

NRC/AREVA Public Meeting

U.S. EPR Design Certification Application Review Schedule

March 13, 2008

AGENDA

Time	Topic	Led by
01:00 p.m.	Introductions/Opening Remarks	Surinder Arora / NRC Sandra Sloan / AREVA
01:10 p.m.	NRC COL and DC Review Process	Steve Bloom / NRC
01:50 p.m.	EPR Draft Safety Review Schedule	Getachew Tesfaye / NRC
02:30 p.m.	Reactor System Branch Scheduling Challenges	Shanlai Lu / NRC
03:10 p.m.	Summary and Next Steps	NRC / AREVA NP
03:45 p.m.	Opportunity for Public Comments	
04:00 p.m.	Adjourn	



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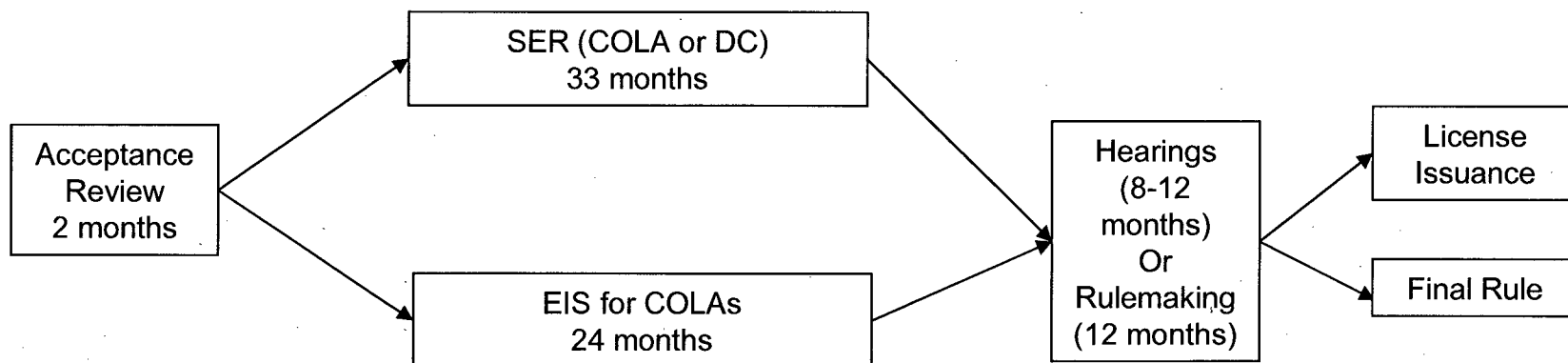
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NRC COL and DC Review Process

