PMBelCOL PEmails

From: BelCol Resource
Sent: Monday, August 03, 2009 8:32 AM
To: PMBelCOL PEmails
Subject: Re: ACRS AP1000 DCD and BLN RCOL Slides
Attachments: BLN COLA _7_13 Draft (edit).pdf; WEC DCD Draft 7_13(edit).pdf

Importance: High

Note: pdf documents profile changed to allow the document to be processed. no other changes made.

From: Richard Grumbir [mailto:richard.grumbir@excelservices.com]
Sent: Tuesday, July 14, 2009 12:33 AM
To: Huang, Jason; McKenna, Eileen; Coffin, Stephanie
Cc: sisk1rb@westinghouse.com; pshastings@duke-energy.com; Aughtman, Amy G.; Tom Spink
Subject: Re: ACRS AP1000 DCD and BLN RCOL Slides

Jason, Eileen, & Stephanie,

attached are the draft Westinghouse DCD and Bellefonte RCOLA slides. Ours too will undergo changes.

I tried sending these out earlier; however, the one set of slides were excessive in filesize and the email was rejected. If you did receive something earlier, please disregard.

Rich

Huang, Jason wrote:
Please find attached the ACRS AP1000 DCD and BLN RCOL Slides. These are draft slides which will be undergoing changes over the week.

Jason Huang
General Engineer
NRO/DNRL/NWE1
301-415-2974

Hearing Identifier: Bellefonte_COL_Public_EX
Email Number: 1621

Mail Envelope Properties (5A7F273F3E481245BC055B36939D34632559941917)

Subject: Re: ACRS AP1000 DCD and BLN RCOL Slides
Sent Date: 8/3/2009 8:31:54 AM
Received Date: 8/3/2009 8:32:06 AM
From: BelCol Resource

Created By: BelCol.Resource@nrc.gov

Recipients:
"PMBelCOL PEmails" <PMBelCOL.PEmails@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	976	8/3/2009 8:32:06 AM
BLN COLA _7_13 Draft (edit).pdf	12141785	
WEC DCD Draft 7_13(edit).pdf	4279328	

Options
Priority: High
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

AP1000 Reference Combined License Application Presentation to ACRS Selected Chapters

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Bellefonte site – Artist's rendering

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COLA Team Meeting Participants

Scheduled Presenters:
Jack Bailey – TVA
Andrea Sterdis - TVA
Tom Spink – TVA
Eddie Grant – NuStart
Amy Aughtman – SNC
Peter Hastings – AP1000 DCWG

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Combined License (COL) Schedule

- 2007 October – Original submittal
- 2008 January – NRC acceptance
- 2009 January – FSAR Revision 1
- 2009 June – SER with Open Items
- 2009 July – ACRS for some chapters

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Combined License (COL) Application

- Cover Letter, Affidavits, etc. ("Part 0")
- Part 1 – General & Financial Information
- Part 2 – Final Safety Analysis Report
- Part 3 – Environmental Report
- Part 4 – Plant Specific Technical Specifications
- Part 5 – Emergency Planning Information
- Part 6 – Limited Work Authorization Information
- Part 7 – Departures & Exemption Requests
- Part 8 – Safeguards Information
- Part 9 – Withheld Information
- Part 10 – Proposed License Conditions, including ITAAC
- Part 11 – Enclosures (e.g., QAPD)

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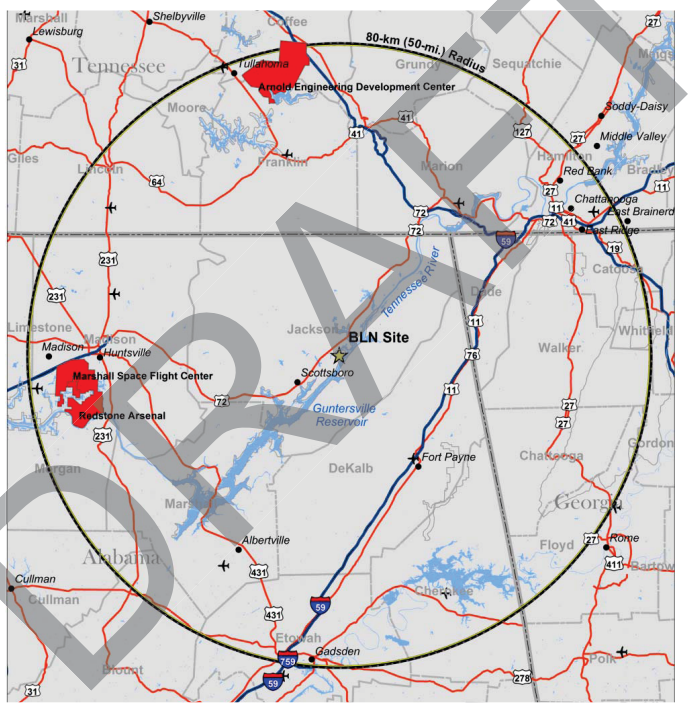
Bellefonte site – 50 mile radius



