Index:

1. Next Meeting
2. Motions
3. Action Item Activity
4. Visitors
5. Roll Call
6. Action Item List
7. Rules of the Chair
8. Meeting Minutes
9. Attachments

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:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Motion</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welchel</td>
<td>Accept 2000Oct25 Minutes</td>
<td>Motion: Carried (Unanimous)</td>
</tr>
<tr>
<td>Dennis</td>
<td>Accept Kevin Cox as member</td>
<td>Motion: Carried (Unanimous)</td>
</tr>
<tr>
<td>Welchel</td>
<td>Grant Larry Vick Voting Privilege</td>
<td>Motion: Carried (Unanimous)</td>
</tr>
<tr>
<td>WG</td>
<td>Revoke William Deluca Membership</td>
<td>Motion: Carried (One Abstention)</td>
</tr>
<tr>
<td>McCullough</td>
<td>Close AI 32 and AI 51</td>
<td>Motion: Not Carried</td>
</tr>
<tr>
<td>Felker</td>
<td>Close AI 32 and AI 51</td>
<td>Motion: Carried (Consensus)</td>
</tr>
<tr>
<td>Felker</td>
<td>Delete the Malfunction list of 25 starting with “The</td>
<td>Motion: (Not Carried)</td>
</tr>
<tr>
<td></td>
<td>malfunctions listed below shall be included…” through</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malfunction 25 in Section 3.1.4</td>
<td></td>
</tr>
</tbody>
</table>

3. **Action Item Activity:**

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

4. **Visitors**

<table>
<thead>
<tr>
<th>Visitor</th>
<th>Date</th>
<th>Affiliation</th>
<th>Email, Phone Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfredo SaintGeours</td>
<td>2001Apr03</td>
<td>Laguna Verde -</td>
<td>Email: <a href="mailto:agv96296@cie.gob.mx">agv96296@cie.gob.mx</a> &lt;br&gt;Phone: (52)(012)9740405 &lt;br&gt;Fax: (52)(01)29899090</td>
</tr>
<tr>
<td>Scott Halverson</td>
<td>2001Apr03</td>
<td>Callaway – General Supervisor Simulator Systems Management</td>
<td>Email: <a href="mailto:smhalverson@cal.ameren.com">smhalverson@cal.ameren.com</a> &lt;br&gt;Phone: 573-676-8257 &lt;br&gt;Fax: 573-676-4481</td>
</tr>
<tr>
<td>Paul Stovall</td>
<td>2001Apr03</td>
<td>Oconee – OPS Training manager</td>
<td>Email: <a href="mailto:pmstoval@duke-energy.com">pmstoval@duke-energy.com</a> &lt;br&gt;Phone: 864-885-3307 &lt;br&gt;Fax: 864-885-3432</td>
</tr>
<tr>
<td>Walt Shura</td>
<td>2001Apr03</td>
<td>North Anna – Simulator, ESP Supervisor</td>
<td>Email: <a href="mailto:walt.shura@dom.com">walt.shura@dom.com</a> &lt;br&gt;Phone: 540-848-2479 &lt;br&gt;Fax: 540-894-2441</td>
</tr>
</tbody>
</table>
## ANS 3.5 Working Group Approved Meeting Minutes
April 03-06, 2001
INPO - Atlanta

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

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Page 3 of 34
### 5. Roll Call:

