



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

November 10, 2011

MEMORANDUM TO: File

FROM: Sherry Meador **/RA/**
Technical Secretary, ACRS

SUBJECT: CERTIFICATION OF THE MINUTES OF THE MEETING
OF THE SUBCOMMITTEE ON ABWR REGARDING COL
APPLICATION OF SOUTH TEXAS PROJECT (STP) ON
MARCH 9, 2011

The minutes of the subject meeting were certified on August 22, 2011 as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment:
As stated

Certified by: Said Abdel-Khalik
Certified on: August 22, 2011

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MINUTES OF THE
ACRS ADVANCED BOILING WATER REACTOR SUBCOMMITTEE MEETING
MARCH 9, 2011, ROCKVILLE, MD

The ACRS Advanced Boiling Water Reactor (ABWR) Subcommittee held a meeting on March 9, 2011 in Room T2B1, 11545 Rockville Pike, Rockville, Maryland. The meeting convened at 8:30 am and adjourned at 11:22 am.

The entire meeting was open to the public. No written comments or requests for time to make oral statements were received from members of the public related to this meeting.

ATTENDEES

ACRS Members/Consultants/Staff

Said Abdel-Khalik, Chairman
J. Sam Armijo, Member
Charles Brown, Member
John Stetkar, Member
Dennis Bley, Member
Michael Ryan, Member
Michael Corradini, Member
Graham Wallis, ACRS Consultant
M. Banerjee, Designated Federal
Official

NRC Staff

Rocky Foster, NRO
Ed Roach, NRO
Mark Tonacci, NRO
Eugene O. Eagle, Jr, NRO
Eric Lee, NSIR
Robert Moody, NSIR
John Rycyna, NSIR
T. R. Tjader, NRO
Stacy Joseph, NRO
Dinesh Taneja, NRO

Syed Haider, NRO
Dan Barss, NSIR
Michael Eudy, NRO
Don Habib, NRO
Charles Harbuck, NRO
Mark Lintz, NRO
Jim Kellum, NRO
Ed Robinson, NSIR
Stephen Williams, NRO
Craig Erlanger, NRO

Other Attendees

Scott Head, NINA
George Cashell, NINA
Tom Daley, NINA
Scot Stephens, NINA
Coley Chappell, NINA
Fred Puleo, NINA
Milton Rejcek, NINA
David Dauzat, NINA
Jay Phelps, STPNOC
Edgar Brown, Westinghouse
Steve Frantz, MLB
Craig Swanner, MPR
George Strambach, Westinghouse
(telephone bridge line)

SUMMARY

The purpose of the meeting was to review Chapters 11, 13 and 16 of the Safety Evaluation Report with no open items associated with the combined license application for South Texas project Units 3 and 4. Discussion also included selected follow-up action items resulting from prior ABWR Subcommittee meetings. The meeting transcripts are attached and contain a detailed description of each matter discussed during the meeting. The presentation slides and handouts used during the meeting are attached to the transcripts.

The significant issues discussed during the meeting are listed in the Table below.

SIGNIFICANT ISSUES	
1. New radwaste system (departure) follows EPRI guidance – Upon Member Ryan’s question, Mr. Rejcek, NINA, noted the expected operational dose saving of 75% (new dose 25% of original) (Chapter 11)	Transcript p 8-9, 60
2. ACRS Action Item 9 on underground piping carrying radioactive fluid - Mr. Rejcek, NINA, addressed how underground release is handled (e.g., H3) in STP design and operational programs, these piping run through tunnels, designed for zero leakage, or above/ below the water table. Lessons learned from operating units were discussed [STP program for minimization of contamination for plant-life cycle for underground piping] – Action Item 9 was closed.	NINA presentation slide # 7 under Chapter 11. Transcript pages 9-17, 57-60, 133
3. Scott Head, NINA, described the transition from NINA to STPNOC as the operating organization of STP 3&4, once licensed. Upon Chairman Abdel-Khalik’s question, Mr. Head stated the transition would happen upon completion of plant construction, when all the ITAAC is closed, and NINA is ready to load fuel.	Transcript pages 7, 22-24
4. Member Bley brought up the issue of STP Cyber Security program (COLA Part 8-follows RG 5.71 template) – Action Item 35- Concern was raised by Member Brown as to the lack of details regarding the architecture, communication systems and network (e.g., communication interface between control room and outside the plant, e.g., EOF). Staff considers cyber security as an operational program and no ITAAC exists. Future inspections will verify that the strategy and architecture meet the requirements of the approved cyber security plan. Members to review program document provided by NRO and decide need for briefing – NRO staff to coordinate with the applicant for future briefing (New Action Item 85). (Chapter 13)	Transcript pages 28-55

<p>5. Part 21 report on plant operation with one main steam line isolated – The initial question from Chairman Abdel-Khalik asked if the analysis methodology was included in the STP reactor vibration analysis. The answer was negative. NINA proposed TS would require analysis before such operation is allowed. (Chapter 16)</p>	<p>Transcript pages 62-66</p>
<p>6. Member Stetkar asked if operation in Mode 1, 2 and 3 is allowed with containment purge or vent valves open. TS operability requirements, valve position for inerting and de-inerting containment (24 hours into and out of an outage), type of valves used, were discussed. (Chapter 16)</p>	<p>Transcript pages 66-71</p>
<p>7. ACRS Action item 67- NINA addressed the question, originally raised by Member Brown at the 2/8/11 ABWR Subcommittee meeting, regarding determinism of RTIS, if NINA should add a statement to FSAR Chapter 7 regarding hardware for the watchdog timer and that it is independent and diverse from FPGA. NINA submitted a revision on the docket to FSAR Appendix 7DS that included such a statement. This item was closed.</p>	<p>NINA presentation slide #4 on ACRS Action Items and transcript pages – 98-99, 133</p>
<p>8. ACRS Action item 68 (Chapter 7) – Qualification test of Common Q platform at 70% loading - Coley Chappell, NINA, asked for a clarification on the original question raised by Member Brown at the 2/8/11 ABWR Subcommittee meeting as to members’ expectations. Member Brown noted that he wanted a presentation that demonstrated how the Common Q platform was qualified to operate at the 70 percent loading.</p>	<p>NINA presentation slide #5 on ACRS Action Items and transcript pages 99-100</p>
<p>9. ACRS Action item 69 (marked in NINA slides as Action Item 70 under Chapter 16 presentation) – Members’ question from 2/8/11 ABWR Subcommittee meeting regarding TS allowed bypass of sensors and channels of ELCS - Original question raised by Members Stetkar and Brown was if TS would allow simultaneous bypass of a sensor division and an ESF actuation division. A long discussion tried to clarify the differences between the RTIS and ELCS logic and the system TS. This item was closed.</p>	<p>NINA presentation slides #6-12 on Chapter 16 and transcript pages 72-96, 133</p>
<p>10. Members went through a list of action items resulting from the previous day’s (3/8/11) meeting (see action items list at the end of this document or the 3/8/11 meeting minutes for more detail). Member Corradini pointed out the need for NINA to justify changes they plan to make to the downstream fuel effects testing even if changes follow ACRS members’ suggestions. Also, the need for the staff to justify their acceptance was noted.</p>	<p>Transcript pages 102-129, 131-132</p>

<p>11. Discussed status of ACRS Acton Items updated or closed at 3/8/11 meeting:</p> <ul style="list-style-type: none"> • Item #46 - Question asked by Member Shack on the need for identifying and justify assumptions regarding ppm boron in solution used in chemical effects analysis - closed • Item #47a – Need for a future briefing on downstream effects testing and analysis – remains open. • Item #47b - basis for assuming destroyed fiber to be 10% of one ft³ – was revised by NINA to be 100% of one ft³ - closed. • Item #49 - future briefing on design of vacuum breaker shield – closed 	<p>Transcript pages 129-131</p>
<p>12. As the meeting was about to end well before the 3:30 pm end time noted in the FRN, the DFO was asked to check the telephone bridge line at that time to contact any member of the public ready to provide comments or questions. Post meeting note - The DFO followed the request and verified nobody was on the telephone.</p>	<p>Transcript pages 134, 135</p>

List of action items, resulting from this meeting and actions items from previous ABWR Subcommittee meetings that are closed in this meeting are included in the Table below.

ACRS ABWR Subcommittee Action items

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
March 2, 2010 Subcommittee Meeting							
1	3/2/10	<p>Dr. Armijo expressed interest in the fuel related topical reports and the effect of the fuel change (amendment to COL) on the analyses in Chapters 4 and 15.</p> <p>Communicate ACRS desire to review fuel amendment (first reload) application that replaces GE 7 fuel (DCD) to contemporary fuel (Armijo)</p>	Chapter 4	SER	ACRS (Abdullahi/ Banerjee)	<p>Potential impact to other areas including Chapters 6 and 15 in addition to Chapter 4.</p> <p>Closed as Follows: A list of fuel amendment related technical/ topical reports has been provided. ACRS (Dr. Armijo lead) to determine which ones the Committee would like to review and the responsible Subcommittee(s). Proposal to be presented at the April P&P.</p> <p>ACRS, with Member Banerjee's lead, will review the TRs.</p>	4/9/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
2	3/2/10	Future presentation of staff and STP to address diesel qualification to 60 degrees C, related occupancy issues and HVAC changes. (Abdel-Khalik)	Chapter 9	COLA/SER	STP/NRO	STP to provide additional discussion on habitability at future Subcommittee meeting on impact of higher temperature (departure T1 2.15-2) when Chapter 9 is presented to the Subcommittee. The issue of diesel qualification was addressed at 3/18/10 meeting and the issue of habitability was addressed at 10/20/10 meeting satisfactory to the members.	10/20/10-closed
3	3/2/10	Part 21 reports issued on stability analysis post DCD need to be addressed (Abdel-Khalik)	Chapters 4 and 15	COLA/SER	STP/NRO	STP and staff to address at March 18, 2010 meeting. Closed as follows: STPNOC will provide an updated Stability Option III analyses including resolution of the Part 21 issues before fuel load (COM 4.4-3) Staff will follow-up commitment through established processes.	3/18/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
4	3/2/10	Part 21 reports issued post DCD - how staff identifies, captures and addresses Part 21 issues that affect the ABWR design? (Abdel-Khalik)		COLA/SER	NRO/STP	<p>Staff plans to address it at a future meeting.</p> <p>STP is preparing a list of all applicable Part 21 items since original design certification and will develop a process to address them in the COLA space. Staff to follow-up and address at a future ACRS meeting. STP provided additional information on 6/8/10 (slides 8 and 9), 10/20/10 (slides 9 -11, ACRS Action Items), and 3/9/11 (Slide 5 on Chapter 16). STPNOC made changes to FSAR and TS bases to address 1988 Part 21 on BWR operation with a MSL isolated.</p> <p>Also, how to address it process-wise. The EDO response dated 9/10/10 to ACRS interim letter, dated 8/9/10, committed to develop guidance for addressing Part 21 reports in new reactor licensing process. The staff will update ACRS when such guidance is completed.</p>	This item is closed. See item 51.
5	3/2/10	Deletion of MSIV closure and scram on hi radiation	Chapters 7 & 19	DCD	-	BWROG Topical Report reviewed and approved by NRC. Closed	3/2/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
6	3/2/10	FW line break mitigation – This accident is not described in Chapter 15 (Abdel-Khalik).	Chapter 6	COLA/SER	STP/NRO	The applicant stated that this accident does not affect Chapter 15 doses and that the entirety of the accident and its effects will be discussed in the presentation on Chapter 6. Addressed during 6/24/10 meeting. Refer to Sections 6.2, 6.3 and 15.6.	6/24/10
7	3/2/10	FPGA – address in more detail (e.g., inter-channel communication, determinancy) Application of Common Q platform (Brown)	Chapter 7	COLA/SER	STP/NRO	Staff to discuss at 5/20 meeting. NRO to provide documents to Subcommittee in advance of briefing on this topic as needed. Based on 5/20 meeting FPGA is closed. Application of Common Q platform, independence and determinancy are being considered by Member Brown. Based on the applicant's presentation on Chapter 7 at 2/8/11 SC meeting this item is closed.	2/8/11
8	3/2/10	Address GSI-191 flow blockage (not just for fuel) (Abdel- Khalik)	Chapter 6	COLA/SER	STP/NRO	Staff and STP to discuss this issue during presentation on strainers and downstream effects testing as part of Chapter 6 on 6/24, 2010. This item is part of item 47.	6/24/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
9	3/2/10	Address how underground release is handled (e.g., H3) in STP design and operational programs. Address if underground piping carrying radioactive liquids run through tunnels, designed for zero leakage, or above/ below the water table. (Ryan)	Chapter 11	COLA/SER	STP	<p>To be discussed at a future meeting. Implementation of commitments made in STP RAI response, letters U7-C-STP-NRC-100156, 6/30/10 and U7-C-STP-NRC-090121, 8/26/09, and staff follow-up will be the subject.</p> <p>AT 10/20/10 ABWR SC - STPNOC slide 12 on Action Items, committed to NEI 08-08A. More details about corrosion resistance of material, coatings, wrappings and types of connection (flanged?) were asked.</p>	<p><u>3/9/11</u></p> <p><u>Closed per NINA briefing (slide # 7 under Chapter 11)</u></p>

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10	3/2/10	GALE code – impact of the very conservative approach used by the staff and need for uncertainty analysis and use of actual experience data. (Ryan)	Chapter 12	SER	NRO	<p>Dr. Ryan asked if staff has any insights on how results from the new GALE code will compare to results from the old GALE code. What impact is this likely to have on the application? He also expressed concern regarding the effect on the applicant of making significant changes to RGs in the middle of a review?</p> <p>Staff to address this issue generically at a future meeting.</p> <p>Staff discussed the issue at 3/18/10 SC meeting to Committee's satisfaction. The issue is closed.</p>	3/18/10
11	3/2/10	Disparity between staff and STP presentation related to all x/q values being bounded by DCD.	Chapter 15	SER	NRO	Staff acknowledged error in presentation slides. Issue closed.	3/2/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
12	3/2/10	Related to HFE, how specific DAC acceptance criteria be amenable to staff inspection (Bley)	Chapter 18	SER	ACRS	<p>DAC issues will be closed after the issuance of the COL. This means that the Committee will not be able to track the closure of DAC-related technical issues before they are requested to write a letter on the staff's SER.</p> <p>ACRS to receive briefing on digital I&C DAC at 570 ACRS meeting on 3/5/10, and decide if further follow-up is needed.</p> <p>Also see item 17. At 10/20/10 ABWR SC meeting members decided that this issue will be rolled into the generic ACRS comments on the DAC process. This item was closed.</p>	10/20/10
13	3/2/10	Subcommittee would like a better understanding of how adding dry/wetwell pressure indication on SPDS gives higher assurance of control room capability post accident when SPDS is non-safety related (Stetkar)	Chapter 18	SER	NRO	<p>Staff to provide additional information to ACRS.</p> <p>Staff presentation at 10/20/10 ABWR SC meeting. See meeting minutes. This item was closed based on information provided and the application of the HFE process.</p>	10/20/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
14	3/2/10	EDG qualification to increased ambient temperature (Stetkar)	Chapters 8, 9	FSAR/SER	STP/NRO	STP to discuss at next meeting. DG qualified to room temperature and electronics are located in cabinet outside room. This item is closed.	3/18/10
15	3/2/10	Subcommittee would like a better understanding of the basis for SER conclusion related to MCR and RSS and operator ability in switching from a digital MCR to analog RSS (Stetkar)	Chapter 18	SER	NRO	Staff to address this question in the context of the Chapters 7 and 18 discussions on RSS. Staff presentation at 10/20/10 ABWR SC meeting. See meeting minutes. This item was closed based on information provided and the application of the HFE process through design and operator training.	10/20/10
16	3/2/10	May need more aggressive staff review of HFE. Dr. Bonaca indicated that he might have questions on Chapter 18 (human factors engineering) after he reflected on the presentation. (Bonaca)	Chapter 18	SER	ACRS/NRO	Staff to address: Dr. Bonaca referring to questions from Dr. Stetkar above – Treatment of SPDS, core cooling display parameters and their bases. Closed-refer to item 15 above.	Closed

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
17	3/2/10	Staff needs to formalize handling of DAC	Chapter 18	NRO Programs	ACRS/NRO	ACRS comments in their 7/24/09 letter applies, plus another letter is expected to be drafted in July 2010. At 10/20/10 ABWR SC meeting members decided that this issue will be rolled into the generic ACRS comments on the DAC process. This item was closed.	10/20/10
18	3/2/10	Related to SER open item 1-3 on aging management, it was noted that detailed technical review is conducted under license renewal process when it should be an issue to consider from the first day on. Dr. Stetkar noted that additional guidance in the area may be helpful.	Chapter 1	Aging management	ACRS/NRO	Staff plans to close this issue in the staff's final SER with no open items.	
19	3/2/10	Occupational doses received from ABWRs and how they compare to occupational doses at other reactors. Can we compare ABWR to other Japanese BWRs as well as to U.S. BWRs? (Ryan)	Chapter 12	ABWR occupational dose	NRO	Staff to address this issue at a future meeting. At 3/18 SC meeting, NRO and STP provided occupational dose data for Japanese and US BWRs since 1993 and the average dose for the Kashiwazaki-Kariwa plants, two of which are ABWR units, from 1997 thru 2002.	3/18/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
March 18, 2010 Subcommittee Meeting							
20	3/18/10	Number of times RCIC is expected to cycle on and off during an 8 hour SBO event (Stetkar)	Chapter 5	RCIC	STP	RCIC qualification and Operator response may be challenged due to repeated cycling (Response-4 times during 8 hr. SBO-STP slide 18 and 19, 6/8/10 ABWR SC-Closed)	6/8/10
21	3/18/10	Rx vessel EOL fluence value and error band (Abdel-Khalik/Armijo)	Chapter 5	Rx Vessel Material	STP	COLA uses DCD value, will be updated once PTLR is finalized/approved	3/18/10
22	3/18/10	Ensure all documents (engineering, design, procedures, PTS etc) at the plant use a consistent set of units (either British or Metric). (Abdel-Khalik)	All	All	STP	Too many number of problems and near misses happen when operators and technicians at the plant have to take action based on inconsistent units. Closed per STP slide 8&9 presented at 6/24/10 meeting.	6/24/10
23	3/18/10	Address how K6 and K7 RCS leakage TS limits compare with proposed STP numbers, and justify STP limits, if higher. Also address instrument sensitivity and how it compares with 1 gpm number. (Armijo)	Chapter 5	PTS	STP	Unidentified leakage limit was increased from 1 gpm DCD value to 5 gpm STP TS as STP is not using LBB. Closed per STP slide 10&11 presented at 6/24/10 meeting.	6/24/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
24	3/18/10	Confirm that East transmission lines are capable of supplying all 4 units' safety loads when other lines are lost. (Stetkar/Sieber)	Chapter 8	FSAR	STP	Concern was that given shared transmission right of way and towers, all other lines could be lost under a storm situation. Closed per STP slide 10, ABWR SC meeting 6/8/10.	6/8/10
25	3/18/10	State if there are single or double closing coils on switchyard breakers. (Stetkar)	Chapter 8	FSAR	STP	There may be additional questions if the answer is "single." 6/8/10 ABWR SC – STP slide 11, answer is "single closing coil." Stetkar question-demonstration of capability to reclose upon (single?) failure of DC power under worst switchyard fault to restore one offsite power supply. Closed per STP slide page 12 presented at 6/24/10 meeting.	6/24/10
26	3/18/10	Provide switchyard control system backup battery discharge time. (Stetkar/Sieber)	Chapter 8	FSAR	STP	Breakers may not close after LOOP clears if battery exhausted. Batteries sized to operate 10 hrs, expected life 15-20 yrs.- re: STP slide 12 at 6/8/10 ABWR SC.	6/8/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
27	3/18/10	Performance of switching logic under various electrical transients. (Stetkar)	Chapter 8	FSAR	STP	STP may want to address it beyond COL while detailed design is finalized. STP slides 14-16, 6/8/10 ABWR SC meeting. Stetkar to review and decide if sufficient to close action item. See STP slides 7-11 on Chapter 8 at 10/20/10 ABWR SC.	10/20/10-closed
28	3/18/10	NRO to address how the SBO rule requirements are being ensured after operator action time is factored into the scenario with STP specification of "less than 10 minutes CT startup time." (Stetkar)	Chapter 8	SER	NRO	As STP chose not to do SBO coping analysis, they have to demonstrate that the CTs are capable of powering shutdown buses within 10 minutes of the onset of SBO (10 CFR 50.63 (c)(2)). The scenario involves needed operator action to shed/load buses before breaker can be closed. EDO letter, 9/1/10 – discuss at next Chapter 8 briefing	10/20/10 – See NRO slides on Chapter 8, page 4 and backup-closed.
29	3/18/10	Address qualification of submerged 345 KV cables. (Brown)	Chapter 8	FSAR	STP	High water table prompted question on qualified life. STP slide 13, 6/8/10 ABWR SC meeting.	6/8/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
30	3/18/10	<p>Address when DRAP list will be effectively populated and staff review is completed.</p> <p>How does staff ensure the DRAP list and the process (COLA vs. ITAAC) related to it are acceptable? (Stetkar)</p>	Chapter 17	FSAR/SER	STP/NRO	<p>With evolving plant PRA and DRAP, members were concerned that ITAAC may not be an appropriate closer mechanism for DRAP list. STP slide 20 6/8/10 ABWR SC meeting –List and justifying analysis to be available to ACRS 3rd quarter 2011. Staff to address the ACRS review timing question.</p> <p>At the 6/24/10 ABWR SC meeting the staff discussed their review of evolving DRAP list thru an audit (3rd quarter of 2010 and inspection late 2011. STP/NRO will brief ABWR SC in future, time to be determined.</p> <p>10/20/10 ABWR SC STP slide 14 – Provided draft DRAP list, staff to provide audit report when available. Future presentation by STP on process with examples.</p>	
31	3/18/10	4.16 kV winding in CTG1 bus could carry two PIP buses together with one safety bus (Stetkar)	Chapter 8	FSAR/SER	STP	STP to confirm at a future meeting. STP slide 17 6/8/10 ABWR SC - confirmed	6/8/10

May 20, 2010 Subcommittee Meeting

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
32	5/20/10	During the presentation on preoperational testing, members Stetkar and Brown noted that they had identified "overlap testing" requirements for various systems but could not identify end-to-end testing requirements.	Chapter 14	FSAR	STP	STP to address at a future meeting. Closed per STP slide page 13 &14 presented at 6/24/10 meeting.	6/24/10
33	5/20/10	Dr. Abdel-Khalik wanted to know the steam velocity and how it compares to other plants that have undergone extended uprate.	Chapter 14	FSAR	STP	STP to address at a future meeting. Re: STP slide 15 of 10/20/10 ABWR SC presentation on Action items.	10/20/10- closed
34	5/20/10	Dr. Abdel-Khalik wants the staff to provide reports submitted regarding reactor flow induced vibration for review by the Committee, and a briefing on their review of the predictive analysis.	Chapter 14 Section 3.9.2	Tech. Report	NRO	This technical report is due from STPNOC in later 2010.	
35	5/20/10	Member Brown raised the issue of cyber-security ITAAC and whether or not it should be included in Chapter 14.	Chapter 14	ITAAC	NRO	NRO staff to address at a future meeting	

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36	5/20/10	Dr. Stetkar pointed out a possible inconsistency between the diagram of the backup SCRAM control circuit and the description of that circuit in the text.	Chapter 14	FSAR/SER	STP/NRO	STP and NRO staff to address at a future meeting. Text clarification withdrawn by STP. Re: Slide 16, 17 of 10/20/10 ABWR SC briefing on Action Items.	10/20/10- closed
June 8, 2010 Subcommittee							
37	6/8/10	Compile ABWR SSAR in a CD and provide to members	-	DCD	ACRS Staff	CD mailed to the members during the week of 6/13/10	Closed
38	6/8/10	STP White paper on PRA screening process for plant changes – provide to members	Chapter 19	FSAR	STP	E-mailed to members on 6/10/10 and a CD provided on 6/11/10.	6/10/10
39	6/8/10	2006 MCR dam failure screening assessment	Chapter 19	FSAR	STP	E-mailed to members on 6/10/10 and a CD provided on 6/11/10.	6/10/10
40	6/8/10	Dam failure risk – Baecher paper, US Bureau of Reclamation data and Army Corps of Engineer report used in SER	Chapter 19	SER	NRO	E-mailed to members on 6/10/10 and a CD provided on 6/11/10	6/10/10

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
41	6/8/10 10/20/10	DW flood valve failure modes other than failure of fusible links considered in FSAR. <u>Operating experience? A small leak during normal operation would go undetected thus accumulating water in the lower drywell. Toshiba test results. (Bley)</u>	Chapter 19 Section 9.5.12	FSAR	STP	STP Slide 18, ABWR SC 10/20/10 provided results of a FEMA. Additional question on valve leak during normal operation (10/20/10).	
June 23-24, 2010 Subcommittee Meeting							
42	6/23/10	Main turbine missile analysis and maintenance program will be submitted to the NRC within 3 years after issuance of COL. ACRS wanted to be informed about staff's decision-making regarding adequacy of program.	Chapter 10, 3	SER	STP/NRO	The turbine design will meet acceptance criteria of SRP 3.5.1.3 and RG 1.115, will meet the minimum requirements in Table 3.5-1, STP Commitment. 3.5-1. Expected to be addressed in next Chapter 10 presentation.	At the 10/20/10 ABWR SC meeting STPNOC noted that documents may be submitted sooner.
43	6/23/10	Documented basis for adequacy of turbine rotor integrity related to FATT and Cv departure	Chapter 10	FSAR/SER	STP/NRO	EDO letter, 9/1/10 – discuss resolution at future briefing.	
44	6/23/10	NRO process for review of Tier 2 departures (review if qualifies as T2, not the technical adequacy)	Generic	SER	ACRS	ACRS to decide if they want to raise any issue regarding it.	