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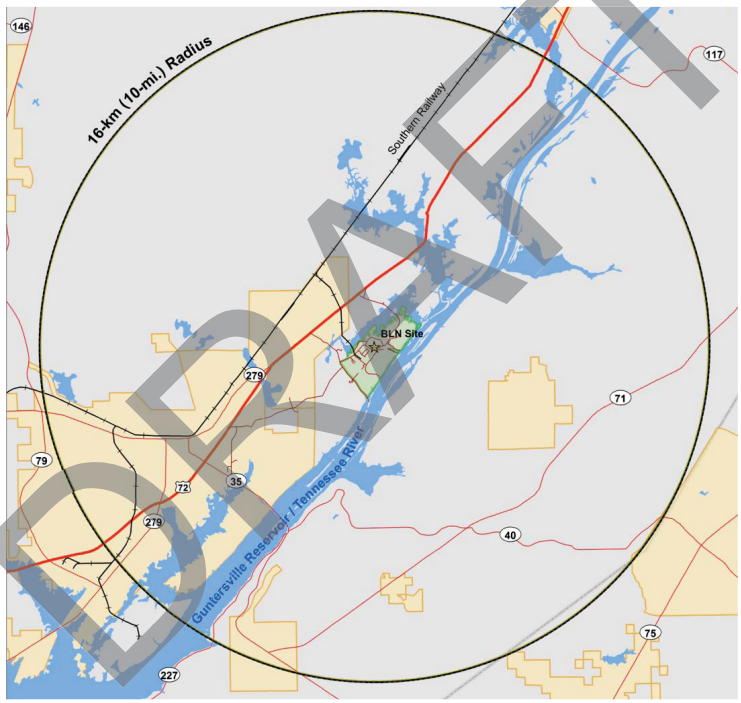
Bellefonte site – 10 mile radius



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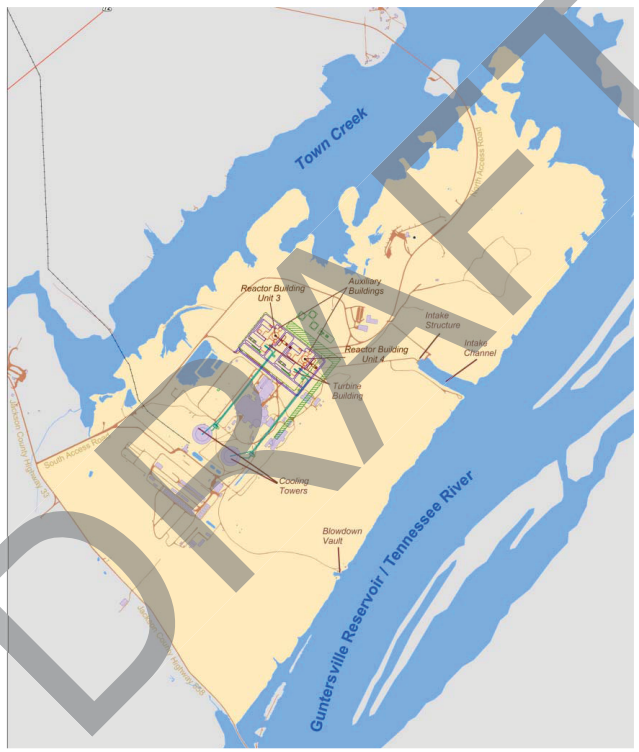
Bellefonte site – local site area



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• Chapter 1
Introduction and General Description of the Plant

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R-COLA Chapter 1 – Content

Introduction and General Description of the Plant

1.1 INTRODUCTION
1.2 GENERAL PLANT DESCRIPTION
1.3 COMPARISONS WITH SIMILAR FACILITY DESIGNS
1.4 IDENTIFICATION OF AGENTS AND CONTRACTORS
1.5 REQUIREMENTS FOR FURTHER TECHNICAL INFORMATION
1.6 MATERIAL REFERENCED
1.7 DRAWINGS AND OTHER DETAILED INFORMATION
1.8 INTERFACES FOR STANDARD DESIGN
1.9 COMPLIANCE WITH REGULATORY CRITERIA
1.10 NUCLEAR POWER PLANTS TO BE OPERATED ON MULTI-UNIT SITES

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R-COLA Chapter 1 – 1 COL Item

BLN 1.1-1 Construction and Startup Schedule
– schedule information provided

STD 1.9-1 Regulatory Guide Conformance
– conformance addressed

STD 1.9-2 Bulletins and Generic Letters
– conformance addressed

STD 1.9-3 Unresolved Safety Issues and Generic Safety Issues
– conformance addressed

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R-COLA Chapter 1 – Other

STD SUP 1.1 Describes formatting of the FSAR and LMAs

e.g., COL SUP SUP CDI

BLN SUP 1.4 ID of agents and contractors

STD SUP 1.6 Incorporated by Reference documents

DCD & NEI 06-13, 07-02, 07-03, 07-08

BLN SUP 1.7 Plant specific systems

BLN SUP 1.8 Interfaces, COL items & Departures

STD SUP 1.9 Regulatory Criteria and Guidance conformance

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R-COLA Departures (see Part 7)

STD 1.1-1 Organization and Numbering – STD/BLN

- Regulation requires FSAR to follow DCD organization and numbering – Some additional sections needed – various Ch.

