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**1. Next Meeting:**

**Location:** CAE – Montreal, Canada

**Date:** Aug 6-10, 2001

- Monday Aug 06 – Half Day (Break Out Session 12pm –5pm)
- Tuesday Aug 07 - Full Day (Break Out Session 8am –12pm)
- Wednesday Aug 08 - Full Day
- Thursday Aug 09 - Full Day
- Friday Aug 10 - Morning only if Needed

## 2. Motions:

Welchel Accept 2000Oct25 Minutes	Motion: Carried (Unanimous)
Dennis Accept Kevin Cox as member	Motion: Carried (Unanimous)
Welchel Grant Larry Vick Voting Privilege	Motion: Carried (Unanimous)
WG Revoke William DeLuca Membership	Motion: Carried (One Abstention)
McCullough Close AI 32 and AI 51 Colby will develop one Survey question that relates to performance and fidelity of non-referenced units. Additional AI may be initiated if the results indicate additional considerations are warranted.	Motion: Not Carried
Felker Close AI 32 and AI 51	Motion: Carried (Consensus)
Felker Delete the Malfunction list of 25 starting with "The malfunctions listed below shall be included..." through malfunction 25 in Section 3.1.4	Motion: (Not Carried)

## 3. Action Item Activity:

62	Send Meeting Materials to Absent members	Koutouzis
63	Address the problem of other standards placing requirements on the ANS 3.5 Standard without our knowledge. (NFSC Sub-Committee I);	Dennis
64	Florence to prepare W. DeLuca letter for T. Dennis signature;	Florence Dennis
65	NUPPSO comment to Kevin Cox (Complete)	Welchel
66	Scan NRC Form 398 and Email to WG members	Havens
67	Contact Shawn concerning Clarification Statement	Dennis
68	Survey #2	Colby Shelly Felker

## 4. Visitors

Visitor	Date	Affiliation	Email, Phone Fax
Alfredo SaintGeours	2001Apr03	Laguna Verde -	Email: <a href="mailto:agv96296@cfe.gob.mx">agv96296@cfe.gob.mx</a> Phone: (52)(012)9740405 Fax: (52)(01)29899090
Scott Halverson	2001Apr03	Callaway – General Supervisor Simulator Systems Management	Email: <a href="mailto:smhalverson@cal.ameren.com">smhalverson@cal.ameren.com</a> Phone: 573-676-8257 Fax: 573-676-4481
Paul Stovall	2001Apr03	Oconee – OPS Training manager	Email: <a href="mailto:pmstoval@duke-energy.com">pmstoval@duke-energy.com</a> Phone: 864-885-3307 Fax: 864-885-3432
Walt Shura	2001Apr03	North Anna – Simulator, ESP Supervisor	Email: <a href="mailto:walt.shura@dom.com">walt.shura@dom.com</a> Phone: 540-848-2479 Fax: 540-894-2441

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Kevin Cox	2001Apr03	Exelon Generation Dresden Nuclear Power Station	Email: kevin.cox@exeloncorp.com Phone: 815-942-2920 Fax: 815-941-7121
Jorge Del Rio	2001Apr03	INPO Suite 100 700 Galleria Parkway, SE Atlanta, GA 30339-5957	Email: <a href="mailto:delrioj@inpo.org">delrioj@inpo.org</a> Phone: 770-644-8000 Fax: 770-644-8120
Terry Byron	2001Apr03	INPO Suite 100 700 Galleria Parkway, SE Atlanta, GA 30339-5957	Email: byrontr@inpo.org Phone: 770-644-8627 Fax:
Bill Fitzpatrick	2001Apr04	INPO Suite 100 700 Galleria Parkway, SE Atlanta, GA 30339-5957	Email: fitzpatrickwe@inpo.org Phone: 770-644-8503 Fax: 770-644-8120
			Email: Phone: Fax:
			Email: Phone: Fax:

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**5. Roll Call:**

Present	Member	Address	Notes/Proxy:	Email, Phone Fax
Present	Timothy Dennis – Chairman	P. O. Box 119 645 Lehigh Gap St. Walnutport, PA 18088-0119		Email: a243@yahoo.com Phone: 610-767-0979 Fax: 610-767-7095
Present	Jim Florence – Vice Chairman	Nebraska Public Power District P. O. Box 98 Brownville, Nebraska 68321		Email: <a href="mailto:jbfflore@nppd.com">jbfflore@nppd.com</a> Phone: 402-825-5700 Fax: 402-825-5584
Present	Keith Welchel – Secretary	Duke Power Company Oconee Training Center- MC:ON04OT 7800 Rochester Hwy Seneca, SC 29672		Email: kwelchel@duke-energy.com Phone: 864-885-3349 Fax: 864-885-3432
Present	F.J. (Butch) Colby – Editor	CAE Inc. 8585 Cote-de-Liesse P.O. Box 1800 Saint-Laurent Quebec, Canada H4L 4X4		Email: <a href="mailto:butchcolby@cs.com">butchcolby@cs.com</a> Email: butch.colby@cae.com Phone: (410) 381-3557 Fax: (410) 381-2017
Present	Frank Collins – Style Editor	US NRC, Office of Nuclear Reactor Regulation 09-D24 Washington, DC 20555	Larry Vick Email: Lxv@nrc.gov Phone: 301-415-3181	Email: JFC1@NRC.GOV Phone: 301-415-3173 Fax: 301-415-2222
Present	George McCullough	American Electric Power 620 Sixth Ave. St. Albans, WV 25177-2964		Email: gsmccullough@aep.com Phone: 304-722-1337 Fax: 304-722-1332
Present	Hal Paris	GSE Systems 8930 Stanford Blvd. Columbia, MD. 21004		Email: hal.paris@gse.com Phone: 410-772-3559 Fax: 410-772-3595
Present	Robert Felker	EXITECH Corporation 102 E. Broadway Maryville, TN 37804		Email: rfelker@EXITECH.com Phone: 410-461-4295 Fax: 410-730-4008
Present	Allan A. Kozak	Dominion Generation North Anna power Station P.O. Box 402 Mineral, VA 23117-0402		Email: allan_kozak@dom.com Phone: 540-894-2400 Fax:
Present	William M. (Mike) Shelly	Entergy Services, Inc. 1340 Echelon Parkway Jackson, MS 39213-8298		Email: wshelly@entergy.com Phone: 601-368-5861 Fax: 601-368-5816
Present	Dennis Koutouzis	INPO 700 Galleria Parkway, NW Atlanta, GA 30339-5957		Email: koutouzisjd@inpo.org Phone: 770-644-8838 Fax: 770-644-8120
Absent (2)	William A. DeLuca	Pennsylvania Power & Light, Co. Susquehanna Steam Electric Station P.O. Box 467 Berwick, PA 18603		Email: WADeLuca@pplweb.com Phone: 570-542-1988 Fax: 570-542-3177
Present	Oliver Havens, Jr	PSEG Power Hope Creek Generating Station, NTC 244 Chestnut St. Salem, NJ 08079		Email: Oliver.Havens@pseg.com Phone: 856-339-3797 Fax: 856-339-3997
Present	Kevin Cox	Exelon Generation Dresden Nuclear Power Station 6500 North Dresden Rd. Morris, IL 60450		Email: kevin.cox@exeloncorp.com Phone: 815-942-2920 x-2109 Fax: 815-941-7121
Absent (1)	SK Chang	Dominion Nuclear Connecticut, Inc. Millstone Power Station L. F. Sillin, Jr. Nuclear Training Ctr. Rope Ferry Road Waterford, CT 06385		Email: Shih-Kao_Chang@dom.com Phone: 860-437-2521 Fax: 860-437-2671
NA	Suriya Ahmad	Standards Administrator American Nuclear Society 555 North Kensington avenue La Grange Park, IL 60526-5592		Email: sahamad@ans.org Phone: 708-579-8269 Fax: 708 352 6464

## 6. Action Item List

### Action Item Quicklook Table

Open					Complete				
1	2	3	4	5	6	7	8	9	10
<del>11</del>	12	13	14	<del>15</del>	16	17	<del>18</del>	<del>19</del>	20
<del>21</del>	<del>22</del>	<del>23</del>	<del>24</del>	25	<del>26</del>	27	<del>28</del>	<del>29</del>	<del>30</del>
<del>31</del>	<del>32</del>	<del>33</del>	34	<del>35</del>	36	<del>37</del>	38	<del>39</del>	40
<del>41</del>	42	<del>43</del>	44	<del>45</del>	46	<del>47</del>	48	<del>49</del>	<del>50</del>
<del>51</del>	<del>52</del>	53	<del>54</del>	<del>55</del>	<del>56</del>	57	58	59	60
<del>61</del>	62	63	64	<del>65</del>	66	67	68		