**Steve Bloom, Chief
Planning and Scheduling Branch**
March 13, 2008

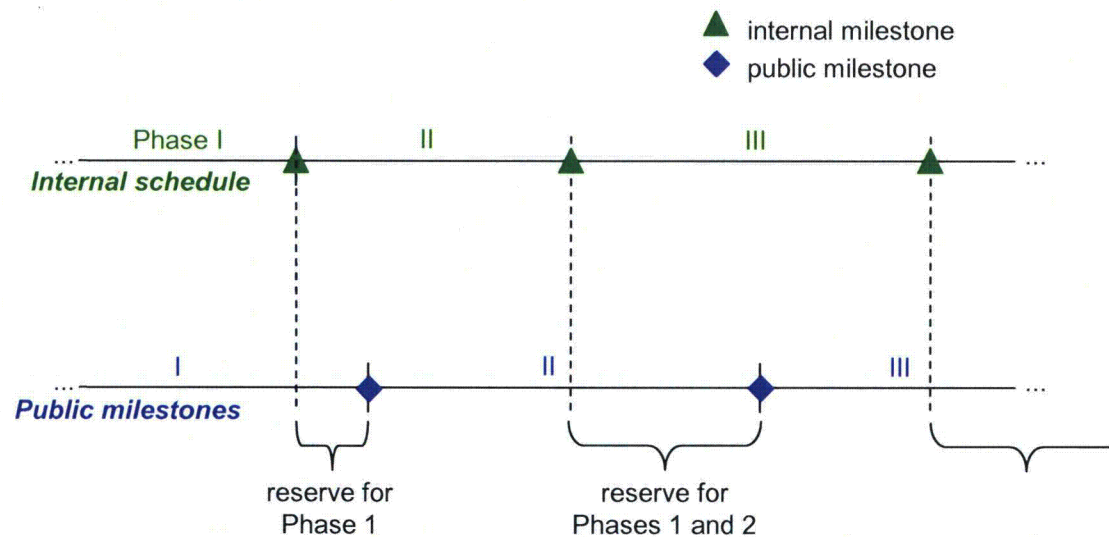
Licensing Review Phases

- NRC's review of COLs and DCs is organized in the same way
 - Acceptance Review (2 months)
 - 6-Phase SER (33 months includes Management Reserve)
 - 4-Phase EIS (24 months includes Management Reserve)
 - Not covered in detail during this presentation
 - Hearings (COLs) (8-12 months "Schedule for hearing determined by Commission and Atomic Safety and Licensing Board")
 - Rulemaking (DCs) (Goal is 12 months)



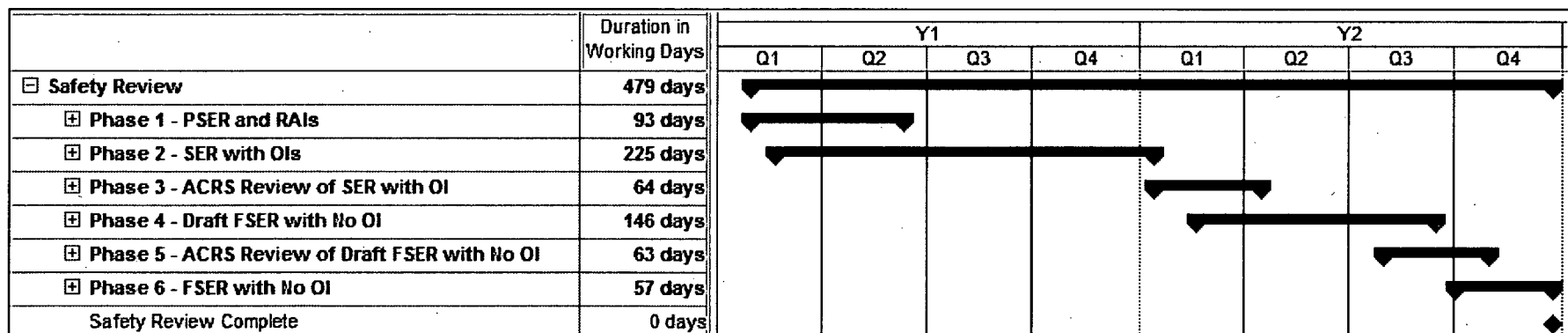
Management Reserve

- Nominal amount of MR is 60 working days (12 weeks)
- Could increase with increased application uncertainty (technical issues)



Safety Review 6-Phase SER

1. PSER & RAIs
2. SER with Open Items
3. ACRS Meetings (SER with OIs)
4. Advanced FSER, no open items
5. ACRS Meetings
6. FSER



(Note: Durations in this figure differ from nominal durations.)