BLN 8.2-1 Transformer arrangement for Unit 3 - BLN

- Moved to avoid crossing lines – Ch. 8

BLN 9.2-1 Service water system blowdown flow path – BLN

- All blowdown to waste water systems, none to CWS – Ch. 9

BLN 18.8-1 Relocated TSC and OSC – BLN

- Single TSC for both units – Ch. 13
- Single OSC for multiple stations – Ch. 13

BLN 2.3-1 Exclusion Area Boundary Atmospheric Dispersion Value (χ/Q)

- Plant Specific Analyses – not bounded by DCD

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R-COLA Chapter 1 – Open Items

OI 1-1 Final DCD Conforming Changes - STD

- Applicant to update COLA to incorporate final DCD

OI 1-2 License Condition Criteria - STD

- Staff to finalize criteria for commitments vs conditions

OI 1.4-1 Interface Content Identification - STD/BLN

- Identify where DCD interfaces are addressed

OI 1.4-2 Regulatory Guide Compliance - STD/BLN

- Address remaining NRC questions

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R-COLA Chapter 1 – Open Items

OI 1.4-3 Construction Impacts on Operating Units – STD

- NRC Staff to complete review and identify any concerns

OI 1.4-4 Construction Impacts on Operating Units – STD

- Provide positive statement of implementation timing

OI 1.5-1 Part 30/40/70 Licenses – STD

- Licenses to receive, possess, and use source, byproduct, and special nuclear material: staff to request more information

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- Chapter 4
Reactor

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R-COLA Chapter 4 – Content

Reactor

4.1 SUMMARY DESCRIPTION

4.2 FUEL SYSTEM DESIGN

4.3 NUCLEAR DESIGN

4.4 THERMAL AND HYDRAULIC DESIGN

4.5 REACTOR MATERIALS

4.6 FUNCTIONAL DESIGN OF REACTIVITY CONTROL SYSTEMS

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R-COLA Chapter 4

R-COLA Chapter 4 – 1 COL Item

STD 4.4-2 Confirm Assumptions for Safety Analyses DNBR Limits – post COL item – license condition proposed

R-COLA Chapter 4 – Other

No other information

This chapter entirely IBR except for one COL item

R-COLA Chapter 4 – Open Items

There are no open items for Chapter 4.

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• Chapter 5
Reactor Coolant System and Connected Systems

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R-COLA Chapter 5 – Content

Reactor Coolant System and Connected Systems

5.1 SUMMARY DESCRIPTION

5.2 INTEGRITY OF REACTOR COOLANT PRESSURE BOUNDARY

5.3 REACTOR VESSEL

5.4 COMPONENT AND SUBSYSTEM DESIGN

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R-COLA Chapter 5 – 6 COL Items

STD 5.2-1 ASME Code and Addenda – code year identified

STD 5.2-2 Plant Specific Inspection Program
- program described

STD 5.3-1 Reactor Vessel Pressure – Temperature Limit Curves – post COL item – license condition proposed

STD 5.3-2 Reactor Vessel Materials Surveillance Program
- program described

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R-COLA Chapter 5 – 6 COL Items

STD 5.3-4 **Reactor Vessel Materials Properties Verification – as-built item – license condition proposed**

STD 5.4-1 **Steam Generator Tube Integrity - program described**

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R-COLA Chapter 5 – Other

5.2 STD SUP Reactor coolant chemistry program

5.3 STD SUP Pressure – temperature control procedures

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R-COLA Chapter 5 – Open Items

There are no open items for Chapter 5.

• Chapter 10
Steam and Power Conversion

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R-COLA Chapter 10 – Content

Steam and Power Conversion

10.1 SUMMARY DESCRIPTION

10.2 TURBINE-GENERATOR

10.3 MAIN STEAM SUPPLY SYSTEM

10.4 OTHER FEATURES OF STEAM AND POWER CONVERSION SYSTEM

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R-COLA Chapter 10 – 5 COL Items

STD 10.1-1 Erosion-Corrosion Monitoring
– program described

STD 10.2-1 Turbine Maintenance and Inspection
– post COL item – license condition proposed

BLN 10.4-1 Circulating Water Supply – system described

BLN 10.4-2 Condensate, Feedwater and Auxiliary Steam System Chemistry Control – system described

BLN 10.4-3 Potable Water – system described

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R-COLA Chapter 10 – Other

10.2 **STD SUP** Turbine missile generation for dual units
STD SUP Testing, operations, and maint. procedures
STD SUP Inservice inspection program

10.3 **STD SUP** Operations and maintenance procedures
STD SUP Chemical addition program

10.4 **BLN CDI** Circulating water design to replace CDI
STD SUP Operations, and maintenance procedures
STD SUP Chemical addition program

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R-COLA Chapter 10 – 1 Open Item

OI 10.1-1 FAC Program Implementation Schedule - STD

- **Applicant to identify schedule for flow accelerated corrosion program**

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• Chapter 11
Radioactive Waste Management