### Action Items

No.	Status	Date	Assigned To:	Work Assignment
1	<p>Tim contacted Mike Wright. No Input from Mike. The Scope change should be approved soon.</p> <p>2001Apr05 Scope statement will be revised based on SubCommittee-1 comments that ANS 3.1 is not Training Criteria</p>		Dennis	<p>DOE Nuclear Facility vs. Power Plant Simulators – Check with ANS 3. Inquire as to whether other simulator issues are addressed/referenced in other ANS 3 standards Tim Dennis will contact Mike Wright (ANS-3 chair). Are DOE issues referencing simulators?</p> <p>2001Apr05 Dennis Tim attended the SubCommittee-1 meeting and was informed the PINS form needs to be completed. Additionally, the scope statement states ANS 3.1 establishes Training Criteria, but does not. Accepted 3.5 Scope change and Appendix D</p> <p><b>2000mar09</b> Chandler Comments (NUPPSO) relating to DOE simulators. We need to resolve Open NUPPSO comments from the 1998 standards approval process.</p>
2	<p><b>Date: 2000oct25</b> <b>Status:</b> Additional Editorial Review Required</p> <p><b>Date: 2000mar09</b> <b>Status: Complete</b></p>		Colby Welch	Obtain a Master Copy of the ANS 3.5 standard in Dual Column (working/1998) format. The WordPerfect copy from Shawn does not port into WORD correctly Assigned to Butch Colby.
3	<b>Date: 1999sep14</b> <b>Status: Complete</b>		Welchel	Get NUPPSO comments to members
4	<b>Date: 1999sep14</b> <b>Status: Complete</b>		Welchel	Send copy of meeting minutes 1998Nov04 and 1999Mar02-03 to Jim Florence

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<b>5</b>	<b>Date: 1999sep14</b> <b>Status: Complete</b>		<b>Florence</b>	Jim will look at creating a survey on the USUG WEB concerning the Action Items and for soliciting info from the industry
<b>6</b>	<b>Date: 1999sep14</b> <b>Status: Complete</b>		<b>Dennis</b>	Jeff will contact ANS about ANSI Historical standards Cataudella-Spoke with ANS Standards Secretary, Shawn Coyne-Nalbach Historical Standards: Past standards are retired and are only available as historical standards. 1979, 1981, 1985, and 1993 are no longer endorsed by ANSI and ANS only the 1998 standard is endorsed.
<b>7</b>			<b>Shelly Vick Dennis</b>	Talk to ANS about use of footnotes, asterisks, etc in standards To review style guide.  2001Apr05 Shelly Shelly will call Shawn.
<b>8</b>			<b>Dennis</b>	Contact Mike Wright about the scope change Scope and Background submitted to Shawn and Mike. No schedule at present for ANS-3 to review scope change.  2001Apr05 Contacted Sub-Committee-1 and Dennis needs to complete PINS forms;
<b>9</b>	<b>Date: 2001Apr05</b> <b>Status: Closed</b> <b>Dennis</b>		<b>Dennis</b>	Is ANS 3 considering that the standard may address other simulators not specific to NRC Regulatory Commission licensing?  2001Apr05 Dennis - No - per SubCommittee-1 Tamp Meeting  Tim will verify with Mike concerning additional scope (adding DOE facilities into 3.5). 2001Apr05 Dennis - No - per SubCommittee-1 Tamp Meeting  <b>2000mar09</b> Tim will check at the next ANS 3 meeting
<b>10</b>	<b>Date: 2001Apr04</b> <b>Status: Awaiting</b> <b>Kozak conversation with Chandler and Mallay</b>		<b>Kozak Collins (Vick) McCullough</b>	Propose security criteria for Simulators operating in Exam Mode  2001Apr04 Kozak PPT Presentation outlining several Security concerns. The presentation is included in the AI-10 documentation dated 2001Apr04. Final conclusion was that the current wording is sufficient.  AI Originator: Parking Lot Issue  2001Apr05 Kozak Two NUPPSO comments: NUPPSO supporting comment: James: Mallay stated that this item should be non-prescriptive. NUPPSO supporting comment: Harish Chandler

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				<p>Kozak will call Chandler and Mallay and discuss their NUPPSCO</p> <p><b>2000mar09</b> Determine source of Exam Security comment</p>
<b>11</b>	<b>Date: 2001Apr05 Status: Closed Moved to AI 13</b>		<b>Felker Collins (Vick)</b>	<p>Standard Section 3.1.4 - Add information notices and any other information; establish threshold of documents to be reviewed. Correspondences change over time. Discuss at next meeting with Felker present.</p> <p>Origin: Parking Lot List</p> <p>2001Apr05 Deferred for later discussion pending more important issues</p>
<b>12</b>				Intentionally Left Blank
<b>13</b>			<b>Felker Florence Colby</b>	<p>Standard Section 3.1.3(7) - Rated coolant Flow - are BWR's OK with this? Review entire list in section 3.1.3 for applicability. Review present parameter list. Colby has additional information for discussion at the next meeting. Consider instrument accuracy relating to different plant types.</p> <p>Origin: Parking Lot List</p> <p>Review all List; Combined with the 3.1.3(7) item (Moved from 23);</p> <p>Standard Section 3.1.4 - Add information notices and any other information; establish threshold of documents to be reviewed. Correspondences change over time. Discuss at next meeting with Felker present.</p> <p>Note: Review associations between removal of List and Appendix.</p> <p>2001Apr05 Moved AI 11 to AI 13 Deferred for later discussion pending more important issues</p> <p>Felker: The Simulator shall cause an alarm or automatic action only if the reference plant would have caused an alarm or automatic action. Suggestion to replace Sections 4.1.3 and 4.1.4 with the language above.</p> <p>2001Apr05 Felker – Tables that remain in the 2003 Std should updated or noted as Historical.</p> <p>Florence – Recommendation for wording in Section 3.1.3. See Notes in Minutes Body.</p> <p>2001Apr04 Colby Presented the History of the Critical Parameters list.</p>
<b>14</b>			<b>Paris</b>	Review guidance on stimulated devices. Combine stimulated

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			<p><b>Felker Florence</b></p> <p>hardware and stimulated devices. Issues relating to various stimulated device functions and compatibility with the simulator (e.g. Run/Freeze, History retention and Recalls/Backtracks, software revision control)</p> <p>2001Apr04 Paris Recommends new definition:</p> <p>Old Definition: “<b>stimulated hardware.</b> Components or devices that perform their functions independently of and parallel to the simulation process”</p> <p>2001Apr05 Paris Considerations for new definitions for later review New Definitions: Suggested choices for new definitions:</p> <ol style="list-style-type: none"> <li>1. <b>stimulated hardware.</b> Components or devices that are integrated to the simulator process via simulator inputs and/or outputs which perform their functions independently of and parallel to the simulation process”.</li> <li>2. <b>stimulated components.</b> Hardware or software components that are integrated to the simulator process via simulator inputs and/or outputs which perform their functions independently of and parallel to the simulation process”.</li> <li>3. <b>stimulated components.</b> Components or devices that are integrated to the simulator process via simulator inputs and/or outputs which perform their functions independently of and parallel to the simulation process”.</li> <li>4. <b>stimulated components.</b> Hardware or software components that perform their functions independently of and parallel to the simulation process”</li> </ol> <p>and</p> <p>Change Stimulated Hardware to Stimulated Device</p> <p>Originator: NUPPSCO comments 1998 review process and in Butch’s survey</p> <p><b>2000mar09</b> <b>Determine the source of this comment</b></p>	
15	<p><b>Date: 2000mar09</b> <b>Status: Complete</b> Presentation by Allan Kozak</p>		<p><b>Collins (Vick) Kozak McCullough</b></p> <p>Numerous uses of Training Needs Assessment (TNA) Collins - Add paragraph in Section 3.0 detailing TNA and then remove all other references to TNA.</p> <p>Training Needs Assessment was changed to Training Impact Assessment</p> <p><b>2000mar09</b> <b>Determine Source of this comment</b></p>	
16			<p><b>Welchel Dennis</b></p> <p>Coordinate use of Discrepancy and Deviation. Consider Yoder #12.</p> <p>NUPPSCO Comment</p>	



