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 Final Safety Analysis Report (FSAR) is also being submitted to the Nuclear Regulatory Commission to support the necessary Materials License requested in the COL Application Letter (PPL Bell Bend, 2008) to receive, possess and use special nuclear material under 10 CFR 70.} 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 a revised U.S. EPR design certification application to the NRC on November 15, 2012 (AREVA, 2012).

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 171.1 acres (69.2 hectares). The BBNPP property occupies an area of 975 ac (395 ha) within the BBNPP Project Boundary which is 2,055 ac (832 ha). No commercial, industrial, institutional, or recreational structures are located within the BBNPP site area. There are several residential structures located within the BBNPP Site which are owned by PPL and will be vacated prior to plant operation.

The BBNPP site is found approximately 5 mi (8 km) northeast of the Borough of Berwick, Pennsylvania, and 1.6 mi (2.6 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 1.1-1shows the Exclusion Area Boundary for the BBNPP with a minimum distance from the center of the containment building of 0.43 mi (0.69 km), except on the west side boundary, where the minimum distance has been calculated to be 0.33 mi (0.53 km). 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
Start of Construction*	November 2017
Construction Completed	June 2022
Commercial Operation Date (COD)	June 2023
* First safety-related concrete.	

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, 2012. NRC Docket No. 52-020, U. S. Evolutionary Power reactor (U. S. EPR), "Re-Submittal of Revision 4 of the U. S. EPR Final Safety Analysis Report for Design Certification," AREVA NP Inc., November 15, 2012.

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.

PPL Bell Bend, LLC, 2008. PPL Bell Bend, LLC Letter, T.L. Harpster (PPL Bell Bend, LLC) to U.S. Nuclear Regulatory Commission, BNP-2008-002, Application for Combined License for the Bell Bend Nuclear Power Plant, dated October 10, 2008 (ML082880580).}

Table 1.1-1— {Acronyms Used in this Document}
(Page 1 of 7)

Acronym	Description
χ/Q	Atmospheric Dispersion Value
A/E	Architect – Engineer
AB	Access Building
ACI	American Concrete Institute
AHEX	Atlantic Highly Extended Crust Seismotectonic Source Zone
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
BA-BFZ	Blytheville-Arch-Blytheville fault zone
BA-BL	Blytheville Arch-Bootheel Lineament
BBNPP	Bell Bend Nuclear Power Plant
BE	Best Estimate
BF	Butterfly Valve
BGS	Below Ground Surface
BPT	Brownian Passage Time
B&V	Black & Veatch
BWR	Boiling Water Reactor
C/NM	Consumable/Non-Metallic
CAM	Continuous Air Monitor
CAV	Cumulative Absolute Velocity
CCNPP	Calvert Cliffs Nuclear Power Plant
CD	Certified Design
CEUS	Central and Eastern United States
CK	Check Valve
CLSZ	Charlevoix-La Malbaie Seismic Zone
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
CSDRS	Certified Design Response Spectra
CSR	Cyclic Stress Ratio
CSZ	Charleston Seismic Zone
CU	Consolidated Undrained Triaxial Compression
CVSZ	Central Virginia Seismic Zone
CWSCT	Circulating Water System Cooling Tower
DB	Dry Bulb
D.C.	District of Columbia
D/Q	Deposition Factor

Table 1.1-1— {Acronyms Used in this Document}
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Acronym	Description
DAC	Derived Air Concentration
DC	Direct Current
DCNR	Department of Conservation and Natural Resources
DE	De-aggregated Earthquake
DEH	Controlling Deaggregation Earthquake, High Magnitude
DEL	Controlling Deaggregation Earthquake, Low Magnitude
DEM	Controlling Deaggregation Earthquake, Medium Magnitude
DI	Diaphragm Valve
DNAG	Decade of North American Geology
DOE	Department of Energy
DOT	Department of Transportation
DP	Dew Point
EAC	Early Action Compact
EC	Erosion/Corrosion
ECC-AM	Extended Continental Crust-Atlantic Margin
ECC-GC	Extended Continental Crust-Gulf Coast
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
EPGB	Emergency Power Generating Building
EPIX	Equipment Performance and Information Exchange
EPR	Evolutionary Power Reactor
EPRI	Electric Power Research Institute
EPRI-SOG	Seismicity Owners Group
EQ	Environmental Qualification
ER	Environmental Report or Electrical Resistivity
ERM	Eastern Rift Margin Fault
ERM-N	Eastern Rift Margin-North
ERM-S	Eastern Rift Margin-South
ERM-SCC	Eastern Rift Margin South/Crittenden County
ERM-SRP	Eastern Rift Margin South/River Picks
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
EUR-H	European Utility Requirements-Hard Soil
FDD	Freezing Degree Days
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FF	Free-Free Resonant Column

Table 1.1-1— {Acronyms Used in this Document}
(Page 3 of 7)

Acronym	Description
FFD	Fitness for Duty
FHA	Fire Hazards Analysis
FIRS	Foundation Input Response Spectra
FOS	Factor of Safety
FPE	Fire Protection Engineer
FWHA	Federal Highway Administration
G/G_{max}	Mean values of shear stiffness
GB	Globe Valve
GHEX	Gulf Coast Highly Extended Crust
GMH	Great Meteor Hotspot
GMPEs	Ground Motion Prediction Equations
GMRS	Ground Motion Response Spectra
G-R	Guttenberg - Richter
GRM	Generalized Reciprocal Method
GSC	Geological Survey of Canada
GT	Gate Valve
GWSI	Groundwater Site Inventory
HDPE	High Density Polyethylene
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
IBEB	Illinois Basin Extended Basement
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
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
LPS	Layer Parallel Shortening
LSS	Low Safety Significance

Table 1.1-1— {Acronyms Used in this Document}
(Page 4 of 7)

Acronym	Description
LSZ	Lancaster Seismic Zone
Ma	Million Years Ago
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
MESE	Mesozoic and Younger Extended Region
MESE-N	Mesozoic-and-Younger Extension Mmax Source Zone (Narrow interpretation)
MESE-W	Mesozoic-and-Younger Extension Mmax Source Zone (Wide interpretation)
MidC-A, MidC-B, MidC-C, MidC-D	Midcontinent-Craton Seismotectonic Source Zone (Configurations A, B, C, and D)
M_{max}	Maximum magnitude for any distributed seismicity source zone
Mmax	Approach to defining seismic source zones for distributed seismicity
MMBO	Million Barrels of Oil
MMI	Modified Mercalli Intensity
MRFF	Maintenance Rule Functional Failure
msl	Mean Sea Level
MSS	Medium Safety Significance
NAAQS	National Ambient Air Quality Standards
NAP	North Appalachian Seismotectonic Source Zone
NASA	National Aeronautics and Space Administration
NAVD	North American Vertical Datum
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
NG	Newark - Gettysburg
NGDC	National Geophysical Data Center
NGVD 29	National Geodetic Vertical Datum of 1929
NI	Nuclear Island
NIOSH	National Institute for Occupational Safety and Health
NJ	New Jersey
NJGS	New Jersey Geological Survey
NMESE	Non-Mesozoic-and-Younger Extension Region
NMESE-N	Non-Mesozoic-and-Younger Extension Mmax Source Zone (Narrow interpretation
NMESE-W	Non-Mesozoic-and-Younger Extension Mmax Source Zone (Wide interpretation)
NMFS	New Madrid Fault System
NMN	New Madrid North
NMN-L	New Madrid North plus extension (long)
NMN-S	New Madrid North (short)
NMS	New Madrid South
NMSZ	New Madrid Seismic Zone

Table 1.1-1— {Acronyms Used in this Document}
(Page 5 of 7)

