 10 CFR Part 73, Appendix B. The operational requirements and management system adequately establish the training and qualification required of personnel, to achieve the high assurance objective for security responses within the design of the physical protection system to protect CCNPP Unit 3 against the DBT for radiological sabotage. The proposed training and qualification of security personnel performing security functions conform to applicable guidance in RG 5.75 and NUREG-0800, Section 13.6.1.

13.6.4.2.4 Performance Evaluation Program

The COL applicant described the operational requirements and management system for the PEP in T&QP Section 4, "Performance Evaluation Program," and PSP Section 3, "Performance Evaluation Program." Details of the staff's evaluation of the PEP appear in the discussion of the PSP in Section 13.6.4.1.4 of this report. The staff's determination and findings are documented in that section. In summary, the following applies to the findings of the PEP described in the T&QP:

- The staff concludes that the COL applicant reasonably described how the PEP will be established and maintained to evaluate and demonstrate performance of the physical security program required by 10 CFR 73.55(b)(6). The COL applicant satisfied the requirements of 10 CFR 73.55(b)(6) by describing a PEP that includes the prescriptive

requirements of 10 CFR Part 73, Appendix B, Section VI.C.3(a) through 10 CFR Part 73, Appendix B, Section VI.C.3(m). The staff concludes that the COL applicant's PEP meets the regulatory requirements as stated above and conforms to applicable guidance in RG 5.76 and NUREG-0800, Section 13.6.1.

- In addition, the staff finds that the COL applicant's independent security program review incorporates the prescriptive requirements stated in 10 CFR 73.55(m)(i) through 10 CFR 73.55(m)(iii). The staff concludes that the management system described for the independent security program meets the regulatory requirements of 10 CFR 73.55(m)(i) through 10 CFR 73.55(m)(iii) and conforms to applicable guidance in RG 5.76 and NUREG-0800, Section 13.6.1.

13.6.4.2.5 Summary of the Training and Qualification Plan Review

The staff concludes that the COL applicant meets the requirements of 10 CFR Part 52 Subpart C, Section 52.79(a)(35)(i), 10 CFR Part 52 Subpart C, Section 52.79(a)(35)(ii), and 10 CFR Part 52 Subpart C, Section 52.79(a)(35)(iv). This regulation requires that information submitted for a COL state, in the T&QP, how the COL applicant will meet the requirements of 10 CFR Part 73 and describe the implementation of the training and qualification of security personnel performing security functions.

The staff finds that the COL applicant adequately described, in the T&QP, how it will meet the performance and prescriptive requirements in 10 CFR Part 73, Appendix B for a nuclear power reactor license. Specifically, the COL applicant described the operational requirements and management system that meet the requirements of 10 CFR Part 73, Appendix B. The staff finds that the T&QP, if adequately implemented as described, will satisfy the requirements that personnel are trained and qualified to perform and implement security functions to achieve the objective of high assurance for the protection of CCNPP Unit 3 against threats that include the DBT for radiological sabotage, and the activities involving SNM are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety. The COL applicant descriptions and information on the T&QP for the CCNPP Unit 3 physical protection program, submitted on the docket, conform to acceptance criteria in NUREG-0800, Section 13.6.1, and therefore are acceptable.

The staff concludes that the COL applicant has met applicable standards and requirements of the Atomic Energy Act of 1954 and NRC regulations and there is reasonable assurance that the facility will be constructed and will operated in conformity with the license, the provisions of the Atomic Energy Act of 1954, and NRC regulations. The staff concludes that the issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

13.6.4.3 *Appendix C Safeguards Contingency Plan*

13.6.4.3.1 Introduction

CCNPP Unit 3 COLA Part 8 includes the SCP, which describes how the COL applicant will meet, maintain, and implement the requirements, standards, and criteria of 10 CFR Part 73, Appendix C. 10 CFR Part 52, Subpart B (specifically 10 CFR 52.79(a)(35)(i) and 10 CFR 52.79(a)(35)(ii)) requires that information submitted for the COL application include a discussion of how the COL applicant will meet the requirements of 10 CFR Part 73 and descriptions of the implementation of the PSP. In the Introduction, 10 CFR Part 73,

Appendix C, states, “[a] licensee safeguards contingency plan is a documented plan to give guidance to licensee personnel in order to accomplish specific defined objectives in the event of threats, thefts, or radiological sabotage relating to special nuclear material or nuclear facilities licensed under the Atomic Energy Act of 1954, as amended.”

The COL applicant’s licensing basis, which establishes the design and capabilities of a physical protection system and the operational requirements of security personnel credited to perform security functions to achieve the objective of high assurance for the protection of CCNPP Unit 3 against the DBT for radiological sabotage, is described in COL FSAR Chapter 13.6, “Physical Security,” and PSP Part 8 (including the CCNPP Unit 3 Security Assessment, which is incorporated by reference), and the T&QP.

In CCNPP Unit 3 COLA Part 8, the COL applicant submitted an SCP that describes how operational requirements and a management system are established for meeting the requirements of 10 CFR Part 73, Appendix C and 10 CFR 73.55(c)(5). The SCP describes how the COL applicant plans to meet the requirements for a predetermined set of decisions and actions, identify measures necessary to implement decisions, specify security personnel responsibilities for each decision and action, and establish goals for responding to threats, theft, and radiological sabotage.

The SCP content comprises four categories (background, generic planning base, licensing planning base, and responsibility matrix) to satisfy the four categories stated in 10 CFR Part 73, Appendix C, Section II.B. The fifth category, implementation procedures, which are the culmination of the security contingency planning process, is not required to be submitted for NRC approval and is not included with the SCP. However, the requirements for the preparation of detailed written procedures must be completed and implemented after licensing in accordance with established license conditions and milestones identified in COL FSAR Section 13.4, “Operation Program Implementation,” which is provided to satisfy the requirements of 10 CFR 52.36(iv).

13.6.4.3.2 Background Information, Scope, and Perceived Danger

In SCP Section 1.1, “Purpose of the Safeguards Contingency Plan (SCP),” the COL applicant described the purpose and goals of the SCP. The COL applicant indicated that the purpose is to provide guidance to security and management personnel during contingency events and provide understanding of security contingency response, but it is not intended to restrict the exercise of appropriate actions needed to interdict and neutralize threats, including radiological sabotage.,. In SCP Section 1.2, “Scope of the Safeguards Contingency Plan,” the COL applicant indicated that the SCP will include the use of procedures that define decisions and actions required of security force personnel and facility operations personnel to achieve and maintain safe shutdown for nuclear reactors and their operations.

In SCP Section 1.3, “Perceived Danger,” the COL applicant described the threats associated with the adversarial characteristics of the DBT, against which a physical protection system is designed to protect. The characteristics of the DBT are considered in the descriptions of the perceived danger. The characteristics included violent external assault by well-trained, equipped, and dedicated individuals, willing to kill or be killed, with active or passive knowledge gained from inside assistance; internal threat; land and waterborne vehicle bomb assaults; and coordinated external assaults, as specified in 10 CFR 73.1(a)(1).

In SCP Section 1.4, “Definition,” the COL applicant indicated that definitions found in Appendix A to the PSP are applicable in describing operational and technical aspects of the security contingency response, as required by 10 CFR Part 73, Appendix C, Section II.B.1.d.

The staff finds the following:

- The COL applicant’s SCP satisfies the requirements of 10 CFR Part 73, Appendix C, Section II.B.1.a through 10 CFR Part 73, Appendix C, Section II.B.1.d by providing adequate descriptions for the background consisting of perceived danger, purpose, and scope of the SCP, with references to definitions contained in the PSP. The descriptions in the SCP conform to RG 5.54, “Standard Format and Content of Safeguards Contingency Plans for Nuclear Power Plants.”

- The referenced definitions in PSP Appendix A conform to the industry guidance of NEI 03-12, Revision 6. The staff reviewed PSP Appendix A, “Glossary of Terms and Acronyms,” and finds it complies with the definitions contained in 10 CFR 73.2 and conforms to the guidance in RG 5.76.

13.6.4.3.3 Generic Planning Base

In SCP Section 2, “Generic Planning Base,” the COL applicant described the generic planning base for security contingency response in accordance with the criteria in 10 CFR Part 73, Appendix C, Section II.B.2. The COL applicant identified generically the objectives for contingency events. These objectives included (1) preventing an act of radiological sabotage, (2) protecting personnel and equipment, (3) maintaining security, (4) offering support in an emergency, and (5) recovering operational security posture. The SCP identified the responsibilities of security and facility personnel for contingency events, along with response objectives, data required, decisions, and actions for implementing procedures. In SCP Section 2.2, “Situations Covered by the Contingency Plan,” the COL applicant described the situations covered by the SCP. Specifically, the SCP described the following situations or postulated events:

- Event 1: malevolent threat and use of vehicles (vehicle bomb or vehicle in an attack)
- Event 2: detection of impending attack, threat, and direct armed attack
- Event 3: civil disturbance
- Event 4: protected or vital area intrusion and discovery of breached barrier
- Event 5: fire, explosion, or other catastrophe
- Event 6: detection of aberrant behavior
- Event 7: security force strike or unavailability of security force
- Event 8: loss of contact with security officers
- Event 9: confirmed sabotage, tampering, vandalism, and malicious mischief
- Event 10: bomb threat and explosive device discovered

- Event 11: loss of onsite and offsite security communications
- Event 12: loss of security system power
- Event 13: loss of alarm assessment systems and IDSs
- Event 14: loss of security lighting
- Event 15: loss of security computer
- Event 16: extortion, coercion, hostage threat
- Event 17: waterborne threat
- Event 18: coordinated land vehicle bomb attack
- Event 19: standoff attack by a sniper
- Event 20: insider threat

For each of the postulated events indicated above, the COL applicant described the objectives that conform to RG 5.54. Examples of objectives described include the following, as appropriate for the events indicated above:

- Determine credibility and extent of threat.
- Communicate determination and report security conditions.
- Assess alarms and intrusions.
- Initiate appropriate security response.
- Maintain security systems and operational postures.
- Interdict and neutralize any attack.
- Initiate labor strike contingencies.
- Minimize plant and personnel vulnerabilities.
- Facilitate emergency response.
- Implement appropriate compensatory measures.
- Determine cause of loss of security systems capabilities.
- Return to normal operations.

Similarly, the COL applicant described the data required for each of the events. Examples of data required include the following:

- Information about the threat or malicious activity

- Number and characteristics of individuals or adversaries
- Plant location, area affected, entry points, and other conditions
- Assessment of threat, conditions, alarms, or scope of event
- Status of local law enforcement response
- Status of plant and security systems
- Vulnerabilities, effect, and impact on plant systems and personnel
- Results of investigation into the event
- Impact on security response strategy
- Response plans and procedures

In SCP Section 2.1, "Situation Not Covered by Contingency Plan," the COL applicant stated, "this plan [SCP] does not include the emergency plans to be implemented if a radiological release results from a successful sabotage attempt. However, the CCNPP Unit 3 Emergency Plan (EP) may be implemented as a result of actions taken under this plan."

The staff finds the following:

- In the SCP, the COL applicant adequately described the contingency planning for postulated threats or events, ranging from operational accidents to intentional acts, up to and including radiological sabotage, that will be used to indicate the beginning or aggravation of a safeguards contingency for security personnel in accordance with requirements of 10 CFR Part 73, Appendix C, Section II.B.2. The COL applicant's postulated events described in the SCP conform to guidance in RG 5.54.

- The COL applicant adequately described the framework for developing the detail of the generic planning bases, in plant procedures, which will contain criteria for initiating and terminating the security contingency response with specific decisions, actions, and supporting information. The COL applicant adequately defined the objectives and data required for each identified event. The identified objectives and required data demonstrate a level of awareness of the nature and severity of events that will allow the COL applicant to prepare for a security contingency response that will successfully nullify or reduce any adverse consequences arising from the security contingency, as prescribed in 10 CFR Part 73, Appendix C, Section II.B.2.a and 10 CFR Part 73, Appendix C, Section II.B.2.c. The descriptions of objectives and data required for each event conform to the guidance in RG 5.54.

- The COL applicant's SCP satisfies the requirements of 10 CFR Part 73, Appendix C, Section II.B.2 and 10 CFR Part 73, Appendix C, Section II.B.2.a through 10 CFR Part 73, Appendix C, Section II.B.2.c, by providing adequate descriptions of contingency events, along with security objectives and data required to establish the framework for developing detailed procedures for implementing security contingency response. The COL applicant's operational plans for security contingencies conform to guidance provided in RG 5.54 and NUREG-0800, Section 13.6.1.

13.6.4.3.4 Licensing Planning Base

The COL applicant addressed the licensing planning base requirements of 10 CFR Part 73, Appendix C, Section II.B.3 in SCP Section 4, "Licensee Planning Base." The COL applicant indicated that the information addressing organizational structure, physical layout, engineered PSS, law enforcement assistance, policies, and administrative and logistical considerations in the PSP is incorporated by reference in accordance with the requirements of 10 CFR Part 73, Appendix C, Section II.B.3.a through 10 CFR Part 73, Appendix C, Section B.3.e. Specifically, the COL applicant provided supplemental information in the SCP concerning the required factors affecting safeguards contingency planning that are specific to the facility. The COL applicant considered the following topics required for the licensing planning base:

- Licensee Organization: SCP Section 4.1, "Licensee Organization," described the security organizational structure, reporting lines, and duties of security personnel. The COL applicant indicated that the overall facility management organization is outlined in the COL FSAR and plant procedures, which will further describe the security organizational structure, reporting lines, and duties of security personnel and other individuals implementing the security plans. The security organization is staffed with appropriately trained and equipped personnel, in a command structure with administrative controls and procedures, to provide a comprehensive response to threats, up to and including the characteristics described in the DBT, against CCNPP Unit 3. The PSP's descriptions of the security organization's management structure and the applicable duties of security personnel are incorporated by reference.

