ANS 3.5 Working Group Meeting Minutes
American Nuclear Society
Western Services Corporation, Frederick, MD
2015 January 12-16

Approved

Visitors

Visitor	Date	Affiliation	Email, Phone Fax
Mr. Tim Dennis	2015jan12	645 Lehigh Gap St. P. O. Box 119 Walnutport, PA 18088-0119	**Email**: a243@yahoo.com **Phone**:610-767-0979 **Fax**: 610-767-7095
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Scott Sloan	2015jan15	11555 Rockville Pike Rockville, MD 20852	Email: scott.sloan@nrc.gov Phone: 301-415-1619 Cell: 443-254-3007
Mark I. Terry	2015jan16	7196 Crestwood Blvd, Suite 300 Frederick, MD, 21703	Email: terrym@ws-corp.com Office: 301-644-2518 Mobile: 301-401-3936 Fax: 301-682-8104

1. Membership and Attendance

Present	Member	Address	Notes-Proxy	Email-Phone-Fax
Present	Jim Florence **Chair**	Nebraska Public Power District P. O. Box 98 Brownville, Nebraska 68321		**Email**: jbflore@nppd.com **Phone**: 402-825-5700 **Fax**: 402-825-5584
Present	Robert Felker **Vice Chair**	Western Services Corporation 7196 Crestwood Blvd Suite 300 Frederick, MD 21703		**Email**: felker@ws-corp.com **Phone**: 301-644-2520 **Fax**: 301-682-8104 **Cell**: 240-344-5889
Present	Keith Welchel **Secretary**	Duke Power Company Oconee Training Center- MC:ON04OT 7800 Rochester Hwy Seneca, SC 29672		**Email**: keith.welchel@duke-energy.com **Phone**: 864-885-3349 **Fax**: 864-885-3432
Present	F.J. (Butch) Colby **Editor**	L-3 MAPPS 8565 Cote-de-Liesse Quebec, Canada H4T 1G5		**Email**: butchcolby@comcast.net **Email**: butch.colby@l-3com.com **Phone**: (410) 961-7535 **Fax**: (410) 756-1954
Present	Lawrence (Larry) Vick **Parliamentarian**	US NRC, Office of Nuclear Reactor Regulation 07-G13 Washington, DC 20555		**Email**: lawrence.vick@nrc.gov **Phone**: 301-415-3181 **Fax**: 301-415-3061
Present	George McCullough	GSE Systems, Inc. 2300 St. Marys Road Suite D St. Marys, GA 31558		**Email**: gsmccullough@gses.com **Phone**: 912-576-6730 **Cell**: 410-707-6946
Absent	Bill Hendy	INPO 700 Galleria Parkway, NW Atlanta, GA 30339-5957	No Proxy	**Email**: hendywr@inpo.org **Phone**: 770-644-8838 **Fax**: 770-644-8120
Present	Frank Tarselli	129 Abbey Rd Sugarloaf, PA 18249		**Email**: frankt64@ptd.net **Phone**: 570.542.3717 **Cell**: 570-956-0303 **Fax**: 570.542.3855
Present	SK Chang	Dominion Nuclear Connecticut, Inc. Millstone Power Station L. F. Sillin, Jr. Nuclear Training Ctr. Rope Ferry Road Waterford, CT 06385		**Email**: Shih-Kao.Chang@dom.com **Phone**: 860-437-2521 **Fax**: 860-437-2671
Present	Robert Goldman	Entergy 1340 Echelon Parkway Jackson, MS 39213-8298		**Email**: rgoldma@entergy.com **Phone**: 601-368-5582 **Fax**:
Present	David Goodman	Luminant PO Box 1003 Glen Rose, TX 76043		**Email**: david.goodman@luminant.com **Phone**: 254-897-5636 **Fax**: 254-897-5714

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Present	Jody Lawter	VC Summer Nuclear Station PO Box 88 Jenkinsville, SC 29065		**Email**: jody.lawter@scana.com **Phone**: 803-345-4854 **Fax**: 803-931-5616
Absent	Mac McDade	Progress Energy – Harris Nuclear Plant 3932 New Hill–Holleman Rd New Hill, NC 27562	No Proxy	**Email**: mac.mcdade@pgnmail.com **Phone**: 919-362-3319 **Fax**: 919-362-3346
Absent	Michael Petersen	Xcel Energy – Prairie island – Monticello 1660 Wakonade Drive West Welch, MN 55089	No Proxy	**Email**: Michael.petersen@xenuclear.com **Phone**: 651-388-1121 x 7253 **Cell**: 715-410-8783 **Fax**: 651-330-6282
Present	Pablo Rey	Tecnatom, s.a. Avda. Montes de Oca, 1 San Sebastian de los Reyes, 28703 - Madrid	Thursday afternoon Proxy: Tim Dennis	**Email**: prey@tecnatom.es **Phone**: +346-079-99218 **Fax**: +349-165-98677
Present	James Sale	North Anna Power Station 11022 Haley Drive, PO Box 402 Mineral, Virginia 23117-0402		**Email**: jim.sale@dom.com **Phone**: 540-894-2464 **Fax**: 540-894-2931
Present	William Fraser	Westinghouse Electric Company Nuclear Automation 680 Waltz Mill Road Madison, PA 15663, USA		**Email**: fraserwa@westinghouse.com **Cell**: 717-304-6225 **Work**: 724-722-5777 **Work**: 724-722-5234

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2.   **Action Items**

2.1   Action Item Quick-look Table

Open		Complete		Carried to Next Standard	

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	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	

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2.2   Action Items

No.	Status	Date	Assigned To:	Work Assignment
1		2010oct05	**Florence** **Lawter** **Sale**	Appoint new members for officer development (job shadow for position development). Parliamentarian Assist Lawter, Sale
2	2011nov17: Closed	2010oct06	**Koutouzis** McCullough	2009 AI-60 Define the Term **Training Needs Assessment** 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	**Vick** Tarselli (BWR) Petersen (BWR) Rey (BWR) Goodman (PWR) McDade (PWR) Sale (PWR)	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.

| 4 | 2011jun08: Closed items - 1, 3, 4

 2011nov16: Closed Item 2 | 2010oct06 | **Tarselli**
 Vick
 Chang
 Fraser
 Felker | 2009 AI-132
 1. Review Malfunction Testing. 2011jun08 Closed
 2. Are all list required?
 3. What constitutes Malfunction testing is unclear 2011jun08 Closed
 4. Better define Malfunction causes. 2011jun08 Closed

 2011jun08
 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.

 2011nov16
 Closed by Motion |
| 5 | 2011jun08: Closed

 2011nov16: Wording change. | 2010oct06 | **McCullough**
 Florence
 Tarselli
 Colby | 2009 AI-134
 Minimum testing Periodicity
 Build Periodicity into the standard

 2011jun09
 Closed with Motions
 Realtime/Repeatability testing periodicity moved to AI-10

 2011nov16:
 Added the word capability:
 An instructor station capability test shall be conducted |

| 6 | 2012aug30: Closed | 2010oct06 | **Welchel**
Lawter
Petersen
McDade
Goodman | 2009 AI-147
2009 AI-180
Non-fully integrated mode performance testing
Where applicable run performance test off-line

2011jun08 Discussion

2011nov18 Welchel
New Definition and Sec. 3.4.3 change proposed for consideration.
Discussion tabled

2012aug29 Motion Not Carried.
AI-6 is not closed and will consider additional input based on the discussions and member feedback.

2012aug30 Motion Carried
New AI-44: AI-6 Motion Carried Simple Majority: Consult ANS-21 (Maintenance Operations Testing & Training) subcommittee for determination if this change is a Substantive Change.

2012sep21: The following reply was received from Carl Mazzola:

This is a substantive change. Another sentence was added with a shall statement.

AI-6 passed with a 8-For and 7-Against. Substantative change requires Consensus requiring a 75% approval. Therefore AI-6 status is **Not Carried**. AI-6 minutes status has been updated to: **Not Carried**.

2012dec05: AI-6 is Closed |

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| 7 | 2012aug30: Closed | 2010oct06 | **Vick** Goldman | 2009 AI-150 Review the term Power Range for consistency Confusion about the term Power Range.

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. |
| 8 | 2011jun09: Closed | 2010oct06 | **Chang** Tarselli Felker | 2009 AI-162 Review Appendix B parameters against the standard body MANTG comments App. B parameters and std body are not consistent.