Acronym	Description
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)
OBE	Operating Basis Earthquake
OCR	Over Consolidation Ratio
ODCM	Offsite Dose Calculation Manual
OJT	On-the-Job Training
OKA	Oklahoma Aulacogen
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
PEZ	Paleozoic Extended Crust Zone
PEZ-N	Paleozoic Extended Crust Seismotectonic Source Zone (Narrow Interpretation)
PEZ-W	Paleozoic Extended Crust Seismotectonic Source Zone (Wide Interpretation)
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
PVC	Polyvinyl Chloride
PW	Pittsburgh - Washington Lineament
QAPD	Quality Assurance Program Description
QC	Quality Control
RC	Resonant Column

Table 1.1-1— {Acronyms Used in this Document}
(Page 6 of 7)

Acronym	Description
RCA	Radiologically Controlled Area
RCG	Rough Creek Graben
RCTS	Resonant Column Torsional Shear
RD	Rupture Disk Valve
REF	Controlling Reference Earthquake
REMP	Radiological Environmental Monitoring Program
RERR	Radiological Effluent Release Report
RFT	Reelfoot Thrust
RFT-L	Reelfoot Thrust plus extensions (long)
RFT-S	Reelfoot Thrust (short)
Rizzo	Paul C. Rizzo & Associates
RLME	Repeated Large Magnitude Earthquake
RMS	Records Management System
RQD	Rock Quality Designation
RR	Reelfoot Rift
RR-RCG	Reelfoot Rift includes the Rough Creek Graben
RSZ	Ramapo Seismic Zone
RV	Relief Valve
SA	Self Actuated or Spectral Acceleration
S&L	Sargent & Lundy
SAR	Safety Analysis Report
SARA	Superfund Amendments and Reauthorization Act
SCDOT	South Carolina Department of Transportation
SCR	Stable Continental Region
SCRs	Stable Continental Regions
SCS	Soil Conservation Service
SDWIS	Safe Drinking Water Information System
SECPOP	Sector Population Land Fraction, and Economic Estimation Program
SFCTF	Spent Fuel Cask Transfer Facility
SFCTM	Spent Fuel Cask Transfer Machine
SGH	Scranton Gravity High
SLR	St. Lawrence Rift Seismotectonic Source Zone
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
SSC	Seismic Source Characterization
SSCs	Structures, Systems, and Components
SSE	Safe Shutdown Earthquake
SSES	Susquehanna Steam Electric Station
SSHAC	Senior Seismic Hazard Analysis Committee
SSI	Soil-Structure Interaction
SSSI	Structure-Soil-Structure Interaction
StdP	Standard Temperature and Pressure
STEL	Short-Term Exposure Limit

Table 1.1-1— {Acronyms Used in this Document}
(Page 7 of 7)

Acronym	Description
STUDY-R	Study Region Mmax Source Zone
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

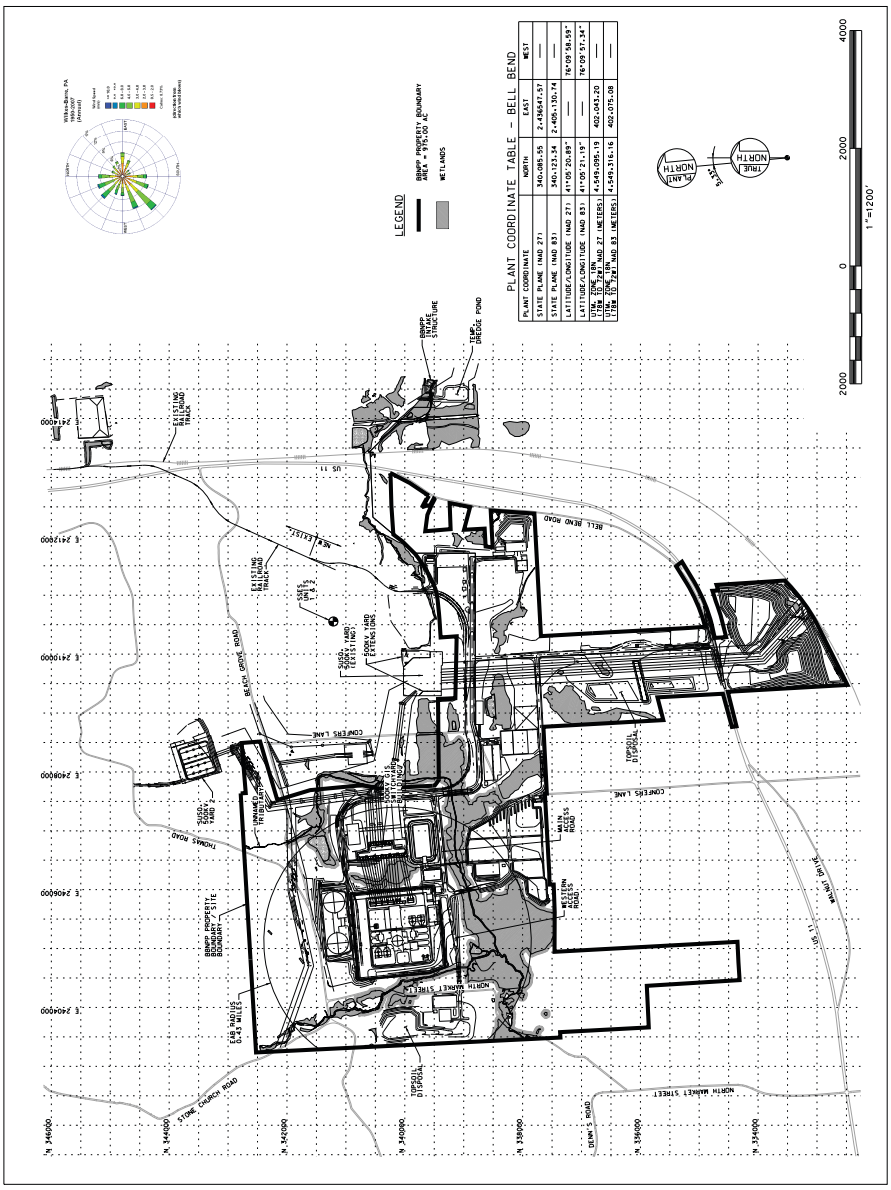

Figure 1.1-1— {Site Area Map and Exclusion Area Boundary}

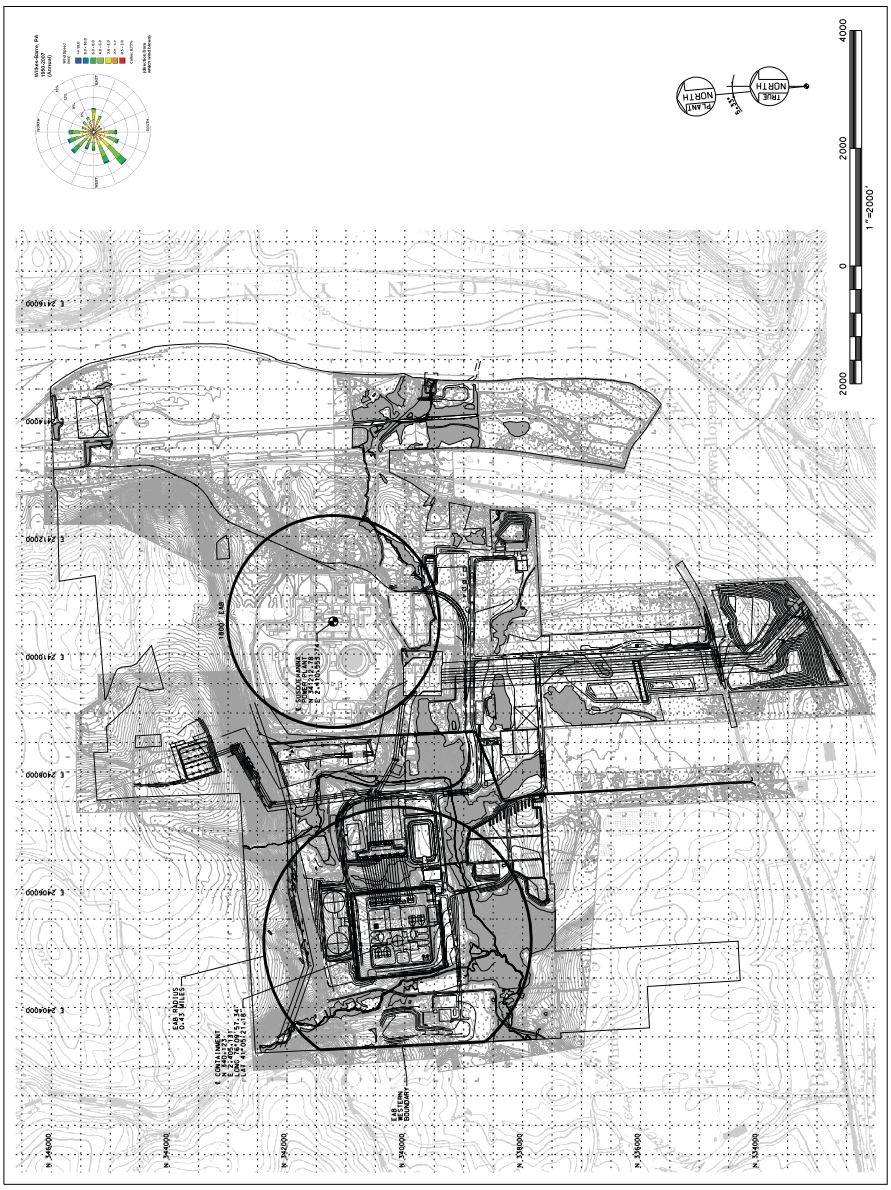

Figure 1.1-2— {Combined Exclusion Area Boundaries}

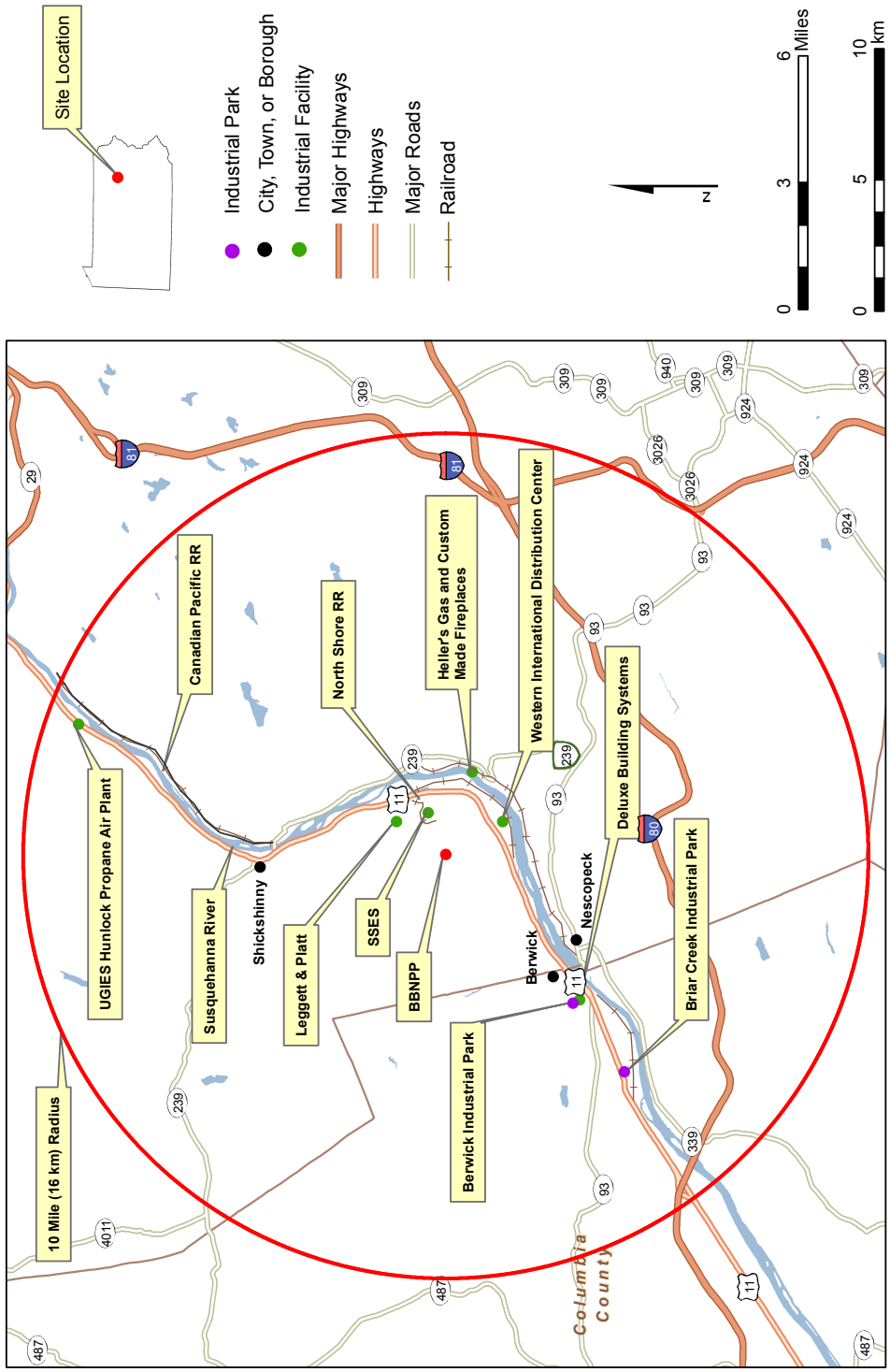

Figure 1.1-3— {10 mi (16 km) Surrounding Area}

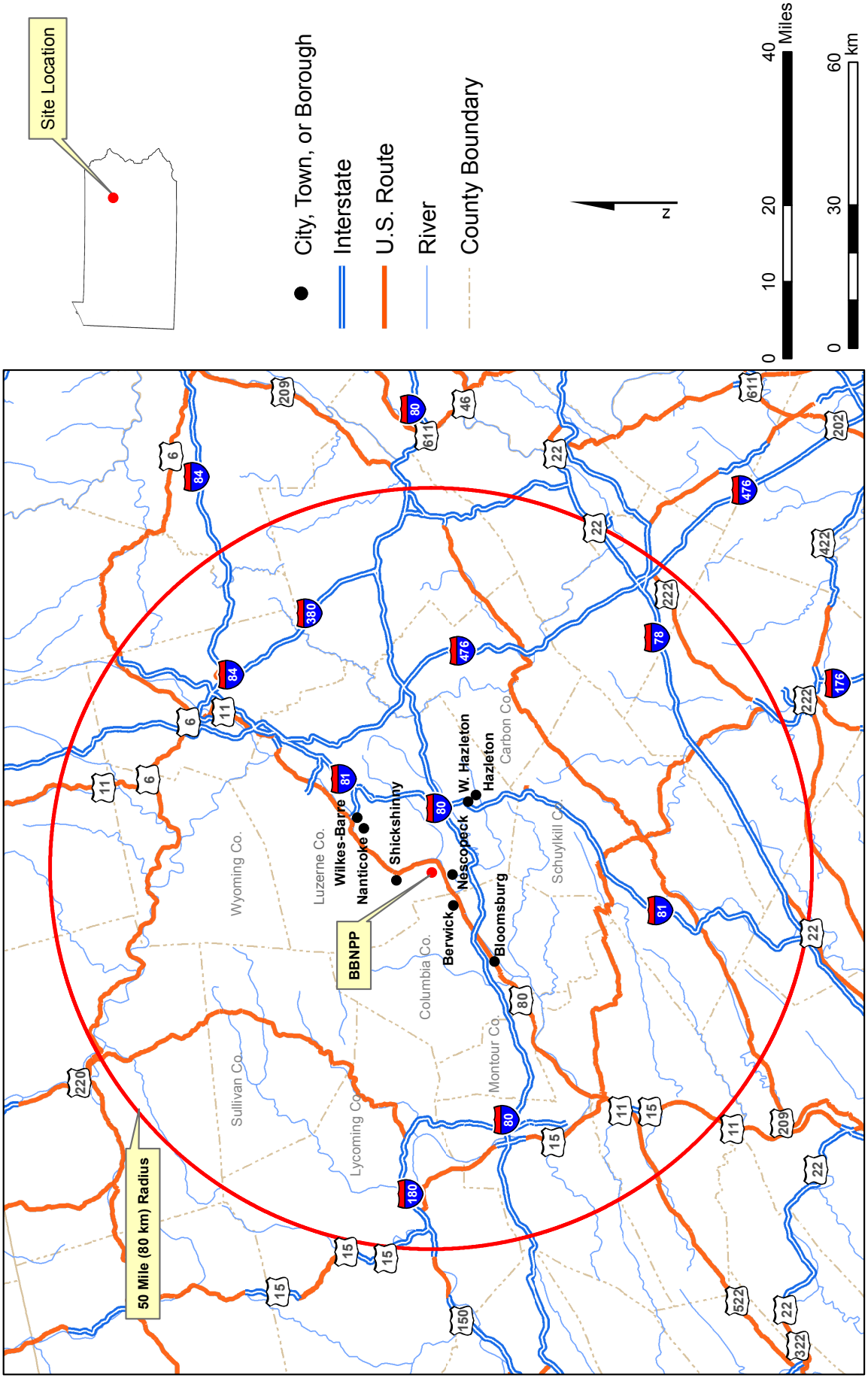

Figure 1.1-4— {50 mi (80 km) Surrounding Area}

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 BBNPP 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

No departures or supplements.

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.

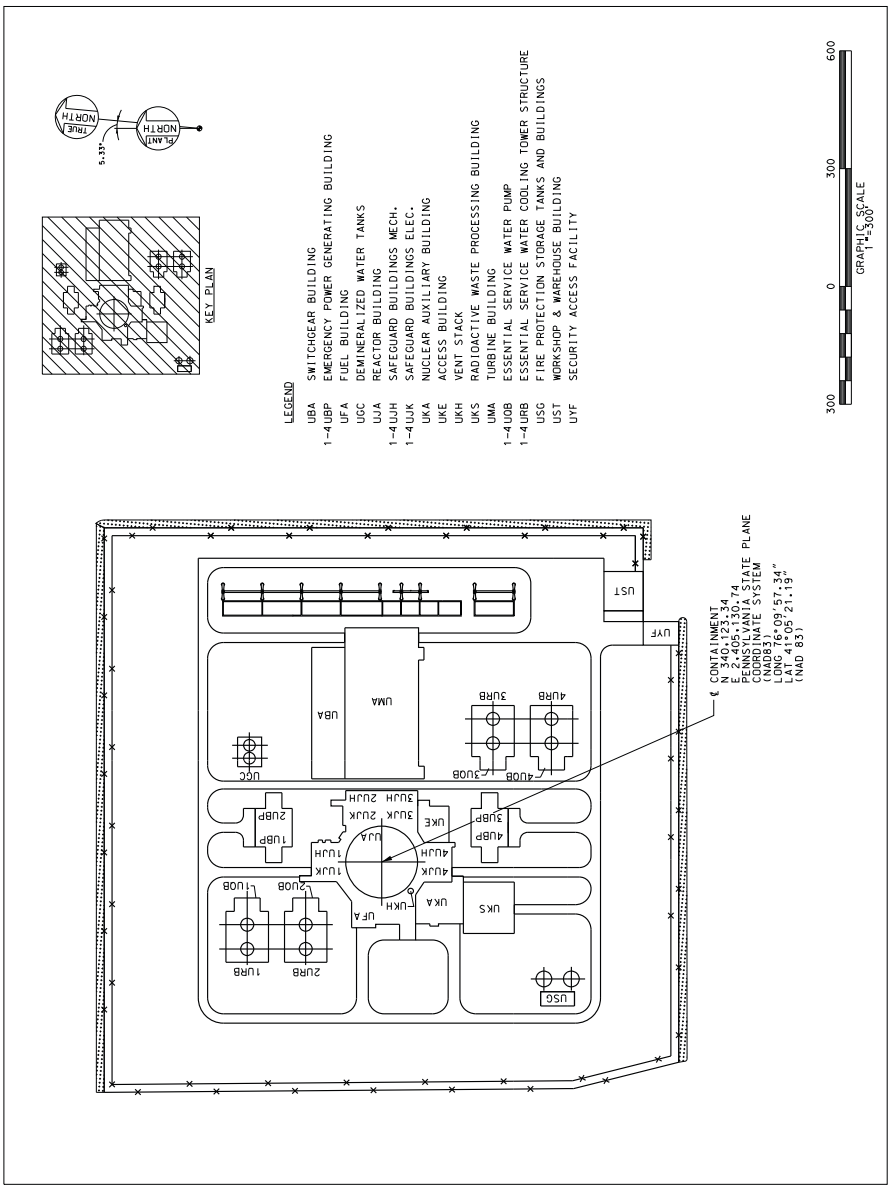

Figure 1.2-1— {BBNPP Nuclear and Turbine Building Island Layout}

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 wholly owned 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 wholly owned 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 approximately 11,000 MWe in the United States. PPL Generation, LLC is a wholly owned 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, through its subsidiaries, 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 wholly owned 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 07-08A	Generic FSAR Template Guidance for Ensuring that Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA), Revision 0	October 2009	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	December 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
NEI 08-08A	Generic FSAR Template Guidance for Life Cycle Minimization of Contamination	October 2009	11.2, 11.3, 11.4, 11.5
NEI 12-01	Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities, Revision 0	April 2012	13.3

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 (five 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
9.2-12	ESWS Blowdown Line
9.2-13	Ultimate Heat Sink Piping and Instrumentation Diagram
9.2-14	Ultimate Heat Sink Systems
9.2-15	Essential Service Water System Piping & Instrumentation Diagram
9.4-1	ESWEMS Pump House HVAC
9.4-2	ESWEMS Pump House 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:

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
Ultimate Heat Sink (UHS) Makeup Flow Rate	FSAR 9.2.5. FSAR 16 (COLA Part 4)
Setpoint Control Program	FSAR 16 (COLA Part 4)
Radiological Consequences of Design-Basis Accidents	FSAR 15.0.3, in the applicable portions for each individual DBA, and in results for each individual DBA in Table 15.0-2.
Reactor Coolant Pump Rotor Seizure	FSAR 15.3.3.4
Inadvertent Loading and Operation of a Fuel Assembly in an Improper Position	FSAR 15.4.7.3
RCS Primary-to-Secondary Leakage	FSAR 16, Technical Specifications Bases 3.4.12 and 3.4.16 (COLA Part 4)
Decay Time prior to Fuel Movement	FSAR 16, Technical Specifications LCO 3.9.3 and B 3.9.3 (COLA Part 4)
Essential Service Water System - Normal Makeup, Blowdown, and Chemical Treatment	FSAR Table 3.2-1 FSAR 9.2.1.2, 9.2.1.3, 9.2.5

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

(Page 1 of 2)

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 characteristics	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
8-5	Design details for electrical distribution for circulating water system components outside the Turbine Building	U.S. EPR Interface	8.3
9-1	Provide a cask design that satisfies the requirement for interfacing with the Spent Fuel Cask Transfer Facility (SFCTF).	U.S. EPR Interface	9.1.4
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

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

(Page 2 of 2)

Item No.	Interface	Interface Type	FSAR Section
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

(Page 1 of 21)

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 the characteristics of its proposed site to the site parameters in Table 2.1-1. If the characteristics of the site fall within the assumed site parameters in Table 2.1-1, then the U.S. EPR standard design is bounding for the site. For site-specific characteristics that are outside the bounds of the assumptions presented in Table 2.1-1, the COL applicant will demonstrate that the U.S. EPR design acceptably meets the regulatory requirements, given the site-specific characteristic. In such an instance, the COL applicant will also demonstrate that the design commitments and acceptance criteria described in the FSAR do not need to be changed, or will propose new design commitments or acceptance criteria, or both.	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

Table 1.8-2— FSAR Sections that Address COL Items
(Page 2 of 21)

Item No.	Description	Section
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
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 site 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	Deleted	Deleted
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 from the plant as part of its environmental assessment.	2.3.5
2.3-10	Deleted	Deleted
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-specific characteristic 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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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
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 compare the final strain-dependent soil profile with the U.S. EPR design generic soil parameters and verify that the site-specific seismic response is enveloped by the CSDRS and the profiles discussed in Section 2.5.2, 2.5.4.7 and 3.7.1 and summarized in Table 3.7.1-6, Table 3.7.1-8 and Table 3.7.1-9.	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 and the NAB structures have the capacity to support the bearing pressure with a factor of safety of 3.0 under static conditions or 2.0 under dynamic conditions, whichever is greater.	2.5.4.10.1

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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 predicted tilt 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
2.5-9	A COL applicant that references the U.S. EPR design certification will reconcile the site specific soil and backfill 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 soil layer(s) underlying the foundation basemats of Seismic Category I structures.	2.5.4.10.3
2.5-11	Deleted	Deleted
2.5-12	A COL applicant that references the U.S. EPR design certification will provide an assessment of predicted settlement values across the basemat of Seismic Category I structures during and post construction. The assessment will address both short term (elastic) and long term (heave and consolidation) settlement effects with the site-specific soil parameters, including the soil loading effects from adjacent structures.	2.5.4.10.2
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 site-specific pressure-retaining components 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 characteristics and compare these to the standard plant criteria. If the site-specific wind and tornado charactistics are not bounded by the site parameters, postulated for the certified design, 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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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	Deleted	Deleted
3.4-5	Deleted	Deleted
3.4-6	A COL applicant that references the U.S. EPR design certification will include in its maintenance program appropriate watertight door preventive maintenance in accordance with manufacturer recommendations so that each Safeguards Building and Fuel Building watertight door above elevation +0 feet remains capable of performing its intended function.	3.4.1
3.4-7	A COL applicant that references the U.S. EPR design certification will design the watertight seal between the Access Building and the adjacent Category I access path to the Reactor Building Tendon Gallery. Watertight seal design will account for hydrostatic loads, lateral earth pressure loads, and other applicable loads.	3.4.2
3.5-1	A COL applicant that references the U.S. EPR design certification will describe essential elements of a program 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 safety-related SSCs, 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 1×10^{-5} for turbine-generators unfavorably oriented.	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
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	Deleted	Deleted
3.6-2	Deleted	Deleted
3.6-3	Deleted	Deleted

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
3.6-4	A COL applicant that references the U.S. design certification will provide diagrams showing the configurations, locations, and orientations of the pipe whip restraints in relation to break locations in each piping system.	3.6.2.5.1
3.6-5	A COL applicant that references the U.S. EPR design certification will implement the ISI program as augmented with NRC approved ASME Code cases that are developed and approved for augmented inspections of Alloy 690/152/52 material to address PWSCC concerns.	3.6.3
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 a location for the free-field acceleration sensor 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
3.7-7	A COL applicant that references the U.S. EPR design certification will demonstrate that the response of the Access Building to an SSE event will not impair the ability of Seismic Category I systems, structures, or components to perform their design basis safety functions.	3.7.2.8
3.7-8	A COL applicant that references the U.S. EPR design certification will demonstrate that the response of the TB (including Switchgear Building on the common basemat) to an SSE event will not impair the ability of Seismic Category I systems, structures, or components to perform their design basis safety functions.	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
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 criteria specified in Section 3.8.4.4.5 and those specified in AREVA NP Topical Report ANP-10264NP-A.	3.8.4.5

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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 site-specific soil characteristics that are not within the envelope of the soil parameters 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 the use of epoxy coated rebar for foundations subjected to aggressive environments, as defined in ACI 349-01, Chapter 4. In addition, waterproofing and damproofing system of Seismic Category I foundations subjected to aggressive environments will be evaluated for use in aggressive environments. Also, the concrete of Seismic Category I foundations subjected to aggressive environments will meet the durability requirements of ACI 349-01, Chapter 4 or ASME, Section III, Division 2, Article CC-2231.7, as applicable.	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 site-specific settlement monitoring requirements 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
3.8-17	A COL applicant that references the U.S. EPR design certification will address examination of buried safety-related piping in accordance with ASME Section XI, IWA-5244, “Buried Components.”	3.8.4.7
3.8-18	A COL applicant that references the U.S. EPR design certification will compare the NI common basemat site-specific predicted angular distortion to the angular distortion in the relative differential settlement contours in U.S. EPR FSAR Figure 3.8-124 through Figure 3.8-134, using methods described in U.S. Army Engineering Manual 1110-1-1904. The comparison is made throughout the basemat in both the east-west and north-south directions. If the predicted angular distortion of the NI common basemat structure is less than the angular distortion shown for each of the construction steps, the site is considered acceptable. Otherwise, further analysis will be required to demonstrate that the structural design is adequate.	3.8.5.5.1
3.8-19	A COL applicant that references the U.S. EPR design certification will compare the EPGB site-specific predicted angular distortion to the angular distortion in the total differential settlement contours in Figure 3.8-135, using methods described in U.S. Army Engineering Manual 1110-1-1904. The comparison is made throughout the basemat in both the east-west and north-south directions. If the predicted angular distortion of the basemat of EPGB structures is less than the angular distortion shown, the site is considered acceptable. Otherwise, further analysis will be required to demonstrate that the structural design is adequate.	3.8.5.5.2
3.8-20	A COL applicant that references the U.S. EPR design certification will compare the ESWB site-specific predicted angular distortion to the angular distortion in the total differential settlement contours in Figure 3.8-136, using methods described in U.S. Army Engineering Manual 1110-1-1904. The comparison is made throughout the basemat in both the east-west and north-south directions. If the predicted angular distortion of the basemat of ESWB structures is less than the angular distortion shown, the site is considered acceptable. Otherwise, further analysis will be required to demonstrate that the structural design is adequate.	3.8.5.5.3
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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
3.9-2	A COL applicant that references the U.S. EPR design certification will prepare the design specifications and design reports for site-specific 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. The COL applicant will address the results and conclusions from the reactor internals material reliability programs applicable to the U.S. EPR reactor internals with regard to known aging degradation mechanisms such as irradiation-assisted stress corrosion cracking and void swelling addressed in Section 4.5.2.1.	3.9.3
3.9-3	Deleted	Deleted
3.9-4	As noted in ANP-10264NP-A, A COL applicant that references the U.S. EPR design certification will describe essential elements of a program to 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
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	Deleted	Deleted
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
3.9-14	Deleted	Deleted
3.10-1	Deleted	Deleted
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	Deleted	Deleted
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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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. If the impact review determines the piping analysis does not bound the additional mass of the pipe support, the COL applicant will perform reanalysis of the piping to include the additional mass.	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
3.12-3	A COL applicant that references the U.S. EPR design certification will describe essential elements of a program to monitor the RHR/SIS/EBS injection piping from the RCS to the first isolation valve (all four trains), and RHR/SIS suction piping from the RCS to the first isolation valve (trains 1 and 4) during the first cycle of the first U.S. EPR initial plant operation to verify that operating conditions have been considered in the design unless data from a similar plant's operation demonstrates that thermal oscillation is not a concern for piping connected to the RCS.	3.12.5.9
3.12-4	A COL applicant that references the U.S. EPR design certification will describe essential elements of a program to monitor pressurizer surge line temperatures during the first fuel cycle of initial plant operation to verify that the design transients for the surge line are representative of actual plant operations.	3.12.5.10.1
3.12-5	A COL applicant that references the U.S. EPR design certification will describe essential elements of a program to monitor the normal spray line temperatures during the first cycle of the first U.S. EPR initial plant operation to verify that the design transients for the normal spray are representative of actual plan operations unless data from a similar plant's operation determines that monitoring is not warranted.	3.12.5.10.3
3.12-6	Deleted	Deleted
3.13-1	A COL applicant referencing the U.S. EPR design certification will submit the inservice inspection program for ASME 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
5.2-2	A COL applicant that references the U.S. EPR design certification will identify additional ASME code cases to be used.	5.2.1.2
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
5.2-4	A COL applicant that references the U.S. EPR design certification will develop procedures in accordance with RG 1.45, Revision 1.	5.2.5.5
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 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

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Item No.	Description	Section
5.3-4	A COL Applicant that references the U.S. EPR design certification will provide plant specific surveillance data to benchmark BAW-2241P-A and demonstrate applicability to the specific plant.	5.3.1.6.2
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	A COL applicant that references the U.S. EPR design certification will define a coating application and maintenance program for components that cannot be procured with DBA qualified coatings in accordance with 10 CFR 50 Appendix B, Criterion IX.	6.1.2.3.2
6.1-3	A COL applicant that references the U.S. EPR design certification will define the coatings program and its implementation, including maintenance and repair of coatings.	6.1.2.2.2
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
6.4-2	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, address their impact on control room habitability in accordance with RG 1.78 , and if necessary, identify the types of sensors and automatic control functions required for control room operator protection.	6.4.1
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	Deleted	Deleted
7.1-2	A COL applicant that references the U.S. EPR design certification will, following selection of the actual plant operating instrumentation and calculation of the instrumentation uncertainties of the operating plant parameters, calculate the primary power calorimetric uncertainty. The calculations will be completed using an NRC acceptable method and confirm that the safety analysis primary power calorimetric uncertainty bounds the calculated values.	7.7.2.3.5
7.1-3	A COL applicant that references the U.S. EPR design certification will identify the need for any site-specific PAM variables.	7.5.2.2.1
7.1-4	A COL applicant that references the U.S. EPR design certification will establish a plan to address the site-specific implementation of the limitations and conditions identified in Section 4 of the NRC Safety Evaluation for Topical Report ANP-10272A, “Software Program Manual for TELEPERM XS Safety Systems.”	7.1.1
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

Table 1.8-2— FSAR Sections that Address COL Items

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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 and 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 establish procedures to 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 perform appropriate tests and analyses, which demonstrate that an identified NRC-approved cask can be safely connected to the spent fuel cask transfer facility (SFCTF), and the cask and its adapter meet the criteria specified in Table 9.1.4-1, prior to initial fuel loading into the reactor.	9.1.4
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

Table 1.8-2— FSAR Sections that Address COL Items
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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 being used are appropriate for the site location and for fluid properties that apply	9.2.1.3.5
9.2-5	A COL applicant that references the U.S. EPR design certification will provide a description of materials that will be used for the UHS at their site location, including the basis for determining that the materials being used are appropriate for the site location and for the fluid properties that apply.	9.2.5.2
9.2-6	A COL applicant that references the U.S. EPR design certification will confirm by analysis of the highest average site-specific wet bulb and dry bulb temperatures over a 72-hour period from a 30-year hourly regional climatological data set that the site-specific evaporative and drift losses for the UHS are bounded by the values presented in Table 9.2.5-3.	9.2.5.3
9.2-7	A COL applicant that references the U.S. EPR design certification will confirm that the site characteristic sum of 0% excedance maximum noncoincident wet bulb temperature and the site-specific wet bulb correction factor does not exceed the value provided in Table 9.2.5-2. If the value in Table 9.2.5-2 is exceeded, the maximum UHS cold-water return temperature of 95°F is to be confirmed by analysis (see Section 9.2.5.3.3).	9.2.5.3.1
9.2-8	A COL applicant that references the U.S. EPR design certification will confirm that the site-specific UHS makeup capacity is 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.	9.2.5.3
9.2-9	A COL applicant that references the U.S. EPR design certification will compare site-specific chemistry data for normal and emergency makeup water to the parameters in Table 9.2.5-5. If the specific data for the site fall within the assumed design parameters in Table 9.2.5-5, then the U.S. EPR standard design is bounding for the site. For site-specific normal and emergency makeup water data or characteristics that are outside the bounds of the assumptions presented in Table 9.2.5-5, the COL applicant will provide an analysis to confirm that the U.S. EPR UHS cooling towers are capable of removing the design basis heat load for a minimum of 30 days without exceeding the maximum specified temperature limit for ESWS and minimum required basin water level.	9.2.5.2
9.2-10	A COL applicant that references the U.S. EPR design certification will perform an evaluation of the interference effects of the UHS cooling tower on nearby safety-related air intakes. This evaluation will confirm that potential UHS cooling tower interference effects on the safety related air intakes does not result in air intake inlet conditions that exceed the U.S. EPR Site Design Parameters for Air Temperature as specified in Table 2.1-1.	9.2.5.3.1
9.2-11	A COL applicant that references the U.S. EPR design certification will confirm that the maximum UHS cold-water return temperature of 95°F is met by an analysis that confirms that the worst combination of site-specific wet bulb and dry bulb temperatures over a 24-hour period, from a 30-year hourly regional climatological data set is bounded by the values presented in Table 9.2.5-4.	9.2.5.3.3
9.4-1	A COL applicant that references the U.S. EPR design certification will provide site-specific design information for the turbine building ventilation system (TBVS).	9.4.4
9.4-2	A COL applicant that references the U.S. EPR design certification will provide site-specific design information for the switchgear building ventilation system, turbine island (SWBVS).	9.4.4
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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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	Deleted	Deleted
9.5-17	Deleted	Deleted
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
9.5-21	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, including type of connectivity, radio frequency, normal and backup power supplies and plant security system interface.	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	Deleted
10.2.1	Deleted	Deleted

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Item No.	Description	Section
10.2-2	A COL applicant that references the U.S. EPR design certification will provide applicable material properties of the site-specific turbine rotor, including the method of calculating the fracture toughness properties.	10.2.3.1
10.2-3	A COL applicant that references the U.S. EPR design certification will provide applicable site-specific turbine disk rotor specimen test data, load displacement data from the compact tension specimens and the fracture toughness properties.	10.2.3.2
10.2-4	Deleted	Deleted
10.2-5	A COL applicant that references the U.S. EPR design certification will provide the site-specific turbine rotor inservice inspection program and inspection interval consistent with the manufacturer's turbine missile analysis.	10.2.3.6
10.2-6	A COL applicant that references the U.S. EPR design certification will include ultrasonic examination of the turbine rotor welds or provide an analysis which demonstrates that defects in the root of the rotor welds will not grow to critical size for the life of the rotor.	10.2.3.6
10.2-7	A COL applicant that references the U.S. EPR design certification will provide the site-specific inservice inspection program, inspection intervals, and exercise intervals consistent with the turbine manufacturer's recommendations for the main steam stop and control valves, the reheat stop and intercept valves, and the extraction non-return valves.	10.2.2.12
10.2-8	A COL applicant that references the U.S. EPR design certification will provide a reliability evaluation of the overspeed protection system, which includes the inspection, testing, and maintenance requirements needed to demonstrate reliable performance of the system.	10.2.2.9
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 describe essential elements of 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.	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 to support 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 perform a site-specific liquid waste management system cost-benefit analysis.	11.2.4
11.2-2	A COL applicant that references the U.S. EPR design certification will provide site-specific information on the release pathway, including a detailed description of the discharge path and plant sources of dilution, the discharge flow rate, and dilution factors at or beyond the point of discharge.	11.2.3.3

Table 1.8-2— FSAR Sections that Address COL Items

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Item No.	Description	Section
11.2-3	A COL applicant that references the U.S. EPR design certification will confirm that the site-specific parameters are bounded by those provided in Table 11.2-5 and the dose pathways provided in Section 11.2.3.4.1. For site-specific parameters that are not bounded by the values provided in Table 11.2-5 and dose pathways other than those provided in Section 11.2.3.4.1, a COL applicant that references the U.S. EPR design certification will perform a site-specific liquid pathway dose analysis following the guidance provided in RG 1.109 and RG 1.113, and compare the doses to the numerical design objectives of 10 CFR Part 50, Appendix I and demonstrate compliance with requirements of 10 CFR Part 20.1302 and 40 CFR Part 190.	11.2.3.4.2
11.2-4	A COL applicant that references the U.S. EPR design certification will confirm that the site-specific annual average liquid effluent concentrations are bounded by those specified in Table 11.2-7. For site-specific annual average liquid effluent concentrations that exceed the values provided in Table 11.2-7, a COL applicant that references the U.S. EPR design certification will demonstrate that the annual average liquid effluent concentrations for expected and design basis conditions meet the limits of 10 CFR Part 20, Appendix B, Table 2 in unrestricted areas.	11.2.3.5
11.2-5	A COL applicant that references the U.S. EPR design certification will confirm that the site-specific data (such as distance from release location to unrestricted area, contaminant migration time, and dispersion and dilution in surface or ground water) are bounded by those specified in Section 11.2.3.7. For site-specific parameters that exceed the values provided in Section 11.2.3.7, a COL applicant that references the U.S. EPR design certification will provide a site-specific analysis to demonstrate that the resulting water concentrations in the unrestricted area would meet the concentration limits of 10 CFR Part 20, Appendix B, Table 2 using the guidance provided in SRP Sections 2.4.12, 2.4.13, 11.2 and BTP 11-6.	11.2.3.7
11.2-6	A COL applicant that references the U.S. EPR design certification and that chooses to install and operate mobile skid-mounted processing systems connected to permanently installed LWMS processing equipment will include plant and site-specific information describing how design features and implementation of operating procedures for the LWMS will address the requirements of 10 CFR Part 20.1406(b) and guidance of SRP Section 11.2, RG 4.21 and 1.143, IE Bulletin 80-10, NEI 08-08, and all quality assurance requirements as stated in Section 4.3 of ANSI/ANS 55.6-1993.	11.2.1.2.4
11.3-1	A COL applicant that references the U.S. EPR design certification will perform a site-specific gaseous waste management system cost-benefit analysis.	11.3.4
11.3-2	A COL applicant that references the U.S. EPR design certification will provide a discussion of the onsite vent stack design parameters and site-specific release point characteristics.	11.3.3.3
11.3-3	A COL applicant that references the U.S. EPR design certification will confirm that the site-specific parameters are bounded by those provided in Table 11.3-4 and the dose pathways provided in Section 11.3.3.4. For site-specific parameters that are not bounded by the values provided in Table 11.3-4 and dose pathways other than those provided in Section 11.3.3.4, a COL applicant that references the U.S. EPR design certification will perform a site-specific gaseous pathway dose analysis following the guidance provided in RG 1.109 and RG 1.111, and compare the doses to the numerical design objectives of 10 CFR Part 50, Appendix I and demonstrate compliance with requirements of 10 CFR Part 20.1302 and 40 CFR Part 190.	11.3.3.4
11.3-4	A COL applicant that references the U.S. EPR design certification will confirm that the site-specific annual average gaseous effluent concentrations are bounded by those specified in Table 11.3-6. For site-specific annual average gaseous effluent concentrations that exceed the values provided in Table 11.3-6, a COL applicant that references the U.S. EPR design certification will demonstrate that the annual average gaseous effluent concentrations for expected and design basis conditions meet the limits of 10 CFR Part 20, Appendix B, Table 2 in unrestricted areas.	11.3.3.5
11.3-5	A COL applicant that references the U.S. EPR design certification will confirm that the site-specific accident atmospheric dispersion data is bounded by the values provided in Table 2.1-1. For site-specific accident atmospheric dispersion data that exceed the values provided in Table 2.1-1, a COL applicant that references the U.S. EPR design certification will provide a site-specific analysis demonstrating that the resulting dose at the exclusion area boundary associated with a radioactive release due to gaseous waste system leak or failure does not exceed 0.1 rem in accordance with SRP Section 11.3, BTP 11-5.	11.3.3.6

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
11.3-6	A COL applicant that references the U.S. EPR design certification and that chooses to install and operate mobile skid-mounted processing systems connected to permanently installed GWMS processing equipment will include plant and site-specific information describing how design features and implementation of operating procedures for the GWMS will address the requirements of 10 CFR Part 20.1406(b) and guidance of SRP Section 11.3, RG 4.21, RG 1.143, IE Bulletin 80-10, and NEI 08-08.	11.3.1.2.4
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 61 licensed low level disposal site, toxic or hazardous waste requirements per 10 CFR 20.2007, 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. NEI 07-10A PCP Template is an alternate means of demonstrating compliance with GL 89-01 and SECY 05-0197 until a plant specific PCP is developed under license conditions.	11.4.3
11.4-2	A COL applicant that references the U.S. EPR design certification and that chooses to install and operate mobile skid-mounted processing systems connected to permanently installed solid waste management system (SWMS) processing equipment will include plant and site-specific information describing how design features and implementation of operating procedures for the SWMS will address the requirements of 10 CFR Part 20.1406(b) and guidance of SRP Section 11.4, Regulatory Guides 4.21 and 1.143, IE Bulletin 80-10, industry standards, NEI 08-08, and all quality assurance requirements as stated in Section 7 of ANSI/ANS 40.37-1993.	11.4.1.2.5
11.4-3	A COL applicant that references the U.S. EPR design certification will address plant-specific commitments to address the long-term storage of LLRW beyond the provisions described in the U.S. EPR design certification when such storage capacity is exhausted and describe how additional onsite LLRW storage or alternate LLRW storage will be integrated in plant operations. To address the need for additional storage, the commitment will address the requirements of 10 CFR Part 20, Appendix B (Table 2, Column 1 and 2); dose limits of 10 CFR 20.1301, 20.1302, and 20.1301(e) in unrestricted areas; Part 20.1406(b) in minimizing the contamination of plant facilities and environs; and design objectives of Sections II.A, II.B, II.C, and II.D of Appendix I to 10 CFR Part 50. The design and operations of additional onsite storage capacity will be integrated in the plant-specific process control program and consider the guidance of SRP Section 11.4 and Appendix 11.4-A, Regulatory Guides 1.206, 4.21 and 1.143, IE Bulletin 80-10, industry standards, and NEI 08-08.	11.4.1.2.1
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. NEI 07-09A is an alternate means of demonstrating compliance with GL 89-01 and SECY 05-0197 until a plant and site-specific ODCM is developed under a license condition.	11.5.2
11.5-2	A COL applicant that references the U.S. EPR design certification and that chooses to install and operate skid-mounted radiation monitoring and sampling systems connected to permanently installed radioactive process and waste management systems will include plant-specific information describing how design features and implementation of operating procedures for the PERMSS will address the requirements of 10 CFR Part 20.1406(b) and guidance of SRP Section 11.5, Regulatory Guides 4.21 and 1.143, IE Bulletin 80-10, ANSI/HPS-13.1-1999 and ANSI N42.18-2004, and NEI 08-08.	11.5.1
11.5-3	A COL applicant that references the U.S. EPR design certification is responsible for deriving PERMSS subsystem's lower limits of detection or detection sensitivities, and set-points (alarms and process termination/diversion) for liquid and gaseous process radiation monitoring equipment not covered by the ODCM based on plant and site-specific conditions and operating characteristics of each installed radiation monitoring subsystem.	11.5.2

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
11.5-4	A COL applicant that references the U.S. EPR design certification is responsible for developing a plant-specific process and effluent radiological sampling and analysis plan for systems not covered by the ODCM, including provisions describing sampling and analytical frequencies, and radiological analyses for the expected types of liquid and gaseous samples and waste media generated by the LWMS, GWMS, and SWMS.	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
12.3-4	A COL applicant that references the U.S. EPR design certification will maintain dose rates below the administrative limits shown in Table 12.3-14 or revise nearby or adjacent radiation zone designations as necessary based on site-specific dose analysis for the areas listed in Table 12.3-14.	12.3.2.3
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
13.2-2	A COL applicant that references the U.S. EPR design certification will assess their training program to demonstrate that the spent fuel pool instrumentation will be maintained available and reliable in an extended loss of AC power. Personnel shall be trained in the use and the provision of alternate power to the safety-related level instrument channels.	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
13.3-2	A COL applicant that references the U.S. EPR design certification will address the requested information in Fukushima Recommendation 9.3 regarding Emergency Preparedness Communications and Staffing, as outlined in Enclosure 5 of the request for additional information, pursuant to the 10 CFR 50.54(f) letter dated March 12, 2012 (ML12053A340).	13.3

Table 1.8-2— FSAR Sections that Address COL Items

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Item No.	Description	Section
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
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
13.6-4	A COL applicant that references the U.S. EPR design certification will provide a cyber security plan consistent with 10 CFR 73.54.	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 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	A COL applicant that references the U.S. EPR certified design will either perform the natural circulation test (Test #196) or provide justification for not performing the test. The need to perform the test will be based on evaluation of previous natural circulation test results and a comparison of reactor coolant system (RCS) hydraulic resistance coefficients applicable to normal flow conditions.	14.2.12
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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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
14.2-12	A COL applicant that references the U.S. EPR design certification will provide site-specific test abstract information for plant laboratory equipment.	14.2.12
14.2-13	A COL applicant that references the U.S. EPR design certification will provide site-specific test abstract information for the turbine island ventilation systems.	14.2.12
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
14.3-3	A COL applicant that references the U.S. EPR design certification will identify a plan for implementing DAC. The plan will identify 1) the evaluations that will be performed for DAC, 2) the schedule for performing these evaluations, and 3) the associated design processes and information that will be available to the NRC for audit.	14.3.6.3
15.0-1	A COL applicant that references the U.S. EPR design certification will provide for staff review a report that demonstrates compliance with the following items applicable to the first cycle of operation: ♦ Examine fuel assembly characteristics to verify that they are hydraulically compatible based on the criterion that a single package of assembly specific critical heat flux (CHF) correlations can be used to evaluate the assembly performance. ♦ Verify that uncertainties used in the setpoint analyses are appropriate for the plant and cycle being analyzed. ♦ Verify that the DNBR and LPD satisfy SAFDL with a 95/95 assurance. ♦ Review the U.S. EPR FSAR Tier 2 analysis results for the first cycle to confirm that the static setpoint value provides adequate protection for at least three limiting AOO.	15.0
16.0-1	Reviewer's Notes and brackets are used to identify information or characteristics 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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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.	17.6.8
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
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
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

Table 1.8-2— FSAR Sections that Address COL Items
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Item No.	Description	Section
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.	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 U.S. EPR PRA-based seismic margin assessment is bounding for their specific site, and will update it to include site-specific SSC and soil effects (including sliding, overturning liquefaction and slope failure).	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 describe the process to 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
19.2-1	A COL applicant that references the U.S. EPR design certification will develop and implement severe accident management guidelines using the Operating Strategies for Severe Accidents (OSSA) methodology described in U.S. EPR FSAR Section 19.2.5 and in ANP-10314, Revision 0, "The Operating Strategies for Severe Accidents Methodology for the U.S. EPR Technical Report."	19.2.5

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 Guides 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.

{In addition to the review of the Regulatory Guides identified in U.S. EPR Table 1.9-2, Regulatory Guides in Divisions 1, 4, 5 and 8 were reviewed from the time period six months prior to the docket date of the U.S. EPR Design Certification Document (U.S. EPR FSAR) until six months prior to the docket date of the BBNPP COLA. This review identified an additional six RGs that were revised or issued between the six month cutoff date prior to docketing of the U.S. EPR FSAR and the docket date of the BBNPP COLA.

Five Division 1 RGs were identified that were either issued or revised during that time interval:

- 1.45, "Guidance on Monitoring and Responding to Reactor Coolant System Leakage", Revision 1, May 2008
- 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III", Revision 34, October 2007
- 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1", Revision 15, October 2007
- 1.193, "ASME Code Cases Not Approved for Use", Revision 2, October 2007
- 1.210, "Qualification of Safety-Related Battery Chargers and Inverters for Nuclear Power Plants", Initial issue, June 2008

One Division 4 RG was issued during that time interval:

- 4.21, "Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning", Initial issue, June 2008

BBNPP does not take exception to any of the six newly issued or revised Regulatory Guidance documents. BBNPP conforms to the Regulatory Guidance identified in U.S. EPR Table 1.9-2 characterized as "N/A-COL" and the additional six Regulatory Guides and Revisions listed above. The only exceptions to those applicable RGs for BBNPP are identified in BBNPP FSAR Table 1.9-1.}

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 BBNPP 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 Management Position Responsible for Quality and Performance Improvement 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
		The QAPD identified in Section 17.5 is based on NQA-1-1994. Applicable Regulatory Guides supplement and support the QAPD. Commitment to a particular Regulatory Guide does not constitute a commitment to Regulatory Guides or standards that may be referenced therein.	FSAR 17.5
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	The QAPD identified in Section 17.5 is based on NQA-1-1994. Applicable Regulatory Guides supplement and support the QAPD. Commitment to a particular Regulatory Guide does not constitute a commitment to Regulatory Guides or standards that may be referenced therein.	FSAR 17.5
1.30, R0	Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment	The QAPD identified in Section 17.5 is based on NQA-1-1994. Applicable Regulatory Guides supplement and support the QAPD. Commitment to a particular Regulatory Guide does not constitute a commitment to Regulatory Guides or standards that may be referenced therein.	FSAR 17.5
1.33, R2	Quality Assurance Program Requirements (Operation)	The QAPD identified in Section 17.5 is based on NQA-1-1994. Applicable Regulatory Guides supplement and support the QAPD. Commitment to a particular Regulatory Guide does not constitute a commitment to Regulatory Guides or standards that may be referenced therein.	FSAR 17.5

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
1.38, R2	Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, Handling of Items for Water-Cooled Nuclear Power Plants	The QAPD identified in Section 17.5 is based on NQA-1-1994. Applicable Regulatory Guides supplement and support the QAPD. Commitment to a particular Regulatory Guide does not constitute a commitment to Regulatory Guides or standards that may be referenced therein.	FSAR 17.5
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	The QAPD identified in Section 17.5 is based on NQA-1-1994. Applicable Regulatory Guides supplement and support the QAPD. Commitment to a particular Regulatory Guide does not constitute a commitment to Regulatory Guides or standards that may be referenced therein.	FSAR 17.5
1.112, R1	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	The QAPD identified in Section 17.5 is based on NQA-1-1994. Applicable Regulatory Guides supplement and support the QAPD. Commitment to a particular Regulatory Guide does not constitute a commitment to Regulatory Guides or standards that may be referenced therein.	FSAR 17.5
1.127, R1	Inspection of Water-Control Structures Associated with Nuclear Power Plants	With the use of the ESWEMS Retention Pond as a safety-related make-up water supply to the UHS, the inspection and maintenance guidelines apply to BBNPP.	FSAR 9.2.5.6
1.132, R2	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

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
1.208, 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
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