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				<p><b>2001apr03</b> Welchel Discrepancy is used in sections 4.4.3.2 and 5.2. Webster's definition: Discrepancy-inconsistency Deviation – diverge</p>
17			Dennis Welchel	<p>Get feedback from industry on actually how the 1998 standard is actually used. Use USUG meetings. Cataudella – Seabrook MANTG meeting (Aug-1999) comments:</p> <ul style="list-style-type: none"> <li>• How to document Scenario Based Testing?</li> <li>• Expand on what is V&amp;V and what is necessary.</li> <li>• Shelly – User feedback is not available for inclusion at this time.</li> <li>• Develop Mission statement for working group.</li> <li>• Cataudella – Problems implementing Scenario Based Testing.</li> <li>• Benchmarking of various sites has shown use of V&amp;V and scenario validation.</li> </ul> <p><b>2000mar09</b> Welchel – Add relevant SSNTA meeting minutes to WG minutes.</p> <p>Wait for industry experience</p> <p>2001Apr05 Industry Feedback Callaway has implement the 1998 Standard and presently reports no concerns.</p> <p><b>2001apr03</b> Welchel As of Jan 2001, Callaway (Scott Halverson) is the only simulator presently implementing the 1998 standard. The industry consensus, as expressed at the 2001 USUG meeting, is that implementing Scenario based testing for License Class Simulator Scenarios is unworkable. It is generally agreed that the Regulatory carrot for using the simulator for License Candidate Reactivity Manipulations, is a significant positive for adopting the 1998 3.5 ANS standard. Activity: MANTG Mar 2001 SSNTA Jan 2001 SCS Jan 2001 USUG Jan 2001</p>
18	<p><b>Date: 2000mar09</b> <b>Status:</b></p> <p><b>Closed Statement</b> (Do we need to put some boundaries as to the limits simulator)</p>		Kozak Shelly Cox Havens Florence	<p>Part-Task – Should Part-Task become part of the standard or remain as an appendix. Possibly look at tying the Standard body to the Appendix; Application of Full Scope Simulators. Outside interest are asking for uses of simulators that are not related to Operator Training. <del>Do we need to put some boundaries as to the limits simulator?</del> (Closed 2001Apr05)</p> <p>Origin: Scope Change at Oconee Meeting</p> <p>2001Apr05</p>

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				<p>Florence Moved from AI 22 Look at the use of Simulator, Simulation Facility; Definitions change Simulation Facility becomes Simulator; Simulation Facility is now defined as the collection of Simulators; Coordinate use of Simulator and Simulation Facility.</p> <p>2001Apr05 Kozak Close the Boundry issue <i>Do we need to put some boundaries as to the limits simulator;</i></p> <p>2001Apr05 Kozak See Minutes Body</p> <p><b>2000mar09</b> Presentation of Virginia Power Classroom/Part-task trainer at the 2000mar09 meeting</p> <p>Related AI: 41</p>
19	<p><b>Date: 2001apr05</b> <b>Status: Closed</b> (This Item will be ask on Survey#2)</p>		<p><b>Colby</b> <b>Florence</b></p>	<p>Using the simulator for other than Operator Training. Uses in predictive analysis and design mods, SAMGS procedures changes;</p> <p>2001Apr05 Colby Include this as part of Survey #2 and Closed</p> <p><b>2000mar09</b> Scope change. This will require approval from ANS-3</p>
20			<p><b>Paris</b> <b>Colby</b> <b>Kozak</b></p>	<p>Exploiting technology changes and future industry trends. What's coming around the corner;</p> <p>2001Apr05 Paris Presentation: What is Around the Corner (See Attachments Section)</p>
21	<p><b>Date: 2000mar10</b> <b>Status: Complete</b> Keith Welchel wanted to dismiss this item. The WG agreed.</p>		<p><b>Collins</b> <b>(Vick)</b> <b>Welchel</b> <b>Chang</b></p>	<p>(JFC/KPW/JS) Hybrid Simulators. Hybrid Simulator refers to a simulator that implements many different technologies, source code vendors, different operating systems, integration vendors, etc. Maybe we need to have words that stipulate that testing needs to cover all the other changes we make to the simulator that may affect the operation of the simulator: Instructor Console, Operating Systems, New I/O, etc. (Voted to Dismiss-Consensus) Comments on regulation - The Working Group will not comment on regulations. The Standards Working Group is working in Working Group space.</p> <p><b>2000mar10</b> Keith Welchel moved to dismiss this item. Jim Florence Seconded;</p>
22	<p><b>Date: 2001apr05</b> <b>Status: Closed</b></p>		<p><b>Florence</b> <b>Kozak</b></p>	<p><del>Workshops on Testing Philosophy (what are the benefits? testing that provides results); USUG participation;</del> <del>Schedule workshop during USUG at SCS in Jan. 1999. Develop materials for handout. Florence lead material development.</del></p>

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				<p>Closed 2001Apr05 Complete</p> <p>Look at the use of Simulator, Simulation Facility; Definitions change Simulation Facility becomes Simulator; Simulation Facility is now defined as the collection of Simulators Coordinate use of Simulator and Simulation Facility. Closed Moved to AI 18</p> <p>Jim gave a presentation at the 2000 SCS conference during the USUG meeting.</p>
23				Intentionally Left Blank
24	<p><b>Date: 2000mar09</b> <b>Status: Complete</b> <b>No Action.</b> Real-time at this time does not seem to be an industry concern at this time. Committee members had no issues with the definition or Section 4.1.1. Therefore, this AI was Closed.</p>		<b>Dennis DeLuca</b>	<p>Real Time - Tim will give further consideration and he will look at industry standards; Measuring Real-Time;</p>
25			<b>Dennis</b>	<p>Process Guidelines (Mods and Testing) ;Institutionalizing Procedures</p> <p>Dennis: Next meeting, present external review showing procedures etc... and present recommendations using Millstone experience.</p> <p>2001Apr05 Dennis Deferred</p>
26	<p><b>Date: 2000mar10</b> <b>Status: Complete</b></p> <p>Historical information was presented at the SCS conference.</p> <p>Tim checked with ANS Headquarters and this issue was discussed in detail</p>		<b>Dennis</b>	<p>1985 ANS 3.5 Standard is Historical Standard; Tim Dennis will follow up with Shawn and Mike Wright about Historical/Active Standards and how the present process does not follow the five year; How should we handle or should we comment that the 1985 ANS/ANSI 3.5 standard is now an Historical standard and is no longer in the ANSI catalog.</p> <p>Does the ANS 3.5 Working Group need to comment on this issue; Utilities would need to take exception by treating Certification as other; Mark up the Form 474 and state the other that you are going to do. Scenario Based testing (&gt; 25%/yr.); Performance Based testing Plan</p> <p>Dennis will call Mike Wright confirming ANS-3 understands the Historical Standard issue</p>
27			<b>Collins(Vick)</b>	(JFC/TD) Possible cross-pollination with other standards. Frank

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			<b>Dennis Koutouzis</b>	and Tim will contact others  2001Apr05 Dennis Reference: ANSI/ISA-77.20-1993 Fossil Fuel Power Plant Simulators – Functional Requirements  Reviewed FAA WEB Site: <a href="http://www.faa.gov/nsp">www.faa.gov/nsp</a> Simulator Qualifications: <a href="http://www.faa.gov/nsp/ac.htm">www.faa.gov/nsp/ac.htm</a>  Colby –To research Navy Simulator Systems
28	<b>Date: 1999sep15</b> <b>Status: Complete</b>		<b>Florence</b>	Suggested a letter to Jim Stavely asking for a commitment to attend meetings along with 02Mar1999 meeting minutes; however, Jim Stavely resigned and submitted replacement resume Oliver Havens, Jr;
29	<b>Date: 2000mar10</b> <b>Status: Complete</b>		<b>Florence Dennis</b>	Vice-chair prepare letter to Jim Davis asking for commitment to attend meetings along with 02Mar1999 meeting minutes; Chair to sign and send. Chair to send letter to Jim Davis and Ken Rach thanking them for their past participation and asking them for substitute resumes.
30	<b>Date: 2001Apr05</b> <b>Status: Complete</b>		<b>Florence Welchel</b>	Jim Florence suggested that the following information be placed on the USUG Web Page: ANSI-3.5 Membership List, approved meeting minutes, meeting schedules and meeting agendas. Florence/Welchel will ensure WEB page is updated  Florence: <ul style="list-style-type: none"> <li>• Check with Shawn (ANS) for WEB space.</li> <li>• Check with USUG for WEB Space</li> </ul> 2001Apr05 Florence Membership List Minutes Meeting Schedules Will not use ANS WEB Site  All future approved ANS WG minutes will be placed on the USUG WEB site.
31	<b>Date: 1999sep15</b> <b>Status: Complete</b>		<b>Dennis</b>	Mission statement for Working Group for the 2003 standard. AI #31 added 1999sep14  <b>1999sep15:</b> Voted not to complete
32	<b>Date: 2001Apr04</b> <b>Status: Closed by Motion</b>	<b>1999sep15</b>	<b>Colby Collins Koutouzis Havens Felker McCulough</b>	Description: Multi-Units. Application of reference unit simulators to non-referenced units. Butch has offered to survey the industry. INPO will assist by supplying information from their databases;  Misc Info: <ul style="list-style-type: none"> <li>• Reg Guide 1.149 refers to Multi-Unit Plant, but 3.5 does not.</li> <li>• Felker - Simulators other than the referenced unit are not covered by this standard;</li> </ul> 2001Apr04 The WG, by Motion, closed AI 51 and 32. There was agreement

