

Bellefonte Nuclear Plant, Units 3 & 4

COL Application

Part 10

**Proposed License Conditions
(Including ITAAC)**

Revision 1

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 10, License Conditions and ITAAC**

BLN Proposed License Conditions

1. ITAAC (Inspections, Tests, Analyses, and Acceptance Criteria):

There are several ITAAC identified in the COLA. Once incorporated into the COL, the regulations identify the requirements that must be met.

PROPOSED LICENSE CONDITION:

The ITAAC identified in the tables in Appendix B are hereby 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.

2. COL HOLDER ITEMS:

There are several COL information items that can not be resolved prior to issuance of the Combined License. The referenced AP1000 design certification has already justified why each COL Holder item (as identified in the AP1000 DCD Tier 2 Table 1.8-2) can not be resolved before the COL is issued, provides sufficient information on these items to support the NRC licensing decision, and identifies an appropriate implementation milestone. Each COL information item that cannot be resolved completely before the COL is issued is also identified as a COL Holder item in the COLA FSAR Table 1.8-202. Therefore, in accordance with the guidance in Regulatory Guide 1.206, section C.III.4.3, the following License Condition is proposed to address these COL Holder items. Holder items (per DCD Table 1.8-2) that are addressed by the COLA are not included in the proposed condition. These include COL information item numbers 3.11-1, 9.5-6, 10.1-1, and 13.6-5.

PROPOSED LICENSE CONDITION:

Each COL Holder item identified below shall be completed by the identified implementation milestone through completion of the action therein identified.

SUMMARY OF COMBINED LICENSE INFORMATION HOLDER ITEMS			
COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
3.6-1	Pipe Break Hazards Analysis	3.6.4.1	Prior to initial fuel load
<p>After a Combined License is issued, the following activity will be completed by the COL holder:</p> <p>A pipe rupture hazard analysis is part of the piping design. It is used to identify postulated break locations and layout changes, support design, whip restraint design, and jet shield design. The final design for these activities will be completed prior to fabrication and installation of the piping and connected components. The as-built reconciliation of the pipe break hazards analysis in accordance with the criteria outlined in subsections 3.6.1.3.2 and 3.6.2.5 will be completed prior to fuel load.</p>			
3.7-3	Seismic Interaction Review	3.7.5.3	Prior to initial fuel load
<p>The seismic interaction review will be updated by the Combined License holder for as-built information. This review is performed in parallel with the seismic margin evaluation. The review is based on as-procured data, as well as the as-constructed condition. The as-built</p>			

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SUMMARY OF COMBINED LICENSE INFORMATION HOLDER ITEMS			
COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
seismic interaction review is not provided with the COL application, but is completed prior to fuel load.			
3.7-4	Reconciliation of Seismic Analyses of Nuclear Island Structures	3.7.5.4	Prior to initial fuel load
The Combined License holder will reconcile the seismic analyses described in subsection 3.7.2 for detail design changes, such as those due to as-procured or as-built changes in component mass, center of gravity, and support configuration based on as-procured equipment information. Deviations are acceptable based on an evaluation consistent with the methods and procedure of Section 3.7 provided the amplitude of the seismic floor response spectra, including the effect due to these deviations, does not exceed the design basis floor response spectra by more than 10 percent. The Combined License holder will complete this reconciliation prior to fuel load.			
3.9-2	Design Specification and Reports	3.9.8.2	Prior to initial fuel load
After a Combined License is issued, the following activities are completed by the COL holder: Reconciliation of the as-built piping (verification of the thermal cycling and stratification loadings considered in the stress analysis discussed in subsection 3.9.3.1.2) is completed by the COL holder after the construction of the piping systems and prior to fuel load.			
4.4-2	Confirm Assumptions for Safety Analyses DNBR Limits	4.4.7	Prior to initial fuel load
Combined License applicants referencing the AP1000 certified design will address changes to the reference design of the fuel, burnable absorber rods, rod cluster control assemblies, or initial core design from that presented in the DCD. Following selection of the actual plant operating instrumentation and calculation of the instrumentation uncertainties of the operating plant parameters as discussed in subsection 7.1.6, Combined License applicants will calculate the design limit DNBR values using the RDTP with these instrumentation uncertainties and confirm that either the design limit DNBR values as described in Section 4.4 remain valid, or that the safety analysis minimum DNBR bounds the new design limit DNBR values plus DNBR penalties, such as rod bow penalty.			
5.3-1	Reactor Vessel Pressure – Temperature Limit Curves	5.3.6.1	Prior to initial fuel load
The COL Holder shall update the P/T limits using the PTLR methodologies approved in the AP1000 DCD using the plant-specific material properties or confirm that the reactor vessel material properties meet the specifications and use the Westinghouse generic PTLR curves.			
5.3-4	Reactor Vessel Materials Properties Verification	5.3.6.4.1	Prior to initial fuel load
The Combined License holder will complete prior to fuel load verification of plant-specific belt line material properties consistent with the requirements in subsection 5.3.3.1 and Tables 5.3-1 and 5.3-3. The verification will include a pressurized thermal shock evaluation based on as-procured reactor vessel material data and the projected neutron fluence for the plant design objective of 60 years. This evaluation report will be submitted for NRC staff review.			