SER Phase 1 – PSER and RAIs

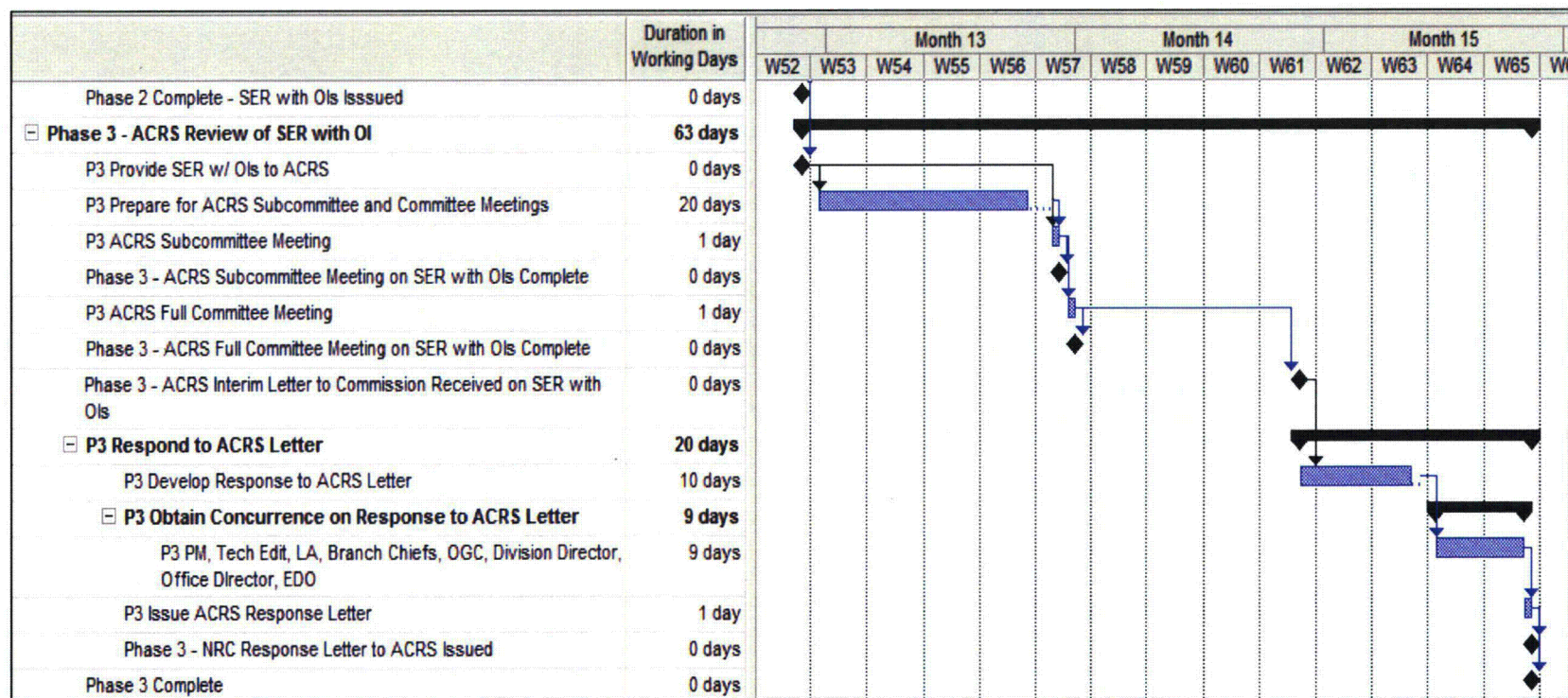
- Begins with start of review
- Ends when for a chapter when all RAIs issued for the chapter
- Includes (for example):
 - Reading COLA/DC
 - Preparing PSER and RAIs
 - Internal peer reviews and concurrence
 - Interactions with applicant
 - Site audit

Phase 2 – SER with Open Items

- Begins with review of RAI responses
- Ends with submission of completion of SER w/OI
 - Includes:
 - Reading responses
 - Preparing SER w/OI input
 - Internal peer reviews and concurrence
 - Interactions with applicant
 - Can be extended – by late RAI responses
 - Staff will evaluate timing of the first ACRS interaction based on the number and complexity of Open Items