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
45	6/23/10, ACRS Letter 8/9/10	Provide RAI response regarding redundancy and diversity of turbine overspeed sensors including power supply – ITAAC very general in scope Staff to provide RAI response with or before the SER.	Chapter 10	RAI resp.	STP/NRO	EDO letter 9/10/10 – Resolution will be presented with final SE with no OI. Update provided by STP at 2/8/11 ABWR SC meeting. NINA will submit additional details on redundancy and diversity and on ITAAC.	
46	6/24/10	Identify and justify assumptions regarding ppm Boron in solution used in chemical effects analysis (GSI 191 ECCS Strainer)	Chapter 6	FSAR	STP/NRO	Important contributor regarding concentration of AI in SP (ECCS recirculating water). Closed per NINA slide#11/staff briefing at 3/8/11 ABWR SC meeting	3/8/11
47	6/24/10	a.Downstream effects: Future briefing on test and analysis (Lic. Condn.) b.Basis for assuming destroyed fiber (10% of 1 ft ³) reaching fuel	Chapter 6 Chapter 4	FSAR/SER	STP/NRO	STP to brief by 4/2011 At 3/8/11 ABWR SC meeting NINA noted that the assumption of 10% has been changed to 100% (Chapter 6 Slide#12)	3/8/11-Item 47b is closed
48	6/24/10	Provide three ERI reports used in staff review of containment analysis	Chapter 6	SER	NRO	Provided by NRO and included in background documents CD for 3/8/11 ABWR SC meeting to members.	Closed

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
49	6/24/10	Future briefing on design of vacuum breaker shield	Chapter 6	FSAR	STP	To address loading and height of water level. Closed per NINA briefing (Slides# 13-17) at 3/8/11 SC meeting.	3/8/11
50	6/24/10, EDO letter 9/10/10	Presentation on Toshiba Technical reports - strainer design and pool swell analyses	Chapter 6	FSAR	STP/NRO	NRO and ACRS staff to schedule. Closed per staff briefing at 3/8/11 SC meeting	3/8/11
51	EDO letter 9/10/10	Staff to update ACRS after developing guidance on the process of addressing Part 21 reports in new reactor licensing.	ACRS Letter dated 8/9/10	COLA/DC review process	NRO	NRO to advise ACRS staff when such briefing can be scheduled.	
52	EDO letter 9/10/10	Staff to brief ACRS on Long term cooling	SRM dated 5/8/08	COLA	NRO	NRO and ACRS staff to schedule	
October 20, 2010 Subcommittee Meeting							
53	10/20/10	NRO to submit for ACRS review technical report on reactor flow induced vibration	Section 3.9.2	SER	NRO	This technical report is due from STPNOC in later 2010.	Closed, duplicate of 34

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
54	10/20/10	Basis for STP being bounded by the DCD wind loading and design basis hurricane, i.e., basis for 3 second gust wind loading and the 100 year history record of hurricane within 50 miles of site (Stetkar).	Section 3.3 Chapter 2	FSAR	STP	STPNOC to address at 11/30 ABWR SC meeting. See Slide 41	Closed
55	10/20/10	Basis for the use of Regulatory Guide 1.76 Region II parameters	Section 3.3 Chapter 2	FSAR	STP	STPNOC to address at 11/30 ABWR SC meeting. See Slides 42-44	Closed
56	10/20/10	Confirm rail/truck large equipment access bay door in reactor building is water tight. (Stetkar)	Section 3.4 Chapter 2	FSAR	STP	STPNOC to address at 11/30 ABWR SC meeting. See Slides 45	Closed
57	10/20/10	Confirm levels of water-proofing of foundation of RSW pump house. (Stetkar)	Section 3H.6.6.4	FSAR	STP	STPNOC to address at 11/30 ABWR SC meeting. See Slides 46	Closed
58	10/20/10	Clarify various water level parameters discussed in Chapter 3 and how they were derived. (Stetkar)	Section 3.4	FSAR	STP	STPNOC to clarify FSAR (11/30/10 meeting slide 40)	

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
59	10/20/10	A value of 1×10^{-2} per year per plant was chosen as a conservative value for the product of strike and damage probabilities- provide basis.	Section 3.5, Chapter 10	FSAR	STP	STP to address at next Chapter 10 briefing.	
60	10/20/10	Types of commercial aircraft and frequency considered. (Stetkar)	Sections 3.5, 2.3	FSAR	STP	RAI response dated 9/14/09 provided to members.	10/25/10
61	10/20/10	Justify deviation from SRP related to wave height.	Chapter 2	FSAR	STP	Open item in SER	
62	10/20/10	The basis and application of the 30 minute response time upon a single passive failure of the RSW piping and how the analysis justify a 30 day supply for the UHS while accounting for the pipe failure. (Stetkar)	Section 9.2.5.5.2	FSAR	STP		
63	10/20/10	The basis for approx. 17 meter RSW pump NPSH and how it was calculated (specifically at end of 30d).	Section 9.2.15.2	FSAR	STP		

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
64	10/20/10	Generation of spurious signals in digital I&C cabinets containing only fiber optic cables due to heat related to fire in the room. (Stetkar)	Section 9.5.1	FSAR	NRO		
November 30, 2010 Subcommittee Meeting							
65	11/30/10	How MCR breach width derived from Froehlich's equation used in the FLDWAV model compare with the value used in confirmatory BREACH model	Section 2.4.4	FSAR/SER	STPNOC		
66	11/30/10	Comparison of staff's confirmatory SLOSH and STPNOC's ADCIRC at Gulf Coast	Section 2.4.4	FSAR/SER	STPNOC/NRO	The requested information provided by NRO staff was e-mailed to the members present at the 11/30 ABWR SC meeting on 12/1/10.	
February 8, 2011 Subcommittee Meeting							
67	2/8/11	Add to FSAR a statement regarding hardware for the watchdog timer that is independent and diverse from FPGA	Chapter 7	FSAR	NINA	Closed per NINA presentation slide #4 on ACRS Action items at 3/9/11 ABWR SC Meeting	3/9/11

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
68	2/8/11	a. Provide qualification test of Common Q platform at 70% loading. b. Confirm FSAR App. 7D maintains design to <70% loading.	Chapter 7	FSAR	NINA		
69	2/8/11	During Chapter 16 presentation to ABWR SC (3/9/11) address bypass of combination of sensors and channels of ELCS.	Chapter 7		NINA	Closed per NINA presentation slides #6-12 on Chapter 16 at 3/9/11 ABWR SC Meeting	3/9/11
March 8, 2011 Subcommittee Meeting							
70	3/8/11	NPSH for RCIC at 100 C (vice 77C) – number used for vapor pressure head needs to be justified (Stetkar)	Chapter 5, Table 5.4-1a	FSAR	NINA		
71	3/8/11	RCIC pump qualification w.r.t internal components and quality of lube water (Stetkar)	Chapter 5	FSAR	NINA		
72	3/8/11	How hydrodynamic load definition are developed and evaluated for ECCS strainers also at 100C? (Wallis)	Chapters 6, 3	FSAR	NINA	STP to cover this at Chapter 3 meeting	

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
73	3/8/11	Does analysis for Japanese plant bound thin bed effects? (Wallis)	Chapter 6	FSAR	NINA		
74	3/8/11	Justify use of Nucon fiberglass fiber vs. textile fiber, and as a surrogate. (Wallis)	Chapter 6	FSAR/SER	NINA/NRO		
75	3/8/11	Al-oxy-hydroxide an appropriate surrogate for ZnOxide? Experimental verification? (Wallis)	Chapter 6	FSAR	NINA/NRO		
76	3/8/11	Will STP use Zn injection? (Armijo)	Chapter 6	FSAR	NINA		
77	3/8/11	Justify use of partial length fuel assembly in test (Abdel-Khalik, Wallis)	Chapter 6	FSAR	NINA	Analyze post COL test data and determine need for future ACRS briefing	
78	3/8/11	Justify use of unheated test	Chapter 6	FSAR	NINA	See item 77 above	
79	3/8/11	NRC-accepted protocol for addition of debris-introduction of debris in different sequence may provide worse results (Wallis)	Chapter 6	FSAR/SER	NINA/NRO	See item 77 above	

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
80	3/8/11	RE: pressure drop modeling of the debris bed in test acceptance criteria, justify use of 2 power of flow rate in test acceptance criteria vs. use of other exponent such as 1.2. (Wallis)	Chapter 6	FSAR	NINA		
81	3/8/11	Multiple tests at same condition to demonstrate margin.	Chapter 6	FSAR	NINA		
82	3/8/11	Justify shorter transient loop time in test vs. actual debris deposition time. (Wallis)	Chapter 6	FSAR	NINA		
83	3/8/11	Justification that 1.7 factor is bounding given uneven distribution of debris at lower plenum, downward flow of HPCF thru core (Wallis)	Chapter 6	FSAR	NINA	Need to show margin	
84	3/8/11	Parametric study of K-factor vs. flow rate (AK, Wallis)	Chapter 6	FSAR	NINA		
March 9, 2011 ABWR Subcommittee Meeting							

No.	MTG/ date generated	ACTION ITEM	CONTEXT	AREA	LEAD(s)	COMMENTS / ACTION / DISPOSITION	Date Resolved
85	3/9/11	STP Cyber Security program (safeguards document)	Chapter13 COLA Part 8	FSAR/COLA	ACRS	Members to review program document provided by NRO and decide need for briefing, also see item 35	

Documents provided to the Subcommittee

1. ACRS Action Item List – ABWR Subcommittee on STP COLA
2. NINA Letter dated 2/23/2011 with proposed revision to FSAR Appendix 7DS to address the ACRS question on watchdog timer.
3. Background Documents
 - a. STP SER without Open Items Chapters 11, 13 & 16, and transmittal memo
 - b. STP FSAR, Rev. 4, Chapters 11, 13 & 16
 - c. NEI 07-03A, Rev. 0, Generic FSAR Template Guidance for Radiation Protection Program Description, May 2009
 - d. NEI 07-09A, Rev. 0, Generic FSAR Template Guidance for Offsite Dose Calculation Manual (ODCM) Program Description, March 2009
 - e. NEI 07-10A, Rev. 0, Generic FSAR Template Guidance for Process Control Program (PCP), March 2009
 - f. NEI 08-08A, Rev. 0, Generic FSAR Template Guidance for Life Cycle Minimization of Contamination, October 2009
 - g. SECY 05-0197, Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, 10/28/2005
 - h. Regulatory Guide 5.71, Cyber Security Programs for Nuclear Facilities, 1/2010
 - i. NEI 06-13A, Rev. 1, Template for an Industry Training Program Description
 - j. NEI 99-01, Rev. 5, Methodology for Development of Emergency Action Levels
 - k. NEI 06-06, Rev. 5, Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites
 - l. NRC Acceptance Letter on NEI 06-06, Rev. 5, dated 12/2/2009
 - m. RAI response from STPNOC (NINA), dated 8/27/2008, containing Emergency Plan changes and Evacuation Time Estimates
 - n. RAI response from STPNOC (NINA), dated 9/28/2009, on Emergency Action Level, Initiating Conditions etc.
 - o. RAI response from STPNOC (NINA), dated 6/1/2010, on TSC Habitability
 - p. RAI response from STPNOC (NINA), dated 10/27/2010, on Fitness for Duty
 - q. FEMA Interim Finding Report for Reasonable Assurance, dated 10/8/2009
 - r. STP ITAAC, Rev 4
 - s. Tier 1 FSAR Information, Rev 4
 - t. STP Departure Report, Rev 4
 - u. STP COLA Proprietary Report, Rev 4
 - v. STP COLA Part 5, Emergency Planning, Rev 4

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

ABWR SUBCOMMITTEE MEETING

OPEN SESSION

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WEDNESDAY

MARCH 9, 2011

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ROCKVILLE, MARYLAND

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The Advisory Committee met at the
 Nuclear Regulatory Commission, Two White Flint
 North, Room T2B3, 11545 Rockville Pike, at 8:30
 a.m., Said Abdel-Khalik, Chairman, presiding.

COMMITTEE MEMBERS:

- SAID ABDEL-KHALIK, Chairman
- JOHN W. STETKAR, Member-at-Large
- J. SAM ARMIJO, Member
- DENNIS C. BLEY, Member
- CHARLES H. BROWN, Member
- MICHAEL L. CORRADINI, Member
- MICHAEL T. RYAN, Member

1 ACRS CONSULTANTS PRESENT:

2 GRAHAM B. WALLIS

3 NRC STAFF PRESENT:

4 CRAIG ERLANGER, NSIR/DSP

5 MICHAEL EUDY, NRO/DNRL/NGE2

6 ROCKY FOSTER, NRO/DNRL/BWR

7 CRAIG HARBUCK, NRO/DCIP/CTSB

8 STACY JOSEPH, NRO/DNRL/BWR

9 ERIC LEE, NSIR/DSP

10 ED ROACH, NRO/DCIP/CHPB

11 JOHN RYCINA, NSIR/DSP/ISCPB

12 MARK TONACCI, NRO/DNRL/BWR

13 STEPHEN WILLIAMS, NRO/DCIP/CHPB*

14 GEORGE WUNDER, NRO/DNRL/NGE2

15 MAITRI BANERJEE, Designated Federal Official

16

17 ALSO PRESENT:

18 ED BROWN, Westinghouse

19 STEVE CASHELL, NINA Licensing, STP 3&4

20 COLEY CHAPPELL, STPNOC

21 THOMAS DALEY, NINA Engineering, STP 3&4

22 DAVE DAUZAT, NINA I&C Engineering, STP 3&4

23 SCOTT HEAD, NINA Manager, Regulatory Affairs,

24 STP 3&4

25 JAY PHELPS, STPNOC Operations Manager

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1 ALSO PRESENT (CONT'D)

2 FRED PULEO, NINA Licensing, STP 3&4

3 MILTON REJCEK, NINA Engineering, STP 3&4

4 GEORGE STRAMBACK, Westinghouse*

5 CRAIG SWANNER, TANE Licensing

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7 *Participating via telephone

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P-R-O-C-E-E-D-I-N-G-S

8:29 a.m.

CHAIRMAN ABDEL-KHALIK: The meeting will now come to order.

This is a continuation of yesterday's meeting of the ABWR Subcommittee of the Advisory Committee on Reactor Safeguards dealing with the South Texas Project COL application and the corresponding safety evaluation reports prepared by the staff.

I'm Said Abdel-Khalik, Chairman of the Subcommittee.

ACRS Members in attendance today are Charlie Brown, Sam Armijo, Dennis Bley, Mike Ryan and John Stetkar. Dr. Corradini will join us later this morning. Dr. Graham Wallis, ACRS Consultant is also in attendance. Ms. Maitri Banerjee is the Designated Federal Official for this meeting.

Today's meeting will cover Chapters 11, 13 and 16. In addition, the Applicant plans to address several ACRS action items that resulted from the ACRS Members' questions at the February 8th Subcommittee meeting on Chapter 7. The staff and the Applicant may also discuss other action items from previous ABWR Subcommittee meetings.

This meeting is being conducted under the

1 same rules announced yesterday. So at this point, I'd
2 like to call on Mr. Mark Tonacci of NRO to begin the
3 presentation.

4 MR. TONACCI: Good morning, Mr. Chairman,
5 Members of the Committee. Thank you for your time
6 today and time reviewing all of the documentation that
7 we sent to you.

8 I have no prepared comments. I look
9 forward to an engaging discussion today just like
10 yesterday. Thank you.

11 CHAIRMAN ABDEL-KHALIK: Thank you.

12 So at this time, we'll move on to NINA's
13 presentation.

14 MR. HEAD: Thank you. Good morning. And
15 thanks for having us back today.

16 This first Chapter we're going to discuss
17 is Chapter 11. There's our pretty much standard
18 agenda. And the attendees, the last time we briefed
19 you on Chapter 11, Milton Rejcek gave a briefing on
20 the rad waste system and he'll be leading the
21 discussion here today also.

22 I'd like to note that as I indicated
23 yesterday, our operations manager Jay Phelps would be
24 joining us today, and he is with us for each of these
25 presentations.

1 And in case there's a question, I was
2 going to go ahead and note that you'll notice we had
3 talked about the NINA transition last meeting, and you
4 understand that's going on. As part of that
5 transition of the process we're going through, the
6 operations personnel are staying with STPNOC. They've
7 not been loaned to NINA. And so since our ultimate
8 goal is for STPNOC to operate the plant, that's an
9 appropriate thing to do. But it has not at all
10 impacted our working relationship as you'll see today.
11 So I would just note that based on our discussion we
12 had last time.

13 And with that, I'm going to turn it over
14 to Milton.

15 MR. REJCEK: Good morning. I'll first
16 start with a quick summary for Chapter 11.

17 The rad waste system, the DCD systems were
18 replaced with some of the more current technology.
19 What we did was basically eliminated the high-dose,
20 high-maintenance items like the evaporator. We also
21 added some additional tanks to give us better
22 segregation of rad wastes and support for re-use.
23 Conventional filters were replaced with reverse
24 osmosis. That's all part of your vendor modular rad
25 waste systems. The solid waste drumming and

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1 incineration systems that were part of the certified
2 design have been removed and eliminated. And then
3 lastly in Chapter 11-5 on the process radiation
4 monitoring systems, we made a few changes there that
5 basically allowed us to use some of the more recent
6 technology on monitors and so forth.

7 With that, that left us with no remaining
8 items as far as RAIs on Chapter 11. Everything has
9 been closed for a few months now.

10 We have one last item.

11 Any question on the first?

12 CHAIRMAN ABDEL-KHALIK: Any questions at
13 this point?

14 MR. REJCEK: I may be moving too fast.

15 MEMBER RYAN: That's all right.

16 On slide 4, you've listed a number of
17 improvements. Do you have any insights yet on those
18 savings or operational radiation protection
19 improvements that have resulted from those changes?

20 MR. REJCEK: Yes. In Chapter 12, there's
21 a section there that we covered, and we reduced the
22 dose. We actually used an EPRI document where they
23 evaluated where they had evaporators and shifted other
24 systems and we used that as our base and then when
25 back and figured out what we thought we'd do. And it

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1 cut it down by one fourth.

2 MEMBER RYAN: Twenty-five percent savings?

3 MR. REJCEK: Yes.

4 MEMBER RYAN: Okay. And I think that's an
5 important aspect.

6 MR. REJCEK: Right. And that is
7 documented in the COLA.

8 MEMBER RYAN: Right. Thanks.

9 MR. REJCEK: Okay. Any other questions?

10 MR. HEAD: As we pointed out, obviously
11 the last time, we've had lots of rad waste experience
12 at 1 and 2. And this was our opportunity to take
13 advantage of that experience. And that's clearly what
14 we've done with units 3 and 4.

15 MR. REJCEK: So as I said, all of the
16 technical issues, the RAIs are now closed regarding
17 Chapter 11.

18 The last remaining item was ACRS action
19 item #9 which had to do with underground piping
20 carrying radioactive fluids. And the next slide, we
21 cover some of the things that South Texas has done
22 regarding that.

23 First off, since we last talked, NEI 08-08
24 is now incorporated by reference with the
25 clarification that the design changes for certified

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1 design materials are not required. And that's because
2 the design certification preceded 10 CFR 20.1406. So
3 obviously the design didn't require 1406 prior. Not
4 to say that a lot of the features are aren't also in
5 the design, but there's just not referenced.

6 We also made sure that no piping -- oh,
7 before I finish that, the evaluations programs and
8 procedures in NEI 08-08, your operational programs, we
9 issued six months prior to our commencement of our
10 Pre-operational Test Program. So that'll cover all
11 your inspections and the different things we'll do to
12 ensure that we don't have leakages and problems.

13 We also made sure that no piping
14 containing fluids is direct buried.

15 CHAIRMAN ABDEL-KHALIK: I guess I don't
16 understand the first bullet.

17 MR. REJCEK: Yes, sir.

18 CHAIRMAN ABDEL-KHALIK: Could you just
19 explain what that means?

20 MR. REJCEK: Well --

21 CHAIRMAN ABDEL-KHALIK: You incorporate
22 something by reference and then you say this is not
23 required?

24 MR. REJCEK: The design portion -- the
25 design portion.

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1 If it said, for instance, one of the good
2 features in any NEI 08-08 is to have a leak chase
3 behind your spent fuel pool liners so you can collect
4 that. We have that. But we don't call that out in
5 the COLA DCD. It never even called out as meeting the
6 requirement of 1406 -- CFR 20.1406 -- at that point.

7 So we didn't go back and try to make all
8 of the changes to chapters that were incorporated by
9 reference to say yes, here's how 1406. So many things
10 are in there. But --

11 MR. CHAPPELL: What the template does is
12 it incorporates two main aspects -- design and
13 operational programs. And in conjunction, those
14 ensure that life cycle contamination is minimized in
15 the layer. And because there's a portion of the
16 certified design, it is our responsibility to evaluate
17 the design and ensure that those two aspects in
18 conjunction achieve the goals of 20.1406.

19 CHAIRMAN ABDEL-KHALIK: Okay. Please
20 proceed.

21 MR. REJCEK: Okay. The other thing we did
22 was piping carrying contaminated fluids. There's none
23 that is direct buried. All below-grade piping and
24 contaminated fluids is in tunnels, so hence we can get
25 in there and monitor from time to time.

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1 We also made sure that we're using
2 corrosion-resistant alloy. Most of it's stainless of
3 course -- 304s and 316. One exception is the sump
4 pumps. Those are carbon steel. There's some
5 transition there from carbon to stainless.

6 All the joints are welded as much as
7 possible. We don't have any screwed or fitted
8 connections. We're not using any socket welds. So
9 we've given a lot of thought in the design about
10 making sure that we had the right materials to make it
11 last and not leak.

12 Obviously part of the program, NEI 08-08,
13 we do the periodic walkdowns and look for leaks and so
14 forth. Those would be handled in your corrective
15 action program which is part of our maintenance
16 program. And I will mention Units 1 and 2 have a
17 pretty good aggressive program there including a leak
18 prioritization program so that radioactive leaks do
19 get much more attention than your standards. So I
20 expect 3 and 4 will just piggyback on that same
21 program in maintenance and the corrective actions and
22 go on from there.

23 Likewise, STP 1 and 2 has a robust
24 groundwater monitoring program. That's referenced by
25 NEI 07-07 which we participate with and developed.

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1 We'll just expand that. We'll have the luxury here of
2 being able to know where we'll want to put monitoring
3 points for instance to look for areas for future if we
4 had leakages. So that program will be expanded prior
5 to Unit 3's fuel load.

6 That's kind of a quick -- I apologize for
7 going fast -- synopsis, but I want to leave time for
8 questions.

9 MEMBER RYAN: All right. Milton, on Units
10 1 and 2 versus the new units, how does the groundwater
11 system work? Are you flowing from the existing units
12 to the new units or vice versa? I'm just trying to
13 see if any existing contamination would become an
14 issue for the new unit?

15 MR. REJCEK: The underground?

16 MEMBER RYAN: Yes.

17 MR. REJCEK: The shallow aquifer base
18 dilutes from the northwest towards 1 and 2. So where
19 we're located, it would move toward the --

20 MEMBER RYAN: It's from the new units to
21 the old units, and the chance of having any ground
22 contamination from the old units to the new units is
23 pretty low?

24 MR. REJCEK: Correct. It'd be against the
25 groundwater flow basically.

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1 MEMBER RYAN: Right. So that's a positive
2 thing.

3 On your inspection tunnels, are those
4 large enough for folks to walk through? Are they
5 small? You'll need camera crawlers? How are you
6 going to --

7 MR. REJCEK: No, they're pretty large
8 because there's a lot of other piping routed through
9 there.

10 MEMBER RYAN: That's good.

11 MR. REJCEK: Condensate piping, for
12 instance, routes through there. There's a number of
13 things in the rad waste tunnel.

14 MEMBER RYAN: Right. Okay.

15 CHAIRMAN ABDEL-KHALIK: Are there any
16 additional questions to the Applicant on Chapter 11?

17 MEMBER RYAN: Just one more.

18 On the 07-07 program, what have your
19 results been today for 1 and 2? Do you have any
20 problems that you're wrestling with now? Or is it in
21 a maintenance mode? Could you help me understand
22 where you are?