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

### Action Item Quicklook Table

<table>
<thead>
<tr>
<th>No.</th>
<th>Status</th>
<th>Date</th>
<th>Assigned To:</th>
<th>Work Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open</td>
<td>2001Apr05</td>
<td>Tim</td>
<td>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? 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 2000mar09 Chandler Comments (NUPPSCO) relating to DOE simulators. We need to resolve Open NUPPSCO comments from the 1998 standards approval process.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Complete</td>
<td>1999sep14</td>
<td>Date: 1999sep14 Status: Complete Welchel Get NUPPSCO comments to members</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Complete</td>
<td>1999sep14</td>
<td>Date: 1999sep14 Status: Complete Welchel Send copy of meeting minutes 1998Nov04 and 1999Mar02-03 to Jim Florence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date: 1999sep14</td>
<td>Status: Complete</td>
<td>Florence</td>
<td>Dennis</td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
<td>-----------------</td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>6</td>
<td>Date: 1999sep14</td>
<td>Status: Complete</td>
<td>Dennis</td>
<td>Jeff will contact ANSI about ANSI Historical standards Cataudella-Spoke with ANSI 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 ANSI only the 1998 standard is endorsed.</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>Shelly</td>
<td>Talk to ANSI about use of footnotes, asterisks, etc in standards To review style guide. 2001Apr05 Shelly Shelly will call Shawn.</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>Dennis</td>
<td>Contact Mike Wright about the scope change Scope and Background submitted to Shawn and Mike. No schedule at present for ANSI-3 to review scope change. 2001Apr05 Contacted Sub-Committee-1 and Dennis needs to complete PINS forms;</td>
</tr>
<tr>
<td>9</td>
<td>Date: 2001Apr05</td>
<td>Status: Closed</td>
<td>Dennis</td>
<td>Is ANSI 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 2000mar09 Tim will check at the next ANSI 3 meeting</td>
</tr>
<tr>
<td>10</td>
<td>Date: 2001Apr04</td>
<td>Status: Awaiting</td>
<td>Kozak</td>
<td>Propose security criteria for Simulators operating in Exam Mode 2001Apr04 Kozak 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</td>
</tr>
<tr>
<td></td>
<td>Date: 2001Apr05</td>
<td>Felker Collins (Vick)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------------</td>
<td>-----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Status: Closed Moved to AI 13</td>
<td>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. Origin: Parking Lot List</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Intentionally Left Blank</td>
<td>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. Origin: Parking Lot List</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 13 | | Review all List; Combined with the 3.1.3(7) item (Moved from 23); 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. Note: Review associations between removal of List and Appendix. 2001Apr05 Moved AI 11 to AI 13 Deferred for later discussion pending more important issues 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. 2001Apr05 Felker – Tables that remain in the 2003 Std should updated or noted as Historical. Florence – Recommendation for wording in Section 3.1.3. See Notes in Minutes Body. 2001Apr04 Colby Presented the History of the Critical Parameters list. 2001Apr05 Paris Review guidance on stimulated devices. Combine stimulated...
<table>
<thead>
<tr>
<th>Felker Florence</th>
<th>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)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001Apr04 Paris</td>
<td>Recommends new definition:</td>
</tr>
<tr>
<td>Old Definition:</td>
<td>“<strong>stimulated hardware.</strong> Components or devices that perform their functions independently of and parallel to the simulation process”</td>
</tr>
<tr>
<td>2001Apr05 Paris</td>
<td>Considerations for new definitions for later review</td>
</tr>
<tr>
<td>New Definitions:</td>
<td>Suggested choices for new definitions:</td>
</tr>
<tr>
<td>1. <strong>stimulated hardware.</strong> 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”</td>
<td></td>
</tr>
<tr>
<td>2. <strong>stimulated components.</strong> 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”.</td>
<td></td>
</tr>
<tr>
<td>3. <strong>stimulated components.</strong> 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”.</td>
<td></td>
</tr>
<tr>
<td>4. <strong>stimulated components.</strong> Hardware or software components that perform their functions independently of and parallel to the simulation process”</td>
<td></td>
</tr>
<tr>
<td>and</td>
<td></td>
</tr>
<tr>
<td>Change Stimulated Hardware to Stimulated Device</td>
<td></td>
</tr>
<tr>
<td>Originator: NUPPSCO comments 1998 review process and in Butch’s survey</td>
<td></td>
</tr>
</tbody>
</table>

**2000mar09**
Determine the source of this comment

<table>
<thead>
<tr>
<th>Date: 2000mar09</th>
<th>Collins (Vick) Kozak McCullough</th>
<th>Numerous uses of Training Needs Assessment (TNA) Collins - Add paragraph in Section 3.0 detailing TNA and then remove all other references to TNA.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status: Complete</td>
<td>Presentation by Allan Kozak</td>
<td>Training Needs Assessment was changed to Training Impact Assessment</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td><strong>2000mar09</strong> Determine Source of this comment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16</th>
<th>Welchel Dennis</th>
<th>Coordinate use of Discrepancy and Deviation. Consider Yoder #12.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NUPPSCO Comment</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Status</td>
<td>Kozak, Shelly, Cox, Havens, Florence</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>2000mar09</td>
<td>Closed Statement (Do we need to put some boundaries as to the limits simulator)</td>
<td>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. <strong>Do we need to put some boundaries as to the limits simulator?</strong> (Closed 2001Apr05)</td>
</tr>
<tr>
<td></td>
<td><strong>2001apr03</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Welchel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discrepancy is used in sections 4.4.3.2 and 5.2. Webster’s definition: Discrepancy-inconsistency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deviation – diverge</td>
<td></td>
</tr>
</tbody>
</table>

**17 Dennis Welchel**

- Get feedback from industry on actually how the 1998 standard is actually used. Use USUG meetings.
- Cataudella – Seabrook MANTG meeting (Aug-1999) comments:
  - How to document Scenario Based Testing?
  - Expand on what is V&V and what is necessary.
  - Shelly – User feedback is not available for inclusion at this time.
  - Develop Mission statement for working group.
  - Cataudella – Problems implementing Scenario Based Testing.
  - Benchmarking of various sites has shown use of V&V and scenario validation.

**2000mar09 Welchel**

- Add relevant SSNTA meeting minutes to WG minutes.
- Wait for industry experience

**2001Apr05 Industry Feedback**

- Callaway has implement the 1998 Standard and presently reports no concerns.

**2001apr03 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
|   | Date: 2001apr05 | Status: Closed | Florence Kozak | 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.

2001Apr05
Kozak
Close the Boundry issue

Do we need to put some boundaries as to the limits simulator; |
|   | Date: 2001apr05 | Status: Closed | Colby Florence | Using the simulator for other than Operator Training. Uses in predictive analysis and design mods; SAMGS procedures changes;

2001Apr05
Colby
Include this as part of Survey #2 and Closed |
|   | Date: 2000mar09 | Status: Complete | Paris Colby Kozak | Exploiting technology changes and future industry trends. What's coming around the corner;

2001Apr05
Paris
Presentation: What is Around the Corner (See Attachments Section) |
|   | Date: 2000mar10 | Status: Complete | Collins (Vick) Welchel Chang | (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.

2000mar10
Keith Welchel moved to dismiss this item. Jim Florence Seconded; |
|   | Date: 2001apr05 | Status: Closed | Florence Kozak | Workshops on Testing Philosophy (what are the benefits? testing that provides results); USUG participation;
| 23 | **Date: 2000mar09**  
**Status: Complete**  
**No Action.**  
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. |  | Intentionally Left Blank |
| 24 | **Date: 2000mar09**  
**Status: Complete**  
**No Action.**  
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. | **Dennis DeLuca** | Real Time - Tim will give further consideration and he will look at industry standards; Measuring Real-Time; |
| 25 | **Date: 2000mar10**  
**Status: Complete**  
**No Action.**  
Historical information was presented at the SCS conference. Tim checked with ANS Headquarters and this issue was discussed in detail | **Dennis** | Process Guidelines (Mods and Testing) ;Institutionalizing Procedures  
Dennis: Next meeting, present external review showing procedures etc… and present recommendations using Millstone experience.  
2001Apr05  
Dennis  
Deferred |
| 26 | **Date: 2000mar10**  
**Status: Complete**  
**No Action.**  
Historical information was presented at the SCS conference. Tim checked with ANS Headquarters and this issue was discussed in detail | **Dennis** | 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.  
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 (> 25%/yr.); Performance Based testing Plan  
Dennis will call Mike Wright confirming ANS-3 understands the Historical Standard issue |
| 27 |  | **Collins(Vick)** | (JFC/TD) Possible cross-pollination with other standards. Frank |
## ANS 3.5 Working Group Approved Meeting Minutes
April 03-06, 2001
INPO - Atlanta

<table>
<thead>
<tr>
<th>Date</th>
<th>Status</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 Sep 1999</td>
<td>Complete</td>
<td>Florence suggested a letter to Jim Stavely asking for a commitment to attend meetings along with 02 Mar 1999 meeting minutes; however, Jim Stavely resigned and submitted a replacement resume Oliver Havens, Jr.</td>
</tr>
<tr>
<td>10 Mar 2000</td>
<td>Complete</td>
<td>Dennis Vice-chair prepared a letter to Jim Davis asking for commitment to attend meetings along with 02 Mar 1999 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.</td>
</tr>
<tr>
<td>05 Apr 2001</td>
<td>Complete</td>
<td>Florence Chair 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 the Web page is updated. Florence: - Check with Shawn (ANS) for WEB space. - Check with USUG for WEB space. 2001 Apr 05 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.</td>
</tr>
<tr>
<td>15 Sep 1999</td>
<td>Complete</td>
<td>Dennis Mission statement for Working Group for the 2003 standard. AI #31 added 1999 Sep 14 1999 Sep 15: Voted not to complete</td>
</tr>
<tr>
<td>04 Apr 2001</td>
<td>Closed by Motion</td>
<td>Colby Collins Koutouzis Havens Felker McCulough 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: - Reg Guide 1.149 refers to Multi-Unit Plant, but 3.5 does not. - Felker - Simulators other than the referenced unit are not covered by this standard. 2001 Apr 04 The WG, by Motion, closed AI 51 and 32. There was agreement.</td>
</tr>
</tbody>
</table>
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.

**2000Oct26:**
Butch will request bullets on Multi-Unit from the Group for next meeting

| 33 | Date: 2001Apr04 | Status: Closed | Havens       | Change 24-month design change limit to some shorter period. |
|    |                |                | Kozak        |                                                           |
|    |                |                | Shelly       |                                                           |
|    |                |                | Welchel      |                                                           |
|    |                |                |              | **2001apr03**                                             |
|    |                |                | Welchel      | Proposed new wording:                                    |
|    |                |                |              | **5.3.1.2 Subsequent Upgrade.** 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.** |
|    |                |                |              | 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: |
|    |                |                |              | **5.3.1.2 Subsequent Upgrade.** 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.** |
|    |                |                |              | **5.1.2.2 Subsequent Update.** 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.** |
|    |                |                |              | **5.1.2.2 Subsequent Update.** 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.** |
|    |                |                |              | . |
|    |                |                |              | WG agreed to close this AI with no further discussion. The 12 and 24 month timelines could be used to ensure the modifications. |

| 34 | Date: 2001Apr05 | Status: Closed | Welchel      | 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. |
|    | 1999sep15       |                | McCullough   | Origin: Welchel                                          |
|    |                |                | DeLuca       |                                                           |
|    |                |                | Koutouzis    |                                                           |
## 35. Date: 2001Apr05  
**Status:** Closed  
**McCullough Collins (Vick)**  
Review the double column Draft Working Document prepared by Butch Colby  
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.

## 36. Date: 2000mar08  
**Koutouzis Havens**  
Questions from Review of INPO Documents:  
- Timeline for incorporation of Plant design changes into the simulator  
- Instructor Qualification  
- Long Term Open Simulator Fidelity Issues  
This is an information AI  
2001Apr05  
Koutouzis  
No Update  
Related AI: 34

## 37. Date: 2001Apr05  
**Status:** Closed  
**Koutouzis Collins (Vick)**  
Five Required Control Manipulations Clarification  
2001Apr05  
Koutouzis  
No Update  
Related AI: 34

## 38. Date: 2001Apr05  
**Status:** Closed  
**Dennis**  
Discuss the ANS definitions and process of Clarification and Interpretation  
2001Apr05  
Refer to Meeting Minutes {find the meeting minutes and place here}

## 39. Date: 2001Apr05  
**Status:** Closed  
**McCullough Florence Felker**  
Consider differentiating validation of Requal and Initial License Scenarios  
2001Apr05  
McCullough  
{Add LTI Document Here}

## 40. Date: 2000mar08  
**Cox Vick Florence**  
Appendix Update for Scenario Based Testing Documentation.  
2001Apr05
<table>
<thead>
<tr>
<th>No.</th>
<th>Date/Status</th>
<th>Author(s)</th>
<th>Action/Comment</th>
</tr>
</thead>
</table>
| 41  | 2000Oct26   | DeLuca Colby      | Appendices consideration up-front and not as an after thought.  
Tie documentation and Testing to the Standard Body  
Related AI: 18  
Resolution (2000Oct26 – Colby):  
- Continue using Appendices A and B as is  
- Recommendation to revisit appendices content  
- Consider moving Appendix D (Part-Task) into standard main body  
- Related AI-18 |
| 42  | 2000mar08   | Chang Felker Cox  | Use of Verification and Validation  
Origination: Colby Survey  
2000Oct26:  
Chang to look at Survey and determine the issues with Verification and Validation and bring to next meeting  
Origin: ANS 3.5 WG Survey #1  
2001Apr05  
Felker  
The use of V&V as espoused through the IEEE 7xxx standards for SW Validation. We have outside documentation regarding the use of the term SW Validation &Verification;  
It is not V&V as defined in the Nuclear Industry. |
| 43  | 2001Apr03   | Welchel           | Send 1998 Standard NUPPSCO comments to:  
- Hal Paris  
- Bob Felker  
- Bud Havens  
2001apr03  
Welchel - Delivered 2001apr03 |
| 44  | 2000mar08   | Paris Havens Chang| 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.  
2001Apr05  
Paris  
Concern: What is Repeatability? Further review is needed.  
See Attachment for AI 44  
2000Oct26:  
Hal and Group will review the use of these terms and consistency |
| 45  | 2000Oct26   | Shelly Chang Havens| Clarify Overrides do not have to be tested like Malfunctions and are not Malfunctions. (Survey Comment 3.15 p20)  
2000Oct26:  
Non-issue because it’s related to CFR and not the standard  
- Not all Overrides need to be tested |
<p>| | | | |</p>
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</table>
| 46 | Date: 2000Oct26 Status: Complete | 2000mar09 | Committee | Only Overrides in Scenarios need to be tested  
AI45 Originated from Colby survey  
Confusion between the CFR about 25%/yr and the 98 standard linking Overrides to Malfunctions  
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.

Request members review the other parts of the survey and comment. Members are asked to review and submit two bullets that they consider important for further ANS3.5WG consideration.

| 47 | Date: 2000Oct26 Status: Complete | 2000mar09 | Colby | Send Thank You notes to all Survey Participants.


2000Oct26: Deleted due to Motion by Felker being Carried  
WG decided to revert back to Training Needs Assessment.

| 49 | Date: 2000Oct26 Status: Complete | 2000mar09 | Kozak | Determine source of Training Needs Assessment  
Related AI: 15


| 50 | Date: 2001Apr04 Status: Closed Redundant to AI 10 | 2000mar09 | Colby | Additional survey concerning Exam Security Concerns  
2001Apr05  
Colby  
Close redundant to AI 10. Closed  
2001Apr04  
Kozak presented a PPT presentation outlining and defining security issues  
Closed based on better understanding of NUPPSCO.

| 51 | Date: 2001Apr04 Status: Closed by Motion | 2000mar09 | Colby | Send out another survey concerning Multi-unit questions and will try to target Simulator, Training, and OPS  
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.

| 52 | Date: 2000Oct26 Status: Complete | 2000mar09 | Felker | Locate previous Multi-Unit work completed by the 1993 WG.  
Bob will contact Bill Geiss  
Resolution: 2000Oct26 Felker  
Material does not exist.

| 53 | 2000mar09 | Colby | Review the Appendix A – A(3) (BOM). Consider removal of the...
<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Status</th>
<th>Assignee</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>2000Apr05</td>
<td>Complete</td>
<td>Vick</td>
<td>Aquire US Government Style Guide</td>
</tr>
<tr>
<td>55</td>
<td>2000Oct25</td>
<td>Complete</td>
<td>Dennis</td>
<td>Distribute Robert Boire work assignments</td>
</tr>
<tr>
<td>56</td>
<td>2000Oct26</td>
<td>Complete</td>
<td>Colby</td>
<td>Contact Mr. Cox (Com Ed) for 3.5 WG participation.</td>
</tr>
<tr>
<td>57</td>
<td>2000Oct25</td>
<td></td>
<td>Dennis</td>
<td>Remove all references to 3.1</td>
</tr>
<tr>
<td>58</td>
<td>2000Oct25</td>
<td></td>
<td>Dennis</td>
<td>Send Robert Boire a note of thanks for his participation</td>
</tr>
<tr>
<td>59</td>
<td>2000Oct26</td>
<td></td>
<td>Florence</td>
<td>Develop a list of Action Items for 3.5-WG resulting from the 2000Oct26 USUG Ops Test Directors Meeting at DC Cook</td>
</tr>
<tr>
<td>60</td>
<td>2000Oct26</td>
<td></td>
<td>McCullough</td>
<td>Define the Term Training Needs Assessment in such a manner that it is clear in intent to both Training and Simulator staffs</td>
</tr>
<tr>
<td>61</td>
<td>2001Apr03</td>
<td>Complete</td>
<td>Welchel</td>
<td>Write letter to NRC concerning the WG comments on the proposed rule change</td>
</tr>
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<td></td>
</tr>
<tr>
<td>62</td>
<td>Koutouzis</td>
<td>Send Meeting Materials to Absent members;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Dennis</td>
<td>Address the problem of other standards placing requirements on the ANS 3.5 Standard without our knowledge. (NFSC Sub-Committee I);</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Florence</td>
<td>Florence to prepare W. DeLuca letter for T. Dennis signature;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Date: 2001apr03 Status: Complete</td>
<td>Welchel</td>
<td>NUPPSCO comment to Kevin Cox (Complete)</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Havens</td>
<td>Scan NRC Form 398 and Email to WG members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Dennis</td>
<td>Contact Shawn concerning Clarification Statement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ms. Shawn M. Coyne-Nalbach  
NFSC Secretary  
American Nuclear Society  
555 North Kensington Avenue  
La Grange Park, IL 60526-5592

Dear Ms. Coyne-Nalbach:

Subject: Request for Clarification

Reference: ANSI/ANS-3.5-1998 Standard Document, Section 4.4.3.2

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.

I am writing this letter to your organization to request a clarification to the reference document in regards to Simulator Scenario-Based Testing.

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.

I am concerned that the Standard requires scenarios developed...
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.

Please clarify the preceding paragraph by addressing the following questions:

1. What is the intent of scenario-based testing? Does scenario-based testing impose additional training program requirements?

   **ANS-3.5 Working Group answer:**

   Scenario Based Testing is intended to best utilize, to the extent possible, the existing training scenario development process without imposing additional training program requirements.

2. How does scenario-based testing interface with simulator performance testing?

   **ANS-3.5 Working Group answer:**

   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.

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?

   **ANS-3.5 Working Group answer:**

   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. 

I would appreciate a clarification statement from the ANS-3.5 
Working Group. 

Thank you for your attention to my request. 

Sincerely, 

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

| 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 NUPPSCO 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
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 May 22, 2001:
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 2001 Apr 03: 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 to 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 is 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 FY1 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!
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 (3rd 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;
Florence - The list was initially defined for initial simulator testing, but has now evolved into a list for operator training;
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
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
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/nsf](http://www.faa.gov/nsf)
  - Simulator Qualifications: [www.faa.gov/nsf/ac.htm](http://www.faa.gov/nsf/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

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 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.

#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:
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
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.