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				<p>that the 3.5 Standard does not cover simulator configured for Multi-Unit use. The Multi-Unit issues are basically training related and are not minimum reference unit Standard's space. Additional Survey questions will be directed by AI 50. The WG approved a motion to delete AI 32 and AI 51 and Colby will still ask survey questions concerning multi-unit plants.</p> <p><b>2000Oct26:</b>  <b>Butch will request bullets on Multi-Unit from the Group for next meeting</b></p>
33	<p><b>Date: 2001Apr04</b>  <b>Status: Closed</b></p>		<p><b>Havens</b>  <b>Kozak</b>  <b>Shelly</b>  <b>Welchel</b></p>	<p>Change 24-month design change limit to some shorter period.</p> <p><b>2001apr03</b>  Welchel  Proposed new wording:  <b>5.3.1.2 Subsequent Upgrade.</b> <i>Following the initial upgrade, reference unit modifications determined to be relevant to the training program shall be implemented on the simulator within 24 months of their reference unit in-service dates, or earlier if warranted by a training needs assessment.</i></p> <p>Requiring that a determination of the relevance to training and that a training needs assessment be completed should be sufficient. Recommendation is that the "24 months" be removed and that section 5.3.1.2 should read:</p> <p><b>5.3.1.2 Subsequent Upgrade.</b> <i>Following the initial upgrade, reference unit modifications determined to be relevant to the training program shall be implemented on the simulator based on training needs assessments in accordance with the criteria provided in 4.2.1.4.</i></p> <p><b>5.1.2.2 Subsequent Update.</b> <i>Following the initial update, new data shall be reviewed, and the simulator design data base appropriately revised, once per calendar year. Modifications made to the reference unit shall be reviewed for determination of the need for simulator modification within 12 months.</i></p> <p><b>5.1.2.2 Subsequent Update.</b> <i>Following the initial update, new data shall be reviewed, and the simulator design data base appropriately revised, once per calendar year. Modifications made to the reference unit shall be implemented on the simulator based on training needs assessments in accordance with the criteria provided in 4.2.1.4.</i></p> <p>.</p> <p>WG agreed to close this AI with no further discussion. The 12 and 24 month timelines could be used to ensure the modifications.</p>
34	<p><b>Date: 2001Apr05</b>  <b>Status: Closed</b></p>	1999sep15	<p><b>Welchel</b>  <b>McCullough</b>  <b>DeLuca</b>  <b>Koutouzis</b></p>	<p>Present standard does not address software bugs, discrepancies, and enhancements. Time limits only relate to plant design changes, no time limits are associated for simulator fidelity and enhancements.</p> <p>Origin: Welchel</p>

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				<p>2001Apr05 Closed – Other issues are handled with the Simulator Configuration Process</p> <p>Related AI: 36</p>
35	<p><b>Date: 2001Apr05</b> <b>Status: Closed</b></p>	2000mar08	<b>McCullough Collins(Vick)</b>	<p>Review the double column Draft Working Document prepared by Butch Colby</p> <p>2001Apr05 McCullough Reviewed and recommend no changes at this time. Footnotes in the side-by-side format do not agree with the original document but this should clear up when the double format is deleted. Additional editorial work may be needed to ensure the footnotes align correctly.</p>
36		2000mar08	<b>Koutouzis Havens</b>	<p>Questions from Review of INPO Documents:</p> <ul style="list-style-type: none"> <li>• Timeline for incorporation of Plant design changes into the simulator</li> <li>• Instructor Qualification</li> <li>• Long Term Open Simulator Fidelity Issues</li> </ul> <p>This is an information AI</p> <p>2001Apr05 Koutouzis No Update</p> <p>Related AI: 34</p>
37	<p><b>Date: 2001Apr05</b> <b>Status: Closed</b></p> <p><b>Group agreed to closed this item. No additional information required.</b></p>	2000mar08	<b>Koutouzis Collins(Vick)</b>	<p>Five Required Control Manipulations Clarification</p> <p>2001Apr05 Koutouzis No Update</p>
38	<p><b>Date: 2001Apr05</b> <b>Status: Closed</b></p>	2000mar08	<b>Dennis</b>	<p>Discuss the ANS definitions and process of Clarification and Interpretation</p> <p>2001Apr05 Refer to Meeting Minutes { find the meeting minutes and place here }</p>
39	<p><b>Date: 2001Apr05</b> <b>Status: Closed</b></p>	2000mar08	<b>McCullough Florence Felker</b>	<p>Consider differentiating validation of Requal and Initial License Scenarios</p> <p>2001Apr05 McCullough { Add LTI Document Here }</p>
40		2000mar08	<b>Cox Vick Florence</b>	<p>Appendix Update for Scenario Based Testing Documentation.</p> <p>2001Apr05</p>

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			<b>Collins McCullough</b>	Draft a Scenario Based Testing Guideline (new) Appendix
<b>41</b>	<b>Date: 2000Oct26 Status: Complete</b>	2000mar08	<b>DeLuca Colby</b>	<p>Appendices consideration up-front and not as an after thought. Tie documentation and Testing to the Standard Body</p> <p>Related AI: 18</p> <p><b>Resolution (2000Oct26 – Colby):</b></p> <ul style="list-style-type: none"> <li>• Continue using Appendices A and B as is</li> <li>• Recommendation to revisit appendices content</li> <li>• Consider moving Appendix D (Part-Task) into standard main body</li> <li>• Related AI-18</li> </ul>
<b>42</b>		2000mar08	<b>Chang Felker Cox</b>	<p>Use of Verification and Validation Origination: Colby Survey</p> <p><b>2000Oct26:</b> <b>Chang to look at Survey and determine the issues with Verification and Validation and bring to next meeting</b></p> <p><b>Origin: ANS 3.5 WG Survey #1</b></p> <p><b>2001Apr05 Felker</b> <b>The use of V&amp;V as espoused through the IEEE 7xxx standards for SW Validation. We have outside documentation regarding the use of the term SW Validation &amp; Verification;</b></p> <p><b>It is not V&amp;V as defined in the Nuclear Industry.</b></p>
<b>43</b>	<b>Date: 2001Apr03 Status: Complete</b>	2000mar08	<b>Welchel</b>	<p>Send 1998 Standard NUPPSO comments to:</p> <ul style="list-style-type: none"> <li>• Hal Paris</li> <li>• Bob Felker</li> <li>• Bud Havens</li> </ul> <p><b>2001apr03</b> Welchel - Delivered 2001apr03</p>
<b>44</b>		2000mar08	<b>Paris Havens Chang</b>	<p>Clarify Simulator Repeatability wrt to Real-time and not Scenario Based Testing. Repeatability is not specified for Scenario Based Testing but is related to Real-time.</p> <p>2001Apr05 Paris Concern: What is Repeatability? Further review is needed. See Attachment for AI 44</p> <p><b>2000Oct26:</b> <b>Hal and Group will review the use of these terms and consistency</b></p>
<b>45</b>	<b>Date: 2000Oct26 Status: Complete</b>	2000mar08	<b>Shelly Chang Havens</b>	<p>Clarify Overrides do not have to be tested like Malfunctions and are not Malfunctions. (Survey Comment 3.15 p20)</p> <p><b>2000Oct26:</b> <b>Non-issue because it's related to CFR and not the standard</b></p> <ul style="list-style-type: none"> <li>• Not all Overrides need to be tested</li> </ul>

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				<ul style="list-style-type: none"> <li>Only Overrides in Scenarios need to be tested</li> <li>AI45 Originated from Colby survey</li> <li>Confusion between the CFR about 25%/yr and the 98 standard linking Overrides to Malfunctions</li> <li>Recommend that this is a non-issue and should be closed because its not an issue with the standard but is with the 10CFR Part 55</li> </ul>
46		2000mar09	<b>Committee</b>	Request members review the other parts of the survey and comment. Members are ask to review and submit two bullets that they consider important for further ANS3.5WG consideration
47	<b>Date: 2000Oct26 Status: Complete</b>	2000mar09	<b>Colby</b>	Send Thank You notes to all Survey Participants
48	<b>Date: 2000Oct26 Status: Complete</b>	2000mar09	<b>Colby</b>	<p>Modify DCD Training Needs Assessment to Training Impact Assessment</p> <p><b>2000Oct26: Deleted due to Motion by Felker being Carried WG decided to revert back to Training Needs Assessment</b></p>
49	<b>Date: 2000Oct26 Status: Complete</b>	2000mar09	<b>Kozak</b>	<p>Determine source of Training Needs Assessment Related AI: 15</p> <p><b>2000Oct26: Could not determine the Source of Training Needs Assessment</b></p>
50	<b>Date: 2001Apr04 Status: Closed Redundant to AI 10</b>	2000mar09	<b>Colby</b>	<p>Additional survey concerning Exam Security Concerns</p> <p>2001Apr05 Colby Close redundant to AI 10. Closed</p> <p>2001Apr04 Kozak presented a PPT presentation outlining and defining security issues</p> <p>Closed based on better understanding of NUPPSO.</p>
51	<b>Date: 2001Apr04 Status: Closed by Motion</b>	2000mar09	<b>Colby</b>	<p>Send out another survey concerning Multi-unit questions and will try to target Simulator, Training, and OPS</p> <p>2001Apr04 The WG, by Motion, closed this AI 51 and 32. There was agreement that the 3.5 Standard does not cover simulator configured for Multi-Unit use. The Multi-Unit issues are basically training related and are not minimum reference unit Standard's space. Additional Survey questions will be directed by AI 50. The WG approved a motion to delete AI 32 and AI 51 and Colby will still ask survey questions concerning multi-unit plants;</p>
52	<b>Date: 2000Oct26 Status: Complete</b>	2000mar09	<b>Felker</b>	<p>Locate previous Multi-Unit work completed by the 1993 WG. Bob will contact Bill Geiss</p> <p><b>Resolution: 2000Oct26 Felker</b></p> <p>Material does not exist.</p>
53		2000mar09	<b>Colby</b>	Review the Appendix A – A(3) (BOM). Consider removal of the



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				BOM list and replace with I&C list  2001Apr05 Colby March 2000 meeting minutes Working Doc Editor to remove BOM from Appx A
54	Date: 2000Apr05 Status: Complete	2000mar09	Vick	Aquire US Government Style Guide  2001Apr05 Style manual given to Style Editor.
55	Date: 2000Oct25 Status: Complete	2000oct25	Dennis	Distribute Robert Boire work assignments  2001Oct25 Completed
56	Date: 2000Oct26 Status: Complete	2000oct25	Colby	Contact Mr. Cox (Com Ed) for 3.5 WG participation.  <b>2000Oct26</b> <b>Colby called Mr Cox but Mr Cox is out until 2000Oct30.</b> <b>Terrill Laughton attended on behalf of Mr Cox</b>
57		2000oct25	Dennis	Remove all references to 3.1  2001Apr05 Dennis Deferred for later discussion.
58		2000oct25	Dennis	Send Robert Boire a note of thanks for his participation  2001Apr05 Dennis Letterhead not available. Florence will contact Shawn at ANS and request letterhead.
59		2000oct26	Florence McCullough	Develop a list of Action Items for 3.5-WG resulting from the 2000Oct26 USUG Ops Test Directors Meeting at DC Cook  2001Apr05 Florence Deferred until Florence communicates with McCullough
60		2000oct26	McCullough	Define the Term <b>Training Needs Assessment</b> in such a manner that it is clear in intent to both Training and Simulator staffs  2001Apr05 McCullough  Trainers and Simulator personel view Training Needs Assesments Differently; Training Needs Analysis and Training Needs Assessment are npot used consistently. McCullough will revisit this item in a future date;  Reference: ACAD-85-006 "A Suppliment to Principles of Training Systems Development"
61	Date: 2001apr03 Status: Complete	2000oct26	Welchel Dennis	Write letter to NRC concerning the WG comments on the proposed rule change  2001apr03 Welchel – Letter Written and mailed to NRC stating the three

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				issues regarding the proposed rule change.
62			Koutouzis	Send Meeting Materials to Absent members;
63			Dennis	Address the problem of other standards placing requirements on the ANS 3.5 Standard without our knowledge. (NFSC Sub-Committee I);
64			Florence Dennis	Florence to prepare W. DeLuca letter for T. Dennis signature;
65	Date: 2001apr03 Status: Complete		Welchel	NUPPSO comment to Kevin Cox (Complete)
66			Havens	Scan NRC Form 398 and Email to WG members
67			Dennis	<p>Contact Shawn concerning Clarification Statement</p> <p>2001jul11</p> <p>Ms. Shawn M. Coyne-Nalbach NFSC Secretary American Nuclear Society 555 North Kensington Avenue La Grange Park, IL 60526-5592</p> <p>Dear Ms. Coyne-Nalbach:</p> <p>Subject: Request for Clarification</p> <p>Reference: ANSI/ANS-3.5-1998 Standard Document, Section 4.4.3.2</p> <p>I am a supervisor for the Nebraska Public Power District's Cooper Nuclear Station responsible for maintaining the functional requirements for our full-scope nuclear power plant control room simulator used for operator training and examination.</p> <p>I am writing this letter to your organization to request a clarification to the reference document in regards to Simulator Scenario-Based Testing.</p> <p>Section 4.4.3.2 of the reference document states that scenarios developed for the simulator, including the appropriate instructor interfaces and cueing, shall be tested before use for operator training or examination. The simulator shall be capable of being used to satisfy predetermined learning or examination objectives without exceptions, significant performance discrepancies, or deviation from the approved scenario sequence. A record of the conduct of these tests, typically in the form of a completed scenario or lesson plan checklist, and the evaluation of the test results, shall be maintained.</p> <p>I am concerned that the Standard requires scenarios developed</p>

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				<p>for the simulator shall be tested before use for operator training or examination. It appears that this requirement may not be achievable with all operator training programs, namely initial license candidate training programs.</p> <p>Please clarify the preceding paragraph by addressing the following questions:</p> <p>1. What is the intent of scenario-based testing? Does scenario-based testing impose additional training program requirements?</p> <p>ANS-3.5 Working Group answer:</p> <p>Scenario Based Testing is intended to best utilize, to the extent possible, the existing training scenario development process without imposing additional training program requirements.</p> <p>2. How does scenario-based testing interface with simulator performance testing?</p> <p>ANS-3.5 Working Group answer:</p> <p>Simulator performance testing comprises Operability and Scenario Based Testing and establishes a test program to ensure simulator performance for the use in operator training and examination.</p> <p>3. Do simulator users have to test each scenario before every use, including those utilized to support initial license candidate training programs? Can training programs that utilize simulators currently certified to previous editions of the standard take testing credit for simulator performance testing and simulator scenarios previously developed and approved for use in operator training or examination?</p> <p>ANS-3.5 Working Group answer:</p> <p>Users of the standard are encouraged to take testing credit for simulator performance testing and simulator scenarios previously developed and approved for use in operator training or examination. This does not imply that a scenario shall be tested before every use, however the following items should be considered before subsequent use of the approved scenario developed for operator training or examination:</p> <p>* If the training process requires revalidation of the</p>
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				<p>scenario;  * Whenever models or simulator capabilities are changed or modified in a way that affects the scenario performance.</p> <p>If any of the above items have occurred and impact the scenario, the scenarios shall be re-tested before use for operator training or examination.</p> <p>I would appreciate a clarification statement from the ANS-3.5 Working Group.</p> <p>Thank you for your attention to my request.</p> <p>Sincerely,</p> <p>James B. Florence  Simulator Supervisor  Nebraska Public Power District  Cooper Nuclear Station  Brownville, NE 68321  Phone: 402-825-5700  Pager: 402-977-3692  Fax: 402-825-5584  Email: jbflore@nppd.com</p>
68			Colby Shelly Felker	Survey #2

## **7. Rules of the Chair**

- **Interim Voting (Motions) shall be by Consensus;**
- **Administrative issues by simple majority;**
- **The Chairman rules that no Motions will be accepted when not in session;**
- **The Chair shall be informed of absences;**
- **The absent member is encouraged to send a proxy;**
- **A Proxy shall not have voting privileges (By Consensus Vote, Proxy Voting Privileges may be granted for a single Working Group Session);**
- **Members attend the full length of the meeting;**
- **The two absent policy will be enforced;**
- **Word 7.0 will be the document format;**
- **The Host will collect and send all handout material for absent members without proxy;**

## **8. Tuesday 2001Apr03 (Day 1)**

### **Opening Comments (Tim Dennis):**

- Roll Call
  - Absent Members:
    - Bill Deluca
    - Frank Collins (Proxy Larry Vick)
    - SK Chang
- Review of Meeting minutes Dated 2001oct25
  - Motion to Accept Minutes as Written
    - Minutes Accepted
- Review of the Agenda
  -
- Membership:
  - Kevin Cox
    - Introduced himself
      - Dresden Simulator Supervisor
      - SRO Certified Instructor
      - Completing RNI Re-host
    - Vote for Kevin is moved to Thursday Afternoon after the 2:30pm break
- Distributed NUPPSO comments to:
  - Hal Paris
  - Bob Felker
  - Bud Havens
  - Kevin Cox
- Discussed revisions to the Working Standard
  - All Standard changes will reference an action item in the working group minutes.

### **Reports:**

#### **NRC**

- Regulation Update:
  - Committee Comments:
    - Commission considered Committee Comments
    - Timeline: Qtr 3-4, 2001

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- July 3, 2000 – Publication of notice of Rule Change. Generally rule changes take a year or longer;
- 10 CFR 55 moved simulator applicable wording from Section 55.45.B to new section 55.46
- Reg Guide 1.149 – Same timeline as Rule Change
  - Supports the final rule
- Standard needs work concerning Scenario Based:
  - More guidance is needed
  - Felker:
    - SBT is an impediment for the industry as a whole going to the 1998 Standard
  - Goes to ACRS as FYI
- Stovall – To satisfy scenario based testing: Is it acceptable in Initial License Training Programs to utilize post training simulator fidelity review process to meet intent?

#### INPO

- Five Utilities announce consideration to apply for New Plant License
  - Constellation
  - Dominion
  - Southern
  - Exelon
  - Entergy
- Development of pebble bed reactor technology and utility announcement of intent to consider new plants may indicate a need for new simulators on the horizon
  - Note: Past 35-WG discussions were about taking the Standard in a new direction, more directed towards maintenance of simulators.
- IAEA
  - Developing a Simulator Training Technical Document

#### MANTG

- Next Meeting May 11 and 12, 2001
  - March Meeting
    - Active in producing Simulator Fidelity Documents;
      - Document are available on USUG WEB
      - Rehashed Callaway's Scenario Based Testing Documents;
    - Good list of Region I status;
    - Millstone sent in 474 for 1998 Standard;
    -
  - NFSC
    - T. Dennis handed out Meeting Minutes – January 2001;
    - Asked for new membership;
    - Felker is concerned that other standards are placing requirements on ANS 3.5 that the 3.5 WG does not know about;
- AI-63 Assigned T. Dennis**

#### EXITECH

- No New News

#### SSNTA

- The SSNTA simulator sub committee has prepared a position statement for the Parent committee. This Statement will be presented at the next Region II parent committee meeting which is scheduled for May22, 2001:

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Concerning the ANS 3.5-1998 standard, the SSNTA Simulator Sub-committee is generally favorable and anticipates adoption of the ANS 3.5-1998 standard recognizing differing facility needs and schedules. At this point, rulemaking finality related to 10CFR55, including public comments, has not been resolved. Therefore, public comments have the potential to significantly alter the final impact of the changes to 10CFR55.

The SSNTA Simulator Sub-Committee recognizes that a utility may desire to adopt the ANS 3.5-1998 standard, and methods presently exist that allow its adoption. However, the SSNTA Simulator Sub-Committee, with a Consensus vote, recommends deferment of the adoption of the ANS 3.5-1998 standard until final issuance of 10CFR55 and Regulatory Guide 1.149-Rev. 3.

- Region II Reactivity Manipulation Exemption Request:
  - Catawba – Filed an exemption and the NRC requested more information;
  - Oconee – Presently preparing an exemption request;

### USUG

- Met in January 2001 at USUG meeting at Palo Verde Site
  - Problems with scenario based testing
  - An awareness that several International users rely on the ANS 3.5 standard
  - General meeting atmosphere is that the regulation is not in place, so most utilities are committing to the standard at this time;

### SCS

- Scott Halverson
  - SCS recent name change – **GET NEW NAME FROM SCOTT**
  - Trying to develop a position guide for the qualification for simulation modelers
  - Object – Promotion of simulation in general
  - Next meeting in San Antonio, Texas

### NEI

- Jim Florence
  - Sent link to committee members a NEI link discussing new plant construction activity;

### WESTRAN

- Scott Halverson
  - At last meeting Key Performance Indicators dominated discussion

### IAEA/DOE

- No New News
- Paris - International simulator users rely on the ANS 3.5 Standard

**Adjourned 2001Apr03: 1630**

## 8. Wednesday 2001Apr04 (Day 2)

### Presentations:

#### Whiteboard Use at Callaway – Scott Halverson

- Scott Halverson gave a presentation of the new Whiteboard technology and utilizing the simulator in an interactive environment. The presentation demonstrated using the simulator in an interactive environment and the ability the display realtime simulator data;
- The 3.5-WG was also interested in the Callaway Scenario Based testing program. Scott presented data showing that more simulator discrepancies were found using Scenario Based Testing than with the previous Malfunction and Transient Testing methods;
- Callaway has been using the Whiteboard Technology for about two years in License and Requal Training;
- Scott stated that no DR's were noted during training after that scenario had been validated using Scenario Based Testing;

#### INPO's use of Simulators - Bill Fitzpatrick

- Certification
  - INPO does not put a lot of emphasis on certification. Not a lot gained;
  - Looking for student feedback;
  - A lot of time in the control room;
  - Mods and fidelity issues;
  - Long term plant issues not in the simulator;
  - INPO will spend even less time on certification after the rule change;
  - Memorandum of agreement with the NRC;
  - Felker – Certification is not going away, just Form 474. Testing is still expected but and the expectations have not changed with respect to simulator fidelity;
  - Dennis – Does INPO ensure that the evaluators are familiar with ANS 3.5?  
Answer: No. But they are familiar with the standard.
  - INPO does not penalize for “OLD” simulators;
  - INPO is avoiding putting on the simulator technical hat unless the fidelity of the machine is suspect;
  - INPO will only comment on Simulator issues that have an adverse affect on training and that the issue reaches the Objective level;
  - INPO looks at Simulator Reliability Issues:
    - Can scenarios be completed?
    - Is the available for training?
- Required Manipulations
  - Expect to see a list that comes out of the needs analysis, not from the Denton list;
  - Issue with rushing scenarios during the training cycle because they are required;
  - Issue with rushing timed scenarios;
  - May push out other important training due to statutory training;
- How does INPO use the Simulator:
  - Evaluating operating crews and how they operate the plant;
    - Performance Mode – INPO;
    - Evaluation Mode – Utility;
  - Training Mode
    - Evaluate the training organization:
      - Training techniques;
      - Interested in the training aspect and the response of the trainer;



## Discussion of Action Items

### Welchel - AI-16

- Discrepancy is used in sections 4.4.3.2 and 5.2.  
Webster's definition:  
Discrepancy-inconsistency  
Deviation – diverge

### Welchel - AI 17

- As of Jan 2001, Callaway (Scott Halverson) is the only simulator presently implementing the 1998 standard. Callaway is presently implementing two testing programs, one for the 1985/1993 standard (pre 1998) and one for the 1998 Standard (Scenario Based Testing)

The industry consensus, as expressed at the 2001 USUG meeting, is that implementing Scenario based testing for License Class Simulator Scenarios is unworkable. It is generally agreed that the Regulatory carrot for using the simulator for License Candidate Reactivity Manipulations, is a significant positive for adopting the 1998 3.5 ANS standard.

### Welchel/Dennis - AI 61

- Letter Written and mailed to NRC stating the three issues regarding the proposed rule change

### DeLuca - AI 34

- Closed – Other issues are handled with the Simulator Configuration Process

### Colby - AI 32 and AI 51

- Consensus to remove AI 32 and AI 51 carried with two No Votes. AI 50 will be amended to incorporate any additional Survey Topics including FYI Multi-Unit plant questions. The WG Carried a motion to close Multi-Unit AI's (32 and 51), after much discussion.
- The discussion was centered around whether or not the WG should consider Multi-Unit Simulators. The final consensus was that Multi-Unit plants were not in the present 3.5 scope and even though the AI's were removed, the WG agreed that Colby should still ask Multi-Unit Questions on the Survey. The WG will review the responses and additional AI's may be added based on the feedback. The Multi-Unit issue and will be dropped from further discussion;
- Reg Guide 1.149 (DG-1080) gives guidance on Multi-Unit plants in Section C2-Use of a Simulator for Multiple Plants;

### Colby - Survey Section B

- Welchel - Question #2 – Add Year for each System Upgraded
- McCullough - New Question – I/O Upgrades
- Halverson - New Question - Instructor Station Upgrades

### Kozak - AI 10

- PPT Presentation:
    - Exam Mode Security  
Proposed Criteria  
ANS 3.5
    - Section 3 General Requirements
      - “The overall simulator design shall incorporate provisions for examination security”.
- FACT!

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- Simulator and LAN architectures are increasing in complexity, challenging computer security.
  - Security Considerations
  - Environment Control
  - Video and Audio feeds to other areas
  - Radio Transmissions
  - Area Lockdown capabilities
- Security Considerations
  - Data Control
    - Local Area Network (LAN) requirements
    - Local Area Network (LAN) external connections
    - IC Control – “Read, Write”
    - Computer interfaces – Plant Computer System (PCS), Emergency Response Facility (ERF)
    - Administrative Control
- **WHY?**
  - Upgrades projects and station requirements are changing the security envelope
  - New challenges are being generated
  - Wait until major projects are completed (3<sup>rd</sup> Qtr)
  - Define major areas that become lists. Don’t become prescriptive
  - **Current wording appears sufficient**
- {End Presentation}
- Colby – Exam Security discussion originated with F. Collins.
- Halverson – Consider adding an Appendix describing several acceptable Exam Security methods;
- **This AI is a Parking Lot Issue carried over from the 1998 Standard. Additional information is needed.**

### Paris - AI 14

- Paris gave presentation
- Recommendation:  
Old Definition:  
“**stimulated hardware.** Components or devices that perform their functions independently of and parallel to the simulation process”  
  
New Definition:  
“**stimulated hardware.** Components or devices that are integrated to the simulator process via inputs and outputs but perform their functions independently of and parallel to the simulation process”  
  
and  
  
Change Stimulated Hardware to Stimulated Device

### Felker/Florence - AI 13

- Felker – Malfunction List should be removed. The list is redundant to the output of the SAT process;
- Vick – Prefers that the list remain;
- Paris – Could be of value in the future for simulator procurements;
- Colby – Exceptions are being taken on the certification form because some malfunctions on the list of 25 cannot be performed on the simulator;
- The simulator procurement process uses the malfunction list in the initial testing phase;

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- Florence - The list was initially defined for initial simulator testing, but has now evolved into a list for operator training;
- The list does have some value. Additionally, this list is not the same list in 10 CFR 55. It is not clear on what basis this list is a requirement in today's environment.
- Florence - In today's environment, it's not clear as to the lists' purpose;
- Consider adding Regulatory Documents in the Selection Process List;
- Alfredo SaintGeours - List is just a subset of a greater list and feels the list should remain;

Adjourned 2001Apr04: 1740

**8. Thursday 2001Apr05 (Day 3)**

**Dennis - AI 01**

- Revise Scope Statement - Comments from SubCommittee-1 to Tim Dennis Training Criteria is not established in ANS 3.1. Review the 3.5 Scope to reword the Training Criteria reference in the second paragraph;
  - Recommendation - Change "Training Criteria" to "Qualifications and Training Methodology"
- **{Need New Scope Statement from Dennis}**

**McCullough - AI 39**

- Clarification Statement for Scenario Based Testing:

**SBT is intended to best utilize, to the extent possible, the existing training scenario development process without imposing additional training program requirements. Simulator performance testing comprises Operability and SBT and establishes a test program to ensure simulator performance for the use in operator training and examination.**

**Users of the standard are encouraged to take testing credit for simulator performance testing and simulator scenarios previously developed and approved for use in operator training or examination. This does not imply that a scenario shall be tested before every use, however the following items should be considered before subsequent use of the approved scenario developed for operator training or examination:**

- **If the training process requires revalidation of the scenario;**
- **Whenever models or simulator capabilities are changed or modified in a way that affects the scenario performance.**

**If any of the above items have occurred and impact the scenario, the scenarios shall be re-tested before use for operator training or examination.**

- Why is there a perception in the Industry that they cannot meet the 1998 Standard with Initial License Training:
- What constitutes scenario Based Training:
  - Instructors Validate a Lesson Plan;
  - Discrepancies are found and fixed before actual use;
  - Documentation:
    - Check list for each Lesson Plan;
  - Continually tested
    - Before – New Must be completed before

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- During –
- After –
- Halverson – Using a scenario in training before using it the next time, is Scenario Based Testing because you've tested it before the next session;
- Shelly – Scenarios executed using the same Sequence of Events, but with different timing, may result in totally different plant conditions;
  - Kozak – The Standard does not address the situation where the simulator operates correctly, but the outcome of the scenario is not what was intended due to differences in timing;
- ILT scenarios are much longer and more unpredictable;
- Requal scenarios are much shorter and predictable;
- Felker – Operability testing was designed to handle the Longer Scenarios;
  - How do we test a simulator today:
    - Simulator is comprised of a Subset of all that could be test which is:
      - Operability Test - 15%
      - Malfunction – 25% per year
      - Scenario Based Test – Remaining Total
        - The rub is that we're trying to put ILT testing in the Scenario Based Testing
- Identifying the problem:
  - Resources:
    - Large number of scenarios
    - Machine Time
    - Instructor Time
- History – Paris
  - This started with Collins presentation at SCS conferences several years ago when he listed problems the NRC was experiencing;
- McCullough –
  - Is the '98 standard placing undue requirements on the training department;
    - Are sufficient controls in place on training scenarios;
  - Develop a Clarification ready for distribution;
  - Look at this from the training angle;
  - Dissecting the Sentence:
    - "Scenarios shall be tested **before** use for operator training or examination"
  - Testing methodologies:
    - Baseline the ILT Scenario. Use the same methodology used in procurement of simulators. A baseline is developed for the set of ILT scenarios, and from then on all Scenario changes are viewed as a change from the baseline;
  - Kozak – Events that may cause revalidation of Scenarios
    - Significant Time lapse
    - Significant Model changes
    - Significant Scenario changes in complexity

**Kozak - AI 18**

- Boundary Conditions
- Are other groups using the simulator?
  - The standard should not limit Simulator use by other organizations;
  - Probably not is an issue for the WG to address at this time;
  - 3.5 addresses the use of simulator in Operator Training
- Std does not mention Part task in the body of the Std
- A lot of terms used in the industry
  - Part task

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- Limited Scope
- Appendix D. Requirements may be keeping the Classroom trainer out of the classroom due to configuration control requirements.
  - Consider reviewing the wording in Appx D as to relax the requirements that may be keeping the Classroom trainer out of the classroom
  - Just how much fidelity is required in the classroom
- Fidelity of the Panel Displays may be a stumbling block to getting the Simulator into the Classroom.

**Dennis - AI 27**

- Review FAA WEB Site
  - National Simulator Program [www.faa.gov/nsp](http://www.faa.gov/nsp)
  - Simulator Qualifications: [www.faa.gov/nsp/ac.htm](http://www.faa.gov/nsp/ac.htm)
- Reference: ANSI/ISA-77.20-1993
  - Fossil Fuel Power Plant Simulators – Functional Requirements
- Colby –To research Navy Simulator Systems

**Colby - AI 19**

- Closed - Include this as part of Survey #2 and Closed

**Florence - AI 13**

- Florence Recommendation for Section 3.1.3  
**3.1.3 Normal Evolutions.** The simulator shall be capable of simulating heatup from a cold shutdown condition to full power operations through unit shutdown from rated power to a cold shutdown condition in a continuous manner, without any mathematical model or initial condition changes utilizing reference unit integrated operating procedures to support performance-based operator training programs.

The simulator shall calculate system parameters corresponding to particular operating conditions, display these parameters on the appropriate instrumentation, and provide proper alarms and protective system actions.

For other evolutions such as reactor core end-of-cycle coastdown, mid-loop operations, refueling operations, or evolutions where the reactor vessel head is removed, conditions may be achieved in a non-continuous manner and mathematical model or initial condition changes are permitted.