23 MR. REJCEK: That's a good question. I'm
24 not aware of any. I mean, it's a pretty robust
25 program.

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1 MR. HEAD: Is the question on leaks or on
2 --

3 MEMBER RYAN: Yes, on leaks. When you run
4 07-07 programs addressing any underground
5 contamination that you have now --

6 MR. REJCEK: Yes.

7 MEMBER RYAN: -- how's that going?

8 MR. REJCEK: Are you saying that we found
9 things?

10 MEMBER RYAN: No, what have you found and
11 what have you done about it? How have you addressed
12 it?

13 MR. REJCEK: I'm not sure I know enough
14 right now to answer that completely.

15 I know obviously even the secondary system
16 has tritium in it for instance. So we found tritium
17 in --

18 CHAIRMAN ABDEL-KHALIK: Can we hold that
19 as a follow-up item for you to find information and
20 you can --

21 MR. REJCEK: Gordon is probably the better
22 one to answer that.

23 MR. CHAPPELL: Yes, we'll try to make a
24 call and maybe --

25 MEMBER RYAN: And I'm not looking for a

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1 huge amount. Just a status report of where things
2 stand. Do you understand everything you need to
3 understand to this point, and you're making corrective
4 actions or you're still in the discovery phase and
5 things that are happening? I'm just trying to get a
6 handle on where you are in the program.

7 MEMBER BLEY: The pipes in the tunnels,
8 you said they're mostly welded as much as you can.

9 MR. REJCEK: Yes, sir.

10 MEMBER BLEY: But you must hear vacuum
11 breakers along the line that open up inside the
12 tunnels. Is that true? No?

13 MR. REJCEK: I don't think so. None that
14 I could think of.

15 MEMBER BLEY: Really.

16 MR. REJCEK: Pretty much the piping in the
17 rad waste tunnel, for instance, is pumping from a
18 backwash tank for instance in the reactor building to
19 the rad waste building.

20 MEMBER BLEY: Okay. All local? Yes.
21 Okay.

22 MR. REJCEK: And then all the sumps of
23 course in the reactor building and turbine building,
24 the same thing.

25 MEMBER BLEY: Okay. Thanks.

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1 CHAIRMAN ABDEL-KHALIK: Any additional
2 questions to the Applicant on Chapter 11?

3 If the staff doesn't mind, we can just do
4 what we did yesterday and have the Applicant continue
5 on with the presentation of Chapter 13 before we get
6 the staff's presentation.

7 MR. TONACCI: Mr. Chairman, 13 is a very
8 different animal. I think it would behoove us to put
9 this one behind because it may take us a little more
10 time in the STP's presentation of 13. I think we may
11 kind of lose the thread on 11.

12 CHAIRMAN ABDEL-KHALIK: All right. No
13 problem. That's fine. We'll have the staff then come
14 up and present Chapter 11.

15 MR. CHAPPELL: Mr. Chairman, for the
16 purposes of the Action Item 9 that's addressed here
17 with the exception of the follow-up of those 07-07
18 questions, have we addressed the concerns of this?

19 MEMBER RYAN: Yes. Thank you.

20 MR. CHAPPELL: Thank you.

21 MR. EUDY: These are a lot nicer than last
22 time.

23 MEMBER RYAN: They don't blow off the
24 desk.

25 MR. EUDY: We aim to please.

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1 MEMBER RYAN: Design improvement.

2 MR. EUDY: We have a technical staff
3 person on the line.

4 Steve Williams, are you with us?

5 MEMBER BLEY: The line might be silenced.

6 CHAIRMAN ABDEL-KHALIK: Is the line open?

7 MS. BANERJEE: It should be.

8 CHAIRMAN ABDEL-KHALIK: Please check on
9 it. Thank you.

10 MR. EUDY: That's part of why we wanted to
11 go ahead since we already had someone hopefully on the
12 line.

13 MR. ROACH: If we want, we can go ahead.

14 MR. WILLIAMS: Yes, I'm on the line. It's
15 Steve Williams.

16 MR. ROACH: Okay. Thanks, Steven.

17 MR. WILLIAMS: Hello.

18 MEMBER RYAN: Yes, Hello.

19 MR. EUDY: Good morning. I'm Michael
20 Eudy, Project Manager. And we'll be presenting the
21 staff's overview of the review for Chapter 11.

22 With me, I have Ed Roach who is the Branch
23 Chief for the Health Physics Branch. And on the line
24 we have Steve Williams who is the main technical
25 reviewer for this Chapter. The Project Manager George

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1 Wunder, myself and I've introduced the technical
2 staff.

3 Chapter 11 addresses the radioactive
4 source terms, radioactive waste generation and how the
5 waste streams are processed as well as how radiation
6 is monitored in the plant. STP provided an overview
7 of what they had. And at the time of the presentation
8 to the Subcommittee last March, we had identified
9 three open items for Chapter 11 related to the
10 condensate storage tank. And they were condensate
11 storage tank source term, function volume, CST
12 location, design features and 10 CFR 20.1406
13 implications, CST maximum radioactive concentrations
14 and dose rate calculations.

15 During the staff's review of the
16 Applicant's responses to those open items, the staff
17 determined that they were outside condensate storage
18 tanks that contained radioactive material. Therefore,
19 it was supplemental RNIs were issued and the items
20 were moved to Chapter 12 for continuation of the
21 review. For Chapter 11, the items are closed.

22 And to date, all the open items for
23 Chapter 11 have been closed, and only one confirmatory
24 item remains.

25 MEMBER RYAN: Just so I'm clear, the items

1 that were moved to Chapter 12 are all still open in
2 Chapter 12?

3 MR. ROACH: Actually, what the Applicant
4 was required to do was update several tables in
5 Chapter 12.2 on source term related to those.

6 MEMBER RYAN: So it's just a matter adding
7 them to Chapter 12?

8 MR. ROACH: Yes.

9 MEMBER RYAN: Okay. Great.

10 MR. EUDY: With respect to the impact on
11 the Chapter 11, the staff has reviewed all the
12 departures identified by the Applicant, and we have
13 determined that they are appropriate.

14 The staff has also found that the eight
15 identified COL information items have also been
16 adequately addressed. And the Applicant has just
17 provided their responses to an ACRS action item
18 regarding minimization of contamination for plant-life
19 cycle for underground piping.

20 In conclusion, the staff has confirmed
21 that the Applicant has addressed relevant information
22 as specified in the referenced ABWR DCD. In addition,
23 the staff concludes that the Applicant has met
24 applicable regulations and is in conformance with
25 applicable guidance with respect to source terms,

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1 liquid-based management system, gaseous waste
2 management, solid waste management and the process
3 radiation monitoring system.

4 And the staff will take questions.

5 CHAIRMAN ABDEL-KHALIK: Are there any
6 questions for the staff on Chapter 11?

7 (No audible response.)

8 CHAIRMAN ABDEL-KHALIK: No? Okay. Thank
9 you very much.

10 MR. EUDY: And I guess to follow up, I'd
11 heard that there was an action item regarding the
12 status of the contamination.

13 CHAIRMAN ABDEL-KHALIK: There was a
14 follow-up item and that pertains to experience with
15 leaks from Units 1 and 2.

16 MR. EUDY: Okay.

17 MEMBER RYAN: Particularly in the context
18 of the 07-07 and the NEI 07-07 type program.

19 MR. EUDY: Okay. So that's really an
20 Applicant --

21 CHAIRMAN ABDEL-KHALIK: Yes.

22 MR. EUDY: Okay.

23 CHAIRMAN ABDEL-KHALIK: Thank you.

24 MR. EUDY: Thank you very much.

25 CHAIRMAN ABDEL-KHALIK: At this time we'll

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1 move to the Applicant's Chapter 13.

2 Please.

3 MR. HEAD: Okay. We're going to do
4 Chapter 13, Conduct of Operations and standard agenda.

5 Attendees? Obviously Jay Phelps is up
6 here with us on this presentation. Fred Puleo made
7 our presentation for the initial presentation. Coley
8 will be doing it today. Fred has just gotten back
9 from Japan. He was over there for a DAC inspection or
10 supporting a DAC inspection. So they're in the
11 preparation. Coley did most of the support for that.
12 But obviously Fred is here to support us on that.

13 So with that, I'm going to go ahead and
14 turn it over to Coley.

15 MR. CHAPPELL: Thank you.

16 Content of Chapter 13, this is a recap of
17 where we briefed ACRS before. We have no departures
18 in Chapter 13. Conduct of Operations as you would
19 expect deals with a lot of supplemental information
20 towards organizational structure, training,
21 procedures, emergency plan and then the schedule of
22 how these will be implemented.

23 One thing of note, we have mentioned that
24 we have a transition from STPNOC to NINA. And this is
25 one of the places in the last revision -- revision 5

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1 -- where we had to update the organizational structure
2 to reflect that. So it shows that relationship.

3 The summary, we had no ACRS action items
4 based on the last presentation. There are no open
5 items identified in the SER. All COL items have been
6 addressed. And all RAIs have been responded to and
7 are considered closed or confirmatory for this
8 chapter.

9 There are license conditions associated
10 with this chapter that deal with implementation of the
11 operational programs. And that are delineated in the
12 tables in this section.

13 CHAIRMAN ABDEL-KHALIK: Now, the licensee
14 for Units 1 and 2 is STPNOC. And the licensee for
15 Units 3 and 4 will be NINA.

16 MR. HEAD: Initially. Initially. During
17 the co-construction phase, design, licensing and
18 construction phase, and that basically the 103G
19 moment, the license will then transfer to STPNOC to
20 operate the plant.

21 CHAIRMAN ABDEL-KHALIK: When is that
22 transition?

23 MR. HEAD: 103G. When the plant is
24 finished and all the ITAAC is closed and we're ready
25 to load fuel, at that point in time, the operating

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1 license will transition to STPNOC.

2 MEMBER BLEY: So loading fuel will be the
3 first thing that --

4 MR. HEAD: Yes, sir. But obviously during
5 all of that, they'll be a transition phrase that
6 everyone will be going through. But at that point in
7 time, NINA will be basically an owner as opposed to
8 the constructor.

9 MEMBER BLEY: I know it's post-COL. But
10 when do you anticipate having a simulator in place,
11 having an operating staff, or at least the basic
12 operating staff and actually having the procedures in
13 place?

14 MR. PHELPS: Currently the simulator will
15 be there around the first of 2013. And slightly prior
16 to that, we will initiate the first licensed operator
17 training class. There are a total of six of those
18 planned with 18 individuals in each of those classes
19 to support the needs for staffing at the control room
20 which are really based on the pre-operational test
21 schedules so that all the component manipulations and
22 alignments are accomplished by the STP operations
23 organization and not the constructor as we prepare
24 that.

25 MEMBER BLEY: And the procedures will be

1 in place before the simulators?

2 MR. PHELPS: Absolutely. Well, those that
3 are required. There's a large set of those procedures
4 that are required for simulator factory acceptance
5 testing inside acceptance testing. There are a number
6 also of procedures. Most of those are local
7 operations that are not required for the simulator.
8 But they will be available prior to I think it's six
9 months prior to fuel load that all of those have to be
10 done.

11 They're being used as the basis for really
12 the development of the start up, and the pre-
13 operational test program procedures is part of the
14 verification and validation process to confirm that
15 the operating procedures are going to actually work
16 the way that they're intended.

17 CHAIRMAN ABDEL-KHALIK: Okay. Any
18 questions for the Applicant on Chapter 13?

19 (No audible response.)

20 CHAIRMAN ABDEL-KHALIK: Okay. And I guess
21 there are no ACRS open items related to Chapter 13,
22 correct?

23 At this time, we'll move to the staff.

24 MR. FOSTER: Good morning. I'm Rocky
25 Foster. I'm the Chapter PM for Chapter 13, Conduct of

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1 Operations.

2 We're moving quite a bit ahead of schedule
3 here on things, and so I've got the support staff
4 waiting to come down. They're not here yet. So in
5 support of things, I'll go ahead and start the
6 presentation, and then if you all have any questions,
7 we can try to filter them as best as we can. So we've
8 got people out making phone calls trying to get them
9 down here already for you.

10 Okay. Chapter 13 is Conduct of
11 Operations. This is our Phase 4 presentation, SER
12 with no open items. The presentation is based off of
13 Revision 4 to the application. We do have Revision 5
14 in-house now we're starting to review. But the
15 presentation does not cover that. We do know there
16 are a couple of areas in Chapter 13 that we will have
17 to review. One is 13.1 which is the organization, and
18 then we're also looking at the EP portion of things as
19 far as how the name of the applicant changes or the
20 licensee as how the impact would be on emergency
21 preparedness on it.

22 Also, the presentation does not cover 13.6
23 which is Physical Security. That was in the package
24 we did send up to you. So we had a full package for
25 you, but the presentation does not address that.

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1 George Wunder is our lead PM on this.
2 Again, I'm the Chapter PM. And then we have our EP
3 staff here, Robert Moody and then many of the
4 preparers from NSIR also were the technical reviewers
5 for the project.

6 All the open items for Chapter 13 have
7 been closed. They have been resolved. We have two
8 outstanding confirmatory items in Fitness for Duty
9 which is in 13.7.

10 Chapter 13.03 had one open item that dealt
11 with the TSC habitability issue. The Applicant
12 responded to the RAI. The staff did independent
13 calculations to confirm the radiological dose met the
14 NRC guidelines. And we also verified the FSAR
15 address, the upgraded charcoal filter efficiency.

16 Fitness for Duty. Fitness for duty is
17 kind of a new sort of program that's developing for us
18 here with the new reactors. The technical review for
19 fitness for duty covered two different areas, mainly
20 adequacy for construction phase and the operational
21 phase. And our criteria was 10 CFR Part 26,
22 52.79(a)(44). And then the reference document the
23 Applicant used was NEI 0-06-Rev 5.

24 Also, fitness for duty is covered
25 underneath the operational program table, item #15

1 underneath Security Program, which covers physical
2 security in three parts, cybersecurity and also
3 fitness for duty also.

4 We have two confirmatory items with 13.7.
5 And the Applicant has addressed them in the RAI
6 response. When Rev 6 comes in, we'll do the
7 confirmation of them from there to close those out.

8 The staff's position is that the South
9 Texas Project FSAR for fitness for duty is acceptable,
10 and it conforms to the regulatory requirements.

11 Questions so far? Yes, sir?

12 MEMBER BLEY: I have one before you get to
13 this. But it's really an internal one for our
14 Committee.

15 Charlie, I was away for that meeting two
16 weeks ago. Did you get into South Texas when you
17 talked the cybersecurity stuff at that meeting?

18 MEMBER BROWN: No, nothing explicit.

19 MEMBER BLEY: We can bring it up here
20 again.

21 MR. FOSTER: We can talk about it to our
22 hearts' content since we have so much time.

23 (LAUGHTER.)

24 MEMBER BLEY: Go ahead.

25 (LAUGHTER.)

1 MR. FOSTER: I'm comfortable.

2 MEMBER BROWN: No, we talked primarily
3 very generically on the Reg Guide and it's interaction
4 with 5.71.

5 And John, correct me if I'm wrong, I don't
6 remember any great detail on SGT 3 and 4 unless you
7 do.

8 MEMBER STETKAR: I don't. I was even
9 trying to remember who did we learn suddenly was going
10 to be the pilot project?

11 MEMBER BROWN: I'm trying to remember that
12 too.

13 MEMBER STETKAR: We can look it up later.

14 MEMBER BROWN: I guess we had that
15 generically. So we don't really need to dig into it
16 here.

17 I just got the transcript to refresh my
18 brain two days ago. And I unfortunately didn't get
19 there.

20 CHAIRMAN ABDEL-KHALIK: Let's continue,
21 please.

22 MR. FOSTER: Sure.

23 Cybersecurity. The cybersecurity plan
24 submitted by South Texas follows the requirements of
25 Reg Guide 5.71 which was provided to the ACRS and

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1 approved by the ACRS. South Texas was one of the
2 first applicants to diligently follow that template
3 rather than the industry template which was 08-09.

4 What it commits South Texas to do in the
5 different elements is establish the cybersecurity
6 team, establish the defense architecture and strategy,
7 identify the critical digital assets. And with each
8 of the assets, they'll address 148 separate security
9 controls for each asset.

10 The firm determined their configuration
11 management. And they have an ongoing assessment
12 program for security measures and the effectiveness
13 which is a big thing with cybersecurity is it's a
14 revolving process to go on, and you need to measures
15 to be able to assess it.

16 Again, the Applicant followed the template
17 in Reg Guide 5.71. We have no open items with it.
18 And the ACRS did approve 5.71.

19 We did have an action item related to
20 Chapter 7, I believe. And it was ACRS Action Item
21 #35. And this dealt with cybersecurity ITAAC.

22 I have feverishly talked with the staff on
23 those to determine their position on this, and the
24 staff is following the guidelines out of SECY-05-0197
25 when it talks to programmatic plans and processes.

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1 Okay? Cybersecurity is an operational program that's
2 in Section 15 of the operational program, 13.4S1
3 table. And based off of that, it has no ITAAC. Okay?
4 It's a performance-based regulation. We have things
5 that are based off of these.

6 We do have license conditions in place
7 such as the cybersecurity plan will be inspected prior
8 to fuel on site within the protected area underneath
9 10 CFR 50.34 in accordance with IMC 2504.

10 And we also do have a separate license
11 condition in the SE that talks about eight months
12 prior to fuel on site. This is Chapter Section
13 13.8.5. "STP has developed a written protective
14 strategy that describes in detail cybersecurity
15 measures, systems, the deployment of cybersecurity
16 program relative to site-specific conditions." Okay?

17 Questions, comments, please?

18 MEMBER BROWN: Yes. Your slide says
19 Chapter 13.8, Cybersecurity Plan. When I went and
20 looked at the FSAR, there was no section 13.8. And so
21 there was nothing to take a look at.

22 Maybe there was a separate -- Maitri
23 thinks or tells me there was a separate document. I
24 did not find that in the profusion of documents. So
25 I'll just go without having that.

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1 MR. FOSTER: Well, I'll tell you what --

2 MEMBER BROWN: Well, let me finish.

3 MR. FOSTER: Okay.

4 There was one thing in the SER where you
5 stated -- let me go back to the beginning here of 13.

6 You label it 13.8

7 MR. FOSTER: Right.

8 MEMBER BROWN: And this is what I was
9 looking for. When I went through the FCR and took a
10 look at that, it's very prescriptive. They walk
11 through all the management stuff. It said they'll
12 have this, they'll do this, they'll do this, blah blah
13 blah. All the stuff in 5.71 seemed to be -- I didn't
14 check every one -- but it just seemed that they walked
15 down through the entire checklist and the template and
16 everything else.

17 But the issue that we had been discussing
18 in several of the other meetings was the heart of the
19 architecture of the systems that were being brought in
20 and how they were being looked at during the licensing
21 process to ensure that they gave the capability for
22 establishing a satisfactory cybersecurity program. In
23 other words, it's fine to have plans and processes,
24 but if you don't have an architecture -- a defensive
25 architecture -- that allows you to implement that,

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1 then it doesn't do you much good. And in discussions
2 with others in some of the other programs -- in other
3 words, we go off and we design the digital INC. We
4 design the network -- the stuff that goes and feeds
5 into the network and becomes part of that -- what the
6 vendors are delivering -- and there seemed to be very
7 little connection looking at the cybersecurity
8 aspects. And that's basically what I got out of the
9 previous meetings.

10 And this one looked interesting. Your
11 comment in here was that their cybersecurity plan --
12 if I can ever find it -- made a very specific
13 statement. So you're going to have to bear with me
14 here.

15 MR. PULEO: Mr. Brown?

16 MEMBER BROWN: Yes?

17 MR. PULEO: It might help, the South Texas
18 Project submitted our cybersecurity plan as a
19 safeguards document. So if you're looking for it,
20 you're probably not going to find it.

21 MR. FOSTER: It was actually included as
22 part of Part 8 which was the security program.

23 MEMBER BROWN: Okay. Well, that's why I
24 didn't know it. Okay.

25 Let me ask my question because apparently

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1 you all looked at it. I guess. Right?

2 You made a statement, said the CSP
3 establishes -- and this is the operative word -- "how
4 digital computer and communication systems in that
5 works within the scope of 10 CFR 73.54 will be
6 adequately protected from cyber attacks."

7 So that's the question that we've been
8 asking, and the question to which we have not gotten
9 any really consistent answers at this point. So I
10 don't have any problem with the stuff that's in here
11 relative to 5.71 -- the management stuff, the
12 processes and programs. What I'm interested in seeing
13 is what is the staff doing in terms of looking at how
14 these communication systems and networks will actually
15 -- at some level, how they will accomplish that
16 security function. How will their plants and
17 processes be able to actually implement something with
18 the hardware architectures they have? We haven't seen
19 that yet.

20 So in my mind, that's open. And so that's
21 the open item that I would look for whether we do it
22 today or whether we do it in some other opportunity.
23 We can't do it today -- we can't do it today -- but
24 some other presentation where we get a little detail.
25 And it doesn't have to be excruciating detail. But it

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1 needs to have enough detail so that we understand that
2 people are looking at it from at least the perspective
3 that we see.

4 One example of that, if you go look at the
5 figure in 7 DS -- I think it's 7 DS. It's the new
6 chapter that was brought in that we looked at back in
7 the February meeting. It was 7 DS-something. Maybe
8 it was just 7 DS.

9 And there's a figure in there where it
10 shows that the outputs from the system going into the
11 plant data network. Some of the stuff goes directly
12 to TSC. Some of it goes directly to what's called a
13 secure communications port, and then it goes off to
14 the corporate network and it goes off to the emergency
15 operating facility. And it's in that context that the
16 cybersecurity issue is coming up.

17 In other words, the communications outside
18 the plant from the main control room to other folks,
19 how do we maintain and make sure that those always
20 stay crisp and protected and that they can't be
21 compromised such that the operators and other folks
22 outside the main control room are not working from a
23 different set of data. In other words, it's been
24 hacked, compromised, wormed -- whatever the
25 appropriate cyber words --

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1 MR. FOSTER: Or the term is.

2 MEMBER BROWN: -- the term is for the day.

3 So that's where I end up right now. So I
4 think we've still got an open item relative to that
5 particular point.

6 MR. RYCINA: I'm John Rycina. I'm a
7 cybersecurity specialist in NSIR. I was the lead
8 reviewer for the STP cybersecurity plan.

9 The draft temporary instruction which will
10 be used for inspecting STP indicates that the
11 inspectors will verify that the licensee has
12 developed, implemented and maintained the defense in
13 depth protective strategy in defensive architecture to
14 ensure the capability to detect, respond to and
15 mitigate the effects and recover from cyber attacks
16 and CDAs.

17 The inspectors are instructed to verify
18 that the strategy and architecture meet the
19 requirements of the approved cybersecurity plan and
20 the implementing procedures. Additionally, the
21 inspectors are instructed to verify that multiple
22 defensive levels have been established by the licensee
23 using a network architecture that includes a series of
24 increasingly communicative, restrictive defensive
25 security levels and to verify that all communications

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1 permitted between adjacent security levels and
2 monitored and controlled by a suitable and
3 appropriately configured non-deterministic boundary
4 protective device or by determinist devices such as a
5 data diode.

6 It continues to state that the inspectors
7 should verify the defensive architecture allocates the
8 highest level of cybersecurity protection to CDAs or
9 to carry out safety or security functions. It also
10 states that the inspectors should verify that CDAs
11 that provide data acquisition functions are allocated
12 at least to the next highest defensive level
13 protection.

14 In other words, it's telling the
15 inspectors to confirm that the defensive architecture
16 that's been approved during the reviews actually
17 implemented on site.

18 MEMBER BROWN: Well, we haven't seen a
19 defensive architecture. So we have no idea what's
20 supposed to -- it's a good process. I mean, I'm not
21 arguing with the process that you've got in place.
22 It's a matter of what does the characterization of
23 that defensive architecture look like? It can't be
24 just a global cloud that says stuff goes in and
25 somewhere in there we're going to make sure it all

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1 comes out right. We'd like to have some idea that
2 there's something to that -- something tangible.

3 MS. BANERJEE: Mr. Chairman, what I was
4 thinking that maybe I can work with the staff and if
5 necessary with the Applicant and schedule a separate
6 review of the safeguards information that contains the
7 cybersecurity plan.

8 CHAIRMAN ABDEL-KHALIK: We can do that.
9 We can combine that with a later meeting that we have
10 scheduled since obviously neither the staff nor the
11 Applicant will be able to address this today.

12 MEMBER BROWN: We did have a number of
13 discussions with NSIR and the I&C reviewers for NRO
14 and NRR about two weeks ago. And we discussed the
15 processes and stuff that have been discussed right
16 here. But again, it's getting down to some of the
17 meat and potatoes -- a little bit of information on
18 that architecture.

19 So I'm not contesting what you've said.
20 I mean, I don't have any objections with the plan.

21 We did have discussions relative to who
22 would be doing the inspections. How knowledgeable
23 digital computer communications processes do the
24 inspectors have? When they're reviewing a design,
25 when do they do it in terms of the process of the

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1 development of the design by vendors?