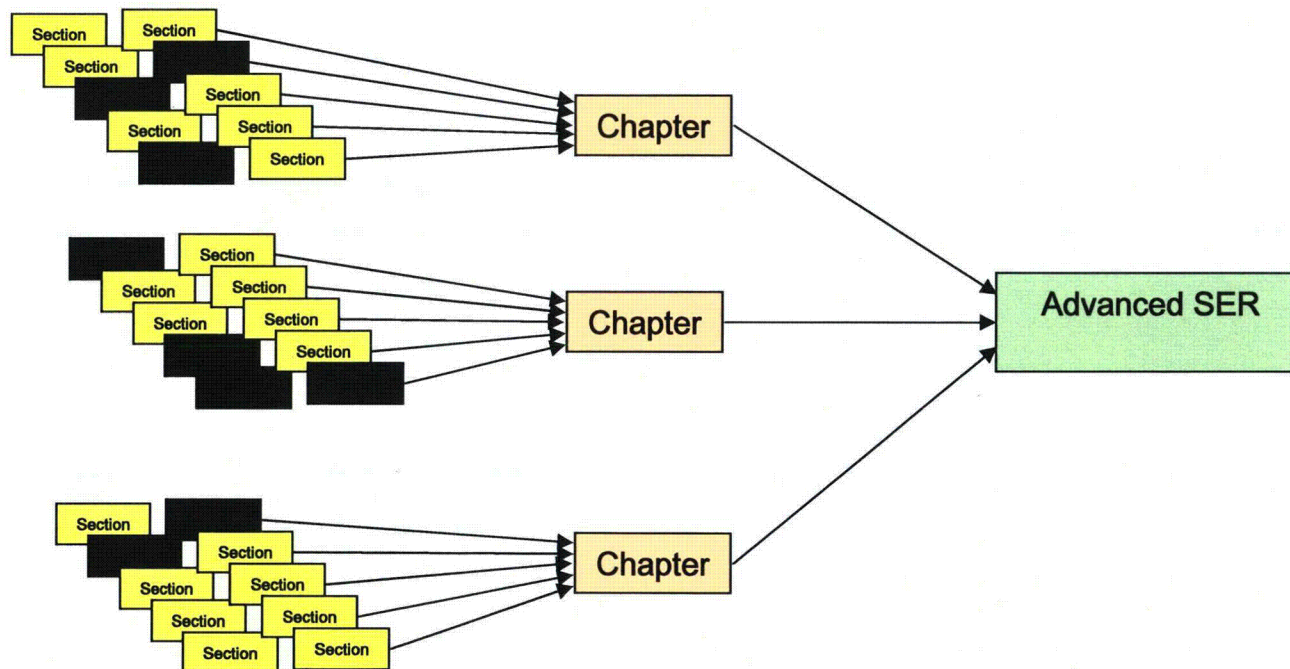
Phase 3 – ACRS Review of SER

- Begins with Issuance of SER w/OI
- Ends with staff response letter to ACRS



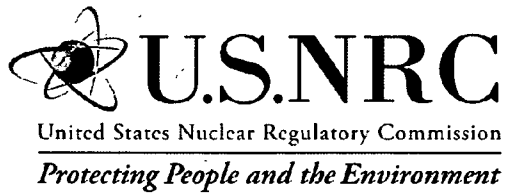
Phase 4 – Advanced SER

- Advanced SER contains no open items
- Resolves identified open items plus issues resulting from ACRS review
- Includes four general sub-phases (similar to SER w/ OI)
 1. Awaiting input from applicant
 2. Resolution of OIs and issues by Technical Reviewer
 3. Chapter completion process
 4. Document completion process
- Work excludes SER chapters and sections without OIs and issues



Work: SER Phase 4 – Advanced FSER

- Begins with receipt of first input from applicant
- Ends with completion of advanced SER
 - Includes:
 - Reading and evaluating applicant input
 - Interactions with applicant
 - Preparing Draft FSER section
 - Internal peer reviews and concurrence
 - Other activities . . .
- Can be extended – by late applicant responses

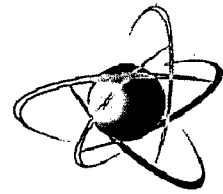


Phase 5 – ACRS Review of Advanced SER

- Activities **ARE THE SAME** as ACRS Review of SER w/OI

Phase 6 – Final SER

- **FSER**
 - Contains no open items
 - Differs from advanced SER only in those areas addressed in ACRS review
 - We won't know what these areas are until after ACRS meeting
 - Work in these areas can begin as soon as issues are known
 - Activities occur in 2 sub-phases:
 - ACRS Issue Resolution
 - Document Completion



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U.S. EPR Design Certification Draft Review Schedule