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R-COLA Chapter 11 – Content

Radioactive Waste Management

11.1 SOURCE TERMS

11.2 LIQUID WASTE MANAGEMENT SYSTEMS

11.3 GASEOUS WASTE MANAGEMENT SYSTEM

11.4 SOLID WASTE MANAGEMENT

11.5 RADIATION MONITORING

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R-COLA Chapter 11 – 7 COL Items

STD 11.2-1 **Liquid Radwaste Processing by Mobile Equipment – mobile equipment design features provided**

STD/BLN 11.2-2 **Cost Benefit Analysis of Population Doses – standard method provided – site specific results**

STD/BLN 11.3-1 **Cost Benefit Analysis of Population Doses – standard method provided – site specific results**

STD 11.4-1 **Solid Waste Management System Process Control Program – commitment to use NEI template**

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R-COLA Chapter 11 – 7 COL Items

STD 11.5-1 **Plant Offsite Dose Calculation Manual (ODCM) – commitment to use NEI template**

BLN/STD 11.5-2 **Effluent Monitoring and Sampling – standard program described – site specific QA**

BLN 11.5-3 **10 CFR 50, Appendix I – program described**

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R-COLA Chapter 11 – Other

11.2	STD SUP	Supplemental QA per RG 1.143
11.3	STD SUP	Supplemental QA per RG 1.143
11.4	STD SUP	Supplemental QA per RG 1.143
11.4	STD SUP	Process Control Procedure

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R-COLA Chapter 11 – Open Items

- Low Level Radwaste Storage - STD
  - Address long-term storage capabilities

• Chapter 12
Radiation Protection

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R-COLA Chapter 12 – Content

Radiation Protection

12.1 ASSURING THAT OCCUPATIONAL RADIATION EXPOSURES ARE AS-LOW-AS-REASONABLY ACHIEVABLE (ALARA)

12.2 RADIATION SOURCES

12.3 RADIATION PROTECTION DESIGN FEATURES

12.4 DOSE ASSESSMENT

12.5 HEALTH PHYSICS FACILITIES DESIGN

APPENDIX 12AA – RADIATION PROTECTION PROGRAM

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R-COLA Chapter 12 – 7 COL Items

STD 12.1-1 **ALARA and Operational Policies – policies described**

STD 12.2-1 **Additional Contained Radiation Sources – source controls described**

STD 12.3-1 **Administrative Controls for Radiological Protection – controls described**

STD 12.3-2 **Criteria and Methods for Radiological Protection – criteria and methods described**

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R-COLA Chapter 12 – 7 COL Items

STD 12.3-3 **Groundwater Monitoring Program – program described**

STD 12.3-4 **Record of Operational Events of Interest for Decommissioning – recordkeeping described**

STD 12.5-1 **Radiological Protection Organization and Procedures – organization and procedures described**

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R-COLA Chapter 12 – Other

12.4 STD SUP Dose to Construction Workers

R-COLA Chapter 12 – Confirmatory

CI 12.1-1 NEI 07-03 Adoption - STD

- **Approved by NRC - Applicant to adopt approved template**

R-COLA Chapter 12 – Open Items

- **NEI 07-08 Approval - STD**
  - **Applicant to IBR final approved template**
- **NEI 08-08 Approval - STD**
  - **NRC Approve and Applicant to adopt final approved template**
- **Construction Worker Dose Program - STD**
  - **Applicant program to minimize dose**

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• Chapter 14
Initial Test Program

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R-COLA Chapter 14 – Content

Initial Test Program

14.1 SPECIFIC INFORMATION TO BE INCLUDED IN PRELIMINARY/FINAL SAFETY ANALYSIS REPORTS

14.2 SPECIFIC INFORMATION TO BE INCLUDED IN STANDARD SAFETY ANALYSIS REPORTS

14.3 CERTIFIED DESIGN MATERIAL

14.4 COMBINED LICENSE APPLICANT RESPONSIBILITIES

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R-COLA Chapter 14 – 6 COL Items

STD 14.4-1 **Organization and Staffing**
– information described

STD 14.4-2 **Test Specifications and Procedures**
– post COL item – license condition proposed

STD 14.4-3 **Conduct of Test Program**
– post COL item – license condition proposed

STD 14.4-4 **Review and Evaluation of Test Results**
– post COL item – license condition proposed

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R-COLA Chapter 14 – 6 COL Items

STD 14.4-5 **Testing Interface Requirements – information described**

STD 14.4-6 **First-Plant-Only and Three-Plant-Only Tests – post COL item – license condition proposed**

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R-COLA Chapter 14 – Other

14.2 STD SUP **Schedule information**

14.3 STD SUP **Additional ITAAC**

R-COLA Chapter 14 – Open Items

- **Proposed License Condition 6 – STD**
  - **Related to Chapter 1 OI – License Conditions**
- **Proposed License Condition 8 – STD**
  - **Related to Chapter 1 OI – License Conditions**

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• Chapter 16
Technical Specifications

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R-COLA Chapter 16 – Content

Technical Specifications

16.1 TECHNICAL SPECIFICATIONS

16.2 DESIGN RELIABILITY ASSURANCE PROGRAM

16.3 INVESTMENT PROTECTION

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R-COLA Chapter 16 – 2
COL Items

STD 16.1-1 Technical Specification Preliminary Information
- all bracketed information completed

STD 16.3-1 Procedure to Control Operability of Investment Protection Systems, Structures and Components
- procedures described

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R-COLA Chapter 16 – Other

No other information necessary.

R-COLA Chapter 16 – Open Items

- Setpoint methodology - STD
  - Describe setpoint control program

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• Chapter 17
Quality Assurance

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R-COLA Chapter 17 – Content

Quality Assurance

17.1 QUALITY ASSURANCE DURING THE DESIGN AND CONSTRUCTION PHASES

17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

17.3 QUALITY ASSURANCE DURING DESIGN, PROCUREMENT, FABRICATION, INSPECTION, AND/OR TESTING OF NUCLEAR POWER PLANT ITEMS

17.4 DESIGN RELIABILITY ASSURANCE PROGRAM

17.5 QUALITY ASSURANCE PROGRAM DESCRIPTION – NEW LICENSE APPLICANTS

17.6 MAINTENANCE RULE PROGRAM

17.7 COMBINED LICENSE INFORMATION ITEMS

17.8 REFERENCES

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R-COLA Chapter 17 – 4 COL Items

BLN 17.5-1 **Quality Assurance Design Phase – Utilizing existing TVA QA program until COL issued**

STD 17.5-2 **Quality Assurance for Procurement, Fabrication, Installation, Construction and Testing – included in proposed QAPD**

STD 17.5-4 **Quality Assurance Program for Operations – included in proposed QAPD**

STD 17.5-8 **Operational Reliability Assurance Program Integration with Quality Assurance Program – included in proposed QAPD**

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R-COLA Chapter 17 – Other

17.6 STD SUP **Maintenance rule program description**

R-COLA Chapter 17 – Open Items

OI 17.1-1 **RG 1.33 application in NEI 06-14 - STD**

- **NRC approve and Applicant adopt approved template**

OI 17.1-2 **Inspection re: hydrology documentation - BLN**

- **NRC to schedule**

OI 17.1-3 **Inspection re: contractor oversight - BLN**

- **NRC to schedule**

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R-COLA Chapter 17 – Open Items

OI 17.5-1 Regulation citation correction - STD
- NEI 06-14 revision to address

OI 17.5-2 Independent reviews - STD
- NEI 06-14 revision to address

OI 17.5-3 Identification of "licensee" - STD
- NEI 06-14 revision to address

OI 17.5-4 Commercial grade calibration - STD
- NEI 06-14 revision to address

OI 17.5-5 Commercial grade dedication - STD
- NEI 06-14 revision to address

OI 17.5-6 Clarify RG position documentation - STD
- Submittal in process

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• Chapter 19
Probabilistic Risk Assessment

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R-COLA Chapter 19 – Content

Probabilistic Risk Assessment

19.1 INTRODUCTION

19.2 INTERNAL INITIATING EVENTS

19.3 MODELING OF SPECIAL INITIATORS

…

19.57 INTERNAL FIRE ANALYSIS

19.58 WINDS, FLOODS, AND OTHER EXTERNAL EVENTS

19.59 PRA RESULTS AND INSIGHTS

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R-COLA Chapter 19 – 5 COL Items

STD 19.59.10-1 **As-Built SSC HCLPF Comparison to Seismic Margin Evaluation – As-built item – proposed license condition**

STD 19.59.10-2a **Evaluation of As-Built Plant Versus Design in AP1000 PRA – As-built item – proposed license condition**

STD 19.59.10-2b **Evaluation of Site-Specific PRA External Events – confirmed generic analysis is applicable**

STD 19.59.10-3 **Internal Fire and Internal Flood Analyses – As-built item – proposed license condition**

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R-COLA Chapter 19 – 5 COL Items

STD 19.59.10-4 Develop and Implement Severe Accident Management Guidance
– As-built item – proposed license condition

STD 19.59.10-5 Equipment Survivability
– As-built item – proposed license condition

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R-COLA Chapter 19 – Other

19.59.10.6 STD SUP **PRA configuration controls description**

R-COLA Chapter 19 – Open Items

OI 19.58-1 **Staff to complete hydrology impact review - BLN**

- **NRC Staff action to complete review**

OI 19.58-2 **Staff to complete toxic chemical impact review - BLN**

- **NRC Staff action to complete review**

OI 19.59-1 **Staff to complete DCD seismic margins review - STD**

- **WEC & NRC Staff action to complete review**

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NuStart Energy℠

AP1000 Design Control Document Amended Design

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July 23-24, 2009

Rob Sisk, Manager
AP1000 Licensing and Customer Interface
Westinghouse - Nuclear Power Plants

Westinghouse

DCD Amendment Overview

- Introduction of the WEC AP1000 Team
- The amended design builds on the NRC AP1000 Certified Design (Rev 15)
- Changes were made consistent with regulatory requirements
  - Address COL Information items
  - Address Design Acceptance Criteria
  - Address NRC requirements (i.e., Security)
  - Enhance Standardization
  - Design Maturity (i.e., procurement details; Integrated Head Package)
  - Address editorial changes and changes for consistency