2 A typical example of that, you talked
3 about diodes or non-deterministic communications
4 devices. Some of the communication devices can be
5 construed to be one way, but they're software
6 triggered to make them one way. That means they're
7 hackable. Okay? Or they can be designed even if they
8 are hackable from that, you can drop a line to ground
9 which zeroes out the ability to change what you've
10 told it in the program in terms of its one-way
11 communication. Or it can be adjusted direct one-way
12 communication. There is no way to make it software
13 variable. It's a hardware-type decision that can't be
14 done by software.

15 Those are the kind of things we're looking
16 for is to how people can discern what's going on and
17 do we know the architecture set-up to handle that.

18 MR. FOSTER: I guess, Charlie, when I
19 stand back from this -- I mean, the points that you're
20 talking about and you're wanting to see are very
21 important points. But I understand that where we're
22 at within the Part 52 process for licensing and
23 specifically with this design, these things weren't
24 designed. I mean, we all know ABWR was certified back
25 in the '90s. Cybersecurity was a new term then.

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1 And the Applicant still has to go through
2 that process itself of engineering of the design
3 during the construction phase. Okay? And those
4 processes that they go through and the inspection
5 processes that are put up -- the things that the staff
6 will look at at that time after licensing -- okay --
7 are covered by the operational programs. I mean,
8 that's why operational programs was developed and
9 approved by the Commission was that you'd have many
10 programs that would come in or topics that would come
11 in where we didn't know the full scope of things. We
12 knew that. We knew the Applicant wouldn't have
13 procedures. They wouldn't have vendor specs -- okay
14 -- because of where they're at within the design
15 function itself, but that we could gather enough
16 information right at the program to license the
17 program itself, but then have the provisions in place
18 underneath SECY-05-0197, but that we would follow
19 through with the inspection process on this
20 engineering stuff that had to be done.

21 MEMBER BROWN: What you're telling is what
22 I perceive out of this is we're saying with the I&C,
23 we don't need to know anything until sometime four or
24 five years down the path. And I guess when I'm
25 sitting here looking and saying hey, if it's not

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1 obvious, cybersecurity has become a very critical item
2 that we have to deal with in these programs. It's
3 obvious from everything else that goes on in the rest
4 of the world that the stuff everything in the world is
5 being hacked like crazy and has dire consequences.
6 And you're telling me well, we're just going to look
7 at this two, three, four years down after licensing.

8 And I had no problem with that except
9 there are things you can do during the licensing
10 process that gives you not the details but says for
11 instance I won't accomplish communications with
12 software controlled switch devices in order to
13 accomplish a unit directionality. You can do that.
14 It's not hard. And it doesn't require you to know
15 what the technology is or anything else. And it's not
16 being done.

17 So I mean, we walk away and we're sitting
18 here saying well, we have no idea what's going to be
19 out. And if you look at what's going on through every
20 other major network, from banks to defense to foreign
21 issues where people shut down 1,000 centrifuges with
22 something that sits around and lives there for a year
23 or whatever it is before it decides to take everything
24 out of service. I just don't see how we can get away
25 without seeing some tangible -- I don't want to call

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1 them requirements -- but something in the licensing
2 venue that tells us we're going to have an
3 architecture that's defensive enough in nature. No
4 problem with the levels 4, 3, 2, 1 and 0.

5 Where are these elements going to fit?
6 How well is it defined? You don't have to say what it
7 is, but you have to say how well is it defined and
8 some idea of how you're going to make sure that it's
9 not compromisable.

10 I'm where I am, Rocky.

11 MR. FOSTER: First of all, I don't want to
12 have the impression that I think that when it comes to
13 cybersecurity and all the events that are going on
14 worldwide that I don't consider it a very, very --

15 MEMBER BROWN: I wouldn't question your
16 integrity.

17 (LAUGHTER.)

18 MR. FOSTER: Okay. But what we're having
19 to deal with is the established licensing process that
20 we've laid out for Part 52, and then how within that
21 process we're allowing an applicant to come in with
22 the information at certain times within the process
23 itself. Okay?

24 We've got the staff here that have been in
25 more conversations with you than I have on this.

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1 MEMBER BROWN: Yes, we had numerous
2 conversations. And we ended up in the same place at
3 the end of the last one, if I remember correctly.

4 I'm one person on the Committee. Okay?
5 I will make my positions known to the Committee, and
6 the Committee will have to make a decision on how hard
7 we want to push on this. I just happen to think we're
8 at a point where we've got to work on it, got 13 other
9 members right now, and this is the opportunity to make
10 some of the points known. And we will bring that back
11 out when we get to the point of having to address it.
12 Without any information, I'm not sure how it can be
13 resolved right now. Correct me if I'm wrong. I mean,
14 we've been through some of this stuff.

15 MR. LEE: If I may, I jot down a couple of
16 --

17 MEMBER BROWN: Give your name.

18 MR. LEE: My name is Eric Lee, NSIR,
19 cybersecurity specialist.

20 I jot down a couple of items that you have
21 just mentioned, and maybe I could address your
22 concerns.

23 First one, you extensively talked about
24 the defensive architecture and the boundary device
25 about the one-way type of thing. I agree with

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1 everything you said. And for that reason, we
2 specifically put in the regulatory -- first of all,
3 before I discuss that -- the cybersecurity plan is I
4 guess a commitment. It identifies the element of a
5 cybersecurity program. Then in addition to that, it
6 provides a criteria that licensees are going to meet
7 to implement these program elements within the
8 cybersecurity plan. And in that plan, licensees have
9 committee to follow Regulatory Guide 5.71. And in
10 Regulatory Guide 5.71, we dido talk about this concern
11 that you had specifically. We had exactly the same
12 concern as you did about the boundary device. That is
13 why we said deterministic device, and we specifically
14 put in the terms -- can't remember exactly what terms
15 we used -- but that was to specifically address your
16 concern about that aspect. That's why we say -- I
17 think it say deterministic -- hardware --

18 MEMBER BROWN: -- just stated it can be
19 non-deterministic or deterministic in his comments
20 from the microphone up there a second ago.

21 So that sounds to me like somebody's left
22 the barn door open. That's not accusatory. Just both
23 of you used two different terms here. One used both
24 and the other said no, we're excluded to one only.

25 And deterministic is a very -- I don't

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1 want to call it a generic word -- but deterministic is
2 not necessarily a definition of one way. You can be
3 deterministic and be bi-directional.

4 MR. LEE: I agree with, sir, but the --

5 MEMBER BROWN: The term is just doesn't
6 meet the test of covering that part of the waterfront.

7 CHAIRMAN ABDEL-KHALIK: It appears that
8 this discussion is not converging. And therefore --

9 MR. FOSTER: I've got to say I agree with
10 you. I don't think we're going to be able to solve
11 this --

12 CHAIRMAN ABDEL-KHALIK: Right. And
13 therefore --

14 MR. FOSTER: -- topic today.

15 CHAIRMAN ABDEL-KHALIK: -- what I would
16 recommend is that we include this as a follow-up item
17 --

18 MR. FOSTER: I agree with that.

19 CHAIRMAN ABDEL-KHALIK: -- with Maitri's
20 proposal that we have a closed safeguards session at
21 one of the future meetings to address cybersecurity
22 issues.

23 MR. TONACCI: I'm certainly open to that.

24 From the discussion that I hear, I'm not
25 convinced that what you want to see is going to be in

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1 that. If you're looking for a system design, I don't
2 think you're going to see that for a while. So I'm
3 not sure what you're actually looking for.

4 MEMBER BROWN: Well, I can clarify.

5 What I'm looking for --

6 MEMBER RYAN: Maybe I could ask you a
7 question that might help from my understanding. I
8 struggle with the same kind of thing that the system
9 -- the physical system that's going to do all these
10 things is probably generations away in terms of the
11 evolution of this kind of equipment. So I think the
12 aspect you're reaching for here is that the design
13 principles and the architecture may be applied
14 differently as the technology of all of this evolves
15 some.

16 So I'm wondering if we're talking about
17 principles versus hardware and how can we get close to
18 understanding how it's going to work as a system when
19 it's ten years away, or some number of years away.

20 Is that part of the problem?

21 MEMBER STETKAR: Mike, everybody uses that
22 excuse. I draw the analogy to a bicycle. You know
23 what a bicycle is. People have been developing new
24 types of cog sets for bicycles for years. But a cog
25 set is still a cog set. And it has a certain purpose

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1 for a bicycle. That's where we are in hardware design
2 for digital I&C systems.

3 People are refining little things on chip
4 sets and things like that. But a chip set is a chip
5 set. We're not designing a new bicycle here.

6 MEMBER RYAN: Okay.

7 MEMBER STETKAR: Charlie has just been
8 pressing. Are we going to have a cog set or are we
9 going to have a fluid drive, are we going to have some
10 sort of software programmable bicycle?

11 MEMBER BROWN: An example was in the
12 interest of achieving both diversity and a difference
13 in defense, they modified their previous digital I&C
14 system to have what's called an FPGA -- field-
15 programmable gate array-type system for the reactor
16 trip system. I thought that was a good decision.
17 It's not software driven -- okay -- other than the
18 design and the programming of the chips which is
19 dependent upon software in order to get all the gates
20 burned the way they want them burned.

21 But FPGAs have been around for 20 years.
22 So I agree with you. But the point being is that you
23 can describe what you want regardless of the
24 technology change in terms of fundamental principles
25 in terms of how they should operate.

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1 MEMBER RYAN: That puts a finer point on
2 it for me and hopefully for the staff too.

3 MR. RYCYNA: Well, actually, the one-way
4 boundary devices that we're talking exist today. You
5 can actually buy them. Or they're hardware-based.

6 MEMBER BROWN: For example, we had the
7 discussion, on the FPGA system in the last meeting
8 they talked about in the slides -- they had a watchdog
9 timer that was diverse hardware-based and independent
10 of the FPGAs. It was on the slide. It was not in the
11 FSAR.

12 Simple solution. Say that in the FSAR.
13 Now it becomes something that the licensee has that he
14 puts in his procurement documents, and it defines the
15 fundamental nature of what you're using as a back-up
16 in order to make sure the thing works its way in the
17 time that it's supposed to do it. So --

18 MR. FOSTER: The meeting you're talking
19 about is for Vogle. Is that the one you're --

20 MEMBER BROWN: No, the February 8th or
21 something.

22 CHAIRMAN ABDEL-KHALIK: We talked about
23 Chapter 7.

24 MEMBER BROWN: Chapter 7 about three or
25 four weeks ago.

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1 MR. ERLANGER: Good morning, everyone. My
2 name is Craig Erlanger. I'm the Branch Chief
3 responsible for cybersecurity policy development.

4 Where I think we're probably not
5 communicating right now is to explain what we're
6 trying to do in cybersecurity. It is a programmatic
7 approach independent of design. That might not sit
8 well with what we're trying to do in Chapter 13.

9 But a high level what you'll see in Reg
10 Guide 5.71 is 148 security controls. Technical,
11 things that should be considered when you're designing
12 a system. Operational and management ones -- things
13 that we can interface and assist with and make sure
14 they go well.

15 What we're seeing in licensing -- what
16 we're trying to do -- is we're getting -- I won't even
17 say commitments -- guarantees. It's going to be a
18 license condition that applicants will do these 148
19 things for the every system -- every system that they
20 identify as a critical digital asset.

21 So in the short-term, if you're looking
22 for wire diagrams -- a level of detail -- these are
23 things that the staff can't provide. The applicant is
24 not -- and the Applicant is here to speak for
25 themselves -- they're not far along enough in the

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1 process most likely to identify exactly where things
2 are going to fit in their architecture. But what 5.71
3 provides is a methodology and approach which again
4 they commit to in licensing that this is how they will
5 identify a digital asset. This is how they will apply
6 the security controls. And it goes through a whole
7 program look.

8 So again, we're looking at a program --
9 high-level things like I will identify a cybersecurity
10 team that has the following skill sets, I will have a
11 defensive architecture that puts systems in different
12 levels based upon their functionality. It has scoping
13 in there, safety, security EP, important to, things
14 that matter that'll take you to I'll say a core
15 damage/radiological sabotage scenario. We're Part 73.
16 We're concerned with malicious actors.

17 What we did for the Digital I&C
18 Subcommittee, which we're more than willing to come
19 back to do again, is we discussed with the Part 50 and
20 Part 52 folks who does what in the scope of these
21 reviews and explained the landscape of who looks at
22 what. But we're not going to get to the level of
23 detail where we can talk to a system level.

24 And the next meeting coming up, if you
25 want to have a separate meeting on it, we can walk

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1 through what we did on the 23rd. No problem. It
2 always helps to communicate more, get our position out
3 there.

4 But what it sounds like you're looking for
5 today is probably not available from the Applicant's
6 perspective. And I'll let them answer.

7 MEMBER BROWN: I'm going to answer this.

8 Under that point, you just made the same
9 point. We don't need to know anything about any of
10 the systems. It's all programmatic.

11 Under that logic -- let me finish -- okay,
12 please. Under that logic, I could have in the FSARs
13 or whatever it is, say I will design my I&C design in
14 accordance with IEEE 603, this reg guide, this reg
15 guide and this reg guide. Here it is. It's four
16 sentences. It's on the paper. And we don't need to
17 know anything else because we have a process in place
18 that will identify that everybody meets all of these.

19 That is not an acceptable approach. And
20 --

21 MR. ERLANGER: I'm not saying that, sir.

22 MEMBER BROWN: Let me finish. Let me
23 finish.

24 I am not asking. We -- and we -- I hope
25 it's -- I think it's we -- we're not asking for line

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1 diagrams. We are asking for some concrete definition
2 that ensures that we have a description of what we're
3 looking for other than generic words that say we will
4 meet some nice requirement -- something. In other
5 words, some methodology that -- wrong word. I think
6 he commented right. There are devices and approaches
7 to doing things like taking FPGAs to do something in
8 this world that solves a big problem relative to
9 potential software faults or failures. There are ways
10 to describe what you would like to have in the
11 communications world that solve the problem of not
12 allowing somebody to get into it.

13 The comment was made in one other meeting,
14 well, gee, we want all this information to go out onto
15 a corporate network which is up in level 2 relative to
16 5.71, which is available to everybody. This was on
17 another project. And that just didn't seem to compute
18 because of the possibility of having the data being
19 contaminated.

20 So I disagree that the programmatic advice
21 having some description of what you want on the
22 licensing side of what you want to get to demonstrate
23 the architecture are incompatible.

24 And now Chairman, I defer.

25 CHAIRMAN ABDEL-KHALIK: I think everybody

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1 had his say. And at this point it is clear that we do
2 need an extra meeting on this subject with the
3 understanding that you don't have wiring diagrams for
4 us to look at, nor are we asking for wiring diagrams.

5 But at this stage, we will try to set up
6 an extra meeting within the scheduled meeting
7 structure that we have. And the exact contents of the
8 meeting we will work on the details of what is to be
9 included in the meeting through discussions between
10 Charlie, Maitri, the staff and the Applicant and
11 myself.

12 MR. TONACCI: I think that's a good idea.

13 We've reviewed other designs -- Vogle and
14 Summer. If they have what you're looking for, we can
15 go there and use that as an example to get us started.

16 CHAIRMAN ABDEL-KHALIK: We're not going to
17 resolve this issue today. And therefore, it is in
18 everyone's best interests that we reach sort of a
19 resolution of this issue before we get to the full
20 committee presentation in June. And therefore, we
21 will have to set up this additional meeting if
22 necessary.

23 MEMBER BROWN: I'd like to make sure John
24 and Dennis, since they have been in the other meetings
25 and have some of the same thoughts, at least make sure

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1 we all are involved in how we're going to discuss this
2 thing.

3 CHAIRMAN ABDEL-KHALIK: Yes. Yes, of
4 course. Absolutely. Okay.

5 MR. FOSTER: One point of interest, the
6 safeguards portion of the cybersecurity plan, it's
7 basically the appendix of Reg Guide 5.71. I mean,
8 that's what it is.

9 MEMBER BROWN: It's very generic.

10 MR. FOSTER: That's just they put it in
11 Part 8 which came underneath the marking --

12 MEMBER BROWN: I kind of gathered that
13 from reading the FCR.

14 CHAIRMAN ABDEL-KHALIK: Nevertheless, the
15 length and contents of that meeting will be work out
16 later. We can't work it out on the fly right now.

17 MR. FOSTER: Can we close out ACRS Action
18 Item #35? Because it dealt with the ITAAC.

19 MEMBER BROWN: Well, that's another
20 thought. I mean, your comment was there's no -- I
21 might be phrasing this wrong, so correct me. We're
22 not going to test to see that it can't be accessed.

23 MR. FOSTER: Well --

24 MEMBER BROWN: You said there's no ITAAC.
25 I'm taking you at your word.

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1 MR. FOSTER: Cybersecurity falls
2 underneath the operational programs. And by
3 definition, operational programs by SECY-05-0197 does
4 not have ITAAC.

5 MEMBER BROWN: That's fine. Okay. So I'm
6 going to put in place a secure system which I never
7 test to see that -- I don't bring any nice hackers and
8 see if they can hack it.

9 MR. FOSTER: It's not inspected. I'm just
10 saying that is not covered --

11 MEMBER BLEY: Let's wait for the other
12 meeting.

13 CHAIRMAN ABDEL-KHALIK: Can we wait until
14 after that proposed meeting before we decide whether
15 or not this item is closed?

16 MR. FOSTER: I'll defer to that. I'm
17 fine.

18 MEMBER BROWN: Good point.

19 CHAIRMAN ABDEL-KHALIK: Thank you very
20 much. Okay.

21 At this point, are you done with Chapter
22 13?

23 MR. FOSTER: Unless there's any questions.

24 (LAUGHTER.)

25 MR. FOSTER: Is there anything the

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1 Applicant wanted to add here?

2 CHAIRMAN ABDEL-KHALIK: Okay.

3 MR. PULEO: We have no further comments on
4 Chapter 13.

5 CHAIRMAN ABDEL-KHALIK: All right. Let's
6 take a ten-minute break. And then we'll get to the
7 Applicant's next chapter. Okay?

8 We will reconvene at ten minutes to 10:00.

9 (Whereupon, at 9:36 a.m., off the record
10 until 9:49 a.m.)

11 CHAIRMAN ABDEL-KHALIK: We're back in
12 session.

13 At this time, the Applicant will present
14 Chapter 16. But it's my understanding that there is
15 a follow-up comment on Chapter 11.

16 MR. HEAD: Yes, sir. But I was planning
17 on doing that at the end, but we can do that right now
18 if you want to.

19 CHAIRMAN ABDEL-KHALIK: Yes, please.

20 MR. HEAD: Okay. Well, if you recall
21 during our Chapter 12 briefing --

22 CHAIRMAN ABDEL-KHALIK: Eleven.

23 MR. HEAD: -- Chapter 11 briefing, but
24 during the Chapter 12 briefing previously, we had a
25 gentleman named Gordon Williams from STPNOC, our lead

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1 health physics. And we contacted him on our
2 experience -- just to confirm because we want to make
3 sure that we had our recollection correct -- so Milton
4 has called him and is ready to convey some experience
5 with respect to 07-07 at 1 and 2.

6 And so, Milton if you would.

7 MR. REJCEK: Okay. Yes, I did talk to
8 Gordon Williams. And he conveyed to me that basically
9 he felt there were three major lessons learned.

10 The first thing we did was we put our
11 money where our mouth was, and we went ahead and
12 drilled three new wells -- two within the protected
13 area and one outside the protected area that would
14 help us not because we thought there was any
15 deficiency in the Unit 1 and 2 programs, not by any
16 means -- and we of course still monitor and report all
17 that -- gives us some additional methods from number
18 1 to be able to tell how fast the water from the
19 reservoir influences the ground -- the shallow
20 aquifer. So that's what the well outside the
21 protected area did.

22 The other two wells were situated in
23 positions where we basically were able to better
24 quantify and confirm a previous leak that we had
25 that's since been repaired. In fact, that even

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1 involved removing some sand and stuff as part of the
2 clean-up process of that. So we now feel that that
3 particular area if it ever had a problem again, we
4 could monitor that better.

5 The surprise -- this is new information,
6 of course documented on our corrective action program
7 so I'm not sure what the final outcome would be -- but
8 by design our auxiliary steamline that connects the
9 two units has these little drain lines -- those little
10 automatic drains that spit out the collective moisture
11 after a period of time. That was one of those
12 thinking I guess in the original design it would be
13 holding over mine. Well, the additional well actually
14 told us that yes, it does influence the shallow
15 aquifer. We can see the effects of that. So we're
16 looking how we're going to correct it.

17 So there was one surprise. And again,
18 that's in progress right now. I'm not sure what the
19 final outcome will be.

20 What happens in that case is that's all
21 backfill area. So when it actually gets on the ground
22 and gets into that backfill area, the next time you
23 get a rain, you're right into that shallow aquifer a
24 lot faster than we ever imagined it did.

25 So yes, there were some lessons learned.

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1 I guess from a three and four takeaway, my personal
2 takeaway in fact in this is that despite all the best
3 designs and NEI 08-08 -- 08 Alpha -- 08-08 Alpha --
4 make sure I get this right -- whatever you do on the
5 design, you still want to have those monitoring
6 systems. I mean, we're going to have the benefit of
7 those lessons learned in 1 and 2. So hopefully we can
8 spot some of these wells in our protected area. Unit
9 3 and 4 do a lot better job.

10 That's it in a nutshell. If you want to
11 go deeper, we'll have to get a hold of Gordon Williams
12 again.

13 MEMBER RYAN: No, I think that's fine for
14 this stage of the game. And thanks for the
15 clarification.

16 I guess I agree with your observation if
17 the 3 and 4, you are getting some experience from
18 having 1 and 2 experience in your pocket to rely on.
19 Of course, you know what a fan looks like now. But
20 when you two units on it, it's going to change with
21 the groundwater. So you'll react to that and be ahead
22 of the game.

23 MR. REJCEK: Yes. The key thing there is
24 that you don't want to just put your monitoring wells
25 just to meet your program. You might want it in areas

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1 where closer to things that you might think might be
2 a problem.

3 The last thing I'd like to do real quickly
4 is to clarify a number. We talked about what the rad
5 waste dose was reduced down. What I meant was to one
6 fourth the base. There was a four-time reduction. So
7 it's 25 percent of what we originally had.

8 MEMBER RYAN: Yes, as opposed to a 25
9 percent reduction from where you were.

10 MR. REJCEK: Yes.

11 MEMBER RYAN: So that's a good
12 clarification. Thank you.

13 CHAIRMAN ABDEL-KHALIK: Thank you very
14 much.

15 At this time, we'll continue with Chapter
16 16.

17 MR. HEAD: Okay. We're going to do
18 Chapter 16, Technical Specifications today. And if
19 you'll go to our standard agenda.

20 And attendees today, Steve Cashell who
21 briefed us the first time. In the briefing today.
22 We've got Dave Dausat and Ed Brown, Craig Swanner if
23 we have detailed questions, and then obviously Jay
24 Phelps, tech specs.

25 PARTICIPANT: A crucial part of his life.

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1 MEMBER STETKAR: Which is a real sad
2 comment on your life.

3 (LAUGHTER.)

4 MR. HEAD: Okay. So Steve?

5 MR. CASHELL: Okay.

6 As you recall, our specs ABWR tech specs
7 are written in improved standard tech spec format.
8 And we followed NUREG-1433 for the BWR4 for
9 containment issues and 1434 BWR6 for most everything
10 else. That is all to Rev 0. And eventually we'll
11 bring that up to working with you on our spec upgrade
12 project to Rev 4. So we have those improvements.

13 Approximately 100 departures affected our
14 tech specs -- six of the Tier 1/Tier 2* departures
15 affected them, nine Tier 2 design-related departures.
16 And the remainder were departures to correct or
17 clarify information in the bases and tech specs,
18 departures that affected the administrative control
19 section, provided consistency between the tech specs
20 and bases or just editorial in nature.

21 We had a single COL license information
22 item. And that will supply all the bracketed
23 information. I think we had 454 brackets there we had
24 to fill in. The staff came out with interim staff
25 guidance 08 regarding the completion of brackets for

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1 new plants. And that's how we followed that and we
2 were able to fill in all the brackets. And there are
3 no ITAAC in the tech spec or associated with tech
4 specs.

5 Some items of interests, the biggest one
6 probably is a set point control program. We actually
7 added the new specification 55211 to the
8 administrative control section. That required us to
9 develop an instrument set point methodology for STP 3
10 and 4. So we have our own set point methodology
11 that's been approved by the staff.

12 And they also required us to revise some
13 definitions and related surveillance procedures. But
14 that all allowed us to relocate the allowable values
15 out of the tech specs to a licensee controlled
16 document. And that licensee controlled document will
17 contain all the values described in set point control
18 for you. So now we go one place and do everything.