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COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
9.1-7	Coupon Monitoring Program	9.1.6	Prior to commercial operation
A spent fuel rack Metamic coupon monitoring program is to be implemented when the plant is placed into commercial operation. This program includes tests to monitor bubbling, blistering, cracking, or flaking; and a test to monitor for corrosion, such as weight loss measurements and or visual examination.			
10.2-1	Turbine Maintenance and Inspection	10.2.6	Prior to initial fuel load
The Combined License holder will submit to the NRC staff for review prior to fuel load, and then implement a turbine maintenance and inspection program. The program will be consistent with the maintenance and inspection program plan activities and inspection intervals identified in subsection 10.2.3.6. The Combined License holder will have available plant-specific turbine rotor test data and calculated toughness curves that support the material property assumptions in the turbine rotor analysis after the fabrication of the turbine and prior to fuel load.			
14.4-2	Test Specifics and Procedures	14.4.2	Prior to initial fuel load
NOTE –addressed by proposed License Condition #6.			
14.4-3	Conduct of Test Program	14.4.3	Prior to initiating test program
A site-specific startup administration manual (procedure), which contains the administration procedures and requirements that govern the activities associated with the plant initial test program, as identified in DCD Subsection 14.2.3 and as described in APP-GW-GLR-038 (DCD Reference 2), is provided prior to initiating the plant initial test program.			
14.4-4	Review and Evaluation of Test Results	14.4.4	Prior to initial fuel load
The Combined License holder is responsible for review and evaluation of individual test results as well as final review of overall test results and for review of selected milestones or hold points within the test phases. Test exceptions or results which do not meet acceptance criteria are identified to the affected and responsible design organizations, and corrective actions and retests, as required, are performed.			
14.4-6	First-Plant-Only and Three-Plant-Only Tests	14.4.6	Prior to preoperational testing
The COL holder for the first plant and the first three plants will perform the tests listed in subsection 14.2.5. For subsequent plants, either tests listed in subsection 14.2.5 shall be performed, or the COL applicant shall provide a justification that the results of the first-plant-only tests or first-three-plant tests are applicable to the subsequent plant. The Combined License holder(s) for the first AP1000 plant (or first three plants) available for testing will perform the tests defined during preoperational and startup testing as identified in subsections 14.2.9 and 14.2.10. Combined License holders referencing the results of the tests will provide the report as necessary. The schedule for providing this information will be provided prior to preoperational testing.			

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SUMMARY OF COMBINED LICENSE INFORMATION HOLDER ITEMS			
COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
19.59.10-1	As-Built SSC HCLPF Comparison to Seismic Margin Evaluation	19.59.10.5	Prior to initial fuel load
<p>The Combined License holder referencing the AP1000 certified design will review differences between the as-built plant and the design used as the basis for the AP1000 seismic margins analysis prior to fuel load. A verification walkdown will be performed with the purpose of identifying differences between the as-built plant and the design. Any differences will be evaluated to determine if there is a significant adverse effect on the seismic margins analysis results. Spacial interactions are addressed by COL information item 3.7-3. Details of the process will be developed by the Combined License holder.</p> <p>The Combined License holder referencing the AP1000 certified design should compare the as-built SSC HCLPFs to those assumed in the AP1000 seismic margin evaluation prior to fuel load. Deviations from the HCLPF values or assumptions in the seismic margin evaluation due to the as-built configuration and final analysis should be evaluated to determine if vulnerabilities have been introduced. The requirements to which the equipment is to be purchased are included in the equipment specifications. Specifically, the equipment specifications include:</p> <ol style="list-style-type: none"> 1. Specific minimum seismic requirements consistent with those used to define the Table 19.55-1 HCLPF values. <p>This includes the known frequency range used to define the HCLPF by comparing the required response spectrum (RRS) and test response spectrum (TRS). The range of frequency response that is required for the equipment with its structural support is defined.</p> <ol style="list-style-type: none"> 2. Hardware enhancements that were determined in previous test programs and/or analysis programs will be implemented. 			
19.59.10-2	Evaluation of As-Built Plant Versus Design in AP1000 PRA and Site-Specific PRA External Events	19.59.10.5	Prior to initial fuel load
<p>The Combined License holder referencing the AP1000 certified design will review differences between the as-built plant and the design used as the basis for the AP1000 PRA and Table 19.59-18 prior to fuel load. If the effects of the differences are shown, by a screening analysis, to potentially result in a significant increase in core damage frequency or large release frequency, the PRA will be updated to reflect these differences.</p>			
19.59.10-3	Internal Fire and Internal Flood Analyses	19.59.10.5	Prior to initial fuel load
<p>The Combined License holder referencing the AP1000 certified design will review differences between the as-built plant and the design used as the basis for the AP1000 internal fire and internal flood analysis prior to fuel load. Differences will be evaluated to determine if there is significant adverse effect on the internal fire and internal flood analysis results.</p>			
19.59.10-4	Develop and Implement Severe Accident Management Guidance	19.59.10.5	Prior to startup testing
NOTE - addressed by proposed License Condition #6.			

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SUMMARY OF COMBINED LICENSE INFORMATION HOLDER ITEMS			
COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
19.59.10-5	Equipment Survivability	19.59.10.5	Prior to initial fuel load
The Combined License holder referencing the AP1000 certified design will perform a thermal lag assessment of the as-built equipment listed in Tables 6b and 6c in Attachment A of APP-GW-GLR-069 to provide additional assurance that this equipment can perform its severe accident functions during environmental conditions resulting from hydrogen burns associated with severe accidents.			

3. OPERATIONAL PROGRAM IMPLEMENTATION:

The provisions of the regulations address implementation milestones for some operational programs. The NRC will use license conditions to ensure implementation for those operational programs whose implementation is not addressed in the regulations. COLA FSAR Subsection 13.4, Table 13.4-201, identifies several programs required by regulations that must be implemented by a milestone to be identified in a license condition.

PROPOSED LICENSE CONDITION:

The licensee shall implement the programs or portions of programs identified in Table 13.4-201 on or before the associated milestones in Table 13.4-201.

A. Construction Initiation – The licensee shall implement each operational program identified below prior to initiating construction of nuclear safety or security related structures, systems, or components.

A.1 – Fitness for Duty (Construction)

B. 18 Months Prior to Fuel Load – The licensee shall implement each operational program identified below at least 18 months prior to scheduled date of initial fuel load.

B.1 – Reactor Operator Training

C. Receipt of materials – The licensee shall implement each operational program identified below prior to initial receipt of byproduct, source, or special nuclear materials onsite (excluding Exempt Quantities as described in 10 CFR 30.18).

C.1 – Radiation Protection (applicable portions)

D. Fuel Receipt – The licensee shall implement each operational program identified below prior to initial receipt of fuel onsite.

D.1 – Fire Protection (applicable portions)

D.2 – Radiation Protection (applicable portions)

D.3 – Security Program (applicable portions)

E. Construction Testing – The licensee shall implement each operational program identified below prior to initial construction testing.

E.1 – Initial Test Program – Construction Testing

F. – Preoperational Testing – The licensee shall implement each operational program identified below prior to initial preoperational testing.

F.1 – Initial Test Program – Preoperational Testing

G. Fuel Loading – The licensee shall implement each operational program identified below prior to initial fuel load.

G.1 – Environmental Qualification

G.2 – Pre-Service Testing

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G.3 – Process and Effluent monitoring and Sampling

G.4 – Radiation Protection (applicable portions)

G.5 – Motor-Operated Valve Testing

G.6 – Fire Protection

G.7 – Fitness for Duty (Operations)

G.8 – Containment Leakage Rate Testing Program

H. Startup Testing – The licensee shall implement each operational program identified below prior to initial startup testing

H.1 – Initial Test Program – Startup Testing

I. MODE 4 – Not used.

J. Initial Criticality – The licensee shall implement each operational program identified below prior to initial criticality.

J.1 – Reactor Vessel Material Surveillance

K. Waste Shipment – The licensee shall implement each operational program identified below prior to initial radioactive waste shipment.

K.1 – Radiation Protection

4. Not used

5. SECURITY PROGRAM REVISIONS:

An implementation license condition approved in the SRM regarding SECY-05-0197 applies to the security program.

PROPOSED LICENSE CONDITION:

The licensee shall maintain in effect the provisions of the physical security plan, security personnel training and qualification plan, and safeguards contingency plan, and all amendments made pursuant to the authority of 10 CFR 50.90, 50.54(p), 52.97, and Section VIII of Appendix D to Part 52 when nuclear fuel is onsite, and continuing until all nuclear fuel is permanently removed from the site.

6. OPERATIONAL PROGRAM READINESS:

The NRC inspection of operational programs will be the subject of the following license condition in accordance with SECY-05-0197:

PROPOSED LICENSE CONDITION:

The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.

a. This schedule shall include a submittal schedule for the emergency planning implementing procedures to the NRC consistent with 10 CFR Part 50, Appendix E, Section V.

b. This schedule shall include a schedule for the development of a site specific Severe Accident Management Guidance.

c. This schedule shall include a submittal schedule for the reactor vessel pressurized thermal shock evaluation at least 18 months prior to initial fuel load.

d. This schedule shall include a submittal schedule for approved preoperational and startup test procedures in accordance with FSAR Section 14.2.3.

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7. VENDOR AE CONSTRUCTOR QUALIFICATIONS:

COLA FSAR Subsection 1.4.1 indicates that the applicant has not yet identified some of the major participants in the construction of the power plant. Thus, the technical qualifications of the NSSS vendor, architect-engineer, and constructor, and the division of responsibility among them could not be reviewed.

PROPOSED LICENSE CONDITION:

Prior to commencement of construction, the licensee shall submit a license amendment request that 1) identifies the NSSS vendor, architect-engineer, and constructor; 2) describes their technical qualifications; and 3) describes the division of responsibility among them.

8. STARTUP TESTING:

COLA FSAR Section 14.2 specifies certain startup tests that must be completed after fuel load. Operating licenses typically have included the following condition related to startup testing.

PROPOSED LICENSE CONDITION:

Any changes to the Initial Startup Test Program described in Chapter 14 of the FSAR made in accordance with the provisions of 10 CFR 50.59 or Section VIII of Appendix D to 10 CFR Part 52 shall be reported in accordance with 50.59(d) within one month of such change.

9. Not used

10. ENVIRONMENTAL PROTECTION PLAN:

Operating licenses typically have included the following condition related to environmental testing.

PROPOSED LICENSE CONDITION:

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 C.F.R. Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as referenced by Subpart C of 10 C.F.R. Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," and all applicable requirements therein have been satisfied.

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Appendix A: Environmental Protection Plan (Nonradiological)

1.0 Objectives of the Environmental Protection Plan

The purpose of the Environmental Protection Plan (EPP) is to provide for protection of nonradiological environmental resources during construction and operation of the nuclear facility. The principal objectives of the EPP are as follows:

- (1) Verify that the facility is operated in an environmentally acceptable manner, as established by the Final Environmental Impact Statement (FEIS) and other NRC environmental impact assessments.
- (2) Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.
- (3) Keep NRC informed of the environmental effects of facility construction and operation and of actions taken to control those effects.

Environmental concerns identified in the FEIS which relate to water quality matters are regulated by way of the licensee's NPDES permit.

2.0 Environmental Protection Issues

In the FEIS dated [month year], the staff considered the environmental impacts associated with the construction and operation of the Bellefonte Nuclear Plant, Units 3 and 4 (BLN). Certain environmental issues were identified which required study or license conditions to resolve environmental concerns and to assure adequate protection of the environment.

2.1 Aquatic Issues

- (1) No specific nonradiological aquatic impact issues were identified by NRC staff in the FEIS.

2.2 Terrestrial Issues

- (1) No specific nonradiological terrestrial impact issues were identified by NRC staff in the FEIS.

3.0 Consistency Requirements

3.1 Plant Design, Construction, and Operation Activities

The licensee may make changes in station design or operation or perform tests or experiments affecting the environment provided such activities do not involve an unreviewed environmental question and do not involve a change in the EPP*. Changes in station design or operation or performance of tests or experiments which do not affect the environment are not subject to the requirements of this EPP. Activities governed by Section 3.3 are not subject to the requirements of this section.

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Before engaging in additional construction or operational activities which may significantly affect the environment, the licensee shall prepare and record an environmental evaluation of such activity. Activities are excluded from this requirement if all measurable nonradiological environmental effects are confined to the on-site-areas previously disturbed during site preparation and plant construction. When the evaluation indicates that such activity involves an unreviewed environmental question, the licensee shall provide a written evaluation of such activity and obtain prior NRC approval. When such activity involves a change in the EPP, such activity and change to the EPP may be implemented only in accordance with an appropriate license amendment as set forth in Section 5.3 of this EPP.

A proposed change, test or experiment shall be deemed to involve an unreviewed environmental question if it concerns: (1) a matter which may result in a significant increase in any adverse environmental impact previously evaluated in the FEIS, environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board; or (2) a significant change in effluents or power level; or (3) a matter, not previously reviewed and evaluated in the documents specified in (1) of this Subsection, which may have a significant adverse environmental impact.

