

# SOARCA Peer Review Panel Meeting Agenda

March 2-3, 2009

6<sup>th</sup> Floor Conference Room  
21 Church Street  
Rockville, MD

## March 2, 2010

8:30 – 8:45	Welcome (S Elkins/NRC)
8:45 – 9:00	Review meeting objectives and agenda (K. Vierow/Chair)
9:00 – 10:30	SOARCA Uncertainty quantification overview (S. Burns/SNL)
10:30 -10:45	Break
10:45 – 11:45	Scenario selection and conclusions review (J. Schaperow/NRC)
11:45 – 1:00	Lunch
1:00 – 2:00	Peach Bottom accident progression review (M. Leonard/dycoda)
2:00 – 3:00	Surry accident progression review (K. Wagner/SNL)
3:00 – 3:15	Break
3:15 – 3:45	Evacuation modeling review (R. Sullivan/NRC)
3:45 – 4:45	Off-site consequence modeling review (N. Bixler/SNL)
4:45 – 5:30	Open discussion (All)
5:30	Adjourn

## March 3, 2010

8:30 - 9:00	Containment Structural Analysis (NRC)
9:00 – 9:15	SOARCA path forward and public meeting plans (S. Elkins/NRC)
9:15 – 12:00	Peer review panel discussions (K. Vierow/Chair)
12:00 - 1:00	Lunch
1:00 – 4:00	Peer review panel discussions (K. Vierow/Chair)
4:00 – 5:00	Meeting review and closeout (K. Vierow/Chair)
5:00	Adjourn

Q/5

## SOARCA Peer Review Committee Meeting No. 3 (March 2<sup>nd</sup> and 3<sup>rd</sup>, 2010)

The SOARCA Peer Review Committee met in NRC offices on March 2<sup>nd</sup> and 3<sup>rd</sup>, 2010 for the third time. The objective of the meeting was to further discussions, with the goal of completion, of all comments previously made by the committee members on the draft SOARCA NUREG documents.

Fundamentally, the objective of this meeting was successfully met. The peer review committee found all but a few of the staff comment resolutions acceptable.

Over the course of the two day meeting several major items were identified which require varying degrees of follow-on action. This summary is provided prior to receipt of each individual peer review member's reports and prior to the overall committee report, and therefore serves as an interim summary of the discussions. Drafts of these reports will be provided by the end of April, 2010, with final versions by mid-May.

Major items discussed are summarized below, along with proposed resolutions:

1. Include a summary of events not considered in SOARCA with justification.
  - a. Large break LOCA, multi-unit accidents, low power and shutdown, extreme seismic events, spent fuel pool accidents, security events are examples of such events not analyzed in SOARCA.
  - b. Proposed Resolution: Add summary text addressing each type of event not included.
2. Highlight and expand mitigation efforts in the NUREG.
  - a. Generally, the committee members all agreed that mitigation actions will occur for most/all scenarios.
  - b. Individual views amongst the membership are varied regarding assumptions to be made in what to include as mitigations.
  - c. Proposed Resolution: Upon receipt of individual committee member reports address each opinion on a case by case basis.
3. Provide additional justification in support of the analyzed timing and location of RCS high temperature failure results.
  - a. Performed sensitivity analysis using MELCOR and SCDAP/RELAP5 on the Surry plant which resulted in temperatures high enough to cause RCS failure.
  - b. Similar analysis continues for the Peach Bottom plant.
  - c. Proposed Resolution: Resolve some minor technical details of the Surry analysis and continue on with the Peach Bottom analysis.
4. Provide additional justification for Surry hydrogen combustion results.
  - a. Performed sensitivity analysis delaying the start time of combustion ignition to determine the impact on containment pressure.
  - b. Proposed Resolution: Reevaluate the sensitivity analysis based on peer review comments.

5. Reconsider projecting LCF risk predictions out to 100 miles.
  - a. Reporting LCF risk predictions out to 100 miles suggests that reactor accidents threaten people out to that distance. The peer committee suggested truncating results at 50 miles.
  - b. Proposed Resolution: Revise presentation of results (and the NUREG) for LCF risk prediction to 50 miles. This requires text to justify 50 miles including the basis for 50 mile regulatory analysis guidelines, SAMA evaluations, and ingestion EPZ.
  
6. Present clear justification for source term discussions in the NUREG.
  - a. Include text that explains the acceptability of the source term data used in SOARCA, with appropriate comparative discussions regarding FGR-13, BEIR-5 and BEIR-7 data.
  - b. Proposed Resolution: Obtain guidance from one of the peer review members in this field and include as appropriate.
  