19 From the initial meeting, you all asked us
20 and the NRC to go back and look at all the Part 21s
21 that had occurred since the certification. And we did
22 that. The staff did that. And one item that applied
23 to tech specs was operation with an isolated MSIV
24 there -- three places in the tech specs that allow you
25 or tell you to isolate an MSIV. And then there was a

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1 Part 21 associated with that where someone did an
2 analysis of how would you operate with one of these
3 isolated -- what would the vibration do to you or
4 excess flow and all that. So we've committed to it
5 and we've put it in the tech specs and in the FSAR to
6 perform an appropriate analysis prior to operation
7 with an isolated MSIV. So that's how we closed that.
8 And I forget the number of it, but it was an ACRS
9 issue that's already been resolved.

10 CHAIRMAN ABDEL-KHALIK: Now the analysis
11 methodology, is that included in that component
12 vibration assessment that you just concluded?

13 MR. CASHELL: I believe they'll be able to
14 do some of the work there, and then from that we'll
15 perform whatever additional analysis that has to be
16 performed. It wasn't going to be a strict test of
17 isolating each individual one and seeing what that did
18 though. But that's as much as I know about it.

19 CHAIRMAN ABDEL-KHALIK: Right. But right
20 now, all you're saying is that they'll just analyze it
21 before they isolate the MSIV.

22 MR. CASHELL: That's what we'll actually
23 do before we try to run the plant. Right not we won't
24 operate the plant. Yes, we won't be able to take that
25 action that's in the bases that the tech specs direct

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1 us to if we don't have that analysis completed.

2 CHAIRMAN ABDEL-KHALIK: Right. But I'm
3 asking about the analysis methodology and whether that
4 is a part of the component vibration assessment.

5 MR. CASHELL: I don't know the answer to
6 that.

7 MR. HEAD: You mean for the whether we're
8 --

9 CHAIRMAN ABDEL-KHALIK: For the steam
10 dryer, for example.

11 MR. HEAD: Whether we're assessing if we
12 can operate with three --

13 CHAIRMAN ABDEL-KHALIK: Right, right.
14 What would be the impact of the increased steam
15 velocity in the steam lines.

16 MR. CASHELL: We specifically said yes, it
17 would be all the connected steam equipment. Yes.

18 MR. HEAD: But I think you're asking are
19 we analyzing right now for three train operation or
20 with one MSIV closed.

21 CHAIRMAN ABDEL-KHALIK: I'm asking whether
22 the analysis methodology to address this particular
23 issue is included in your component vibrational
24 assessment report.

25 MR. HEAD: I believe it's not.

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1 CHAIRMAN ABDEL-KHALIK: It is not?

2 MR. HEAD: I don't think we've envisioned
3 operating like this, and that would complicate the
4 licensing process. And so, I will -- Coley, do you
5 happen to know the answer?

6 MR. CHAPPELL: Yes. This is Coley
7 Chappell.

8 My understanding from the FIV analysis it
9 does not include three-line operation for the current
10 set of testing. What is in place here is a
11 requirement in the SR that if operation with a
12 steamline isolated were to be contemplated would not
13 be allowed unless such an analysis was performed.

14 CHAIRMAN ABDEL-KHALIK: Right. And the
15 question is who's going to review that analysis and
16 whether that --

17 MR. HEAD: Well, obviously we will. And
18 I don't know. Does the bases make it clear it needs
19 NRC approval or is it at that point just a 5059?

20 MR. CASHELL: It's just a 5059 for us.
21 The Part 21 was actually written because an analysis
22 had been done, but it was a faulty analysis. Then
23 following that, they performed a good analysis.

24 MR. HEAD: I could imagine three or four
25 questions that would fail and require NRC approval

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1 before we ran in that condition. And we were there
2 before we even made the bases change. But the bases
3 change makes it explicit that for us to run in that
4 condition for a long period of time we need to do an
5 analysis. And like I say, there's --

6 CHAIRMAN ABDEL-KHALIK: And whether you
7 can do it with 5059 or it requires NRC approval, this
8 is something to be determined later?

9 MR. HEAD: Yes, sir. If we were wanting
10 to operate in that condition which is like I say is --

11 CHAIRMAN ABDEL-KHALIK: Unlikely.

12 MR. HEAD: -- unlikely.

13 CHAIRMAN ABDEL-KHALIK: Right. Okay.

14 MR. HEAD: Okay.

15 MR. CASHELL: And then there's a little
16 remaining confirmatory information that is to be
17 provided in Rev 6.

18 And that concludes the tech specs for the
19 Chapter 16 portion of this. Are there any questions?

20 MEMBER STETKAR: Yes. I'm going to hit
21 you with a standard curve ball.

22 Can you operate in modes 1, 2 and 3 with
23 the 550 millimeter containment purge or event valves
24 open? That seems to have bounced around in the tech
25 specs over the last two revisions. And I'm quite

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1 honestly confused about what the tech specs are right
2 now. 3.6.1.3 is the section, and you may want to do
3 some homework on it. But I'm honestly confused about
4 whether you are legally allowed to do that. I
5 understand that an inerted containment and everything.
6 But we are by the way a nation of lawyers, and this is
7 the lawyers writing things. So I'm just curious
8 whether the tech specs allow you to operate with those
9 lines open.

10 MR. PHELPS: The large HVAC supply and
11 exhaust?

12 MEMBER STETKAR: Yes. The drywall purge
13 event. The big ones.

14 MR. CASHELL: I believe that we are not.

15 MEMBER STETKAR: I'm not sure. That's
16 what I believed the last time around. But now I'm not
17 so sure. That's why I'm asking.

18 MR. CASHELL: There's a period of 24 hours
19 --

20 MR. PHELPS: Yes. I think for a period of
21 24 hours.

22 MR. CASHELL: -- on both sides where you
23 can inert where those operations allow.

24 MR. CHAPPELL: Right. This is Coley
25 Chappell again.

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1 What is required by the tech specs is the
2 operability of the valves in the mode. These are
3 containment isolation valves penetration isolations.

4 In some cases based on design, the
5 operability may be challenged by certain
6 configurations. So that's part of the operability of
7 those particular valves.

8 And at times, it was mentioned we would
9 vent prior to shutting down. We would then de-inert
10 the containment. And so those valves would be there.
11 But there may be configurations due to other
12 situations such as a HELB analysis of something that
13 would require under certain configurations some of the
14 valves to remain closed for operability. Not
15 necessarily these particular valves, but it might
16 preclude retaining them open throughout a cycle, for
17 example.

18 MEMBER STETKAR: I think I understand what
19 you said.

20 MR. HEAD: So Coley, we do the valves, we
21 would open as would be inert?

22 MR. CHAPPELL: Correct.

23 MR. CASHELL: You're allowed to do that on
24 both sides of the cycle.

25 MR. CHAPPELL: Correct.

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1 MR. CASHELL: And I think you have 24
2 hours to operate in that condition. But other than
3 that --

4 MEMBER STETKAR: I guess I couldn't even
5 find that. But I'm not sure. There's so much redline
6 strikeouts and the versions that I have --

7 MR. CASHELL: If you go to Part 4, it's
8 the clean copy and you'll be able to see.

9 MEMBER STETKAR: What?

10 MR. CASHELL: If you go to Part 4 of our
11 COLA, those are the clean tech specs where we've
12 factored in the Chapter 16 changes.

13 MEMBER STETKAR: Rev 4?

14 MR. CASHELL: Part 4.

15 MEMBER STETKAR: Okay. I guess I don't
16 have it.

17 MR. CASHELL: You're in Part 2, I believe.

18 MEMBER STETKAR: Okay. Yes, I guess I
19 don't have Part 4.

20 MR. CASHELL: I have them on a memory, so
21 we can look at all this.

22 MEMBER STETKAR: It's okay. I think I
23 understood what I heard.

24 I couldn't find any information about
25 these valves. I did notice in the Chapter 15 analyses

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1 that it's assumed that they close within 20 seconds.
2 They're 550-millimeter valves. So they're rather
3 large valves.

4 Do you know what kind of valves they are?
5 I don't mean manufacturer. Are they butterfly valves?
6 Are they gate valves? Are they --

7 MR. CASHELL: They're butterfly valves.

8 MEMBER STETKAR: They're butterfly valves?

9 MR. CASHELL: Yes.

10 MEMBER STETKAR: Okay.

11 MR. CASHELL: And some of the plants had
12 to actually block the valves because --

13 MEMBER STETKAR: You took that out. So --

14 MR. CASHELL: -- at certain pressure in
15 there, the valves couldn't close. So they blocked
16 them 50 percent so they could --

17 MEMBER STETKAR: But apparently you took
18 that out.

19 MR. CASHELL: Yes. Well --

20 MEMBER STETKAR: Did you remove that
21 requirement also?

22 MR. CASHELL: Well, ours can close under
23 accident pressure. So the design of ours enables them
24 to close under accident pressure.

25 MEMBER STETKAR: Okay.

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1 MR. CASHELL: However I do believe that
2 they won't be opened.

3 MEMBER STETKAR: Okay. It's my
4 understanding that they can be open. They're allowed
5 to be open. And I'm not sure I see the restriction
6 about 24 hours anywhere.

7 MR. CASHELL: I'll find you that.

8 MEMBER STETKAR: Maybe off-line later, you
9 can show me that.

10 CHAIRMAN ABDEL-KHALIK: Can we hold that
11 as a follow-up item then?

12 MR. CASHELL: The 24 hours is on the
13 containment oxygen spec that tells you you have to
14 establish the parameters required by tech specs within
15 24 hours after entering mode 1 for start-up. It might
16 be mode 2. And to do that, you need those valves open
17 to operate the systems necessary to establish the
18 proper atmospheric conditions within the primary
19 containment.

20 MS. BANERJEE: Do you remember the tech
21 spec number? I can get a printout of that page.

22 MEMBER STETKAR: I've got the tech specs
23 here.

24 Continue. Thank you.

25 CHAIRMAN ABDEL-KHALIK: Okay.

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1 MR. CASHELL: So that concludes this
2 portion. Any other questions?

3 CHAIRMAN ABDEL-KHALIK: Are there any
4 questions for the Applicant on Chapter 16?

5 (No audible response.)

6 CHAIRMAN ABDEL-KHALIK: Okay.

7 MR. CASHELL: From the Chapter 7
8 discussion on February 8th, you asked us to address
9 the bypass of sensors and channels for the Engineering
10 Safety Features Logic and Control System. We call
11 that the ELCS.

12 The way our tech specs are laid out, all
13 the sensors are in one section and all the logic is in
14 the remaining sections within Chapter 3.3. So sensor
15 channels are contained in Section 3.3.1.1.

16 These sensor channels are used by both the
17 reactor -- now I'm going to keep this simple and just
18 tell you about reactor trip and isolation and ELCS --
19 the ELCS.

20 MEMBER BROWN: Section 3.3, is this the --

21 MR. CASHELL: Instrumentation overall.

22 MEMBER BROWN: This is Tier 1?

23 MR. CASHELL: No, of the tech specs. I'm
24 sorry.

25 MEMBER BROWN: Of the tech specs? Okay.

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1 Okay, I'm sorry. Thank you.

2 MR. CASHELL: Okay. So sensors are in
3 3.3.1.1. And then the logic output channels for RTIS
4 -- reactor trip and isolation -- is 3.3.1.2, and for
5 output in 3.3.1.4.

6 I'll show you a better slide of this in a
7 second.

8 But there are four divisions or channels
9 of sensors. And there's four divisions of channels of
10 logic and output for RTIS. So when you look at that
11 -- everything flowing that way -- a division on
12 everything. When you go toward the ELCS, the ELCS is
13 using the same sensors like drywall pressure high,
14 it's the same sensor used by both. But ELCS, we take
15 it down to the actual subsystem. So within ELCS,
16 there's either two channels or there's a single
17 channel. And for all of the initiation functions
18 within ELCS -- and that's what we're going to use as
19 examples -- there will be two channels. One channel
20 will actuate the valve. One channel will actuate the
21 pump. So if you wanted to start low-pressure flood or
22 Charlie, for instance, you need the pump and the
23 valve. So it's a two out of two when you get to that
24 point.

25 But let me show you a better

1 representation of this. So the sensor channels are
2 all contained in 3.3.1.1. The RTIS, we have the logic
3 and output channels. There's one channel per
4 division. And if you go over to the ELCS side -- ECCS
5 and the ESF -- there's two logic and output channels
6 for the ECCS initiation functions then for ADS, and
7 there's a single logic and output channel for other
8 ESF functions.

9 And you'll see why. It makes tests very
10 easy. If anything breaks in 3.3.1.4, you'll see
11 there's alpha through lima or something that tells you
12 immediately you have one hour to get that channel
13 back. Regardless of what it is, you have one hour to
14 get the channel back. If you don't get it back, you
15 just go to Section 3.5.1 and enter -- declare the
16 affected component inoperable, and then you just enter
17 that specification. And that always makes the action
18 duration identical. You don't have two different
19 action durations. Okay?

20 So here are the possible actions you can
21 take. If you're in 3.3.1.1 -- if it's just a sensor
22 channel that breaks, the only thing you can do is you
23 can either trip the channel or you can bypass the
24 sensor channels. And the way you bypass sensor
25 channels is a division of sensors bypass. So if a

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1 sensor goes bad, what you'll do first off the tech
2 specs say you can either trip it if you know which one
3 it is -- and you will right away -- or quickly within
4 six hours you can just go to division of sensor bypass
5 and for instance take out all the division 1 sensors.
6 Okay?

7 And the other rule there is only one
8 division of sensors may be bypassed at a time.
9 There's interlocks and also tech specs only allows
10 that.

11 Now when you get down to 3.3.1.2, the RPS
12 and MSIV actuation, the possible actions there are
13 also to trip or bypass a channel. Now that's only in
14 the logic channel. There's only a TLF logic output
15 bypass that you can do. And that's also by division.
16 Or you can trip an output channel. The output channel
17 doesn't have a bypass. So only one division of logic
18 may be bypassed at any one time. I'll talk about
19 bypasses a little bit more on the next slide.

20 Now when you get down to the ESF
21 instrumentation, the possible actions are essentially
22 to declare the feature -- whatever the associated
23 feature is, you declare that feature inoperable. Or
24 in certain of those single channel situations where a
25 function would be to actually de-valve, you'd go ahead

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1 and actuate that valve. Actuating a system doesn't
2 hurt you. You just do that and you've met the safety
3 function. Okay?

4 Technical specifications do not provide
5 for any bypass of the ELCS logic or output channels.
6 Here are the rules --

7 MEMBER BROWN: You zipped right through
8 that last statement.

9 John and Dennis, help me if get this
10 stated wrong when we were discussing this in the last
11 meeting.

12 I thought one of the questions -- I'm
13 trying to recall now because I didn't have a
14 transcript -- was relative to on the safeguards
15 systems that obviously channels actuate different
16 pieces.

17 MR. CASHELL: Right.

18 MEMBER BROWN: In other words, one channel
19 doesn't -- I mean, two channels don't actuate one pump
20 for instance if my memory serves me correctly. And I
21 thought one of the questions in addition to some of
22 the other stuff I think that John asked was if you
23 take out a whole channel, how do you bypass a whole
24 channel if you deem it some problem and you're not
25 exactly sure what it was?

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1 Now you just stated that you cannot bypass
2 or disable an entire --

3 MR. CASHELL: Per tech specs. Tech specs
4 gives you no provision. There are some maintenance
5 bypasses in the ELCS.

6 MEMBER BROWN: But maintenance
7 circumstances are different plant conditions. This is
8 operationally is what I'm --

9 MR. CASHELL: Yes. So what happens, let's
10 say you're in -- the examples I'll show you, we're
11 going to use the division -- within each division
12 there are six SLFs or logic functions. Okay? So low-
13 pressure core flooders for instance is in division 1,
14 2 and 3 -- alpha, bravo, Charley.

15 MEMBER BROWN: Okay.

16 MR. CASHELL: The channels we're talking
17 about in tech specs purposes, there are two channels
18 for low-pressure flooders Charley for instance. One of
19 those channels goes to the valve. One goes to the
20 pump. And you can see that in the figures in the
21 bases of the tech specs.

22 MEMBER BROWN: Why would you have -- I
23 guess I didn't pick that up from going through the
24 stuff that was a level detail far from my
25 understanding of the system -- but why would you have

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1 a different channel? If you need both devices to
2 actuate to accomplish the function, why would I have
3 two different channels do that? I mean, if I lose
4 one, I lose the whole function anyway.

5 MR. CASHELL: Yes, that was a certified
6 design. It's a two out of two at that point.

7 But it makes -- well, from my standpoint,
8 it makes tech specs very easy for the operator. He
9 loses a channel, he knows what to do. He just
10 declares that piece of equipment inoperable.

11 MEMBER BROWN: The pump and/or the valve?

12 MR. CASHELL: No, no. It would be low-
13 pressure flooder.

14 MEMBER BROWN: So he declares -- not the
15 actuating functions but the system that actuates?

16 MR. CASHELL: Correct. It's declared
17 inoperable. And then that's what allows you to ensure
18 that your completion times are identical.

19 MEMBER BROWN: Okay. I understand you're
20 zipping through now.

21 MR. HEAD: We understand the question from
22 the previous discussion. We certainly wanted to make
23 sure we were headed towards answering the questions
24 that were asked. We can discuss this in any detail
25 you want because how we manage inter-reactor tech

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1 specs is an important operational consideration.

2 So you're headed towards a diagram --
3 right -- that shows the different --

4 MEMBER BROWN: No, there's no diagram.
5 That's why I asked the question. That would have been
6 helpful to have something to illustrate what you were
7 talking about.

8 MEMBER BLEY: Do you have --

9 MR. CASHELL: I do have some paper.

10 MEMBER BROWN: Is there something in the
11 FSAR that shows this?

12 MR. CASHELL: Oh, sure.

13 MEMBER BROWN: I'm sure there is. It's
14 just a matter of --

15 MR. CASHELL: As far as the figures at the
16 end of 3.3.1.4.

17 MS. BANERJEE: I can go and make copies
18 for distribution.

19 CHAIRMAN ABDEL-KHALIK: Let's continue,
20 please.

21 MEMBER STETKAR: Well, let me see if I can
22 follow up because one of the questions I think I
23 raised was do the tech specs allow you to
24 simultaneously bypass a sensor division and an ESF
25 actuation division.

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1 MR. CASHELL: No, they don't.

2 MEMBER STETKAR: That's what I'm hearing
3 you say this morning. Do they explicitly prohibit you
4 from doing that?

5 MR. CASHELL: Yes, yes.

6 MEMBER STETKAR: They do?

7 MR. CASHELL: Yes.

8 MEMBER STETKAR: Where? In other words,
9 you said there are bypasses down in -- maintenance
10 bypasses in the ESF actuation divisions. Is that
11 correct?

12 MR. CASHELL: Let me put it like this.
13 The tech specs don't say don't bypass the ESF
14 equipment. However, as soon as we bypass the ESF
15 equipment or ECCS equipment, you've made it
16 inoperable. Once you've made it inoperable, you have
17 one hour to enter the specification for the inoperable
18 subsystem.

19 MEMBER STETKAR: So that's the
20 interpretation that when --

21 MR. CASHELL: That you declare, that you
22 bypass.

23 MEMBER STETKAR: But when a sensor
24 division is bypassed, it's not -- it's inoperable
25 also.

1 MR. PHELPS: Let me try to understand.
2 When you bypass a division of sensors --

3 MEMBER STETKAR: Right.

4 MR. PHELPS: -- you've effectively taken
5 your actuation logic to two out of three.

6 MEMBER STETKAR: Right.

7 MR. PHELPS: It still goes to all three
8 divisions --

9 MEMBER STETKAR: Right.

10 MR. PHELPS: -- and you haven't impacted
11 any of your ESF functions at that point.

12 MEMBER STETKAR: Understand completely.

13 MR. PHELPS: So what I'm saying is if you
14 had division 1 sensors, could I take division 3 ESF
15 equipment out of service? I think the answer is yes,
16 that that is acceptable. You would be in the
17 technical specifications to where you now only have
18 two out of three -- whatever function that was for the
19 --

20 MEMBER STETKAR: That's allowed?

21 MR. PHELPS: Yes. That would be allowed.

22 MEMBER STETKAR: That's sort of what I was
23 trying to get to.

24 MR. PHELPS: Okay. That's what I was --

25 MEMBER STETKAR: The bypass term

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1 inappropriately. But that is allowed?

2 MR. PHELPS: Yes.

3 MEMBER STETKAR: Okay.

4 MR. HEAD: Are we sure we're answering
5 these questions from an ESF standpoint versus RPS
6 standpoint? Because they are different, right?

7 MR. PHELPS: Yes.

8 MEMBER STETKAR: I was interested in ESF
9 in particular.

10 MEMBER BROWN: ESF was relative to where
11 I was going. I don't think I asked any --

12 MEMBER STETKAR: RPS is a little different
13 animal.

14 MR. HEAD: Was Jay's answer an RPS answer
15 or an ESF answer?

16 MEMBER BROWN: Well, I'm about to ask --

17 MR. CASHELL: ESF.

18 MR. HEAD: Was it? Okay.

19 MEMBER BROWN: I wanted a little
20 clarification if I could.

21 MEMBER STETKAR: Jay's answer is
22 consistent to my reading of the tech specs that that
23 condition was allowed. I could take out division 3 of
24 high-pressure core flood, let's say, and division 1
25 sensors.

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1 MR. PHELPS: Yes.

2 MEMBER STETKAR: So I had division 2, 3,
3 4 sensors left that would provide input to division --
4 I can't remember --

5 MR. PHELPS: One and 2.

6 MEMBER STETKAR: -- 1 and 2. Thanks.

7 MR. PHELPS: One and 2 for high-pressure
8 core flooder.

9 MEMBER STETKAR: Yes. Two for high-
10 pressure core flooder. Okay.

11 MEMBER BROWN: And that's what I was --

12 MEMBER STETKAR: And that's allowed.
13 Under whatever time limits --

14 MR. PHELPS: Correct.

15 MEMBER STETKAR: -- that's allowed. Okay.

16 MEMBER BROWN: The clarification I wanted
17 was just to recalibrate my understanding. I mean,
18 I've got three divisions of actuating functions and
19 four divisions of sensing functions and monitoring
20 functions.

21 And if I take out a division of sensors
22 for say division 1, that doesn't throw away the
23 ability -- it's division 4 that's the one that has no
24 actuation if I remember. Is that correct?

25 MR. CASHELL: Right, right.

1 MEMBER BROWN: Okay. But I've still got
2 the division 1 actuation functions available.

3 Are they fed by the other sensor
4 divisions?

5 MR. CASHELL: Yes.

6 MEMBER BROWN: They are?

7 MR. CASHELL: Correct.

8 MEMBER BROWN: Okay. So each actuation
9 division is fed by the other four sets of sensor --

10 MR. CASHELL: Yes.

11 MEMBER BROWN: -- divisions. So
12 effectively you've still got two out of three.

13 MEMBER STETKAR: If you take out division
14 3 actuation, you go down -- in division 1 sensors --
15 you go down to two out of three four divisions 1 and
16 2 actuation, if you will.

17 MEMBER BROWN: All right. Thank you.

18 MR. CASHELL: Where the confusion comes in
19 I think is on the RPS side and that you can take out
20 a division of sensors. So of the four sensors you've
21 lost one whole division. And you can take out a whole
22 division of the logic down there, for instance. But
23 you still have three divisions of sensors feeding
24 three divisions of logic. And they're crisscrossed
25 every way so that you still have three channels

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1 capable of providing two signals. But the ELCS is
2 different.

3 Once you start taking out when you talk
4 about a whole division of ELCS, for instance, if you
5 took out division 3 of ELCS, you would immediately
6 have to declare low-pressure flooder Charley, high-
7 pressure flooder Charley, diesel generator Charley,
8 isolation -- it's all the continuation isolation
9 Charley.

10 So now you're in a 351 for moldable ECCS
11 inoperable. And you don't stay there long.

12 MEMBER STETKAR: But you're down to two
13 out of two.

14 MR. CASHELL: Yes.

15 MEMBER BROWN: Effectively. Isn't that
16 correct?

17 MR. CASHELL: Right.

18 MEMBER BROWN: Okay. And therefore you
19 have to put a time limit on yourself in order to get
20 something back in service. Is that --

21 MR. CASHELL: That's right. And that's
22 what makes these specs so much easier to use than the
23 specs that have the sensors and logic all in the same
24 chapter. It's one of the benefits of these.

25 Okay. So here's some rules with bypass.

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1 Bypass capabilities available for a single division of
2 sensors. Now this is tech spec limitations. Bypass
3 capabilities are also available for a single division
4 of RTIS. Bypassing a single division of sensors and
5 a single division of the RTIS logic -- like we just
6 talked about, you have three sensors. The reason is
7 to provide signals to three logic divisions for RTIS.

8 Bypass capability and tech specs is not
9 provided for in ELCS logic. In other words, there's
10 no tech spec that tells you to bypass the ELCS logic.
11 And once you ever bypass anything, it's inoperable.
12 So you take the associated actions.

13 Now to give an example, let's say, the
14 only thing we've lost is the division 3 safety logic
15 function 1 which only -- I did it for simplicity --
16 but it only supplies low-pressure flooder Charley. So
17 what action be in 3.3.1.4 tells you it is to restore
18 that channel to operable status within an hour.

19 If that can't be done, then you declare
20 low-pressure flooder Charley inoperable. And that
21 requires you to entire LCO 3.5.1 for loss of low-
22 pressure flooder Charley.

23 MEMBER BROWN: Now that's the whole
24 division you're talking about right now. When you say
25 loss of single channel division 3, you lost --

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1 MR. CASHELL: You have six SLFs in each
2 division. So there's 18 SLFs. And four of those in
3 each division are paired.

4 So what I did is I choose up here --

5 MEMBER BROWN: Okay. So you're talking
6 about one of six.

7 MR. CASHELL: SLF -- yes. One of six in
8 Div 3. And I chose one that took out a single
9 function. There are others that have two and three
10 functions. If you had one of those SLFs go out, you'd
11 have to declare all three of those functions
12 inoperable and enter the spec for those --

13 MEMBER BROWN: And there's a time --

14 MR. CASHELL: Yes. And the time keeps
15 shortening the more it goes inoperable.

16 MEMBER BROWN: So in this case, with this
17 being your only inoperability out there, low-pressure
18 core flooder Charley has to be restored to operating
19 status in 14 days.

20 MR. CASHELL: Provided RCIC is operable.
21 If RCIC's not operable, you have seven days.

22 MEMBER BROWN: So I'm two out of two for
23 seven days? Well, remember, I'm just simple minded.

24 MR. PHELPS:

25 You're essentially down to two trains of

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1 high-pressure injection sources.

2 MEMBER BROWN: You had a problem, you're
3 expending on both of them?

4 MR. PHELPS: Yes, you're doing low
5 pressure here. Yes.

6 MEMBER BROWN: You put them on both of
7 them to actuate if you needed it.

8 MR. PHELPS: Right.

9 MEMBER BROWN: And you allow that. I
10 don't want to use the pejorative. But you're going to
11 allow that by tech spec for seven days at that point.

12 MR. PHELPS: Right.

13 MR. HEAD: Because the system is still
14 there. The operator can still go --

15 MR. CASHELL: You can still manually
16 initiate the system perhaps. You still have --

17 MEMBER BROWN: It's not redundant anymore.

18 MR. CASHELL: Low-pressure flooders. Well,
19 the redundancy's built -- for the ECCS systems, it
20 works a little different. The redundancy's built into
21 the subsystem structure of the ECCS. Three low-
22 pressure flooders -- alpha, bravo and Charley -- EDS,
23 RCIC for high-pressure, and then --

24 MEMBER BROWN: So if one of those two
25 remaining failed --

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1 MR. CASHELL: Well, then you have two low-
2 pressure --

3 MEMBER BROWN: No, no, no. Failed during
4 a casualty. The remaining one would operate and you
5 would be okay.

6 MR. CASHELL: Right, right. A single low-
7 pressure function is all you need in there.

8 MEMBER BROWN: Okay. Great.

9 Did I understand that right, you operator
10 guys, you plant guys?

11 I don't know if I'm treading on thin ice
12 or what.

13 MR. HEAD: But what the PRA guys would say
14 that the timeframes involved are based on the fact to
15 a certain extent there is a system there that's
16 capable of still being --

17 MR. CASHELL: Now let's take that example
18 one step further. Let's say that same problem that
19 you have but you've already got -- four days earlier,
20 you put the division 1 sensors in bypass. So
21 everything that's broken has a separate spec. You
22 enter all these specs as these things occur. So four
23 days prior to that, you entered LCO 3.3.1.1 action A,
24 and that tells you I have to restore that division 1
25 sensor or I have to trip the individual sensor and

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1 restore all the other sensors within 30 days of
2 inoperability. And that still leaves me with three
3 divisional sensors. So I still have three drywall
4 high-pressure signals and three low-water level
5 signals coming in to start my ECCS. And then the
6 remaining actions are the same for the loss of low-
7 pressure flooders Charley. So you have separate specs
8 dealing with all of this.

9 Now if you lost another set of sensors at
10 the time, you'd put that sensor -- so it's a
11 beautifully simplistic method when you start walking
12 through it. It's tough to sit there and read on it I
13 understand.

14 MR. HEAD: Yes, these do factor in.
15 Obviously the tech spec experiences of the '80s and
16 some of the -- I won't use the word pain -- but
17 certainly --

18 MR. CASHELL: Getting away from that
19 cascading that we used to have to do, these specs just
20 tell you hey, don't even mess around in the 2.3.1.4.
21 If you can't get that fixed in an hour, you're over in
22 where you're declaring supported equipment inoperable
23 -- whole subsystems inoperable and taking those
24 actions rather than people used to try to figure out
25 where they out and seven days later they realize, oh

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1 my gosh, we've been on this spec for seven days and
2 didn't know it. But we don't have that.

3 But don't look at ELCS as the same as
4 RTIS. In other words, you don't just turn a switch
5 and wipe out everything in division 3, for instance.

6 CHAIRMAN ABDEL-KHALIK: Are there any
7 further questions?

8 MEMBER BLEY: Yes. I just wanted to
9 follow up on something that Scott said because he said
10 the PRA guys would say the system that isn't operable
11 may still be operable.

12 MR. HEAD: No. They're still there.

13 MEMBER BLEY: Still there?

14 MR. HEAD: Right.

15 MEMBER BLEY: Well, that implies the PRA
16 guys might try to take advantage of them. But I've
17 talked to operators in plants who have told me once
18 I've declared inoperable, I'll never turn it on.

19 MR. HEAD: Well, you wouldn't find that at
20 our plant.

21 MR. PHELPS: No. Absolutely not.

22 MEMBER BLEY: Okay.

23 MEMBER BROWN: Well, let me --

24 MR. HEAD: You mean they would manually
25 actuate it then?

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1 MEMBER BLEY: Yes. They would say it's
2 inoperable and I'm not allowed to turn it back on
3 again. I've run into that in many -- is that really
4 specified in your training in your admin procedures?

5 MR. PHELPS: Yes. You do your PRA just
6 calculating your --

7 MEMBER BLEY: Yes, I know. But the PRA
8 doesn't --

9 MR. PHELPS: -- the work that you're
10 doing. You consider that component functional or
11 nonfunctional.

12 It's always inoperable in either one of
13 those cases from a tech spec basis. But if it's
14 functional, we still take credit for it in the
15 calculation of the anticipating changing core damage
16 frequency for that work week, assuming it's just out
17 of service for --

18 MEMBER BLEY: Well, I have wanted to do
19 that too. But then I've run into operators who said
20 you'd better not because I won't turn it on.

21 MR. PHELPS: No.

22 MR. HEAD: No, sir.

23 MR. PHELPS: Absolutely not.

24 MR. HEAD: That is foreign to certainly 1
25 and 2. And it will be foreign to 3 and 4.

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1 MR. PHELPS: Absolutely.

2 MEMBER BLEY: But I'd like to know how you
3 make it foreign.

4 MEMBER STETKAR: Because I used to be an
5 operator, and I used to be shift supervisor. And when
6 something was inoperable, when it had a red tag
7 hanging on it, our operators were instructed do not
8 touch that.

9 MR. PHELPS: Correct.

10 MEMBER STETKAR: Because you're -- well,
11 wait a minute. Because you're liable to kill
12 somebody.

13 MR. PHELPS: No, that's different. When
14 I talk nonfunctional there, you could have a room
15 cooler for the pump out of service, for example. The
16 system is inoperable. The component itself that
17 provides water to the reactor vessel is capable. If
18 you have a red tag, it's unavailable. It's
19 nonfunctional.

20 MEMBER STETKAR: It depends on what you
21 tag.

22 MR. PHELPS: An instrumental piece that's
23 out of service --

24 MR. HEAD: If you put a red tag and you
25 close it out, we've probably declared nonfunctional --

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1 MR. PHELPS: Correct.

2 MR. HEAD: -- also. And so it is
3 literally broke. Okay? But if the operators are
4 trained, use it or use something -- I mean, that's not
5 --

6 MEMBER BLEY: I'm glad to hear that
7 because I was kind of stunned when I've run into that.

8 MR. HEAD: Well clearly, a big part of our
9 one and two risk management tech specs was -- and you
10 allowed how many times we're allowed to calculate is
11 depending is significantly different if the diesel is
12 torn apart versus whether it just won't actuate. And
13 because if it's sitting there ready to perform, where
14 the vast majority of the situations you would deal
15 with being able to manually actuate it is going to get
16 you what you need.

17 MEMBER BROWN: So it's a matter of the
18 color of the tag or how you define or declare it.

19 MEMBER BLEY: You might not even tag it.

20 MEMBER BROWN: Well, the only way I would
21 think would be --

22 MR. PHELPS: Absolutely.

23 MR. HEAD: But in the books, per tech
24 specs, the clock would be ticking. It is inoperable.

25 MR. PHELPS: Right.

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1 MR. HEAD: Because it cannot perform its
2 design-basis function. And that's why I alluded to
3 the PRA space. But it's still capable of mitigating
4 a significant number of events.

5 MEMBER BLEY: Most events. Yes.

6 MR. HEAD: They will do that.

7 MEMBER BLEY: That's good to know.

8 MEMBER BROWN: So there's no way to
9 identify -- let me use your diesel generator example
10 -- okay? In other words, it won't automatically
11 actuate but manually be just fine? So somebody -- the
12 operators have to remember that circumstance. So
13 there's no label, nothing hanging down there that says
14 this is available for manual operation but it will not
15 -- I find it hard to believe that you're going to
16 remember everything.

17 MR. PHELPS: There aren't really that many
18 items that are out of service. Typically you're
19 working one division at a time per work week --

20 MEMBER BROWN: Okay.

21 MR. PHELPS: -- as you do that. So the
22 turnover process very clearly identifies what
23 equipment is currently available and inoperable. And
24 the operators have to review the technical
25 specifications and the action statements therein. And

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1 those are briefed at the beginning.

2 And there are things that can get a little
3 out there that require very specific briefings. At
4 the beginning of each shift, there are reminders. For
5 example, when we enter extended allowed outage time
6 using the risk-based tech specs, there are sometimes
7 some unique features. And there's a very detailed
8 briefing performed every day those guys come into to
9 remind them of restrictions on operation, whether you
10 can't do liquid releases, you can't open a containment
11 isolation valve, that are covered daily as we work
12 through that particular plant configuration set.

13 CHAIRMAN ABDEL-KHALIK: Are there any
14 additional questions to the Applicant on Chapter 16?

15 MR. HEAD: I guess I would like to add,
16 this was obviously our attempt to answer the action
17 item that came out of the discussion. I hope we --

18 MEMBER BROWN: No, my part's satisfied.
19 So I'm closed on this one. I defer to John for his --

20 MEMBER STETKAR: No, I'm happy. I
21 understand it.

22 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

23 At this time, we'll move to the staff.

24 MS. JOSEPH: Good morning. My name is
25 Stacy Joseph, Chapter PM for Chapter 16, Technical

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1 Specifications. And I'm joined here by Craig Harbuck,
2 our lead reviewer for tech specs.

3 We had one item in our NCO of open items.
4 And this had to do with completion of bracketed items
5 for plant-specific tech specs having to do with set
6 point methodology and PTLR.

7 MR. HARBUCK: And there's not a whole lot
8 to say about this. With respect to technical advances
9 for those items that Stacy mentioned were -- they
10 completed their evaluations. And the information is
11 correct and the references to the methodologies are
12 correct in the tech specs. So those items are closed
13 and detailed on the slide are all of the things that
14 were marked as being pending completion of those
15 reviews that are now resolved.

16 So going on to the last slide, we can come
17 to the conclusion that we satisfied the regulatory
18 requirements pertaining to tech specs.

19 CHAIRMAN ABDEL-KHALIK: Any questions for
20 the staff on Chapter 16?

21 (No audible response.)

22 CHAIRMAN ABDEL-KHALIK: Okay. Thank you.

23 At this time, I believe we are scheduled
24 to address some of the ACRS action items. Is the
25 Applicant ready to proceed to that?

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1 MR. CHAPPELL: Mr. Chairman, we are ready
2 to discuss the prepared items as a follow-up from
3 Chapter 7. And then I believe we're also working to
4 address the overall status of the action items which
5 we may yet be ready for that point.

6 CHAIRMAN ABDEL-KHALIK: Okay. Let us just
7 address the action items that you have on your
8 presentation here.

9 Please proceed.

10 MR. CHAPPELL: My name is Coley Chappell
11 again. I will briefly present a follow-up to the
12 action items that resulted from our Chapter 7
13 discussion back on February 8th.

14 Those two items on the ACRS action list
15 are #67 and 68.

16 Item #67 was mentioned earlier by Mr.
17 Brown. This regarded a statement in our presentation
18 regarding determinacy in the reactor trip and
19 isolation and near-term monitoring system platform.
20 The gate array has a watchdog timer that is a diverse
21 hardware-based configuration compared to the FPGA.
22 And so for that follow-up item from that presentation
23 we submitted a revision on the docket to the
24 subsection or the appendix in 7DS Subsection 1.3 that
25 included the statement in the presentation for Chapter

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1 7. And that's an update for that item.

2 MEMBER BROWN: I'm happy with that.

3 MR. CHAPPELL: Okay.

4 MEMBER BROWN: Closed.

5 MR. CHAPPELL: Our next item is an update
6 on item #68. As was mentioned earlier with our
7 licensing engineer Fred Puleo who was involved in a
8 DAC inspection preparation in Japan, our I&C team has
9 also been involved in that, and we've also been
10 working on gathering some of the information on the
11 Common Q qualification test. So this is an update
12 that we'll be providing that qualification test as
13 part of a future presentation to ACRS.

14 But the one part to discuss is there may
15 be have some other discussion following the meeting.
16 We understood that the qualification test wanted to be
17 reviewed by ACRS.

18 CHAIRMAN ABDEL-KHALIK: Could you repeat
19 that, please?

20 MR. CHAPPELL: The Common Q qualification
21 test that ACRS has a desire to review that to look at
22 the qualification test.

23 Our understanding and the action that we
24 took from the February 8th meeting was limited to
25 that. We have had some iterations regarding this

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1 action item with the staff about other aspects related
2 to this action item that may have come in afterwards.
3 And I wanted to take this opportunity to understand
4 what the expectation is to close this action item so
5 that when we come back and address it, we can fully
6 meet the ACRS' concern.

7 MEMBER BROWN: I don't necessarily want to
8 review the entire test. I just wanted a presentation
9 that demonstrated how the Common Q platform was
10 qualified to operate at the 70 percent point -- what
11 was stated. All the rest of the stuff, I'm not
12 interested in dragging.

13 CHAIRMAN ABDEL-KHALIK: That was the
14 focus.

15 MR. CHAPPELL: Okay.

16 MEMBER BROWN: Yes, the focus was on that
17 and that alone. But we'd like to see how was it done
18 and what were the results. That shouldn't be all that
19 hard if the information is available.

20 Dennis, John, did you all have any other
21 thought?

22 (No audible response.)

23 MEMBER BROWN: Okay.

24 MR. CHAPPELL: And then we have been
25 working on the action items and updates from

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1 yesterday's presentations as well as I think we'll
2 have a list to go through just recently in the last
3 hour provided.

4 CHAIRMAN ABDEL-KHALIK: Right.

5 MS. BANERJEE: Mr. Chairman, if I may be
6 excused for just a few minutes, I am getting copies of
7 that list printed right now and mailed to --

8 CHAIRMAN ABDEL-KHALIK: Once we have that
9 list, what would we do with the list at this time?

10 MR. HEAD: This was to go over yesterday's
11 -- all the action items we had so that we're all --

12 CHAIRMAN ABDEL-KHALIK: We captured.
13 Okay.

14 Why don't we take a five-minute break
15 until Maitri retrieves that list? This is just
16 essentially bookkeeping to make sure that we have
17 captured all the open items or all the questions from
18 yesterday and if any from today? Okay.

19 Thank you.

20 (Whereupon, at 10:41 a.m., off the record
21 until 10:45 a.m.)

22 CHAIRMAN ABDEL-KHALIK: We're back in
23 session.

24 You have the typed version, Coley?

25 MR. CHAPPELL: Sure.

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1 CHAIRMAN ABDEL-KHALIK: Okay.

2 MR. CHAPPELL: I think we just have a
3 hand-out.

4 CHAIRMAN ABDEL-KHALIK: Okay.

5 MR. HEAD: So the desired outcome is go
6 through --

7 CHAIRMAN ABDEL-KHALIK: Yes, sir.

8 MR. HEAD: -- and make sure that what is
9 captured here accurately reflects the questions.

10 CHAIRMAN ABDEL-KHALIK: Sure. Okay.

11 MR. HEAD: Would you like us to read them
12 or John for maybe the first one just ask if it --

13 MEMBER STETKAR: I'm sorry. I'm
14 preoccupied.

15 CHAIRMAN ABDEL-KHALIK: Let's go through
16 the list and read them.

17 MR. HEAD: Okay. I'll just start at the
18 top and proceed down.

19 The first one is Chapter 5, and then after
20 the first one they're related to Chapter 6.

21 The first question is John Stetkar's
22 question specifically about vapor pressure head. The
23 table reported 4.33 meters at 77 degrees Celsius. In
24 the COLA table, it was stated the values are adjusted
25 to 100 Celsius and report the vapor head as 4.39

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1 meters. However, at one atmosphere, the boiling
2 temperature is 100 degrees Celsius. That's by
3 definition the vapor pressure would equal atmospheric
4 pressure at 10.77 meters. Thus this negates the
5 positive head of the atmosphere.

6 So the question is to explain this
7 apparent --

8 MEMBER STETKAR: yes, the question is to
9 explain how do you determine you have adequate net
10 positive suction head for the RCICs because it stated
11 that the required net positive suction head is seven
12 meters. So regardless of what the suction line losses
13 are, even if they're zero, it doesn't seem you're
14 going to make it at 100 degrees C.

15 MR. CHAPPELL: What you're looking at in
16 Revision 4 was modified by an RAI that's intended to
17 be included in Revision 6. But it only changes the
18 numbers slightly. It does not address the concern.
19 But we'll provide an update when we respond to this
20 question that clarifies that as well.

21 The next item -- Dr. Wallis --

22 CHAIRMAN ABDEL-KHALIK: Well, before we
23 get there, there's another item in Chapter 5 which
24 deals with the bearings -- the filters for the RCIC
25 turbine pump bearings.

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1 MEMBER STETKAR: Lubrication system. I
2 heard a lot of words. But I guess I wasn't convinced
3 that we have assurance that the analyses that are done
4 given the contamination and particulate loading in the
5 suppression pool that you use for the downstream
6 effects for GSI-191. I mean, that same loading should
7 apply for operability of the RCIC turbine when it's
8 taking suction from the suppression pool. And how are
9 those loadings factored into continued operability of
10 the RCIC turbine given whatever filtration system you
11 have for the lubricating water systems? And a concern
12 is with those filters plugged basically.

13 MR. CHAPPELL: Right.

14 MR. HEAD: We weren't attempting to close
15 this one yesterday. I think maybe we got --

16 MEMBER STETKAR: I mean I heard a little
17 bit of references to QME, but everything that I've
18 read in there doesn't really address this type of
19 phenomena. It addresses internal wear and binding of
20 valves and things like that.

21 MR. CHAPPELL: We had discussed those
22 aspects, but I think we'll take that about the
23 specific aspects of the RCIC --

24 MEMBER STETKAR: What I'm trying to do is
25 to instill a sensitivity at least among the staff

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1 anyway that when they review those qualifications
2 programs, they make sure that this issue has been
3 addressed, that it doesn't slip through a crack.

4 MR. CHAPPELL: Okay.

5 All right. I'll then continue on the next
6 item on this list.

7 Dr. Wallis asked about how hydrodynamic
8 load definitions are developed and evaluated for the
9 strainers. And we have a comment here that we intend
10 to cover this with a Chapter 3 discussion.

11 DR. WALLIS: Just use a condensation
12 pressure wave.

13 MR. CHAPPELL: The next item asked about
14 Nucon fiberglass fiber diameter. These are also by
15 Dr. Wallis. And we were informed that we would have
16 an answer by Wednesday a.m., and we have not yet had
17 the answer.

18 DR. WALLIS: Not to my knowledge do we
19 have that answer. So --

20 MR. CHAPPELL: Prompted for that
21 information but don't have an update yet for ACRS.

22 CHAIRMAN ABDEL-KHALIK: Just compared to
23 the average thickness if you deposit all that material
24 on the surface.

25 DR. WALLIS: It's about ten mils.

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1 CHAIRMAN ABDEL-KHALIK: Well, it's 8.-
2 something mils.

3 MR. CHAPPELL: The next item asked if
4 South Texas Projects 3 and 4 plan to use zinc
5 injection for hydrogen water chemistry.

6 Next item --

7 MEMBER ARMIJO: That's kind of mixed up.
8 It's just the zinc injection for dose reduction. And
9 that's --

10 MR. CHAPPELL: Two separate pieces.

11 MEMBER ARMIJO: Yes. And the hydrogen
12 water chemistry, I may have mentioned it, but I have
13 no concerns about that.

14 Because the question is is a zinc in the
15 plant -- that loading -- is it addressed in your GSI-
16 191-type analysis? Is there enough zinc there to
17 worry about? Is it released? And do you treat it?
18 That's the context.

19 MR. CHAPPELL: Okay. Thank you.

20 CHAIRMAN ABDEL-KHALIK: So just whether or
21 not the use of zinc injection would impact the assumed
22 loadings --

23 MR. HEAD: For the downstream effect.

24 CHAIRMAN ABDEL-KHALIK: Right.

25 MR. CHAPPELL: This is an option -- an

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1 operational option. It hasn't been considered.

2 MEMBER ARMIJO: And it doesn't make any
3 difference. You may conclude that the zinc that was
4 added by zinc injection stays in the plant, stays on
5 the crud or the surfaces and has no role in the event
6 of a LOCA.

7 MR. CHAPPELL: And that's the purpose of
8 the zinc injection.

9 MEMBER ARMIJO: Well, it's supposed to
10 stay put. But this is a different chemistry and it's
11 a pretty --

12 MR. HEAD: And we understand the context.

13 MR. CHAPPELL: Okay. The next question,
14 if the analysis performed for the Japanese plant's
15 bounds thin bed effects?

16 CHAIRMAN ABDEL-KHALIK: I guess if the
17 answer to the question regarding the diameter of the
18 fiber and the average thickness is satisfactory, then
19 this issue is moot.

20 DR. WALLIS: That might help us.

21 I was pointed to some Toshiba reports.
22 This might explain that.

23 MS. BANERJEE: The three Toshiba reports?
24 001, 002 and 003. Do they address it? Does anyone
25 know?

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1 DR. WALLIS: There are CDs, so I will look
2 at them.

3 MS. BANERJEE: Yes, they're on the CDs.
4 Yes.

5 MR. HEAD: Yes, I believe what my
6 commitment there was is that we would be prepared to
7 discuss that in case it wasn't clear after you'd done
8 your review.

9 DR. WALLIS: Maybe you have a simple
10 answer.

11 MS. BANERJEE: So let's give them.

12 MR. CHAPPELL: Okay. The next item, Dr.
13 Wallis and Dr. Abdel-Khalik asked for justification
14 for the use of partial length fuel assembly.

15 Next item, Dr. Wallis --

16 MR. HEAD: Well, okay, let's -- this is
17 one I believe our agreement is that we will go back
18 and look at our Chapter 6C and consider alternative
19 wording to make it clear that we have to consider the
20 effects of --

21 CHAIRMAN ABDEL-KHALIK: Right. To go back
22 and analyze the data based on the short assembly, and
23 then decide whether or not this is appropriate --

24 MR. HEAD: Right.

25 CHAIRMAN ABDEL-KHALIK: -- or whether you

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1 need to go back and re-do some experiments -- redesign
2 the experiments with a full length assembly.

3 MR. HEAD: Yes, sir. And --

4 DR. WALLIS: I think it was decided after
5 you've done the test you can answer the question.

6 MR. HEAD: Right.

7 CHAIRMAN ABDEL-KHALIK: Right.

8 MR. HEAD: And that we have the
9 opportunity for a future briefing with ACRS on the
10 results of those tests.

11 DR. WALLIS: What may save you is that
12 complicated let's say debris catcher that you showed
13 us. I think that was at the bottom of everything.
14 And it looks as if it's likely --

15 CHAIRMAN ABDEL-KHALIK: Catch everything.

16 DR. WALLIS: -- to catch a lot of stuff.
17 Yes.

18 MR. HEAD: Which was a big part of our
19 thinking all along that that thing looked like it was
20 the challenging moment.

21 DR. WALLIS: You have to demonstrate it.

22 MR. HEAD: So the justification is
23 something that's going to come in the future. It's
24 not something that we're going to brief. It's not
25 really an action item.

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1 CHAIRMAN ABDEL-KHALIK: But in essence,
2 it's a commitment --

3 MR. HEAD: Right.

4 CHAIRMAN ABDEL-KHALIK: -- a commitment
5 re-write 6C to say we're going to look at the data and
6 then decide whether or not we can stop at that point
7 or we need to go further.