**Adjourned 2001Apr05: 1730**

**8. Friday 2001Apr06 (Day 4)**

**Adjourned 2001Apr06: 1200**

## **9. Attachments**

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AI 20 Paris

What is around the corner? New developments

### **Source: Parking Lot**

1. Windows NT is a very proven platform and is considered common at this point and not a new development. Best count is 47 Installations to date. This should not affect any 3.5 issues.
2. More importantly and as a result of the Windows NT conversions, are the expanded uses of the simulation in the classroom, simplified Instructor and Developer Interfaces, and allowing cost effective portability of the simulation. Hence, a simulator on a workstation or laptop in real-time. This seems to be an improvement in efficiency. This does not interfere with traditional simulator operator training and is not a 3.5 issue, as long as the desktop simulator is not used for any formal training and in consideration of recommendations of Appendix D.
3. Plant Improvements regarding the replacement or improvement in the Control Room seems to be an important trend for the future. This is in relation to aging equipment and potential life extensions at the nuclear facilities. Specifically, DCS systems or partial DCS systems are being considered. This activity affects the simulator to a very large extent. The problem is , at a minimum, four-fold.

How do you keep training on what you have that reflects the current plant configuration?

How do you train operators on the new systems before they are installed since the whole operating philosophy is very different?

What should be simulated verses stimulated?

If a DCS system is installed, how do you carve out the existing portions of the models that are being replaced and what is the impact to testing.

This decision making and guidance is provided by the standard. It should be noted that dependent upon the scope of the modifications and schedule for implementation, this could result in a very significant effort to n the part of the simulator maintenance group. This can contribute to a potential major problem as it relates to stimulated devices. This brings a whole new world of suppliers to the simulation Industry (Siemens, ABB, Foxboro, etc.)

4. NSSS upgrades continue to be a major area of activity. This has always been a trend for the continued improvement of the NSSS models. In the last few years the trend has expanded to include the use of actual Engineering models used in analysis at the power station. The results seem to be mixed and very reliant on available computing resources and which specific model is implemented. This trend is expected to continue. The standard provides sufficient guidance in this area.
5. BOP model improvements to existing simulators appears to be a trend. As better software fidelity is available there are model upgrades occurring based upon the unique needs of that particular simulator. The standard provides sufficient guidance in this area.

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AI 44 Paris

#44 Clarify Simulator Repeatability wrt to Real-time and not Scenario Based Testing. Repeatability is not specified for Scenario Based Testing but is related to Real-time.

2000Oct26:

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Hal and Group will review the use of these terms and consistency

Source of comment: TVA comments from the 1998 NUPPSCO review process. The comment was very specific. The comment was:

“Page 14. Section 4.1.1 The last sentence is unacceptable. The last sentence. “...time base relationships, sequences, durations, rates, and accelerations are all items which are determined primarily by the quality of the software models, and are only consequentially affected if the simulation is not running in real time. If these items are to be addressed at all, the requirements should be in 4.1.3.2. As it stands now, 4.1.1 adds a substantial performance requirement to be 4.1.3.2, et.,al., which requires only that the”...observable change in the parameters correspond in direction to those expected...”

The term “real-time” is very specific and technical, and should be defined so as only to require that the simulation advances the time step no more or less the value of the time step.

This comment also applies to the “glossary” definition on page 6.”

Page 14. The reference to repeatability should be removed unless it is clearly defined (and agreed upon) and specific acceptance criteria are given

### DEFINITIONS

**repeatability.** The capability of the simulator to have successive tests of its dynamic performance conducted in the same time base relationships, sequences, durations, rates, and accelerations which, in turn, produce the same results within the limits required by this standard.

**real time.** Simulation of dynamic performance in the same time base relationships, sequences, durations, rates, and accelerations as the dynamic performance of the reference unit.

### USAGES

#### REAL-TIME

initial condition. A set of data that represents the status of the reference unit from which **real-time** simulation can begin.

3.1.1 **Real Time** and Repeatability. The simulator shall, in a repeatable manner, operate in **real time** while conducting any of the evolutions required by this section.

3.1.2 Limits of Simulation. Mathematical models of physical phenomena are sometimes simplified to meet **real-time** simulation requirements. Such simplification can limit the conduct of certain evolutions on the simulator. In addition, it is sometimes possible to create events on a simulator that progress beyond reference unit design limits. Simulation could be inaccurate beyond these limits. Examples of such events include primary containment failure and gross core degradation. To reduce the potential for negative training, automatic or administrative controls shall be provided to alert the instructor when model parameters exceed values indicative of events beyond the implemented simulation scope or expected reference unit behavior.

4.1.1 **Real Time** and Repeatability. It shall be demonstrated that the simulator performs the capabilities defined in 3.1, completes execution within the designed time interval, and is repeatable. In addition, it shall be demonstrated that between successive simulator tests no noticeable differences exist with respect to time base relationships, sequences, durations, rates, and accelerations.

4.3 Simulator Instructor Station Capabilities. It shall be demonstrated that initial conditions specified in 3.3.1 are administratively controlled and are representative of reference unit conditions.

It shall be demonstrated that the simulator includes features specified in 3.3.3, and that implementation of simulator control features does not alert the operator to pending events other than those features that cause departure from **real-time** execution of the models or notification of reaching a limit of simulation. For stimulated hardware it shall be documented that noticeable differences have been defined and that training needs assessments have been performed in accordance with 4.2.1.4.

It shall be demonstrated that the simulator includes features specified in 3.3.3, and that implementation of simulator control features does not alert the operator to pending events other than those features that cause departure from **real-time** execution of the models or notification of reaching a limit of simulation. For stimulated hardware it shall be documented that noticeable differences have been defined and that training needs assessments have been performed in accordance with 4.2.1.4.

## REPEATABILITY

3.1.1 Real Time and **Repeatability**. The simulator shall, in a repeatable manner, operate in real time while conducting any of the evolutions required by this section.

4.1.1 Real Time and **Repeatability**. It shall be demonstrated that the simulator performs the capabilities defined in 3.1, completes execution within the designed time interval, and is **repeatable**. In addition, it shall be demonstrated that between successive simulator tests no noticeable differences exist with respect to time base relationships, sequences, durations, rates, and accelerations.

### 4.4.2 Validation Testing.

Validation tests shall be conducted prior to the simulator's use in training and examination for the following situations:

- (1) Completion of simulator initial construction.
- (2) Whenever models are changed or modified in a way that potentially affects fidelity relative to the reference unit.
- (3) Whenever there are changes which have the potential to affect simulator capabilities or **repeatability**, including changes to computer platforms, operating systems and run-time utilities, interface systems, or instructor stations.

D2. Part-Task and Limited-Scope Simulator General Requirements. At a minimum, the following general requirements of the standard should apply in their entirety to part-task and limited-scope simulators.

#### 3.1.1 Real Time and **Repeatability**

Part-Task and Limited-Scope Simulator Testing and Validation Requirements. At a minimum, the following testing and validation requirements of the standard should apply in their entirety to part-task and limited-scope simulators.

- 4.1.1 Real Time and **Repeatability**
- 4.1.2 Limits of Simulation

## REPEATABILITY ISSUES



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The main issue with repeatability arises from performing calculations in parallel in separate processors. If each module took exactly the same amount of time to perform each calculation and if each module started at exactly the same time, repeatability would not be an issue. However, neither case is true. First, advanced modeling makes extensive use of iterative solutions. That means that a value in one processor that may be solved before it is used in a calculation in another processor may not get solved until after that second calculation if a transient condition exists. The sequencing of calculations across processors is not rigid. Second, Windows NT does not necessarily start calculations promptly when told to. In some cases, a 3-5 millisecond delay may exist and this delay is random across processors. This of course exacerbates the problem of calculation sequencing.

This problem does not affect calculations within a single processor because modules are always solved in a rigid order as called by the executive system. This is one solution to the repeatability problem – buy a fast enough processor so that you only need one to perform all of the model calculations. Unfortunately, models have the tendency to expand to exceed the capacity of any processor.

A second solution is to control the posting of results from a given processor into shared memory. If all new results are held in memory local to that processor until all processors have completed the current frame, then no cross processor changes will result from calculation timing. The scheme for this solution is as follows:

At loading time, each module is analyzed to determine what values are output from that module. A temporary local buffer is allocated to contain those values.

When a module is executed, it reads the inputs from shared memory which will by definition now be the results from the previous frame, performs its calculations, and place the results in a local buffer. Any calculations within that frame on that processor will have access to new results from that local buffer. Any calculations on any other processor will only have access to the previous frame data and any new local results from the respective processors.

At the completion of that frame for all processors, all new results are posted into shared memory. Once this is completed, the next frame can be started.

This may seem cumbersome and time consuming, but in actual computing time this only adds a few milliseconds to an individual frame.

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