2011jun09 – A parliamentary issue regarding motion results. See AI-26

2011nov16: AI-8 was reviewed and changed to "Carried". See Summer minutes Section 5.4. |

| 9 | 2012aug29: Closed | 2010oct06 | **Felker**
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. |
| 10 | 2011nov16: Closed | 2010oct06 | **McCullough**
Felker
McDade
Goldman | 2009 AI-179
Real-time and Repeatability testing Periodicity
2009 Public review comments.
Methodology to demonstrate real-time.

2011jun10
Carried from AI-5 Realtime/Repeatability
-Establish Realtime/Repeatability Periodicity Testing Requirement

2011nov16
Closed by Motion. |

11	2012Mar16: Closed	2010oct06	**Goodman** Vick Petersen Chang	2009 AI-181 Section 5 rewrite 2009 Westrain Comment #60 Configuration Management expectations needs strengthening Performance based. V&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 2012Mar16: Closed with three AI motions
12	2010oct22: Closed	2010oct06	**Florence**	Invite ANS-21 Chair to WG meeting ANS-21 Chair Gene Carpenter Two White Flint North Washington, DC 20555-0001 **Mobile Ph**: 202-579-5155 **Work Ph**: 301-415-7333 **Email**: gene.carpenter@nrc.gov
13	2011jan28: Closed	2010oct06	**Florence**	Send letters of appointment to new working group members and their respective facility management Letter to new working group member and manager.
14	2011jan28: Closed	2010oct06	**Florence**	Coordinate next ANS-3.5 Meeting at the Crystal River Nuclear Power Plant in January 2011
15	2011jan28: Closed	2010oct06	**Florence**	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.

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16	2012aug29: Closed	2011jan28	**Sale** Rey McCullough Tarselli Chang Koutouzis	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.
17	2012Mar14: Closed	2011jan28	**McDade** 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 *Code of Federal Regulations*, Title 10, "Energy," Part 55, "Operators' Licenses" (10CFR55) **and station mandated experience requirements** Consider language in Section 1.2 Background to add clarification regarding control manipulations allowed by 10CFR55.46 and how this standard supports it. 2012mar14 – team recommended closure. Standard is sufficient.

| 18 | 2013nov06: Closed | 2011jan28 | **Florence** Rey Holl Fraser | 1) Contact ANS to determine international opportunities in Standard development. 2) Consider language in Section 1.2 Background to mention use of this standard by the international community. 3) Additional consideration in the Standard body for the international community.

Acknowledge international regulatory authorities.

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.

2013nov06
Language was inserted in Foreword to mention use of this standard by the international community and to acknowledge international regulatory authorities; "The working group acknowledges the use of this Standard by international users and owners of nuclear power plant simulators that may be subject to international nuclear regulatory authorities; the degree of application of this Standard to their respective nuclear power plant simulators is the responsibility of international authorities." |

19	2012nov18: Closed	2011jan28	**Tarselli** McCullough Goodman Chang Rey	Review the list below for inclusion into ANS 3.5 or other standards and basis for the recommendation: • Engineering Assist • Simulation Assisted Engineering • EP • DCS Logic Control Validation • HFE – Human Factors Engineering • Tech Training – I&C / Mechanical • PR Tours • Process Flow Diagrams • Spec. Operating Parameters • PRA • SAMG
20	2012aug30: Closed	2011jan28	**McCullough** Colby Tarselli Lawter Fraser	Identify areas in the standard that can be improved to address DCS 2012aug30: Closed by Motion
21	2011jun10: Closed	2011jan28	**McCullough** Felker Koutouzis Lawter Goodman	Evaluate the need for inclusion into the standard other simulation devices derived directly from the full scope control room simulator. 2011jun10 – Presentation and discussion. No additional discussion and action will be taken. This AI is closed.
22	2012aug30: Closed	2011jan28	**Lawter** 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

23	2012aug28: Closed	2011jan28	**Vick** 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.
24	2011feb01: Closed	2011jan28	**Florence**	Submit PINS Form to ANS Administrator 2011feb01 PINS has been submitted.

25	2012mar13: Closed	2011jun10	**Chang**	The following Appendix B Steady State parameters were considered in AI-8.
				BWR
				   - control rod drive hydraulic system flow and temperature
				   - secondary plant heat balance data
				PWR
				   - containment pressure
				   - boron concentration
				   - pressurizer temperature
				   - control rod positions
				   - secondary plant heat balance
				
				These parameters should be reviewed for inclusion into the standard body Steady State parameter list.
				
				2012mar13: Closed by Motion

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26	2012dec05: Closed	2011jun10	**Florence**	Review and recommend modifications to the Rule of the Chair related to quorum in session. Interim Voting (Motions – Substantive Changes) shall be by Consensus (75% [rounded up] of quorum in session); 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); 2011nov15: Additional consideration is needed to determine if previously "Not-carried" Motions are affected by the revised Rule of the Chair. 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. AI-26 is Closed.
27	2011nov15: Closed	2011jun10	**Florence**	Define Substantive Change with regards to Motion "Carried" threshold. 2011nov15: Closed with AI-26 discussion.
28	2012aug30: Closed	2011jun10	**Felker** Chang Sale	Review and report to the WG the usage of the terms: **If available** versus **As applicable**. 2012aug30: Closed with AI-28 discussion.

| 29 | 2011nov17: Closed | 2011jun10 | **Rey** Tarselli | Review Normal Operating procedures Surveillance testing with regards to periodicity testing.

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

2011nov17: Closed by Motion: Carried
Text substitution in section 4.1.3.2 Normal evolutions |
| 30 | 2012Mar14: Closed | 2011jun10 | **Sale** | Review Appendix B Steady State section for deletion.

2012mar14 – AI-9 deleted Appendix. This AI is closed. |
| 31 | 2011nov18: Closed | 2011jun10 | **Petersen** Chang | Review list nomenclature for consistency

2011nov18: Closed by Motion Carried. |
| 32 | 2012dec11: Closed | 2011nov17 | **McCullough** | Verify testing periodicity terminology consistency across section 4.

2012dec11
McCullough lead a discussion reviewing the sections and consistency. There is consistency across Section 4.0.

AI-32 is closed. |
| 33 | 2012aug30: Closed | 2011nov18 | **Welchel** | Review use and consistency of term Fully Integrated, partially-integrated and Non-integrated, and Standalone with regards to Sections 3 and 4.

2012aug30 – Review indicates the Section 5 rewrite consolidated these terms.

AI-33 Closed. |

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34	2012Mar16: Closed	2012Mar14	**Colby**	AI-9 deleted Appendix B, this AI is to review/cleanup remaining references to Appendix B 2012mar16: Closed Two Column Document Rev 4 updated.
35	2012Mar15: Closed	2012Mar15	**Felker** Colby	AI-5 Review the usage of "preference" and "shall" in Section 5.1.2 2012mar15: Closed - The working group reviewed the definitions of "preference" and "precedence". The list may be a precedence list but preference is adequate.
36	2012aug30: Closed	2012Mar15	**McCullough** Goodman	Consider replacing the opening paragraph in Section 5. With the following: 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. 2012aug30: Closed with AI-36 discussion.
37	2012dec11: Closed	2012Mar15	**Chang** Fraser Goodman	Consider definitions for "benchmark" and "baseline". 2012dec11 Recommendation is to close AI-37 with no action.
38	2012aug30: Closed	2012Mar15	**Rey** Goodman	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. 2012aug30: Closed with AI-38 discussion.
39	2012aug28: Closed	2012Mar15	**Goodman** Chang	Consider revising Section 5.1 to include verification and validation as it applies to initial simulator construction. 2012aug28 – Closed by agreement

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40	2012Mar15: Closed	2012Mar15	**Goodman**	Section D.2 cleanup references to 3.2.1.4 and in Section D.3 cleanup references to 4.2.1.4. Closed by Motion
41	2012aug28: Closed	2012aug28 Diablo Canyon	**Goodman** Welchel Dennis Felker	Additional review of Section 3.4.1/3.4.2/4.4.1/4.4.2 - 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" - The new Background section no longer refers to V&V, and includes no reference to CM - Review IEEE and ANS 3.5 for alignment of V&V requirements - 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) 2012aug28 – Closed by agreement
42	2012aug30: Closed	2012aug30 Diablo Canyon	**Chang**	Review the use of "Because" in the first paragraph of section 5.1.2 Simulator Performance Benchmark. Consider "If" or "When". Multiple baseline data are not always available and sometimes no data is available. 2012aug30: Editorial Change. AI-42 is Closed.

43	2013apr02: Closed by Motion	2012aug30 Avila Beach	**Vick** Lawter Rey Sale Tarselli Cupp Florence	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. 2012dec13 Several versions were presented and discussed. WG agreed to continue additional discussion. 2013apr02: Proposal #1 occupied the majority time of discussion. After several hours of discussion a straw poll indicated lack of support.
44	2012sep21: Closed by Email from Carl Mazzola.	2012aug30	**Florence**	AI-6 Motion Carried Simple Majority: Consult ANS-21 (Maintenance Operations Testing & Training) subcommittee for possible Substantive Change. 2012sep21: The following reply was received from Carl Mazzola: **This is a substantive change. Another sentence was added with a shall statement.** AI-6 passed with a 8-For and 7-Against. Substantative change requires Consensus requiring a 75% approval. Therefore AI-6 status is Not Carried. AI-6 minutes status has been updated to: Not Carried. 2012dec05: AI-44 is Closed
45	2012dec11: Closed	2012aug31	**Chang** 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.

46	2012dec11: Closed	2012aug31	**Petersen** 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.
47	2012dec12: Closed	2012aug31	**Mcdade** Florence Felker	Review Scope statement to include additional exclusions. 2012dec12 Closed by Motion. Revised Section 1.2 Background
48	2012dec12: Closed	2012aug31	**Chang** Rey Gagnon	Review the standard for extended length scenarios and possible guidance. 2012dec12 Closed. New AI-50
49	2012dec11: Closed	2012dec11	**McCullough**	2012dec11 Reference AI-45 Update the standard changing all references of human machine interface to human system interface. Closed by Motion.

| 50 | 2013nov06: Closed | 2012dec12 | **Florence** 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. 2013nov06 Language was inserted in 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; "The working group diligently considered events such as the Fukushima Daiichi Nuclear Power Plant accident and uses of the simulator for both extended duration scenarios and emergency preparedness drills/exercises for inclusion in the scope of this Standard. The working group ultimately determined that these types of simulator applications are not within scope of this standard; however, the standard does not preclude the use of simulators for activities other than operator training and examination." |
| 51 | Closed: 2013apr03 by Motion | 2012dec13 | **Goodman** Rey Vick Cupp | 2012dec13 New AI-51 – Possible revision to Section 4.4.3 Simulator reactor core performance testing. Closed: 2013apr03 by Motion. Replaced Section 4.4.3 |

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52	2013jul25: Closed		**Felker** Colby	2013apr05 Strengthen the comments: Appendix B deletion Section 3.1.4 Malfunction List deletion 2013jul25 WG agreed to closed AI-52. See 2013jul25 minutes for closure description.
53	2013jul25: Closed		**Colby**	2013apr05 Blank Appendix Allowed? 2013jul25 Final Read Item Appendices have been adjusted. ANS input is that blank Appendices are not allowed.
54	2013jul25: Closed		**Goodman**	2013apr05 Section 3.4 and 3.4.4 review for PEST testing requirement. Evaluate the requirement to perform PEST testing in section 3.4.4 in a fully integrated mode of operation. 2013jul24 – Parking lot item: 4.2.2/4.1.3 No periodicity needs to be addressed when this AI is resolved. 4.2.2 – No change 4.1.3 – AI-54 Steady-state is listed in two section 4.1.3and 4.4.1 and periodicity is defined only in Section 4.4.1. This item is left open pending AI-54 discussion 2013jul25 Goodman discussion. Closed by Motion.

55	2013nov05: Closed		**Florence**	2013jul23 Contact Pat Schroeder is Section 6. Is boilerplate. What is the purpose of Section 6.0 Is Appendix Header boilerplate. Determine standard language for Section 6; currently, we identify one reference; lead in paragraph suggests more than one paragraph. IN addition, this section paragraph is difficult to understand 2013nov05 Email from Don Spellman to Jim Florence dated Sunday, September 08, 2013 1:16 PM. Section tech edits will be removed. Colby will update Section 6
56	2013jul26: Closed		**Florence**	2013jul23 In the "American National Standard" front section of the standard; send the technical edits to ANS (Pat Schroeder) as information only… (Chang & Florence) 2013jul26 Email sent to ANS Pat Schroeder
57	2013jul26: Closed		**Chang**	2013jul23 Verify all uses of "by this section" for change consideration to "in this section" for consistency throughout standard 2013jul26 Review with recommendation to make no change

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58	2013jul25: Closed		**Chang**	2013jul23 Line 199 in tech edit spreadsheet – delete "steady-state test" in Section 4.4.1 2013jul25 Closed by Motion: Motion (Carried): Operability to Transient Term Update
59	2013jul25: Closed		**Chang**	2013jul23 Lines 221 & 222 in tech edit spreadsheet; identify the role that procedures have in Section 4.4.4 2013jul25: Closed Motion (Carried): AI-59 PEST use of Unit procedure
60	2013jul25: Closed		**Florence**	2013jul23 2013jul25: Closed to AI-55
61	2013jul25: Closed		**Felker** Mirshah Tarselli	2013jul24 Review Two-column document technical edit reviews for correctness. 2013jul25: Closed Review completed with no comment.
62	2013nov05: Closed		**Colby**	2013jul24 Review Footnotes and Footnote numbering in the final document before sending for comment/approval. Review the standard references to Appendices to ensure correct reference/tie 2013nov05: Document: ANS-3.5-2014 draft Read Nov-2013.docx Appendices have been reordered. Footnote references have been corrected in the body and Appendix B.

63	Closed: 2013jul24		**Colby**	2013jul24 Parking lot Item: A.1 – should "evaluation" be "examination"? Section A.1 Change "evaluation" to "examination" and "tool" to "device".
64	2013jul26: Closed		**Chang**	2013jul25 Review uses of "by this section" 2013jul26 Review with recommendation to make no change
65	2013jul26 Closed	2013jul26 Pilgrim	**Colby**	2013jul25 Tech Edit Items List in Sections 4.1.3.2 2013jul26 Two column document updated. Completed
66	2013jul26 Closed	2013jul26 Pilgrim	**Colby**	2013jul25 AI-66 Tech Edit Items List in Sections 4.1.4, 4.4.1, 4.4.2 Remove list capitalization 2013jul26 Two column document updated. Completed

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67	2013nov06: Closed		**Rey** Tarselli Goodman McCullough	2013jul25 Include Steady-state and normal evolutions as Performance test. Possibly separate Steady-state and Normal evolutions without creating additional burden. Reference AI-54 for consideration. 2013nov06: Motion - Normal Evolutions testing requirements Motion - Move Steady-State to Section 4.4 Simulator performance testing
68	2015jan14: Closed		**Welchel**	2015jan12 Lloyd Comment #4 – Additional consideration for incorporating a more comprehensive update that will include Section 3 and Section 5. 2015jan14 Motion Carried - Replace Section 1.2 last paragraph with the following - Replace the second paragraph in Sec. 3 "General requirements" with the following - Move Sec. 3 second paragraph to second paragraph to Sec. 5 "Simulator configuration management" with the following
69			**Florence**	2015jan15: Coordinate with ANS to include the titles of appendices in the standards' Table of Contents.

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3. Working Group Procedural Rules

3.1 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.

3.2   Rules Enacted by the Working Group

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

4. <u>Monday 2015 January 12 (0800)</u>

4.1   Introduction (0800)

4.2   Roll Call

Members Present:

> Jim Florence
> Robert Felker
> Keith Welchel
> F.J. (Butch) Colby
> Lawrence (Larry) Vick
> George McCullough
> Frank Tarselli
> SK Chang
> Robert Goldman
> David Goodman
> Jody Lawter
> Pablo Rey
> Jim Sale
> William Fraser

Visitors:

> Tim Dennis
> Vincent Gagnon

Approved

4.3 Consensus Level

15 - Voting members
14 - Voting members Present (2 Proxy Vote)
8 - Quorum (Majority Total Membership)
11 - Consensus ($\geq$ 75% votes)
9 – Super Majority ($\geq$ 2/3 Votes)
8 – Majority (> 50% votes)

4.4 Motion (Carried): Agenda Rev 0 Approval

Motion: **Carried**
14 – For   0 – Against   0 – Abstained
Date 2015jan12 **Motion**: Approve Agenda Rev 0

4.5 Motion (Carried): Membership

William Hendy and Mac McDade are not considered members for the purpose of this meeting to facilitate voting quorum requirements.

Absent two consecutive meetings without proxy.

Motion: **Carried**
14 – For   0 – Against

• 0 – Abstained
Date 2015jan12 **Motion**: William Hendy and Mac McDade are not considered members for the purpose of this meeting to facilitate voting quorum requirements.

4.6 Officers reports

Florence (Chair)	No Report
Welchel (Secretary)	No report
Colby (Editor)	No report
Chang (Style Editor)	No report
Vick (Parliamentarian)	No report

4.7 Industry Update

INPO	No Update
USUG - Florence	No Update
Dennis	No Update
WESTRAIN - Goodman	No Update
NEI - Petersen	No Update
SSNTA	No Update

4.8 Item resolution

Reference document: Final_2015jan12_Ballot_Comment_Resolution.xlsx

4.9   [109 Lloyd] -

4.10   [142 Chang] - No change.