7. Assess and address potential structural/seismic – liquefaction issues.
  - a. A peer review member presented concerns regarding the liquefaction of soil during a severe earthquake causing vertical shifting of the concrete containment foundation slab which could result in plant system damage.
  - b. Proposed Resolution: Provide pertinent supporting plant information to one of the committee members for further evaluation.
  
8. Continue current NUREG editing efforts.
  - a. The NUREG contains structural and editorial issues (worse than the previous revision reviewed by the committee). One of the peer review members offered to help us with this.
  - b. Proposed Resolution:
  
9. Continue uncertainty study to completion.
  
10. Consider follow-on work beyond SOARCA.

*In complete*

*In complete*

SOARCA major project milestones were presented and discussed:

- |  |                |
|--|----------------|
| 1. Submit SOARCA documents to plants for fact check  | end of March   |
| 2. Incorporate peer review, staff and plant comments | mid-April      |
| 3. Provide documents to ACRS subcommittee            | end of April   |
| 4. ACRS subcommittee                                 | mid-May        |
| 5. ACRS full committee                               | mid-June       |
| 6. Release draft NUREG for public review and comment | end of July    |
| 7. Public meetings(s)                                | late August    |
| 8. Final concurrence of NUREG, NUREG/CR & NUREG/BR   | early October  |
| 9. NUREG and recommendations to Commission           | end of October |

### SOARCA Documents Review/Approval Process

- NUREG-1935, State-of-the-Art Reactor Consequence Analyses – Summary Report
- NUREG-1935, Appendix A, Peach Bottom Integrated Analysis and NUREG-1935, Appendix B, Surry Integrated Analysis
- NUREG/CR-7008, MELCOR – Reactor Core Melt Accident Simulation – Best Practices from State-of-the-Art Reactor Consequence Analyses Study
- NUREG/CR-7009, MACCS2 – Calculated Environmental Impact of Reactor Core Melt Accidents – Best Practices from State-of-the-Art Reactor Consequence Analyses Study
- NUREG/BR-0471, Modeling Hypothetical Accidents at Nuclear Power Plants – State-of-the-Art Reactor Consequence Analyses

Activity	Due	Lead	Notes/Status
Provide draft NUREG, Rev. 0 to Peer Review Committee	July 2, 2009	Shawn (SNL)	COMPLETE
Incorporate Peer Review comments	Monday Jan 15, 2010	Shawn (SNL) Jason (NRC) Marty (NRC)	COMPLETE
Conduct NRC <u>technical</u> review of draft NUREG (relative to incorporation of peer review comments) and NUREG/BR	Friday Jan 29, 2010	Mark (NRC)	COMPLETE
Incorporate NRC technical reviewers' comments and complete technical-editing	Friday Feb 5, 2010	Shawn (SNL) Mark & NRC Leads	COMPLETE
<b>Revision 1 of Draft NUREG, NUREG/CR and NUREG/BR – MASTER DOCUMENT CONTROLLED BY SANDIA --</b>			
Provide draft NUREG to Peer Review Committee for 3 <sup>rd</sup> meeting	Tuesday Feb 15, 2010	SNL	COMPLETE
Brief DSA Management on draft NUREG, NUREG/CRs and NUREG/BR (& peer review comments)	Week of Feb 22, 2010	Scott Elkins	Master document controlled by Sandia. All comments submitted to SOARCA PM for assembly and resolution by SOARCA team leads before revising master document.
Conduct 3 <sup>rd</sup> Peer Review Committee Meeting	Tues., Wed. Mar 2-3, 2010	SNL/NRC	

*Revising*

Activity	Due	Lead	Notes/Status
Brief RES Management on draft NUREG, NUREG/CRs and NUREG/BR (& peer review comments)	Thursday Mar 4, 2010	Scott Elkins	Master document controlled by Sandia. All comments submitted to SOARCA PM for assembly and resolution by SOARCA team leads before revising master document.
Brief EDO on status of SOARCA	Thursday Mar 4, 2010	Scott Elkins	Brief EDO Every 3 months
Complete development of NUREG/CR for MELCOR and MACCS2	Friday Mar 5, 2010	SNL	SNL to develop NUREG/CR from MELCOR and MACCS2 using information in Vol. 2 of original SOARCA NUREG and new input from NRC & SNL Technical Leads.
Brief SOARCA Steering Committee on draft NUREG, NUREG/CRs, and NUREG/BR (& peer review comments)	Monday Mar 15, 2010	Scott Elkins	Brief Steering Committee every 3 months
NRC completes technical review of MELCOR and MACCS2 NUREG/CRs	Friday Mar 19, 2010	Scott Elkins	SNL to submit documents for review by NRC Technical leads. NRC to have 2 weeks to review NUREG/CRs and SNL to have 1 week to revise NUREG/CRs per comments
Brief Commission TA's on status of SOARCA Project	Late Mar 2010 (TBD)	Scott Elkins	Brief Commission TAs every 6 months. Current ATMIS due date: 3-17-10
Provide draft NUREG, /CR & /BR to NRC offices and Regions for review/concurrence.	Wednesday Mar 24, 2010	Scott Elkins	Via memo from J. Uhle ( <i>NUREG/BR for information</i> ) Documents to be uploaded to SharePoint website to allow HQ and regional employees to review and submit comments.
Submit NUREG, NUREG/CRs, and NUREG/BR to Peach Bottom and Surry for fact check.	Week of Mar 29, 2010		B. Sheron and NRR? Involve NRR and OPA in communication with Peach Bottom & Surry <i>Use NUREG/BR as tool for communication</i> <b>NOTE – Need complete copies of both MELCOR decks to send with documents.</b>
Incorporate comments from peer review, NRC offices, Surry & Peach Bottom	Monday Apr 12, 2010	SNL/NRC	SNL controls master for all documents.

