FINAL SAFETY ANALYSIS REPORT

CHAPTER 1

INTRODUCTION AND GENERAL DESCRIPTION OF THE PLANT

1.0 INTRODUCTION AND GENERAL DESCRIPTION OF THE PLANT

This chapter of the U.S. EPR Final Safety Analysis Report (FSAR) is incorporated by reference with supplements as identified in the following sections.

1.1 INTRODUCTION

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

This Final Safety Analysis Report is submitted to the Nuclear Regulatory Commission as part of an application for a Class 103 combined license (COL) to construct and operate a nuclear power facility under the provisions of 10 CFR 52, Subpart C. This nuclear power facility is designated {the Bell Bend Nuclear Power Plant (BBNPP).} This FSAR incorporates the FSAR prepared for the design certification application for the AREVA evolutionary pressurized water reactor, (herein referred to as the U.S. EPR). AREVA NP, the entity sponsoring the design certification application for the U.S. EPR, submitted Revision1 of the U.S. EPR design certification application, including the U.S. EPR FSAR, to the NRC on May 29, 2009 (AREVA, 2009).

Upon approval and issuance of the design certification for the U.S. EPR, the approved version of the FSAR for the U.S. EPR and the associated Appendix to 10 CFR 52 documenting the design certification for the U.S. EPR are incorporated by reference into this COL application. Within each section, or subsection, only supplemental information or departures from the certified design are presented. If the U.S. EPR provides sufficient information, this FSAR will state "This section of the U.S. EPR FSAR is incorporated by reference" at the section (i.e. X.Y) level and "No departures or supplements" at the highest subsection level where such a statement can be made. Likewise, if a section contains additional information, a statement is provided at the section level to identify if departures or supplements are provided. Section and subsection numbering is only provided to the extent necessary to provide sufficient context to correlate the information provided in this FSAR with the information provided in the U.S. EPR FSAR.

Supplemental information is provided in three forms. Additional information, such as this text, is provided in the appropriate section. The second form is COL Item responses. COL Items are statements in the U.S. EPR FSAR that indicate that the COL applicant must provide additional information. Each applicable COL Item is restated in the equivalent section/subsection in this FSAR and information to address the COL Item is provided. The final type of supplemental information provided in this FSAR is to address conceptual design information provided in the U.S. EPR FSAR. Conceptual design information is presented in the U.S. EPR FSAR enclosed in double brackets "[[ ]]". As stated in the U.S. EPR FSAR, the conceptual design information is outside the scope of the U.S. EPR standard design, and is not submitted for certification as part of that document. Like COL Items, the conceptual design information is restated in this FSAR followed by the site specific information.

Departures from the U.S. EPR FSAR are identified in the applicable sections of the COL Application.

{U.S. EPR nuclear power plants that are licensed in cooperation with UniStar Nuclear Services LLC are standardized to the extent practical. This allows for a standardized FSAR. Information that is unique to BBNPP is enclosed in braces "{ }". Information not enclosed in braces is generic for all facilities licensed in cooperation with UniStar Nuclear Services. }

The U.S. EPR FSAR includes the following COL Item in Section 1.1:

> A combined license (COL) applicant that references the U.S. EPR design certification and proposes a multi-unit license application will provide the changes and additional information needed to license a multi-unit plant.

This COL Item is addressed as follows:

{This COL application is for a single unit U.S. EPR. As such, no changes or additional information are needed to address this COL Item. The reference plant for this COL application is Calvert Cliffs Nuclear Power Plant Unit 3. The BBNPP COL application maintains the same format and content as the reference plant to the extent practicable.}

1.1.1 PLANT LOCATION

The U.S. EPR FSAR includes the following COL Item in Section 1.1.1:

> A COL applicant that references the U.S. EPR design certification will identify the specific plant site location.

This COL Item is addressed as follows:

{BBNPP is located south and west of the existing Susquehanna Steam Electric Station (SSES) in Salem Township, Luzerne County, Pennsylvania. The site boundaries are delineated in Figure 1.1-1. The BBNPP Owner Controlled Area (OCA) is 882 ac (357 ha). The BBNPP site occupies an area of 424 acres (172 hectares) within the OCA. No commercial, industrial, residential, or recreational structures are located within the site area.

The BBNPP site is found approximately 5 mi (8 km) northeast of the Borough of Berwick, Pennsylvania, and 1.5 mi (2.4 km) to the north and west of the north branch of the Susquehanna River. The major metropolitan centers closest to the site include: Wilkes-Barre, which is approximately 19 mi (31 km) to the northeast; Allentown, PA, which is approximately 50 mi (80 km) to the southeast; and Harrisburg, PA, which is approximately 70 mi (10 km) to the southwest.

Figure 1.1-1 shows the Exclusion Area Boundary for the BBNPP with a minimum distance from the center of the containment building of 2,270 ft (692 m). It also shows the location of BBNPP with respect to SSES Units 1 and 2. Figure 1.1-2 shows that BBNPP is not within the SSES Units 1 and 2 Exclusion Area Boundary. Figure 1.1-3 and Figure 1.1-4 illustrate the 10-mile (16 km) and 50-mi (80 km) surrounding area showing major state and local roads, towns, cities, county lines and state lines.

The structures, systems, and components are designed such that a design basis accident in BBNPP, would not significantly impact safe operation of SSES.

BBNPP shares the following structures, systems, and components with SSES Units 1 and 2:

- Offsite Transmission System,
- Emergency Operations Facility (EOF), and
- Railroad spur.

In accordance with 10 CFR 52.79(a)(31) (CFR, 2008), the following provides an evaluation of the potential hazards to the structures, systems, and components (SSCs) important to safety of operating units resulting from construction activities at a multi-unit site and describes the managerial and administrative controls are to be used to provide assurance that the limiting conditions for operation (LCOs) at the operating units, are not exceeded as a result of new plant construction activities.

Although the BBNPP is not a multi-unit site, due to its proximity to SSES Units 1 and 2, managerial and administrative controls will be in place to coordinate construction activities which have the potential for causing SSES Units 1 and 2 to exceed LCOs or have an adverse impact on the availability of safety and risk significant SSCs. SSES Units 1 and 2 procedures and processes are currently in place to control activities that could affect compliance with an LCO or availability of safety and risk significant SSCs, e.g., equipment clearance and tagout procedures, access controls, and switchyard controls.

The potential hazards associated with BBNPP construction activities include, but are not limited to; general construction activities such as site exploration, grading, clearing, and installation of drainage and erosion-control measures; boring, drilling, dredging, pile driving and excavating; transportation, storage and warehousing of equipment; construction, erection, and fabrication of new facilities; and connection, integration, and testing. Specific potential impacts to SSES Units 1 and 2 SSCs important to safety include the relocation and construction of transmission lines/towers.

The majority of the SSES Units 1 and 2 SSCs important to safety are contained and protected within safety-related structures. Managerial controls will protect these internal SSCs from postulated construction hazards by maintaining the integrity and design basis of the safety-related structures and foundations. Heavy load drop controls, crane boom failure standoff requirements, ground vibration controls and construction generated missiles controls are examples of managerial controls that shall be established to provide this reasonable assurance.

Other managerial controls shall be established to prevent or mitigate unnecessary challenges to SSES Units 1 and 2 safety systems that could be caused by potential BBNPP construction activity hazards, such as disruption of offsite transmission lines or impact to cooling water supplies.

Construction impacts on security controls are addressed in the BBNPP Security Plan. The BBNPP Security Plan is provided in Part 8 of the COL application.}

Additional site details are provided in Chapter 2.

1.1.2 CONTAINMENT TYPE

No departures or supplements.

1.1.3 REACTOR TYPE

No departures or supplements.

1.1.4 POWER OUTPUT

No departures or supplements.

1.1.5 SCHEDULE

The U.S. EPR FSAR includes the following COL Item in Section 1.1.5:

> A COL applicant that references the U.S. EPR design certification will provide the estimated schedules for completion of construction and commercial operation.

This COL Item is addressed as follows:

{The schedule milestones for BBNPP are:

Milestone Schedule Dates

Activity	Milestone Date
Design Certification Submitted (AREVA NP)	December 2007
Reference COLA Submitted (Calvert Cliffs Unit 3)	March 2008
Bell Bend COLA Submitted	October 2008
Construction Completed	December 2017
Commercial Operation Date (COD)	December 2018}

1.1.6 FORMAT AND CONTENT

1.1.6.1 Regulatory Guide 1.206

This FSAR follows the U.S. EPR FSAR organization and numbering. The U.S. EPR FSAR was written in accordance with the format and content of Regulatory Guide 1.206, (NRC, 2007). This FSAR provides departures and supplemental information from the standard U.S. EPR design that is unique to the {BBNPP} project. If the information provided in the U.S. EPR FSAR sufficiently addresses the Regulatory Guide 1.206 content for {BBNPP}, this FSAR will state "No departures or supplements" at the highest section level where such a statement can be made.

In addition, this FSAR may add a final section or subsection (when necessary) for references made within this document. References will be provided if they are used in this FSAR even if they were identified within the U.S. EPR FSAR.

1.1.6.2 Standard Review Plan

No departures or supplements.

1.1.6.3 Text, Tables and Figures

Tables and figures are identified by the section or subsection in which they appear and are numbered sequentially. For example, Table 1.1-1 and Figure 1.1-1 would be the first table and figure appearing in Section 1.1. Figures consist of diagrams, plots, pictures, graphs or other illustrations. Tables and figures are located at the end of the applicable section (X.Y) immediately following the text.

1.1.6.4 Numbering of Pages

Pages are numbered sequentially within each chapter.

1.1.6.5 Proprietary Information

This document contains no proprietary information.

1.1.6.6 Acronyms

Table 1.1-1 provides a list of acronyms that are used in this document.

1.1.6.7 COL Information Items

The COL Items in the U.S. EPR FSAR are discussed in Section 1.8.

1.1.6.8 Tense

This section is added as a supplement to the U.S. EPR FSAR.

This FSAR is a licensing basis document that will control plant design and operations after the COL is issued and is generally written in the present tense. Plant design and configuration are described in the present tense although the plant is not yet built. Similarly, programs, procedures, and organizational matters are generally described in the present tense although such descriptions may not yet be implemented. Accordingly, the use of the present tense in this FSAR should be understood as describing the plant, programs and procedures, and organization as they will exist when in place, and not as a representation that they are already in place.

1.1.7 REFERENCES

{This section is added as a supplement to the U.S. EPR FSAR.

AREVA, 2009. NRC Docket No. 52-020, U. S. Evolutionary Power reactor (U. S. EPR), "Submittal of Revision 1 of the U. S. EPR Final Safety Analysis Report for Design Certification," AREVA NP Inc., May 29, 2009.

CFR, 2008. Title 10, Code of Federal Regulations, Part 52.79, Contents of Applications; Technical Information in Final Safety Analysis Report, U.S. Nuclear Regulatory Commission, 2008.

NRC, 2007. Combined License Applications for Nuclear Power Plants (LWR Edition), Regulatory Guide 1.206, Revision 0, U.S. Nuclear Regulatory Commission, March 2007.}

Table 1.1-1—{Acronyms Used in this Document}

(Page 1 of 5)

Acronym	Description
χ/Q	Atmospheric Dispersion Value
A/E	Architect – Engineer
AB	Access Building
ACI	American Concrete Institute
AOV	Air-Operated Valve
AFDD	Accumulated Freezing Degree-Days
AASHTO	American Association of State Highway and Transportation Officials
ALOHA	Areal Locations of Hazardous Atmospheres
ANS	American Nuclear Society
ANSI	American National Standards Institute
AQCR	Air Quality Control Region
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
BBNPP	Bell Bend Nuclear Power Plant
BE	Best Estimate
BF	Butterfly Valve
B&V	Black & Veatch
BWR	Boiling Water Reactor
C/NM	Consumable/Non-Metallic
CAM	Continuous Air Monitor
CCNPP	Calvert Cliffs Nuclear Power Plant
CD	Certified Design
CEUS	Central and Eastern United States
CK	Check Valve
CN	Composite Runoff Curve Number
COV	Coefficient of Variation
CPT	Cone Penetrometer Test
CR	Control Room
CRE	Control Room Envelope
CRR	Cyclic Resistance Ratio
CRREL	Cold Regions Research and Engineering Laboratory
CSR	Cyclic Stress Ratio
CSZ	Charleston Seismic Zone
CU	Consolidated Undrained Triaxial Compression
DB	Dry Bulb
D.C.	District of Columbia
D/Q	Deposition Factor
DAC	Derived Air Concentration
DC	Direct Current
DCNR	Department of Conservation and Natural Resources
DE	De-aggregated Earthquake
DEH	High End of Distance Range
DEL	Low End of Distance Range
DEM	Middle End of Distance Range
DI	Diaphragm Valve
DNAG	Decade of North American Geology
DOE	Department of Energy
DOT	Department of Transportation
DP	Dew Point

Table 1.1-1—{Acronyms Used in this Document}

(Page 2 of 5)

Acronym	Description
EAC	Early Action Compact
EC	Erosion/Corrosion
ECFS	East Coast Fault System
ECL	Effluent Concentration Limits
EGC	Excelon Generation Company
EMC	Electromagnetic Compatibility
EMS	Energy Management System
Enth	Enthalpy
EPA	Environmental Protection Agency
EPIX	Equipment Performance and Information Exchange
EPR	Evolutionary Power Reactor
EQ	Environmental Qualification
ER	Environmental Report or Electrical Resistivity
ES	Engineered Safeguards
ESP	Early Site Permit
EST	Earth Science Team
ESWB	Essential Service Water Building
ESWEMS	Essential Service Water Emergency Makeup System
ET	Evaporation and Transpiration
ETR	Energy Transfer Ratio
FDD	Freezing Degree Days
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FF	Free-Free Resonant Column
FFD	Fitness for Duty
FHA	Fire Hazards Analysis
FOS	Factor of Safety
FPE	Fire Protection Engineer
FWHA	Federal Highway Administration
GB	Globe Valve
G-R	Guttenberg - Richter
GT	Gate Valve
GWSI	Groundwater Site Inventory
HF	High Frequency
HMR	Hydrometeorological Report
HO	Hydraulic Operated
HPS	Health Physics Society
HR	Humidity Ratio
HRL	Hudson River Line
IAHR	International Association of Hydraulic Engineering and Research
ICEA	Insulated Cable Engineers Association
ICRP	International Commission on Radiological Protection
ID	Identification
IDLH	Immediately Dangerous to Life and Health
IRC	Independent Review Committee
ISFSI	Independent Spent Fuel Storage Installation
JFD	Joint Frequency Distribution
JPM	Job Performance Measures
KKS	Kraftworks Kennzeichen System

Table 1.1-1—{Acronyms Used in this Document}

(Page 3 of 5)

Acronym	Description
LB	Lower Bound
LEL	Limit of Explosive Level
LERF	Large Early Release Frequency
LF	Low Frequency
LFL	Lower Flammability Limit
LGIP	Large Generator Interconnection Procedure
LiDAR	Light Detection and Ranging
LLC	Limited Liability Company
LLNL	Lawrence Livermore National Laboratory
LNG	Liquilified Natural Gas
LSS	Low Safety Significance
LSZ	Lancaster Seismic Zone
MA	Manual Actuated
MACCS2	MELCOR Accident Consequence Code System
MCDB	Mean Coincident Dry Bulb Temperature
MCDP	Mean Coincident Dew Point Temperature
MCWB	Mean Coincident Wet Bulb Temperature
MCWS	Mean Coincident Wind Speed Temperature
MD	Maryland
MED	Master Equipment Database
MMI	Modified Mercalli Intensity
MRFF	Maintenance Rule Functional Failure
msl	Mean Sea Level
MSS	Medium Safety Significance
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NBSR	North Branch of Susquehanna River
NBSZ	Newark Basin Seismic Zone
NEC	National Electrical Code
NEI	Nuclear Energy Institute
NERC	North American Electric Reliability Corporation
N - G	Newark - Gettysburg
NGDC	National Geophysical Data Center
NGVD 29	National Geodetic Vertical Datum of 1929
NIOSH	National Institute for Occupational Safety and Health
NJ	New Jersey
NJGS	New Jersey Geological Survey
NMFS	New Madrid Fault System
NMSZ	New Madrid Seismic Zone
NOAA	National Oceanic and Atmospheric Administration
NP	Non-Proprietary
NPDES	National Pollution Discharge Elimination System
NPRDS	Nuclear Plant Reliability Data System
NRC	Nuclear Regulatory Commission
NRCS	U.S. National Resources Conservation Service
NWS	National Weather Service
NY	New York
NY-AL	New York – Alabama Lineament
OAQPS	Office of Air Quality, Planning and Standards (EPA)