   Standard ANS boilerplate language

4.11   [143 Chang] – Resolved

   Add title to Appendices.

4.12   [23 Stamm] – No change

   Florence to follow up with Stamm

4.13   [110/132 Lloyd/Jones] – Deferred

4.14   [111 Lloyd] – No change

4.15   [190 Holl] – No change

4.16   [189 Holl] – No change

4.17   [Guha #2] Motion (Carried): Remove Definition for Stimulated Component

Motion: **Carried**
• 14 – For   • 0 – Against   • 0 – Abstained
Date: 2015jan12

Motion: Remove Definition for Stimulated Component
Reason: Not used in standard

4.18   [Lloyd #4] Motion (Not carried): Section 3.0 General Requirements delete the second paragraph

Motion: **Not Carried**   • 3 – For   • 11 – Against   • 0 – Abstained
Date: 2015jan12   **Motion**: Section 3.0 General Requirements delete the second paragraph.   New Section 3.0 General Requirements wording: A nuclear power plant simulator is a training device used in support of initial and requalification training, as well as a device for examining operators. The simulator shall be referenced to a specific unit. The scope of simulation shall require the operator to take the same action on the simulator to conduct an evolution as on the reference unit, using the reference unit operating procedures. The scope of simulation shall permit the conduct of all evolutions required in this section until plant conditions are stable.   **Reason**: Wording in the second paragraph is redundant and does not align with the design of Section 3/Section4. Paragraph presents redundant or incomplete requirements that may create unnecessary confusion for the user.

Reason Against:
- Not complete and requires addition modification in Section 5
- Paragraph has more than just redundant requirement.
- Consider for Parking lot item for next revision
- The paragraph is a lead in and while may have redundant requirements, enhances clarity.

4.19 [146 Chang] Motion (Carried): 3.1.4 Malfunctions – Replace TNA with systematic approach to training

Motion: **Carried**
• 13– For
• 1 – Against
• 0 – Abstained
Date: 2015jan12

Motion: Change

The simulator shall support consequential failures of systems and equipment due to operator action or malfunction of supporting systems where supported by a training needs assessment.

to

The simulator shall support consequential failures of systems and equipment due to operator action or malfunction of supporting systems when required by the systematic approach to training.

Reason: Clarification

Reason For:
• Not a substantive change.
Reason Against:
• Changing "where supported" to "when required" alters intent.

4.20 [145 Chang] - Editorial change: Add "the" before "number"

4.21 [Guha SC #4 / Lloyd SC #5] Motion (Carried): Change Section 3.1

Guha Sub-committee #4
Lloyd Sub-committee #5

Motion: **Carried**

- 12– For
- 2 – Against
- 0 – Abstained

Date: 2015jan12

Motion: Change Section 3.1

The response of the simulator resulting from operator action, no operator action, improper operator action, automatic reference unit controls, and inherent operating characteristics shall be realistic and shall not violate the physical laws of nature, such as conservation of mass, momentum, and energy, within the limits of the testing criteria of Sec. 4, "Testing requirements ."

to

The response of the simulator resulting from operator action, no operator action, improper operator action, automatic controls, and inherent operating characteristics shall represent the response of the reference unit within the limits of the testing criteria of Section 4, "Testing requirements." Simulator performance shall be consistent with the physical laws of nature including conservation of mass, momentum and energy.

Reason: The original requirement was written as a long sentence with a complex structure. Restructuring the requirement into two sentences makes the standard easier to read and understand. No change to the requirement results from this change.

Reason Against:
- Changes intent. "Not violate" is not the same as "consistent with".
- "Shall be realistic" is not the same as "represent the response of"

4.22 [192 Holl] – Malfunction Cause and Effect Requirement addition (Parking Lot)

Parking lot:

- How to document a sound technical basis.

- Is Cause & Effect document required for each malfunction.

4.23   Adjourned: 1800

Approved

5.   **Tuesday 2015 January 13 (0800)**

5.1   Roll Call

Members Present:

     Jim Florence
     Robert Felker
     Keith Welchel
     F.J. (Butch) Colby
     Lawrence (Larry) Vick
     George McCullough
     Frank Tarselli
     SK Chang
     Robert Goldman
     David Goodman
     Jody Lawter
     Pablo Rey
     Jim Sale
     William Fraser

Visitors:

     Tim Dennis
     Vincent Gagnon
     Jim Kellum

5.2   Consensus Level

    15 - Voting members
    14 - Voting members Present (2 Proxy Vote)
    8 - Quorum (Majority Total Membership)
    11 - Consensus (≥ 75% votes)
    9 – Super Majority (≥ 2/3 Votes)
    8 – Majority (> 50% votes)

5.3   [193 Holl] – 3.3.1 Discussion deferred to Thursday.

5.4   [193 Holl] – 3.3.2 No change.

5.5   [147 Chang] – 3.3.3 No change.

5.6   [Lloyd #7] – 3.3.3 Editorial change

    New wording for Section 3.3.3 first sentence:

        Replace:
        The simulator shall include freeze, run, snapshot, backtrack, operator interfaces override, and initial condition reset.

        With:
        The simulator shall include freeze, run, snapshot, initial condition reset, backtrack and override of operator interfaces.

5.7   New Consensus Level

    15 - Voting members
    13 - Voting members Present
    7 - Quorum (Majority Total Membership)
    10 - Consensus (≥ 75% votes)
    9 – Super Majority (≥ 2/3 Votes)
    7 – Majority (> 50% votes)

5.8   [206 Goodman] – Fully-integrated, partially-integrated, stand-alone

Parking lot – (Goodman) Define Fully-integrated, partially-integrated, stand-alone in regards to Section 3.4 and 5.2.3.2

5.9   [25 Stamm] – Section 3.4.2 Should to Shall

No change

5.10   [26 Stamm] - Section 3.4.3 SBT Remove NRC in the first Item

No change

5.11   [194 Holl] - Reference in section 3.4.4 to the scope of simulation shall be removed

No change

5.12   [214/27/114 Crone/Stamm/Lloyd] Motion (Tabled): 4.1.1 Real time and repeatability

Motion: **Tabled**   • xx– For   • xx – Against   • 0 – Abstained
Date: 2015jan13   **Motion**: Replace Section 4.1.1   From: A real time and repeatability test shall be conducted :   (1)   upon completion of simulator initial construction;   (2)   once per reference unit fuel cycle.

To:

A real time and repeatability test shall be conducted :
(1)   upon completion of simulator initial construction;
(2)   once per reference unit fuel cycle.

It shall be demonstrated that the simulator performs the capabilities defined in Sec. 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.

Reason:

Motion tabled to allow member an opportunity to review history

5.13   [28 Stamm] Motion (Carried): 4.1.2 Limits of Simulation (**Substantive Change**)

Motion: **Carried**
- 12– For
- 0 – Against
- 1 – Abstained

Date: 2015jan13

Motion: Replace Section 4.1.2

From:

A limits of simulation notification test shall be conducted:
(1)   upon initial implementation of limits of simulation;
(2)   whenever there is a change or modification to the limits of simulation.

To:

> A limits of simulation notification test shall be conducted:
> (1)   upon initial implementation of limits of simulation;
> (2)   whenever there is a change or modification to the limits of simulation.
>
> It shall be demonstrated that the limits of simulation are identified and that automatic or administrative means are in place for notification to the instructor that the limits of simulation have been reached or exceeded.
>
> **Reason**: Stamm Comment #28 – Test criteria added

Abstained Reason: Text added is redundant to section 3.1.2

5.14   [136/107 Jones/Hendricsen] – No change

5.15   [148 Chang] – Section 4.1.4 Editorial

Revise Section 4.1.4 Second paragraph:

From

It shall be demonstrated that simulator response during the conduct of the malfunctions required by Sec. 3.1.4 meets the following acceptance criteria

To:

It shall be demonstrated that simulator response during testing of the malfunctions required by Sec. 3.1.4 meets the following acceptance criteria:

Approved

5.16   [186 Parrish] – No change

5.17   [137 Jones] – No change

5.18   [196 Holl] – No change

5.19   [198 Holl] – Corrected by Goodman 207

Parking lot – Repeatability/DCS. While not directly related to Holl Comment # 198, the working group discussed that various repeatability requirements in the Standard may not be achievable in DCS designs; the working group should consider this question in the next edition of the Standard.