Activity	Due	Lead	Notes/Status
Complete technical-editing	Monday Apr 19, 2010	SNL	Sandia will complete technical editing of NUREG and NUREG/CR. Completed documents will be considered Revision 2. Completed documents will be transferred to NRC control. <b>NOTE – Currently some sections are totally US measurements while others have dual (US &amp; SI) units. Need to standardize – All US or all dual units.</b>
<b>Revision 2 of Draft NUREG, NUREG/CR, and NUREG/BR – MASTER DOCUMENT CONTROL TRANSFERRED TO NRC --</b>			
Provide draft NUREG, NUREG/CR and NUREG/BR to DSA management	Wednesday Apr 21, 2010		<b>NOTE – Per J. Mitchell – MACCS2 (and perhaps MELCOR) sections are not in MS Word. Can NRC revised them or do we need to depend on SNL?</b>
Provide draft NUREG, NUREG/CR and NUREG/BR to OGC and ACRS Subcommittee	Monday Apr 26, 2010		Via memo from J. Uhle (NUREG/BR is provided for information)
ACRS Subcommittee Meeting	May 2010		
Brief EDO on status of SOARCA	Mid-June 2010		Brief EDO Every 3 months
ACRS Committee Meeting	June 2010		Full committee meeting may be public and will be first public rollout of NUREG document.
Incorporate comments from OGC and ACRS	June 2010		NRC responsible for revising document to address ACRS & OGC comments.
Complete RES and SOARCA Steering Committee review and concurrence on draft NUREG, NUREG/CR, and NUREG/BR	Tuesday June 29, 2010		
Incorporate outstanding comments into draft NUREG	July 1 – 27, 2010		
Brief EDO on status of SOARCA	Mid-July 2010		Brief EDO Every 3 months
Complete technical-editing	Tuesday July 27, 2010		

Activity	Due	Lead	Notes/Status
<b>Revision 3 of the Draft NUREG, NUREG/CR, and NUREG/BR – MASTER DOCUMENT CONTROLLED BY NRC –</b>			
Provide draft NUREG, NUREG/CR and NUREG/BR to DSA management	Tuesday July 27, 2010		
Brief RES management on draft NUREG, NUREG/CR and NUREG/BR	Wednesday July 28, 2010		
Brief SOARCA Steering Committee on draft NUREG, NUREG/CR and NUREG/BR	Thursday July 29, 2010		
Release draft NUREG for public review and comment.	Friday July 30, 2010		Use NUREG/BR as a communication tool
Provide final NUREG and NUREG/CR to ACRS & OGC	Monday Aug 2, 2010		<i>(OGC gets NUREG/CR for information only)</i>
Brief Commission TA's on status of SOARCA Project	Mid-August 2010	Scott Elkins	Brief Commission TAs every 6 months
Conduct Public Meetings at Peach Bottom and Surry NPPs	Aug 16 – 25, 2010		<i>(If necessary)</i>
Conduct ACRS meeting	Sept. 2010		Open to public.
Incorporate comments from public, ACRS & OGC – complete final quality check for NUREG, NUREG/CR, and NUREG/BR	Sept 1 – 30, 2010		
Complete final technical edit of draft NUREG, NUREG/CR, and NUREG/BR	Sept 2010		
Complete NRC Offices final review and concurrence of NUREG, /CR & /BR	Oct 1 – 21, 2010		
Brief EDO on status of SOARCA	Mid-Oct 2010		Brief EDO Every 3 months

Activity	Due	Lead	Notes/Status
Conduct final SOARCA Steering Committee Briefing	Thursday Oct 21, 2010		
Present NUREG and recommendations to Commission	Thursday Oct 28, 2010		