The licensee shall maintain records of changes in facility design or operation and of tests and experiments carried out pursuant to this Subsection. These records shall include written evaluations which provide bases for the determination that the change, test, or experiment does not involve an unreviewed environmental question or constitute a decrease in the effectiveness of this EPP to meet the objectives specified in Section 1.0. The licensee shall include as part of the Annual Environmental Operating Report (per Subsection 5.4.1) brief descriptions, analyses, interpretations, and evaluations of such changes, tests and experiments.

* This provision does not relieve the licensee of the requirements of 10 CFR 50.59.

3.2 Reporting Related to the NPDES Permit and State Certification

Changes to, or renewals of, the NPDES Permits or the State certification shall be reported to the NRC within 30 days following the date the change or renewal is approved. If a permit or certification, in part or in its entirety, is appealed and stayed, the NRC shall be notified within 30 days following the date the stay is granted.

The licensee shall notify the NRC of changes to the effective NPDES Permit proposed by the licensee by providing NRC with a copy of the proposed change at the same time it is submitted to the permitting agency. The licensee shall provide the NRC a copy of the application for renewal of the NPDES Permit at the same time the application is submitted to the permitting agency.

3.3 Changes Required for Compliance with Other Environmental Regulations

Changes in plant design or operation and performance of tests or experiments which are required to achieve compliance with other Federal, State, and local environmental regulations are not subject to the requirements of Section 3.1.

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4.0 Environmental Conditions

4.1 Unusual or Important Environmental Events

The licensee shall evaluate and report to the NRC Operations Center within 24 hours (followed by a written report in accordance with Subsection 5.4) any occurrence of an unusual or important event that indicates or could result in significant environmental impact causally related to the construction activities or plant operation. The following are examples of unusual or important environmental events: onsite plant or animal disease outbreaks, mortality or unusual occurrence of any species protected by the Endangered Species Act of 1973, unusual fish kills, unusual increase in nuisance organisms or conditions, and unanticipated or emergency discharge of waste water or chemical substances.

Routine monitoring programs are not required to implement this condition.

4.2 Environmental Monitoring

4.2.1 Aquatic Monitoring

(1) No specific nonradiological aquatic monitoring requirements were identified by NRC staff in the FEIS.

4.2.2 Terrestrial Monitoring

(1) No specific nonradiological terrestrial monitoring requirements were identified by NRC staff in the FEIS.

5.0 Administrative Procedures

5.1 Review and Audit

The licensee shall provide for review and audit of compliance with the EPP. The audits shall be conducted independently; they may not be conducted by the individual or groups responsible for performing the specific activity. A description of the organizational structure utilized to achieve the independent review and audit function and results of the audit activities shall be maintained and made available for inspection.

5.2 Records Retention

The licensee shall make and retain records associated with this EPP in a manner convenient for review and inspection and shall make them available to the NRC on request.

The licensee shall retain records of construction and operation activities determined to potentially affect the continued protection of the environment for the life of the station. The licensee shall retain all other records relating to this EPP for five years or, where applicable, in accordance with the requirements of other agencies.

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5.3 Changes in the Environmental Protection Plan

Requests for changes in the EPP shall include an assessment of the environmental impact of the proposed change and a supporting justification. Implementation of such changes in the EPP shall not commence prior to NRC approval of the proposed changes in the form of a permit amendment incorporating the appropriate revision to the EPP.

5.4 Reporting Requirements

5.4.1 Routine Reports

An Annual Nonradiological Environmental Report describing implementation of this EPP for the previous year shall be submitted to the NRC prior to June 1 of each year. The initial report shall be submitted prior to June 1 of the year following issuance of the operating license.

The report shall include summaries and analyses of the results of the environmental protection activities required by Subsection 4.2 of this EPP for the report period, including a comparison with related preoperational studies, operational controls (as appropriate), and previous nonradiological environmental monitoring reports, and an assessment of the observed impacts of the plant operation on the environment. If harmful effects or evidence of trends toward irreversible damage to the environment are observed, the licensee shall provide a detailed analysis of the data and a proposed course of mitigating action.

The Annual Nonradiological Environmental Report shall also include:

- (1) A list of EPP noncompliances and the corrective actions taken to remedy them.
- (2) A list of changes in station design or operation, tests, and experiments made in accordance with Subsection 3.1 which involved a potentially significant unreviewed environmental question.
- (3) A list of nonroutine reports submitted in accordance with Subsection 5.4.2.

In the event that some results are not available by the report due date, the report shall be submitted noting and explaining the missing results. The missing results shall be submitted as soon as possible in a supplementary report.