5.20   [207 Goodman] Motion (Carried): Section 4.2.1.1 Noticeable Difference

Motion: **Carried**
• 13– For
• 0 – Against
• 0 – Abstained
Date: 2015jan13
Motion:
Change 4.2.1.1 from:
A comparison shall be performed to demonstrate that panels, consoles, operating stations, and other HSIs 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.**

To:

A comparison shall be performed to demonstrate that panels, consoles, operating stations, and other HSIs required by Sec. 3.2.1.1 replicate the size, shape, color, and configuration of those of the reference unit. **Noticeable differences shall be assessed in accordance with Sec. 5.**

Reason: The wording in these sections should be changed to be consistent with 4.1.3. The final sentence of 4.2.1.1 should also be changed to be consistent with 4.1.3.

5.21 [207 Goodman] Motion (Carried): Section 4.2.1.2 Noticeable Difference

Motion: **Carried**
- 13– For
- 0 – Against
- 0 – Abstained

Date: 2015jan13

Motion:

Change 4.2.1.2 from:

A comparison shall be performed to demonstrate that instrumentation, controls, markings, and operator aids 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.

To:

A comparison shall be performed to demonstrate that instrumentation, controls, markings, and operator aids 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. **Noticeable differences shall be assessed in accordance with Sec. 5.**

Reason: The wording in these sections should be changed to be consistent with 4.1.3. The final sentence of 4.2.1.2 should also be changed to be consistent with 4.1.3.

5.22   [207 Goodman] Motion (Carried): Section 4.2.1.3 Noticeable Difference

Motion: **Carried**
• 13– For • 0 – Against • 0 – Abstained
Date: 2015jan13
Motion: Change 4.2.1.3 from:

A comparison shall be performed to demonstrate that the simulator control room environment replicates the reference unit control room in accordance with Sec. 3.2.1.3. **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.**

To:

A comparison shall be performed to demonstrate that the simulator control room environment replicates the reference unit control room in accordance with Sec. 3.2.1.3. **Noticeable differences shall be assessed in accordance with Sec. 5.**

Reason: The wording in these sections should be changed to be consistent with 4.1.3. The final sentence of 4.2.1.3 should also be changed to be consistent with 4.1.3.

5.23   [207 Goodman] Motion (Carried): Section 4.2.2.1 Noticeable Difference

Motion: **Carried**
- 13– For
- 0 – Against
- 0 – Abstained

Date: 2015jan13

Motion:

Change 4.2.2.1 from:

It shall be demonstrated that the systems of the reference unit that are within the scope of simulation are adequate to perform the normal evolutions required by Sec. 3.1.3 and the malfunctions required by Sec.

3.1.4. It shall be demonstrated that the scope of simulation includes system interactions with other simulated systems so as to provide a total integrated unit response. **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.**

To:

It shall be demonstrated that the systems of the reference unit that are within the scope of simulation are adequate to perform the normal evolutions required by Sec. 3.1.3 and the malfunctions required by Sec. 3.1.4. It shall be demonstrated that the scope of simulation includes system interactions with other simulated systems so as to provide a total integrated unit response. **Noticeable differences shall be assessed in accordance with Sec. 5.**

Reason: The wording in these sections should be changed to be consistent with 4.1.3. The final sentence of 4.2.2.1 should also be changed to be consistent with 4.1.3.

5.24   [207 Goodman] Motion (Carried): Section 4.2.2.2 Noticeable Difference

Motion: **Carried**
- 13– For
- 0 – Against
- 0 – Abstained

Date: 2015jan13

Motion:

    Change 4.2.2.2 from:

It shall be demonstrated that systems operated or monitored external to the control room, and necessary to perform the normal evolutions required by Sec. 3.1.3 and the malfunctions required by Sec. 3.1.4, are simulated. It shall be demonstrated that the operator is able to interface with the remote activity in a similar manner as in the reference unit. **It shall be demonstrated that deviations are corrected or that a training needs assessment has been conducted in accordance with the criteria provided by Sec. 5.**

To:

It shall be demonstrated that systems operated or monitored external to the control room, and necessary to perform the normal evolutions required by Sec. 3.1.3 and the malfunctions required by Sec. 3.1.4, are simulated. It shall be demonstrated that the operator is able to interface with the remote activity in a similar manner as in the reference unit. **Noticeable differences shall be assessed in accordance with Sec. 5.**

Reason: The wording in these sections should be changed to be consistent with 4.1.3. The final sentence of 4.2.2.2 should also be changed to be consistent with 4.1.3.

5.25   [207 Goodman] Motion (Carried): Section 4.3.3 Noticeable Difference

Motion: **Carried**
- 13– For
- 0 – Against
- 0 – Abstained

Date: 2015jan13

Motion:

Change 4.3.3 from:

It shall be demonstrated that the simulator includes the features specified in Sec. 3.3.3. The implementation of simulator control features shall 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. **It shall be demonstrated that deviations are corrected or that a training needs assessment has been conducted in accordance with the criteria provided by Sec. 5.**

To:

It shall be demonstrated that the simulator includes the features specified in Sec. 3.3.3. The implementation of simulator control features shall 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. **Noticeable differences shall be assessed in accordance with Sec. 5.**

Reason: The wording in these sections should be changed to be consistent with 4.1.3. The final sentence of 4.3.3 should also be changed to be consistent with 4.1.3.

5.26   [197 Holl] – Corrected by Goodman 207

5.27   [208 Goodman] Motion (Carried): Change the first sentence in Section 4.2.1

Motion: **Carried**
• 13– For
• 0 – Against
• 0 – Abstained
Date: 2015jan13

> **Motion**:
>
> Change the first sentence in Section 4.2.1 from:
>
> > A comparison shall be performed to identify noticeable differences:
>
> To:
>
> > A comparison between the simulator and the reference unit control room shall be performed:
>
> **Reason**: Clarify the object of the comparison. The assessment of noticeable differences is addressed in the subsections of 4.2.1

5.28   [149 Chang] – Editorial Sec. 4.3.4 Local Operator Actions

   Editorial - change "the local operator action" to "local operator actions"

5.29   [29 Stamm] – No change

5.30   [30 Stamm] Motion (Carried): Change Section 4.4 Readability and remove redundancy (Substantive ?)

Motion: **Carried**
• 12– For • 1 – Against • 0 – Abstained
Date: 2015jan13
Motion: Change Section 4.4 from:

It shall be demonstrated that performance testing is conducted to identify noticeable differences between the simulator control room or simulated systems when evaluated against the control room or systems of the reference unit. Noticeable differences shall be assessed in accordance with Sec. 5.

It shall be demonstrated that simulator performance testing is conducted as specified below. A record of the conduct of these tests and their evaluations shall be maintained.(footnote 3)

To:

It shall be demonstrated that performance testing is conducted to identify noticeable differences between the simulator control room or simulated systems when evaluated against the control room or systems of the reference unit. Noticeable differences shall be assessed in accordance with Sec. 5.

Simulator performance testing shall be conducted as specified below. A record of the conduct of these tests and their evaluations shall be maintained.(footnote 3)

Reason: Readability and remove redundancy (it shall be demonstrated) with no change in requirements

Reason Against: Not necessary. Readable the way it was.

5.31   Adjourned: 1730

6. <u>**Wednesday 2015 January 14 (0800)**</u>

6.1   Roll Call

Members Present:

     Jim Florence
     Robert Felker
     Keith Welchel
     F.J. (Butch) Colby
     Lawrence (Larry) Vick
     George McCullough
     Frank Tarselli
     SK Chang
     Robert Goldman
     David Goodman
     Jody Lawter
     Pablo Rey
     Jim Sale
     William Fraser

Visitors:

     Tim Dennis
     Vincent Gagnon

6.2   Consensus Level

    15 - Voting members
    14 - Voting members Present (2 Proxy Vote)
    8 - Quorum (Majority Total Membership)
    11 - Consensus ($\geq 75\%$ votes)
    9 – Super Majority ($\geq 2/3$ Votes)
    8 – Majority ($> 50\%$ votes)

6.3   Motion (Carried): Cooper Sheridan Training Center Minutes Rev 12 Approved

Motion: **Carried**
• 13 – For
• 0 – Against
• 1 – Abstained
Date 2015jan14 **Motion**: Cooper Sheridan Training Facility Rev 12 Approved

6.4   [138 Jones] – No change

6.5   [44 Tesmer] – No change

6.6   [43 Tesmer] – No change

6.7   [199 Holl] – No change

6.8   [94/93/113/130/131/184 Hudnut/Hudnut/Lloyd/Soderholm/Soderholm/Parrish] – No change

6.9   [150 Chang] – Section 4.4.3 Editorial (See 6.14 Motion)

Change: listing of key alarms and key automatic actions occurring and assertion that they would be expected for the scenario;

To: listing of key alarms and key automatic actions that occurred and assertion that they were expected for the scenario;

6.10   [151 Chang] - No change

6.11   [200 Holl] - No change

6.12   [Lloyd #8] Motion (Not Carried): Remove Exam Security from section 3.3.3

Motion: **Not Carried (Substantive change requires Consensus)** • 8 – For • 6 – Against • 0 – Abstained
Date 2015jan14 **Motion**:   Change the last paragraph of Section 3.3.3

From:

For components that store historical data or whose performance depends on history, requirements for freeze, run, initial condition reset, snapshot, backtrack, and examination security shall be included.