  In SCP Section 4.1.1, "Duties/Communications Protocols," the COL applicant described the duties/communications protocols for security personnel (i.e., Response Team Leader, CAS and SAS Operator, ARs and ASOs, Supplemental Security Officers, and Plant Operations). Specific duties and communications protocols described include the security command and controls for implementation of a security contingency response (e.g., determining response priorities, directing security response and redeployment, requesting offsite LLEA assistance, monitoring and assessment, communications, implementing preplanned contingency response) and safety/security interface functions (e.g., emergency response, notification, safety priorities, and integration with the emergency response organization and required emergency response).

  In SCP Section 4.1.2, "Security Chain of Command/Delegation of Authority," the COL applicant described how command and control functions will be maintained for security contingency events. The COL applicant also described the specific plans for succession of command and control when implementing a security contingency response.

- Physical Layout: In SCP Section 4.2, "Physical Layout," the COL applicant indicated that the PSP included depictions of the CCNPP Unit 3 site and plant layout (e.g., OCA, PA, and VAs). The PSP and COL FSAR, contained the site maps showing physical structures and the descriptions of the site in relation to nearby towns, transportation routes, and other nearby facilities or infrastructures, in accordance with requirements of 10 CFR Part 73, Appendix C, Section II.B.2.b.

- Safeguards (Security) Systems: SCP Section 4.3, "Safeguards Systems," incorporates by reference the physical protection system descriptions in the PSP (e.g., SCP Sections 9, 11, 12, 13, 15, and 16), which are integrated with the licensee planning for

security contingency response to interdict and neutralize adversaries. The physical protection systems begin at the outermost perimeter and continue along pathways to the plant structures and locations of target set equipment.

The CCNPP Unit 3 Security Assessment and AREVA TR ANP-10295 describe the performance requirements and design bases for the engineered physical security systems (e.g., VBS, IDSs, assessment and communications systems, delay barriers or features, hardened barriers, defensive fighting positions, CAS and SAS, lighting, primary and secondary power). The engineered PSS are relied on and are integrated with security personnel to implement a security contingency response so as to address the requirements of 10 CFR Part 73, Appendix B, Section II.B.3.c(i).

The COL applicant stated, "Section 8 of this Contingency Plan describes the Physical security systems that support how [CCNPP Unit 3] will respond to an event in accordance with the DBT, beginning with onsite physical protection measures implemented at the outermost facility perimeter, and moving inward through the physical protection measures taken to protect target set equipment." The CCNPP Unit 3 Security Assessment and AREVA TR ANP-10295 present the details of the COL applicant's analysis, key assumptions, and resulting engineered and administrative controls (systems and hardware, as well as security personnel) required to provide detection, assessment, communications, and physical barriers (i.e., delays) to adversaries. These documents also described the defensive fighting positions that protect security responders carrying out the security functions of interdictions and neutralizations.

The T&QP described how security personnel will be trained and qualified in performing security contingency response duties. The PSP (Sections 3 and 17) and the T&QP (Section 4) addressed the requirement related to the PEP in 10 CFR Part 73, Appendix C, Section II.B.3.c(iii). In PSP Section 18, the COL applicant identified the minimum number of armed responders (i.e., ARs and ASOs) available at all times to respond to security contingency events, with a general description of their response capabilities. The CCNPP Unit 3 Security Assessment (Sections 4 through 6 and Section 18) established the COL applicant's licensing basis, which included the minimum number of security responders required and the locations that responders must maintain at all times to implement the security contingency response. The T&QP established the operational requirement that security responders (i.e., AR and ASO) may not be assigned any other duties or responsibilities that could interfere with assigned armed response team duties and responsibilities.

- Law Enforcement Assistance: In SCP Section 4.4, "Law Enforcement Assistance," the COL applicant described the role of LEAs. The COL applicant stated that it relies on the LEAs to the extent necessary for the protection of CCNPP Unit 3 and that site security personnel will support, assist, and advice LEAs in control and command and offsite assistance. The COL applicant described coordination with local, State, and/or Federal LEAs that are available to respond to requests for assistance. Additional information, described in PSP Section 8, included the establishment of a Law Enforcement Response Plan (LERP), which will include details of the mutual agreements with LEAs, capabilities, and criteria for assistance.

  In SCP Section 5.5, "Local Law Enforcement Agencies (LLEA)," the COL applicant identified the Calvert County Sheriff's Office as the entity responding to criminal activities

and threats to CCNPP Unit 3. In SCP Section 5.7, "State Response Agencies," the COL applicant, identified the Maryland State Police, State Fire Marshal, and Department of Natural Resources Police as agencies responding to terrorist threats and criminal activities at CCNPP Unit 3 and providing support in the integrated response plan. In SCP Section 5.8, "Federal Response Agencies," the COL applicant indicated that the Federal Bureau of Investigation and U.S. Coast Guard, along with other Federal LEAs, will respond to threats or criminal activities under Federal jurisdiction.

- Policy Constraints and Assumption: In SCP Section 4.5, the COL applicant described constraints and assumptions regarding (1) the site boundary (area of authority), (2) who is authorized to carry weapons and use deadly force, (3) training and instruction on the use of deadly force that adhere to State of Maryland statutes and Federal laws, (4) establishment of plant-specific policy and the instructions for self-defense and defense of others, (5) who has authority to request offsite assistance, (6) procedures for recalling off-duty staff for security contingency response, and (7) the policy for taking necessary alternative courses of actions determined by the circumstances of an event.

- Administrative and Logistical Considerations: SCP Section 4.6 included the COL applicant's descriptions of administrative functions of individuals supporting security contingency response. The COL applicant designated managers of safeguards and control of security plans and procedures, and designated the supervisors responsible for maintaining the required number of trained and qualified security personnel on duty. In addition, the COL applicant established the operational requirements that security-related problems be documented in accordance with plant procedures and be entered in the plant's CAP.

The staff finds the following:

- The COL applicant adequately described (1) organization structure, (2) physical layout, (3) safeguards systems that include engineered physical security systems and the specific structure of the security response organization, (4) plans to establish training and qualification of individuals assigned response duties and responsibilities, and (5) availability of ARs as required by 10 CFR Part 73, Appendix C, Section II.B.3. In accordance with the requirement of this section, the COL applicant's SCP incorporates by reference the descriptions already included in other portions of the CCNPP Unit 3 COLA (e.g., the PSP, T&QP, Security Assessment). The staff finds the COL applicant meets the regulatory requirements of 10 CFR Part 73 and its Appendix B that are applicable to a nuclear power reactor license. The staff findings are documented in previous portions of this report addressing review and findings of the PSP and T&QP.

- The COL applicant is not required to meet 10 CFR Part 73, Appendix C, Section II.B.3.c(V), which requires the development, implementation, and maintenance of a written procedure documenting the protective strategy (i.e., preplanned security response with details of the physical protection measures, security systems, and deployment of the armed response team for response to threats). The preparation of detailed written procedures is not required for the COLA but must be completed and implemented after licensing, in accordance with established license conditions and milestones identified in COL FSAR Section 13.4, "Operation Program Implementation." The implementation schedule and milestones are provided in accordance with the requirement of 10 CFR 52.36(iv). However, the COL applicant must adequately

describe in sufficient detail the licensing basis, which consists of the design of a physical protection system (i.e., detection, assessment, communications, response) and established operational requirements and management systems, for the protection of CCNPP Unit 3 in accordance with the regulatory requirements of 10 CFR 73.55(a) through 10 CFR 73.55(k). The COL applicant also identified predetermined actions and engineered physical security systems and features that are relied on to implement required security contingency response. In addition, the COL applicant presented sufficient detail on the command and control structure, the minimum staffing requirements, and the generic planning base addressing initiating events, objectives, and data. The generic planning base establishes the framework for determining what must be included in detailed written procedures for security contingency response, in accordance with the requirements of 10 CFR Part 73, Appendix C, Section II.B.3.c(v)(1) through 10 CFR Part 73, Appendix C, Section II.B.3.c(v)(6).

- In accordance with the requirements of 10 CFR Part 73 Appendix C, Section II.B.3.d, the COL applicant adequately described the available law enforcement assistance (i.e., local, State, and Federal). The COL applicant provided a general description of the framework for establishing an LERP, which will contain the detailed mutual agreements with LEAs, their capabilities, and the criteria for assistance in responding to security contingency events. In accordance with the requirements of 10 CFR Part 73, Appendix C, Section II.B.3.e(i) through 10 CFR Part 73, Appendix C, Section II.B.3.e(iii), the COL applicant adequately described the operational requirements to develop detailed policy and constraints, including the training of security personnel, for the authorization to carry weapons and use deadly force in accordance with State of Maryland statutes and Federal laws. The regulatory requirement for use of enhanced weapons, 10 CFR Part 73, Appendix C, Section II.B.3.e(iv), is not applicable, as it is not within the scope of the requested COL or authorized by current regulations in 10 CFR.

- The staff concludes that the COL applicant's SCP satisfies the requirements of 10 CFR Part 73, Appendix C, Section II.B.3, II.B.3.a through II.B.2.c, by adequately describing the contingency events, along with security objectives, and data required for the development of detailed procedures for implementing a security contingency response. Similarly, the staff concludes that the COL applicant's SCP adequately addressed the establishment of policies, constraints, and planning assumptions, and considered the administrative and logistics requirements, in accordance with the requirements of 10 CFR Part 73, Appendix C, Sections II.B.3.e through II.B.3.f. In establishing detailed operational plans and implementing procedures for security contingency response, the SCP conforms to the guidance provided in RG 5.54 and NUREG-0800, Section 13.6.1.

13.6.4.3.5 Responsibility Matrix and Response to Safeguards Contingency Event

In SCP Section 3, "Responsibility Matrix," the COL applicant stated, "[a] responsibility matrix that identified responses to postulated security contingency events is contained in [CCNPP Unit 3] procedures." The COL applicant indicated that the responsibility matrix will be a planning tool that integrates the response capabilities of the security organization with information relating to decisions and actions to respond to the events given in the generic planning base (SCP Section 2) and information on the licensee planning base (SCP Sections 4.1, 4.2, and 4.3).

In SCP Section 5.0, “Response Capabilities,” the COL applicant described the security contingency response to threats against CCNPP Unit 3. The descriptions are in addition to information on operational requirements given in PSP Section 18, which described response requirements and the design of a physical protection system for the protection of CCNPP Unit 3, as presented in the CCNPP Unit 3 Security Assessment. The additional information in the SCP included descriptions of the armed response team, supplemental security officers, and facility operations involved in the protection against threats up to and including the DBT. The SCP further defines the roles and responsibilities of the security contingency response (i.e., a framework for developing the detailed responsibility matrix), which will be captured in detailed implementing procedures. The descriptions, objectives, and key individual roles and responsibilities for responding to security contingency events are described below:

- Response to Threat: In SCP Section 5.1, “Response to Threats,” the COL applicant indicated that the protective strategy, along with organizational roles and responsibilities, is designed to defend the facility against all adversarial characteristics of the DBT. The CCNPP Unit 3 Security Assessment described the analysis, development, and results of security responses based on postulated bounding attack scenarios and established, in part, the COL applicant’s licensing basis for the security contingency response to protect CCNPP Unit 3.

- Armed Response Team: In SCP Section 5.2, “Armed Response Team,” the COL applicant stated that an armed response team consists of trained and qualified ARs and ASOs and indicated that they are available at all times to implement a security contingency response to internal and external threats. PSP Section 18 and the CCNPP Unit 3 Security Assessment identify the minimum number of ARs and ASOs on duty at the site at all times. The COL applicant indicated that the armed response team members, their availability, and the assigned equipment are described in definitions contained in PSP Appendix A.

- Supplemental Security Officer: In SCP Section 5.3, “Supplemental Security Officer,” the COL applicant described the use of supplemental security officers who are trained and qualified ASOs. The COL applicant indicated that these supplemental security officers are not required, or relied on, for immediate response. The COL applicant’s assumption is that supplemental ASOs may be available on site or may be assigned to any duty, in accordance with the requirements in 10 CFR 73.55(k)(4).

- Facility Operations Response and Emergency Plan Response: The COL applicant indicated in SCP Section 5.4, “Facility Operations Response,” that operational personnel are responsible for responding with operational resources to threats so as to maintain the safety of nuclear operations. The COL applicant credited operator actions to preempt or to mitigate events with maintaining the integrity of reactor fuel, containment, and spent fuel (e.g., mitigative actions in the case of a potential loss of large areas from fire or explosions, as described in the CCNPP Unit 3 Mitigation Strategies Report, to satisfy the requirements of 10 CFR 73.50.54(hh).) The COL applicant indicated, in SCP Section 5.5, “Emergency Plan Response,” that the emergency response organization is responsible for initiating preemptive and mitigative actions in accordance with the plant’s emergency planning and operating procedures.

Additional information presented in sections of the SCP that address the overall duties, responsibilities, and/or interfaces for safeguards contingency response include the following:

- In SCP Section 5.5, “Emergency Plan Response,” the COL applicant described the availability of the emergency response organization to implement the emergency plan and interfaces necessary for security events. SCP Section 5.6, “Local Law Enforcement Agencies (LLEA),” and SCP Section 5.7, “State Response Agencies: Federal Response Agencies,” provided general descriptions of the anticipated offsite assistance for security contingency events.