5.4.2 Nonroutine Reports

The licensee shall submit a written report to the NRC within 30 days of occurrence of any event described in Section 4.1 of this plan. The report should:

- (a) describe, analyze, and evaluate the event, including the extent and magnitude of the impact, and site preparation and preliminary construction activities underway at the time of the event,
- (b) describe the likely cause of the event,
- (c) indicate the action taken to correct the reported event,
- (d) indicate the corrective action taken to preclude repetition of the event and to prevent similar occurrences involving similar site preparation and preliminary construction activities, and (e)
- indicate the agencies notified and their preliminary responses.

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For events reportable under this subsection that also require reports to other Federal, State or local agencies, the licensee shall report in accordance with those reporting requirements in lieu of the requirements of this subsection. The licensee shall provide the NRC with a copy of such report at the same time it submits it to the other agency.

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Appendix B. Inspections, Tests, Analysis and Acceptance Criteria

AP1000 DCD Tier 1 ITAAC

The Tier 1 information (including the ITAAC) of the referenced DCD is incorporated by reference with the following departures and/or supplements.

Security Hardware ITAAC

The security related ITAAC are included in the referenced DCD Tier 1 Subsection 2.6.9 as incorporated by reference above.

Plant Specific ITAAC

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.3.29:

2.3.30 Storm Drain System
No entry for this system.

2.3.31 Raw Water System
No entry for this system.

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.5.10:

2.5.11 Meteorological and Environmental Monitoring System
No entry for this system

2.5.12 Closed Circuit TV System
No Entry for this system

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.6.11:

2.6.12 Transmission Switchyard and Offsite Power System
No entry for this system.

Emergency Planning ITAAC

The emergency planning ITAAC are included in the attached table. Include these ITAAC after DCD Tier 1 Section 3.7.

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 1 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
<p>10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.</p>	<p>1.1 A standard emergency classification and emergency action level (EAL) scheme exists, and identifies facility system and effluent parameters constituting the bases for the classification scheme. [D.1**]</p> <p>[**D.1 corresponds to NUREG-0654 /FEMA-REP-1 evaluation criteria.]</p>	<p>1.1 An inspection of the control room, technical support center (TSC), and Central Emergency Control Center (CECC) will be performed to verify that they have displays for retrieving facility system and effluent parameters in specific Emergency Action Levels (EALs) identified in the following list of EALs in Appendix 1, Section 5, of the Emergency Plan:</p> <p style="text-align: center;">EALs in Emergency Plan Appendix 1, Section 5</p> <p>Abnormal Rad Levels/Radiological Effluents: AU1 (EALs 1, 2), AU2, AA1 (EALs 1, 2), AA2, AA3, AS1 (EAL 1), AG1 (EAL 1) Cold Shutdown/Refueling System Malfunction: CU2, CU3, CU4, CU7, CU8, CA1, CA4, CS1, CG2 Fission Product Barrier Thresholds: <u>Fuel Clad Barrier Thresholds Values:</u> 2. Primary Coolant Activity Level 3. Core Exit Thermocouple Readings 4. Reactor Vessel Water Level 6. Containment Radiation Monitoring <u>RCS Barrier Threshold Values:</u> 2. RCS Leak Rate 4. SG Tube Rupture 6. Containment Radiation Monitoring <u>Containment Barrier Threshold Values:</u> 2. Containment Pressure 3. Core Exit Thermocouple Reading 4. SG Secondary Side Release with P-to-S Leakage 5. CNMT Isolation Failure or Bypass 6. Significant Radioactive Inventory in Containment Hazards or Other Conditions Affecting Plant Safety: HU1 (EAL 2), HA1 (EALs 1, 2) System Malfunction: SU1, SU4 (EAL 1), SU8, SA1, SA2, SA4, SS1, SS2, SS3, SS6, SG1, SG2</p>	<p>1.1.1 The specific parameters identified in the EALs in Emergency Plan Appendix 1, Section 5 have been retrieved and displayed in the control room, TSC, and CECC.</p> <p>1.1.2 The ranges available in the control room, TSC, and CECC encompassed the values for the specific parameters identified in the EALs in Emergency Plan Appendix 1, Section 5.</p>