To:

For components that store historical data or whose performance depends on history, requirements for freeze, run, initial condition reset, snapshot, and backtrack shall be included.

Reason: No corresponding testing criteria in Sec 4

Reason Against:
- Weakens the minimal exam security that was present
- Prefers having in the instructor station area
- Removing broadens the scope beyond just historical components that store history
- New build value for needed simulator functionality
- Problematic to remove it
- Initially in favor when added to the standard

6.13   [195a Holl] – No change

6.14   [150 Chang] Motion (Carried): Section 4.4.3 Change Tense for "occurring" and "would be" (Substantive ?)

Motion: **Carried**
- 11 – For
- 3 – Against
- 0 – Abstained

Date
2015jan14

Motion:

Section 4.4.3 change:

listing of key alarms and key automatic actions occurring and assertion that they would be expected for the scenario;

To

listing of key alarms and key automatic actions that occurred and assertion that they were expected for the scenario;

Reason: Consistency in sentence tense

Reason Against:
- Change in requirement. Occurring and Occurred do not mean the same thing.
- Updating SBT without sufficient time to gel in the industry
- Does not fully understand the original intent with the word occurring.

6.15   AI-68 Motion (Carried): Sec. 1.2/3/5/alignment

Motion: **Carried**
- 14 – For
- 0 – Against
- 0 – Abstained

Date
2015jan14

Motion:

Replace Section 1.2 last paragraph with the following:

> The standard is organized such that simulator functional and physical requirements described in Sec. 3, "General requirements" correspond to testing requirements described in Sec. 4, "Testing requirements." The subnumbering of Secs. 3 and 4 is consistent so that corresponding paragraphs in each section address the same subject matter from a requirements and testing standpoint. Configuration management, including verification and validation, is described in Sec. 5, "Simulator configuration management."

Replace the second paragraph in Sec. 3 "General requirements" with the following:

> The overall simulator design should incorporate provisions for examination security.

Add this second paragraph to Sec. 5 "Simulator configuration management" with the following:

> A process incorporating structured software design and testing concepts shall provide control of simulator modifications. In addition, the process shall provide for verification and validation of simulator changes and configuration management capabilities.

Reason: Clarity and Section alignment

Notes:
- Sec 1.2 Section Titles added for clarity
- The paragraph added to Sec 5 was brought forward from Sec 3, leaving the exam security sentence in Sec 3.
- Deleted "performance testing" in the Sec. 5 addition. Does not delete a requirement. Performance testing is in Sec 4.

6.16   [Guha #3] – No change, see Section 6.15 [AI-68 Motion]".

6.17   Adjourned: 1730

7.   Thursday 2015 January 15 (0800)

7.1   Roll Call

Members Present:

Jim Florence
Robert Felker
Keith Welchel
F.J. (Butch) Colby
Lawrence (Larry) Vick
Frank Tarselli
SK Chang
Robert Goldman
David Goodman
Jody Lawter
Pablo Rey
Jim Sale
William Fraser

George McCullough (Absent for remainder of week)

Visitors:

Tim Dennis
Vincent Gagnon
Scott Sloan

7.2   Consensus Level

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

7.3   Industry Update – Dennis

Western Services Minutes ANS-3.5 Transition Status (2014 Annual Report):

Western Services Minutes ANS-3.5 Transition Status (2014 Annual Report):
ANS-3.5-1985   12 (17%)
ANS-3.5-1998   5 (7%)
ANSI/ANS-3.5-2009   52 (75%)

Vogtle 3/4 and Summer 2/3 simulators are not yet Plant Referenced Simulators (PRS).
Calvert Cliffs also transitioned 01january2015.

7.4   New Consensus Level

   15 - Voting members
   14 - Voting members Present
   8 - Quorum (Majority Total Membership)
   11 - Consensus ($\geq$ 75% votes)
   9 – Super Majority ($\geq$ 2/3 Votes)
   8 – Majority (> 50% votes)

7.5   [110/132 Lloyd/Jones] – No change

"Programs that utilize the simulator for purposes other than operator training and examination should identify specific functional and validation requirements for that use."

Origin:

AI 19 - Review the list below for inclusion into ANS 3.5 or other standards and basis for the recommendation:

- Engineering Assist
- Simulation Assisted Engineering
- EP
- DCS Logic Control Validation
- HFE – Human Factors Engineering
- Tech Training – I&C / Mechanical
- PR Tours
- Process Flow Diagrams
- Spec. Operating Parameters
- PRA
- SAMG

AI-47 (Motion) Revise Background adding exclusion for other programs
Purpose: To address simulator usage that is not presently addressed in the standard.
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.

7.6   [202/96/153/205/209/210/154/156 Luniewski/Wyatt/Chang/Goodman/Goodman/Goodman/Chang]: Motion (Carried) – Replace definition name "noticeable difference with "discrepancy" (Substantive ?)

Motion: **Carried**
• 12 – For
• 0 – Against
• 2 – Abstained
Date 2015jan15

Motion:

Replace

noticeable difference: Any difference in the physical attributes or dynamic response between the simulator and the reference unit that is distinguishable by an observer and confirmed by a subject matter expert.

With:

discrepancy: Any difference in the physical attributes or dynamic response between the simulator and the reference unit that is distinguishable by an observer and confirmed by a subject matter expert.

Reason: To eliminate confusion with the use of the terms "noticeable difference" and "acceptable difference."

7.7   [152 Chang] – No change

7.8   [201 Holl] – No change

7.9   [72 Stamm] – No change

7.10   [73 Stamm] – No change

7.11   [74 Stamm] – No change

7.12   [115 Lloyd] – No change

7.13   [116 Lloyd] – No change

7.14   [75 Stamm] – No change

7.15   [155 Chang] – Editorial Section 5.2.3

        change "is part" to "are parts";

7.16   [157 Chang] – No change

7.17   [158 Chang] – Editorial Appendix A.3

        Change "math" to "mathematical"

7.18   [159 Chang] – No change

7.19   [31 Stamm] – No change

7.20   New Consensus Level

> 15 - Voting members
> 14 – 13 Voting members Present + 1 Proxy
> 8 - Quorum (Majority Total Membership)
> 11 - Consensus (≥ 75% votes)
> 9 – Super Majority (≥ 2/3 Votes)
> 8 – Majority (> 50% votes)
>
> Proxy Tim Dennis for Pablo Rey

7.21   [202/96/153/205/209/210/154/156 Luniewski/Wyatt/Chang/Goodman/Goodman/Goodman/Chang]: Motion (Carried) – Replace "noticeable differences" with "discrepancies" (Substantive ? / Share)

Motion: **Carried**
• 14 – For
• 0 – Against
• 0 – Abstained

Date
2015jan15

Motion:

In the following Sections replace all occurrences of "noticeable differences" with the word "discrepancies"

> 3.4 Simulator performance testing (2)
> 4 Testing requirements (1)
> 4.1.3 Normal Evolutions (1)
> 4.2.1 Physical fidelity and human factors (1)
> 4.2.1.1 Scope of operator interfaces (1)
> 4.2.1.2 Instrumentation, controls, markings, and operator aids (1)
> 4.2.1.3 Control room environment (1)
> 4.2.2.1 Systems controlled or monitored from the control room (1)
> 4.2.2.2 Systems controlled or monitored external to the control room (1)
> 4.3.3 Other features (1)
> 4.4 Simulator performance testing (2)

Reason: Eliminate confusion between to use of the terms "noticeable difference", "discrepancy", "deficiency", "deviation", and "acceptable difference".

Note: 4.2.1 was previously updated by Motion (Change the first sentence in Section 4.2.1). This motion did not update Sec. 4.2.1.

7.22 [202/96/153/205/209/210/154/156 Luniewski/Wyatt/Chang/Goodman/Goodman/Goodman/Chang]: Motion (Carried) – Change Sec. 5.1 and delete Sec. 5.1.3 (Substantive ? / Share)

Motion: **Carried**
- 14 – For
- 0 – Against
- 0 – Abstained

Date
2015jan15

Motion:

Change Sec. 5.1 from:

A configuration management program shall be established to document the adequacy of the initial design and performance of the simulator. The configuration management program for initial simulator construction shall include:

(1) a means for establishing a simulator design baseline;

(2) a means for establishing a simulator performance benchmark;

(3) a means for identifying acceptable differences between the simulator and the reference unit.

To:

A configuration management program shall be established to document the adequacy of the design and performance of the simulator at the time the simulator is approved for use in operator training and examination. The configuration management program for initial simulator construction shall include:

(1) a means for establishing a simulator design baseline;

(2) a means for establishing a simulator performance benchmark;

(3) a means for identifying acceptable differences between the simulator and the reference unit in accordance with Sec. 5.3.

And delete Section 5.1.3.

Reason: Eliminate confusion between to use of the terms "noticeable difference", "discrepancy", "deficiency", "deviation", and "acceptable difference".

7.23   [202/96/153/205/209/210/154/156 Luniewski/Wyatt/Chang/Goodman/Goodman/Goodman/Chang]: Motion (Carried) – Sec. 5.2 and delete Sec. 5.2.1 and renumber subsections after 5.2 (Substantive ? / Share)

Motion: **Carried**
- 14 – For
- 0 – Against
- 0 – Abstained

Date
2015jan15

Motion:

Change Sec. 5.2 from:

A configuration management program shall be established to verify the adequacy of changes to the design and performance of the simulator. Simulator changes shall be performed within the context of a structured process for design, development and testing using written instructions established for control of the simulator hardware and software configuration. The configuration management program for simulator changes shall include:

(1) a means for identifying acceptable differences between the simulator and the reference unit;

> (2) a means for resolving simulator discrepancies;
>
> (3) a means for verifying and validating simulator changes;
>
> (4) a means for maintaining a simulator performance benchmark.
>
> **To**:
>
> A configuration management program shall be established to verify the adequacy of changes to the design and performance of the simulator. Simulator changes shall be performed within the context of a structured process for design, development and testing using written instructions established for control of the simulator hardware and software configuration. The configuration management program for simulator changes shall include:
>
> (1) a means for resolving simulator discrepancies;
>
> (2) a means for verifying and validating simulator changes;
>
> (3) a means for maintaining a simulator performance benchmark;
>
> (4) a means for identifying acceptable differences between the simulator and the reference unit in accordance with Sec. 5.3.
>
> **Delete Section 5.2.1 and appropriately renumber subsection numbers under Sec. 5.2.**
>
> **Reason**: Eliminate confusion between to use of the terms "noticeable difference", "discrepancy", "deficiency", "deviation", and "acceptable difference".
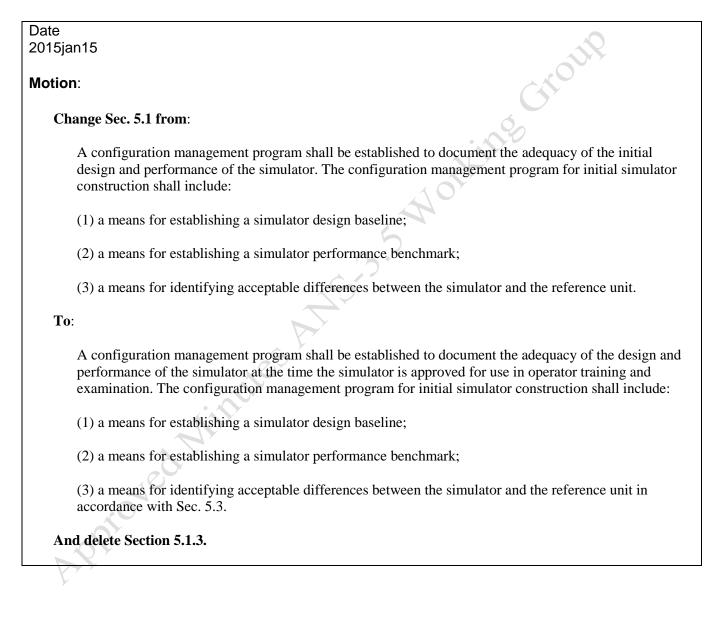
7.24   [202/96/153/205/209/210/154/156 Luniewski/Wyatt/Chang/Goodman/Goodman/Goodman/Chang]: Motion (Carried) – Change Sec. 5.3 (Substantive ? / Share)

Motion: **Carried**
• 14 – For

- 0 – Against
- 0 – Abstained

Date
2015jan15

Motion:

Change Sec. 5.3 from:

Noticeable differences shall be corrected unless a training needs assessment has determined that a change to the simulator is not required. Noticeable differences that do not impact the actions to be taken by the operator or do not detract from training are acceptable and are not required to be corrected. The following parameters should be evaluated to determine if the difference has an impact on the actions to be taken by the operators:

(1) the HSI required for normal, abnormal, or emergency procedures;

(2) the differences in performing the task on the simulator versus performing the task in the reference unit control room;

(3) the differences in operator cues, auditory and visual information presented to the operator, and the critical decisions and actions required of the operator;

(4) the function of the equipment and the potential for impacting reference unit safety, tripping the reference unit, or damaging reference unit equipment;

(5) the differences required by the team response to normal, abnormal, or emergency actions;

(6) the review of operational experience to identify the potential for operator error or the necessity for reinforcement of the skills required for the task.

Documentation of acceptable simulator differences, including the associated training needs assessment, shall be maintained as long as the noticeable difference exists.

To:

Discrepancies shall be corrected unless a training needs assessment has determined that a change to the simulator is not required. Discrepancies that do not impact the actions to be taken by the operator or do not detract from training are acceptable and are not required to be corrected. The following parameters should be evaluated to determine if the difference has an impact on the actions to be taken by the operators:

(1) the HSI required for normal, abnormal, or emergency procedures;

(2) the differences in performing the task on the simulator versus performing the task in the reference unit control room;

(3) the differences in operator cues, auditory and visual information presented to the operator, and the critical decisions and actions required of the operator;

(4) the function of the equipment and the potential for impacting reference unit safety, tripping the reference unit, or damaging reference unit equipment;

(5) the differences required by the team response to normal, abnormal, or emergency actions;

(6) the review of operational experience to identify the potential for operator error or the necessity for reinforcement of the skills required for the task.

Documentation of acceptable simulator differences, including the associated training needs assessment, shall be maintained as long as the difference exists.

Reason: Eliminate confusion between to use of the terms "noticeable difference", "discrepancy", "deficiency", "deviation", and "acceptable difference".

7.25   [202/96/153/205/209/210/154/156 Luniewski/Wyatt/Chang/Goodman/Goodman/Goodman/Chang]: Motion (Carried) – Update definition: "training needs assessment"

Motion: **Carried**
13 – For   1 – Against   0 – Abstained
Date 2015jan15 **Motion**: **Change the definition of training needs assessment from**: **training needs assessment:** An appraisal by a subject matter expert of a simulator deviation, deficiency, or modification, and its relative importance to the operator during performance of required tasks. **To**: **training needs assessment:** An appraisal by a subject matter expert of a simulator discrepancy or modification and its relative importance to the operator during performance of required tasks. **Reason**: Eliminate confusion between to use of the terms "noticeable difference", "discrepancy", "deficiency", "deviation", and "acceptable difference".

Reason Against: Removed two words deviation and deficiency.

7.26   [27/114/195 Stamm/Lloyd/Holl]: Motion (Carried) – 4.1.1 Real time and repeatability (**Substantive**)

Motion: **Carried**
13 – For   1 – Against

- 0 – Abstained

Date
2015jan15

Motion:

Replace Section 4.1.1 from:

A real time and repeatability test shall be conducted :
(1)   upon completion of simulator initial construction;
(2)   once per reference unit fuel cycle.

To:

A real time and repeatability test shall be conducted :
(1)   upon completion of simulator initial construction;
(2)   once per reference unit fuel cycle.

It shall be demonstrated that the simulator completes execution within the designed time interval, and is repeatable. In addition, it shall be demonstrated that between successive simulator tests no discrepancies exist with respect to time base relationships, sequences, durations, rates, and accelerations. Discrepancies shall be assessed in accordance with Sec. 5.

Reason: Reinstate acceptance criteria and establish option for discrepancy resolution.

Reason Against:
- Does not address public comment
- Paragraph was previously removed. Definition coves the paragraph just added.
- No additional guidance

7.27   [214 Crone] – No change

7.28   [193 Holl]: Motion (Carried) –Sec. 3.3.1 and Sec. 4.3.1 Remove Initial Condition storage capacity (Substantive ?)

