

Acceptance Review for New Reactor COL Applications

NRO All-Hands Meeting
September 5, 2007

A-2

Agenda

- Overview of Acceptance Review
- Use of Safety Analysis Report Review Guide
 - Example 1 – COLA Section 12.1 (radiation protection and ALARA)
 - Example 2 – COLA Section 3.9.6 (design, qualification, and inservice testing programs for pumps, valves)
- Use of Environmental Review Guide
- Next Steps

Scope of Acceptance Review

What's new?

- Completeness: Has information required by the regulations been submitted in application? [RG 1.206, C.IV.1]
- Technical Adequacy: Is information of sufficient technical depth such that the staff can perform the review with a minimal number of RAIs? [RG 1.206, C.III.x.y.z]
- Reaffirm/Revise Planning Assumption: Do the EPM pre-baseline planning assumptions need to be revised? [EPM]

Office Instruction

■ Discusses:

- Roles & responsibilities – PMs, tech staff, BCs, scheduling/planning staff, NRO management
- Completeness and technical adequacy reviews
- Early communication with applicants
- Process for reaffirming/revising EPM scheduling models

■ Attachments

- Template for NRO and NSIR Branch transmittal memo
- Safety Analysis Report & Environmental Review Guides (Attachments C and D)

■ Available on NRO website

Scheduling Terminology

- Accept application for review – high quality application; docket for review immediately after 60-day acceptance review
- Defer review of application – application has some tech deficiencies; applicant should be able to submit information to address deficiencies within 180 days; docket for review once staff evaluates completeness of new information
- Application Unacceptable for Docketing – low quality application – high scheduling risk; incomplete/too many technical deficiencies; do not accept application but identify deficiencies

Acceptance Review Process

NRO/NSIR Technical Staff and PMs

1. Reviews COL applications and related information (e.g., technical reports)
 - Reviews COLA section, COL Items, supp data, ITAAC/DAC
 - Refers to Design Finality Matrices (e.g., ABWR, AP1000)
 - Refers to SRP, RG 1.206, risk insights and survey results to ID key missing info in COLA -> (1st-of-kind, departures, missing info)
2. Communicates show stopper issues to NRO PM as soon as practicable
3. Reviews current EPM schedule for COL application
4. Identifies changes to the current scheduling assumptions
5. Documents results of acceptance reviews in Attachments C and D (**Examples to follow**)
6. Branches transmit results to DNRL PMs using Branch memo

Acceptance Review Process

DNRL processes results of acceptance review

7. Safety PM compiles and evaluates technical deficiencies identified by technical branches
8. NPLS PM revises schedule using inputs from technical branches
9. DNRL, NRO/NSIR technical staff and managers discuss decision to accept, defer or reject
10. Decisions to defer acceptance of application are briefed to agency senior management and Commission, if necessary
11. After application is accepted for review, Safety PM prepares acceptance letter to applicant containing review schedule
12. Application is docketed

SAR Review Guide

- Systematic review and documentation of acceptance review
 - Supplemental data (e.g., AP1000 technical reports)
 - COL Information/Action Items
 - ITAAC or DAC
 - First-of-a-kind engineering reviews
- Identifies application-specific significant technical deficiencies, impacts on schedules and risk significance of those deficiencies
- Transmitted to Safety PM who compiles results from all NRO and NSIR technical branches

Acceptance Review Products

■ Application Specific Review Plan

– Revised EPM review schedule for application

■ Reflects content and quality of application

■ Relates technical deficiencies of application to SRP sections, i.e., list of review topic deficiencies identified for all COL sections (output from Branch memo)

Example Acceptance Review Schedule

<u>Task Name</u>	<u>Duration</u>	<u>Start</u>	<u>Finish</u>
ACCEPTANCE REVIEW – RCOL - NRG ENERGY - SOUTH TEXAS PROJECT	43 days	10/01/07	12/03/07
Receiving, Staging and Noticing Application	1 day	10/01/07	10/01/07
SUNSI Review	5 days	10/02/07	10/09/07
Administrative Processing	6 days	10/01/07	10/10/07
Application Review by Technical Staff and PMs in NRO and NSIR	26 days	10/01/07	11/06/07
Compilation, Analysis, and Decision	25 days	10/23/07	11/28/07
Acceptance Review Complete, Begin Proprietary Review	0 days	11/28/07	11/28/07
Federal Register Notice Published		11/28/07	12/03/07

Lessons Learned from Previous Reviews (ML072430683)

Area/Topic	Calcs Req	Audit	Data	Analysis	Results	Design	Op. Exp.	Remarks
7.9 Data Communication Systems								
Design-basis Information (see RG 1.206 C.1.7.9.2)				X		X		
Area/Topic	Calcs Req	Audit	Data	Analysis	Results	Design	Op. Exp.	Remarks
8.2 Offsite Power System								
Grid(Reliability, Protocols)				X	X			Emerging Technical Issues Grid reliability. Protocol between grid operators and plant operator. Real time contingency analysis software tool.
Performance of FMEA of the switchyard				X	X	X		
Area/Topic	Calcs	Audit	Data	Analysis	Results	Design	Op. Exp.	Remarks
8.3.1 A-C Power Systems (Onsite)								
Diesel generator capacity and capability	X			X	X	X		First-of-a-Kind Technical Review Use of Combustion Turbine Generator as emergency power sources in lieu of diesel generators.
Penetrations over load protection	X			X		X		
Degraded voltage protection	X			X		X		
Area/Topic	Calcs	Audit	Data	Analysis	Results	Design	Op. Exp.	Remarks
8.3.2 D-C Power Systems (Onsite)								
Battery capacity and capability	X			X	X	X		
Battery Charger design	X			X	X	X		
Area/Topic	Calcs	Audit	Data	Analysis	Results	Design	Op. Exp.	Remarks
9.1.1 New Fuel Storage								

Example 1 – COL Section 12.1 Assumptions

COL Application Section was an example from an incomplete application. To allow the review, we assumed:

- COL Application Section 12.5S was supplied by the applicant
- COL Application Section 12.5S was complete enough to allow the formal review to occur

Documents Referenced During Acceptance Review

- COL Application Section 12.1
- COL Application Sections 12.2-12.5S
- RG 1.206
- DCD Section 12.1
- SER Section 12.1
- SRP Section 12.1
- RGs 1.8, 8.8, and 8.10

Table for COL Section 12.1

1. Review Area/Topic*	Completeness and Technical Adequacy Which Form Basis for Acceptability for Docketing				Changes to Planning Assumptions to be Considered in Development of Baseline Review Schedule			Review Dependencies Among Concurrent Reviews		
	2. Does COL section address the items required by regulation (refer to RG 1.206, Section C.IV.1)? (Yes/No)	3. Is COL section technically sufficient for this review area/ topic? (yes/no)**	4. Can the technically deficiency be resolved through the RAI process? (yes/no)**	5. If no, for either completeness or technical adequacy, identify deficiency(ies). This information will be needed for technical review.	6. Is the identified technical deficiency related to a risk-significant SSC)? (yes/no)***	7. Are the pre-baseline review schedule and estimated staff-hours appropriate? (yes/no)	8. For each no, identify the change (or basis for change).	9. Identify the total review time in staff-hours****	10. Can the review of the area/topic be completed without the completion of a concurrent review? (yes/no)	11. For each no, identify which application (DCD or COLA) and section.
Operation Policies	Y	Y	Y	N/A	N/A	Y		N/A	Y	SRP Section 12.5S – same review
RG 8.10 (COL I/I)	Y	Y	Y	N/A	N/A	Y		N/A	Y	SRP Section 12.5S – same review
RG 1.8 (COL I/I)	Y	Y	Y	N/A	N/A	Y		N/A	Y	SRP Section 12.5S – same review
Occupational Radiation Exposures (COL I/I)	Y	Y	Y	N/A	N/A	Y		N/A	Y	SRP Section 12.5S – same review
RG 8.8 (COL I/I)	Y	Y	Y	N/A	N/A	Y		N/A	Y	SRP Section 12.5S – same review

Example 2 – COL Section 3.9.6 Assumptions

- AP1000 Inservice Testing (IST) Program described in Section 3.9.6 of Combined License (COL) application
- Telephone conferences with applicant held to determine when missing or deficient information could be corrected
- All information will be corrected within 180-day period with exception of motor-operated valve (MOV) program description that will contain first-of-a-kind diagnostic testing approach

Acceptance Review of AP1000 COL IST Example

- Perform background review of Part 52, Staff Requirements Memoranda, RG 1.206 (C.III and IV), and AP1000 DCD IST Program (Section 3.9.6) and COL Information (Section 3.9.8)
- Review AP1000 COL IST example using draft Office Instruction NRO-REG-100
- Evaluate completeness and technical adequacy of AP1000 COL IST example based on RG 1.206 and other guidance in NRO-REG-100
- Complete SAR Acceptance Review Table in Attachment C to NRO-REG-100

Regulatory Guide 1.206

Staff Position C.III.3.9.6

Functional Design, Qualification, and IST Programs for Pumps, Valves, and Dynamic Restraints

3.9.6.1 Equipment not included in certified design

3.9.6.2 IST Program for Pumps

3.9.6.3 IST Program for Valves

1. Motor-Operated Valves
2. Other Power-Operated Valves
3. Check Valves
4. Pressure Isolation Valve Leak Testing
5. Containment Isolation Valve Leak Testing
6. Safety and Relief Valves
7. Manually Operated Valves
8. Explosively Actuated Valves

3.9.6.4 IST Program for Dynamic Restraints

3.9.6.5 Relief Requests and Alternative Authorizations to OM Code

SAR Acceptance Review Results Table

Topic	RG 1.206 C.IV.1	Tech Adeq?	Accept OK?	Defici ency	Risk Min	Sched OK?	Concurrent Review?
Add Equip	Yes	Yes	Yes	NA	Yes	Yes	NA
Pumps	Yes	Yes	Yes	NA	Yes	Yes	NA
Valves	Yes	No*	No*	Slide	No	Yes	Yes
MOVs	Yes	No	No	Slide	No	No	Yes
POVs	Yes	No*	No*	List	No	Yes	Yes
Check	Yes	No*	No*	List	No	Yes	Yes
PIV Leak	Yes	No*	No*	List	Yes	Yes	No

*Applicant will provide corrected information within 180-day review period

AP1000 IST Acceptance Review Valves

RG 1.206 C.III.3.9.6.3

- COL application should fully describe IST Program for valves:
 - Supplement IST Table for Code class and actuator
 - Describe IST Program for preservice tests, replacement, repair, maintenance, and position
 - Describe methods for measuring reference and IST values
 - Describe test procedures and schedules
 - Describe implementation program with milestones
- Telecon indicates information will be provided within 180-day period
- Concurrent review with DCD Rev. 16 and Topical Report

AP1000 IST Acceptance Review

RG 1.206 C.III.3.9.6.3.1

Motor-Operated Valves

- COL application should fully describe IST Program for MOVs:
 - Describe design-basis periodic verification
 - Show preservice and IST demonstrate functionality
- Telecon indicates that information will not be provided for at least 6 months
- First-of-a-kind review to require 300 additional hours

SAR Acceptance Review Results Table

Topic	RG 1.206 C.IV.1	Tech Adeq?	Accept OK?	Defici ency	Risk Min?	Sched OK?	Concurrent Review?
CIV Leak	Yes	Yes	Yes	NA	Yes	Yes	No
SRVs	Yes	No*	Yes	List	Yes	Yes	No
Manual	Yes	Yes	Yes	NA	Yes	Yes	No
Explosive	Yes	No*	Yes	List	Yes	Yes	No
Snubber	Yes	No*	No*	List	No	Yes	No
Relief/Alt	Yes	No*	No*	List	No	Yes	Yes

*Applicant will provide corrected information within 180-day period.

COL Section 3.9.6

Acceptance Review Conclusions

- Applicant needs to provide additional information for IST program review
- Some information will be provided within 180-day time period
- MOV program description will not be provided within 180-day time period and will require additional 300 hours of staff review time after acceptance

Environmental Acceptance Review

- Attachment D to Office Instruction
- Environmental SRP was starting point
 - NUREG-1555
 - Focused on data & information needs
 - Adapted reviewer tool previously developed
- Tool developed by NRC & PNNL, used for
 - Pre-application readiness assessments
 - Calvert Cliffs – limited use

Review Structure

- Accidents
- Alternatives
- Cultural Resources
- Decommissioning
- Ecology
- Hydrology
- Land Use
- Need for Power & Cost-Benefit
- Meteorology
- Radiological Health
- Site & Tech Overview
- Socioeconomics and Environmental Justice
- Transmission Lines
- Transportation
- Uranium Fuel Cycle
- Waste Systems

Next Steps

- Concurrence of Office Instruction completed by mid-September
- Respond to staff questions (FAQ on website)
- Use of new acceptance review for South Texas Project (STP) COL application
- Training on use of risk-insights
- Revision 1?
 - Lessons learned from acceptance review for STP COL application
 - Electronic workflow for documenting future acceptance reviews
 - New attachment containing guidance for DCD reviews

Points of Contact

- NSIR, NRO/DE –Jennifer Dixon-Herrity, Kim Gruss, Renee Li
- NRO/DSRA – Hossein Hamzehee, Gene Hsii
- NRO/DCIP – Terry Beltz
- NRO/DSER – Jay Lee
- NRO/DNRL – Joe Colaccino, Steve Koenick

Thank You!!

- Working Group – great ideas, hard work on Office Instruction for new process
- NRO/NSIR Management – support and direction on process and outcomes
- Staff in NRO/NSIR technical branches
 - Input to Lessons Learned from Previous Reviews (June 15th memo)
 - “Testing” draft Office Instruction
 - Administrative support
 - Division management review