Table 1.1-1—{Acronyms Used in this Document}

(Page 4 of 5)

Acronym	Description
OCR	Over Consolidation Ratio
ODCM	Offsite Dose Calculation Manual
OJT	On-the-Job Training
OSHA	Occupational Safety and Health Administration
P	Proprietary
PA	Pilot Actuated or Pennsylvania
PADEP	Pennsylvania Department of Environmental Protection
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PCP	Process Control Program
PCWD	Prevailing Coincident Wind Direction
PDA	Pile Driving Analyzer
PeGWIS	Pennsylvania Groundwater Information System
PGA	Peak Ground Acceleration
PGS	Pennsylvania Geological Survey
PJM	Pennsylvania, New Jersey, and Maryland Regional Transmission Organization
PL	Plug Valve
PMS	Probable Maximum Storm
PMT	Probable Maximum Tsunami
PMWP	Probable Maximum Winter Precipitation
PP	Pocket Penetrometer
PPE	Plant Parameter Envelope
PPL EU	PPL Electric Utilities
PSA	Potentially Stressed Areas
PSHA	Probabilistic Seismic Hazard Analysis
PSP	Physical Security Plan
PST	Pre-Service Testing
PTS	Pressurized Thermal Shock
PW	Pittsburgh - Washington Lineament
QAPD	Quality Assurance Program Description
QC	Quality Control
RC	Resonant Column
RCA	Radiologically Controlled Area
RCTS	Resonant Column Torsional Shear
RD	Rupture Disk Valve
REMP	Radiological Environmental Monitoring Program
RERR	Radiological Effluent Release Report
Rizzo	Paul C. Rizzo & Associates
RMS	Records Management System
RQD	Rock Quality Designation
RV	Relief Valve
SA	Self Actuated
S&L	Sargent & Lundy
SAR	Safety Analysis Report
SARA	Superfund Amendments and Reauthorization Act
SCDOT	South Carolina Department of Transportation
SCR	Stable Continental Region
SCS	Soil Conservation Service
SDWIS	Safe Drinking Water Information System
SECPOP	Sector Population Land Fraction, and Economic Estimation Program

Table 1.1-1—{Acronyms Used in this Document}

(Page 5 of 5)

Acronym	Description
SGH	Scranton Gravity High
SOG	Seismic Owner's Group
SOV	Solenoid-Operated Valve
SPT	Standard Penetration Test
SQDP	Seismic Qualification Data Package
SRBC	Susquehanna River Basin Commission
SSA	Sole Source Aquifer
SSES	Susquehanna Steam Electric Station
SSHAC	Senior Seismic Hazard Analysis Committee
StdP	Standard Temperature and Pressure
STEL	Short-Term Exposure Limit
TEDE	Total Effective Dose Equivalent
TI	Technical Integration
TIP	Trial Implementation Project
TLD	Thermoluminescent Dosimeter
TMU	Tyrone - Mt. Union Lineament
TNT	Trinitrotoluene
TOC	Top of Concrete
TRT	Test Review Team
TWA	Time Weighted Average
UB	Upper Bound
UC	Unconfined Compression
UCSS	Updated Charleston Seismic Source
UFL	Upper Flammability Limit
UHRS	Uniform Hazard Response Spectra
UHS	Uniform Hazard Spectra or Ultimate Heat Sink
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USCG	United States Coast Guard
USCS	Unified Sort Classification System
USDA	U.S. Department of Agriculture
USDOC	U.S. Department of Commerce
USGS	U.S. Geological Survey
VA	Virginia
Vp	Compressional Wave Velocity
VADOT	Virginia Department of Transportation
VDEQ	Virginia Natural Resources Education Guide
V/H	Vertical - to - Horizontal
Vs	Shear-Wave Velocity
WB	Wet Bulb
WCA	Water Challenged Area
WOH	Weight of Hammer
WOR	Weight of Rod
WS	Wind Speed
WSE	Water Surface Evaluation
WUS	Western United States
WWI	Water Well Inventory