8 MS. BANERJEE: That's a post-COL activity.

9 MR. HEAD: No, the re-writing of 6C is on
10 this side of COL.

11 MS. BANERJEE: But reviewing the test
12 data.

13 MR. HEAD: The reviewing the test data is
14 post --

15 CHAIRMAN ABDEL-KHALIK: And that's fine
16 with us.

17 MR. HEAD: Okay.

18 MR. CHAPPELL: Okay. We ready to go on?

19 MR. HEAD: And I think the next one is of
20 the same type that our alternative wording will
21 address the protocol question that we brought up.

22 CHAIRMAN ABDEL-KHALIK: I guess that sort
23 of would say that you will revise the write-up to say
24 that you were going to do experiments with different
25 protocols for the addition of various components and

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1 then select the one --

2 MR. HEAD: My vision is that we would say
3 that we're going to use this in our protocol. But
4 we're also going to do additional work to confirm that
5 it is the most challenging or define the most
6 challenging.

7 DR. WALLIS: Especially around the
8 condition that you suspect is limiting.

9 MR. HEAD: Right. Right. And again, that
10 would be something that we would expect to present
11 results of to ACRS at a future briefing -- a post-COL
12 briefing.

13 CHAIRMAN ABDEL-KHALIK: Okay.

14 MR. CHAPPELL: The next item Dr. Wallis
15 asked for justification that the 1.7 factor is
16 bounding considering the potential for uneven
17 distribution of debris in the lower plenum of the
18 channeling through other locations due to the high-
19 pressure core flood flow down through the core.

20 DR. WALLIS: Are you going to do some more
21 analysis or something to see if you can answer the
22 questions?

23 CHAIRMAN ABDEL-KHALIK: I think the way we
24 left it was that you were going to do analyses with
25 different ratios until you get to failure. And that

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1 way you will identify your margin beyond the 1.7
2 ratio.

3 MEMBER CORRADINI: Can I ask a procedural
4 question?

5 CHAIRMAN ABDEL-KHALIK: Yes, sir.

6 MEMBER CORRADINI: So weren't you guys
7 committing to think about it and come back with an
8 engineering solution or to take our recommendation
9 directly?

10 CHAIRMAN ABDEL-KHALIK: This one, we're
11 going to think about taking your recommendation as
12 part of the testing program.

13 MEMBER CORRADINI: But I guess where I'm
14 coming from is -- so this is just me alone -- the way
15 these were given to you -- at least the way I view it
16 at least this one since I remember this one is in the
17 spirit of it's your plant, it's your design, you
18 figure out a way to satisfy the concern rather than go
19 do it the way we just suggested.

20 MR. HEAD: I appreciate that.

21 MEMBER CORRADINI: Okay. Because I
22 strongly believe that if you start accepting what
23 we're suggesting off-the-cuff, the next time you come
24 in front of us we'll develop a new off-the-cuff
25 solution.

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1 (LAUGHTER.)

2 MEMBER CORRADINI: Well, I think it's your
3 responsibility to understand our concern and then come
4 up with a way to satisfy the concern, not to the
5 specifics of the action item. That's --

6 DR. WALLIS: And justify it.

7 MEMBER CORRADINI: And justify it. And
8 justify it. If you think we're wrong --

9 DR. WALLIS: That's right.

10 MEMBER CORRADINI: -- you have great
11 liberty and ability to fight us to the death on it.

12 DR. WALLIS: We're very happy to admit
13 that we're wrong.

14 MEMBER CORRADINI: That's the only thing
15 I want to make sure of on this one.

16 CHAIRMAN ABDEL-KHALIK: Right. But the
17 off-the-cuff suggestion, I fully agree with what you
18 said, Mike.

19 MEMBER CORRADINI: I think the approach is
20 very sound.

21 MR. HEAD: My perspective is that we know
22 we're coming back -- I think we're coming back -- at
23 some point with our fuel amendment. And that I
24 believe that at point in time we need to be able to
25 demonstrate to you what we've done. And we may take

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1 a number of the suggestions yesterday and be able to
2 present to you our basis for why that fuel at that
3 point in time is acceptable.

4 CHAIRMAN ABDEL-KHALIK: We're just trying
5 to capture as much detail as possible to help you in
6 the process.

7 MEMBER CORRADINI: But at least on that
8 one since I spoke up, I wanted to make sure you
9 understood that it was a suggestion to consider either
10 to toss out because it was ill-conceived or at least
11 to adopt the principle of it. And you have to defend
12 it. You can't come back to us and say well, you told
13 us to do it. Because somehow that may have just
14 occurred.

15 MR. HEAD: I understand that.

16 CHAIRMAN ABDEL-KHALIK: So is this
17 particular item clear?

18 MR. HEAD: Yes, sir.

19 CHAIRMAN ABDEL-KHALIK: Okay.

20 MR. HEAD: And when I think that those
21 three are -- and I don't know -- I had not
22 contemplated any verbiage in 6C for this one per se,
23 but it's going to be imbounded in our total assessment
24 of this test that we're going to perform. And it will
25 be justifying what the results of the future do.

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1 CHAIRMAN ABDEL-KHALIK: Right. It may
2 also be depending on whether or not you sort of think
3 through it and agree that the proposed approach to
4 identify or quantify the margin is the right thing to
5 do, then you'd be able to include it in your revised
6 write-up for 6C.

7 DR. WALLIS: I think it depends on how
8 much margin they can create. If it's not very much,
9 they maybe have to do something else.

10 CHAIRMAN ABDEL-KHALIK: You can't find out
11 until you run the experiment.

12 MR. HEAD: And in the spirit of the
13 suggestion that was offered here, I really don't want
14 to write 6C and somehow limit that we're going to --

15 CHAIRMAN ABDEL-KHALIK: Do exactly.

16 MR. HEAD: -- do these things. And so --

17 CHAIRMAN ABDEL-KHALIK: Perfectly fine.

18 MR. HEAD: Okay.

19 CHAIRMAN ABDEL-KHALIK: Perfectly fine.

20 MR. HEAD: Okay.

21 CHAIRMAN ABDEL-KHALIK: Please continue.

22 MR. CHAPPELL: The next item, Dr. Wallis
23 questioned the appropriateness of aluminum
24 oxyhydroxide as a surrogate for zinc oxide. We
25 included this on the list. I think it was addressed

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1 by the staff in some respects.

2 DR. WALLIS: But the staff expanded on
3 this. They did make statements such as well, we're
4 not sure that it's going to be not worse. But there
5 were going to be some experiments with zinc. I think
6 that the --

7 MR. HEAD: The Owners Group is --

8 DR. WALLIS: -- about this would be the
9 experiments. Zinc turns out to be much more benign
10 than the aluminum. And you would have a case. But if
11 it's just so that we think it can't be as bad as
12 aluminum, that's not a very good case.

13 MR. CHAPPELL: But taken individually as
14 an item, that may be true. And I think there was a
15 point made that there's a number of conservatisms
16 built --

17 DR. WALLIS: But there are also synergisms
18 between the zinc and other stuff.

19 CHAIRMAN ABDEL-KHALIK: Well, I don't
20 think we're going to prepare the answers to these
21 questions now. This is the issue. You come back with
22 an answer.

23 MR. CHAPPELL: Okay.

24 MS. BANERJEE: The issue captured the
25 question.

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1 CHAIRMAN ABDEL-KHALIK: Right.

2 MR. HEAD: So this is one though that
3 actually I did -- I thought the staff did present the
4 entire picture given what we know about this
5 particular chemical. And I would view this one in
6 light of the ones right above it. As we go through
7 and prepare the tests, if the Owners Group concludes
8 that something else is more conservative, we would
9 have to address whether we want to make that change.
10 So I view this as in the spirit of what we're going to
11 be doing in the intervening couple of years.

12 DR. WALLIS: It's not just your
13 experiments. It's also the Owners Group experiments.

14 MR. HEAD: Yes, sir. That's what I meant
15 -- the Owners Group. I'm sorry if I didn't say that.

16 DR. WALLIS: There may also be some
17 evolving thinking of the staff.

18 MR. CHAPPELL: All right. Move on to the
19 second page that I have.

20 Dr. Wallis stated in multiple tests the
21 same conditions would be needed to establish
22 uncertainty in the testing.

23 MR. HEAD: We agree to that.

24 MR. CHAPPELL: Dr. Wallis asked for
25 justification of shorter transient loop time in the

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1 test versus actual debris deposition times in the
2 plant.

3 Dr. Wallis asked NINA to provide the basis
4 for test acceptance criteria utilizing the square
5 relationship versus use of another exponent which may
6 be appropriate such as 1.2 for debris bed.

7 DR. WALLIS: Well, I think my question was
8 does it make a difference that the debris bed has a
9 different exponent than two. Can you justify what you
10 did in light of that? Because it may well be that you
11 can show that you don't have to use another exponent
12 because it's all taken care of by what you did in some
13 way.

14 But you can answer the question.

15 MR. HEAD: So this one looks like
16 something we need to bring back as a follow-up item
17 for ACRS.

18 CHAIRMAN ABDEL-KHALIK: Yes.

19 MR. HEAD: That was my impression at the
20 time that we would want to tell you our thinking on
21 1.2 versus 2 and maybe an April follow-up.

22 CHAIRMAN ABDEL-KHALIK: That impacts your
23 acceptance criterion.

24 MR. HEAD: Whereas the two above that I
25 think is all part of our testing justification.

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1 CHAIRMAN ABDEL-KHALIK: Yes.

2 MR. HEAD: Okay.

3 MR. CHAPPELL: And then the final one on
4 the list Dr. Abdel-Khalik and Dr. Wallis requested a
5 parametric study of k-factor versus flow rate.

6 DR. WALLIS: Don't you have that? When
7 you varied the k-factor, you must have calculated the
8 flow rate. Don't you have that evident somewhere? I
9 calculate the quality. You must have calculated the
10 whole performance.

11 MR. HEAD: Yes, the goal was once we
12 decided on the .95, that's what we were trying to --

13 DR. WALLIS: On the way the computer
14 calculated flow rate.

15 MR. HEAD: I believe it did. But we just
16 weren't -- that was not --

17 DR. WALLIS: I'm a bit surprised you
18 didn't have a big printout sheet that printed out all
19 the variables.

20 MR. HEAD: Well, we may, but not for
21 yesterday, and certainly --

22 DR. WALLIS: You can look and see. It may
23 well be there somewhere.

24 MR. HEAD: Yes, sir. So this is one I had
25 a vision that we would come back and show you what

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1 different k --

2 MEMBER ARMIJO: Mr. Chairman, I'd like to
3 add one thing in the test protocols. I still am
4 concerned that why these tests -- the proposed tests
5 -- will be done at ambient, basically room temperature
6 when that's the only temperature we're sure that will
7 not occur in these accidents. And why wouldn't you
8 just do what was done with the PWR testing?
9 Unfortunately, they ran a few tests at higher
10 temperature that's closer to what the water
11 temperature would be in the event of an accident. And
12 that's more realistic, and it could result in more
13 conservative findings or less conservative findings.
14 But it'd be closer to reality as opposed to this
15 artificial we'll do it at room temperature because
16 it's convenient. It seems to me like it's the wrong
17 way to go.

18 MEMBER CORRADINI: Can I just interject?
19 I'm kind of with Sam, but I guess I think that you
20 have a salient argument as to why it's conservative
21 and you can justify it, fine. And at least in other
22 venues -- I'm not sure if we're allowed to say
23 anything more -- but in other venues with other
24 plants, the argument was as we heated up as it becomes
25 two phase, it's more optimistic so we're not going to

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1 base our judgment on that.

2 But I guess I would agree with Sam to the
3 extent that you want to take the chance, the risk and
4 generate the database to do it. But if it's a
5 tendency that shows optimism and you want to be
6 conservative, fine. But you just have to justify it.
7 That's I guess the way I would put it.

8 DR. WALLIS: I think the problem that I
9 have also is there's the temperature affects several
10 things.

11 MEMBER ARMIJO: It's very complicated.
12 And you don't know up front what the results are going
13 to be -- worse or better. And so the closer you are
14 to a realistic water temperature, the closer you'll be
15 to reality. And if you chose to say well, but we're
16 still going to run tests based on the more
17 conservative temperature, that's fine. But at least
18 you'd know where you are.

19 DR. WALLIS: How do you know it's
20 conservative is the question.

21 MEMBER ARMIJO: Well, unless you do the
22 other test.

23 DR. WALLIS: Right.

24 MR. HEAD: I'm going to have speak that
25 obviously the test becomes significantly more

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1 challenging. And our belief was that we had in
2 minimizing all of the challenges to the fuel that we
3 were going to be creating as challenging a test as we
4 could at ambient, and that given the challenge that we
5 were right at the fuel that the results are going to
6 be evident that we have created an appropriate test,
7 and that in fact given that our belief was the zinc
8 component was actually as it heated up was going to
9 get less of a challenge. And so the ambient was going
10 to be the most challenging condition. So that was our
11 thinking.

12 So we'll have to go through all that I
13 understand.

14 MEMBER ARMIJO: Well, it's your choice.
15 But it's part of your margin assessment -- how much
16 margin do you really have as opposed as to the way you
17 choose to run your test program.

18 But I think testing closer to reality is
19 always a better way to test.

20 MR. HEAD: I agree. But then there's the
21 flip side of that of at what point in time is that
22 necessary given the other --

23 DR. WALLIS: Well, it's so easy. You just
24 a heater on the vessel.

25 MEMBER ARMIJO: And you don't need to go

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1 very high.

2 MEMBER CORRADINI: But I think, Graham,
3 maybe. But what if they do that and they come back
4 and you ask him about adding chemical effects and
5 boric acid? And I mean, it's not their --

6 DR. WALLIS: Well, but then if it's
7 reality, then we'd better ask those questions.

8 MEMBER CORRADINI: Right. But I guess
9 then that to kind of push back, my only thought is if
10 they can show and demonstrate that they're taking a
11 conservative posture and the trends are that way, then
12 it's their plant, they have to live with their
13 conservative --

14 DR. WALLIS: No, they have to make their
15 case.

16 CHAIRMAN ABDEL-KHALIK: I think the point
17 has been made.

18 I have one additional item here. And I
19 don't know whether we resolved it yesterday. It was
20 how much hydrogen is released from the zinc reactions.
21 And the point was made that that's probably a lot less
22 than what you get --

23 MEMBER CORRADINI: Than the assumed metal
24 water reaction.

25 CHAIRMAN ABDEL-KHALIK: -- metal water

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1 reaction.

2 (LAUGHTER.)

3 MS. BANERJEE: So did we add justifying
4 unheated tests on the --

5 CHAIRMAN ABDEL-KHALIK: Yes.

6 MS. BANERJEE: We added to the partial
7 limit?

8 CHAIRMAN ABDEL-KHALIK: No, it's a
9 separate item. Why will the test be run at room
10 temperature. Justify why --

11 MR. HEAD: Justify we did it at room
12 temperature.

13 CHAIRMAN ABDEL-KHALIK: Right. Justify
14 why you intend to do it at room temperature.

15 DR. WALLIS: I guess my question about the
16 hydrogen was what happens to the hydrogen. I think
17 there is hydrogen. Does it stick to the zinc as small
18 bubbles and float around with it?

19 MEMBER ARMIJO: With zinc hydroxide,
20 you've tied up some of it.

21 DR. WALLIS: What happens to it?

22 MR. HEAD: I guess you're asking a pure
23 hydrogen question, not a --

24 MEMBER ARMIJO: Not a chemistry question.

25 DR. WALLIS: Well, it's both. I mean,

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1 it's physical chemistry tied into together.

2 MR. HEAD: Mr. Chairman, maybe I'm
3 finessing it too much, but you say justify. That's
4 still the post-COL item at that point, not something
5 we're justifying at this point in time. Because my
6 expectation is if we're running at different
7 temperatures but we're not going to build a pressure
8 vessel to --

9 MEMBER CORRADINI: I don't think you have
10 to. We may run it ambient. We may at 120. You may
11 run at 150. Something like that possibly.

12 MEMBER ARMIJO: I don't think even at --
13 we're not talking pressure vessels. We're talking --

14 MR. HEAD: I heard that warm --

15 MEMBER ARMIJO: Warm water versus cold
16 water is what was --

17 CHAIRMAN ABDEL-KHALIK: But that could be
18 a part of your revision to 6C.

19 MR. HEAD: Right. Okay.

20 CHAIRMAN ABDEL-KHALIK: Okay?

21 MR. HEAD: All right.

22 CHAIRMAN ABDEL-KHALIK: Anything else?

23 MS. BANERJEE: I was wondering if Dr.
24 Wallis was satisfied with that 4.5 feet square foot
25 scored limit -- where it comes from. Will that be an

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1 operational limit or not? I think that was your
2 question.

3 DR. WALLIS: Aluminum?

4 CHAIRMAN ABDEL-KHALIK: Yes. Aluminum
5 surface area.

6 DR. WALLIS: Well, the rationale was a bit
7 odd. I think the real rationale is that you can
8 maintain less than a certain amount when you contain
9 it.

10 MS. BANERJEE: But the question was --

11 DR. WALLIS: Not really that the -- you
12 could tolerate 4.5. So we'll assume it's there or
13 something. And then we'll assume it's all in the
14 worst form. That doesn't make much sense. Just say
15 that by cleanliness and procedures, we can keep it
16 within a certain amount and then use that if you have
17 a conservative value. But don't justify it by this
18 strange chemical inconsistent argument. You
19 understand what I mean?

20 MS. BANERJEE: Something for FME and your
21 cleanliness program can capture.

22 MR. HEAD: I'll agree how we got to that.

23 DR. WALLIS: I think it's actually in your
24 slide, but it got somehow diverted into something
25 else.

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1 MR. HEAD: As I think, the staff mentioned
2 yesterday, how we got there was a rather convoluted --
3 I'll agree.

4 DR. WALLIS: But then when you got there,
5 the rationale was forget the old stuff and just give
6 the reason.

7 MR. HEAD: And at that point in time,
8 we've taken the conservative that the aluminum decays
9 -- regardless of how we chose that value -- and we
10 believe that the station can meet that expectation.
11 So --

12 DR. WALLIS: But now it's going to be in
13 your specs.

14 MR. HEAD: No, not in our tech specs. But
15 we've got a licensing basis. And what typically
16 happens -- what has happened is that 1 and 2, if we
17 ever find anything -- walk down -- we've done
18 reportability reviews. Did we violate our design
19 basis with that? And that's --

20 DR. WALLIS: Looking for a very thick
21 piece of aluminum.

22 MR. HEAD: No, sir. When we take the walk
23 downs --

24 DR. WALLIS: A very thick piece of
25 aluminum that has four and a half, five square feet

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1 that somebody left in there by mistake.

2 MR. HEAD: What they'll find, they'll drag
3 out a ladder, or they'll drag out someone's can or
4 something else. And then between engineering and
5 licensing, we'll assess that versus our licensing
6 basis. And the important out of all that is we'll
7 always be taking corrective actions which is a big
8 part of what's happened. It's a big part of our
9 competence as to why we're going to be able to
10 maintain the site or the plant is what we've been
11 living with in the 1 and 2 for all these years.

12 CHAIRMAN ABDEL-KHALIK: Okay.

13 MS. BANERJEE: Did we close out that
14 question on hydrogen formation -- the one that you
15 just mentioned? Or are we going to add something?

16 MR. HEAD: No. We have people looking at
17 it, but we're not aware that we've completed it.

18 MEMBER ARMIJO: All of these questions
19 evolve about what is the chemical form of the zinc and
20 what happens when the zinc dissolves in this event.
21 But they assume it does, that the zinc is ground up
22 and it's going to react somehow. But the chemistry of
23 what actually is formed in this environment is the
24 whole question of whether hydrogen comes off, how
25 much. It all depends on what forms of what zinc

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1 compounds are formed. And so I think this needs a
2 little bit more work on describing what happens to
3 that material would clear things up a lot.

4 MS. BANERJEE: And also, Dr. Bley's
5 question on the design of the vacuum breaker valve
6 shield.

7 CHAIRMAN ABDEL-KHALIK: Well, that was
8 shown yesterday.

9 MS. BANERJEE: Okay. So question of water
10 would be getting there, whether it is designed to do
11 it or not.

12 MEMBER BLEY: That wasn't my question.

13 CHAIRMAN ABDEL-KHALIK: No.

14 MEMBER BLEY: Somebody raised that
15 question, but it was discussed yesterday.

16 MS. BANERJEE: Okay. So there is no open
17 item there then.

18 So if we are done with the list -- are we
19 done with the list?

20 CHAIRMAN ABDEL-KHALIK: Yes.

21 MS. BANERJEE: Okay. Then we also closed
22 several or attempted to close several action items
23 yesterday and today. So can we get an agreement on
24 those?

25 CHAIRMAN ABDEL-KHALIK: Yes.

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1 MS. BANERJEE: Okay.

2 Forty-six was one that was addressed by
3 the Applicant. This has to do with identifying and
4 justify assumptions regarding ppm boron in solution
5 used in chemical effects analysis.

6 CHAIRMAN ABDEL-KHALIK: Right.

7 MS. BANERJEE: So that was presented
8 yesterday. Is the item still open?

9 CHAIRMAN ABDEL-KHALIK: No. That was
10 based on Bill Shack's question.

11 MS. BANERJEE: Okay. So closed.

12 Forty-seven had to do with downstream
13 effects, future briefing on testing analysis, basis
14 for assuming. They were 2A and B. One was future
15 briefing on testing analysis. Can we close this and
16 given that we are opening additional items? But that
17 briefing was done. So can we close this?

18 CHAIRMAN ABDEL-KHALIK: Let's just keep
19 it. There is no reason -- it has no material impact.
20 But I'd like to keep it as a placeholder.

21 MS. BANERJEE: Okay. Now the basis for
22 assuming destroyed fiber to be ten percent of one foot
23 cube --

24 CHAIRMAN ABDEL-KHALIK: That's --

25 MS. BANERJEE: -- that's now moot --

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1 CHAIRMAN ABDEL-KHALIK: Right.

2 MS. BANERJEE: -- because they're not using
3 it anymore.

4 CHAIRMAN ABDEL-KHALIK: They're assuming
5 100 percent.

6 DR. WALLIS: Let's go to this issue I had
7 about using fiberglass when what's going to be in
8 there isn't going to be fiberglass. Was that still an
9 issue? I've always had that as an issue. It seemed
10 to me very strange to test with stuff that isn't going
11 to be in there anyway. And more on the fibers that
12 are going to be in there if any are going to be
13 something else.

14 CHAIRMAN ABDEL-KHALIK: Okay. Then I
15 think that's another item that we can add to the list
16 which may go into 6C, sort of the nature of the fibers
17 to be used -- the nature of the surrogate fibers.

18 DR. WALLIS: One of the issues is that the
19 staff is already in some way I think approved --

20 MEMBER STETKAR: That's a generic issue.

21 MEMBER CORRADINI: Yes, I guess I would
22 chime in on this one. In some sense, some of this
23 falls to the staff's job. If we're in disagreement
24 with this and staff is okay with it, we've got to hear
25 from the staff why they're okay and their analysis as

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1 to why they're okay and we're not okay. And it's
2 generic.

3 DR. WALLIS: So does this list go to the
4 staff as well?

5 CHAIRMAN ABDEL-KHALIK: Yes. They are --

6 DR. WALLIS: And I think the may want to
7 answer some if they're --

8 MR. HEAD: And clearly we have the
9 opportunity in the intervening years to agree to test
10 what we've agreed to in the 6C right now and something
11 else. So I suspect if there's an opportunity, we
12 might do that.

13 CHAIRMAN ABDEL-KHALIK: Okay.

14 MS. BANERJEE: Okay. So we are adding one
15 more item for the staff to the list on nature of
16 surrogate fiber being Nucon that's reflective of
17 actual diameter. Okay.

18 Yesterday, the Applicant also addressed
19 49, future briefing and design of vacuum breaker
20 shield. I think we can close that one, right?

21 CHAIRMAN ABDEL-KHALIK: Right.

22 MS. BANERJEE: So 49 is closed.

23 Today they addressed item #9.

24 CHAIRMAN ABDEL-KHALIK: Yes.

25 MS. BANERJEE: Closed? Had to do with how

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1 underground release is handled. We can close that.
2 So 9 is closed.

3 Item 70 had to do with this I&C bypass of
4 sensors and channels.

5 MEMBER BROWN: Item 70?

6 CHAIRMAN ABDEL-KHALIK: 7-0.

7 MS. BANERJEE: 7-0.

8 MEMBER BROWN: Yes. Okay. I thought you
9 said 17. Excuse me.

10 MS. BANERJEE: No. I'm sorry. 7-0.

11 MEMBER BROWN: It's closed from my
12 standpoint. I'm good. John's good also.

13 MS. BANERJEE: So we are closing 70.

14 And then 67, watchdog timer?

15 MEMBER BROWN: That's closed.

16 MS. BANERJEE: That's closed.

17 68, Common Q, is not done yet. So that's
18 still open.