Motion: **Carried**
• 14 – For
• 0 – Against
• 0 – Abstained

Date
2015jan15

Motion:

Replace the first sentence in Sec. 3.3.1, "Initial conditions" with:

The simulator shall have a sufficient number of initial conditions to support the evolutions identified in Sec. 3.1.3.

Replace the first sentence in Sec. 4.3.1, "Initial conditions" with:

It shall be demonstrated that the simulator has a sufficient number of initial conditions to support the operator training and examination program.

Reason: Outdated disc capacity requirement

7.29   Chang – Section Format Alignment 4.1.3 (Editorial)

In Sec. 4.1.3 Swap The lead in sentence and

Change Sec 4.1.3 from:

Approved

It shall be demonstrated that the reference unit evolutions are conducted in a continuous manner without any mathematical model changes**.**

Normal evolutions shall be conducted:

 (1) upon completion of simulator initial construction;

 (2) once per reference unit fuel cycle for items (1) through (3) listed in Sec. 3.1.3.

To:

Normal evolutions shall be conducted:

(1) upon completion of simulator initial construction;

(2) once per reference unit fuel cycle for items (1) through (3) listed in Sec. 3.1.3.

It shall be demonstrated that the reference unit evolutions are conducted in a continuous manner without any mathematical model changes.

7.30   [78 Stamm] – Not individually considered; his comment was to make all other Stamm comments substantive.

7.31   [119 Turnipseed] – Editorial Appendix B

Editorial Change 1500 psia - 2500 psia to 2500 psia - 1500 psia

7.32   [77 Stamm] – No change

7.33   [129 Soderholm] – No change

7.34   [213 Matsumoto] – No change

7.35   [117 Lloyd] – No change

7.36   [204 Brooks] – No change

7.37   Felker – Foot note discussion in Sec 3.4.2

Discussion on the language below
Intent is to clarify that the user can continue to utilize the benchmark data that has been utilized in the past.
Legacy plants can continue to do business as in the past
Post Appendix B deletion, there may be confusion concerning benchmark use

---

3.4.2   Simulator transient testing
 Deleted
Simulator transient testing shall be conducted to confirm overall simulator model completeness and integration.
Simulator transient performance shall be evaluated 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 use 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.

Use of a previously selected set of transients for which performance benchmark ~~baseline~~ data have been established may be acceptable.

Discussion will resume on Friday.

7.38   Adjourned: 1720

8. **Friday 2015 January 16 (0800)**

8.1 Roll Call

Members Present:

Jim Florence
Robert Felker
Keith Welchel
F.J. (Butch) Colby
Lawrence (Larry) Vick
Frank Tarselli
SK Chang
Robert Goldman
David Goodman
Jody Lawter
Pablo Rey (Proxy: Tim Dennis)
Jim Sale
William Fraser

Visitors:

Tim Dennis

8.2 Consensus Level

15 - Voting members
14 – 13 Voting members Present + 1 Proxy
8 - Quorum (Majority Total Membership)
11 - Consensus (≥ 75% votes)
9 – Super Majority (≥ 2/3 Votes)
8 – Majority (> 50% votes)

Approved

Proxy Tim Dennis for Pablo Rey
Visitor: Mark I. Terry (WSC)

8.3   Felker (continued) – Foot note discussion in Sec 3.4.2

Discussion on the language below
Intent is to clarify that the user can continue to utilize the benchmark data that has been utilized in the past.
Legacy plants can continue to do business as in the past
Post Appendix B deletion, there may be confusion concerning benchmark use for legacy simulators

---

3.4.2   Simulator transient testing
 Deleted
Simulator transient testing shall be conducted to confirm overall simulator model completeness and integration.
Simulator transient performance shall be evaluated 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 use 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.

Use of a previously selected set of transients for which performance benchmark ~~baseline~~ data have been established may be acceptable.

8.4   Motion (Carried): Sec 3.4.2 Clarify Performance Testing Benchmark selection for Legacy Simulators (Share)

Motion: **Carried**
- 12 – For
- 2 – Against

• 0 – Abstained
Date 2015jan15 **Motion**: **Add the following sentence prior to the last sentence in the second paragraph in Sec. 3.4.2** Previously selected transients for which performance benchmark data have been established may be used. **Reason**: Add clarity to the intent of simulator performance testing. Legacy users may continue to utilize Appendix B transients and/or other benchmark transients/data previously utilized under previous additions of the standard.

Reason Against:
   Does not add value and may add confusion
   Invites unintended consequences that have not been considered

8.5 [118 Lloyd] – Response Sec 7.10 minutes April 1-5, 2013 meeting

Reduction of ANSI/ANS-3.5-2009 scope in Section 1.1, "Scope" With regard to this comment refer to the resolution of Stamm Comment #23 Deletion of ANSI/ANS-3.5-2009 required malfunctions in Section 3.1.4, "Malfunctions" With regard to this comment refer to the resolution of Lloyd Comment # 112 Deletion of ANSI/ANS-3.5-2009 Appendix B, 'Guidelines for the Conduct of Simulator Operability Testing" With regard to this comment refer to the resolution of Lloyd Comment #117. Sentence added to Sec 3.4.2 second paragraph to further clarify intent.

8.6 Parking Lot Items

Bob Felker	Is transient testing an appropriate method to confirm overall simulator model completeness and integration? Background - If one examines the original intent of transient testing, it was not intended to ensure the simulator transient performance can match direction and trend of the output of another code for severe transients. Transients were used to demonstrate the actual intent of operability testing, to ensure that overall model completeness and integration had been achieved. Action - Is transient testing the appropriate method to ensure overall model completeness and integration is achieved?
Jim Sale	What guidance should be provided in regards to exam security? Background - A public comment was made during the development of the ANS-3.5-2014 that the words "examination security" should be removed from section 3.3.3 [Lloyd#8]. The working group questioned as to whether ANS-3.5 should address examination security or not. This question could not be resolved within the allotted meeting time during deliberation in Frederick, MD, the week of January 12, 2015. A motion was made to remove the words "examination security" from section 3.3.3. The motion was not carried due to inability to achieve a consensus (ANS 3.5 Working Group Meeting Minutes American Nuclear Society Western Services Corporation, Frederick, MD 2015 January 12-16). Action - (1) Evaluate use of ANS-3.5-201x for addressing examination security standards, and (2) if inclusion of "examination security" is to

	remain in ANS-3.5, determine the extent by which the standard should address examination security from a simulator design perspective and determine the appropriate section(s) to modify. The intent is not to address the administrative nature of examination security requirements, but rather how simulator components that store historical data or whose performance depends on history should be addressed in regards to examination security.
George McCullough	How do we document "sound technical basis" in regards to Section 3.1.4? Do we need a malfunction cause & effects document for each malfunction? Background – The working group added a second sentence "Each malfunction shall have a valid cause based upon a sound technical basis." to the lead in paragraph for Section 3.1.4. This sentence came from a motion from the June 7-10 2011 meeting in Cranberry, PA. Reasons: • The Standard is silent on Malfunction causes. • Adding a "cause" for each listed malfunction enhances the technical aspects of the standard and therefore increases simulator fidelity performance. Action – Given that the current standard now has a requirement for a valid malfunction cause, how will that requirement be verified or documented. Should this be documented in Section 5.1 Simulator Baseline similar to assumptions and simplifications? Evaluate the need for inclusion in Section 5.1 of a malfunction cause & effects documents or other suitable documentation.
Bob Felker George McCullough Jody Lawter	How is repeatability applicable to DCS systems?

	While not directly related to Holl Comment # 198, the working group discussed that various repeatability requirements in the Standard may not be achievable in DCS designs; the working group should consider this question in the next edition of the Standard. Background - By its very nature, any distributed computer architecture is not repeatable unless specifically synchronized by something such as a hardware interrupt. Furthermore, 6 equation codes such as RELAP are designed to permit the code to catch up with respect to real time if the code requires multiple iterations to converge on a given solution. Again, this is not repeatable nor is it in real time while this anomaly is in progress. Action - Should the standard "care" and should the standard recognize these departures from real time performance.
Dave Goodman	Define "fully integrated", "partially integrated" and "standalone" in regards to Sections 3.4 & 5.2.3.2. Background - The terms "fully integrated", "partially integrated", and "stand-alone" are not defined or explained in the standard. The mode of system operation applicable for each performance test should result from the specified test requirements and acceptance criteria. Action - Remove all references to "fully integrated", "partially integrated", and "stand-alone" mode of operation from Sections 3.4 and 5.2.3.

8.7   Adjourned: 1315

9. **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, 8th 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.