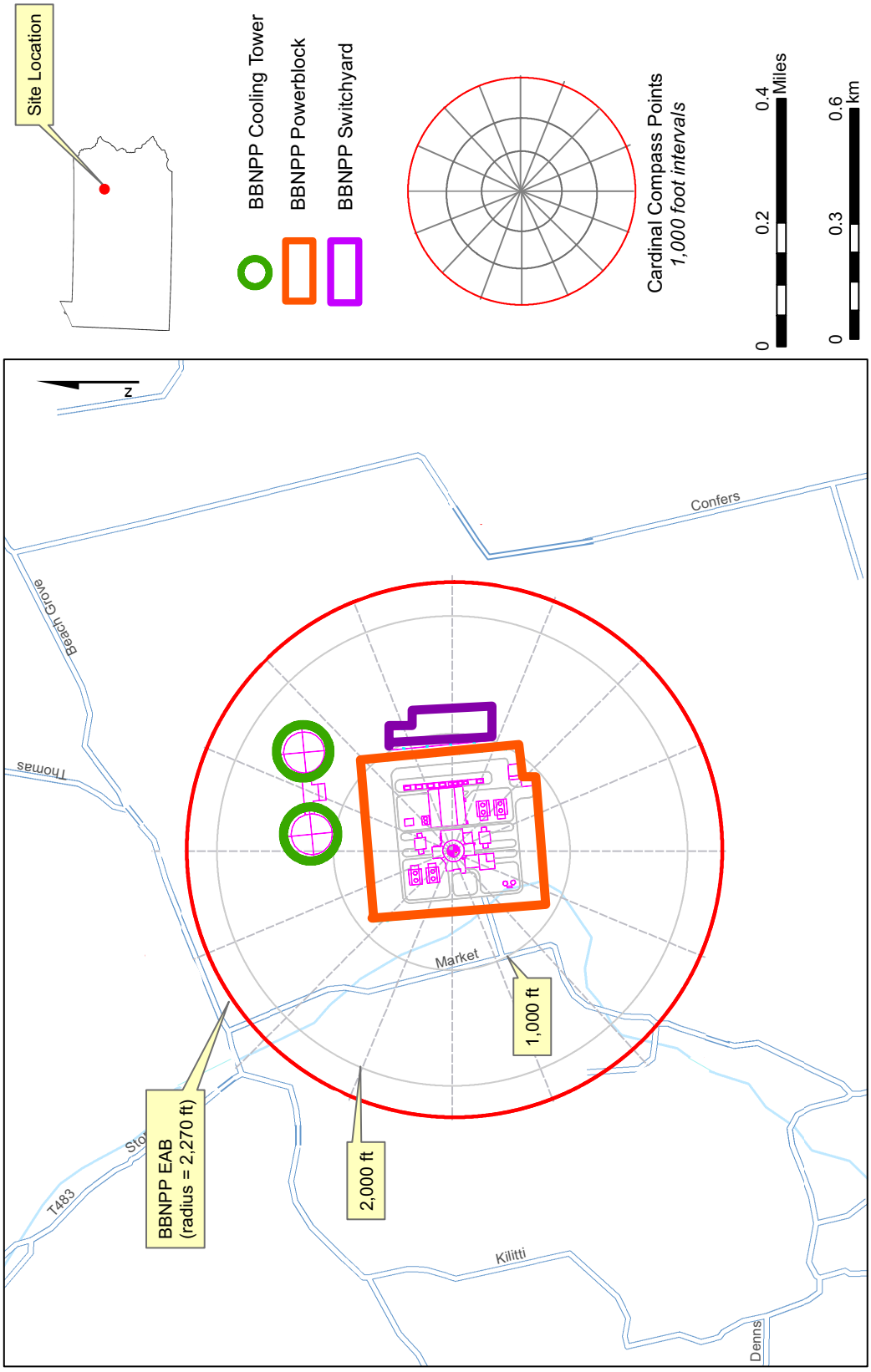

Figure 1.1-1—{Site Area Map and Exclusion Area Boundary}

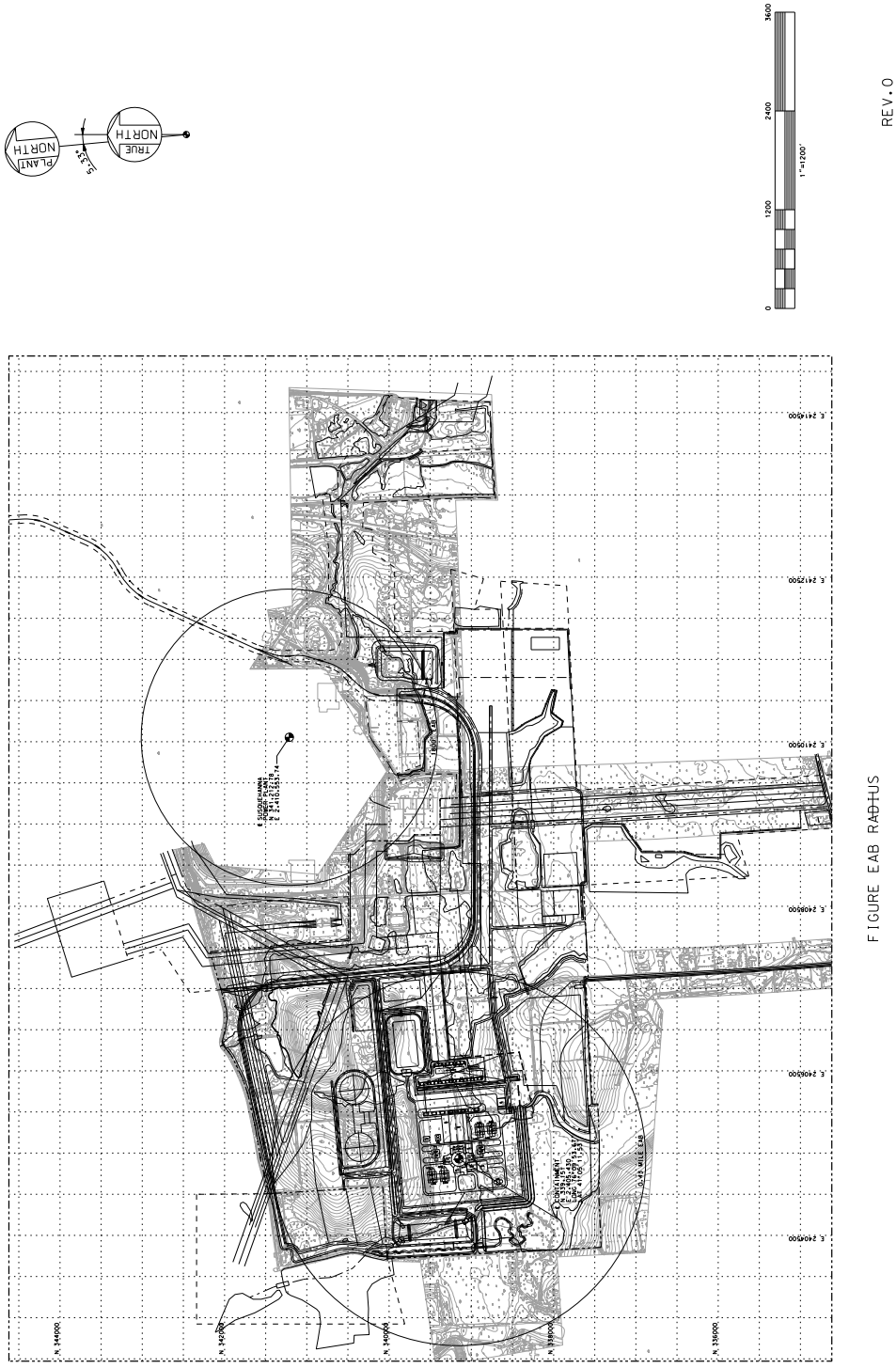

Figure 1.1-2—{Combined Exclusion Area Boundaries}

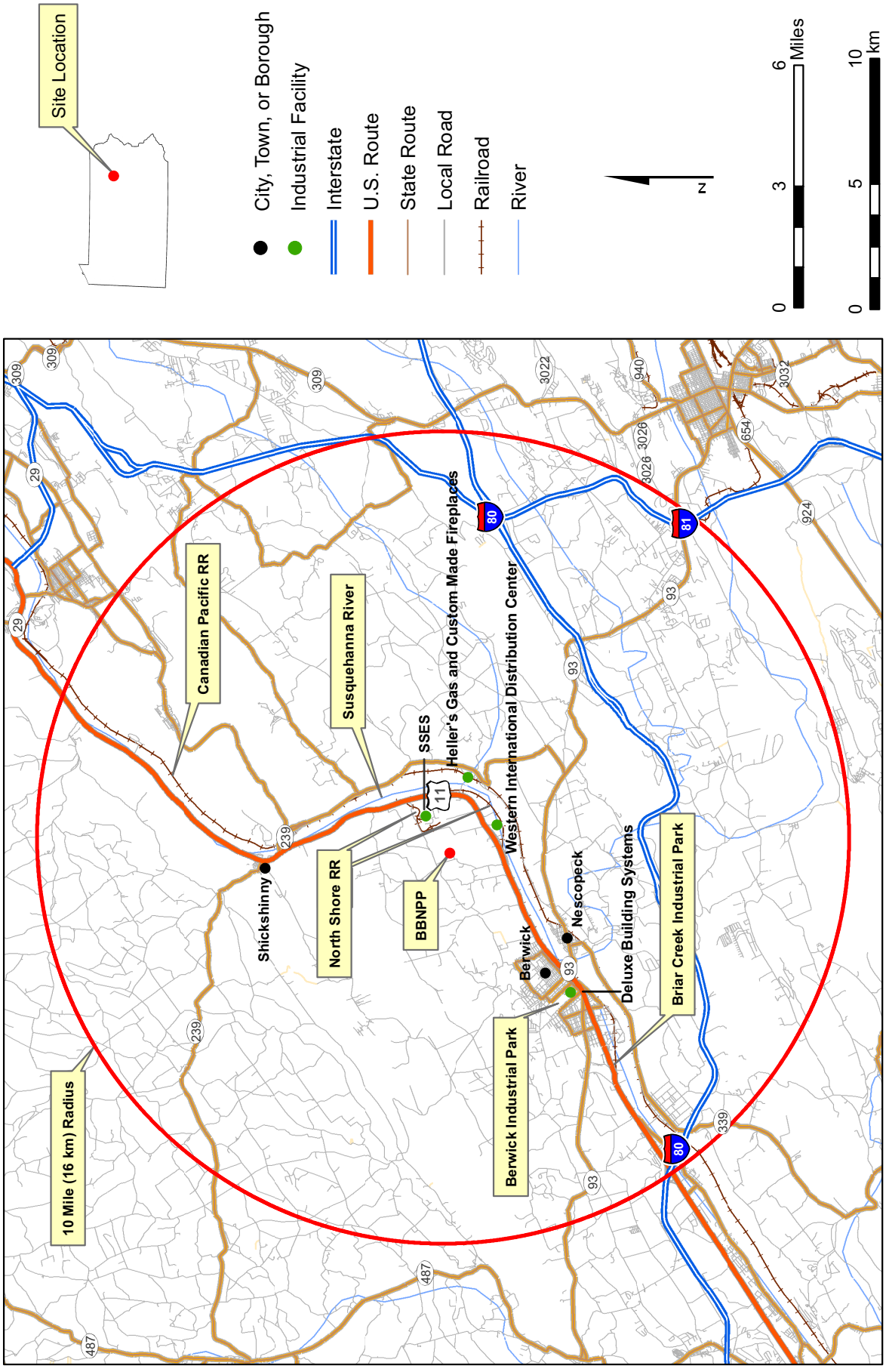

Figure 1.1-3—{10 mi (16 km) Surrounding Area}

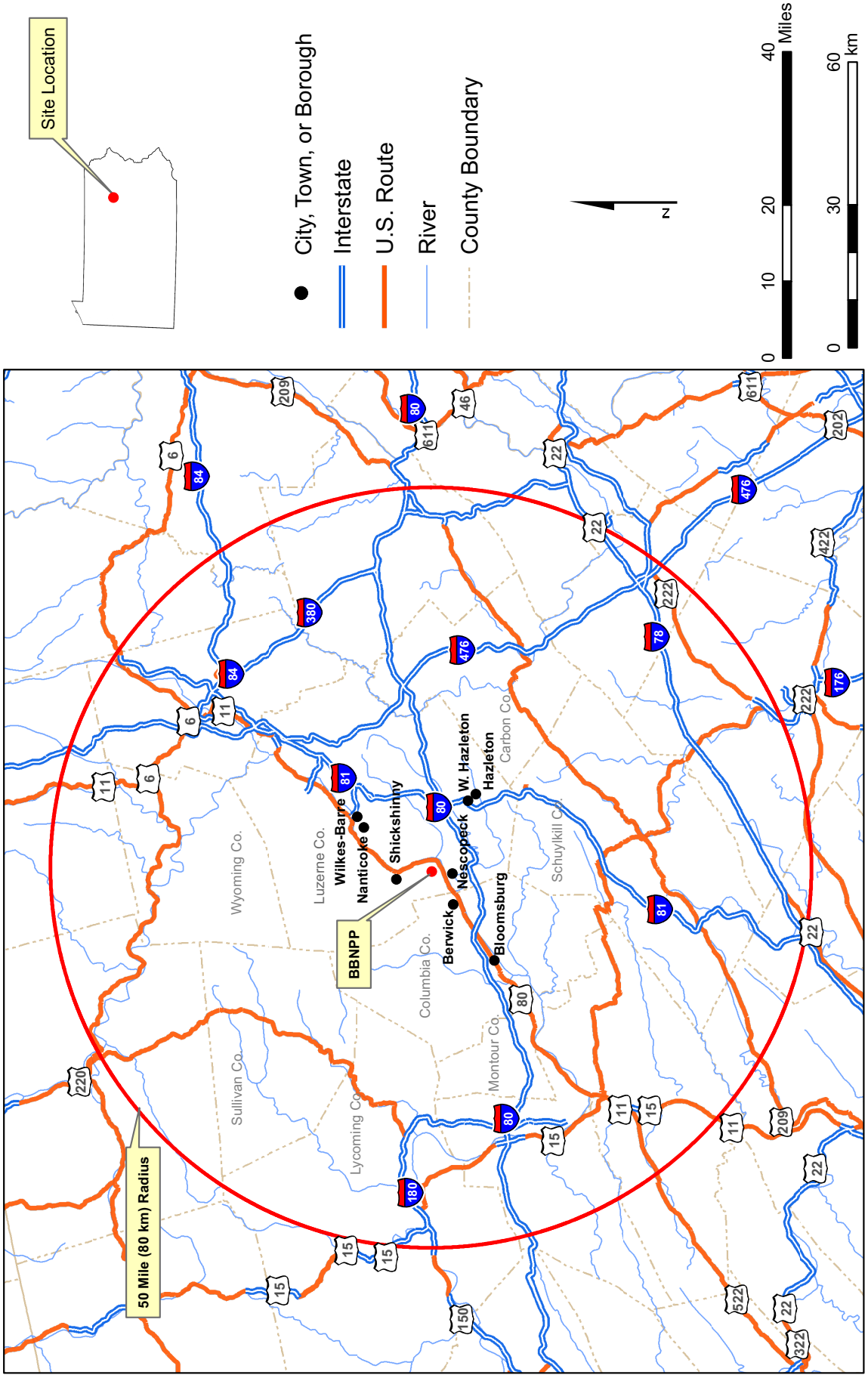

Figure 1.1-4—{50 mi (80 km) Surrounding Area}

1.2 GENERAL PLANT DESCRIPTION

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 1.2:

> A COL applicant that references the U.S. EPR design certification will identify those site-specific features of the plant likely to be of special interest because of their relationship to safety. The COL applicant will also highlight items such as unusual site characteristics, solutions to particularly difficult engineering, construction problems, and significant extrapolations in technology represented by the site specific design.

This COL Item is addressed as follows:

{There are no site-specific features of the plant considered to be of special interest because of their relationship to safety. There are no unusual site characteristics, and no particularly difficult engineering or construction problems, and no significant extrapolations in technology represented by the site specific design.}

1.2.1 PRINCIPAL DESIGN CRITERIA, OPERATING CHARACTERISTICS, AND SAFETY CONSIDERATIONS

No departures or supplements.

1.2.2 SITE DESCRIPTION

{The site description is discussed in Section 2.1.}

The U.S. EPR FSAR includes the following conceptual design information in Section 1.2.2 for the Turbine Building:

> Turbine Building – [[Figures 1.2-28 through 1.2-48.]]

The above conceptual design information is addressed as follows:

An Alstom turbine generator design has been selected. This is the reference design reflected in U.S. EPR FSAR Section 10.1, 10.2, and 10.4.7. Figures in Section 1.2 of the U.S. EPR FSAR are incorporated by reference.

The U.S. EPR FSAR includes the following conceptual design information in Section 1.2.2 for the Access Building:

> Access Building – [[Figures 1.2-50 through 1.2-58.]]

The above conceptual design information is addressed as follows:

The reference Access Building shown in U.S. EPR FSAR Figures 1.2-50 through 1.2-58 is incorporated by reference.

The U.S. EPR FSAR includes the following COL Item in Section 1.2.2:

> A COL applicant that references the U.S. EPR design certification will provide a site-specific layout figure.

This COL Item is addressed as follows:

{The site specific layout is presented in Figure 2.1-1 showing the BBNPP circulating water system cooling towers and intake structure on the Susquehanna River. An enlargement of the layout of the Nuclear and Turbine Building Islands is presented in Figure 1.2-1.}

The U.S. EPR FSAR includes the following COL Item in Section 1.2.2:

A COL applicant that references the U.S. EPR design certification will provide site-specific general arrangement drawings for the Turbine Building and Access Building.

This COL Item is addressed as follows:

The reference plant Turbine Building and Access Building are utilized. The general arrangement drawings provided in the U.S. EPR FSAR are incorporated by reference as discussed above.

1.2.3 PLANT DESCRIPTION

1.2.3.1 Introduction to the U.S. EPR Design and Building Arrangement

1.2.3.1.1 Overview

No departures or supplements.

1.2.3.1.2 Buildings and Arrangement

The U.S. EPR FSAR includes the following conceptual design information in Section 1.2.3.1.2 for the Turbine Building:

Physical separation also protects the [[Turbine Building and Switchgear Building. The Turbine Building houses the components of the steam condensate main feedwater cycle, including the turbine-generator. This building is located in a radial position with respect to the Reactor Building, but is independent from the NI. The Turbine Building is further described in Section 3.7.2. The Switchgear Building, which contains the power supply, the instrumentation and controls (I&C) for the balance of plant, and the SBO diesel generators, is located next to the Turbine Building and is physically separate from the NI. The Switchgear Building is shown in Figure 1.2-1.]]

The above conceptual design information is addressed as follows:

The reference Turbine Building and Switchgear Building designs are utilized. The information as stated in the U.S. EPR FSAR is incorporated by reference.

1.2.3.2 Reactor Coolant System

No departures or supplements.

1.2.3.3 Engineered Safety Features and Emergency Systems

No departures or supplements.

1.2.3.4 Instrumentation and Control Systems

No departures or supplements.

1.2.3.5 Electrical Systems

1.2.3.5.1 General

The U.S. EPR FSAR includes the following conceptual design information in Section 1.2.3.5.1:

> [[For operational flexibility and reliability, the switchyard is configured in either a breaker-and-a-half or double breaker scheme.]]

The above conceptual design information is addressed as follows:

{The BBNPP switchyard is configured in a combination of double breaker and breaker and a half arrangement.}

1.2.3.5.2 Offsite Power

The U.S. EPR FSAR includes the following conceptual design information in Section 1.2.3.5.2:

> [[Offsite power is provided from the switchyard to the onsite power systems through five three-winding auxiliary transformers. Two of the transformers are for safety-related power and three are for non-safety-related power. Two emergency auxiliary transformers provide the source for the onsite safety-related (Class 1E) buses of the emergency power supply system (EPSS). Each of these transformers will normally supply two of the four safety divisions, but each is sized to supply all four divisions in the event of a failure. Three normal auxiliary transformers provide power to the onsite non-safety buses of the normal power supply system (NPSS). These transformers are sized to supply all non-safety loads required for operation with only two of three transformers in operation.]]

The above conceptual design information is addressed as follows:

{The U.S. EPR FSAR description provided above is applicable to the BBNPP Offsite Power System and is incorporated by reference.}

1.2.3.5.3 Onsite Power System

No departures or supplements.

1.2.3.6 Power Conversion Systems

No departures or supplements.

1.2.3.7 Fuel Handling and Storage Systems

No departures or supplements.

1.2.3.8 Cooling Water and Other Auxiliary Systems

No departures or supplements.

1.2.3.9 Radioactive Waste Management Systems

No departures or supplements.

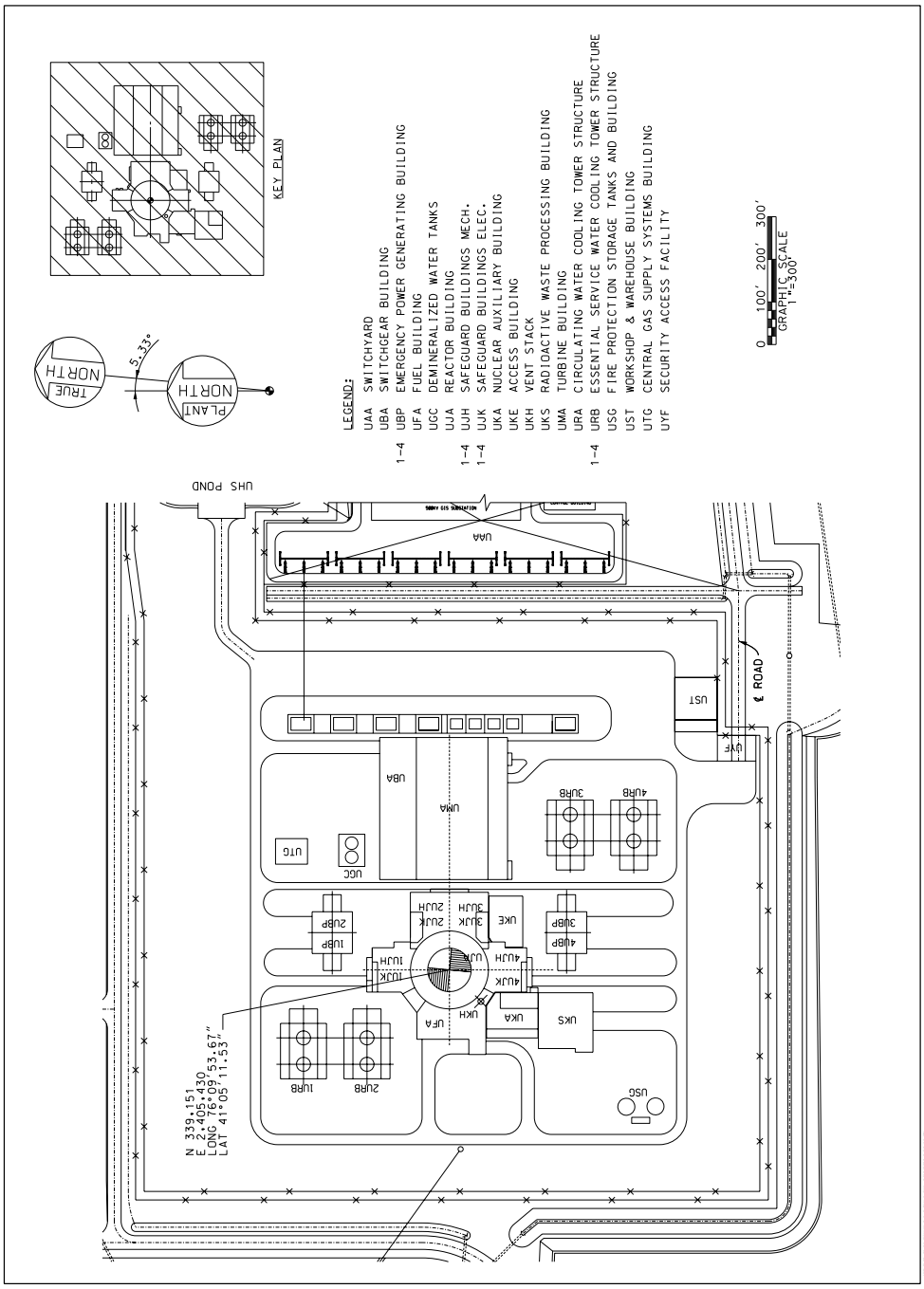

Figure 1.2-1—{BBNPP Nuclear and Turbine Building Island Layout}

1.3 COMPARISONS WITH SIMILAR FACILITY DESIGNS

This section of the U.S. EPR FSAR is incorporated by reference.

1.4 IDENTIFICATION OF AGENTS AND CONTRACTORS

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

1.4.1 APPLICANT – PROGRAM MANAGER

{PPL Bell Bend, LLC is applying for a combined license for the proposed nuclear power plant. The owner of the BBNPP is PPL Bell Bend, LLC. The operator of BBNPP is PPL Bell Bend, LLC. The primary contact with the NRC during the licensing process is PPL Bell Bend, LLC.

Sections 1.4.1.1 through 1.4.1.7 are added as supplements to the U.S. EPR FSAR.

1.4.1.1 PPL Bell Bend, LLC

PPL Bell Bend, LLC is a single purpose limited liability company created for the purpose of owning and operating BBNPP. It is a subsidiary of PPL Bell Bend Holdings, LLC.

The principal office of PPL Bell Bend, LLC is located in Allentown, Pennsylvania. Pennsylvania is the principal place of business.

1.4.1.2 PPL Bell Bend Holdings, LLC

PPL Bell Bend Holdings, LLC was created to facilitate the proposed development and financing of the Bell Bend unit. PPL Bell Bend Holdings, LLC is a subsidiary of PPL Nuclear Development, LLC.

The principal office of PPL Bell Bend Holdings, LLC is located in Allentown, Pennsylvania. Pennsylvania is the principal place of business.

1.4.1.3 PPL Nuclear Development, LLC

PPL Nuclear Development, LLC was created to facilitate the proposed development of nuclear power facilities for PPL Generation, LLC. PPL Nuclear Development, LLC is a subsidiary of PPL Generation, LLC.

The principal office of PPL Nuclear Development, LLC is located in Allentown, Pennsylvania.

1.4.1.4 PPL Generation, LLC

PPL Generation LLC owns and controls generating capacity of 11,556 MWe in the United States. PPL Generation, LLC is a subsidiary of PPL Energy Supply, LLC.

PPL Susquehanna, LLC, a subsidiary of PPL Generation, LLC owns a 90% undivided interest in each of the two nuclear generating units at its Susquehanna Steam Electric Station. Allegheny Electric Cooperative, Inc. owns the remaining 10% undivided interest.

The principal office of PPL Generation, LLC is located in Allentown, Pennsylvania.

1.4.1.5 PPL Energy Supply, LLC

PPL Energy Supply, LLC is engaged in the generation of electric power in the U.S. and the delivery of electricity in the U.K. and is a subsidiary of PPL Energy Funding Corporation.

The principal office of PPL Energy Supply, LLC is located in Allentown, Pennsylvania.

1.4.1.6 PPL Energy Funding Corporation

PPL Energy Funding Corporation is the parent company for various finance and service companies serving PPL Corporation and certain of its affiliates and is a subsidiary of PPL Corporation.

The principal office of PPL Energy Funding Corporation is located in Allentown, Pennsylvania.

1.4.1.7 PPL Corporation

PPL Corporation performs the headquarters function and is the ultimate parent for all PPL's generation assets (fossil, renewable and nuclear), generating operating companies, marketing and trading activities and distribution companies.

The principal office of PPL Corporation is located in Allentown, Pennsylvania.}

1.4.2 OTHER CONTRACTORS AND PARTICIPANTS

The U.S. EPR FSAR includes the following COL Item in Section 1.4.2:

> A COL applicant that references the U.S. EPR design certification will identify the prime agents or contractors for the construction and operation of the nuclear power plant.

This COL Item is addressed as follows:

Design responsibility for the U.S. EPR nuclear power plant resides with AREVA NP Inc. (AREVA NP) for the portions of the facility included in the design certification application. AREVA NP has headquarters in Lynchburg, Virginia, and major design organizations in Lynchburg, Virginia; Charlotte, North Carolina; and Marlborough, Massachusetts. AREVA NP is an AREVA and Siemens company. AREVA NP and its predecessor companies have designed light water reactors for over 40 years. As such, AREVA NP has extensive nuclear design experience in addition to maintaining fabrication facilities for fuel and major components in Europe and the United States. AREVA NP will provide additional services during conduct of startup testing.