DCD Amendment Overview

- Future changes would be addressed in accordance with the Interim Staff Guidance (DC/COL-ISG-11)
- WEC has received 12 SERs on the amended design 10 SERs
  - July 23-24 – Chapters 1, 10, 11, 12, 16, 17 & 19
    [Green Rev 17, , Red Rev 16]
  - October 6& 7 – TBD
  - November 19 &20 –TBD
- No New Exemptions
- No New DAC [continue effort resolve Piping, HFE and I&C DAC]
- 42 Open Items identified in 12 SERs
- 33 Confirmatory Items – Mostly involved with confirming proper incorporation into the final DCD

AP1000 Design Control Document
Amended Design

Chapter 1-
"Introduction and General Discussion"

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Tier 2 Chapter 1 - "Introduction and General Discussion"

- **Chapter Overview**
  - Provides a general overview of the Westinghouse AP1000 simplified passive advanced light water reactor plant; a discussion of the objectives, design criteria operating characteristics of the AP1000; plant site interface requirements; the referenced design documents, and the regulatory basis for the certified design
- **Changes to the "Scope of Design" for the Amended Design include:**
  - Changes are discussed in depth in their appropriate chapters
    - Extension of Seismic spectra to soil conditions (Chapters 2 & 3, 19)
    - Revision to buildings for enhanced protection (Chapters 3, 19F)
    - Protection System Instrumentation (Chapter 7)
    - Revision to electrical systems (Chapter 8)
    - Turbine Manufacturer (Chapter 10)

Tier 2 Chapter 1 - "Introduction and General Discussion"

- **Changes continued:**
  - Sump Screen Design and Analysis (Chapter 6)
  - Control Room Ventilation (Chapters 6 & 15)
  - Spent Fuel Pool Capacity (Chapters 9 & 12)
  - Update Load Handling Capability (Chapter 9)
  - Additional Waste-Water Monitoring Tanks (Chapter 11)
  - Integrated Head Package (Chapters 3 & 12)
  - Revised LOCA Methodology (Chapter 15)
  - Reactor Internal Changes (Chapter 5)
  - Pressurizer Shape Change (Chapter 5)

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Tier 2 Chapter 1 – "Introduction and General Discussion"

AP1000

- **OI-1.0-NWE2-01**
  - Final List of COL Action Items will be finalized upon completion of the other chapters
- **OI-1.0-NWE2-02**
  - Confirmation of the final RGs list and other information as part of the reconciliation of Chapter 1 with the other chapters

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AP1000 Design Control Document Amended Design

Chapter 4

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Tier 2 Chapter 4 Overview

- This chapter describes the mechanical components of the reactor and reactor core, including:
  - fuel rods
  - fuel assemblies
  - nuclear design
  - thermal-hydraulic design
  - materials
  - functional design of reactivity control systems

Tier 2 Chapter 4
Description of Major Changes

AP1000

- Reintroduced the Tier 2* information
- Updated gray rod control assembly (GRCA) design
- Changed the burnable absorber rod design from wet annular burnable absorbers (WABAs) to borosilicate glass
- CRDM and CRD material changes
- Reactor internal material specification changes

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Tier 2 Chapter 4
Open Items

One Open Item:

- **OI-SRP4.5.1-CIB1-01**
  - Westinghouse has provided a response with a proposed resolution

One Confirmatory Item:

- **CI-SRP4.4-1-SRSB-01**
  - Will be completed with the next revision to the DCD Amendment Request (DCD Revision 18)

COL Information Item:

- Calculate the design limit DNBR values after calculation of the instrumentation uncertainties

AP1000 Design Control Document
Amended Design

Chapter 5

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Tier 2 Chapter 5

- **Chapter Overview**
  - Reactor Coolant System and Connected Systems
  - Integrity of Reactor Coolant Pressure Boundary
  - Reactor Vessel
  - Reactor Coolant System Component and Subsystem Design

Description of Major Changes Post Revision 15

AP1000

- RCS Loop Instrumentation Relocation
  - Loop 1 narrow range and diverse actuation system RTD relocated upstream of the pressurizer surge nozzle
  - Wide range RTD relocated upstream of the passive residual heat removal nozzle
- Addition of Applicable Code Cases
- Incorporation of Changes for Zinc Injection Capability
- Pressure Boundary Material Changes to Address Material Supply, Fabrication, and Schedule
- Surveillance Capsule Lead Factor and Azimuthal Location Confirmation
- Reactor Coolant Pump Design
  - Revised the heat removal design
  - Flywheel material change
- Pressurizer Configuration Change
- Reactor Vessel Changes
  - Addition of flow skirt
  - Reduction of in-core instrumentation head penetrations
- Normal Residual Heat Removal Low Temperature Relief Valve Size Increase

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SER Open Items (OI)

- **OI-SRP-5.2.1 – EMB-01**
  - Addition of Code Cases for ISI (RG 1.147) and O&M (RG 1.192) in DCD
- **OI-SRP5.2.1-EMB-02**
  - Reference to RG 1.84 rather than RG 1.85 in DCD
- **OI-SRP5.4.1-SRSB-01**
  - Design specification for RCP heat exchanger
- **OI-SRP5.4.1-CIB1-01**
  - Addition of flywheel material specifications to be referenced in DCD

Westinghouse

SER Open/Confirmatory Items

- **4 Open Items OI**
  - OI-SRP-5.2.1 – EMB-01
  - OI-SRP-5.2.1 – EMB-02
  - OI-SRP5.4.1 – SRSB-01
  - OI-SRP5.4.1 – CIB1-01

- **4 Confirmatory Items CI**
  - CI-SRP5.3.1 – CIB1-01
  - CI-SRP5.3.2 – CIB1-02
  - CI-SRP5.3.2 – CIB1-03
  - CI-SRP5.4.7 – SRSB-04

AP1000 Design Control Document Amended Design

Chapter 10

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Tier 2 Chapter 10

- This Chapter discusses Steam and Power Conversion
- Major changes:
  - Revised interval of turbine valve testing
  - Revised turbine layout to accommodate Toshiba design
  - Replaced Toshiba Turbine Control System with Ovation

Tier 2 Chapter 10

- **5 Open Items (OI) and 1 Confirmatory Item (CI)**
  - **OI-SRP10.2-SBPA-01**
    - Overspeed Protection System meets Single-Failure criterion
  - **OI-SRP10.2-SBPA-02a**
    - ITAAC confirms diversity between overspeed trip systems
  - **OI-SRP10.2-SBPA-02b**
    - Backup turbine speed sensors are magnetic
  - **OI-SRP10.2.3-CIB1-01**
    - Low-trajectory turbine missiles are analyzed
  - **OI-SRP10.2.3-CIB1-02**
    - Clarify discrepancy in turbine missile analysis

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AP1000 Design Control Document Amended Design

Chapter 11

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Tier 2 Chapter 11

- **Chapter Overview**
  - Radioactive Waste Management
    - Source Terms
    - Liquid Waste Management System
    - Gaseous Waste Management System
    - Solid Waste Management System
    - Radiation Monitoring

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Description of Major Changes Post Revision 15

AP1000

- Increased overall liquid waste holdup capacity and improved operational flexibility by adding three additional liquid waste monitor tanks to the Design
- Clarified compliance with 10 CFR 20.1406 by stating how the design minimizes contamination and generation of waste
- Updated DCD Sections for closure of COL items related to Section 11.2.5.3, "Identification of Ion Exchange and Adsorbent Media," 11.2.5.4, "Dilution and Control of Boric Acid Discharge" and 11.3.5.2, "Identification of Adsorbent Material"
- Clarified compliance with RG 1.143 and 10 CFR 71
- Corrected inconsistencies in compliance with 10 CFR 50 App. I and 10 CFR 20.1301
- Various Technical changes to the design of the Liquid Waste System, Gaseous Waste System, and Solid Waste System

Westinghouse

SER Open Item

- **OI-SRP11.3-CHPB-01**
  - Section 11.3.3 needed consequence evaluation of a gaseous system leak or failure

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Chapter 12

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Tier 2 Chapter 12

- **Chapter Overview**
  - Radiation Protection
    - ALARA
    - Radiation Sources
    - Radiation Protection Design Features
    - Dose Assessment
    - Health Physics Facilities Design

Description of Major Changes post Revision 15

AP1000

- Clarified compliance with 10 CFR 20.1406 by stating how the design minimizes contamination and generation of waste
- Revised Radiation effects due to design changes
  - New Radwaste Monitor Tanks
  - Spent Fuel Pool Capacity
  - Fuel Handling Area Shielding Design
  - Integrated RV Head Package and Quick-Lock Connectors
  - Concrete Density in Spent Fuel Transfer Canal and Tube Shielding

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SER Open Items

- **OI-SRP12.1-CHPB-01**
  - Information on design features for HVAC systems to prevent or minimize contamination of environment
- **OI-SRP-12.2-CHPB-02**
  - More detail with airborne radioactivity due to expanded fuel pool capacity
- **OI-SRP12.3-CHPB-02**
  - Dose during refueling due to the change in minimum allowable water depth above active fuel
- **OI-SRP12.3-CHPB-01**
  - More detail to determine if the containment area radiation zones are affected or if the implementation of the Integrated RV Head Package Design results in an increase or decrease in the refueling does estimates
- **OI-SRP12.3-CHPB-03**
  - Density change in the Spent Fuel Transfer Canal and Tube Shielding and the impacts on occupational exposure and effect on radiation zoning

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Chapter 14

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Chapter 14 Overview

- Initial Plant Test Program
  - Specific Information to be Included Preliminary/Final Safety Analysis
  - Pre-operational Test
  - Certified Design Material
  - Combined Licensee Applicant Responsibilities

Major Changes

- Combined License Holder Items for
  - Information in 14.4.3
  - Information in 14.4.1.1

- As-Built Definition

Open Items

Three open items were identified

- **OI-SRP14.3-NWE2-01**
  - Clarify AP1000 definition of As-Built
- **OI-SRP-14.2-CQVP-12**
  - Delete information from DCD relative to COL information item 14.4.2
- **OI-SRP14.2-CQVP-13**
  - Restore COL information item 14.4.3
- Currently, the three open items are being addressed and resolutions will be prepared for NRC review

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Chapter 16

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Tier 2 Chapter 16 Overview

AP1000

- This chapter describes the:
  - Generic Technical Specifications
  - Investment Protection Controls

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Tier 2 Chapter 16
Description of Major Changes

AP1000

- Resolve technical bracketed items in the generic tech specs of the AP1000 DCD, and document activities required for COL Information Item 16.1-1
- Revise ADS valve stroke time requirements
- Change of DC System Voltage from 125 VDC to 250 VDC
- Gray Rod Swap and Operational Requirements Consistent with use of the OPDMS
- Revised equations for overtemperature ΔT and overpower ΔT
- Alternate RCS flow testing method to the precision heat balance
- Revised RCS min temperature for RCP start
- Incorporated appropriate TSTFs, Generic Letters and GSIs

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Tier 2 Chapter 16 Open Items

AP1000

- **COL Information Item**
  - Address remaining bracket items in plant specific Tech Specs
- **Ten Open Items:**
  - **OI-SRP16-CTSB-42**
    - Basis for revised overtemperature ΔT and overpower ΔT equations
    - Westinghouse is developing a response to OI
  - **OI-SRP16-CTSB-25**
    - Alternate RCS flow testing method to the precision heat balance
    - Westinghouse is developing a response to OI
  - **OI-SRP16-CTSB-32**
    - TSTF-448, MCRE testing
    - OI response under review by NRC staff
  - **OI-SRP16-CTSB-33**
    - TSP density
    - Westinghouse is developing a response to OI
  - **OI-SRP16-CTSB-55**
    - Revised RCS min temperature for RCP start with RCS solid
    - RAI response under review by NRC staff

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Tier 2 Chapter 16 Open Items

AP1000

- **Ten Open Items (con't):**
  - **OI-SRP16-CTSB-54**
    - Apparent LTOP TS Bases inconsistencies
    - RAI response under review by NRC staff
  - **OI-SRP16-CTSB-61**
    - Chapter 15 references
    - OI response under review by NRC staff
  - **OI-SRP16-CTSB-62**
    - Minimum RCS flow for boron mixing
    - OI response under review by NRC staff
  - **OI-SRP16-CTSB-07**
    - ADS flow path Operability requirements
    - OI response under review by NRC staff
  - **OI-SRP16.1.1-SEB1-01**
    - Containment Equipment Hatch bolting
    - NRC is auditing design information
- Twenty One Confirmatory Items:
  - Will be completed with the next revision to the DCD Amendment Request (DCD Revision 18)

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Chapter 17

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Tier 2 Chapter 17

This chapter discusses the following:

- Quality Assurance during
  - Design and Construction Phases
  - Operations Phase
  - Design, Procurement, Fabrication, Inspection, Testing
- Design Reliability Assurance Program (D-RAP)
- Major changes:
  - QMS Revision 5 was added
  - Incorporation of ASME NQA-1-1994
  - Incorporation of Maintenance Rule
  - Revised D-RAP component list

Tier 2 Chapter 17

- No COL Information Items changes, and no DAC
- 3 Open Items (OI) and 1 Confirmatory Item (CI)
  - **OI-SRP17.3-CQVP-01**
    - NRC to inspect the Westinghouse QMS
  - **OI-SRP17.4-SPLA-01**
    - Common-cause RCP trip failure removal (Describe why it was removed from the PRA model)
  - **OI-SRP17.4-SPLA-04**
    - Resolve alternative D-RAP ITAAC (proposed alternative in GLE-007)

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Chapter 19

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Tier 2 Chapter 19

- **Chapter Overview**
  - Probabilistic Risk Assessment
    - Internal Events
    - External Events
  - Ex-Vessel Severe Accident Phenomena
  - Additional Assessment of AP1000 Design Features
  - Equipment Survivability Assessment
  - Shutdown Evaluation
  - Malevolent Aircraft Impact

Description of Major Changes Post Revision 15

AP1000

- Addressed site-specific design and site-specific external hazards in a standard manner.
- PRA model changed from proprietary PRA software to CAFTA and evaluated and updated as necessary for various design changes.
- Addition of Appendix 19F regarding malevolent aircraft impacts

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SER Open Items

- **OI-SRP19.0-SPLA-07**
  - More detail of resolved and re-quantified PRA model and any DCD updates that may be necessary
- **OI-SRP19.0-SPLA-13**
  - More detail of the shutdown PRA risk and any DCD updates that may be necessary
- **OI-SRP19.0-SPLA-12**
  - Maintain acceptable seismic margin for Hard Rock High Frequency sites
- **OI-SRP19.0-SPLA-14**
  - More information on the containment inventory of radionuclides used for survivability evaluation
- **OI-SRP19.0F-SPLA-01**
  - OI for review of Appendix 19F, "Malevolent Aircraft Impact"
    - Awaiting Regulator Guidance for review of Section