- In SCP Section 6.0, “Defense-in-Depth,” the COL applicant provided general descriptions and provided programs and measures to ensure defense in depth for the security contingency response to postulated threats. The COL applicant also included the operational requirement to provide minimum staffing and the requirements for procedures to implement interdiction and neutralization functions (e.g., response positions, area of responsibilities, timelines, minimum required number of ARs, equipment and armament, CAS and SAS capabilities). The CCNPP Unit 3 Security Assessment provided detailed descriptions of how defense in depth is provided for layered protection to interdict and neutralize the postulated threats. The PSP described the operational requirements. Examples of information incorporated by reference included (1) the redundancy of safety systems, as well as their spatial separation, providing defense in depth by redundancies and independence of safety-related systems for nuclear operation; (2) provisions for detection and assessment of unauthorized intrusion that consist of layered engineered and administrative controls; (3) multiple layers of barriers between the adversary and the target sets to delay the adversaries; and (4) a layered or defense-in-depth approach to the security response for interdiction and neutralization to achieve the objective of high assurance (i.e., reliability and availability) of protection against the DBT. The COL applicant indicated that details of the security contingency response are to be developed and established in facility implementing procedures.

- In SCP Section 7, “Primary Security Functions,” the COL applicant described the objectives of the security organizations and personnel performing security functions at CCNPP Unit 3. The COL applicant established the requirement to protect against the DBT for radiological sabotage.

- In SCP Section 8, “Protective Strategy,” the COL applicant stated, “[CCNPP Unit 3] had developed, implemented, and maintained a written protective strategy. Procedures describe in detail, the physical protection measures, security systems, and deployment of the armed response team relative to the site-specific conditions, including but not limited to, facility layout and the location of target set equipment and element.” The COL applicant indicated that the overall protective strategy is to defend against the loss of target sets, thereby preventing radiological sabotage and protecting the public from exposure to radiation. The protective strategy is accomplished through the integration of a series of barriers, an insider mitigation program, and security tactics designed to interdict unauthorized vehicles and individuals, while allowing approved individuals authorized access. The COL applicant provided general descriptions of the goals, operational concepts, and performance criteria. These included compliance with regulatory requirements, preplanning of response, measures to protect security personnel, a physical protection system, and an organizational structure for command and control for armed response. The COL applicant referenced the CCNPP Unit 3 Security Assessment, Section 4.0, “Physical Protection Design Features,” for detailed descriptions of the engineered physical security systems and design features credited

for security contingency response. The COL applicant also incorporated by reference the design of physical protection systems described in the U.S. EPR standard design and the U.S. EPR FSAR Tier 1 and Tier 2, and referenced AREVA TR ANP-10295.

The COL applicant indicated that it plans to use the responsibility matrix to demonstrate the relationship between operational elements of security response as the decision/actions sequences progress from the initiation of event to the achievement of security objectives for postulated threat events. The COL applicant indicated that information will include the initiating events, identification of individuals responsible for decisions, and actions required for contingency response. The COL applicant planned to account for conflicts of duties and responsibilities that could prevent or hinder implementation of security contingency and safety responses. The information provided in the T&QP, Table 1, "Critical Task Matrix," in part, establishes the training requirements, including frequencies, for security personnel to fulfill their responsibilities in implementing the security contingency response.

The staff finds the following:

- The COL applicant's postulated threat events in the generic planning base for safeguards contingency response, the licensee planning base, the PSP operational requirements, the CCNPP Unit 3 Security Assessment (i.e., design of a physical protection system to protect against the DBT), the U.S. EPR FSAR, and the T&QP (e.g., critical task matrix, operational requirements for training and qualification) provide the operational requirements, design bases, and systems performance requirements. These requirements establish and define the roles and responsibilities of security personnel (e.g., Security Leader, Plant Operations Shift Managers, Manager/Designees of Security Operations, CAS/SAS Operator, and ASOs) in the security contingency response and adequately establish the framework to develop a detailed responsibility matrix in the implementing procedures.

- 10 CFR Part 73, Appendix C, Section II.B.4 requires a licensee to establish responsibility matrix procedures based on the events outlined in the generic planning base. The COL applicant adequately described specific objectives, initiating events, response entities, assignments and responsibilities, decisions and actions, interrelationships of responsibilities, considerations of conflicts of duties and responsibilities, and predetermined actions to be completed in detailed implementing procedures for postulated threat scenarios. In accordance with the requirements of 10 CFR Part 73, Appendix C, Section II.B(5), implementation procedures (the fifth category of plan information) need not be submitted to the Commission.

- The staff concludes that the COL applicant adequately described how the responsibility matrix, which will include details of the organization, personnel, decisions, and actions for responding to events outlined in the generic planning base, will be developed in detailed written procedures in accordance with the requirements of 10 CFR Part 73, Appendix C, Section II.B.4.a through 10 CFR Part 73, Appendix C, Section II.B.4.d. The staff concludes that 10 CFR Part 73, Appendix C, Section II.B.5, which requires the licensee to establish and maintain written implementing procedures for safeguards contingency response, is not required at this time for licensing, as specified in 10 CFR Part 73, Appendix C, Section II.B.5(iii).

13.6.4.3.6 Summary of the Safeguards Contingency Plan Review

The staff concludes that the COL applicant complies with 10 CFR 52.79(a)(35)(i), 10 CFR 52.79(a)(35)(ii), and 10 CFR 52.79(a)(35)(iv), which require that information submitted for a COL include how the COL applicant will meet the requirements of 10 CFR Part 73 and describe the implementation of the SCP.

As discussed in this report, the staff finds that the COL applicant adequately described, in the SCP, how it will meet the performance and prescriptive requirements in 10 CFR Part 73, Appendix C for the license of a nuclear power reactor. Specifically, the COL applicant described the operational requirements and management system for planning, developing, implementing, and maintaining written procedures that implement the protective strategy, which includes details of physical protection measures, engineered physical security systems, and deployment of the armed security response for safeguards contingency response to achieve the objective of high assurance of the protection of CCNPP Unit 3 against threats including the DBT for radiological sabotage.

The staff finds that the SCP, as described, if adequately developed in detailed implementing plans and procedures and adequately implemented, satisfies the requirements of 10 CFR Part 73, Appendix C, for achieving the objective of high assurance of the protection of CCNPP Unit 3 against threats, including the DBT for radiological sabotage and do not constitute an unreasonable risk to public health and safety. The COL applicant's descriptions and information on the SCP for the CCNPP Unit 3 physical protection program, submitted on the docket, conform to acceptance criteria in NUREG-0800, Section 13.6.1, and are therefore acceptable.

The staff concludes that the COL applicant has met applicable standards and requirements of the Atomic Energy Act of 1954 and NRC regulations, and there is reasonable assurance that the facility will be constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act of 1954,as amended, and the Commission's rules and regulations. The staff finds that issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

13.6.4.4 *License Conditions and Security Program*

13.6.4.4.1 License Conditions

The license for a nuclear facility contains terms and conditions for operation. The provisions of 10 CFR 52.97(c) for issuance of a COL included the terms and conditions as the NRC deems necessary and appropriate. Additional license conditions are proposed by the COL applicant for implementation of security programs as described in the COLA.

In COL FSAR Section 13.4, "Operational Program Implementation," the COL applicant incorporated by reference the U.S. EPR COL information item specifying that a COL applicant referencing the U.S. EPR design will provide site-specific information for the operational program and schedule for implementation. COL FSAR Table 13.4-1, "Operational Program Required by NRC Regulations and Program Implementation," gives each operational program, the regulatory source of the program, the section of the COL FSAR in which the operational program is described, and the associated milestones. COL FSAR Table 13.4-1, Item 15 gives the security programs (i.e., the physical security program, safeguards contingency program, training and qualification program, cyber security program, and FFD program) and their

implementation milestones. The COL applicant established these implementation milestones to implement the engineered and administrative controls and management system for security described in the COLA, including the Security Plan (i.e., the PSP, T&QP, and SCP), for meeting the requirements of 10 CFR Part 73 for a nuclear power reactor.

Additionally, in COLA Part 1, Section 1.1.3, "Requested License and Authorized Uses," the COL applicant requested a license under 10 CFR Part 70 to receive, possess, and use SNM. In accordance with the requirements of 10 CFR Part 70 for issuance of a license, the applicable requirements of 10 CFR Part 73 and 10 CFR Part 74, "Material Control and Accounting of Special Nuclear Material," must be met for the possession of SNM. As a result, the required engineered and administrative controls and management system meeting the security requirements for an SNM license under 10 CFR Part 70 must be implemented before the receipt and possession of SNM. The staff technical review and findings for issuance of an SNM license are not within the scope of this safety evaluation and are addressed separately from this review of the requested COL under the regulations of 10 CFR Part 52.

With respect to the milestones for implementation of security programs (i.e., the PSP, T&QP, and SCP), the COL applicant clarified and confirmed in a March 31, 2011, response to RAI 272, Questions 13.06.01-17 and 13.06.01-18, that the security requirements for the protection of a nuclear power reactor (i.e., those specifically for a nuclear power reactor) under a 10 CFR Part 52 license will be implemented when the PA is operational, before initial fuel load. The COL applicant also confirmed that the security requirements, in accordance with a 10 CFR Part 70 license (i.e., 10 CFR 73.67 and 10 CFR 74.11, 10 CFR 74.13, 10 CFR 74.15, 10 CFR 74.19, and 10 CFR 74.39), for protection of SNM will be implemented before the initial receipt of fuel, as indicated in a proposed revision to Table 13.4-1. The staff considers this RAI closed, as the proposed implementation milestones are in accordance with the regulatory requirements for a power reactor license and a material license. The staff confirmed that the CCNPP Unit 3 COLA, Revision 8, submitted on March 27, 2012, revised COL FSAR Table 1 3.4-1, Item No. 15, to adequately established license conditions with milestones for implementing security programs and plans for a 10 CFR Part 52 COLA and 10 CFR Part 70 Special Nuclear Material license.

In COLA Part 10, the COL applicant addressed COL information items and proposed license conditions related to physical security. Specifically, in COLA Part 10, Appendix A, "Proposed Combined License Conditions," Section 3, "Operational Program Implementation," Section 5, "Security Plan Revision," and Section 6, "Operational Program Readiness," the COL applicant established the following:

- *Proposed License Condition for Operational Program Implementation:* "[Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC] shall implement the programs or portions of programs identified in COL FSAR Table 13.4-1 on or before the associated milestones in COL FSAR Table 13.4-1."

- *Proposed License Condition for Security Plan Revision*: "[Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC] shall fully implement and maintain in effect the provisions of the Security Plan, which consists of the physical security plan, security personnel training and qualification plan, safeguards contingency plan and the cyber security plan, and all amendments made pursuant to the authority of 10 CFR 50.90, 50.54(p), 52.97, and the relevant portions of Part 52 for the U.S. EPR

Design Certification after rulemaking when nuclear fuel is first received onsite, and continuing until all nuclear fuel is permanently removed from the site."

- *Proposed License Condition for Operational Program Readiness*: "[Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC] 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 COL FSAR Table 13.4-1. 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 COL FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first."

- *Proposed License Condition for Environmental Protection*: "The issuance of this COL, subject to the Environmental Protection Plan and the conditions for the protection of the environment set forth herein, is in accordance with the National Environmental Policy Act of 1969, as amended, and with applicable sections of 10 CFR Part 51, 'Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions,' as referenced by Subpart C of 10 CFR Part 52, 'Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants,' and all applicable requirements therein have been satisfied."

In COLA Part 10, Appendix A, Section 1, "Inspection, Test, Analyses, and Acceptance Criteria (ITAAC)," the COL applicant stated:

> [t]here are several ITAAC identified in the COL application. Once incorporated into the COL, regulations identify the requirements that must be met. The ITAAC identified in the tables in Appendix B of Part 10 of the COL application are incorporated into this Combined License. After the Commission has made the finding required by 10 CFR 52.103(g), the ITAAC do not constitute regulatory requirements; except for specific ITAAC, which are the subject of a Section 103(a) hearing, their expiration will occur upon final Commission action in such proceeding.

In COLA Part 10, Appendix B, "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)," Section 2.2, "Physical Security ITAAC," the COL applicant stated:

> The Physical Security ITAACs are contained in U.S. EPR FSAR Tier 1, which is incorporated by reference in Section 1. Site-specific physical security ITAAC [sic] are provided in Table 2.2-1, Part 10: Physical Security ITAAC. The site-specific ITAAC [sic] were selected based on the interface requirements in FSAR Section 14.3.

In COLA Part 10, Section 2.4, "Site-Specific ITAAC," Table 2.4-13, "Security Access Building Inspection, Tests, Analyses, and Acceptance Criteria," states that the inspection, test, and analysis verify that the Security Access Building, as designed and constructed, does not impact the ability of any safety-related SSC to perform its safety functions following a seismic event. The acceptance criteria include confirmation that the minimum separation distance of the as-built Security Access Building from the nearest Seismic Category I SSC is greater than 61.0 m (200 ft).

In the COLA, Part 3, "Environmental Report," Section 3.1, "External Appearance and Plan Layout," the COL applicant described the layout of CCNPP Unit 3 and included assumptions of security perimeter fencing for the plant layout and security bars (barrier) at the opening to the CCNPP Unit 3 intake structure. Section 4.1.1, "The Site and Vicinity," Section 4.3.1.3, "Wetlands," Section 4.7.2, "Occupational Health," and Section 9.3.2.2.3, "Water," also contain descriptions or assumptions related to security, such as those for security fencing and perimeter; size of the PA and PA boundary; security for construction; ecological and nonradiological health impacts; and security for required waterfront, structures, and the pipeline for cooling water supply.

The staff finds the following:

- The COL applicant-proposed license condition for the operational program implementation specific to security complies with the requirement of 10 CFR 73.55(a)(4), which states, "[a]pplicants for an operating license under the provisions of part 50 of this chapter or holders of a combined license under the provisions of part 52 of this chapter, shall implement the requirements of this section before fuel is allowed onsite (protected area)." The staff finds that the proposed license conditions and milestones for the implementation of the physical security, training and qualification, and safeguards contingency requirements are acceptable.

- The COL applicant-proposed license condition for the security plan revision requires the implementation of authorized changes to the security plan (i.e., the PSP, T&QP, SCP, and referenced technical reports) in accordance with the requirements of 10 CFR 50.90, 10 CFR 50.54(p), 10 CFR 52.97, and the relevant portions of 10 CFR Part 52 for the U.S. EPR design certification (i.e., U.S. EPR FSAR Tier 1 and 2) after rulemaking when nuclear fuel is first received on site and continuing until all nuclear fuel is permanently removed from the site. The proposed license condition requires the application of regulatory standards and criteria established under 10 CFR 50.90, 10 CFR 50.54(p), and 10 CFR 52.97 and the relevant portions of 10 CFR Part 52 for the control of changes to the licensing basis, and is therefore acceptable.

- The COL applicant-proposed license condition for operational program readiness supports the planning for and conduct of NRC inspections of operational programs given in the operational program COL FSAR Table 13.4-1. The proposed license condition applies to the implementation of security programs identified in Item 15 of COL FSAR Table 13.4-1 and requires that 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 COL FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first. The proposed license condition conforms to the guidance in RG 1.206, Section C.III.4.3, and is therefore acceptable.

- The COL applicant-proposed license condition for environmental protection is applicable to the plant and its operations, including the conduct of security operations. The COL applicant's environmental report considers the assumptions and impact on the environment from security. The proposed license condition requires the implementation of the Environmental Protection Plan and the conditions for the protection of the environment, as required by the National Environmental Policy Act of 1969, as amended, and with applicable sections of 10 CFR Part 51, "Environmental Protection

Regulations for Domestic Licensing and Related Regulatory Functions," as referenced by 10 CFR Part 52, Subpart C. The proposed license condition also requires the satisfaction of all applicable requirements described. The proposed license condition conforms to the guidance in RG 1.206, Section C.III.4.3, and is therefore acceptable.

- The security ITAAC, as described in the U.S. EPR standard design and in 10 CFR Part 10, Appendix B for the specific site, are identified in the COLA and are subject to the requirements of 10 CFR 52.103(g) that the licensee shall not operate the facility until the NRC makes a finding that the acceptance criteria (identified in the ITAAC) in the COL are met, with the exception of those acceptance criteria that the NRC finds were met under 10 CFR 52.97(a)(2). The expiration of security ITAAC, after the NRC's findings required by 10 CFR 52.103(g), is in accordance with the requirements of 10 CFR 52.103(h) and conforms to RG 1.206, and is therefore acceptable. The requirement that criteria for all ITAAC, including those specific for physical security, must be met before operations begin is established by regulation, and therefore, a specific license condition is not required.

- The COL FSAR Table 13.4-1, established license conditions for milestones for the implementation of the security plans and program required by regulations**.**

13.6.4.4.2 COL Information Items

The staff reviewed COL Information Items 13.6-1 through 13.6-4 from U.S. EPR FSAR Tier 2, Table 1.8-2 included under COL FSAR Section 13.6.

COL Information Item 13.6-2 states:

> A COL applicant that references the U.S. EPR design certification will provide a security plan to the NRC to fulfill the requirements of 10 CFR 52.79(a)(35).

COL Information Item 13.6-1 states:

> A COL applicant that references the U.S. EPR design certification will provide a site-specific security assessment that adequately demonstrates how the performance requirements of 10 CFR 73.55(a) are met for the initial implementation of the security program.

COL Information Item 13.6-3 states:

> A COL applicant that references the U.S. EPR design certification will provide a security program, through the PSP and supporting documents, such as the vital equipment list and the vital areas list that incorporates the security features given in the U.S. EPR FSAR Tier 2, Section 13.6.

COL Information Item 13.6-4 states:

> A COL applicant that references the U.S. EPR design certification will provide a cyber security plan consistent with 10 CFR 73.54.

In COL FSAR Section 13.6, the COL applicant stated the following with regard to addressing the COL information items:

> The Security Plan consists of the Physical Security Plan, the Guard Force Training and Qualification Plan, the Safeguards Contingency Plan, and the Cyber Security Plan. The Security Plan, with the exception of the Cyber Security Plan, is submitted to the NRC as a separate licensing document in order to fulfill the requirements of 10 CFR 52.79(a)(35) (CFR, 2008b). The Security Plan meets the requirements contained in 10 CFR Part 26 (CFR, 2008a) and 10 CFR Part 73 (CFR, 2008d) and will be maintained in accordance with the requirements of 10 CFR 52.98 (CFR, 2008c). The Security Plan, with the exception of the Cyber Security Plan, is classified as Security Safeguards Information and is withheld from public disclosure pursuant to 10 CFR 73.21 (CFR, 2008e).

A Security Plan is provided in COLA Part 8. Security Plan Table 13.4-1 provides the schedule for Security Plan implementation.

A site-specific security assessment, provided in COLA Part 8, includes vulnerability assessments and defensive analysis. The staff notes that the site-specific security assessment adequately demonstrates how the performance requirements of 10 CFR 73.55(a) are met for the initial implementation of the security program. The U.S. EPR security-related technical reports are provided in addition to the Security Plan and the site-specific security assessment. The U.S. EPR security-related reports cover identification of vital equipment, development of target sets, design features to enhance security, portions of the NRC orders applicable to the current operating plants that affect the U.S. EPR design, and the other security features of the U.S. EPR that establish the security system design. These reports are categorized as SGI in accordance with 10 CFR 73.21.

A security program is provided through the PSP and supporting documents, such as the vital equipment list and the vital areas list. The program incorporates the security features given in the U.S. EPR FSAR Tier 2, Section 13.6. COLA Part 8 provides a comprehensive security assessment.

The Cyber Security Plan is provided in COLA Part 11L. Table 13.4-1 provides the schedule for Cyber Security Plan implementation. The Cyber Security Plan is evaluated in Section 13.8 of this report.

Based on information submitted on the docket as indicated above, the staff finds that the information provided by the COL applicant addresses and satisfies the actions described in the COL information items contained in the U.S. EPR FSAR Tier 2, Section 13.6.

13.6.4.4.3 Departures, Exemptions, Alternative Measures, and Regulatory Commitments

Departures and Exemptions: In COLA Part 7, “Departure and Exemptions Requests,” the COL applicant identified departure and exemption requests. COLA Part 7 identifies departures, which are deviations in the CCNPP Unit 3 COL FSAR from the information in the U.S. EPR FSAR, pursuant to 10 CFR Part 52, and evaluations conforming to RG 1.206, Section C.IV.3.3. The COL applicant did not identify any departures from the U.S. EPR FSAR Tier 1 or Tier 2 that are related to physical security. Also, the COL applicant did not identify or request any exemptions to NRC regulations for physical security in COLA Part 7 Section 1.2, “Exemption Requests”. The staff did not review the adequacy of or make any recommendations on the approval of departure or exemption requests related to physical security.

Alternative Measures: With respect to the regulatory requirements of 10 CFR 73.55(r), which allow the COL applicant to provide measures for protection against radiological sabotage other than the ones required by this section, the COL applicant did not specifically identify any alternative measures or explicitly request NRC approval of alternative measures in accordance with the requirements of 10 CFR 73.55(r) for meeting specific regulatory requirements for physical security in the COLA. The staff did not review any adequacies or make any recommendations on approval of alternative measures under 10 CFR 73.55(r).

Regulatory Commitments: The COL applicant did not identify any specific regulatory commitments for physical security (i.e., a commitment that is not legally binding but is relied on in many instances; the NRC expects licensees to honor, in good faith, commitments that have a safety or regulatory purpose).

In the COLA, the COL applicant established legally binding requirements applicable to instituting the security required for the safety of nuclear operations at CCNPP Unit 3. These requirements ensure compliance with, and operations within, applicable NRC requirements and the plant-specific design basis (including all modifications and additions over the life of the license) as docketed.

13.6.5 Post Combined License Activities

The following COL information items in Table 13.6.5-1 of this report include the proposed combined license activities which the staff has evaluated as being acceptable in this report, but which will be completed following issuance of the license as discussed in the SER section listed below.

Table 13.6.5-1 Post Combined License Activities

Item No.	Description	COL FSAR Section	COL SER Section
L.C. - 3	• ***Operational Program Implementation***: Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall implement the programs or portions of programs identified in COL FSAR Table 13.4-1 on or before the associated milestones in COL FSAR Table 13.4-1.	Part 10, Appendix A	13.6.4.4.1
L.C. - 5	***Security Plan Revisions***: Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall fully implement and maintain in effect the provisions of the Security Plan, which consists of the physical security plan, security personnel training and qualification plan, safeguards contingency plan and the cyber security plan, and all amendments made pursuant to the authority of 10 CFR 50.90, 50.54(p), 52.97, and the relevant portions of Part 52 for the U.S. EPR Design Certification after rulemaking	Part 10, Appendix A	13.6.4.4.1

Item No.	Description	COL FSAR Section	COL SER Section
	when nuclear fuel is first received onsite, and continuing until all nuclear fuel is permanently removed from the site.		
L.C. - 6	***Operational Program Readiness***: Calvert Cliffs Unit 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC 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 COL FSAR Table 13.4-1. 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 COL FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first."	Part 10, Appendix A	13.6.4.4.1
L.C. - 9	***Environmental Protection Plan*** : The issuance of this COL, subject to the Environmental Protection Plan and the conditions for the protection of the environment set forth herein, is in accordance with the National Environmental Policy Act of 1969, as amended, and with applicable sections of 10 CFR Part 51, 'Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions,' as referenced by Subpart C of 10 CFR Part 52, 'Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants,' and all applicable requirements therein have been satisfied.	Part 10, Appendix A	13.6.4.4.1

13.6.6 Conclusions

The staff reviewed the CCNPP Unit 3 COLA, which establishes the basis for licensing in its descriptions of engineered and administrative controls and management systems (i.e., COLA Parts 1, 2, 7, 8, 9; the Security Plan (the PSP, T&QP, SCP); the referenced CCNPP Unit 3 Security Assessment; AREVA TR ANP-10295; and the U.S. EPR standard design) for the physical protection of the proposed operations of CCNPP Unit 3. The staff concludes the following:

- The COL applicant meets the requirements of 10 CFR 52.79(a)(35)(i), and (ii), which state that information submitted for a COL must describe how the COL applicant will

meet the requirements of 10 CFR Part 73 and provide descriptions (i.e., schedule and milestones) of the implementation and maintenance of the licensing basis for security.

- The licensing basis, along with design bases for security SSCs relied on to protect CCNPP Unit 3 against threats up to and including the DBT, is adequately described in the COLA, which includes the Security Plan and technical reports and regulatory guidance that are incorporated by reference (i.e., FSAR Parts 2, 7, 8, and 10; the PSP, T&QP, and SCP; the CCNPP Unit 3 Security Assessment; the U.S. EPR standard design; and AREVA TR ANP-10295).

- The COL applicant adequately described in the COLA, and established the licensing basis of, how it will meet the performance and prescriptive requirements of 10 CFR Part 73, including 10 CFR Part 73, Appendices B and C, for the licensing of a utilization facility under 10 CFR Part 52. Specifically, the COL applicant adequately described the licensing basis that (1) integrates the design of engineered physical security systems, operational requirements, and management system for a physical protection program (as described in the COLA) for the adequate protection of CCNPP Unit 3; (2) establishes the operational requirements and management system for the implementation of the training and qualification of security personnel performing security functions; and (3) establishes the operational requirements and a management system for developing, implementing, and maintaining written plans and procedures that implement the protective strategy. These plans include details of physical protection measures, engineered PSS, and deployment of the armed security response for safeguard contingency response. The COL applicant's descriptions and information on the SCP for the CCNPP Unit 3 physical protection program, submitted on the docket, conform to acceptance criteria in NUREG-0800, Section 13.6.1, and therefore are acceptable.

The staff concludes that the licensing basis described in the COLA, if the facility is adequately designed, constructed, installed, maintained, and implemented as described, satisfies the requirement for achieving the objective of high assurance of the protection of CCNPP Unit 3 against threats, including the DBT for radiological sabotage and the activities involving SNM are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety.

The staff concludes that the COL application meets the applicable standards and requirements of the Atomic Energy Act of 1954 and NRC regulations for security, and there is reasonable assurance that the facility will be constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act of 1954, and NRC regulations. The staff further concludes that based on the information set forth herein, the issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

13.7 Fitness for Duty

13.7.1 Introduction

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 52.79(a)(44), combined license (COL) applications must include a description of the fitness for duty (FFD) program required by 10 CFR Part 26, "Fitness for Duty Programs," and its implementation. The FFD program is designed to provide reasonable assurance that: (1) Individuals are trustworthy and

reliable as demonstrated by the avoidance of substance abuse; (2) individuals are not under the influence of any substance, legal or illegal, or mentally or physically impaired from any cause, which in any way adversely affects their ability to safely and competently perform their duties; (3) measures are established and implemented for the early detection of individuals who are not fit to perform their duties; (4) the construction site is free from the presence and effects of illegal drugs and alcohol; (5) the work places are free from the presence and effects of illegal drugs and alcohol; and (6) the effects of fatigue and degraded alertness on an individual's ability to safely and competently perform their duties are managed commensurate with maintaining public health and safety.

13.7.2 Summary of Application

COL FSAR Section 13.7 incorporates by reference U.S. EPR FSAR Tier 2, Section 13.7, "Fitness for Duty."

In addition, in COL FSAR Section 13.7, the COL applicant provided the following:

COL Information Items

The COL applicant provided additional information in COL FSAR Section 13.7 to address COL Information Item 13.7-1 from U.S. EPR FSAR Tier 2, Table 1.8-2 as follows:

> A COL applicant that references the U.S. EPR design certification will submit a physical security plan to the NRC to fulfill the fitness for duty requirements of 10 CFR 26.

Supplemental Information

In addition the COL applicant provided information on the implementation of the construction phase FFD program.

13.7.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the final safety evaluation report (FSER) related to the U.S. EPR FSAR.

The applicable regulatory requirements for COL FSAR Section 13.7 are as follows:

1. 10 CFR Part 26, "Fitness for Duty Programs," as it relates to FFD construction and operations program requirements

2. 10 CFR 52.79(a)(44), "License, Certifications, and Approvals for Nuclear Power Plants," as it relates to the FFD program provided by 10 CFR Part 26 and its implementation

Acceptance Criteria

Pending the issuance of an NRC regulatory guide for the NRC-accepted final version of NEI 06-06, COL applicants may cite NEI 06-06, Revision 5 document as a reference in the development of site-specific applications.

13.7.4 Technical Evaluation

The staff reviewed COL application Part 2, FSAR Sections 13.7, and Table 13.4-1, Part 7, Departures and Part 10, ITAAC, and found that it represents the complete scope of information relating to this review topic.

The staff reviewed COL FSAR Section 13.7 and cross-checked with the referenced design certification FSAR to ensure that the information in the U.S. EPR FSAR and the COL FSAR represents the complete scope of required information relating to this review topic. The staff confirmed that the information contained in the COL application and incorporated by reference addresses the required information relating to this section. U.S. EPR FSAR Tier 2, Section 13.7 has been reviewed by the staff under Docket No. 52-020. The staff's technical evaluation of the information incorporated by reference related to fitness-for-duty has been documented in the staff safety evaluation report on the design certification application for the U.S. EPR.

The staff reviewed the following information in the COL applicant's COL FSAR:

COL Information Item and Supplemental information

The staff reviewed the COL applicant's disposition of COL Information Item 13.7-1 from U.S. EPR FSAR Tier 2, Table 1.8-2 included under COL FSAR Section 13.7, as well as the supplemental and site-specific information provided by the COL applicant.

The COL applicant revised COL FSAR Section 13.7, and Table 13.4-1, and eliminated unnecessary FFD information from Parts 7 and 10 of the COL application Revision 7 describing the FFD program, as part of its response to the staff's RAIs. The staff review of COL FSAR Section 13.7 included the following: (1) The adequacy of the FFD program for the operations and construction phases; and (2) the program implementation milestones as proposed by the COL applicant for both the operations and construction phases.

The staff issued four RAIs to obtain further clarification of the COL applicant's FFD program. The four RAIs discussed below are associated with the resolution of COL FSAR Section 13.7-1, Table 13.4-1, and Parts 7 and 10.

The staff notes that under 10 CFR 52.79(a)(44), the COL FSAR must contain a description of the FFD program and its implementation required by 10 CFR Part 26. In COL FSAR Section 13.7, the COL applicant stated that the construction phase program conforms to the guidance in NEI 06-06, Revision 5. In RAI 244, Question 13.07-1, the staff requested that the COL applicant clarify its plans to update its FFD program for the construction phase. In an August 31, 2010, response to RAI 244, Question 13.07-1, the COL applicant stated that. UniStar Nuclear Energy (UNE) will implement a construction phase (FFD) program that follows the guidance in the NEI 06-06, Revision 5, and evaluate changes in subsequent revisions of NEI 06-06 and modify the construction phase FFD program to incorporate substantial changes as appropriate.

The staff considers NEI 06-06, Revision 5 acceptable for use as reference to support the development of site specific application, as indicated in NRC letter to Mr. Jack W. Roe, December 2, 2009. NEI 06-06 provides FFD program examples to meet the requirements of 10 CFR 52.79(a)(44). As the staff continues to review NEI-06-06 and its subsequent revisions thereof and develops the supporting regulatory guidance document that endorses the final version of the NEI document, the staff confirms that the COL applicant will update its FFD

program for construction activities and comply with certain clarifications, additions, and exceptions in the regulatory guidance as discussed in the response to RAI 244, Question 13.07-1.

COL FSAR Section 13.7, "Fitness for Duty," states this section of the U.S. EPR FSAR is incorporated by reference with the following supplement. The U.S. EPR FSAR includes COL Information Item 13.7-1 in COL FSAR Section 13.7:

> A COL applicant that references the U.S. EPR design certification will submit a Physical Security Plan (PSP) to the NRC to fulfill the fitness for duty requirements of 10 CFR Part 26.

The staff reviewed the information presented in the CCNPP Unit 3, PSP Revision 4, and located two sections for review. One section, Item 10, Page 9 of 38, addressed work hour controls, and stated the COL applicant implements work hour controls for individuals performing security duties, in accordance with the requirements of 10 CFR Part 26, Subpart I, and that the COL applicant describes general performance objectives and process for implementing the requirements for work hour controls, including the documentation process.

The staff also reviewed the CCNPP Unit 3, PSP Revision 4, FFD information discussed in COL FSAR Section 14.1, which stated that FFD, among Access Authorization processes, are important components of the integrated protective strategy at CCNPP Unit 3. The process provides high assurance that personnel will be fit for duty, demonstrated by the absence of evidence of substance abuse, or do not constitute an unreasonable risk to the health and safety of the public. The staff finds that the information provided by the COL applicant adequately addressed this COL FSAR Section 13.7 COL information item, regarding the PSP, and therefore considers the COL applicant's FSAR Section 13.7 acceptable.

The COL applicant stated that their FFD program is implemented and maintained in two phases, the construction and operations phases, which are dependent on the activities, duties, or access afforded to certain individuals at the construction site.

The COL applicant stated that their construction FFD program conforms to the guidance in NEI 06-06 Revision 5, which applies to persons constructing or directing the construction of safety- and security-related structures, systems, or components performed onsite where the new reactor will be installed and operated. Other onsite, key personnel will be subject to the operations FFD program that complies with the requirements of 10 CFR Part 26, Subparts A through H, N, and O. At the establishment of a protected area, all persons who are granted unescorted access will meet the requirements of an operations FFD program.

The COL applicant stated their site-specific information as the construction site is provided:

- The construction site area is defined in the Physical Security Plan and will be under the control of UniStar Nuclear Operating Services, LLC. The 10 CFR Part 26 requirements will be implemented for the construction site area based on the descriptions provided in COL FSAR Table 13.4-1.

- Construction Workers and First Line Supervisors are covered by the Constellation Energy Corporate Security FFD Program (10 CFR Part 26, Subpart K).

- UNE employees and subcontractor construction management and oversight personnel are covered by a Constellation Energy Corporate Security Operations FFD Program. Bechtel Power Corporation employees and Bechtel Power Corporation subcontractors, construction management, and oversight personnel will be covered by the Constellation Energy Corporate Security FFD Program (10 CFR Part 26, Subpart A - H, N, and O).

- UNE security personnel are covered by a Constellation Energy Corporate Security Operations FFD Program. Bechtel Power Corporation security personnel are covered by the Constellation Energy Corporate Security FFD Program (10 CFR Part 26, Subpart A - H, N and O). This coverage is applicable from the start of construction activities to the earlier of (1) the receipt of Special Nuclear Material (SNM) in the form of fuel assemblies, or (2) the establishment of a Protected Area, or (3) the 10 CFR 52.103(g) finding.

- UNE FFD Program personnel are covered by a Constellation Energy Corporate Security Operations FFD Program. Bechtel Power Corporation FFD Program personnel will be covered by the Constellation Energy Corporate Security FFD Program (10 CFR Part 26, Subpart A - H, N and O).

- UNE security personnel protecting fuel assemblies are covered by a Constellation Energy Corporate Security Operations FFD Program (10 CFR Part 26, Subpart A - I, N, and O).

- Personnel required to physically report to the TSC or EOF when that requirement is in effect are covered by a Constellation Energy Corporate Security Operations FFD Program.

The COL applicant stated that the operations phase FFD program complies with the operations program denoted in 10 CFR Part 26.

In an August 31, 2010, response to RAI 244, Question 13.07-1, the COL applicant committed to modify the COL FSAR to indicate a replacement to COL FSAR Section 13.7, “Fitness for Duty,” to provide site-specific information, and to provide explanation of their construction FFD program to comply with certain clarification, additions, and exceptions in these future, endorsed revisions as necessary. The staff confirmed that COL FSAR Section 13.7, Revision 7, dated December 20, 2010, was revised as committed to in the RAI response. Accordingly, the staff finds that the COL applicant has adequately addressed this issue and, therefore, considers RAI 244 Question 13.07-1 resolved.

In RAI 244, Question 13.07-2, the staff requested that the COL applicant describe how COL FSAR Table 13.4-1, Item 15, (Page 4 of 5, 13-33), complies with 10 CFR Part 26, Sections 26.3 and 26.4. The staff specifically requested that the COL applicant address the guidance in the NRC December 2, 2009, letter to the Nuclear Energy Institute, “Status of U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 06-06, ‘Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites’,” or describe an acceptable alternative.

Additionally, in RAI 271, Question 13.07-4, the staff requested that the COL applicant provide additional information on the COL applicant’s use of the word “license condition” in COL FSAR Table 13.4-1, in light of the explicit implementation requirements of 10 CFR Part 26, which negate the need for licensing conditions.

In an August 31, 2010, response to RAI 244, Question 13.07-2, the COL applicant provided the changes to the COL application that describe the FFD program required by 10 CFR Part 26, including the site-specific information for the various classifications of workers that must be covered to comply with the requirements of 10 CFR Part 26. Associated changes to COL FSAR Section 13.7 are discussed in the August 31, 2010, response to RAI 244, Question 13.07-1. COL FSAR Table 13.4-1, "Operations Programs Required by NRC Regulations and Program Implementation," was updated as follows:

COL FSAR Table 13.4-1 Operations Programs Required by NRC Regulations and Program Implementation

Program Title	Program Source	FSAR Section	Milestone	Requirement
FFD Program (Construction-Mgt & Oversight Personnel)	10 CFR Part 26 Subparts A-H, N and O	13.7	Prior to initiating 10 CFR 26 initial construction activities	10 CFR 26, Subpart K
FFD Program (Construction-Workers & First Line Supervisors)	10 CFR Part 26 Subparts K	13.7	Prior to initiating 10 CFR 26 construction activities	10 CFR 26, Subparts A-H, N, O
FFD Program for security personnel	10 CFR Part 26 Subparts A-H, N and O 10 CFR Part 26 Subparts A-I, N and O	13.7	Prior to initiating 10 CFR 26 construction Activities Prior to the earlier of: a. Receipt of SNM in the form of fuel assemblies b. Establishment of a Protected Area, or c. 10 CFR 103.(g) finding	10 CFR 26, Subparts A-H, N, O
FFD Program for FFD Program personnel	10 CFR Part 26 Subparts A, B, D-H, N, O and C per licensee's discretion	13.7	Prior to initiating 10 CFR 26 construction activities	10 CFR 26, Subparts A, B, D-H, N, O, C (optional)
FFD Program for persons required to physically report to the TSC or EOF	10 CFR Part 26, Subparts A – I, N, and O, except for Parts 26.205 – 209		Prior to the conduct of the first full participation emergency preparedness exercise under 10 CFR Part 50,	10 CFR 26, Subparts A-I, N and O, except for Sections 26.205-209

Program Title	Program Source	FSAR Section	Milestone	Requirement
			Appendix E, Section F.2.a	
FFD Program for Operation	10 CFR Part 26, Subparts A – I, N, and O, except for individuals listed in Part 26.4(b), who are not subject to Part 26.205 – 209		Prior to the earlier of: a. Establishment of a protected area, or b. 10 CFR 52.103(g) finding	10 CFR 26, Subparts A-I, N and O, except for individuals listed in Section 26.4, who are not subject to Sections 26.205-209

In an August 31, 2010, response to RAI 244, Question 13.07-2, and in a December 8, 2010, response to RAI 271, Question 13.07-4, the COL applicant committed to modifying COL FSAR Table 13.4-1 to indicate a further explanation of FFD programs, when they are required, FFD associated milestones, requirements, and the eliminations of license conditions. The staff has confirmed that COL FSAR, Revision 7, Section 13.7, dated December 20, 2010, was revised as committed in the RAI response. Accordingly, based on its review of the COL applicant's detailed responses to the RAIs, the staff finds that the COL applicant has adequately addressed this issue and, therefore, considers RAI 244, Question 13.07-2 and RAI 271, Question 13.07-4, resolved.

In the COL application, Part 7, 1.2.5 (Pages 1-17 through 1-20), the COL applicant requested an exemption from the requirements of 10 CFR 52.79(a)(44), to provide a description of the fitness for duty program by 10 CFR Part 26 and its implementation. In the COL application, Part 7, 1.2.5 (Pages 1-17 through 1-20,), the COL applicant stated that they require an exemption related to the FFD program description because of the pending, at the time of the COL application, 10 CFR Part 26 rule amendments. Considering the amended 10 CFR Part 26, published on March 31, 2008 (73 *Federal Register* 16966), in RAI 244, Question 13.07-3, the staff requested that the COL applicant revise the justification for an exemption request or provide the FFD program description required by the revised rule.

In an August 31, 2010, response to RAI 244, Question 13.07-3, the COL applicant stated that the exemption request related to the schedule requirements of 10 CFR 52.79(a)(44) would be removed from the COL application. Accordingly, because the COL applicant adequately addressed and provided detailed responses to the RAIs requested by the staff, the staff finds that the COL applicant has adequately addressed this issue and, therefore, considers RAI 244, Question 13.07-3 resolved.

13.7.5 Post Combined License Activities

There are no post COL activities related to this section.

13.7.6 Conclusions

The staff reviewed the COL application and checked the referenced U.S. EPR FSAR. The staff's review confirmed that the COL applicant addressed the required information relating to

fitness for duty, and there is no outstanding information expected to be addressed in the COL FSAR related to this section.

The staff reviewed the information in the U.S. EPR FSAR on Docket No. 52-020. The results of the staff's technical evaluation of the information related to fitness-for-duty incorporated by reference in the COL FSAR have been documented in the staff's SER on the design certification application for the U.S. EPR. The staff's SER on the U.S. EPR is not yet complete. The staff will update Section 13.7 of this report to reflect the final disposition of the U.S. EPR design certification application.

The staff finds that COL FSAR, Revision 7 sufficiently addresses RAI 244, Questions 13.07-1, 13.07-2, and 13.07-3, and RAI 271, Question 13.07-4, detailed in Section 13.7.4 of this report. Additionally, the staff finds that COL FSAR, Revision 7, Sections 13.7, Table 13.4-1, and Part 10 Item 6, comply with the requirements of establishing and maintaining FFD programs for both the construction and operations phases, as required in 10 CFR Part 26 and 10 CFR 52.79(a)(44), and conform to the guidance in NEI 06-06, Revision 5, for use to support the development of a site-specific application, and are therefore acceptable.

13.8 Cyber Security Program

13.8.1 Introduction

The topic of cyber security is evaluated in this separate section of this report although it is described in Section 13.6 of the COL applicant's FSAR.

13.8.2 Summary of Application

In a May 13, 2010, letter to the NRC), UniStar Nuclear Energy (UniStar) submitted a Cyber Security Plan (CSP) for CCNPP Unit 3. The CSP applies to all critical digital assets (CDAs) required for CCNPP Unit 3 operation. In the submittal, UniStar describes how it establishes, implements, and maintains a cyber security program that protects digital computer and communication systems and networks associated with safety-related and important-to-safety functions; security functions; emergency preparedness functions, including offsite communications; and support systems and equipment which, if compromised, would impair safety, security, or emergency preparedness functions.

In addition, in COL FSAR Section 13.6, the COL applicant provided the following:

COL Information Items

The COL applicant provided additional information in COL FSAR Section 13.6 to address COL Information Item 13.6-4 from U.S. EPR FSAR Tier 2, Table 1.8-2 as follows:

> A COL applicant that references the U.S. EPR design certification will provide a cyber security plan consistent with 10 CFR 73.54.

13.8.3 Regulatory Basis

The relevant requirements of NRC regulations for the CSP, and the associated acceptance criteria, are specified in NUREG-0800, Section 13.6.

The applicable regulatory requirements for Section 13.8 are as follows:

1. 10 CFR Part 73, "Physical Protection of Plants and Materials," Appendix G, "Reportable Safeguards Events," as it relates to cyber security.

2. 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks," as it relates to cyber security.

3. 10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage," 10 CFR 73.55(a)(1), 10 CFR 73.55(a)(4), 10 CFR 73.55(b)(8), and 10 CFR 73.55(m), as they relate to cyber security.

4. 10 CFR 73.58, "Safety/security Interface Requirements for Nuclear Power Reactors" as it relates to cyber security.

The related acceptance criteria are as follows:

1. RG 5.71, "Cyber Security Programs for Nuclear Facilities," January 2010, provides guidance for complying with 10 CFR 73.54.

2. Staff Requirements Memorandum (SRM), CMWCO-10-0001, "Regulation of Cyber Security at Nuclear Power Plants," October 21, 2010.

13.8.4 Technical Evaluation

The staff's review of the information contained in the COL FSAR is discussed as follows:

COL Information Items

The staff reviewed COL Information Item 13.6-4 from U.S. EPR FSAR Tier 2, Table 1.8-2 included under COL FSAR Section 13.6.

> A COL applicant that references the U.S. EPR design certification will provide a cyber security plan consistent with 10 CFR 73.54.

The COL applicant addressed this item by indicating that the CCNPP Unit 3 Emergency Plan conforms to the guidance in RG 5.71 and is provided in COLA Part 11L, and the schedule for the CSP implementation is provided in COL FSAR Table 13.4-1.

The staff reviewed COL FSAR Table 13.4-1, "Operational Programs Required by NRC Regulations and Program Implementation," and the COL applicant's CSP against the requirements of 10 CFR 73.55(a)(4) and the guidance in RG 5.71. To address the staff's concerns with the CSP, the staff sent RAIs to the COL applicant. In letters dated August 26, 2010, and January 20, 2011, the COL applicant submitted its responses to these RAIs. The COL applicant submitted the CSP in a June 13, 2011, Revision 1 letter. The revised CSP incorporates the RAI responses.

13.8.4.1 *Scope and Purpose*

This CSP describes how CCNPP Unit 3 Nuclear Project, LLC established a cyber security program to achieve high assurance that CCNPP Unit 3 digital computer and communication systems and networks associated with safety, security, and emergency planning (SSEP) functions (hereafter defined as critical digital assets) are adequately protected against cyber-attacks up to and including the Design Basis Threat. The following actions, described in the CSP, provide high assurance of adequate protection of systems associated with the above functions from cyber-attacks:

- Implementing and documenting the baseline security controls described in RG 5.71, Regulatory Position C.3.3

- Implementing and documenting a CSP to maintain the established cyber security controls through a comprehensive life cycle approach, as described in CSP Section 1.4

In SRM, CMWCO-10-0001, "Regulation of Cyber Security at Nuclear Power Plants," October 21, 2010, the Commission determined as a matter of policy that the NRC's cyber security rule at 10 CFR 73.54, is interpreted to include structures, systems, and components in the balance of plant (BOP) that have a nexus to radiological health and safety at NRC-licensed nuclear power plants. On November 19, 2010, the Executive Director for Operations sent a Commission Information Paper (SECY-10-0153) to inform the Commission of the staff's implementation of this policy determination. In that paper as well as subsequent correspondence with the industry, the staff stated that the COL applicant would need to revise its CSP to address this policy decision. The COL applicant's revised CSP describes how to include BOP structures, systems, and components (SSCs) in the scoping process for CDAs.

Based on its review of this section, the staff finds that the CCNPP3 CSP appropriately follows the guidance in RG 5.71 and SRM CMWCO-10-0001and is acceptable.

13.8.4.2 *Performance Based Requirements*

The CSP states:

> As required by 10 CFR 73.55(a)(1), a licensee must implement the requirements of the rule through its Commission-approved physical security plan, training and qualification plan, safeguards contingency plan, and cyber security plan, referred to collectively as "security plans." As defined in 10 CFR 73.54(b)(3), cyber security is a component of the physical protection program. As such, this plan establishes how CCNPP3 digital computer and communication systems and networks within the scope of 10 CFR 73.54 will be adequately protected from cyber-attacks up to and including the DBT.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.3 *Cyber Security Program Implementation*

The COL applicant committed to implementing its cyber security program by stating the following:

> The CCNPP Unit 3 Nuclear Project LLC established and maintains a CSP that complies with the requirements of 10 CFR 73.54(b)(2) and 10 CFR 73.55(b)(8) to protect those systems within the scope of 10 CFR 73.54(a)(1)(i-iv) that can, if compromised, directly or indirectly have an adverse impact on the SSEP functions of a nuclear facility. This cyber security program complies with 10 CFR 73.54 by establishing and implementing defensive strategies consistent with the defensive model described in Section 1.3.1.5 of this document, including the security controls described in Sections 1.3.1, 3.2, and 1.3.3, and maintaining the program, as described in Section 1.4 of this document.
>
> Documentation of the security controls in place for each CDA is available for inspection. Modifications to the CSP are conducted in accordance with 10 CFR 50.54(p). As required by 10 CFR 50.90, "Application for Amendment of License, Construction Permit, or Early Site Permit," CCNPP Unit 3 Nuclear Project, LLC will submit changes that are determined to decrease the effectiveness of this plan or for any other reason of this plan to the NRC for approval. CCNPP Unit 3 Nuclear Project LLC Power will also report any cyber-attacks or incidents at CCNPP Unit-3 to the NRC, as required by 10 CFR 73.71, "Reporting of Safeguards Events," and Appendix G, "Reportable Safeguards Events," to 10 CFR Part 73.

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and is therefore acceptable.

13.8.4.4 *Cyber Security Assessment and Authorization*

The CSP discusses the following policies and procedures:

- CCNPP Unit 3 Nuclear Project, LLC developed, disseminated, and annually reviews and updates a formal documented security planning, assessment, and authorization policy that describes the purpose, scope, roles, responsibilities, management commitments, and coordination among CCNPP Unit 3 departments and the implementation of the security program and the controls given in CSP Sections 2 and 3.

- A formal documented procedure to facilitate the implementation of the cyber security program and the security assessment.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.5 *Cyber Security Team*

The CSP discusses the cyber security team (CST), and its authority to conduct an objective assessment, make determinations, implement defense-in-depth protective strategies, and implement the security controls using the process outlined in RG 5.71, Section C.3.3.

The submitted CSP states that the CST should have broad knowledge in the following areas:

- Information and digital system technology
    - Cyber security
    - Software development
    - Communications
    - Systems administration
    - Computer engineering
    - Networking-site and corporate networks
    - Programmable logic controllers
    - Digital instrumentation and control systems
    - Distributed control systems
    - Computer systems and databases used in design, operation, and maintenance of CDAs
- Nuclear facility operations, engineering, and technical specifications
- Physical security and emergency preparedness systems and programs
- The submitted CSP lists the roles and responsibilities for the CST, which include the following:
- Perform or oversee each stage of cyber security management processes.
- Document all key observations, analyses, and findings during the assessment process so that this information can be used in the application of security controls.
- Evaluate or reevaluate assumptions or conclusions about current cyber security threats.
- Evaluate or reevaluate assumptions or conclusions about potential vulnerabilities to, and consequences from, an attack.
- Evaluate or reevaluate assumptions or conclusions about the effectiveness of existing cyber security controls, defensive strategies, and attack mitigation methods, as well as cyber security awareness and training of those working with, or responsible for, CDAs and cyber security controls throughout their system life cycles.
- Confirm information from reviews of CDAs and connected digital devices and associated security controls including walkdown inspections with physical and electronic validation activities.
- As needed, identify and implement new cyber security controls.

- Document the implementation of alternate or compensating measures in lieu of any security controls (RG 5.71, Appendices B and C).

- Document the basis for not implementing certain controls (RG 5.71, Appendix B).

- Prepare documentation and oversee implementation of security controls (RG 5.71, Appendices B and C).

- Retain all documentation in accordance with 10 CFR 73.55(q) and CSP Section 1.5.

The submitted CSP notes that security assessment determinations should not be constrained by business goals.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.6 *Identification of Critical Digital Assets*

The submitted CSP describes that the COL applicant will document the identification of critical digital assets and includes the following:

- Identify and document systems, equipment, communication systems, and networks that are associated with the SSEP functions described in 10 CFR 73.54(a)(1), as well as the support systems associated with these SSEP functions. Systems, equipment, and network systems associated with SSEP functions are referred to as critical systems (CS). The CST identifies CS by conducting an initial consequence analysis of systems, equipment, communication systems, and networks to determine those which, if compromised, exploited, or failed, could impact the SSEP functions of the nuclear facility, without taking into account existing mitigating measures.

- Perform a dependency and pathway analysis of any system or equipment associated with SSEP functions to determine whether it is CS.

- Identify and document CDAs that have a direct, supporting, or indirect role in the proper functioning of CS.

The submitted CSP discusses the documentation of the following:

- Description of CDA

- Identification of each CDA within each CS

- Description of CDA function

- Identification of the consequences to the CS and SSEP functions, if a compromise were to occur

- Identification of the digital devices having direct or indirect roles in CS function

- Description of security functional requirements or specifications that includes the following:

- Security requirements for vendor or developers to maintain system integrity
- Secure configuration, installation, and operation of the CDA
- Effective use and maintenance of security features or functions
- Known vulnerabilities regarding configuration and use of administrative functions
- Effective use of user-accessible security features or functions
- Methods for user interaction with CDA
- User responsibilities in maintaining the security of the CDA

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.7 *Reviews and Validation Testing*

The submitted CSP identifies and documents the method to accomplish reviews and validation testing for each CDA. For each CDA/CS group, the CST will:

- Confirm a direct/indirect connection pathway
- Confirm infrastructure interdependencies
- Review application of defensive strategies, including defensive models, security controls, and other defensive measures

The submitted CSP describes a method for conducting CDA walkdown inspections, including the following:

- Performing, where practical, physical inspection of the connections and configuration of each CDA
- Tracing all communication connections into and out of each termination point along the pathway for each CDA
- Examining the physical security of the CDA, including the communication pathways
- Examining the configuration and assessing the effectiveness of existing security controls along the communication pathways
- Examining interdependencies for each CDA and trust relationships between CDA
- Examining interdependencies with infrastructure support systems emphasizing compromises of electrical power, environmental controls, and fire suppression equipment
- Examining systems, communication systems, and networks that are potential pathways for attacks

- Resolving discrepancies found in the review

The submitted CSP notes that an electronic validation is performed when a walkdown inspection is impractical. This electronic validation consists of tracing a communication pathway from start to finish. Use of electronic equipment may prove a better method than a physical walkdown.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.8 *Defense-in-Depth Protective Strategies*

The submitted CSP provides for the implementation of defensive strategies that ensure the capability to detect, respond to, and recover from a cyber-attack. The defensive strategies consist of the following:

- Security controls implemented in accordance with CSP Section 1.3.1 and the defensive model outlined in RG 5.71, Regulatory Position C.3.2
- Defense-in-depth measures described in CSP Section 3.6
- Detailed defensive architecture described in CSP Section 3.7
- Maintenance of a cyber security program in accordance with CSP Section 1.4

The submitted CSP notes that the defensive model establishes the logical and physical boundaries between CDAs with similar risks and CDAs with lower security risks.

The staff was concerned that the CCNPP Unit 3 discussion of the defensive architecture would need to be redesigned based on upcoming changes to the design certification applicant's (AREVA) digital Instrument & Control (I&C) system design. Therefore, in RAI 257, Question 13.06.06-4, the staff requested that the COL applicant address the following:

> An applicant's cyber security program must be designed to apply and maintain defense in depth defensive strategies to comply with 10 CFR 73.54 (c)(2). The CCNPP Unit 3 proposed CSP Section 1.3.1.5, Defense-in-Depth Protective Strategies discusses the defensive architecture which will protect the critical digital assets at CCNPP Unit 3. At a public meeting on June 25, 2010, representatives of AREVA, the designer of the plant to be built at Calvert Cliffs, stated they would redesign the I&C data communications system and a drawing of a modified defensive architecture was provided to the staff. Please confirm that the defensive architecture information provided in the proposed CCNPP Unit 3 CSP will not be changed due to I&C data communications design changes being made by AREVA.

In an August 26, 2010, response to RAI 257, Question 13.06.06-4, the COL applicant confirmed changes would not be made to the defensive architecture described in the CSP due to I&C data communications design changes. The COL applicant stated that necessary components will remain in level 4 as described in the CSP. Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 for defense-in-depth

protective strategies, and is therefore acceptable. Accordingly, the staff considers RAI 257, Question13.06.06-4 resolved.

Application of Security Controls

The COL applicant established defense-in-depth strategies by committing to implement and document the following:

- Defensive model (RG 5.71, Regulatory Position C.3.2)
- Physical security program and physical barriers
- Operational and management controls described in CSP Section 3 and verification of their effectiveness
- Technical controls described in CSP Section 2

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71.

The submitted CSP discusses the use of information collected from CSP Section 1.3.1.4 to conduct one or more of the following:

- Implementation of all security controls specified in CSP Section 2
- Implementation of an alternative control given in CSP Section 2--if a security control cannot be applied--by carrying out one of the following:
    - Documenting the basis for employing alternate countermeasures
    - Performing and documenting an attack vector and attack tree analysis of the CDA to confirm that the countermeasure provides the same or greater protection as the corresponding control
    - Implementing alternative countermeasures that provide at least the same degree of protection as the corresponding security control in CSP Section 2
- Do not implement a control enumerated in CSP Section 2, instead the following should be performed:
    - Attack vector and attack tree analyses of the specific security controls for the CDA that will not be implemented
    - Document that the attack vector does not exist and demonstrate that the control is not necessary

The submitted CSP notes that, before implementing security controls on a CDA, the potential for adverse impact must be assessed. Specifically, the COL applicant should consider the following:

- Do not implement a security control if there is possible impact to SSEP functions.

- Use alternate controls to mitigate the lack of the security control, in accordance with CSP Section 1.3.1.6.

The COL applicant used the phrase, "as applicable," throughout their CSP in the context of security control implementation. In an August 26, 2010, response to RAI 251, Question 13.06.06-2, the COL applicant clarified its security control implementation by stating that the cross-functional cyber security team will determine the applicability for cyber security control implementation and that if two cyber security controls conflict with each other for a certain CDA, that the cross-functional cyber security team may find it acceptable not to implement one of the security controls. This is consistent with the intent of CSP Section 1.3.1.6 which states that when a security control is determined to have an adverse effect, that alternate controls will be used to mitigate the lack of the security control for the CDA in accordance with the process described in CSP Section 1.3.1.6. Based on these factors, the staff finds the response to RAI 251, Question 13.06.06-2 acceptable.

In RAI 383, Question 13.06.06-6, the staff requested that the COL applicant remove the words "as applicable" from footnotes 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, and 17 in the CSP due to the fact that the process for handling the COL applicant's concern about two conflicting cyber security controls for a certain CDA is already addressed in CSP Section 1.3.1.6, "Application of Security Controls." In a February 14, 2013, response to RAI 383, Question 13.06.06-6, the COL applicant agreed to delete the footnotes (numbered above) addressing the word "applicable" as requested by the staff.

The submitted CSP includes provisions to verify that CDAs are adequately protected from cyber-attacks up to and including the DBT, and that any identified gaps have been closed. The program should require the COL applicant to do the following:

- perform an effectiveness analysis, as described in CSP Section 1.4.1.2

- perform a vulnerability assessment or scans, as described in CSP Section 1.4.1.3

Based on its review of this section of the submitted CSP and the clarification provided by the RAI responses, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.9 *Incorporating the Cyber Security Program into the Physical Protection Program*

The submitted CSP describes how the cyber security program is reviewed as a component of the physical security program in accordance with the requirements of 10 CFR 73.55(m) as described in RG 5.71, Appendix A, Section A.3.2.

The CSP discusses the following efforts necessary to integrate physical and cyber security:

- establishment of site organizational responsibilities for cyber security

- documentation of physical and cyber security interdependencies

- developed policies and procedures to integrate and unify management and physical and cyber security controls

- incorporation of policies and procedures to secure the CDAs from attacks up to and including the DBT
- coordinated acquisition of physical or cyber security services, training, devices, and equipment
- coordination of personnel training
- integration and coordination of incident response personnel
- training of senior management
- performance of periodic exercises of simulated physical and cyber attacks

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.10 *Policies and Implementing Procedures*

The CSP states:

- CCNPP Unit 3 Nuclear Project, LLC developed and implemented policies and procedures to meet the security control objectives provided in CSP Sections 2 and 3.
- CCNPP Unit 3 Nuclear Project, LLC documented, reviewed, approved, issued, used, and revised policies and implementation procedures as described in CSP Section 1.4.
- CCNPP Unit 3 Nuclear Project, LLC ensured that personnel responsible for implementing and overseeing the program report to the site vice president who is accountable for nuclear plant operation.
- CCNPP Unit 3 Nuclear Project LLC's procedures established specific responsibilities for positions described in CSP Section 3.10.10.

Based on its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.11 *Maintaining the Cyber Security Program*

The submitted CSP describes how maintaining the Cyber Security Program to support CDAs is implemented.

This section establishes the programmatic elements necessary to maintain security throughout the life cycle of CDAs. CCNPP Unit 3 Nuclear Project LLC implemented the elements of this section to maintain high assurance that CDAs associated with the SSEP functions of CCNPP Unit 3 are adequately protected from cyber-attacks.

CCNPP Unit 3 Nuclear Project LLC employs a life cycle approach to conform to the controls described in Section 3 of this plan. This approach ensures that the security controls established and implemented for CDAs are adequately maintained to achieve the site's overall cyber security program objectives. For proposed new digital assets, or existing digital assets that are

undergoing modification, CCNPP Unit 3 Nuclear Project LLC implements the process described in Section 1.4.2 of this plan. CCNPP Unit 3 Nuclear Project LLC maintains records in accordance with Section 1.5 of this plan.

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.12 *Continuous Monitoring and Assessment*

The submitted CSP describes how ongoing monitoring of cyber security controls used to support CDAs conforms to CSP Section 3.

CCNPP Unit 3 Nuclear Project LLC continuously monitors security controls in conformance to Section 3 of this plan. Automated support tools are also used, as appropriate, to accomplish near real-time cyber security management for CDAs. The continuous monitoring program includes the following:

- ongoing assessments to verify that the security controls implemented for each CDA remain in place throughout the life cycle
- verification that rogue assets have not been connected to the infrastructure
- periodic assessments of the need for and effectiveness of the security controls identified in Sections 2 and 3 of this plan
- periodic security program review to evaluate and improve the effectiveness of the program
- This element of the program is mutually supportive of the activities conducted to manage configuration changes of CDAs. Continuous monitoring may require periodic updates to the cyber security plan.

Based on its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.13 *Periodic Assessment of Security Controls*

The submitted CSP describes how periodic assessment of cyber security controls is used to support CDAs. The staff notes that the CSP conforms to RG 5.71, Appendix A, “Generic Cyber Security Plan Template,” Section A.4.1.1, “Periodic Assessment of Security Controls.”

> CCNPP Unit 3 Nuclear Project, LLC performs periodic assessments to verify that the security controls implemented for each CDA remain robust, resilient, and effective in place throughout the life cycle. The CST verifies the status of these security controls on at least an annual basis or in accordance with the specific requirements for each security control, as described in Sections 2 and 3 of this plan, whichever is more frequent.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.14 *Effectiveness Analysis*

The submitted CSP describes how ongoing monitoring of cyber security controls used to support CDAs conforms to CSP Sections 2 and 3.

The CST monitors and measures the effectiveness and efficiency of the Cyber Security Program and the security controls to ensure that both are implemented correctly, operating as intended, and continuing to provide high assurance that CDAs are protected against cyber-attacks up to and including the DBT. Reviews of the security program and controls include but are not limited to, periodic testing of the security controls, audits of the Physical and Cyber Security Programs and implementing procedures; safety/security interface activities; the Testing, Maintenance, and Calibration Program; operating experience; and feedback from the NRC and local, State, and Federal law enforcement authorities.

The insights gained from these analyses are used to

- improve performance and effectiveness of the cyber security program
- manage and evaluate risk
- improve the effectiveness of implemented security controls described in Sections 2 and 3 of this plan
- ascertain whether new security controls are required to protect CDAs from cyber-attack
- verify that existing security controls are functioning properly and are effective at protecting CDAs from cyber-attack
- facilitate corrective action of any gaps discovered in the security program

The CST verifies the effectiveness of security controls on at least an annual basis or in accordance with the specific requirements for each security control, as described in Sections 2 and 3 of this plan, whichever is more frequent. The CST reviews records of maintenance and repairs on CDA components to ensure that CDAs which perform security functions are maintained per recommendations provided by the manufacturer.

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.15 *Vulnerability Assessments and Scans*

CCNPP Unit 3 CSP states:

> CCNPP Unit 3 Nuclear Project, LLC's CST conducts periodic vulnerability scanning assessments of the security controls, defensive architecture and of all CDAs to identify security deficiencies. The CST performs assessments of security controls and scans for vulnerabilities in CDAs and the environment no less frequently than once a quarter or as specified in the security controls in CSP Sections 2 and 3, whichever is more frequent, and when new vulnerabilities that could potentially affect the effectiveness the security program and security of the CDAs are identified. In addition, the CST employs up-to-date vulnerability

scanning tools and techniques that promote interoperability among tools and automate parts of the vulnerability management process.

CCNPP Unit 3 Nuclear Project LLC's CST analyzes vulnerability assessment and scan reports and addresses vulnerabilities that could be exploited to compromise CDAs and vulnerabilities that could adversely impact SSEP functions. The CST shares information obtained from the vulnerability assessment and scanning process with appropriate personnel to ensure that similar vulnerabilities that may adversely impact the effectiveness of the security of interconnected or similar CDAs and/or may adversely impact SSEP functions are understood, evaluated, and mitigated.

CCNPP Unit 3 Nuclear Project, LLC ensures that the assessment and scanning process does not adversely impact SSEP functions. If this should occur, CDAs will be removed from service or replicated (to the extent feasible) before assessment and scanning is conducted. If CCNPP Unit 3 Nuclear Project, LLC cannot conduct vulnerability assessments or scanning on a production CDA because of the potential for an adverse impact on SSEP functions, alternate controls (e.g., providing a replicated system or CDA to conduct scanning) will be employed.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.16 *Change Control*

The submitted CSP describes how change controls are used to support CDAs. The staff notes that the change controls conform to RG 5.71, Regulatory Position C.4.2.

CCNPP Unit 3 Nuclear Project, LLC systematically plans, approves, tests, and documents changes to the environment of the CDAs, the addition of CDAs to the environment and changes to existing CDAs in a manner that provides a high level of assurance that the SSEP functions are protected from cyber-attacks.

During the operation and maintenance life cycle phases, the program establishes that changes made to CDAs use the design control and configuration management procedures or other procedural processes to ensure that the existing security controls are effective and that any pathway that can be exploited to compromise a CDA is protected from cyber-attacks.

During the retirement phase, the design control and configuration management procedures or other procedural processes address safety, reliability, and security engineering activities.

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.17 *Configuration Management*

The submitted CSP describes how configuration management (CM) is used to support CDAs. CM conforms to RG 5.71, Regulatory Position C.4.2.1.

CCNPP Unit 3 Nuclear Project, LLC has implemented and documented the configuration management controls described in Section 3.11 of this plan. CCNPP Unit 3 Nuclear Project, LLC implements a configuration and change management process, as described in Section 1.4.2 and Section 3.11 of this plan, to ensure that the site's Cyber Security Program objectives remain satisfied. CCNPP Unit 3 Nuclear Project, LLC ensures that modifications to CDAs are evaluated in accordance with Section 1.4.2 of this plan before any modification is implemented so as to maintain the cyber security performance objectives articulated in 10 CFR 73.54(a)(1).

During the operation and maintenance phases of a CDA life cycle, CCNPP Unit 3 Nuclear Project, LLC ensures that changes made are conducted using these configuration management procedures to avoid the introduction of additional vulnerabilities, weaknesses, or risks into the system. This process also ensures timely and effective implementation of each security control specified in Sections 2 and 3 of this plan.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.18 *Security Impact Analysis of Changes and Environment*

The submitted CSP describes how security impact analyses are used to support CDAs. The staff notes that the analyses conform to RG 5.71, Regulatory Position C.4.2.2.

CCNPP Unit 3 Nuclear Project, LLC's CST performs a security impact analysis in accordance with CSP Section 1.4.1.2 before implementing a design or configuration change to a CDA or when changes to the environment occur so as to manage potential risks introduced by the changes. CCNPP Unit 3 Nuclear Project, LLC's CST evaluates, documents, and incorporates into the security impact analysis safety and security interdependencies of other CDAs or systems, as well as updates and documents the following:

- The location of the CDA and connected assets
- Connectivity pathways (direct and indirect)
- Infrastructure interdependencies
- Application of defensive strategies, including defensive models, security controls, and other defensive strategy measures
- Plant-wide physical and cyber security policies, and procedures that secure CDAs from a cyber-attack, including attack mitigation and incident response and recovery
- CCNPP Unit 3 Nuclear Project, LLC performs these impact analyses as part of the change approval process to assess the impacts of the changes on the security posture of CDAs and security controls, as described in Section 1.4.1.2 of this plan, and to address any identified gaps to protect CDAs/CSs from cyber-attack, up to and including the DBT as described in Section 4.2.6.

- CCNPP Unit 3 Nuclear Project, LLC manages CDAs for the cyber security of SSEP functions, CDAs, and CSs through an ongoing evaluation of threats and vulnerabilities and implementation of each of the security controls provided in Sections 2 and 3 of this plan during all phases of the life cycle. Additionally, CCNPP Unit 3 Nuclear Project, LLC has established and documented procedures for screening, evaluating, mitigating, and dispositioning of threat and vulnerability notifications received from credible sources. Dispositioning includes implementation of security controls to mitigate newly reported or discovered threats and vulnerabilities.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.19 *Security Reassessment and Authorization*

The submitted CSP describes how security reassessment and authorization are used to support CDAs. The staff notes that the processes conform to RG 5.71, Appendix A, Section A.4.2.3.

> CCNPP Unit 3 Nuclear Project, LLC has established, implemented, documented, and maintains a process that ensures that modifications to CDAs are evaluated before implementation so that security controls remain effective and that any pathway that can be exploited to compromise the modified CDA is addressed to protect CDAs and SSEP functions from cyber-attacks. The program establishes that additions and modifications are evaluated, using a proven and accepted method, before implementation to provide high assurance of adequate protection against cyber-attacks, up to and including the DBT, using the process discussed in Section 4.1.2 of this plan.

CCNPP Unit 3 Nuclear Project, LLC disseminates, reviews, and updates the following when a CDA modification is conducted:

- A formal, documented security assessment and authorization policy which addresses the purpose, scope, roles, responsibilities, management commitment, coordination among CCNPP Unit 3 Nuclear Project LLC entities, and compliance to reflect all modifications or additions, and

- A formal, documented procedure to facilitate the implementation of the security reassessment and authorization policy and associated controls

Based on its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.20 *Updating Cyber Security Practices*

The submitted CSP describes how updating cyber security practices are used to support CDAs. The practices conform to RG 5.71, Appendix A, Section A.4.2.4.

The CCNPP Unit 3 Nuclear Project LLC Power CST reviews, updates, and modifies CCNPP Unit 3 cyber security policies, procedures, practices, existing cyber security controls, detailed descriptions of network architecture (including logical and physical diagrams), information on security devices, and any other information associated with the state of the security program or

security controls provided in Sections 2 and 3 of this plan when changes occur to CDAs or the environment. This information includes the following:

- Plant- and corporate-wide information on the policies, procedures, and current practices related to cyber security
- Detailed network architectures and diagrams
- Configuration information on security devices or CDAs
- New plant- or corporate-wide cyber security defensive strategies or security controls being developed and policies, procedures, practices, and technologies related to their deployment
- The site's physical and operational security program
- Cyber security requirements for vendors and contractors
- Identified potential pathways for attacks
- Recent cyber security studies or audits (to gain insight into areas of potential vulnerabilities), and
- Identified infrastructure support systems (e.g., electrical power; heating, ventilation, and air conditioning; communications; fire suppression) whose failure or manipulation could impact the proper functioning of CSs

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.21 *Review and Validation Testing of a Modification or Addition of a Critical Digital Asset*

The submitted CSP describes how review and validation testing of CDA modifications is used. The practices are carried out conform to RG 5.71, Appendix A, Section A.4.2.5.

> The CCNPP Unit 3 Nuclear Project LLC's CST conducts and documents the results of reviews and validation tests of each CDA modification and addition using the process described in Section 1.3.1.4 of this plan.

On the basis of its review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71 and is acceptable.

13.8.4.22 *Application of Security Controls Associated with a Modification or Addition*

The submitted CSP describes how security controls associated with modifications are applied. The processes are carried conform to RG 5.71, Appendix A, Section A.4.2.6.

When new CDAs are introduced into the environment, CCNPP Unit 3 Nuclear Project, LLC:

- Deploys the CDA into the appropriate level of the defensive model described in Section 1.3.1.5 of this plan

- Applies the technical controls identified in Section 2 of this plan to conform to the process described in RG 5.71, Regulatory Position C.3.2

- Confirms that the operational and management controls described in Section 3 of this plan are applied and effective for the CDA

When CDAs are modified, CCNPP Unit 3 Nuclear Project, LLC:

- Verifies that the CDA is deployed into the proper level of the defensive model described in RG 5.71 Section 3.2

- Performs a security impact analysis, as described in Section 1.4.2.2 of this plan

- Verifies that the technical controls identified in Section 2 of this plan conform to the process described in Section 1.3.1.6 of this plan

- Verifies that the security controls discussed above are implemented effectively, conform to the process described in Section 1.4.1.2 of this plan

- Confirms that the operational and management controls discussed in Section 3 of this plan are applied and are effective for the CDA

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.23 *Cyber Security Program Review*

The submitted CSP describes how the cyber security program review is accomplished. The process implemented conforms to RG 5.71, Regulatory Position C.4.3.

CCNPP Unit 3 Nuclear Project, LLC Cyber Security Program establishes the necessary measures and governing procedures to implement periodic reviews of applicable program elements, in accordance with the requirements of 10 CFR 73.55(m).

CCNPP Unit 3 Nuclear Project, LLC reviews the program's effectiveness at least every 24 months. In addition, reviews are conducted as follows:

- Within 12 months of the initial implementation of the program

- Within 12 months of a change to personnel, procedures, equipment, or facilities that potentially could adversely affect security

- As necessary based upon site-specific analyses, assessments, or other performance indicators

- By individuals independent of those personnel responsible for program implementation and management

CCNPP Unit 3 Nuclear Project, LLC documents the results and recommendations of program reviews, management's findings regarding program effectiveness, and any actions taken as a result of recommendations from prior program review, in a report to the CCNPP Unit 3 plant manager and to licensee corporate management at least one level higher than the individual having responsibility for day-to-day plant operation. CCNPP Unit 3 Nuclear Project LLC Power maintains these reports in an auditable form, available for inspection, and enters findings from program reviews into the site's Corrective Action Program.

Based on a review of this section, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.24 *Document Control and Records Retention and Handling*

The submitted CSP describes how the cyber security program document control and records retention processes are accomplished. The process conforms to RG 5.71, Regulatory Position C.4.3.

> CCNPP Unit 3 Nuclear Project, LLC has established the necessary measures and governing procedures to ensure that sufficient records of items and activities affecting cyber security are developed, reviewed, approved, issued, used, and revised to reflect completed work. CCNPP Unit 3 Nuclear Project, LLC will retain records and supporting technical documentation required to satisfy the requirements of 10 CFR 73.54 and 10 CFR 73.55, “Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage,” until the NRC terminates the facility operating license. Records required for retention include, but are not limited to, all digital records, log files, audit files, and non-digital records that capture, record, and analyze network and CDA events. These records are retained to document access history and discover the source of cyber-attacks or other security-related incidents affecting CDAs or SSEP functions or both. CCNPP Unit 3 Nuclear Project, LLC will retain superseded portions of these records for at least 3 years after the record is superseded, unless otherwise specified by the NRC.

The COL applicant defined the word, “sufficient,” in a footnote to this CSP section as “all controls implemented where applicable by Calvert Cliffs Nuclear Project, LLC via Appendix A and Appendix B of 51-7002224 Latest Revision)”. In RAI 251, Question 13.06.06-1, the staff requested that the COL applicant further clarify the meaning of this footnote. In an August 26, 2010, to this question, the COL applicant stated that not all technical controls are required to be implemented for each CDA and, in those cases where a certain technical control is not implemented the justification for that decision would be documented. The staff finds this is consistent with the COL applicant’s CSP Section 1.3.1.6 Application of Security Controls, and is consistent with the guidance provided in RG 5.71. The staff finds this clarification acceptable and considers RAI 251, Question 13.06.06-1 resolved.

In RAI 383, Question 13.06.06-5, the staff requested that the COL applicant remove the word “sufficient” from footnote 1 in the CSP due to the fact that the process for handling the COL applicant’s concern about technical controls not being implemented is already addressed in CSP Section 1.3.1.6, “Application of Security Controls.” In a February 14, 2013, response to RAI 383, Question 13.06.06-5, the COL applicant agreed to delete the

footnote addressing the word “sufficient” as requested by the staff. Based on a review of this section and pending satisfactory resolution of the open item, the staff finds that the CCNPP Unit 3 CSP appropriately follows the guidance in RG 5.71, and therefore is acceptable.

13.8.4.25 *Technical Security Controls*

In CSP Section 2.0, the COL applicant included the listing of technical security controls the COL applicant will address as described in CSP Section 1.3.1.6. The staff notes this listing is identical to the listing of technical security controls described in RG 5.71.

The COL applicant clarified in the technical security controls section of their CSP that audit generation is only being applied to certain CDAs and CS; not the entire group comprising the architecture. In RAI 251, Question 13.06.06-3, the staff requested that the COL applicant clarify how the subset was being determined and justify the limiting audit generation to only this subset. In an August 26, 2010, response to RAI 251, Question 13.06.06-3, the COL applicant clarified that the cross-functional cyber security team will determine the subset and that CDAs by design not meant to have an auditing function will not be re-engineered to perform that function. The COL applicant also clarified that the overall systems would meet auditing and monitoring requirements. This clarification continues to meet the intent of the audit generation technical security controls to provide a capability to compile audit records from multiple components within CDAs into a site wide audit trail. The staff finds this clarification acceptable and, therefore, considers RAI 251, Question 13.06.06-3 resolved.

Since the COL applicant intends to address all the technical security controls in RG 5.71, Appendix B, “Technical Security Controls,” the staff finds the listing of controls in the CSP acceptable.

13.8.4.26 *Operational and Management Security Controls*

The submitted CSP included the listing of operational and management security controls the COL applicant will address as described in CSP Section 1.3.1.6. Since the COL applicant intends to address all the operational and management security controls in RG 5.71, Appendix C, “Operational and Management Security Controls,” the staff finds the listing of controls in the CSP acceptable.

13.8.5 Post Combined License Activities

There are no post COL activities related to this section.

13.8.6 Conclusions

The staff reviewed the COL application and checked the referenced U.S. EPR FSAR. The staff’s review confirmed that the COL applicant addressed the required information relating to the CSP, and there is no outstanding information expected to be addressed in the COL FSAR related to this section.

The staff reviewed the information in the U.S. EPR FSAR on Docket No. 52-020. The results of the staff’s technical evaluation of the information related to the CSP incorporated by reference in the COL FSAR have been documented in the staff’s SER on the design certification application

for the U.S. EPR. The staff's SER on the U.S. EPR is not yet complete. The staff will update Section 13.8 of this report to reflect the final disposition of the U.S. EPR design certification application.

In addition, the staff concludes that the relevant information presented within the COL FSAR is acceptable and meets the requirements of applicable NRC regulations. The staff based its conclusion on the following:

The staff compared COL FSAR Table 13.4-1 and the COL applicant's CSP for CCNPP Unit 3 to the relevant NRC regulations and the criteria in RG 5.71. On the basis of its review, the staff finds that the information in the CCNPP Unit 3 CSP adequately addresses the relevant requirements and guidance of 10 CFR 73.54 and RG 5.71, respectively. The staff finds the information contained in this section acceptable.

The staff's review confirmed that the COL applicant addressed the relevant information to satisfy the requirements of 10 CFR 73.54, 10 CFR 73.55(a)(1), 10 CFR 73.55(b)(8), 10 CFR 73.55(m), and 10 CFR Part 73, Appendix G as applicable.