{Bechtel North American Power Corporation (Bechtel) provides design services for portions of the facility design not included in the U.S. EPR design certification (balance of plant) and is expected to be the prime contractor and Architect/Engineer for the construction of BBNPP. Bechtel has extensive architectural-engineering experience, and has participated in the design and construction of more than 150 nuclear power plants worldwide. Bechtel provides design assistance to AREVA NP which retains design responsibility for the U.S. EPR.

Sargent & Lundy

Sargent & Lundy provides design services for portions of the facility design not included in the U.S. EPR design certification (balance of plant) for the construction of BBNPP. Sargent & Lundy has extensive architectural-engineering experience, and has participated in the design and construction of numerous nuclear power plants in the U.S. Sargent & Lundy provides design assistance to AREVA NP which retains design responsibility for the U.S. EPR.

Black & Veatch

Black & Veatch (B&V) provides specialty engineering services to support construction of BBNPP. For example, B&V prepared the design of the Essential Service Water Emergency Makeup System retention pond and make-up water transfer system.

Alstom

Alstom provides the design, fabrication, and delivery of the turbine generators, and provides technical assistance for installation, startup, and operation of this equipment. Alstom has a long history in the application of turbine generators for nuclear power plants.

Paul C. Rizzo & Associates

Paul C. Rizzo & Associates (Rizzo) provide services in the areas of geology, meteorology, demography, hydrology, aquatic and terrestrial aspects, population, land use, thermal and chemical effects and biological factors.

UniStar Nuclear Services, LLC

UniStar Nuclear Services, LLC provides the COL application for PPL Bell Bend, LLC. UniStar Nuclear Services, LLC has developed the COLA for the reference U.S. EPR, Calvert Cliffs Nuclear Power Plant, Unit 3, participated in the development of the Ameren UE COLA for Callaway Unit 2 and developed the COLA for Nine Mile Point Unit 3.

UniStar Nuclear Services, LLC provides Quality Assurance oversight of the COLA projects and performs audits and surveillances of the contractors involved in developing the technical input for the COLA. Quality Assurance oversight of BBNPP design, engineering and construction will be performed under the the UniStar Nuclear Quality Assurance Program Description (QAPD), Revision 0. The Bell Bend QAPD incorporates Revision 0 of the UniStar Nuclear QAPD in its entirety, with the exception of changes to reflect the Bell Bend organization in Section A (and title changes throughout when appropriate). The Bell Bend QAPD is submitted in Part 11A of this COL Application.}

Other various agents and contractors provide specialized services to the project.

1.5 REQUIREMENTS FOR FURTHER TECHNICAL INFORMATION

This section of the U.S. EPR FSAR is incorporated by reference.

1.6 MATERIAL REFERENCED

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 1.6:

> A COL applicant that references the U.S. EPR design certification will include any site-specific topical reports that are incorporated by reference as part of the COL application in Table 1.6-1.

This COL Item is addressed as follows:

Table 1.6-1 of this FSAR contains a list of topical reports submitted to the NRC to support this application.

Table 1.6-1—{Reports Referenced}

Report No.	Title/Revision	Date Submitted to the NRC	FSAR Section
NEI 07-08	Generic FSAR Template Guidance for Ensuring that Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA), Revision 3	November 2008	**12.1.3**
NEI 07-03A	Generic FSAR Template Guidance for Radiation Protection Program Description, Revision 0	May 2009	**12.1.3, 12.5**
NEI 06-13A	Template for an Industry Training Program Description, Revision 2	March 2009	**13.2**
UN-TR-06-001-A	Quality Assurance Program Description, Revision 0	April 2007	**17.5**
NEI 07-02A	Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52, Revision 0	March 2008	**17.7**
NEI 07-09A	Generic FSAR Template Guidance for Offsite Dose Calculation Manual (ODCM) Description, Revision 0	March 2009	**11.5**
NEI 07-10A	Generic FSAR Template Guidance for Process Control Program (PCP), Revision 0	March 2009	**11.4**
NEI 04-07	Pressurized Water Reactor Sump Performance Evaluation Methodology	May 2004	**6.3.2.2.2**
NEI 06-06	Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites, Revision 5	August 2009	**13.7**
NEI 00-02	Probabilistic Risk Assessment (PRA) Peer Review Process Guidance, Revision 1	May 2006	**19.1.2**

1.7 DRAWINGS AND OTHER DETAILED INFORMATION

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

1.7.1 ELECTRICAL AND INSTRUMENTATION AND CONTROL DRAWINGS

The U.S. EPR FSAR includes the following COL Item in Section 1.7.1:

> A COL applicant that references the U.S. EPR design certification will list additional site specific instrumentation and control functional diagrams and electrical one-line diagrams included in the COL FSAR in Table 1.7-1 and supplement the figure legends, if applicable.

This COL Item is addressed as follows:

Table 1.7-1 contains a list of site specific instrumentation and control functional diagrams and electrical one-line diagrams included in the COL FSAR.

1.7.2 PIPING AND INSTRUMENTATION DIAGRAMS

The U.S. EPR FSAR includes the following COL Item in Section 1.7.2:

> A COL applicant that references the U.S. EPR design certification will list additional site specific P&IDs included in the COL FSAR in Table 1.7-2 and supplement the figure legend, if applicable.

This COL Item is addressed as follows:

A list of site specific P&IDs included in the {BBNPP} FSAR is presented in Table 1.7-2.

Table 1.7-1—{I&C Functional and Electrical One Line Diagrams}

FSAR Figure Number	Title
8.2-2	BBNPP 500 kv Switchyard Single Line Diagram
8.3-1	BBNPP Emergency Power Supply System Single Line Drawings (three sheets)
8.3-2	BBNPP Normal Power Supply System Single Line Drawing (four sheets)

Table 1.7-2—{Piping and Instrumentation Diagrams}

FSAR Figure Number	Title
9.2-1	Potable Water
9.2-2	Sanitary Waste Water System
9.2-3	ESWEMS Schematic
9.2-11	Raw Water System
9.4-1	ESWEMS Pumphouse HVAC
9.4-2	ESWEMS Pumphouse HVAC Duct and Instrumentation Diagram
10.4-1	Circulating Water System P&ID (at Cooling Tower)
10.4-5	Circulating Water System P&ID (Makeup System)
10.4-8	Circulating Water System P&ID (Blowdown System)

1.8 INTERFACES WITH STANDARD DESIGNS AND EARLY SITE PERMITS

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 1.8:

> A COL applicant that references the U.S. EPR design certification will describe where the interface requirements are satisfied in the COL Final Safety Analysis Report (FSAR) to demonstrate compatibility with the U.S. EPR design.

This COL Item is addressed as follows:

Interface requirements for systems, structures, and components (SSCs) that relate to specific mechanical, electrical, nuclear, or structural systems are identified in appropriate sections of the FSAR. Table 1.8-1 provides a cross-reference to the description of these interfaces.

1.8.1 COL INFORMATION ITEMS

The U.S. EPR FSAR includes the following COL Item in Section 1.8.1:

> A COL applicant that references the U. S. EPR design certification will identify the FSAR section, or provide a list, that demonstrates how the COL information items have been addressed.

This COL Item is addressed as follows:

The text of the COL Items and COL No. identifier listed in Table 1.8-2 of the U.S. EPR FSAR are presented in Table 1.8-2. For each COL Item listed, the corresponding section of this FSAR that addresses the COL Item is identified. Additional explanatory comments are provided as necessary or appropriate.

1.8.2 DEPARTURES

The U.S. EPR FSAR includes the following COL Item in Section 1.8.2:

> A COL applicant that references the U. S. EPR design certification will provide a list of any departures from the FSAR in the COL FSAR.

This COL Item is addressed as follows:

{The list of departures from the U.S. EPR FSAR is as follows:

Exclusion Area Boundary is 0.43 mi versus EPR EAB of 0.50 mi	FSAR 2.1 and 15.0.3
Maximum Annual Average Atmospheric Dispersion Factor	FSAR 2.3.5.3
Accident Atmospheric Dispersion Factors for 0 - 2, 2 - 8, and 8 - 24 Hours for the Low Population Zone Accident Atmospheric Dispersion Factor for 0 - 2 Hours for the Exclusion Area Boundary	FSAR 2.3.4 and 15.0.3
Estimated Annual Radioactive Liquid and Gaseous Releases ♦ Changes to the input parameters for the GALE code for shim bleed flow rate, process time, and recycle of water ♦ An updated estimate of the Carbon-14 release in gaseous effluents than is given by the GALE code based on larger plant size and the relationship of power level and the production of Carbon-14.	FSAR 11.2.3.2

Safe Shutdown Earthquake - SSE acceleration are the CSDRS shapes anchored to a peak ground acceleration of 0.3g In some cases, the BBNPP ISRS developed from the BBNPP GMRS exceeds the ISRS for the U.S. EPR.. Steps 8 and 9 of the reconcilliation process described in FSAR Section 2.5.2.6 was used to confirm the SSCs are not affected	2.5.2.6, 3.7.1, 3.10, App 3C & 3D
In- Structure Response Spectra (ISRS) Horizontal and vertical acceleration in the peak CSDRS shapes exceed 0.3 g primarily in the high frequency region	FSAR 2.5.2.6 and 3.7.2
Idealized Soil Profiles	FSAR 2.5.2.6 and 3.7.1
Engineered Fill Soil Maximum Unit Weight - The proposed Category 1 Fill and Backfill material exceed the U.S. EPR specified unit weight.	FSAR 2.5.4.2, 2.5.4.5, 2.5.5, and 3.8.4.3
Technical Specifications Setpoint Control Program	FSAR 16.3.3, 16.5.5 and Bases 16.3.3
Toxic Gas Detection and Isolation	FSAR 3.11, 6.4, 9.4.1 and 14.2.12

Justification for these departures is presented in Part 7 of the COL application.}

Table 1.8-1—FSAR Sections that Demonstrate Conformance to U.S. EPR FSAR Interface Requirements

Item No.	Interface	Interface Type	FSAR Section
1-1	Switchgear Building	U.S. EPR Interface	1.2, 8.3, 8.4
1-2	Access Building	U.S. EPR Interface	1.2, 3.7.2
1-3	Turbine Building	U.S. EPR Interface	1.2, 3.7.2
1-4	Fire Protection Storage Tanks and Building	U.S. EPR Interface	1.2, 3.7.2
2-1	Envelope of U.S. EPR site related design	Site Parameter	2.0, Table 2.0-1
2-2	Consequences of potential hazards from nearby industrial, transportation and military facilities	Site Parameter	2.2
2-3	Site-specific χ/Q values based on site-specific meteorological data at the exclusion area boundary (EAB), low population zone (LPZ), and control room	Site Parameter	2.3
2-4	Site-specific seismic parameters	Site Parameter	2.5, 3.7
2-5	Soil conditions and profiles	Site Parameter	2.5
2-6	Bearing pressure of soil beneath the nuclear island basemat	Site Parameter	2.5
2-7	Foundation settlements	Site Parameter	2.5
3-1	Missiles generated from nearby facilities	Site Parameter	3.5
3-2	Missiles generated by tornadoes or extreme winds	Site Parameter	3.5
3-3	Aircraft hazards	Site Parameter	3.5
3-4	Site-specific loads that lie within the standard plant design envelope for Seismic Category I structures	Site Parameter	3.8
3-5	Buried conduit and duct banks, and pipe and pipe ducts	U.S. EPR Interface	3.8
8-1	Off-site AC power transmission system connections to the switchyard and the connection to the plant power distribution system	U.S. EPR Interface	8.2
8-2	On-site AC power transmission system connections to the switchyard and the connection to the plant power distribution system	U.S. EPR Interface	8.3
8-3	Auxiliary power and generator transformer areas	U.S. EPR Interface	8.2
8-4	Lightning protection and grounding system grid	U.S. EPR Interface	8.3.1
9-1	New fuel and spent fuel storage racks	U.S. EPR Interface	9.1.1, 9.1.2
9-2	Provide support systems such as makeup water, blowdown and chemical treatment (to control biofouling) for the UHS	U.S. EPR Interface	9.2.5
9-3	Raw water system	U.S. EPR Interface	9.2.9
9-4	Fire water distribution system	U.S. EPR Interface	9.5.1
10-1	Design details for circulating water system including makeup water, and water treatment	U.S. EPR Interface	10.4.5
11-1	Process Control program and program aspects of process and effluent monitoring and sampling	U.S. EPR Interface	11.5
13-1	Site-specific information for administrative, operating, emergency, maintenance, and other operating procedures.	U.S. EPR Interface	13.5
13-2	Site-specific emergency plan	U.S. EPR Interface	13.3
13-3	Site-specific security assessment and Physical Security Plan	U.S. EPR Interface	13.6
14-1	Site-specific information for development of the initial test program	U.S. EPR Interface	14.2

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
1.1-1	A COL applicant that references the U.S. EPR design certification and proposes a multi-unit license application will provide the changes and additional information needed to license a multi-unit plant.	1.1
1.1-2	A COL applicant that references the U.S. EPR design certification will identify the specific plant site location.	1.1.1
1.1-3	A COL applicant that references the U.S. EPR design certification will provide the estimated schedules for completion of construction and commercial operation.	1.1.5
1.2-1	A COL applicant that references the U.S. EPR design certification will identify those site specific features of the plant likely to be of special interest because of their relationship to safety. The COL applicant will also highlight items such as unusual site characteristics, solutions to particularly difficult engineering, construction problems, and significant extrapolations in technology represented by the site specific design.	1.2
1.2-2	A COL applicant that references the U.S. EPR design certification will provide a site-specific layout figure.	1.2.2
1.2-3	A COL applicant that references the U.S. EPR design certification will provide site-specific general arrangement drawings for the Turbine Building and Access Building.	1.2.2
1.4-1	A COL applicant that references the U.S. EPR design certification will identify the prime agents or contractors for the construction and operation of the nuclear power plant.	1.4.2
1.6-1	A COL applicant that references the U.S. EPR design certification will include any site-specific topical reports that are incorporated by reference as part of the COL application in Table 1.6-1.	1.6
1.7-1	A COL applicant that references the U.S. EPR design certification will list additional site specific instrumentation and control functional diagrams and electrical one-line diagrams included in the COL FSAR in Table 1.7-1 and supplement the figure legends, if applicable.	1.7.1
1.7-2	A COL applicant that references the U.S. EPR design certification will list additional site specific P&IDs included in the COL FSAR in Table 1.7-2 and supplement the figure legend, if applicable.	1.7.2
1.8-1	A COL applicant that references the U.S. EPR design certification will describe where the interface requirements are satisfied in the COL FSAR to demonstrate compatibility with the U.S. EPR design.	1.8
1.8-2	A COL applicant that references the U. S. EPR design certification will identify the FSAR section, or provide a list, that demonstrates how the COL information items have been addressed.	1.8.1
1.8-3	A COL applicant that references the U. S. EPR design certification will provide a list of any departures from the FSAR in the COL FSAR.	1.8.2
1.9-1	A COL applicant that references the U.S. EPR design certification will review and address the conformance with Regulatory Criteria in effect six months before the docket date of the COL application for the site-specific portions and operational aspects of the facility design.	1.9
2.0-1	A COL applicant that references the U.S. EPR design certification will compare site-specific data to the design parameter data in Table 2.1-1. If the specific data for the site falls within the assumed design parameter data and characteristics in Table 2.1-1, then the U.S. EPR standard design is bounding for the site. For site-specific design parameter data or characteristics that are outside the bounds of the assumptions presented in Table 2.1-1, the COL applicant will confirm that the U.S. EPR design acceptably meets any additional requirements that may be imposed by the more limiting site specific design parameter data or characteristic, and that the design maintains conformance to the design commitments and acceptance criteria described in this FSAR.	2.0
2.1-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information related to site location and description, exclusion area authority and control, and population distribution.	2.1
2.2-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information related to the identification of potential hazards stemming from nearby industrial, transportation, and military facilities within the site vicinity, including an evaluation of potential accidents (such as explosions, toxic chemicals, and fires).	2.2
2.2-2	A COL applicant that references the U.S. EPR design certification will provide information concerning site- specific evaluations to determine the consequences that potential accidents at nearby industrial, transportation, and military facilities could have on the site. The information provided by the COL applicant will include specific changes made to the U.S. EPR design to qualify the design of the site against potential external accidents with an unacceptable probability of severe consequences.	2.2.3

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
2.3-1	If A COL applicant that references the U.S. EPR design certification identifies site-specific meteorology values outside the range of the design parameters in Table 2.1-1, then the COL applicant will demonstrate the acceptability of the site-specific values in the appropriate sections of the Combined License application.	2.3
2.3-2	A COL applicant that references the U.S. EPR design certification will provide site-specific characteristics for regional climatology.	2.3.1
2.3-3	A COL applicant that references the U.S. EPR design certification will provide site-specific characteristics for local meteorology.	2.3.2
2.3-4	A COL applicant that references the U.S. EPR design certification will provide the site-specific, onsite meteorological measurement program.	2.3.3
2.3-5	A COL applicant that references the U.S. EPR design certification will provide a description of the atmospheric dispersion modeling used in evaluating potential design basis events to calculate concentrations of hazardous materials (e.g., flammable or toxic clouds) outside building structures resulting from the onsite and/or offsite airborne releases of such materials.	2.3.4
2.3-6	A COL applicant that references the U.S. EPR design certification will confirm that site specific χ/Q values, based on site-specific meteorological data, are bounded by those specified in Table 2.1-1 at the EAB, LPZ and at the control room. For site-specific χ/Q values that exceed the bounding χ/Q values, a COL applicant that references the U.S. EPR design certification will demonstrate that the radiological consequences associated with the controlling design basis accident continue to meet the dose reference values given in 10 CFR 50.34 and the control room operator dose limits given in GDC 19 using site-specific χ/Q values.	2.3.4.2
2.3-7	A COL applicant that references the U.S. EPR design will provide χ/Q values for each cumulative frequency distribution which exceeds the median value (50 percent of the time) as part of the assessment of the postulated impact of an accident on the environment.	2.3.4.2.2
2.3-8	A COL applicant that references the U.S. EPR design certification will provide the site-specific, long-term diffusion estimates for routine releases. In developing this information, the COL applicant should consider the guidance provided in RG 1.23, RG 1.109, RG 1.111, and RG 1.112.	2.3.5
2.3-9	A COL applicant that references the U.S EPR design certification will also provide estimates of annual average atmospheric dispersion (χ/Q values) and deposition (D/Q values) for 16 radial sectors to a distance of 50 miles (80 km) from the plant as part of its environmental assessment.	2.3.5
2.3-10	A COL applicant that references the U.S. EPR design certification will describe the means for providing UHS makeup sufficient to meet the maximum evaporative and drift water loss after 72 hours through the remainder of the 30 day period consistent with RG 1.27.	2.3.1.2
2.4-1	A COL applicant that references the U.S. EPR design certification will provide a site-specific description of the hydrologic characteristics of the plant site.	2.4.1
2.4-2	A COL applicant that references the U.S. EPR design certification will identify site-specific information related to flood history, flood design considerations, and effects of local intense precipitation.	2.4.2
2.4-3	A COL applicant that references the U.S. EPR design certification will provide site-specific information to describe the probable maximum flood of streams and rivers and the effect of flooding on the design.	2.4.3
2.4-4	A COL applicant that references the U.S. EPR design certification will verify that the site specific potential hazards to the safety-related facilities due to the failure of upstream and downstream water control structures are within the hydrogeologic design basis.	2.4.4
2.4-5	A COL applicant that references the U.S. EPR design certification will provide site-specific information on the probable maximum surge and seiche flooding and determine the extent to which safety-related plant systems require protection. The applicant will also verify that the site-parameter envelope is within the design maximum flood level, including consideration of wind effects.	2.4.5
2.4-6	A COL applicant that references the U.S. EPR design will provide site-specific information and determine the extent to which safety-related facilities require protection from tsunami effects, including Probable Maximum Tsunami Flooding.	2.4.6
2.4-7	A COL applicant that references the U.S. EPR design certification will provide site-specific information regarding ice effects and design criteria for protecting safety-related facilities from ice-produced effects and forces with respect to adjacent water bodies.	2.4.7
2.4-8	A COL applicant that references the U.S. EPR design certification will evaluate the potential for freezing temperatures that may affect the performance of the ultimate heat sink makeup, including the potential for frazil and anchor ice, maximum ice thickness, and maximum cumulative degree-days below freezing.	2.4.7

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
2.4-9	A COL applicant that references the U.S. EPR design certification will provide site-specific information and describe the design basis for cooling water canals and reservoirs used for makeup to the UHS cooling tower basins.	2.4.8
2.4-10	A COL applicant that references the U.S. EPR design certification will provide site-specific information and demonstrate that in the event of diversion or rerouting of the source of cooling water, alternate water supplies will be available to safety-related equipment.	2.4.9
2.4-11	A COL applicant that references the U.S. EPR design certification will use site-specific information to compare the location and elevations of safety-related facilities, and of structures and components required for protection of safety-related facilities, with the estimated static and dynamic effects of the design basis flood conditions.	2.4.10
2.4-12	A COL applicant that references the U.S. EPR design certification will identify natural events that may reduce or limit the available cooling water supply, and will verify that an adequate water supply exists for operation or shutdown of the plant in normal operation, anticipated operational occurrences, and in low water conditions.	2.4.11
2.4-13	A COL applicant that references the U.S. EPR design certification will provide site-specific information to identify local and regional groundwater reservoirs, subsurface pathways, onsite use, monitoring or safeguard measures, and to establish the effects of groundwater on plant structures.	2.4.12
2.4-14	A COL applicant that references the U.S. EPR design certification will provide site-specific information on the ability of the groundwater and surface water environment to delay, disperse, dilute, or concentrate accidental radioactive liquid effluent releases, regarding the effects that such releases might have on existing and known future uses of groundwater and surface water resources.	2.4.13
2.4-15	A COL applicant that references the U.S. EPR design certification will describe any emergency measures required to implement flood protection in safety-related facilities and to verify there is an adequate water supply for shutdown purposes.	2.4.14
2.5-1	A COL applicant that references the U.S. EPR design certification will use site-specific information to investigate and provide data concerning geological, seismic, geophysical, and geotechnical information.	2.5.1
2.5-2	A COL applicant that references the U.S. EPR design certification will review and investigate site-specific details of seismic, geophysical, geological, and geotechnical information to determine the safe shutdown earthquake (SSE) ground motion for the site and compare site specific ground motion to the Certified Seismic Design Response Spectra (CSDRS) for the U.S. EPR.	2.5.2
2.5-3	A COL applicant that references the U.S. EPR design certification will verify that the site specific seismic parameters are enveloped by the CSDRS (anchored at 0.3 g PGA) and the 10 generic soil profiles discussed in Sections 2.5.2 and 3.7.1 and summarized in Table 3.7.1-6.	2.5.2.6
2.5-4	A COL applicant that references the U.S. EPR design certification will verify that site-specific foundation soils beneath the foundation basemats of Seismic Category I structures have the capacity to support the bearing pressure with a factor of safety of 3.0 under static conditions.	2.5.4.10.1
2.5-5	A COL applicant that references the U.S. EPR design certification will investigate site-specific surface and subsurface geologic, seismic, geophysical, and geotechnical aspects within 25 miles around the site and evaluate any impact to the design. The COL applicant will demonstrate that no capable faults exist at the site in accordance with the requirements of 10 CFR 100.23 and of 10 CFR 50, Appendix S. If non-capable surface faulting is present under foundations for safety-related structures, the COL applicant will demonstrate that the faults have no significant impact on the structural integrity of safety-related structures, systems, or components.	2.5.3
2.5-6	A COL applicant that references the U.S. EPR design certification will present site-specific information about the properties and stability of soils and rocks that may affect the nuclear power plant facilities under both static and dynamic conditions, including the vibratory ground motions associated with the CSDRS and the site specific SSE.	2.5.4
2.5-7	A COL applicant that references the U.S. EPR design certification will verify that the differential settlement value of ½ in per 50 ft in any direction across the foundation basemat of a Seismic Category I structure is not exceeded. Settlement values larger than this may be demonstrated acceptable by performing additional site-specific evaluations.	2.5.4.10.2
2.5-8	A COL applicant that references the U.S. EPR design certification will evaluate site-specific information concerning the stability of earth and rock slopes, both natural and manmade (e.g., cuts, fill, embankments, dams, etc.), of which failure could adversely affect the safety of the plant.	2.5.5

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
2.5-9	A COL applicant that references the U.S. EPR design certification will reconcile the site specific soil properties with those used for design of U.S. EPR Seismic Category I structures and foundations described in Section 3.8.	2.5.4.2
2.5-10	A COL applicant that references the U.S. EPR design certification will investigate and determine the uniformity of the underlying layers of site specific soil conditions beneath the foundation basemats. The classification of uniformity or non-uniformity will be established by a geotechnical engineer.	2.5.4.10.3
3.1-1	A COL applicant that references the U.S. EPR design certification will identify the site-specific QA Program Plan that demonstrates compliance with GDC-1.	3.1.1.1.1
3.2-1	A COL applicant that references the U.S. EPR design certification will identify the seismic classification of applicable site-specific SSCs that are not identified in Table 3.2.2-1.	3.2.1
3.2-2	A COL applicant that references the U.S. EPR design certification will identify the quality group classification of applicable site-specific SSCs important to safety that are not identified in Table 3.2.2-1.	3.2.2
3.3-1	A COL applicant that references the U.S. EPR design certification will determine site-specific wind and tornado design parameters and compare these to the standard plant criteria. If the site-specific wind and tornado parameters are not bounded, then the COL applicant will evaluate the design for site-specific wind and tornado events and demonstrate that these loadings will not adversely affect the ability of safety-related structures to perform their safety functions during or after such events.	3.3
3.3-2	A COL applicant that references the U.S. EPR design certification will demonstrate that failure of site-specific structures or components not included in the U.S. EPR standard plant design, and not designed for wind loads, will not affect the ability of other structures to perform their intended safety functions.	3.3.1
3.3-3	A COL applicant that references the U.S. EPR design certification will demonstrate that failure of site-specific structures or components not included in the U.S. EPR standard plant design, and not designed for tornado loads, will not affect the ability of other structures to perform their intended safety functions.	3.3.2
3.4-1	A COL applicant that references the U.S. EPR design certification will confirm the potential site specific external flooding events are bounded by the U.S. EPR design basis flood values or otherwise demonstrate that the design is acceptable.	3.4.3.2
3.4-2	A COL applicant that references the U.S. EPR design certification will perform a flooding analysis for the ultimate heat sink makeup water intake structure based on the site-specific design of the structures and the flood protection concepts provided herein.	3.4.3.10
3.4-3	A COL applicant that references the U.S. EPR design certification will define the need for a site-specific permanent dewatering system.	3.4.3.11
3.4-4	A COL applicant that references the U.S. EPR design certification will perform internal flooding analyses prior to fuel load for the Safeguard Buildings and Fuel Building to demonstrate that the impact of internal flooding is contained within the Safeguard Building or Fuel Building division of origin.	3.4.1
3.4-5	A COL applicant that references the U.S. EPR design certification will perform an internal flooding analysis prior to fuel load for the Reactor Building and Reactor Building Annulus to demonstrate that the essential equipment required for safe shutdown is located above the internal flood level or is designed to withstand flooding.	3.4.1
3.5-1	A COL applicant that references the U.S. EPR design certification will describe controls to confirm that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be removed from containment prior to operation, moved to a location where it is not a potential hazard to SSCs important to safety, or seismically restrained to prevent it from becoming a missile.	3.5.1.2.3
3.5-2	A COL applicant that references the U.S. EPR design certification will confirm the evaluation of the probability of turbine missile generation for the selected turbine generator, P1, is less than 1 x 10-4 for turbine-generators favorably oriented with respect to containment.	3.5.1.3
3.5-3	A COL applicant that references the U.S. EPR design certification will assess the effect of potential turbine missiles from turbine generators within other nearby or co-located facilities.	3.5.1.3
3.5-4	A COL applicant that references the U.S. EPR design certification will evaluate the potential for other missiles generated by natural phenomena, such as hurricanes and extreme winds, and their potential impact on the missile protection design features of the U.S. EPR.	3.5.1.4
3.5-5	A COL applicant that references the U.S. EPR design certification will evaluate the potential for site proximity explosions and missiles generated by these explosions for their potential impact on missile protection design features.	3.5.1.5

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
3.5-6	A COL applicant that references the U.S. EPR design certification will evaluate site-specific aircraft hazards and their potential impact on plant SSCs.	3.5.1.6
3.5-7	For sites with surrounding ground elevations higher than plant grade, a COL applicant that references the U.S. EPR design certification will confirm that automobile missiles cannot be generated within a 0.5 mile radius of safety-related SSCs that would lead to impact higher than 30 ft above plant grade.	3.5.1.4
3.5-8	A COL applicant that references the U.S. EPR design certification will describe controls to confirm that unsecured compressed gas cylinders will be either removed or seismically supported when not in use to prevent them from becoming missiles.	3.5.1.1.3
3.5-9	A COL applicant that references the U.S. EPR design certification will describe controls to confirm that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be either removed or seismically supported when not in use to prevent it from becoming a missile.	3.5.1.1.3
3.6-1	A COL applicant that references the U.S. EPR design certification will perform the pipe break hazards analysis and reconcile deviations in the as-built configuration to this analysis.	3.6.1
3.6-2	A COL applicant that references the U.S. EPR design certification will perform the pipe break hazards analysis and reconcile deviations in the as-built configuration to this analysis.	3.6.2.1
3.6-3	A COL applicant that references the U.S. EPR design certification will confirm that the design LBB analysis remains bounding for each piping system and provide a summary of the results of the actual as-built plant specific LBB analysis, including material properties of piping and welds, stress analyses, leakage detection capability, and degradation mechanisms.	3.6.3
3.6-4	A COL applicant that references the U.S. design certification will provide diagrams showing the final as-designed configurations, locations, and orientations of the pipe whip restraints in relation to break locations in each piping system.	3.6.2.5.1
3.7-1	A COL applicant that references the U.S. EPR design certification will confirm that the site specific seismic response is within the parameters of section 3.7 of the U.S. EPR standard design.	3.7.2
3.7-2	A COL applicant that references the US EPR design certification will provide the site-specific separation distances for the access building and turbine building.	3.7.2.8
3.7-3	A COL applicant that references the U.S. EPR design certification will provide a description of methods used for seismic analysis of site-specific Category I concrete dams, if applicable.	3.7.3.13
3.7-4	A COL applicant that references the U.S. EPR design certification will determine whether essentially the same seismic response from a given earthquake is expected at each of the units in a multi-unit site or instrument each unit. In the event that only one unit is instrumented, annunciation shall be provided to each control room.	3.7.4.2
3.7-5	A COL applicant that references the U.S. EPR design certification will determine if a suitable location exists for the free-field acceleration sensor. The mounting location must be such that the effects associated with surface features, buildings, and components on the recordings of ground motion are insignificant. The acceleration sensor must be based on material representative of that upon which the Nuclear Island (NI) and other Seismic Category I structures are founded.	3.7.4.2.1
3.7-6	A COL applicant that references the US EPR design certification will provide the seismic design basis for the sources of fire protection water supply for safe plant shutdown in the event of a SSE.	3.7.2.8
3.8-1	A COL applicant that references the U.S. EPR design certification will confirm that site specific loads lie within the standard plant design envelope for the Reactor Containment Building, or perform additional analyses to verify structural adequacy.	3.8.1.3
3.8-2	A COL applicant that references the U.S. EPR design certification will describe any differences between the standard plant layout and design of Seismic Category I structures required for site-specific conditions.	3.8.4.1
3.8-3	A COL applicant that references the U.S. EPR design certification will confirm that site specific loads lie within the standard design envelope for other Seismic Category I structures, or perform additional analyses to verify structural adequacy.	3.8.4.3
3.8-4	A COL applicant that references the U.S. EPR design certification will provide a description of Seismic Category I buried conduit and duct banks.	3.8.4.1.8
3.8-5	A COL applicant that references the U.S. EPR design certification will provide a description of Seismic Category I buried pipe and pipe ducts.	3.8.4.1.9