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 2 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
2.0 Notification Methods and Procedures			
<p>10 CFR 50.47(b)(5) – Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.</p>	<p>2.1 The means exist to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency. [E.1]</p>	<p>2.1 A test will be performed of the capabilities.</p>	<p>2.1.1 A report exists that confirms communications have been established between the control room and the TVA ODS.</p> <p>2.1.2 A report exists that confirms communications have been established between the ODS and the State of Alabama.</p> <p>2.1.3 A report exists that confirms communications have been established between the ODS and Jackson County.</p> <p>2.1.4 A report exists that confirms communications have been established between the ODS and DeKalb County.</p>
	<p>2.2 The means exist to notify emergency response personnel. [E.2]</p>	<p>2.2 A test will be performed of the capabilities.</p>	<p>2.2 A report exists that confirms notification to the Bellefonte emergency response organization have been performed through the Emergency Preparedness Paging System.</p>
	<p>2.3 The means exist to notify and provide instructions to the populace within the plume exposure EPZ. [E.6]</p>	<p>NOTE: The means to notify and provide instructions to the populace within the plume exposure EPZ is addressed by Acceptance Criteria 8.1.1.2</p>	

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 3 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
3.0 Emergency Communications			
<p>10 CFR 50.47(b)(6) – Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.</p>	<p>3.1 The means exist for communications among the control room, TSC, EOF, principal State and local emergency operations centers (EOCs), and radiological field assessment teams. [F.1.d]</p>	<p>3.1 A test will be performed of the capabilities.</p> <p>NOTE: Additional ITAAC for the as-built TSC and OSC are addressed in Table 3.1-1 of Tier 1 of the AP1000 Design Control Document.</p>	<p>3.1.1 A report exists that confirms the following communications have been established :</p> <ul style="list-style-type: none"> · Control room and ODS; · TSC and ODS. <p>3.1.2 A report exists that confirms communications have been established between the TSC and radiological monitoring teams.</p>
	<p>3.2 The means exist for communications from the control room, TSC, and EOF to the NRC headquarters and regional office EOCs (including establishment of the Emergency Response Data System (ERDS) between the onsite computer system and the NRC Operations Center.) [F.1.f]</p>	<p>NOTE: ITAAC for these communications systems are addressed in Table 3.1-1 of Tier 1 of the AP1000 Design Control Document.</p>	

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 4 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
4.0 Public Education and Information			
<p>10 CFR 50.47(b)(7) – Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.</p>	<p>4.1 The licensee has provided space which may be used for a limited number of the news media at the EOF. [G.3.b]</p>	<p>4.1 An inspection of the Joint Information Center will be performed to verify that space is provided for a limited number of the news media.</p>	<p>4.1 The Joint Information Center has been located in the TVA Chattanooga Complex.</p>

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 5 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
5.0 Emergency Facilities and Equipment			
<p>10 CFR 50.47(b)(8) – Adequate emergency facilities and equipment to support the emergency response are provided and maintained.</p>	<p>5.1 The licensee has established a technical support center (TSC) and onsite operations support center (OSC). [H.1]</p>	<p>5.1 An inspection of the as-built TSC and OSC will be performed.</p> <p>NOTE: Additional ITAAC for the as-built TSC and OSC are addressed in Table 3.1-1 of Tier 1 of the AP1000 Design Control Document.</p>	<p>5.1.1 The TSC has been located in the Maintenance Building.</p> <p>5.1.2 The TSC includes radiation monitors and a ventilation system with a high efficiency particulate air (HEPA) and charcoal filter.</p> <p>5.1.3 Back-up electrical power supply was available for the TSC.</p> <p>5.1.4 The OSC is in a location separate from the control room.</p>
	<p>5.2 The licensee has established an emergency operations facility (EOF). [H.2]</p>	<p>5.2 An inspection of the CECC will be performed.</p>	<p>5.2.1 The CECC had at least 243 square meters (2,625 square feet).</p> <p>5.2.2 Voice transmission and reception have been accomplished between the CECC and the following organizations: NRC, Jackson County, DeKalb County, and State of Alabama.</p>

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 6 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
6.0 Accident Assessment			
<p>10 CFR 50.47(b)(9) – Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.</p>	<p>6.1 The means exist to provide initial and continuing radiological assessment throughout the course of an accident. [1.2]</p>	<p>6.1 A test of the emergency plan will be conducted by performing an exercise or drill to verify the capability to perform accident assessment.</p>	<p>6.1 A report exists that confirms an exercise or drill has been accomplished including use of selected monitoring parameters identified in the EALs in Emergency Plan Appendix 1, Section 5, to assess simulated degraded plant and initiate protective actions in accordance with the following criteria:</p> <ul style="list-style-type: none"> A. Accident Assessment and Classification <ul style="list-style-type: none"> 1. Initiating conditions identified, EALs parameters determined, and the emergency correctly classified throughout the drill. B. Radiological Assessment and Control <ul style="list-style-type: none"> 1. Onsite radiological surveys performed and samples collected. 2. Radiation exposure to emergency workers monitored and controlled. 3. Field monitoring teams assembled and deployed. 4. Field team data collected and disseminated. 5. Dose projections developed. 6. The decision whether to issue radioprotective drugs to TVA emergency workers made. 7. Protective action recommendations developed and communicated to appropriate authorities.