SOARCA NUREG and NUREG/BR Review and Approval Process

ID	Task Name	Duration	Start	Aug '09	Sep '09	Oct '09	Nov '09	Dec '09	Jan '10	Feb '10	Mar '10	Apr '10	May '10	Jun '10	Jul '10	Aug '10	Sep '10	Oct '10	Nov '10
1	SOARCA NUREG Rev 0 to Peer Review Committee	0d	Wed 7/29/09	7/29															
2	Incorporate Peer Review Comments into Vol 1 & 2	45d	Fri 11/13/09				11/13												
3	Technically edit SOARCA NUREG - Rev. 1	10d	Fri 1/15/10						1/15										
4	NRC technical review of SOARCA NUREG Rev. 1	10d	Fri 1/15/10						1/15										
5	Incorporate NRC Technical Comments	6d	Fri 1/29/10						1/29										
6	DSA Mgmt review of draft NUREG	2d	Mon 2/8/10						2/8										
7	Send SOARCA NUREG Rev. 1 to Peer Review Comm	0d	Tue 2/9/10						2/9										
8	Brief Commissioners' TAs	0d	Thu 2/18/10						2/18										
9	3rd meeting of Peer Reviewers	4d	Tue 3/2/10						3/2										
10	Internal NRC review of SOARCA NUREG Rev 1	25d	Wed 2/10/10						2/10										
11	Fact-Check of NUREG, NUREG/CR, NUREG/BR by plants	10d	Tue 3/16/10						3/16										
12	Incorporate comments from Peer Reviewers, NRC, & plants	10d	Tue 3/30/10						3/30										
13	Review of NUREG Rev. 2 by DSA Mgmt & Steering Comm	5d	Tue 4/13/10						4/13										
14	Issue SOARCA NUREG Rev.2 to ACRS for review	0d	Mon 4/26/10						4/26										
15	Issue SOARCA NUREG Rev. 2 to OGC for review	0d	Mon 4/19/10						4/19										
16	Review of Draft SOARCA NUREG by ACRS & OGC	40d	Mon 4/26/10						4/26										
17	Incorporate ACRS & OGC Comments	11d	Mon 6/21/10						6/21										
18	Review of NUREG Rev 4 by DSA Mgt & Steering Comm	5d	Tue 7/6/10						7/6										
19	Brief EDO's Office on Status of SOARCA NUREG	0d	Thu 7/15/10						7/15										
20	NRC Regional Office Review of Rev 3	5d	Tue 7/6/10						7/6										
21	Incorporate comments from reviewers	5d	Fri 7/16/10						7/16										
22	Review of NUREG Rev 3 by DSA Mgt & Steering Comm	0d	Thu 7/22/10						7/22										
23	Brief RES Mgmt on Rev 3	0d	Tue 7/27/10						7/27										
24	Release SOARCA NUREG for public review	0d	Fri 7/30/10						7/30										
25	Public Meetings at Surry & Peach Bottom	7d	Mon 8/23/10						8/23										
26	Submit Final SOARCA NUREG to ACRS for review	31d	Wed 7/28/10						7/28										
27	Submit final SOARCA NUREG to OGC for review	31d	Wed 7/28/10						7/28										
28	Incorporate ACRS & OGC Comments	13d	Thu 9/9/10						9/9										
29	RES Mgmt review of final SOARCA NUREG	15d	Tue 9/28/10						9/28										
30	Brief Steering Committee on final SOARCA NUREG	0d	Mon 10/18/10						10/18										
31	Present final SOARCA NUREG to Commission	0d	Mon 10/25/10						10/25										
32																			
33	Finalize uncertainties technical approach	25d?	Mon 3/15/10						3/15										
34	Consider Peer Review recommendations	12d?	Mon 3/15/10						3/15										
35	Tool development	12d?	Thu 4/1/10						4/1										
36	Finalize parameter list and distribution	48d?	Wed 3/3/10						3/3										
37	Iterate on final parameter list	21d?	Wed 3/3/10						3/3										
38	Parameter sensitivity studies	22d?	Thu 4/8/10						4/8										
39	Production uncertainty calculations	53d?	Mon 5/10/10						5/10										
40																			
41	Documentation	108d?	Wed 3/3/10						3/3										
42	First DRAFT	86d?	Wed 3/3/10						3/3										
43	NRC review	5d	Mon 7/5/10						7/5										
44	Final DRAFT	14d	Tue 7/13/10						7/13										
45	SOARCA Team Meeting	5d?	Thu 4/1/10						4/1										

Revising

Project: SOARCA NUREG Schedule 0  
 Date: Wed 3/10/10

Task: Milestone: Rolled Up Task: Rolled Up Progress: External Tasks: Group By Summary:

Progress: Summary: Rolled Up Milestone: Split: Project Summary: Deadline: