

ANS 3.5 Working Group Meeting Minutes  
Shearon Harris Energy & Environ Center  
2012 December 11-13

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American Nuclear Society  
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**1. Visitors**

<b>Visitor</b>	<b>Date</b>	<b>Affiliation</b>	<b>Email, Phone Fax</b>
Mr. Tim Dennis Proxy for Jody Lawter	2012dec11	645 Lehigh Gap St. P. O. Box 119 Walnutport, PA 18088-0119	<b>Email:</b> a243@yahoo.com <b>Phone:</b> 610-767-0979 <b>Fax:</b> 610-767-7095
Scott Cupp Proxy for Goldman	2012dec11	Entergy Nuclear Arkansas Nuclear One 1448 SR 333 Russellville, AR 72802	<b>Email:</b> <a href="mailto:scupp@entergy.com">scupp@entergy.com</a> <b>Work:</b> 479-858-6858 <b>Fax:</b> 479-858-6820
Vincent Gagnon Proxy for Chang	2012dec11	L-3 MAPPS 8565 Cote-de-Liesse Montreal, Quebec H4T1G5 Canada	<b>Email:</b> <a href="mailto:vincent.gagnon@l-3com.com">vincent.gagnon@l-3com.com</a> <b>Work:</b> 514-787-4927 <b>Cell:</b> 760-638-3348

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**2. Membership and Attendance**

<b>Present</b>	<b>Member</b>	<b>Address</b>	<b>Notes-Proxy</b>	<b>Email-Phone-Fax</b>
Present	Jim Florence <b>Chair</b>	Nebraska Public Power District P. O. Box 98 Brownville, Nebraska 68321		<b>Email:</b> <a href="mailto:jbflore@nppd.com">jbflore@nppd.com</a> <b>Phone:</b> 402-825-5700 <b>Fax:</b> 402-825-5584
Absent	Robert Felker <b>Vice Chair</b>	Western Services Corporation 7340 Executive Way, Suite A Frederick, MD 21704	Proxy: None	<b>Email:</b> felker@ws-corp.com <b>Phone:</b> 301-644-2520 <b>Fax:</b> 301-682-8104 <b>Cell:</b> 240-344-5889
Present	Keith Welchel <b>Secretary</b>	Duke Power Company Oconee Training Center- MC:ON04OT 7800 Rochester Hwy Seneca, SC 29672		<b>Email:</b> keith.welchel@duke-energy.com <b>Phone:</b> 864-885-3349 <b>Fax:</b> 864-885-3432
Present	F.J. (Butch) Colby <b>Editor</b>	L-3 MAPPS 8565 Cote-de-Liesse Quebec, Canada H4T 1G5		<b>Email:</b> <a href="mailto:butchcolby@comcast.net">butchcolby@comcast.net</a> <b>Email:</b> butch.colby@l-3com.com <b>Phone:</b> (410) 961-7535 <b>Fax:</b> (410) 756-1954
Present	Lawrence (Larry) Vick <b>Parliamentarian</b>	US NRC, Office of Nuclear Reactor Regulation 07-G13 Washington, DC 20555		<b>Email:</b> lawrence.vick@nrc.gov <b>Phone:</b> 301-415-3181 <b>Fax:</b> 301-415-3061
Present	George McCullough Proxy Steve White	GSE Systems, Inc. 2300 St. Marys Road Suite D St. Marys, GA 31558		<b>Email:</b> gsmccullough@gses.com <b>Phone:</b> 912-576-6730 <b>Cell:</b> 410-707-6946
Absent	Dennis Koutouzis	INPO 700 Galleria Parkway, NW Atlanta, GA 30339-5957	Proxy: None	<b>Email:</b> koutouzisjd@inpo.org <b>Phone:</b> 770-644-8838 <b>Fax:</b> 770-644-8120
Present	Frank Tarselli	129 Abbey Rd Sugarloaf, PA 18249		<b>Email:</b> frankt64@epix.net <b>Phone:</b> 570.542.3717 <b>Cell:</b> 570-956-0303 <b>Fax:</b> 570.542.3855
Absent	SK Chang	Dominion Nuclear Connecticut, Inc. Millstone Power Station L. F. Sillin, Jr. Nuclear Training Ctr. Rope Ferry Road Waterford, CT 06385	Proxy: Vincent Gagnon	<b>Email:</b> <a href="mailto:Shih-Kao.Chang@dom.com">Shih-Kao.Chang@dom.com</a> <b>Phone:</b> 860-437-2521 <b>Fax:</b> 860-437-2671
Absent	Robert Goldman	Entergy 1340 Echelon Parkway Jackson, MS 39213-8298	Proxy: Scott Cupp	<b>Email:</b> <a href="mailto:rgoldma@entergy.com">rgoldma@entergy.com</a> <b>Phone:</b> 601-368-5582 <b>Fax:</b>
Present	David Goodman	Luminant PO Box 1003 Glen Rose, TX 76043		<b>Email:</b> <a href="mailto:david.goodman@luminant.com">david.goodman@luminant.com</a> <b>Phone:</b> 254-897-5636 <b>Fax:</b> 254-897-5714

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Absent Proxy	Jody Lawter	VC Summer Nuclear Station PO Box 88 Jenkinsville, SC 29065	Proxy: Tim Dennis	<b>Email:</b> jody.lawter@scana.com <b>Phone:</b> 803-345-4854 <b>Fax:</b> 803-931-5616
Present	Mac McDade	Progress Energy – Harris Nuclear Plant 3932 New Hill–Holleman Rd New Hill, NC 27562		<b>Email:</b> mac.mcdade@pgnmail.com <b>Phone:</b> 919-362-3319 <b>Fax:</b> 919-362-3346
Present	Michael Petersen	Xcel Energy – Prairie island – Monticello 1660 Wakonade Drive West Welch, MN 55089		<b>Email:</b> Michael.petersen@xenuclear.com <b>Phone:</b> 651-388-1121 x 7253 <b>Fax:</b> 651-330-6282
Present	Pablo Rey	Tecnatom, s.a. Avda. Montes de Oca, 1 San Sebastian de los Reyes, 28703 - Madrid		<b>Email:</b> prey@tecnatom.es <b>Phone:</b> +346-079-99218 <b>Fax:</b> +349-165-98677
Absent	James Sale	North Anna Power Station 11022 Haley Drive, PO Box 402 Mineral, Virginia 23117-0402	Proxy: None	<b>Email:</b> jim.sale@dom.com <b>Phone:</b> 540-894-2464 <b>Fax:</b> 540-894-2931

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**3.**      **Action Items**

3.1      Action Item Quick-look Table

<b>Open</b>	<b>Complete</b>	<b>Carried to Next Standard</b>
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1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51									

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3.2 Action Items

No.	Status	Date	Assigned To:	Work Assignment
1		2010oct05	<b>Florence Lawter Sale</b>	Appoint new members for officer development (job shadow for position development). Parliamentarian Assist Lawter, Sale
2	2011nov17: Closed	2010oct06	<b>Koutouzis McCullough</b>	2009 AI-60 Define the Term <b>Training Needs Assessment</b> in such a manner that it is clear in intent to both Training and Simulator staff  2011nov17: The WG agreed the definition of “Training Needs Assessment” is adequate
3	2012Aug30: Closed	2010oct06	<b>Vick Tarselli (BWR) Petersen (BWR) Rey (BWR) Goodman (PWR) McDade (PWR) Sale (PWR)</b>	2009 AI-126 Consider adding Performance Test Program in next standard. New Appendix that gives example Performance Testing Program.  2012aug30: AI-3 is closed with the creation of AI-43 A draft Appendix was presented. AI-43 was created for additional consideration.



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<b>4</b>	<p>2011jun08: Closed items - 1, 3, 4</p> <p>2011nov16: Closed Item 2</p>	2010oct06	<p><b>Tarselli</b> Vick Chang Fraser Felker</p>	<p>2009 AI-132</p> <p><del>1. Review Malfunction Testing.</del> 2011jun08 Closed</p> <p>2. Are all list required?</p> <p><del>3. What constitutes Malfunction testing is unclear</del></p> <p>2011jun08 Closed</p> <p><del>4. Better define Malfunction causes.</del> 2011jun08 Closed</p> <p>2011jun08</p> <p>2. AI-4 remains open pending review of Section 3.1.4 List. The remaining issue is relevance of the Malfunction list in Section 3.1.4 to the 201x standard. Additional consideration is if the malfunction list in section 3.1.4 should remain, be deleted or moved.</p> <p>2011nov16 Closed by Motion</p>
<b>5</b>	<p>2011jun08: Closed</p> <p>2011nov16: Wording change.</p>	2010oct06	<p><b>McCullough</b> Florence Tarselli Colby</p>	<p>2009 AI-134</p> <p>Minimum testing Periodicity</p> <p>Build Periodicity into the standard</p> <p>2011jun09</p> <p>Closed with Motions</p> <p>Realtime/Repeatability testing periodicity moved to AI-10</p> <p>2011nov16: Added the word capability: An instructor station capability test shall be conducted</p>

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<b>6</b>	2012aug30: Closed	2010oct06	<b>Welchel</b> Lawter Petersen McDade Goodman	<p>2009 AI-147          2009 AI-180          Non-fully integrated mode performance testing          Where applicable run performance test off-line</p> <p>2011jun08 Discussion</p> <p>2011nov18 Welchel          New Definition and Sec. 3.4.3 change proposed for consideration. Discussion tabled</p> <p>2012aug29 Motion Not Carried.          AI-6 is not closed and will consider additional input based on the discussions and member feedback.</p> <p>2012aug30 Motion Carried          New AI-44: AI-6 Motion Carried Simple Majority:          Consult ANS-21 (Maintenance Operations Testing &amp; Training) subcommittee for determination if this change is a Substantive Change.</p> <p>2012sep21: The following reply was received from Carl Mazzola:</p> <p style="text-align: center;"><b>This is a substantive change. Another sentence was added with a shall statement.</b></p> <p>AI-6 passed with a 8-For and 7-Against. Substantative change requires Consensus requiring a 75% approval. Therefore AI-6 status is <b>Not Carried</b>. AI-6 minutes status has been updated to: <b>Not Carried</b>.</p> <p>2012dec05: AI-6 is Closed</p>
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<b>7</b>	2012aug30: Closed	2010oct06	<b>Vick</b> Goldman	<p>2009 AI-150 Review the term Power Range for consistency Confusion about the term Power Range.</p> <p>2012aug30 AI-7 is closed. Power range has been removed in 3 of 5 instances in the present draft standard. The remaining two instances are consistent.</p>
<b>8</b>	2011jun09: Closed	2010oct06	<b>Chang</b> Tarselli Felker	<p>2009 AI-162 Review Appendix B parameters against the standard body MANTG comments App. B parameters and std body are not consistent.</p> <p>2011jun09 – A parliamentary issue regarding motion results. See AI-26</p> <p>2011nov16: AI-8 was reviewed and changed to “Carried”. See Summer minutes Section 5.4.</p>

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<b>9</b>	2012aug29: Closed	2010oct06	<b>Felker</b> Lawter McCullough Fraser Colby Goodman McDade Koutouzis Rey Sale	2009 AI-163 Next generation simulators New builds. Public review comments that the WG did not considered new builds. Examine unique issues with new builds. Review will ask if 3.5-2009 provides sufficient guidance for new builds.  Focus: Transients (AI-9 Closed Granbury Resort) Malfunctions (Closed AI-4 VC Summer) Configuration management DCS Appendix D Review (Limited Scope applications) Lawter  2011jun10 – Info presented. Next meeting will propose the first of several anticipated standard changes. 2012Mar14 – Motion Rewrites Sections 3.4.3.1/4.4.3.1 and deleted Appendix B  2012aug29 – Working Group discussed Appendix D and agreed to no changes. The Working Group agreed to closed AI-9.
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<b>10</b>	2011nov16: Closed	2010oct06	<b>McCullough</b> Felker McDade Goldman	<p>2009 AI-179 Real-time and Repeatability testing Periodicity 2009 Public review comments. Methodology to demonstrate real-time.</p> <p>2011jun10 Carried from AI-5 Realtime/Repeatability -Establish Realtime/Repeatability Periodicity Testing Requirement</p> <p>2011nov16 Closed by Motion.</p>
<b>11</b>	2012Mar16: Closed	2010oct06	<b>Goodman</b> Vick Petersen Chang	<p>2009 AI-181 Section 5 rewrite 2009 Westrain Comment #60 Configuration Management expectations needs strengthening Performance based. V&amp;V is part of configuration mgt. (Section 4) possible a better fit in Section 5 2011nov15 – Section 5.4 references Section 4.4 and should reference 4.2</p> <p>2012Mar16: Closed with three AI motions</p>
<b>12</b>	2010oct22: Closed	2010oct06	<b>Florence</b>	<p>Invite ANS-21 Chair to WG meeting ANS-21 Chair Gene Carpenter Two White Flint North Washington, DC 20555-0001 <b>Mobile Ph:</b> 202-579-5155 <b>Work Ph:</b> 301-415-7333 <b>Email:</b> gene.carpenter@nrc.gov</p>

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<b>13</b>	2011jan28: Closed	2010oct06	<b>Florence</b>	Send letters of appointment to new working group members and their respective facility management Letter to new working group member and manager.
<b>14</b>	2011jan28: Closed	2010oct06	<b>Florence</b>	Coordinate next ANS-3.5 Meeting at the Crystal River Nuclear Power Plant in January 2011
<b>15</b>	2011jan28: Closed	2010oct06	<b>Florence</b>	2009 AI-185 Send a letter to the NEI in an effort to promote NEI participation in the ANS-3.5 Working Group and to develop a more collaborative relationship.
<b>16</b>	2012aug29: Closed	2011jan28	<b>Sale Rey McCullough Tarselli Chang Koutouzis</b>	Consider the option to include other uses of the simulator in footnote 1 on Page 1 of the Standard (e.g. - technical support). This was a consideration during the development of the scope statement in lieu of explicitly mentioning other uses of the simulator in the scope statement.  2012aug29 – Presentation and discussion. WG agreed to close AI-16 with no action.

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<b>17</b>	2012Mar14: Closed	2011jan28	<b>McDade</b> Tarselli Koutouzis Petersen	Consider placing language in Section 1.2 Background to insert “experience requirements”: `It is intended that in meeting the criteria of this standard, the simulator will be sufficiently complete and accurate to meet the training needs of the industry as well as the requirements of the NRC, as described in <i>Code of Federal Regulations</i> , Title 10, “Energy,” Part 55, “Operators' Licenses” (10CFR55) <b>and station mandated experience requirements</b> <p>Consider language in Section 1.2 Background to add clarification regarding control manipulations allowed by 10CFR55.46 and how this standard supports it.</p> 2012mar14 – team recommended closure. Standard is sufficient.
<b>18</b>		2011jan28	<b>Florence</b> Rey Holl Fraser	<ol style="list-style-type: none"> <li>1) Contact ANS to determine international opportunities in Standard development.</li> <li>2) Consider language in Section 1.2 Background to mention use of this standard by the international community.</li> <li>3) Additional consideration in the Standard body for the international community.</li> </ol> <p>Acknowledge international regulatory authorities.</p> 2012aug29: The recommended wording will be considered during the final read of the standard. The wording is to be inserted in the Foreword and its location will be determined at that time.

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<b>19</b>	2012nov18: Closed	2011jan28	<b>Tarselli</b> McCullough Goodman Chang Rey	<p>Review the list below for inclusion into ANS 3.5 or other standards and basis for the recommendation:</p> <ul style="list-style-type: none"> <li>• Engineering Assist</li> <li>• Simulation Assisted Engineering</li> <li>• EP</li> <li>• DCS Logic Control Validation</li> <li>• HFE – Human Factors Engineering</li> <li>• Tech Training – I&amp;C / Mechanical</li> <li>• PR Tours</li> <li>• Process Flow Diagrams</li> <li>• Spec. Operating Parameters</li> <li>• PRA</li> <li>• SAMG</li> </ul>
<b>20</b>	2012aug30: Closed	2011jan28	<b>McCullough</b> Colby Tarselli Lawter Fraser	<p>Identify areas in the standard that can be improved to address DCS</p> <p>2012aug30: Closed by Motion</p>
<b>21</b>	2011jun10: Closed	2011jan28	<b>McCullough</b> Felker Koutouzis Lawter Goodman	<p>Evaluate the need for inclusion into the standard other simulation devices derived directly from the full scope control room simulator.</p> <p>2011jun10 – Presentation and discussion. No additional discussion and action will be taken. This AI is closed.</p>



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<b>22</b>	2012aug30: Closed	2011jan28	<b>Lawter</b> Sale Welchel Vick Felker	Review the recent regulatory cyber security guidance and OE to determine if cyber security should be included in the standard.  2012aug30: Power Point presentation. Recommendation to close AI-22. AI-22 is closed
<b>23</b>	2012aug28: Closed	2011jan28	<b>Vick</b> Tarselli Rey Sale Florence Chang	Evaluate the need for including into Section 3.3.1 a set of IC criteria for ICs that are to be used when conducting the performance tests required by this standard.  2011jun10 – Proposal made. Additional consideration required.  2012aug28: present requirements are sufficient.
<b>24</b>	2011feb01: Closed	2011jan28	<b>Florence</b>	Submit PINS Form to ANS Administrator  2011feb01 PINS has been submitted.

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<b>25</b>	2012mar13: Closed	2011jun10	<b>Chang</b>	<p>The following Appendix B Steady State parameters were considered in AI-8.</p> <p><b>BWR</b></p> <ul style="list-style-type: none"> <li>- control rod drive hydraulic system flow and temperature</li> <li>- secondary plant heat balance data</li> </ul> <p><b>PWR</b></p> <ul style="list-style-type: none"> <li>- containment pressure</li> <li>- boron concentration</li> <li>- pressurizer temperature</li> <li>- control rod positions</li> <li>- secondary plant heat balance</li> </ul> <p>These parameters should be reviewed for inclusion into the standard body Steady State parameter list.</p> <p>2012mar13: Closed by Motion</p>
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<b>26</b>	2012dec05: Closed	2011jun10	<b>Florence</b>	<p>Review and recommend modifications to the Rule of the Chair related to quorum in session.</p> <p>Interim Voting (Motions – Substantive Changes) shall be by Consensus (75% [rounded up] of quorum in session);</p> <p>Rule of the Chair for the remainder of the meeting:          Interim Voting (Motions – Substantive Changes) shall be by Consensus (75% [rounded up] of voting membership present);</p> <p>2011nov15:          Additional consideration is needed to determine if previously “Not-carried” Motions are affected by the revised Rule of the Chair.</p> <p>2012dec05: At the Granbury Resort Conference meeting, the Vick report (Section 5.10) concluded there are no Motions affected by the revised Rule of the Chair.</p> <p>AI-26 is Closed.</p>
<b>27</b>	2011nov15: Closed	2011jun10	<b>Florence</b>	<p>Define Substantive Change with regards to Motion “Carried” threshold.</p> <p>2011nov15: Closed with AI-26 discussion.</p>
<b>28</b>	2012aug30: Closed	2011jun10	<b>Felker Chang Sale</b>	<p>Review and report to the WG the usage of the terms: <b>If available</b> versus <b>As applicable</b>.</p> <p>2012aug30: Closed with AI-28 discussion.</p>

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<b>29</b>	2011nov17: Closed	2011jun10	<b>Rey Tarselli</b>	<p>Review Normal Operating procedures Surveillance testing with regards to periodicity testing.</p> <p>It should be clarified what Normal Evolutions defined in 3.1.2.2 shall be tested with the frequency established in 4.1.3.2</p> <p>2011nov17: Closed by Motion: Carried Text substitution in section 4.1.3.2 Normal evolutions</p>
<b>30</b>	2012Mar14: Closed	2011jun10	<b>Sale</b>	<p>Review Appendix B Steady State section for deletion.</p> <p>2012mar14 – AI-9 deleted Appendix. This AI is closed.</p>
<b>31</b>	2011nov18: Closed	2011jun10	<b>Petersen Chang</b>	<p>Review list nomenclature for consistency</p> <p>2011nov18: Closed by Motion Carried.</p>
<b>32</b>	2012dec11: Closed	2011nov17	<b>McCullough</b>	<p>Verify testing periodicity terminology consistency across section 4.</p> <p>2012dec11 McCullough lead a discussion reviewing the sections and consistency. There is consistency across Section 4.0.</p> <p>AI-32 is closed.</p>

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<b>33</b>	2012aug30: Closed	2011nov18	<b>Welchel</b>	<p>Review use and consistency of term Fully Integrated, partially-integrated and Non-integrated, and Standalone with regards to Sections 3 and 4.</p> <p>2012aug30 – Review indicates the Section 5 rewrite consolidated these terms.</p> <p>AI-33 Closed.</p>
<b>34</b>	2012Mar16: Closed	2012Mar14	<b>Colby</b>	<p>AI-9 deleted Appendix B, this AI is to review/cleanup remaining references to Appendix B</p> <p>2012mar16: Closed Two Column Document Rev 4 updated.</p>
<b>35</b>	2012Mar15: Closed	2012Mar15	<b>Felker Colby</b>	<p>AI-5 Review the usage of “preference” and “shall” in Section 5.1.2</p> <p>2012mar15: Closed - The working group reviewed the definitions of “preference” and “precedence”. The list may be a precedence list but preference is adequate.</p>
<b>36</b>	2012aug30: Closed	2012Mar15	<b>McCullough Goodman</b>	<p>Consider replacing the opening paragraph in Section 5. With the following:</p> <p>A configuration management program shall be established to provide a means for demonstrating compliance with Sec. 3, “General Requirements.” Section 5.1 is for initial simulator construction or for re-baselining the simulator design, else use Section 5.2.</p> <p>2012aug30: Closed with AI-36 discussion.</p>
<b>37</b>	2012dec11: Closed	2012Mar15	<b>Chang Fraser Goodman</b>	<p>Consider definitions for “benchmark” and “baseline”.</p> <p>2012dec11 Recommendation is to close AI-37 with no action.</p>

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<b>38</b>	2012aug30: Closed	2012Mar15	<b>Rey Goodman</b>	<p>With the new Section 5 (AI-11 2012mar15), Section 5.3 Assessment of Deviations, review the assessment parameters for adequacy as they apply to operational performance. Previously, the items only applied to physical fidelity.</p> <p>2012aug30: Closed with AI-38 discussion.</p>
<b>39</b>	2012aug28: Closed	2012Mar15	<b>Goodman Chang</b>	<p>Consider revising Section 5.1 to include verification and validation as it applies to initial simulator construction.</p> <p>2012aug28 – Closed by agreement</p>
<b>40</b>	2012Mar15: Closed	2012Mar15	<b>Goodman</b>	<p>Section D.2 cleanup references to 3.2.1.4 and in Section D.3 cleanup references to 4.2.1.4.</p> <p>Closed by Motion</p>
<b>41</b>	2012aug28: Closed		<b>Goodman Welchel Dennis Felker</b>	<p>Additional review of Section 3.4.1/3.4.2/4.4.1/4.4.2</p> <ul style="list-style-type: none"> <li>- Previous sections 3.4.1/3.4.2/4.4.1/4.4.2 use the word “Demonstrate”. The new words in Section 5 do not include the word “Demonstrate”</li> <li>- The new Background section no longer refers to V&amp;V, and includes no reference to CM</li> <li>- Review IEEE and ANS 3.5 for alignment of V&amp;V requirements</li> <li>- Review the redefined intent of testing. Is the purpose of testing to “ensure no noticeable differences exist” or is it to “indentify noticeable differences that need to be resolved”. (responsibility Dennis)</li> </ul> <p>2012aug28 – Closed by agreement</p>

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<b>42</b>	2012aug30: Closed		<b>Chang</b>	<p>Review the use of “Because” in the first paragraph of section 5.1.2 Simulator Performance Benchmark.</p> <p>Consider "If" or "When". Multiple baseline data are not always available and sometimes no data is available.</p> <p>2012aug30: Editorial Change. AI-42 is Closed.</p>
<b>43</b>		2012aug30 Avila Beach	<b>Vick</b> Lawter Rey Sale Tarselli Cupp Florence	<p>Review the AI-3 proposed Appendix for possible integration into the draft standard. Also, explore ANS Guidelines as a means to distribute the Performance Testing guidance.</p> <p>2012dec13 Several versions were presented and discussed. WG agreed to continue additional discussion.</p>
<b>44</b>	2012sep21: Closed by Email from Carl Mazzola.	2012aug30	<b>Florence</b>	<p>AI-6 Motion Carried Simple Majority: Consult ANS-21 (Maintenance Operations Testing &amp; Training) subcommittee for possible Substantive Change.</p> <p>2012sep21: The following reply was received from Carl Mazzola:</p> <p style="text-align: center;"><b>This is a substantive change. Another sentence was added with a shall statement.</b></p> <p>AI-6 passed with a 8-For and 7-Against. Substantive change requires Consensus requiring a 75% approval. Therefore AI-6 status is Not Carried. AI-6 minutes status has been updated to: Not Carried.</p> <p>2012dec05: AI-44 is Closed</p>

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<b>45</b>	2012dec11: Closed	2012aug31	<b>Chang</b> Rey Colby Vick	New definition for human-machine interface.  2012dec11 No definition is needed for human machine interface (HMI). New AI-49 changes HMI to HSI. AI-45 is closed.
<b>46</b>	2012dec11: Closed	2012aug31	<b>Petersen</b> Goldman Fraser Rey	Review evolution limitations and Limit of simulation for continued applicability.  2012dec11 A straw poll indicated no additional changes are required.  AI-46 is closed.
<b>47</b>	2012dec12: Closed	2012aug31	<b>Mcdade</b> Florence Felker	Review Scope statement to include additional exclusions.  2012dec12 Closed by Motion. Revised Section 1.2 Background
<b>48</b>	2012dec12: Closed	2012aug31	<b>Chang</b> Rey Gagnon	Review the standard for extended length scenarios and possible guidance.  2012dec12  Closed. New AI-50
<b>49</b>	2012dec11: Closed	2012dec11	<b>McCullough</b>	2012dec11 Reference AI-45  Update the standard changing all references of human machine interface to human system interface. Closed by Motion.



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<b>50</b>		2012dec12	<b>Florence</b> Petersen Gagnon Rey Chang	2012dec12  Update the Foreword to assure the industry that consideration of events such as the Fukushima event, extended length scenarios, EP Drills, etc. i.e. non standard scope scenarios were discussed and determined not to be within the scope of the standard.
<b>51</b>		2012dec13	<b>Goodman</b> Rey Vick Cupp	2012dec13  New AI-51 – Possible revision to Section 4.4.3 Simulator reactor core performance testing.

Approved ANS-3.5 Working Group

#### 4. Working Group Procedural Rules

##### 4.1 Rules of the Chair

- Interim Voting (Motions – Substantive Changes) shall be by Consensus (75% [rounded up] of quorum in session);
- The Chair rules that no Motions will be accepted when not in session;
- Administrative issues by simple majority (quorum in session);
- The Chair shall be informed of absences;
- The absent member is encouraged to send a proxy.
- A Proxy shall have voting privileges
- Members shall attend the full length of the meeting;
- Word 7.0 shall be the document format;
- The Host shall collect and send all handout material for absent members without proxy;
- Robert’s Rules of Order shall be used as a general guide;
- Guest Individual Contributors may receive working copy of the draft standard based on need;
- Chair approval shall be required for distribution of working copies of the draft standard;
- Members shall not Vote against their own non-amended Motion;
- The WG will through the course of normal business, generate confidential documentation applicable to the WG charter. As a result of this business, documentation could be released to the public through approved minutes posted on the ANS 3.5 WEB site. Other information may be released to the public as deemed appropriate by the WG Chair or Vice-Chair. In addition, information may be supplied to non-working group members on a need-to-know basis for the purpose of review and comment.
- When Abstention Votes are present the Majority (> 50%), Super Majority (2/3), Consensus (75%) levels are recalculated by subtracting the Abstention Votes count from the Members Present count
- Non-substantive change requires Majority Vote
- Appendices changes are non-substantives
- Substantive requires Consensus Vote
- Substantive Change: A substantive change in a proposed American National Standard is one that directly and materially affects the use of the standard. Examples of substantive changes are below:
  - “shall” to “should” or “should” to “shall”;
  - addition, deletion or revision of requirements, regardless of the number of changes;
  - Addition of mandatory compliance with referenced standards

4.2 Rules Enacted by the Working Group

Missing two consecutive meetings in a row without representation could result in loss of membership on the committee.

Approved ANS-3.5 Working Group

**5. Tuesday 2012 December 11 (0800)**

5.1 Introduction (0800)

5.2 Roll Call

Members Present:

Jim Florence  
Keith Welchel  
F.J. (Butch) Colby  
Lawrence (Larry) Vick  
George McCullough  
Frank Tarselli  
SK Chang - Proxy  
Robert Goldman – Proxy:  
David Goodman  
Jody Lawter - Proxy  
Mac McDade  
Michael Petersen  
Pablo Rey

Proxy/Visitors:

Tim Dennis (Lawter Proxy)  
Vincent Gagnon (Chang Proxy)  
Scott Cupp (Goldman Proxy)

5.3 Consensus Level

- 16 - Voting members
- 12 - Voting members Present (3 Proxy Votes)
- 7 - Quorum (Majority Total Membership)
- 9 - Consensus ( $\geq 75\%$  votes)
- 8 - Super Majority ( $\geq 2/3$  Votes)
- 7 - Majority ( $> 50\%$  votes)

Approved ANS-3.5 Working Group

5.4 Standard Completion Schedule:

Felker absent - No presentation

5.5 Motion (Carried): Avila Lighthouse Minutes Approval

<b>Motion: Carried</b> <ul style="list-style-type: none"><li>• 11 – For</li><li>• 0 – Against</li><li>• 1 – Abstained</li></ul>
Date 2012 dec 11
<b>Motion:</b> Approve Avila Lighthouse Minutes Draft rev 12

Abstained Vote – Not present at the Avila Lighthouse meeting

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5.6 Motion (Carried): Agenda Rev 0 Approval

Motion: <b>Carried</b> <ul style="list-style-type: none"> <li>• 12 – For</li> <li>• 0 – Against</li> <li>• 0 – Abstained</li> </ul>
Date 2012 dec 11
<b>Motion:</b>  Approve Agenda Rev 0

5.7 Officers reports

Florence (Chair)	No Report
Welchel (Secretary)	No report
Colby (Editor)	
Chang (Style Editor)	
Vick (Parliamentarian)	New Inspection procedure: ML12233A562 IP 41502. Supplement existing IP71111.11 IP.

5.8 Industry Update

INPO	No Update
USUG Florence	No Update
Dennis	ANS 3.5 Transition Summary 2009 – 35 1998 – 17 1985 - 20

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Dennis	
WESTRAIN Goodman	No Update
NEI Petersen	LOFG – Sevier accident modeling recommendation 8. No core model updates not presently required. Future Core updates may be required. Balance required based on accident probability.
SSNTA	No Update

5.9 AI-6 Non Integrated Mode testing

Review of the Failed vote (Mazzola ruling) at the Avila Lighthouse Meeting.  
 Review of the reasons for the failed vote.  
 It will be difficult to craft standards' requirements that will satisfy present regulatory requirements.  
 When a remote panel is disconnected or turned, is the simulator still fully-integrated?  
 What really defines fully-integrated? The simulator that's used for Exams and normal LOR/ILT training is 'the fully-integrated simulator'  
 Regulation requires that licensees demonstrate performance. The utility must demonstrate performance. Regulation does not specifically address NIMO testing.  
 McCullough – What gain is achieved for Core Performance/Transient testing now with the Once per Unit Fuel Cycle (fuel cycles moving to two year cycles) requirement in lue of the previous annual requirement.  
 The working group agreed AI-6 is closed and no further discussion will be pursued.

5.10 AI-32 (McCullough) Periodicity Consistency Review

McCullough lead a discussion reviewing the sections and consistency. There is consistency across Section 4.0.  
 AI-32 is closed.



## 5.11 Consensus Level

- 16 - Voting members
- 13 - Voting members Present (3 Proxy Votes)
- 7 - Quorum (Majority Total Membership)
- 10 - Consensus ( $\geq 75\%$  votes)
- 9 – Super Majority ( $\geq 2/3$  Votes)
- 7 – Majority ( $> 50\%$  votes)

## 5.12 AI-43 (Vick) Recommended Simulator Performance Test Program

The following was presented for discussion: “Section 3.5 Recommended Simulator Performance Test Program.” This section is new and is to be placed in the standard body.

This test program will standardize one approach.

### **Section 3.5 Recommended Simulator Performance Test Program**

The purpose of this recommended simulator performance test program is to provide a program for demonstrating the functional requirements and criteria of the standard to which the full-scope simulator has been designed to respond as compared to actual or predicted reference unit performance. Implementation of this recommendation ensures the simulator’s demonstrated capability and performance is sufficient in scope and fidelity to allow conduct of evolutions associated with nuclear power plant operator licensing training and examinations applicable to the design of the reference unit.

#### 3.5.1 Test Program Overview

This test program ensures that simulated components, equipment, and systems perform in accordance with reference unit design criteria; that nuclear and thermo-hydraulic behavior is observed and confirmed; and, that the simulated power plant can be safely started up from cold ambient conditions and brought to rated full power capacity and then safely shutdown under all expected operational conditions to which the simulator has been designed to respond.

During the conduct of evolutions described in this test program, the simulated nuclear power plant is to be operated in the same manner as the reference unit using relevant plant operating procedures and acceptance standards and criteria. Procedure administrative holds

such as peer checking, approvals, and permissions are assumed given (e.g., waived) so that continued operation of the simulated power plant may be conducted in an expeditious manner. Operating procedure precautions and limitations should be adhered to at all times unless the scope of simulation precludes such compliance.

#### 3.5.2 Test Personnel Qualifications, Functions, and Responsibilities

Test personnel used for the conduct of simulator performance tests should have the requisite knowledge, skills, and abilities to carry out the functions of a nuclear power plant operator and senior operator and to identify simulator performance discrepancies (both modeling and hardware discrepancies).

#### 3.5.3 Pre-Testing Assumptions

This test program assumes the full-scope simulator is in a “Ready-for-Training” state. The test program described in this section does not allow nor credit any other type of performance testing such as off-line tests and or vendor factory acceptance tests. Only simulator initial condition sets developed and maintained from a validated base line initial condition set should be used when conducting the performance tests describe in this program. Simulated electrical power loads, instrument and station air loads, station closed cooling water and service water loads have been verified and validated beforehand. Finally, simulated local operator actions (e.g., remote functions) have been verified, validated, and properly aligned in all initial condition sets.

#### 3.5.4 Tests Documentation

Simulator performance tests documentation should specify the test objective, applicable prerequisites, general test method, and acceptance criteria. For example, regarding general test method for XYZ system, verification of XYZ system capability is demonstrated by the integrated operation of the following: logic and interlocks as specified in system elementary diagrams, XYZ system pumps, including auto initiation; flow path verification, and annunciators.

#### 3.5.5 Testing Scope

Simulator performance testing is generally associated with the time period following fuel loading (may be initial and or subsequent fuel cycle) and extending through 100% power. For purposes of this program, the following types of reference unit performance test items should be performed on the simulated nuclear power plant to which the simulator has been designed to respond:

#### 3.5.5.1 Stability Tests

Stability tests demonstrate expected overall plant stability in relation to minor perturbations caused by a step change in a controlled parameter of interest. Examples include but are not limited to the following:

##### BWR

- Pressure regulator set-point changes
- Pressure backup regulator change
- Reactor water level set-point changes
- Feedwater heater loss
- Turbine valve surveillance
- Reactor recirculation flow control

##### PWR

Need List

#### 3.5.5.2 Major Transients Tests

The following group of major transient tests demonstrates expected overall plant performance. Examples include but are not limited to the following:

##### BWR Feedwater pump trip

- MSIV closure (one valve)
- MSIV closure (all valves)
- Turbine-generator (TG) stop valve fast closure
- Turbine-generator control valve fast closure
- Reactor recirculation pump trip (one)
- Reactor recirculation pump trip (two)
- Loss of TG and offsite power

PWR

Need List

#### 3.5.5.3 Reference Plant Safety Analysis Related Tests

The following group of tests demonstrates expected overall plant performance. Examples include but are not limited to the following:

Need List

#### 3.5.5.4 Abnormal Operational Occurrences (AOOs)

AOOs are conditions of abnormal operation expected to occur one or more times during the life of the plant. The following group of tests demonstrates expected overall plant performance. Examples include but are not limited to the following:

Need List

#### 3.5.5.5 Accidents

Accidents are postulated events that may affect one or more of the barriers to the release of radioactive material to the environs. These events are not expected to occur during the life of the plant but are used to establish the design basis for many systems. The following group of tests demonstrates expected overall plant performance. Examples include but are not limited to the following:

Need List

#### 3.5.5.6 Special Events

Special events are postulated occurrences analyzed to demonstrate different plant capabilities required by regulatory requirements and guidance, industry codes and standards, and licensing commitments applicable to the plant. (e.g. require failure assumptions in excess of AOOs and accidents / encompasses some events that are not considered credible). The following group of tests demonstrates expected overall plant performance. Examples include but are not limited to the following:

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Need List

3.5.5.7 Normal Plant Operations

3.5.5.7.1 Startup to rated full power conditions

3.5.5.7.2 Rated full power conditions to cold shutdown

3.5.5.8 Simulated Malfunction Performance Tests (stand-alone test / scenario based testing)

3.5.5.9 Local Operator Actions Tests

3.5.5.10 Simulator Reactor Core Performance Tests

3.5.5.11 Miscellaneous Tests

Members agreed to review the proposed test program and discussion will resume at a later date.

5.13 AI-37 (Goodman) Consider definition of “baseline” and “benchmark”

The discussion centered on the usage of the term benchmark that is used in 3.4.1/4.4.1. The recommendation is to replace benchmark with predetermined in section’s 3.4.1/4.4.1.

Benchmark implies comparison and predetermined does not.

Recommendation is to close AI-37 with no action.

**AI-37 Consider definition of “baseline” and “benchmark”**

**Team: Chang, Goodman, Frazier**

**Created in March 2012**

A new term was introduced when Section 5 was modified. The “benchmark” term is defined in the wording for Section 5 as the data (or curves) that are used to compare transient test performance. The term “design baseline” is not a new term, as it already exists in the current standard.

Section 5.1.1 is dedicated entirely to defining the phrase “Simulator design baseline”

<b>(1) 5.1.1 Simulator design baseline</b>
<b>(2) The simulator design baseline comprises the simulator design data, hardware configuration, and software configuration at the time the simulator is approved for use in operator training and examination. The simulator design baseline includes the following, as each applies to the defined scope of simulation:</b>
<b>(1) reference unit design drawings and specifications;</b>

- (2) *reference unit operating procedures;*
- (3) *simulator supporting calculations and analyses;*
- (4) *simulator model assumptions and simplifications;*
- (5) *simulator software requirements;*
- (6) *equipment vendor documentation.*

*Design baseline documentation shall provide for relating the final simulator design to the source of the design requirement. The documentation shall be of sufficient detail to permit verification of the simulator configuration by a subject matter expert.*

Section 5.1.2 is dedicated entirely to defining the phrase “Simulator performance benchmark”

**(3) 5.1.2 Simulator performance benchmark**

(4) *The simulator performance benchmark comprises the reference data necessary for the completion of operability testing defined in Sec. 4.4.1 at the time the simulator is approved for use in operator training and examination. Because multiple sources of baseline data are available, the order of preference to ensure simulator fidelity shall be as follows:*

1. *data collected directly from the reference unit;*
2. *data generated through engineering analysis with a sound theoretical basis;*

- 3. data collected from a plant which is similar in design and operation to the reference unit;
- 4. data from subject matter expert estimates;
- 5. other data sources.

**(5)** *Simulator performance benchmark documentation shall provide the expected response of key parameters for each test. For those instances where data are collected from sources other than the reference unit, the data source shall be specifically identified and demonstrated to be applicable to the simulator. The documentation shall be of sufficient detail to permit verification of the simulator performance by a subject matter expert.*

There was some discussion to consider adding new definitions for these terms in Section 2. Sections 5.1.1 and 5.1.2 are adequate. Any attempt to place new definitions in Section 2 may only lead to more confusion.

**Recommendation to WG:** Not to add definitions of “baseline” or “benchmark”.

Other usages of the word “benchmark” in the standard are in Sections 3.4.1 and 4.4.1:

**(6) 3.4.1 Simulator operability testing**

**(7)** Simulator operability testing shall be conducted to confirm overall simulator model completeness and integration by testing the following:

- (8) simulator steady-state performance;
- (9) simulator transient performance for a **benchmark** set of transients.



The type and the number of transient performance tests selected shall be sufficient to demonstrate integrated model performance within the scope of simulation. Preference should be given to those transients expected to occur during the life of the reference unit. The transient selection process should utilize the following references:

- (1) reference unit design;
- (2) operational transients;
- (3) anticipated operational occurrences;
- (4) faults of moderate frequency;
- (5) loss-of-coolant accidents;
- (6) design basis events.

**(10) 4.4.1 Simulator operability testing**

(11) A simulator operability test shall be conducted once per reference unit fuel cycle by testing the following:

- (1) simulator steady-state performance;
- (2) simulator transient performance for a **benchmark** set of transients.

Simulator steady-state performance shall be demonstrated through the

comparison of steady-state response to reference unit performance. The comparison shall be done for three distinct power levels spanning at least 50% of the operating range for which heat balance data is available. The minimum set of parameters to be monitored and acceptance criteria are identified in Sec. 4.1.3.1.

Simulator transient performance shall be demonstrated through the comparison of transient performance response to actual or predicted reference unit performance. The intent of simulator transient performance testing is to verify integrated simulator response and not to test malfunctions. Sec. 4.1.4, items (2) through (4) define the acceptance criteria for the simulator transient performance tests. The minimum set of parameters to be monitored for each selected transient performance test shall be those parameters required to evaluate integrated simulator performance.

There is a strong analogy between malfunction selection and transient selection. The WG deleted a *benchmark* set of 25 malfunctions and provided guidance for malfunction selection in Section 3.1.4. Likewise the WG deleted a *benchmark* set of transients by removing Appendix B and again provided guidance for transient selection in Section 3.4.1. A *benchmark set of transients* has become a historical gloss. Now it is simply a predetermined set of transients.

**Recommendation to WG:** Change the word “benchmark” to “predetermined” in item (2) of Sections 3.4.1 and 4.4.1. The word “benchmark” will be then uniquely referenced in the context of performance benchmark as described in Section 5.1.2.

**Motion:** Change Section 3.4.1 to read

**(12) 3.4.1 Simulator operability testing**

**(13)** Simulator operability testing shall be conducted to confirm overall simulator model completeness and integration by testing the following:

- (1) simulator steady-state performance;
- (2) simulator transient performance for a **predetermined** set of transients.

The type and the number of transient performance tests selected shall be sufficient to demonstrate integrated model performance within the scope of simulation. Preference should be given to those transients expected to occur during the life of the reference unit. The transient selection process should utilize the following references:

- (1) reference unit design;
- (2) operational transients;
- (3) anticipated operational occurrences;
- (4) faults of moderate frequency;
- (5) loss-of-coolant accidents;
- (6) design basis events.

Also change Section 4.4.1 to read

**(14) 4.4.1 Simulator operability testing**

(15) A simulator operability test shall be conducted once per reference unit fuel cycle by testing the following:

- (1) simulator steady-state performance;
- (2) simulator transient performance for a **predetermined** set of transients.

Simulator steady-state performance shall be demonstrated through the comparison of steady-state response to reference unit performance. The comparison shall be done for three distinct power levels spanning at least 50% of the operating range for which heat balance data is available. The minimum set of parameters to be monitored and acceptance criteria are identified in Sec. 4.1.3.1.

Simulator transient performance shall be demonstrated through the comparison of transient performance response to actual or predicted reference unit performance. The intent of simulator transient performance testing is to verify integrated simulator response and not to test malfunctions. Sec. 4.1.4, items (2) through (4) define the acceptance criteria for the simulator transient performance tests. The minimum set of parameters to be monitored for each selected transient performance test shall be those parameters required to evaluate integrated simulator performance.

#### 5.14 AI-45 (Vick) HMI Usage

The working group reviewed usage of human-machine-interface.

Human-system-interface is presently the preferred usage by industry.

AI-49 is created to update the standard with human-system-interface HSI

No definition is needed for human machine interface (HMI).

AI-45 is closed.

Approved ANS-3.5 Working Group

5.15 AI-49 (Motion) Replace human machine interface with human system interface

Reference AI-45

<p><b>Motion: Carried</b></p> <ul style="list-style-type: none"><li>• 13 – For</li><li>• 0 – Against</li><li>• 0 – Abstained</li></ul>
<p>Name 2012 dec 11</p> <p><b>Motion:</b></p> <p>Update the standard changing all references of human machine interface to human system interface.</p> <p>Replace</p> <p>3.2.1.1 Scope of operator interfaces</p> <p>The simulator shall include those panels, consoles, operating stations, and other human-machine interfaces (HMIs) required to provide the controls, instrumentation, alarms, and other human-system interfaces used by operators in the reference unit to conduct the normal evolutions of Sec. 3.1.3.2 and respond to the malfunctions of Sec. 3.1.4.</p> <p>With</p> <p>3.2.1.1 Scope of operator interfaces</p> <p>The simulator shall include those panels, consoles, operating stations and human-system interfaces (HSIs) required to provide the controls, instrumentation and alarms used by operators in the reference</p>

unit to conduct the normal evolutions of Sec. 3.1.3.2 and respond to the malfunctions of Sec. 3.1.4.

Replace

3.2.1.2 Instrumentation, controls, markings, and operator aids

The simulator panels, consoles, operating stations and other HMIs shall include instrumentation, controls, markings, operator aids, and other components or displays that are used during normal, abnormal, off-normal, and emergency evolutions. The following items shall be considered:

- switches;
- controllers;
- meters;
- recorders;
- mimics;
- demarcation lines;
- engravings;
- color;
- panel layout;
- plant computer;
- lights;
- annunciators;
- labels;
- tactile cues;
- display systems;
- other human-machine interfaces.

with

3.2.1.2 Instrumentation, controls, markings, and operator aids

The simulator panels, consoles, operating stations and other HSIs shall include instrumentation,

controls, markings, operator aids, and other components or displays that are used during normal, abnormal, off-normal, and emergency evolutions. The following items shall be considered:

- switches;
- controllers;
- meters;
- recorders;
- mimics;
- demarcation lines;
- engravings;
- color;
- panel layout;
- plant computer;
- lights;
- annunciators;
- labels;
- tactile cues;
- display systems;
- other human-system interfaces.

Replace:

#### 4.2.1.1 Scope of operator interfaces

A comparison shall be performed to demonstrate that panels, consoles, and operating stations and other HMIs that are required by Sec. 3.2.1.1 replicate the size, shape, color, and configuration of those of the reference unit; that noticeable differences are corrected or that a training needs assessment has been conducted in accordance with the criteria provided by Sec. 5.

with



4.2.1.1 Scope of operator interfaces

A comparison shall be performed to demonstrate that panels, consoles, operating stations and other HSIs that are required by Sec. 3.2.1.1 replicate the size, shape, color, and configuration of those of the reference unit; that noticeable differences are corrected or that a training needs assessment has been conducted in accordance with the criteria provided by Sec. 5.

Replace

4.2.1.2 Instrumentation, controls, markings, and operator aids

A comparison shall be performed to demonstrate that instrumentation, controls, markings, and operator aids that are on panels, consoles, operating stations, and other HMIs which are simulated in accordance with Sec. 3.2.1.2, replicate the size, shape, color, configuration, feel, and dynamic functioning of those of the reference unit. Components located on simulated panels but not used by the operator during training may be visually simulated hardware. It shall be demonstrated that information is displayed to the operator in the same format and engineering units as in the reference unit control room. It shall be demonstrated that noticeable differences are corrected or that a training needs assessment has been conducted in accordance with the criteria provided by Sec. 5.

With

4.2.1.2 Instrumentation, controls, markings, and operator aids

A comparison shall be performed to demonstrate that instrumentation, controls, markings, and operator aids that are on panels, consoles, operating stations, and other HSIs which are simulated in accordance with Sec. 3.2.1.2, replicate the size, shape, color, configuration, feel, and dynamic functioning of those of the reference unit. Components located on simulated panels but not used by the operator during training may be visually simulated hardware. It shall be demonstrated that information is displayed to the operator in the same format and engineering units as in the reference unit control room. It shall be demonstrated that noticeable differences are corrected or that a training needs assessment has been conducted in accordance with the criteria provided by Sec. 5.

**Reason:** human-system interface is the industry preferred usage.

AI-49 is closed.

#### 5.16 AI-46 (Petersen)

AI-46 is based on user experience where transiting a standard core code to a beyond design basis core code. An example is transitioning from S3R to MELCOR.

Limits of simulation do not always imply a top-side, upper limit or maximum boundary. A limit of simulation may also imply a lower or minimum boundary.

A straw poll indicated no additional changes are required.

AI-46 is closed.

#### 5.17 AI-48 (Gagnon) Extended Length Scenarios

A short review of AI-48 and extended length scenarios.

AI-48 discussion will resume Wednesday.

#### 5.18 Recessed: 1702

**6. Wednesday 2012 December 12 (0800)**

6.1 Roll Call

Members Present:

Jim Florence  
Keith Welchel  
F.J. (Butch) Colby  
Lawrence (Larry) Vick  
George McCullough  
Frank Tarselli  
SK Chang - Proxy  
Robert Goldman – Proxy:  
David Goodman  
Jody Lawter - Proxy  
Mac McDade  
Michael Petersen  
Pablo Rey

Proxy/Visitors:

Tim Dennis (Lawter Proxy)  
Vincent Gagnon (Chang Proxy)  
Scott Cupp (Goldman Proxy)

## 6.2 Consensus Level

- 16 - Voting members
- 13 - Voting members Present (3 Proxy Votes)
- 7 - Quorum (Majority Total Membership)
- 10 - Consensus ( $\geq 75\%$  votes)
- 9 – Super Majority ( $\geq 2/3$  Votes)
- 7 – Majority ( $> 50\%$  votes)

## 6.3 AI-48 (Gagnon) Extended Length Scenarios – Continued

The discussion centered on the following words for consideration:

### **3.1.5 Beyond design basis scenarios**

The simulator should support the conducts of operator actions to mitigate beyond design basis scenarios like prolonged station black out or loss of ultimate heat sink.

### **4.1.5 Beyond design basis scenarios**

The simulator control room environment shall respond to the loss of AC power and other scenarios which may impact the human-system interfaces, including loss of instrumentation indications and dysfunctional plant communication systems. The simulator shall support operator actions in accordance with the reference unit procedures or guidelines to mitigate the accidents within the scope of simulation.

The wording is suggested to assure the industry that the working group has considered the Fukushima event.

The wording is open-ended and possibly recommends considerations for all responses beyond design basis limitations.

Is there a gap in the present wording this recommendation needs to correct?

SBT should be utilized for extended scenarios.

Today, it may be premature to address Fukushima and extended scenarios that take the simulator beyond design basis.

An alternative to updating the standard may be to update the foreword (not part of the standard) with language that assures the industry the working group considered extended length scenarios.

New AI-50: Update the Foreword to assure the industry that consideration of events such as the Fukushima event, extended length scenarios, EP Drills, etc. i.e. non standard scope scenarios were discussed and determined not to be within the scope of the standard.

AI-48 is closed.

#### 6.4 AI-43 (Vick) Recommended Simulator Performance Test Program – Continued

Member Comments:

- Already in the standard, beyond the scope, additional burden, needs to be slimmed down
- What is being fixed? Written as “should” but need to be a “shall”. Additional burden. Too specific.
- 3.5.1 to 3.5.4 acceptable. Possible new section in 5.0. Needs to be an appendix.
- Standard is adequate as written. Adds unnecessary burden and confusion. Unsure of added value as appendix.
- Agreeable to inclusion of a test program. Removal of Appendix B opens the door to industry confusion. Test program needs to be concise.
- Should be a list and not much more. Sections 3 and 4 already define the test program. Should not broaden the details of the standard.
- More flexibility is needed; is too prescriptive. Prefers it be broad based.
- Good concept.
- More than just the industry uses the standard, the NRC also uses the standard. Prefers a guideline. The concept the NRO process provides ITAAC for meeting specific conditions.
- If placed in the standard body, it will be perceived as additional requirements. Not agreeable if placed in the standard body but agreeable to the concept.
- Testing is already defined in the standard body. Not sure we need anything new. Quite a few new lists that may be perceived as new requirements. Possibly all that is needed is a quick lookup table. Additional details regarding tests frequencies may be beneficial

- Not the job of a standard to help the user meet the standard. Brings individual stand-alone Malfunction testing back. Cannot support in the body of the standard.

Straw poll shows the working group is agreeable to the concept it is workable.

Lists have been removed and now the recommendation brings the list back.

## 6.5 AI-47 (McDade) Review Scope for Exclusions

The wording below was discussed:

**This standard establishes the functional requirements for full-scope nuclear power plant control room simulators that are subject to U.S. Nuclear Regulatory Commission (NRC) regulation for use in operator training and examination. The standard also establishes criteria for the scope of simulation, performance, and functional capabilities of nuclear power plant control room simulators.**

**This standard does not establish criteria for the use of simulators in training programs.**

**For uses of the simulator for other than operator training and examination, functional processes and test criteria associated with the other programs should be utilized to determine acceptable use and control of the simulator for that program.**

**Do we need to add scope to address the specificity of core performance testing to allow for experience requirements addressed in 10CFR55??**

The additional wording does not add additional scope but states areas not addressed.

How does this help? It can be used to assist other users understand the boundaries of use.

If not addressed here and now, this will be addressed through user comment.

A change to the Scope may require another PINS submittal.

6.6 AI-47 (Motion) Revise Background adding exclusion for other programs (McDade)

<p>Motion: <b>Carried</b></p> <ul style="list-style-type: none"><li>• 8 – For</li><li>• 5 – Against</li><li>• 0 – Abstained</li></ul>
<p>Name 2011 Dec 12</p> <p><b>Motion:</b> Replace Section 1.2 Background with the following:</p> <p>Operating and training practices differ among the various organizations that operate nuclear power reactors; the common goals, however, are to ensure safety, equipment availability, and efficient operations. This standard provides flexibility in the design and use of nuclear power plant simulators in meeting these common goals. It is intended that in meeting the criteria of this standard, the simulator will be sufficiently complete and accurate to meet the <b>operator training and examination</b> needs of the industry as well as the requirements of the NRC, as described in Code of Federal Regulations, Title 10, “Energy,” Part 55, “Operators' Licenses” (10CFR55) [1].<sup>4)</sup> These requirements provide guidance in determining the content and setting for training and examination purposes. This standard allows the use of a training needs assessment in several areas where the standard may require features in excess of the requirements of 10CFR55 [1].</p> <p><b>Programs that utilize the simulator for purposes other than operator training and examination should identify specific functional and validation requirements for that use.</b></p> <p>The organization of the standard is such that simulator functional and physical requirements described in Sec. 3 correspond to testing requirements described in Sec. 4. The subnumbering of Secs. 3 and 4 is consistent so that corresponding section paragraphs address the same subject matter from a requirements and testing standpoint. Configuration management, including verification and validation, is described in Sec. 5.</p>

**Reason:** To address simulator usage that is not presently addressed in the standard.

**Reasons Against:**

- Potentially infers requirements not controlled by the operator training department.
- The standard is adequate as written. The addition of this statement is incomplete and adds a previously non-existent and unneeded requirement. Additionally, placing this requirement in the background section is inappropriate.

AI-47 is closed

6.7 AI-43 Recommended Simulator Performance Test Program – Continued

The working group divided into two groups. Each group will independently develop a testing program for review with the full working group.

6.8 Recessed: 1700



7.      **Thursday 2012 December 13 (0800)**

7.1      Roll Call

Members Present:

Jim Florence Proxy  
Keith Welchel  
F.J. (Butch) Colby  
Lawrence (Larry) Vick  
George McCullough Proxy  
Frank Tarselli Proxy  
Robert Goldman  
David Goodman  
Mac McDade  
Michael Petersen  
Pablo Rey

Proxy/Visitors:

Tim Dennis (Lawter Proxy)  
Vincent Gagnon (Chang Proxy)  
Scott Cupp (Goldman Proxy)

7.2      Consensus Level

16 - Voting members  
13 - Voting members Present (3 Proxy Votes)  
7 - Quorum (Majority Total Membership)  
10 - Consensus ( $\geq 75\%$  votes)  
9 – Super Majority ( $\geq 2/3$  Votes)  
7 – Majority ( $> 50\%$  votes)

7.3 AI-43 Recommended Simulator Performance Test Program – Continued

Presentation of the two test programs developed during the Wednesday breakout sessions.

Group 1:

5.4 Test Program	
A test program shall be established for initial simulator acceptance and for ongoing assurance of simulator fidelity.	
5.4.1 The initial test program shall include the items addressed in section 4 of this standard.	
5.4.2 The ongoing test program at a minimum includes the following:	
Operability Test	Once per reference unit fuel cycle
Normal Evolutions Test	Once per reference unit fuel cycle
Reactor Core Performance	Once per reference unit fuel cycle
Real Time and Repeatability	Once per reference unit fuel cycle
Physical Fidelity	Every 4 years
Scenario Based Test	Per Standard Requirements
Post-Event Testing	Following applicable plant transient

Comments:

ANS 3.5 Working Group Meeting Minutes  
Shearon Harris Energy & Environ Center  
2012 December 11-13

- Does not belong in the standard
- Should be in the appendix
- Not prescriptive enough

Group 2:

--

Group 2 presented several versions. All were an Appendix E.

Straw poll to continue discussion. - Majority agreed to keep AI-43 open.

Jim Florence and Scott Cupp agreed to participate in AI-43.

Direction to the AI-43 group is to (straw poll) develop language for an Appendix.

7.4 Cooper Inquiry for consideration

ANS-3.5 Working Group,

An agenda item this week is to address the Cooper inquiry...

Here are two DRAFT options to address the Cooper inquiry; we will discuss this week...

R/

Jim

Cooper Inquiry

Inquiry:

*What is the intent and purpose of “demonstrating” a verification test? What is expected for a verification test to be “demonstrated”?*

Response:

*Section 4.4.1 requirement explanation:*

Verification testing is part of a structured software design and development process for changes to the simulator configuration. A demonstration that verification testing is performed is required whenever simulation models or computer systems are modified in a way that potentially affect simulator performance.

*How the requirement is intended to be applied generically:*

Verification testing is performed by comparing the design of simulated components or systems to design requirements or available data. The extent of verification testing may depend on the nature of the change; a demonstration of verification testing may be as simple as an assertion of simulator conformance. For complex changes, a more detailed assertion of

simulator conformance may be required.

Verification testing documentation should include a description of the change and a description of the testing performed. The documentation should be of sufficient detail to demonstrate acceptable simulator performance to a subject matter expert.

**Or:**

*Section 4.4.1 requirement explanation:*

Verification testing is part of a structured software design and development process for changes to the simulator configuration. A demonstration that verification testing is performed is required whenever simulation models or computer systems are modified in a way that potentially affect simulator performance.

*How the requirement is intended to be applied generically:*

Verification testing is performed by comparing the design of simulated components or systems to design requirements or available data. The extent of verification testing may depend on the nature of the change; a demonstration of verification testing should include a description of the change and a description of the testing performed. The documentation should be of sufficient detail to demonstrate acceptable simulator performance to a subject matter expert.

7.5 Cooper Inquiry Response (Motion)

<p><b>Motion: Carried</b></p> <ul style="list-style-type: none"><li>• 12 – For</li><li>• 1 – Against</li><li>• 0 – Abstained</li></ul>
<p>Name 2012dec13</p> <p><b>Motion:</b> Response to the Cooper Inquiry</p> <p>The extent of verification testing depends on the nature of the change; a demonstration of verification testing may be as simple as an assertion of simulator conformance with the design requirements. Verification testing documentation shall include a description of the change.</p> <p><b>Reason:</b> Clarify how Verification testing is to be demonstrated.</p>

**Reasons Against:** The term assertion is not appropriate. Changing should to shall.

7.6 Core Performance Testing (Goodman)

A presentation was given for alternate language for Section 3.4.3/4.4.3.

Present language does not assist one in ensuring the simulator core meeting regulation. Present language is insufficient.

Alternate language was presented.

New AI-51 – Possible revision to Section 4.4.3 Simulator reactor core performance testing

7.7 Next Meeting Tentative

Timeframe:

June or July 2013

Locations:

- Seabrook
- Pilgrim

7.8 Adjourned: 1545

Approved ANS-3.5 Working Group

**8. Attachment 1 - Style Guide Review (SK Change)**

**201x Standard - Style Guide**

**1. ANSI Style Guide-sheet – 2003**

Available at <http://www.ansi.org/>

**A. General guide-lines**

- Heavy emphasis on technical integrity (accurate, complete, consistent), a spelling error would only be a minor issue.
- Consistency throughout the document: format, capitalization, etc..

**B. Strong recommendations:**

- No requirements in foreword, scope, background, definitions, footnotes.
- Use of “shall” to indicate a requirement; use “should” to indicate a recommendation. Avoid use of “must”.
- References: full and complete. Annex is a preferred term to Appendix.
- Number the footnotes sequentially.

**C. Completeness and consistency of document:**

Pagination, indentation, punctuation, numbering of sections, footnotes, etc.: follow 2009 Standard.

**2. ANSI Style manual, 8<sup>th</sup> edition, version 1.0, 3/1/91. [historical]**

<http://www.new.ans.org/standards/resources/downloads/docs/ansi-stylemanual.pdf>

This has been replaced by the 2003 guide, but ANS keeps it for reference.



### 3. ANS NFSC Policy and Procedures Manual

<http://www.ans.org/standards/resources/downloads/docs/nfscpolicies.pdf>

**Section 7.3 Specifying Requirements in a Standard (Shall, Should, and May)** (approved Jan 2010).

**Directions given in the standard shall use “shall”, “should”, and “may”:**

**Shall**, to designate a mandatory action.

**Should**, to delineate a recommended action. “Should also indicates that the issue must be addressed and that either the recommended action shall be taken or an equivalent action shall be taken and a basis given for equivalency.”

**May**, to designate a permissive action.

**Avoid “shall consider”, “shall, if possible” and equivalent phrases**

**Note:** Three occurrences of “shall consider” or equivalent are found in the 2009 Standard. These may deviate from NFSC rules.

Section 3.2.1.2, end of 1st paragraph: “The following items shall be considered:”

Section 3.2.1.3, end of 1st paragraph: “The following items shall be considered:”

Section 4.4.3.2, end of 4th paragraph: “Evaluation of the test data shall consider.”

**Section 7.4 Use of units** SI units shall be used either parenthetically with English units or SI units exclusively (approved Nov 2004).

It refers to the NBS publication concerning SI units:

NBS Special Publication 330, "The International System of Units (SI)," U.S. Department of Commerce, 1977. The current version is "NIST Special Publication 330. 2008 Edition; U.S. Department of Commerce, National

Institute of Standards and Technology” available at

<http://physics.nist.gov/Pubs/SP330/sp330.pdf>

The 2008 edition has no impact on the SI units used in Appendix C of the Standard:  
MPa and °C

**4. Other References:**

Google dictionary: <http://www.google.com/dictionary>

Merriam-Webster: <http://www.merriam-webster.com/>

The Chicago Manual of Style. Chicago: University of Chicago.

Webster’s New International Dictionary of the English Language (Unabridged). Springfield, MA:  
Merriam-Webster, Inc.

9.      **Attachment 2 – Motion template**

Motion: <b>Not Carried Amended Withdrawn</b> <ul style="list-style-type: none"><li>• x – For</li><li>• x – Against</li><li>• x – Abstained</li></ul>
Name 2011 Nov 17
<b>Motion:</b>
<b>Reason:</b>

**Reasons Against:** Text goes here...

**Reason Abstained:** Text goes here...