19 That's all I have. Anybody else?

20 CHAIRMAN ABDEL-KHALIK: I guess we decided
21 to keep item 35 until we have that briefing on
22 cybersecurity.

23 MS. BANERJEE: Cybersecurity is open.

24 CHAIRMAN ABDEL-KHALIK: All right.

25 Everybody is in agreement with this summary.

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1 Perhaps we should open the microphone or
2 the telephone line and see if there are any members of
3 the public who wish to make a statement.

4 MS. BANERJEE: I'll check.

5 DR. WALLIS: We said public at 3:30. How
6 do you handle something like this? The public is
7 sitting there waiting for 3:30.

8 MEMBER BLEY: They need to be here.

9 DR. WALLIS: For a Subcommittee meeting,
10 it doesn't matter.

11 CHAIRMAN ABDEL-KHALIK: I can assure you
12 that we're not going to wait here until 3:30.

13 (LAUGHTER.)

14 CHAIRMAN ABDEL-KHALIK: Is the bridge line
15 open?

16 MS. BANERJEE: The bridge line is open,
17 but they couldn't say if anybody is on the line or
18 not.

19 CHAIRMAN ABDEL-KHALIK: Okay. Is there
20 anyone on the line at this time? If so, please
21 identify yourself.

22 MR. STRAMBACK: Yes, this is George
23 Stramback from Westinghouse.

24 CHAIRMAN ABDEL-KHALIK: Okay. Thank you,
25 George.

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1 Is there anybody else on the line?

2 (No audible response.)

3 CHAIRMAN ABDEL-KHALIK: Does anyone on the
4 line wish to make a statement or offer comments?

5 (No audible response.)

6 CHAIRMAN ABDEL-KHALIK: Is there anyone in
7 the room who wishes to make a statement or offer any
8 comments?

9 DR. WALLIS: I'll make a statement here.
10 It says "such participants may ask questions at the
11 designated time at the end of the meeting only."

12 MEMBER BLEY: This is the end of the
13 meeting.

14 DR. WALLIS: So I guess -- it says that at
15 the designated time. The designated time was 3:30.
16 I'm just --

17 CHAIRMAN ABDEL-KHALIK: We will make sure
18 that someone is here to see if there are any members
19 of the public.

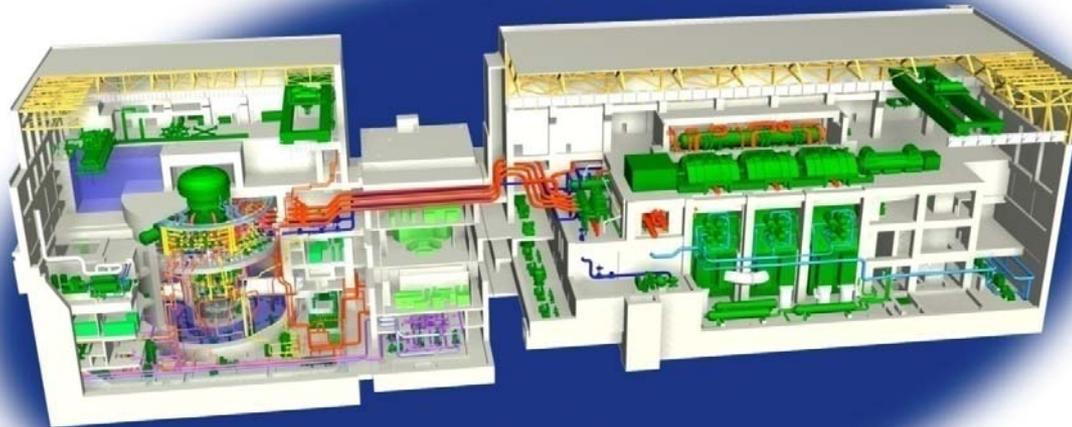
20 But at this time, the meeting is
21 adjourned.

22 (Whereupon, at 11:22 a.m., the hearing was
23 adjourned.)

24

25

South Texas Project Units 3 & 4 Presentation to ACRS ABWR Subcommittee Chapter 11 “Radioactive Waste Management”



Agenda

- Introduction
- Summary of Chapter 11
- Items of interest
- ACRS Action Item

Attendees

- ❑ **Scott Head, NINA Manager, Regulatory Affairs, STP 3 & 4**
- ❑ **Coley Chappell, NINA Licensing, STP 3 & 4**
- ❑ **Milton Rejcek, NINA Engineering, STP 3 & 4**
- ❑ **Tom Daley, NINA Engineering, STP 3 & 4**
- ❑ **Scot Stephens, NINA Licensing, STP 3 & 4**

Chapter 11 Summary

- **DCD systems replaced with current technology**
- **High dose, high maintenance items removed where possible**
- **Additional tanks for segregation to support re-use**
- **Conventional filters replaced with reverse osmosis units**
- **Solid waste drumming and incineration equipment eliminated**
- **Flexibility implemented in selection of radiation monitoring and sampling equipment to allow use of current technology.**

Issue

None: all technical issues regarding Chapter 11 Open Items have been addressed.

ACRS Action Item 9

- **Address underground piping carrying radioactive liquids.**

ACRS Action Item

Minimization of Contamination for Plant Life Cycle

- ❑ **NEI 08-08A is incorporated by reference with the clarification that design changes for certified design materials are not required by implementation of this program. The evaluations, programs, and procedures required by NEI 08-08A will be issued six months prior to commencement of the Preoperational Test Program.**
- ❑ **No piping carrying contaminated fluids is direct buried; all below grade piping carrying contaminated fluids is in tunnels designed to contain system leakage and preclude groundwater in-leakage.**
- ❑ **All below grade piping is corrosion resistant alloy with the possible exception of sump pump suction and discharge lines.**
- ❑ **Joints are welded as much as possible vice screwed or flanged.**
- ❑ **Periodic walkdowns will allow for early detection and correction of leakage and areas of potential leakage.**
- ❑ **Leaks and potential leaks addressed via Corrective Action Program, Modification Process, etc.**
- ❑ **STP 1 & 2 Groundwater Monitoring Program complies with NEI 07-07 and will be expanded to a site program prior to Unit 3 fuel load.**

Chapter 11

Questions and Comments





Presentation to the ACRS Advanced Boiling Water Reactor Full Committee

South Texas Units 3 and 4 COL Application Review

**Advanced SER with no Open Items - Chapter 11
“Radioactive Waste Management”**

March 9, 2011

Staff Review Team

- **Project Managers**

- George Wunder, Lead PM, DNRL/NGE2
- Michael Eudy, Chapter PM, DNRL/NGE2

- **Technical Staff Presenters**

- Ed Roach, Chief, DCIP/CHPB
- Stephen Williams, Reviewer, DCIP/CHPB

STP Units 3 & 4 COLA SER Chapter 11 Chapter Summary

- **Three (3) Open Items related to CST previously identified**
 - CST source term, function and volume
 - CST locations, design features, and 10 CFR 20.1406 implications
 - CST maximum radioactive concentrations and dose rate calculations
- **These open items are closed for this chapter and supplemental RAls were issued in Section 12.2 Radiation Sources. Only one confirmatory item remains for Chapter 11.**
- **Staff reviewed all departures for this chapter and found them acceptable**
- **All 8 COL License Information Items were addressed and found acceptable**
- **STP discussed ACRS Open Item pertaining to minimization of contamination for plant life cycle.**

STP Units 3 & 4 COLA SER Chapter 11

Chapter Conclusions

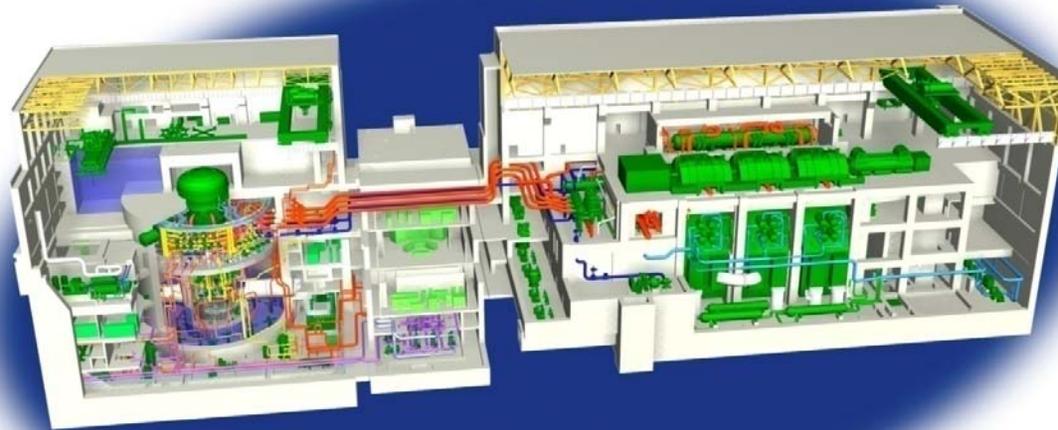
In conclusion, the staff has confirmed that the applicant has addressed the relevant information as specified in the referenced ABWR DCD. In addition, the staff concludes that the applicant has met the applicable regulations and is in conformance with applicable guidance with respect to the Source Terms, LWMS, GWMS, SWMS, and the PRMS.



ACRS Subcommittee Presentation Overview of STP RCOL Chapter 11 – Radioactive Waste Management

Discussion/Committee Questions

South Texas Project Units 3 & 4 Presentation to ACRS ABWR Subcommittee Chapter 13 Conduct of Operations





Agenda

- Introduction
- Chapter 13 Content
- Chapter 13 Summary
- Questions and comments



Attendees

Scott Head	NINA Manager, Regulatory Affairs, STP 3 & 4
Jay Phelps	STPNOC Manager, Operations, STP 3&4
Fred Puleo	NINA Licensing, STP 3 & 4
Coley Chappell	NINA Licensing, STP 3 & 4

Chapter 13 Content

- No departures in Chapter 13
- Supplemental information provided for STP 3 & 4 Operational Programs
 - Organizational structure
 - Transition from STPNOC to NINA
 - Training
 - Procedures
 - Emergency Plan
 - Implementation schedule

Chapter 13 Summary

- During the June 23, 2010, ACRS Chapter 13 presentation, no ACRS action items were identified
- No SER Open Items
- All COL License Information Items have been addressed
- All responses to Requests for Additional Information have been submitted

Chapter 13

Questions and Comments





Presentation to the ACRS Subcommittee

South Texas Units 3 and 4 COL Application Review

**Advanced SE Chapter 13
Conduct of Operations**

March 9, 2011

STP COL Chapter 13

Staff Review Team

- **Project Managers**

- George Wunder, Lead PM, DNRL/BWR
- Rocky Foster, Chapter PM, DNRL/BWR

- **Technical Staff**

- Robert Moody, Reviewer, NSIR
- Edward Robinson, Reviewer, NSIR
- Wayne Chalk, Reviewer, NSIR
- Stella Opara, Reviewer, NSIR
- John Rycyna, Reviewer, NSIR

STP COL Chapter 13 Open/Confirmatory Items Status

- **All Chapter 13 Open Items and Confirmatory Items are closed except Two Confirmatory Items in Fitness for Duty, Chapter 13.7**

STP COL Chapter 13.3 Emergency Preparedness

- **Open Item 13.03-73 is closed**
- Independent calculations confirmed the TSC radiological dose calculations met NRC guidelines.
- EP staff verified that the FSAR addressed the upgraded charcoal filter efficiency.

STP COL Chapter 13.7

Fitness for Duty

- **Areas Covered in Technical Review**
 - Adequacy of Construction Phase
 - Adequacy of Operations Phase
 - **Acceptance Criteria**
 - 10 CFR Part 26, FFD Program
 - 10 CFR 52.79(a)(44)
 - NEI 06-06, revision 5
 - **Milestones**
 - Table 13.4S-1 Operational Programs Required by NRC Regulations

STP COL Chapter 13.7 Fitness for Duty

CONCLUSION

- **Two Confirmatory Items (13.06.01-1 & 13.06.01-2)**
 - Construction vs. Operational Requirements for Construction Phase
 - Description is Supplement and Clarification or Stand Alone FFD Program
- **South Texas Project COL FSAR is Acceptable**
- **Conforms to Regulatory Requirements**

STP COL Chapter 13.8 Cyber Security Plan

- **Follows RG 5.71 guidance and commits to all elements including:**
 - Establish cyber security team
 - Establish defensive architecture and strategy
 - Identify CDAs
 - Address 148 security controls for each CDA
 - Configuration Management
 - Ongoing assessments of security measures for effectiveness

STP COL Chapter 13.8 Cyber Security Plan

- Applicant followed template in RG 5.71 without deviation.
- No open items.
- ACRS approved RG 5.71.

STP COL Chapter 13.8 ACRS Action Item

- **ACRS Action Item (Question #35)**
 - Issue of Cyber-Security ITAAC
 - Performance based regulations
 - Cyber-security is an Operational Program (SECY-05-0197)
 - Cyber security will be inspected prior to fuel on-site (within the protected area) under 10 CFR 50.34 in accordance with IMC 2504

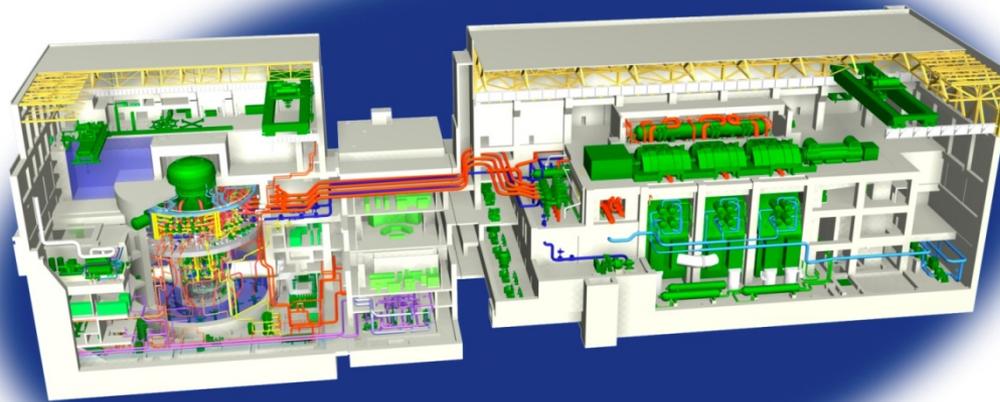
Chapter 13 Summary

- Questions/Comments

South Texas Project Units 3 & 4

Presentation to ACRS ABWR Subcommittee

Chapter 16 - Technical Specifications



Agenda

- Introduction
- Chapter 16 Overview
- Items of Interest
- ACRS Action Item
 - Technical Specifications Overview
- Conclusion

Attendees

Scott Head	Regulatory Affairs Manager, NINA
Jay Phelps	Operations Manager, STPNOC
Steve Cashell	NINA Licensing
Dave Dauzat	NINA I&C Engineering
Ed Brown	Westinghouse Engineering
Craig Swanner	TANE Licensing

Chapter 16 Overview

- Written in the Improved Standard Technical Specification format following NUREG 1433 (BWR-4) and 1434 (BWR-6), Rev. 0
- Approximately 100 departures affect Technical Specifications
 - 6 Tier 1/Tier 2* departures
 - 9 Tier 2 design-related departures
 - The remainder correct or clarify information in the TS and Bases, affect the administrative controls section, provide consistency between the TS and Bases, or are editorial in nature
- Single COL Information Item to supply the bracketed information addressed following ISG-08 regarding completion of brackets
- No ITAAC

Items of Interest

- Setpoint Control Program
 - Added new Specification 5.5.2.11, Setpoint Control Program
 - Developed an Instrument Setpoint Methodology for STP 3&4
 - Revised Definitions and related Surveillance Requirements
 - Relocated Allowable Values from Technical Specifications to a licensee-controlled document
- 10 CFR 21 - Operation with isolated MSIV
 - ACRS Issue - resolved
 - Requires analysis prior to operation with an isolated MSIV
- Remaining confirmatory information to be incorporated into Rev. 6

ACRS Action Item (#70)

- From Chapter 7 discussion on February 8, 2011:
 - Address bypass of sensors and channels for Engineered Safety Features (ESF) Logic and Control System (ELCS).

ACRS Action Item (#70) (continued)

- Sensors and Logic are provided in separate sections of the ABWR Technical Specification.
- Sensor Channels are contained in Section 3.3.1.1, Safety System Logic and Control (SSLC) Sensor Instrumentation. These Sensor Channels are used both by the Reactor Trip & Isolation (RTIS) System (3.3.1.2) for reactor protection and main steam isolation functions, and by ELCS (3.3.1.4) for accident mitigation functions.
- There are 4 Divisions (channels) of Sensors, 4 Divisions (channels) of Logic and Output for RTIS, and either 2 or 1 channel(s) of Logic and Output for ELCS per actuated subsystem or device.

ACRS Action Item (#70) (continued)

<p>SENSOR CHANNELS</p>	<ul style="list-style-type: none"> ■ SSLC Sensors (3.3.1.1) <ul style="list-style-type: none"> □ 4 Divisions - 4 Channels 	
<p>LOGIC & OUTPUT CHANNELS</p>	<ul style="list-style-type: none"> ■ RTIS (3.3.1.2) <ul style="list-style-type: none"> □ RPS & MSIV Isolation □ 4 LOGIC & OUTPUT Channels per Function (1 channel per division) 	<ul style="list-style-type: none"> ■ ELCS (3.3.1.4) <ul style="list-style-type: none"> □ ECCS & ESF □ 2 LOGIC & OUTPUT Channels for ECCS Initiation & ADS □ Single LOGIC & OUTPUT Channel for other ESF Functions

ACRS Action Item (#70) (continued)

3.3.1.1 – SSLC Sensor Instrumentation

- Possible actions for 3.3.1.1 are to trip or bypass **SENSOR CHANNELS**.
- Only one division of sensors may be bypassed at any one time.

3.3.1.2 – RPS and MSIV Actuation

- Possible actions for 3.3.1.2 are to trip or bypass a **LOGIC CHANNEL** or to trip an **OUTPUT CHANNEL**.
- Only one division of logic may be bypassed at any one time.

3.3.1.4 – ESF Actuation Instrumentation

- Possible actions for 3.3.1.4 are to declare features inoperable or to actuate associated devices, requiring entry into other LCOs. **Technical Specifications do not provide for bypass of the ELCS Logic or Output Channels.**

ACRS Action Item (#70) (continued)

- Bypass capability is available for a single division of Sensors.
- Bypass capability is also available for a single division of RTIS Logic.
- Bypassing a single division of Sensors and/or RTIS Logic continues to satisfy single failure criteria.
- Bypass capability is not provided for ELCS Logic in the Technical Specifications.

ACRS Action Item (#70) (continued)

■ Example 1 - Loss of Single Channel (Division 3, SLF 1) (LPFL “C”) of ELCS Logic or Output

3.3.1.4 – ACTION B

Restore Channel to Operable status within 1 hour.

If Channel cannot be restored within 1 hour, then:

Declare LPFL “C” inoperable, requiring entry into LCO 3.5.1 for loss of LPFL “C”.

3.5.1 – ACTION A

Provided RCIC is Operable, restore LPCF “C” to Operable status within 14 days.

ACRS Action Item (#70) (continued)

■ Example 2 - Loss of Single Channel (Division 3, SLF 1) (LPFL “C”) of ELCS Logic or Output with Division 1 Sensors already bypassed

3.3.1.1 – ACTION A

Restore Division 1 Sensors or trip individual inoperable Sensor Channel within 30 days of inoperability. 3 divisions of Sensor Channels remain available to provide necessary inputs.

3.3.1.4 – ACTION B

Restore Channel to Operable status within 1 hour.

If Channel cannot be restored within 1 hour, then:

Declare LPFL “C” inoperable, requiring entry into LCO 3.5.1 for loss of LPFL “C”.

3.5.1 – ACTION A

Provided RCIC is Operable, restore LPCF “C” to Operable status within 14 days.

Chapter 16 Conclusion

Questions and Comments





Presentation to the ACRS Subcommittee

**South Texas Project Units 3 and 4
COL Application Review**

**Advanced Chapter 16
“Technical Specifications”**

March 9, 2011

STP COL Chapter 16 Staff Review Team

- **Project Managers**
 - George Wunder, Lead PM, DNRL/BWR
 - Stacy Joseph, Chapter PM, DNRL/BWR
- **Technical Staff Presenters**
 - Craig Harbuck, Reviewer, CTSB

Overview of Chapter 16 Review Topics of Interest

Topics of Interest	Summary
Open Item 16-1	Completion of site-specific TS COL information <ul style="list-style-type: none">• Site-specific Limiting Safety System Settings• Site-specific RCS Pressure-Temperature Limits

Open Item 16-1

Completion of COL Information Item 16.1

- Site-specific Limiting Safety System Settings (LSSS)
 - Resolved RAI 16-65, Issues 1 and 4.f, based on staff acceptance of setpoint methodology (FSER 7.1.4)
 - Enabled completion of review for
 - STD DEP 16.3-100
 - PTS Sections 1.1, 3.3.1.1, 3.3.1.4, 3.3.4.1, 3.3.4.2, 3.3.7.1, 3.3.8.1, and 5.5.2.11
 - FSER Table 16.1 COL Items 20, 22, 31, 42, 45, 61, and 64
- Site-specific RCS Pressure-Temperature (P-T) Limits Report
 - Resolved RAI 16-65 Issue 1, RAI 16-21 Issue 14, and RAI 5.3.2-1 based on staff acceptance of P-T limits methodology (FSER 5.3.2)
 - Enabled completion of review for
 - STD DEP 16.3-8
 - PTS Sections 3.4.9 and 5.7.1.6
 - FSER Table 16.1, COL Items 74, 75, and 155

Chapter 16 Review Wrap Up

- In the SER with open items, Chapter 16 staff reviewers had no outstanding technical issues related to PTS and bases.
- Based on resolution of open items in Chapters 5 and 7, Open Item 16-1 (LSSS and PTLR) is resolved.
- Therefore, Chapter 16 “Technical Specifications” (PTS and bases) satisfy:
 - 10 CFR 50.36 and 10 CFR 50.36a,
 - 10 CFR 52.79(a)(30), and
 - Sections IV.A.2.c and IV.A.2.e of Appendix A to 10 CFR Part 52 (ABWR DCR).

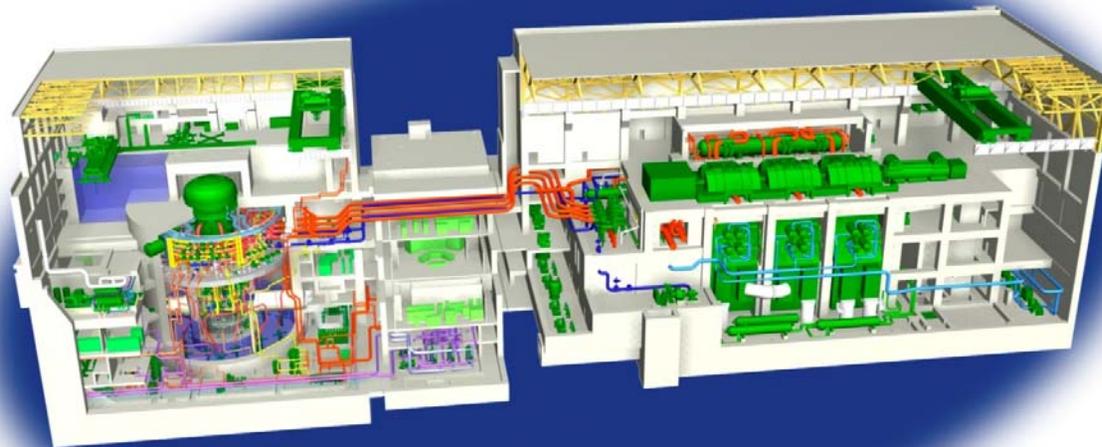


Overview of STP RCOL Chapter 16 – “Technical Specifications”

Discussion/Committee Questions

South Texas Project Units 3 & 4 ACRS ABWR Subcommittee Presentation

ACRS Action Items





Attendees

Scott Head	NINA Manager, Regulatory Affairs, STP 3 & 4
Coley Chappell	NINA Licensing, STP 3 & 4



Agenda

Action Items for Discussion:

- # 67 Watchdog timer diversity from FPGA
- # 68 Providing Common Q qualification test (update)

Action Item # 67

Add to FSAR a statement regarding hardware for watchdog timer that is diverse from FPGA.

Response: Slide #13 of NINA's Chapter 7 presentation (Feb 8, 2011) on the subject of determinism for the RTIS/NMS platform included the following statement:

- All FPGAs performing signal processing functions on a module are monitored by a diverse, hardware based watchdog timer

By letter U7-C-NINA-NRC-11003 dated February 23, 2011, NINA submitted a revision to Appendix 7DS to add the following statement in **FSAR Subsection 7DS.1.3 Determinism:**

- "The watchdog timer is hardware-based and is diverse from the FPGA circuits on each module."



Action Item # 68

Provide qualification test of Common Q platform.

Response: The Common Q qualification test will be provided as part of a future presentation to ACRS.

ACRS Action Items

Questions and Comments