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 7 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
	6.2 The means exist to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3]	6.2 An analysis of emergency plan implementing procedures will be performed.	6.2.1 A methodology has been established to determine source term of releases of radioactive materials within plant systems.
	6.3 The means exist to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]	6.3 An analysis of emergency plan implementing procedures will be performed.	6.3 A methodology has been provided to establish the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.
	6.4 The means exist to acquire and evaluate meteorological information. [I.5]	6.4 An inspection of the control room, TSC, and CECC will be performed to verify the availability of the following meteorological data is available: <ul style="list-style-type: none"> · Wind speed (at 10 m and 54 m) · Wind direction (at 10 m and 54 m) · Ambient air temperature (at 10 m and 54 m) 	6.4 The specified meteorological data was available at the control room, TSC, and CECC.

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 8 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
	<p>6.5 The means exist to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8]</p>	<p>6.5 An analysis of emergency plan implementing procedures will be performed.</p>	<p>6.5 A methodology has been established to provide rapid assessment of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways.</p>
	<p>6.6 The capability exists to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10⁻⁷ μCi/cc (microcuries per cubic centimeter) under field conditions. [I.9]</p>	<p>6.6 A test of TVA field survey instrumentation will be performed to verify the capability to detect airborne concentrations as low as 1E-07 microcuries per cubic centimeters.</p>	<p>6.6 A report exists that confirms instrumentation used for monitoring I-131 to detect airborne concentrations as low as 1E-07 microcuries per cubic centimeters has been provided.</p>
	<p>6.7 The means exist to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]</p>	<p>6.7 An analysis of emergency plan implementing procedures will be performed to verify that a methodology is provided to establish means for relating contamination levels and airborne radioactivity levels to dose rates and gross radioactivity measurements for the following isotopes – Kr-88, Ru-106, I-131, I-132, I-133, I-134, I-135, Te-132, Xe-133, Xe-135, Cs-134, Cs-137, Ce-144.</p>	<p>6.7 The means for relating contamination levels and airborne radioactivity levels to dose rates and gross radioactivity measurements for the specified isotopes has been established.</p>

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 9 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
7.0 Protective Response			
<p>10 CFR 50.47(b)(10) – A range of protective actions has been developed for the plume exposure EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure EPZ appropriate to the locale have been developed.</p>	<p>7.1 The means exist to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including:[J.1] a. employees not having emergency assignments; b. visitors; c. contractor and construction personnel; and d. other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area.</p>	<p>7.1 A test of the onsite warning and communications capability will be performed during a drill or exercise.</p>	<p>7.1.1 A report exists that confirms that, during a drill or exercise, notification and instructions were provided to onsite workers and visitors, within the Protected Area, over the plant public announcement system.</p> <p>7.1.2 A report exists that confirms that, during a drill or exercise, audible warnings were provided to individuals outside the Protected Area, but within the Owner Controlled Area.</p>

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TABLE 3.8-1 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (SHEET 10 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
8.0 Exercises and Drills			
<p>10 CFR 50.47(b)(14) – Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.</p>	<p>8.1 Licensee conducts a full-participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure EPZ, and each State within the ingestion control EPZ. [N.1]</p>	<p>8.1 A full-participation exercise (test) will be conducted within the specified time periods of Appendix E to 10 CFR Part 50.</p>	<p>8.1.1.1 A report exists that confirms an exercise was conducted within the specified time periods of Appendix E to 10 CFR Part 50, onsite exercise objectives were met, and there were no uncorrected onsite exercise deficiencies.</p> <p>8.1.1.2 A report exists that confirms exercise objectives addressed each of the following Emergency Planning (EP) Program Elements:</p> <ul style="list-style-type: none"> · Emergency Classification · Notification and Emergency Communications · Emergency Public Information · Emergency Facilities and Equipment · Accident Assessment · Protective Response and Protective Action Recommendations · Radiological Exposure Control · Recovery and Re-Entry

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>8.1.2.1 A report exists that confirms onsite emergency response personnel were mobilized to fill emergency response positions and there were no uncorrected onsite exercise deficiencies.</p> <p>8.1.2.2 A report exists that confirms onsite emergency response personnel performed their assigned responsibilities and there were no uncorrected onsite exercise deficiencies.</p> <p>(Note 1: Applicant emergency response organization assigned responsibilities are specified in Sections II.B.1 through II.B.7 of the COL Application Emergency Plan.)</p>