Getachew Tesfaye

EPR Branch

March 13, 2008

EPR DC Application Status

- AREVA submitted its application for design certification of the U.S. EPR on December 11, 2007
- AREVA supplemented its application on February 7, 2008, and February 20, 2008
- NRC staff found the application as supplemented to be sufficiently complete and acceptable for docketing and issued Federal Register Notice and docketing letter to AREVA on February 25, 2008. (Docket No. 52-020)
- NRC staff informed AREVA of its intention to publish a schedule for the detailed review of the application within 30 days of docketing

Review Schedule Background

- Schedule based on Design Certification (DC) Enterprise Project Management (EPM) Template
- Baseline EPM schedule for a DC review is 42 months (45 months including management margin)
 - schedule from start of review until Rulemaking is issued
 - start of review shortly after the acceptance date and not date of the application
 - baseline schedule has a stagger built into chapter completions to even out workload
 - Request for additional information (RAI) response time is 30 days

Resource Allocation/Staff-hour Loading

- Staff is currently refining schedule in preparation for issuing major milestone schedule to applicant
- For phases 1 & 2 resource estimates have been developed based on the acceptance review
- Critical path chapters (e.g., Chapter 15) drive schedule not resource estimates.
- Chapters with large resource allocations (≥ 5000 hours)
 - Chapter 3 – Design of Structures, Components, Equipment, and Systems
 - Chapter 6 – Engineered Safety Features
 - Chapter 9 – Auxiliary Systems
 - Chapter 15 – Transients and Accident Analyses
 - Chapter 19 – Probabilistic Risk Assessment and Severe Accident Evaluation

Challenges to the Review Schedule

- Containment design
 - The U.S. EPR design does not rely on active containment cooling systems for post-accident containment mixing.
 - Staff has communicated its concern to AREVA on several occasions regarding this matter
 - Staff anticipates requesting additional information which may require long lead items to properly address the issue
- Earthquake experience and/or test experience approach for seismic and dynamic qualification of mechanical and electrical equipment
 - Based on past experience with similar application, it has taken longer than anticipated to complete the review
 - Review time is highly dependent on the selection of equipment and the type of experience database proposed
 - Estimating review time for establishing equipment similarity for an equipment class is very challenging
 - AREVA has been informed of this challenge, and for now has decided not change the course regarding this approach
- Reactor Systems Branch scheduling challenges
 - New Fuel Design Issue
 - Dependency on Topical Report Reviews
 - Operator Action Assumptions
 - GSI 191, down stream effects on ECCS



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Reactor Systems Review Scheduling Challenges

Shanlai Lu

Reactor Systems Branch

March 13, 2008

New Fuel Design Issue

- 12 ft fuel with M5 cladding and guide tubes exhibited unanticipated significant axial growth during operation with an average burn-up about 40 GWD/T
 - Control rod stuck during cool down
 - Licensing conditions may not be met in TMI
- Operational data potentially invalidated the fuel growth model
- EPR design condition: 14 ft and 60+ GWD/T
- Concern: Actual operation data indicate possible fuel design deficiencies.
- Schedule impact is expected for fuel design topical report and DCD review

Dependency on Topical Report Reviews

- Title Target Date
LBLOCA: July 15, 2008
Fuel Topical Report: Oct 8, 2008
RIA: September, 2009
Set Point Methodology: September, 2009
- Concern: The current Chapter 15 design results were not generated using NRC approved methods.
- The completion of DCD review is dependent on topical report review results

Operator Action Assumptions

- EPR – Active safety system is needed to mitigate LOCA and AOOs
- Chapter 15 analysis credits operator actions
- No justification is provided to support the assumed operator actions
- Concern: A potential significant DCD review open item

Debris Downstream Effect - Core

- AREVA has not provided valid analysis nor any test data to demonstrate that the downstream effects do not adversely affect the performance of the EPR emergency core cooling system components or the coolability of the core.
- Concern: A potential significant DCD review open item

Summary and Next Steps

- Staff is cautiously optimistic that it will have a predictable review schedule for Phases 1 and 2
- Safety review will officially begin on March 19, some branches have already started
- Scheduling letter on target milestones to be issued by March 27, 2008