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
3.8-6	A COL applicant that references the U.S. EPR design certification will confirm that site specific loads lie within the standard design envelope for RB internal structures, or perform additional analyses to verify structural adequacy.	3.8.3.3
3.8-7	A COL applicant that references the U.S. EPR design certification will confirm that site-specific conditions for Seismic Category I buried conduit, electrical duct banks, pipe, and pipe ducts satisfy the requirements specified in Section 3.8.4.4.5 and those specified in AREVA NP Topical Report ANP-10264NP-A.	3.8.4.5
3.8-8	A COL applicant that references the U.S. EPR design certification will address site-specific Seismic Category I structures that are not described in this section.	3.8.4.1
3.8-9	A COL applicant that references the U.S. EPR design certification will describe site-specific foundations for Seismic Category I structures that are not described in this section.	3.8.5.1
3.8-10	A COL applicant that references the U.S. EPR design certification will evaluate site-specific methods for shear transfer between the foundation basemats and underlying soil for soil parameters that are not within the envelope specified in Section 2.5.4.2.	3.8.5.5
3.8-11	A COL applicant that references the U.S. EPR design certification will evaluate and identify the need for the use of waterproofing membranes and epoxy coated rebar based on site-specific groundwater conditions.	3.8.5.6.1
3.8-12	A COL applicant that references the U.S. EPR design certification will describe the program to examine inaccessible portions of below-grade concrete structures for degradation and monitoring of groundwater chemistry.	3.8.5.7
3.8-13	A COL applicant that references the U.S. EPR design certification will identify if any site-specific settlement monitoring requirements are required for Seismic Category I foundations based on site-specific soil conditions.	3.8.5.7
3.8-14	A COL applicant that references the U.S. EPR design certification will describe the design and analysis procedures used for buried conduit and duct banks, and buried pipe and pipe ducts.	3.8.4.4.5
3.8-15	A COL applicant that references the U.S. EPR design certification will use results from site specific investigations to determine the routing of buried pipe and pipe ducts.	3.8.4.4.5
3.8-16	A COL applicant that references the U.S. EPR design certification will perform geotechnical engineering analyses to determine if the surface load will cause lateral and/or vertical displacement of bearing soil for the buried pipe and pipe ducts and consider the effect of wide or extra heavy loads.	3.8.4.4.5
3.9-1	A COL applicant that references the U.S. EPR design certification will submit the results from the vibration assessment program for the U.S. EPR RPV internals, in accordance with RG 1.20.	3.9.2.4
3.9-2	A COL applicant that references the U.S. EPR design certification will prepare the design specifications and design reports for ASME Class 1, 2, and 3 components, piping, supports and core support structures that comply with and are certified to the requirements of Section III of the ASME Code.	3.9.3
3.9-3	A COL applicant that references the U.S. EPR design certification will examine the feedwater line welds after hot functional testing prior to fuel loading and at the first refueling outage, in accordance with NRC Bulletin 79-13. A COL applicant that references the U.S. EPR design certification will report the results of inspections to the NRC, in accordance with NRC Bulletin 79-13.	3.9.3.1.1
3.9-4	As noted in ANP-10264NP-A, A COL applicant that references the U.S. EPR design certification will confirm that thermal deflections do not create adverse conditions during hot functional testing.	3.9.3.1.1
3.9-5	As noted in ANP-10264NP-A, should a COL applicant that references the U.S. EPR design certification find it necessary to route Class 1, 2, and 3 piping not included in the U.S. EPR design certification so that it is exposed to wind and tornadoes, the design must withstand the plant design-basis loads for this event.	3.9.3.1.1
3.9-6	A COL applicant that references the US EPR design certification will identify any additional site-specific valves in Table 3.9.6-2 to be included within the scope of the IST program.	3.9.6.3
3.9-7	A COL applicant that references the U.S. EPR design certification will submit the preservice testing (PST) program and IST program for pumps, valves, and snubbers as required by 10 CFR 50.55a.	3.9.6
3.9-8	A COL applicant that references the US EPR design certification will identify any additional site-specific pumps in Table 3.9.6-1 to be included within the scope of the IST program.	3.9.6.2
3.9-9	COL applicant that references the U.S. EPR design certification will either use a piping analysis program based on the computer codes described in Section 3.9.1 and Appendix 3C or will implement a U.S. EPR benchmark program using models specifically selected for the U.S. EPR.	3.9.1.2

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Item No.	Description	Section
3.9-10	Pipe stress and support analysis will be performed by a COL applicant that references the U.S. EPR design certification.	3.9.1.2
3.9-11	A COL applicant that references the U.S. EPR design certification will provide a summary of the maximum total stress, deformation (where applicable), and cumulative usage factor values for each of the component operating conditions for ASME Code Class 1 components. For those values that differ from the allowable limits by less than 10 percent, the COL applicant will provide the contribution of each of the loading categories (e.g., seismic, pipe rupture, dead weight, pressure, and thermal) to the total stress for each maximum stress value identified in this range.	3.9.3.1
3.9-12	A COL applicant that references the U.S.EPR design certification will provide a table identifying the safety-related systems and components that use snubbers in their support systems, including the number of snubbers, type (hydraulic or mechanical), applicable standard, and function (shock, vibration, or dual-purpose snubber). For snubbers identified as either a dual-purpose or vibration arrester type, the COL applicant shall indicate whether the snubber or component was evaluated for fatigue strength.	3.9.6.4
3.9-13	A COL applicant that references the U.S. EPR design certification will identify the implementation milestones and applicable ASME OM Code for the preservice and inservice examination and testing programs. These programs will be consistent with the requirements in the latest edition and addenda of the OM Code incorporated by reference in 10 CFR 50.55a on the date 12 months before the date for initial fuel load.	3.9.6
3.10-1	A COL applicant that references the U.S. EPR design certification will create and maintain the SQDP file during the equipment selection and procurement phase.	3.10.4
3.10-2	A COL applicant that references the U.S. EPR design certification will identify any additional site specific components that need to be added to the equipment list in Table 3.10-1.	3.10.1.1
3.10-3	If the seismic and dynamic qualification testing is incomplete at the time of the COL application, A COL applicant that references the U.S. EPR design certification will submit an implementation program, including milestones and completion dates, for NRC review and approval prior to installation of the applicable equipment.	3.10.4
3.11-1	A COL applicant that references the U.S. EPR design certification will maintain the equipment qualification test results and qualification status file during the equipment selection, procurement phase and throughout the installed life in the plant.	3.11
3.11-2	A COL applicant that references the U.S. EPR design certification will identify additional site specific components that need to be added to the environmental qualification list in Table 3.11-1.	3.11.1.1.3
3.11-3	If the equipment qualification testing is incomplete at the time of the COL application, a COL applicant that references the U.S. EPR design certification will submit an implementation program, including milestones and completion dates, for NRC review and approval prior to installation of the applicable equipment.	3.11.3
3.12-1	A COL applicant that references the U.S. EPR design certification will perform a review of the impact of contributing mass of supports on the piping analysis following the final support design to confirm that the mass of the support is no more than ten percent of the mass of the adjacent pipe span.	3.12.4.2
3.12-2	As indicated in Section 5.3 of topical report ANP-10264NP-A, pipe and support stress analysis will be performed by the COL applicant that references the U.S. EPR design certification. If the COL applicant that references the U.S. EPR design certification chooses to use a piping analysis program other than those listed in Section 5.1 of the topical report, the COL applicant will implement a benchmark program using models specifically selected for the U.S. EPR.	3.12.4.3
3.13-1	A COL applicant referencing the U.S. EPR design certification will submit the inservice inspection program for ASME Code Class 1, Class 2, and Class 3 threaded fasteners, to the NRC prior to performing the first inspection. The program will identify the applicable edition and addenda of ASME Section XI and ensure compliance with the requirements of 10 CFR 50.55a(b)(2)(xxvii).	3.13.2
3E-1	A COL applicant that references the U.S. EPR design certification will address critical sections relevant to site-specific Seismic Category I structures.	3E
5.2-1	Deleted	
5.2-2	A COL applicant that references the U.S. EPR design certification will identify additional ASME code cases to be used.	5.2.1.2

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Item No.	Description	Section
5.2-3	A COL applicant that references the U.S. EPR design certification will identify the implementation milestones for the site-specific ASME Section XI preservice and inservice inspection program for the reactor coolant pressure boundary, consistent with the requirements of 10 CFR 50.55a (g). The program will identify the applicable edition and addenda of the ASME Code Section XI, and will identify additional relief requests and alternatives to Code requirements.	5.2.4
5.3-1	A COL applicant that references the U.S. EPR design certification will identify the implementation milestones for the material surveillance program.	5.3.1.6
5.3-2	A COL applicant that references the U.S. EPR design certification will provide a plant-specific pressure and temperature limits report (PTLR), consistent with an approved methodology.	5.3.2.1
5.3-3	A COL applicant holder that references the U.S. EPR design certification will provide plant-specific RT_{PTS} values in accordance with 10 CFR 50.61 for vessel beltline materials.	5.3.2.3
5.4-1	A COL applicant that references the U.S. EPR design certification will identify the edition and addenda of ASME Section XI applicable to the site specific Steam Generator inspection program.	5.4.2.5.2.2
6.1-1	A COL applicant that references the U.S. EPR design certification will review the fabrication and welding procedures and other QA methods of ESF component vendors to verify conformance with RGs 1.44 and 1.31.	6.1.1.1
6.1-2	If components cannot be procured with DBA-qualified coatings applied by the component manufacturer, A COL applicant that references the U.S. EPR design certification must do one of the following: procure the component as uncoated and apply a DBA-qualified coating system in accordance with 10 CFR 50 Appendix B, Criterion IX; confirm that the DBA-unqualified coating is removed and the component is recoated with DBA-qualified coatings in accordance with 10 CFR 50 Appendix B, Criterion IX; or add the quantity of DBA-unqualified coatings to a list that documents those DBA-unqualified coatings already existing within containment.	6.1.2.3.2
6.2-1	A COL applicant that references the U.S. EPR design certification will identify the implementation milestones for the CLRT program described under 10 CFR 50, Appendix J.	6.2.6
6.3-1	A COL applicant that references the U.S. EPR design certification will describe the containment cleanliness program which limits debris within containment.	6.3.2.2.2
6.4-1	A COL applicant that references the U.S. EPR design certification will identify the type(s) of Seismic Category I Class IE toxic gas sensors (i.e., the toxic chemical(s) of concern) necessary for control room operator protection.	6.4.6
6.4-2	A COL applicant that references the U.S. EPR design certification will provide written emergency planning and procedures in the event of a radiological or a hazardous chemical release within or near the plant, and will provide training of control room personnel.	6.4.3
6.4-3	A COL applicant that references the U.S. EPR design certification will evaluate the results of the toxic chemical accidents from Section 2.2.3 and address their impact on control room habitability in accordance with RG 1.78.	6.4.4
6.4-4	A COL applicant that references the U.S. EPR design certification will confirm that the radiation exposure of main control room occupants resulting from a design basis accident at a nearby unit on a multi-unit site is bounded by the radiation exposure from the postulated design basis accidents analyzed for the U.S. EPR; or confirm that the limits of GDC-19 are met.	6.4.4
6.6-1	A COL applicant that references the U.S. EPR design certification will identify the implementation milestones for the site-specific ASME Section XI preservice and inservice inspection program for the Class 2 and Class 3 components, consistent with the requirements of 10 CFR 50.55a (g). The program will identify the applicable edition and addenda of the ASME Code Section XI, and will identify additional relief requests and alternatives to Code requirements.	6.6
7.1-1	A COL applicant that references the U.S. EPR design certification will update the initial inventory list of accident monitoring variables including variable types in Table 7.5-1 - Initial Inventory of Post-Accident Monitoring Variables, with a final list upon completion of the emergency procedure guidelines or the emergency operating and abnormal operating procedures prior to fuel loading.	7.5.2.2.1
8.1-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information describing the interface between the offsite transmission system, and the nuclear unit, including switchyard interconnections.	8.1.1
8.1-2	A COL applicant that references the U.S. EPR design certification will identify site-specific loading differences that raise EDG or Class 1E battery loading, and demonstrate the electrical distribution system is adequately sized for the additional load.	8.1.3

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Item No.	Description	Section
8.2-1	A COL applicant that references the U.S. EPR design certification will provide site specific information regarding the offsite transmission system and their connections to the station switchyard.	8.2.1.1
8.2-2	A COL applicant that references the U.S. EPR design certification will provide site-specific information for the switchyard layout design.	8.2.1.2
8.2-3	A COL applicant that references the U.S. EPR design certification will provide site-specific information that identifies actions necessary to restore offsite power and use available nearby power sources when offsite power is unavailable.	8.2.2.7
8.2-4	A COL applicant that references the U.S. EPR design certification will provide a site-specific grid stability analysis.	8.2.2.4
8.2-5	A COL applicant that references the U.S. EPR design certification will provide site-specific information for the protective devices that control the switchyard breakers and other switchyard relay devices.	8.2.1.2
8.2-6	A COL applicant that references the U.S. EPR design certification will provide site-specific information for the station switchyard equipment inspection and testing plan.	8.2.2.5
8.2-7	A COL applicant that references the U.S. EPR design certification will provide site specific information regarding the communication agreements and protocols between the station and the transmission system operator, independent system operator, or reliability coordinator/authority. Additionally, the applicant will provide a description of the analysis tool used by the transmission system operator to determine, in real time, the impact that the loss or unavailability of various transmission system elements will have on the condition of the transmission system to provide post-trip voltages at the switchyard. The information provided will be consistent with information requested in NRC Generic Letter 2006-02.	8.2.1.1
8.2-8	A COL applicant that references the U.S. EPR design certification will provide site-specific information regarding indication and control of switchyard components.	8.2.1.2
8.3-1	A COL applicant that references the U.S. EPR design certification will monitor and maintain EDG reliability during plant operations to verify the selected reliability level target is being achieved as intended by RG 1.155.	8.3.1.1.5
8.3-2	A COL applicant that references the U.S. EPR design certification will describe inspection, testing and monitoring programs to detect the degradation of inaccessible or underground power cables that support EDGs, offsite power, ESW and other systems that are within the scope of 10 CFR 50.65.	8.3.1.1.8
8.4-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information that identifies any additional local power sources and transmission paths that could be made available to resupply the power plant following a LOOP.	8.4.1.3
8.4-2	A COL applicant that references the U.S. EPR design certification will address the RG 1.155 guidance related to procedures and training to cope with SBO.	8.4.2.6.4
9.1-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information on the heavy load handling program, including a commitment to procedures for heavy load lifts in the vicinity of irradiated fuel or safe shutdown equipment, and crane operator training and qualification.	9.1.5.2.5
9.1-2	A COL applicant that references the U.S. EPR design certification will demonstrate that the design satisfies the criticality analysis requirements for the new and spent fuel storage racks, and describe the results of the analyses for normal and credible abnormal conditions, including a description of the methods used, approximations and assumptions made, and handling of design tolerances and uncertainties.	9.1.1.3
9.1-3	A COL applicant that references the U.S. EPR design certification will describe the new fuel storage racks, including a description of confirmatory structural dynamic and stress analyses	9.1.2.2.1
9.1-4	A COL applicant that references the U.S. EPR design certification will describe the spent fuel storage racks, including a description of confirmatory structural dynamic and stress analyses and thermal-hydraulic cooling analyses.	9.1.2.2.2
9.2-1	A COL applicant that references the U.S. EPR design certification will provide site specific information for the UHS support systems such as makeup water, blowdown, and chemical treatment (to control biofouling).	9.2.5.2
9.2-2	A COL applicant that references the U.S. EPR design certification will provide site-specific details related to the sources and treatment of makeup to the potable and sanitary water system along with a simplified piping and instrument diagram.	9.2.4.2.1
9.2-3	The raw water supply system (RWSS) and the design requirements of the RWSS are site specific and will be addressed by the COL applicant.	9.2.9

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Item No.	Description	Section
9.2-4	A COL applicant that references the U.S. EPR design certification will provide a description of materials that will be used for the essential service water system (ESWS) at their site location, including the basis for determining that the materials beinq used are appropriate for the site location and for the fluid properties that apply	9.2.1.3.5
9.5-1	A COL applicant referencing the U.S. EPR certified design will identify additional site specific communication locations necessary to support effective communication between plant personnel in all vital areas of the plant during normal operation, as well as during accident conditions.	9.5.2.3
9.5-2	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.1.7.1, Design and Procurement Document Control.	Table 9.5-1, C.1.7.1
9.5-3	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.1.7.2, Instructions, Procedures and Drawings.	Table 9.5-1, C.1.7.2
9.5-4	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.1.7.3, Control of Purchased Material, Equipment, and Services.	Table 9.5-1, C.1.7.3
9.5-5	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.1.8, Fire Protection Program Changes/Code Deviations.	Table 9.5-1, C.1.8
9.5-6	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.1.8.1, Change Evaluations.	Table 9.5-1, C.1.8.1
9.5-7	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.1.8.5, 10 CFR 50.72 Notification and 10 CFR 50.73 Reporting.	Table 9.5-1, C.1.8.5
9.5-8	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.1.8.7, Fire Modeling.	Table 9.5-1, C.1.8.7
9.5-9	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.5.5, Post-Fire Safe- Shutdown Procedures.	Table 9.5-1, C.5.5
9.5-10	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.5.5.1, Safe- Shutdown Procedures.	Table 9.5-1, C.5.5.1
9.5-11	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.5.5.2, Alternative/ Dedicated Shutdown Procedures.	Table 9.5-1, C.5.5.2
9.5-12	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.5.5.3, Repair Procedures.	Table 9.5-1, C.5.5.3
9.5-13	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.6.2.4, Independent Spent Fuel Storage Areas.	Table 9.5-1, C.6.2.4
9.5-14	A COL applicant that references the U.S. EPR design certification will submit site specific information to address the Regulatory Guide 1.189, Regulatory Position C.6.2.6, Cooling Towers.	9.5.1.2.1
9.5-15	A COL applicant that references the U.S. EPR design certification will submit site specific information to address Regulatory Guide 1.189, Regulatory Position C.7.6, Nearby Facilities.	Table 9.5-1, C.7.6
9.5-16	A COL applicant that references the U.S. EPR design certification will perform an as-built, post-fire Safe Shutdown Analysis, which includes final plant cable routing, fire barrier ratings, purchased equipment, equipment arrangement and includes a review against the assumptions and requirements contained in the Fire Protection Analysis. The post-fire Safe Shutdown Analysis will demonstrate that safe shutdown performance objectives are met prior to fuel loading and will include a post-fire safe shutdown circuit analysis based on the methodology described in NEI 00-01, "Guidance for Post-Fire Safe-Shutdown Circuit Analysis."	9.5.1.2.1
9.5-17	A COL applicant that references the U.S. EPR design certification will evaluate the differences between the as-designed and as-built plant configuration to confirm the Fire Protection Analysis remains bounding. This evaluation will be performed prior to fuel loading and will consider the final plant cable routing, fire barrier ratings, combustible loading, ignition sources, purchased equipment, equipment arrangement and includes a review against the assumptions and requirements contained in the Fire Protection Analysis. The applicant will describe how this as-built evaluation will be performed and documented, and how the NRC will be made aware of deviations from the FSAR, if any.	9.5.1.3

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
9.5-18	A COL applicant that references the U.S. EPR design certification will perform a supplemental Fire Protection Analysis for site-specific areas of the plant not analyzed bv the FSAR.	9.5.1.3
9.5-19	A COL applicant that references the U.S. EPR design certification will provide a description and simplified Fire Protection System piping and instrumentation diagrams for site-specific systems.	9.5.1.2.1
9.5-20	A COL applicant that references the U.S. EPR design certification will describe the program used to monitor and maintain an acceptable level of quality in the fire protection system freshwater storage tanks.	9.5.1.2.1
9.2-21	A COL applicant that references the U.S. EPR design certification will provide a description of the offsite communication system that interfaces with the onsite communication system.	9.5.2.1.1
9.5-22	A COL applicant that references the U.S. EPR design certification will describe the site-specific sources of acceptable fuel oil available for refilling the EDG fuel oil storage tanks within seven days, including the means of transporting and refilling the fuel storage tanks, following a design basis event to enable each diesel generator system to supply uninterrupted emergency power.	9.5.4.4
10.0-1	Deleted	
10.2-1	Deleted	
10.2-2	A COL applicant that references the U.S. EPR design certification will provide applicable material properties of the turbine rotor after the site specific turbine has been procured.	10.2.3.1
10.2-3	A COL applicant that references the U.S. EPR design certification will provide applicable turbine disk rotor specimen test data, load displacement data from the compact tension specimens and the fracture toughness properties after the site-specific turbine has been procured.	10.2.3.2
10.2-4	Deleted	
10.2-5	A COL applicant that references the U.S. EPR design certification will provide the site-specific turbine rotor inservice inspection interval consistent with the manufacturer's turbine missile analysis.	10.2.3.6
10.3-1	A COL applicant that references the U.S. EPR design certification will identify the authority responsible for implementation and management of the secondary side water chemistry program.	10.3.5
10.3-2	A COL applicant that references the U.S. EPR design certification will develop and implement a FAC condition monitoring program that is consistent with Generic Letter 89-08 and NSAC-202L-R3 for the carbon steel portions of the steam and power conversion systems that contain water or wet steam prior to initial fuel loading.	10.3.6.3
10.4-1	A COL applicant that references the U.S. EPR design certification will describe the site-specific main condenser materials.	10.4.1.2
10.4-2	A COL applicant that references the U.S. EPR design certification will describe the site-specific design pressure and test pressure for the main condenser.	10.4.1.2
10.4-3	A COL applicant that references the U.S. EPR design certification will provide the description of the site-specific portions of the CWS.	10.4.5.2.1
10.4-4	A COL applicant that references the U.S. EPR design certification will provide the specific chemicals used within the chemical treatment system as determined by the site-specific water conditions.	10.4.5.2.2
10.4-5	A COL applicant that references the U.S. EPR design certification will provide the site-specific CWS piping design pressure.	10.4.5.2.2
10.4-6	If a vacuum priming system is required, a COL applicant that references the U.S. EPR design certification will provide the site-specific information.	10.4.5.2.2
10.4-7	A COL applicant that references the U.S. EPR design certification will provide information to address the potential for flooding of safety-related equipment due to failures of the site-specific CWS.	10.4.5.3
11.2.-1	A COL applicant that references the U.S. EPR design certification will confirm that the liquid waste management system cost-benefit analysis for the typical site is applicable to their site; if it is not, provide a site-specific cost-benefit analysis.	11.2.4
11.3-1	A COL applicant that references the U.S. EPR design certification will confirm that the gaseous waste management system cost-benefit analysis for the typical site is applicable to their site: if it is not, provide a site-specific cost-benefit analysis.	11.3.4

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
11.4-1	A COL applicant that references the U.S. EPR design certification will fully describe, at the functional level, elements of the Process Control Program (PCP). This program description will identify the administrative and operational controls for waste processing process parameters and surveillance requirements which demonstrate that the final waste products meet the requirements of applicable federal, state, and disposal site waste form requirements for burial at a 10 CFR Part 61 licensed low level disposal site and will be in accordance with the guidance provided in RG 1.21, NUREG-0800 Branch Technical Position 11-3, ANSI/ANS-55.1-1992, and Generic Letters 80-09, 81-38, and 81-39.	11.4.3
11.5-1	A COL applicant that references the U.S. EPR design certification will fully describe, at the functional level, elements of the process and effluent monitoring and sampling programs required by 10 CFR Part 50 Appendix I, and 10 CFR 52.79 (a)(16). This program description, Offsite Dose Calculation Manual (ODCM), will specify how a licensee controls, monitors, and performs radiological evaluations of releases. The program will also document and report radiological effluents discharged to the environment.	11.5.2
12.1-1	A COL applicant that references the U.S. EPR design certification will fully describe, at a functional level, elements of the ALARA program for ensuring that occupational radiation exposures are ALARA. This program will comply with provisions of 10 CFR Part 20 and be consistent with the guidance in RGs 1.8, 8.2, 8.7, 8.8, 8.9, 8.10, 8.13, 8.15, 8.27, 8.28, 8.29, 8.34, 8.35, 8.36, and 8.38, and the applicable portions of NUREG-1736.	12.1.3
12.2-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information for required radiation sources containing byproduct, source, and special nuclear material that may warrant shielding design considerations. This site-specific information will include a listing of isotope, quantity, form, and use of all sources in this latter category that exceed 100 millicuries.	12.2.1.13
12.3-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information on the extent to which the guidance provided by RG 1.21, 1.97, 8.2, 8.8, and ANSI/ HPS-N13.1-1999 is employed in sampling recording and reporting airborne releases of radioactivity.	12.3.4.5
12.3-2	A COL applicant that references the U.S. EPR design certification will provide site-specific information on estimated annual doses to construction workers in a new unit construction area as a result of radiation from onsite radiation sources from the existing operating plant(s). This information will include bases, models, assumptions, and input parameters associated with these annual doses.	12.3.5.1
12.3-3	A COL applicant that references the U.S. EPR design certification will describe the use of portable instruments, and the associated training and procedures, to accurately determine the airborne iodine concentration within the facility where plant personnel may be present during an accident, in accordance with requirements of 10 CFR 50.34(f)(2)(xxvii) and the criteria in Item III.D.3.3 of NUREG-0737. The procedures for locating suspected high-activity areas will be described.	12.3.4.5
12.5-1	A COL applicant that references the U.S. EPR design certification will fully describe, at the functional level, elements of the Radiation Protection Program. The purpose of the Radiation Protection Program is to maintain occupational and public doses ALARA. The program description will identify how the program is developed, documented, and implemented through plant procedures that address quality requirements commensurate with the scope and extent of licensed activities. This program will comply with the provisions of 10 CFR Parts 19, 20, 50, 52, and 71 and be consistent with the guidance in Regulatory Guides 1.206, 1.8, 8.2, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.13, 8.15, 8.27, 8.28, 8.29, 8.34, 8.35, 8.36, 8.38, and the consolidated guidance in NUREG-1736.	12.5
13.1-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information for management, technical support, and operating organizations.	13.1
13.2-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information for training programs for plant personnel.	13.2
13.3-1	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.	13.3
13.4-1	A COL applicant that references the U.S. EPR design certification will provide site-specific information for operational programs and schedule for implementation.	13.4
13.5-1	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.	13.5
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.	13.6

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
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).	13.6
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.	13.6
13.7-1	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 Part 26.	13.7
14.2-1	A COL applicant that references the U.S. EPR certified design will provide site specific information that describes the organizational units that manage, supervise, or execute any phase of the test program.	14.2.2
14.2-2	A COL applicant that references the U.S. EPR certified design will develop a test program that considers the following eight guidance components: 1) The applicant should allow at least nine months to conduct preoperational testing. 2) The applicant should allow at least three months to conduct startup testing, including fuel loading, low-power tests, and power-ascension tests. 3) Plant safety will not be dependent on the performance of untested SSCs during any phase of the startup test program. 4) Surveillance test requirements will be completed in accordance with plant Technical Specification requirements for SSC operability before changing plant modes. 5) Overlapping test program schedules (for multiunit sites) should not result in significant divisions of responsibilities or dilutions of the staff provided to implement the test program. 6) The sequential schedule for individual startup tests should establish, insofar as practicable, that test requirements should be completed prior to exceeding 25 percent power for SSC that are relied on to prevent, limit, or mitigate the consequences of postulated accidents. 7) Approved test procedures should be in a form suitable for review by regulatory inspectors at least 60 days prior to their intended use or at least 60 days prior to fuel loading for fuel loading and startup test procedures. 8) Identify and cross reference each test (or portion thereof) required to be completed before initial fuel loading and that is designed to satisfy the requirements for completing ITAAC.	14.2.11
14.2-3	A COL applicant that references the US EPR design certification will provide site-specific information for review and approval of test procedures.	14.2.3
14.2-4	A COL applicant that references the US EPR design certification will address the site-specific administrative procedures for review and approval of test results.	14.2.5
14.2-5	A COL applicant that references the U.S. EPR design certification will provide site-specific test abstract information for the circulating water supply system.	14.2.12
14.2-6	Reserved.	Not applicable
14.2-7	A COL applicant that references the U.S. EPR design certification will provide site-specific test abstract information for the cooling tower.	14.2.12
14.2-8	A COL applicant that references the U.S. EPR design certification will provide site-specific test abstract information for the raw water supply system.	14.2.12
14.2-9	A COL applicant that references the U.S. EPR design certification will provide site-specific test abstract information for personnel radiation monitors.	14.2.12
14.2-10	A COL applicant that references the U.S. EPR design certification will plan, and subsequently conduct, the plant startup test program.	14.2.4
14.2-11	A COL applicant that references the U.S. EPR design certification will identify the specific operator training to be conducted as part of the low-power testing program related to the resolution of TMI Action Plan Item I.G.1, as described in (1) NUREG-0660 - NRC Action Plans Developed as a Result of the TMI-2 Accident, Revision 1, August 1980, (2) NUREG-0694 - TMI-Related Requirements for New Operating Licenses, June 1980, and (3) NUREG-0737 - Clarification of TMI Action Plan requirements.	14.2.9
14.3-1	A COL applicant that references the U.S. EPR design certification will provide ITAAC for emergency planning, physical security, and site specific portions of the facility that are not included in the Tier 1 ITAAC associated with the certified design (10 CFR 52.80(a)).	14.3
14.3-2	A COL applicant that references the U.S. EPR design certification will describe the selection methodology for site-specific SSCs to be included in ITAAC, if the selection methodology is different from the methodology described within the FSAR, and will also provide the selection methodology associated with emergency planning and physical security hardware.	14.3

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
16.0-1	Reviewer's Notes and brackets are used to identify information or parameters that are plant specific or are based on preliminary design information. A COL applicant that references the U.S. EPR design certification will provide the necessary information in response to the Reviewer's Notes and replace preliminary information provided in brackets of the Technical Specifications and Technical Specification Bases with plant specific values.	16.0
17.2-1	A COL applicant that references the U.S. EPR design certification will provide the Quality Assurance Programs associated with the construction and operations phases.	17.2
17.4-1	A COL applicant that references the U.S. EPR design certification will identify the site-specific SSCs within the scope of the RAP.	17.4.2
17.4-2	A COL applicant that references the U.S. EPR design certification will provide the information requested in Regulatory Guide 1.206, Section C.I.17.4.4.	17.4.4
17.6-1	A COL applicant that references the U.S. EPR design certification will describe the process for determining which plant structures, systems, and components (SSC) will be included in the scope of the Maintenance Rule Program in accordance with 10 CFR 50.65(b). The program description will identify that additional SSC functions may be added to or subtracted from the Maintenance Rule scope prior to fuel load, when additional information is developed (e.g., emergency operating procedures, or EOP), and after the license is issued.	17.6.1
17.6-2	A COL applicant that references the U.S. EPR design certification will provide the process for determining which SSC within the scope of the Maintenance Rule program will be tracked to demonstrate effective control of their performance or condition in accordance with 10 CFR 50.65(a)(2).	17.6.2
17.6-3	A COL applicant that references the U.S. EPR design certification will provide a program description for monitoring SSC in accordance with 10 CFR 50.65(a)(1).	17.6.2
17.6-4	A COL applicant that references the U.S. EPR design certification will identify and describe the program for periodic evaluation of the Maintenance Rule program in accordance with 10 CFR 50.65(a)(3).	17.6.3
17.6-5	A COL applicant that references the U.S. EPR design certification will describe the program for maintenance risk assessment and management in accordance with 10 CFR 50.65(a)(4). Since the removal of multiple SSC from service can lead to a loss of Maintenance Rule functions, the program description will address how removing SSC from service will be evaluated. For qualitative risk assessments, the program description will explain how the risk assessment and management program will preserve plant-specific key safety functions.	17.6.4
17.6-6	A COL applicant that references the U.S. EPR design certification will describe the program for selection, training, and qualification of personnel with Maintenance-Rule-related responsibilities consistent with the provisions of Section 13.2 as applicable. Training will be commensurate with maintenance rule responsibilities, including Maintenance Rule Program administration, the expert panel process, operations, engineering, maintenance, licensing, and plant management.	17.6.5
17.6-7	A COL applicant that references the U.S. EPR design certification will describe the relationship and interface between Maintenance Rule Program and the Reliability Assurance Program.	17.6.6
17.6-8	A COL applicant that references the U.S. EPR design certification will describe the plan or process for implementing the Maintenance Rule Program as described in the COL application, which includes establishing program elements through sequence and milestones and monitoring or tracking the performance and/or condition of SSC as they become operational. The Maintenance Rule Program will be implemented by the time that fuel load is authorized.	17.6.7
17.6-9	A COL applicant that references the U.S. EPR design certification will describe the program for Maintenance Rule implementation.	17.6
18.1-1	A COL applicant that references the U.S. EPR design certification will execute the NRC approved HFE program as described in this section	18.1
18.1-2	A COL applicant that references the U.S. EPR design certification will be responsible for HFE design implementation for a new Emergency Operations Facility (EOF) or changes resulting from the addition of the U.S. EPR to an existing EOF.	18.1.1.3
18.5-1	A COL applicant that references the U.S. EPR design will confirm that actual staffing levels and qualifications of plant personnel specified in Section 13.1 of the COL application remain bounded by regulatory requirements and results of the staffing and qualifications analysis.	18.5
18.8-1	A COL applicant that references the U.S. EPR design certification will describe how HFE principles and criteria are incorporated into the development program for site procedures.	18.8

Table 1.8-2—FSAR Sections that Address COL Items

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Item No.	Description	Section
18.9-1	A COL applicant that references the U.S. EPR design certification will describe how HFE principles and criteria are incorporated into the development of training program scope, structure, and methodology.	18.9
18.12-1	A COL applicant that references the U.S. EPR design certification will implement a human performance monitoring program similar to that which is described in this section.	18.12
19.0-1	A COL applicant that references the U.S. EPR design certification will either confirm that the PRA in the design certification bounds the site specific design information and any design changes or departures, or update the PRA to reflect the site-specific design information and any design changes or departures.	19.0
19.1-1	A COL applicant that references the U.S. EPR design certification will describe the uses of PRA in support of licensee programs and identify and describe risk-informed applications being implemented during the combined license application phase.	19.1.1.2
19.1-2	A COL applicant that references the U.S. EPR design certification will describe the uses of PRA in support of licensee programs and identify and describe risk-informed applications being implemented during the construction phase.	19.1.1.3
19.1-3	A COL applicant that references the U.S. EPR design certification will describe the uses of PRA in support of licensee programs and identify and describe any risk-informed applications being implemented during the operational phase.	19.1.1.4
19.1-4	A COL applicant that references the U.S. EPR design certification will conduct a peer review of the PRA relative to the ASME PRA Standard prior to use of the PRA to support risk-informed applications or before fuel load.	19.1.2.3
19.1-5	A COL applicant that references the U.S. EPR design certification will describe the applicant's PRA maintenance and upgrade program.	19.1.2.4.1
19.1-6	A COL applicant that references the U.S. EPR design certification will confirm that the design-specific U.S. EPR PRA-based seismic margins assessment is bounding for their specific site.	19.1.5.1.2.4
19.1-7	A COL applicant that references the U.S. EPR design certification will perform the site-specific screening analysis and the site-specific risk analysis for external events applicable to their site.	19.1.5.4
19.1-8	A COL applicant that references the U.S. EPR design certification will describe the uses of PRA in support of site-specific design programs and processes during the design phase.	19.1.1.1
19.1-9	A COL applicant that references the U.S. EPR design certification will review as-designed and as-built information and conduct walk-downs as necessary to confirm that the assumptions used in the PRA (including PRA inputs to RAP and SAMDA) remain valid with respect to internal events, internal flood and fire events (routings and locations of pipe, cable and conduit), and HRA analyses (development of operating procedures, emergency operating procedures and severe accident management guidelines and training), external events including PRA-based seismic margins HCLPF fragilities, and LPSD procedures.	19.1.2.2

1.9 CONFORMANCE WITH REGULATORY CRITERIA

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 1.9:

> A COL applicant that references the U.S. EPR design certification will review and address the conformance with regulatory criteria in effect six months before the docket date of the COL application for the site-specific portions and operational aspects of the facility design.

This COL Item is addressed as follows:

A guide to U.S. EPR conformance with regulatory criteria is presented in Section 1.9 of the U.S. EPR FSAR. Conformance with regulatory criteria was summarized in Sections 1.9.1 through 1.9.5 of the U.S. EPR FSAR, including four conformance demonstration tables. These four conformance demonstration tables include U.S. EPR FSAR Table 1.9–2, U.S. EPR Conformance with Regulatory Guides, U.S. EPR FSAR Table 1.9–3, U.S. EPR Conformance with TMI Requirements (10 CFR 50.34(f)) and Generic Issues (NUREG-0933), U.S. EPR FSAR Table 1.9–4, U.S. EPR Conformance with Advanced and Evolutionary Light-Water Reactor Design Issues (SECY-93-087), Table 1–2, U.S. EPR Conformance with Standard Review Plan (NUREG-0800) from ANP-10292, U.S. EPR Conformance with Standard Review Plan (NUREG-0800) Technical Report (AREVA 2009).

Codes used to indicate conformance determinations in the "U.S. EPR Assessment" columns of the four conformance demonstration tables are listed in Table 1.9-1 of the U.S. EPR FSAR. The definition of the conformance code "N/A-COL" is:

> Guidance addresses concerns not addressed with the context of a design certification application and must be addressed by a combined license (COL) applicant referencing the U.S. EPR design certification.

Site-specific conformance to relevant aspects of the associated NRC guidance, as stipulated within the specific context of the cited guidance statement, was assessed for the regulatory guidance assigned a code of "N/A-COL" in the four conformance demonstration tables of the U.S. EPR FSAR.

Regulatory guidance not applicable to {BBNPP} or not within the scope of the FSAR is not identified as non-conforming. Therefore, exceptions to this non-applicable regulatory guidance are not required. For example, Regulatory Guide 1.81, Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants, is not applicable to {BBNPP} since it does not share emergency or shutdown electric systems with {SSES Units 1 and 2}. The results of these assessments are presented in Sections 1.9.1, 1.9.2, 1.9.3, and 1.9.5. Conformance with regulatory criteria associated with operational experience (generic communications) is addressed in Section 1.9.4.

1.9.1 CONFORMANCE WITH REGULATORY GUIDES

Site-specific assessment of conformance with the regulatory guidance identified with a code of "N/A-COL" in Table 1.9-2 of the U.S. EPR FSAR was performed. Those regulatory guidance for which the facility takes exception are identified in Table 1.9-1. The document and section that address the exceptions are also provided in Table 1.9-1. No exceptions are taken to other applicable Regulatory Guides included in U.S. EPR FSAR Table 1.9-2.

1.9.2 CONFORMANCE WITH THE STANDARD REVIEW PLAN

Site-specific assessment of conformance with regulatory guidance identified with a code of "N/A-COL" in Table 1-2 of ANP-10292 (AREVA, 2009) was performed. No exceptions are taken to the applicable NUREG-0800 acceptance criteria included in ANP-10292, Table 1-2.

1.9.3 GENERIC ISSUES

Assessment of the conformance with regulatory requirements and guidance identified with a code of "N/A-COL" in Table 1.9-3 of the U.S. EPR FSAR was performed. {BBNPP} conforms to the regulatory requirements and applicable regulatory guidance in effect six months prior to the submittal date of the COL application that were assigned an assessment code of "N/A-COL" in Table 1.9-3 of the U.S. EPR FSAR.

1.9.4 OPERATIONAL EXPERIENCE (GENERIC COMMUNICATIONS)

Operational experience described in Bulletins and Generic Letters are incorporated by the NRC staff into updates of applicable sections of NUREG-0800. The U.S. EPR design certification application was submitted May29, 2009 (AREVA, 2009) and addressed conformance with the most recent NUREG-0800 updates relative to the U.S. EPR design certification application, March 2007 (for NUREG-0800 Chapters 1-18) and June 2007 (for NUREG-0800 Chapter 19). {In the time period from the mentioned NUREG-0800 updates to April 2008 (i.e. six months prior to submittal of the BBNNP COL application), the only generic communication related to plant design is Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems."

The U.S. EPR design conforms to, among others, General Design Criteria 1 - Quality Standards and Records, 34 - Residual Heat Removal, 35 - Emergency Core Cooling, 36 - Inspection of Emergency Core Cooling Systems, 37 - Testing of Emergency Core Cooling Systems, 38 - Containment Heat Removal System, 39 - Inspection of Containment Heat Removal System, and 40 - Testing of Containment heat Removal System. Piping design criteria provide for high point vents and local high point vents to allow filling and venting of piping systems, including those identified in GL 2008-01. Procedures for filling and venting piping systems and performance testing of the systems will be written and implemented prior to start-up of the plant. A specific operational program has been added to Table 13.4-1 to verify the licensing, design, testing and corrective action issues identified in GL 2008-01 have been resolved and corrective actions implemented.

Therefore, in addition to the discussion on Generic Letter 2008-01, the conformance assessment for BBNPP relative to operational experience is satisfied by the conformance assessment provided in Section 1.9.2 above.}

1.9.5 ADVANCED AND EVOLUTIONARY LIGHT-WATER REACTOR DESIGN ISSUES

Assessment of the conformance with regulatory guidance identified with a code of "N/A-COL" in Table 1.9-4 of the U.S. EPR FSAR was performed. {BBNPP} conforms to the applicable regulatory guidelines in effect six months prior to the submittal date of the COL application that were assigned an assessment code of "N/A-COL" in Table 1.9-4 of the U.S. EPR FSAR.

1.9.6 REFERENCES

{AREVA, 2009. U.S. EPR Conformance with Standard Review Plan (NUREG-0800) Technical Report, ANP-10292, Revision 1, AREVA, May 2009.}

Table 1.9-1—{Conformance with Regulatory Guides}

Note: BBNPP conforms to applicable Regulatory Guides with the following exceptions:
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RG / Rev	Description	Exception Descriptions	Reference
		Division 1 Regulatory Guides	
1.8, R3	Qualification and Training of Personnel for Nuclear Power plants	Licensed personnel are not able to meet Regulatory Guide 1.8, Rev. 3 operating plant experience requirements on BBNPP . Regulatory Guide 1.8, Rev. 2, Regulatory Position C.1.b will be followed instead for a cold licensing program.	FSAR 13.1.3.1 FSAR 13.2 Technical Specifications 5.3.1
		Quality Control and Quality Assurance personnel will meet education and experience requirements in accordance with the approved Quality Assurance Program Description.	FSAR 13.1.3.1
		The Quality Assurance Manager will approve the use of an alternative for the formal education and experience requirements for Quality Assurance positions in accordance with the approved Quality Assurance Program Description.	FSAR 13.1.3.1
1.16, R4	Reporting of Operating Information—Appendix A Technical Specifications	The annual operating report and monthly operating report are submitted in accordance with Technical Specifications. Event reporting is performed in accordance with 10 CFR 50.72 and 50.73 utilizing the guidance of NUREG-1022. Technical Specifications reporting requirements are implemented, as required.	License Condition and Technical Specifications
1.23, R1	Meteorological Monitoring Programs for Nuclear Power Plants	The existing SSES meteorological tower used for pre-application and pre-operation is at a different elevation than plant grade to assure the tower is on a level, open terrain. Similarly, the SSES cooling towers are within 10 times the height of the towers from the SSES meteorological tower. The resolution of the existing sensors does not meet the resolution recommended. The tower, guyed wire and anchor inspections are not performed every 3 years. For BBNPP operation, the SSES and BBNPP cooling towers are within 10 times the height of the towers from the BBNPP meteorological tower	FSAR 2.3.3.1.7, and 2.3.3.2.7 ER 6.4.1, 6.4.1.7, and 6.4.2.7
1.28, R3	Quality Assurance Program Requirements	Quality Assurance Program Requirements are in accordance with the approved Quality Assurance Program Description.	QAPD
1.30, R0	Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment	Quality Assurance requirements for the installation, inspection, and testing of instrumentation and electric equipment are in accordance with the approved Quality Assurance Program Description.	QAPD
1.33, R2	Quality Assurance Program Requirements (Operation)	Quality Assurance Program Requirements for Operation are in accordance with the approved Quality Assurance Program Description.	QAPD
1.38, R2	Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, Handling of Items for Water-Cooled Nuclear Power Plants	Quality Assurance requirements for packaging, shipping, receiving, storage, and handling of items are in accordance with the approved Quality Assurance Program Description.	QAPD
1.39, R2	Housekeeping Requirements for Water-cooled Nuclear Power Plants	Quality Assurance requirements for housekeeping are in accordance with the approved Quality Assurance Program Description.	QAPD
1.70, R3	Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)	The format and content of the FSAR follows Regulatory Guide 1.206 and the U.S. EPR FSAR.	FSAR 1.1.6
1.94, R1	Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants	Quality Assurance Program Requirements for installation, inspection and testing of structural concrete and structural steel during the construction phase of nuclear power plants are in accordance with the approved Quality Assurance Program Description.	QAPD

Table 1.9-1—{Conformance with Regulatory Guides}

Note: BBNPP conforms to applicable Regulatory Guides with the following exceptions:
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RG / Rev	Description	Exception Descriptions	Reference
1.112, R0	Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Light-Water-Cooled Nuclear Power Reactors	Estimated Annual Radioactive Liquid and Gaseous Releases - Changes made to the input parameters for the GALE code for shim bleed flow rate, process time, and recycle of water -An updated estimate of the Carbon-14 release in gaseous effluents was used versus what is given by the GALE code based on larger plant size and the relationship of power level and the production of Carbon-14.	FSAR 11.2.3.2 and 11.3.3.2
1.116, R0	Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems	Quality Assurance Program Requirements for installation, inspection, and testing of mechanical equipment and systems are in accordance with the approved Quality Assurance Program Description.	QAPD
1.132, R3	Site Investigation for Foundations of Nuclear Power Plants	Deviations from Regulatory Guide 1.132 include soil boring depths into bedrock, deviation surveys were limited to boreholes with geophysical testing, and undisturbed samples were sealed in steel tubes, and could not be photographed.	FSAR 2.5.4.2.2.2
1.138, R2	Laboratory Investigations of Soils and rocks for Engineering Analysis and Design of Nuclear Power Plants	More recent ASTM or EPA standards were used that are equivalent to the out-of-date and uncommon test procedures discussed in Regulatory Guide 1.138, R2.	FSAR 2.5.4.2.3
1.198, R0	Procedures and Criteria for Assessing Seismic Soil Liquefaction at Nuclear Power Plant Sites	Aerial photography was not conducted to plan and conduct the subsurface investigation due to uniformity in geologic conditions between the existing SSES Units 1 and 2 and BBNPP.	FSAR 2.5.4.8.1
1.208, R0	A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion	EPRI Report TR-1014381 was used in lieu of EPRI Report 1013105. The former report is the final EPRI report versus the latter update report cited in the Regulatory Guide. There is no technical difference between the recommended CEUS sigma values and report conclusions. Equation 7 in Appendix D, Step 3, Determining Controlling Earthquakes, was not used because it is incorrect. A corrected equation was used instead.	FSAR 2.5.2.4.5
		EPRI TR-1014099 was used in lieu of the Regulatory Guide 1.208 cited document (EPRI Report 1012965). EPRI Report 1012965 was an update report for CAV research while EPRI TR-1014099 is the final report. For the purposes of revised calculation of the CAV in the CEUS, there is no technical difference between the documents. The methodologies of calculation of the CAV of both reports are identical.	FSAR 2.5.2.6
		Division 4 Regulatory Guides	
		None	
		Division 5 Regulatory Guides	
		None	
		Division 8 Regulatory Guides	
8.2, R0	Guide for Administrative Practices in Radiation Monitoring	The reference to 10 CFR 20.401 is no longer valid in the current version of 10 CFR Part 20 ANSI N13.2-1969 was reaffirmed in 1988.	FSAR 12.5

Table 1.9-1—{Conformance with Regulatory Guides}

Note: BBNPP conforms to applicable Regulatory Guides with the following exceptions:

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RG / Rev	Description	Exception Descriptions	Reference
8.4, R0	Direct-Reading and Indirect-Reading Pocket Dosimeters	The reference to 10 CFR 20.202 (a) and 20.401 is no longer valid in the current version of 10 CFR Part 20. ANSI N13.5-1972 was reaffirmed in 1989. The two performance criteria specified in Regulatory Guide 8.4 (accuracy and leakage) for these devices are met using acceptance standards in ANSI N322-1997 "American National Standard Inspection, Test, Construction, and Performance Requirements for Direct Reading Electrostatic/ Electroscope Type Dosimeters."	FSAR 12.5
8.6, R0	Standard Test Procedure for Geiger-Muller Counters	The instrument calibration program is based upon criteria in ANSI N323-1978 (R1993) "Radiation Protection Instrumentation and Calibration."	FSAR 12.5
8.8, R3	Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Reasonably Achievable	Section C.3.b – Regulatory Guide 1.16 Section C.1.b (3) data is no longer reported. Reporting is also no longer required for Section C.1.b (2). Sections C.4.b – C.4.d – Conformance is with the latest revision of NUREG-0041.	FSAR 12.5