ANS 3.5 Working Group Meeting Minutes
Exitech – Maryville, TN

2003 July 21-24

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2 Next Meeting

Location: Exelon Generation, Kennett Square, PA
Airport: Philadelphia International
Date: Oct 27, 2003

- Monday 8:30pm-5:30pm
- Tuesday 8:30am-5:30pm
- Wednesday 8:30am-5;30pm
- Thursday 8:30am-5:30pm
- Friday 8:30am – 12pm

3 Motions

2003Jul21 Description Motion to accept minutes Rev 07 as amended.	Motion: **Carried (Unanimous)**
McCullough AI-100 Core Performance Testing **2003Jul22** Amended Motion Delete Section 3.1.3 Bullet 5 (5) Unit performance testing such as heat balance, determination of shutdown margin, and measurement of reactivity coefficients and control rod worth through the use of permanently installed instrumentation Modify Section 4.1.3.2 **4.1.3.2 Normal Evolutions.** The performance of procedures on the simulator shall be compared and demonstrated to represent correctly the response of the reference unit at the same power level consistent with reference unit procedures and data availability	Motion: **Not Carried** • 5 – For • 3 – Against • 4 – Abstained
Neis **2003Jul24**	Motion: **Carried** • 11 – For • 1 – Against

AI-101 New wording should add clarity that deviations must be assessed and not just documented. 3.2.1.4 Simulator Control Room Deviations Where physical fidelity and human factors deviations exist between the reference unit and the simulator, such deviations may remain if a training needs assessment is performed in accordance with 4.2.1.4.	• 0 – Abstained
Dennis **2003Jul21** Motion of the Chair: Accept Cox resignation (Cox recognized as Contributor in final Standard)	Motion: For -11 Against – 1 Abstain - 0
McCullough **2003Jul24** AI-100 Closed Accept changes to sections: 3.1.5, 4.1.5, 4.4.3.1, 5.3.2	Motion: Carried For -11 Against – 1 Abstain - 0

4 Action Item Activity

104	Review the parliamentarian procedure for motion approval (75% Consensus Rule of the Chair) Rule of the Chair: Interim Voting (Motions) shall be by Consensus Action: Larry will review and advise at future meetings	Vick
105	Action Item: Incorporate technical writing editor modifications for committee review Refer to Colby AI-102 handout (Comment 1 and 2) concerning technical editor review and suggested changes	Shelly Neis Koutouzis
106	Working Group will review tech editing markup Marked up version was distributed to committee members Comments to Shelly by 2003Sep01	Committee
107	Determine what may be acceptable performance test documentation and evaluation test results documentation to take credit for a scenario-based test. Provide a white paper to the Working group for discussion at the next meeting.	Wyatt – Lead Neis Vick Koutouzis Havens Florence
108	Review Section Comparison Section 3.0 Section 3.1 Section 3.1.1 Section 3.1.2 Format of change: • Reline changes (Track Changes)	Felker Vick

	• Add "why change is made" comment for each change • Email changes to Florence for consolidation by 2003Oct01 • Be prepared to present to WG at next meeting	
109	Review Section Comparison Section 3.1.3 Section 3.1.4	Havens McCullough
110	Review Section Comparison Section 3.2	Welchel Paris/Noe
111	Review Section Comparison Section 3.3	Neis Kozak
112	Review Section Comparison Section 3.4	Florence Tarselli Chang
113	Appendix B Revision to Appendix B will address requirements as a result of AI-100	Havens McCullough Tarselli Kozak

5 Visitors

Visitor	Date	Affiliation	Email, Phone Fax
	2003Jul21		Email: Phone: Fax:
Frank Tarselli	2003Jul21,22	PO Box 467 Berwick, PA 18603	Email: fatarselli@pplweb.com Phone: 570.542.3551 Fax: 570.542.3855
William Tessmer	2003Jul21,22	Data Systems and Solutions 6429 Lochridge Rd Columbia, MD 21044	Email: tessmer@ds-s.com Phone: 410.808.2331 Fax: 301.695.3057
Don Noe	2003Jul21	RNI Technologies 107 Industrial Dr. Suite E St Marys, GA 30558	Email: dnoe@rnitech.com Phone: 912.596.6730 Fax: 912.576.6734
Mike Wyatt	2003Jul21	Exelon 200 Exelon Way Kennett Square, PA	Email: micheal.wyatt@exeloncorp.com Phone: 610.765.5659 Fax: 610.755.5807

6 Roll Call

Present	Member	Address	Notes-Proxy	Email-Phone-Fax
Present	Timothy Dennis **Chairman**	P. O. Box 119 645 Lehigh Gap St. Walnutport, PA 18088-0119		Email: a243@yahoo.com Phone:610-767-0979 Fax: 610-767-7095
Present	Jim Florence **Vice Chairman**	Nebraska Public Power District P. O. Box 98 Brownville, Nebraska 68321		Email: jbflore@nppd.com Phone: 402-825-5700 Fax: 402-825-5584
Present	Keith Welchel **Secretary**	Duke Power Company Oconee Training Center- MC:ON04OT 7800 Rochester Hwy Seneca, SC 29672		Email: kwelchel@duke-energy.com Phone: 864-885-3349 Fax: 864-885-3432
Present	F.J. (Butch) Colby **Editor**	CAE Inc. 8585 Cote-de-Liesse P.O, Box 1800 Saint-Laurent Quebec, Canada H4L 4X4		Email: butchcolby@cs.com Email: butch.colby@cae.com Phone: (410) 381-3557 Fax: (410) 381-2017
Present	William M. (Mike) Shelly **Style Editor**	Entergy Services, Inc. 1340 Echelon Parkway Jackson, MS 39213-8298		Email: wshelly@entergy.com Phone: 601-368-5861 Fax: 601-368-5894
Present	Larry Vick **Parliamentarian**	US NRC, Office of Nuclear Reactor Regulation 09-D24 Washington, DC 20555		Email: Lxv@nrc.gov Phone: 301-415-3181 Fax: 301-415-2222
Preset	George McCullough	American Electric Power One Cook Place Bridgman, MI 49106		Email: gsmccullough@aep.com Phone: 269-466-3343 Fax: 269-466-3388 Cell: 269-449-5481
Proxy	Hal Paris	GSE Systems 8930 Stanford Blvd. Columbia, MD. 21004		Email: hal.paris@gses.com Phone: 410-772-3559 Fax: 410-772-3595
Present	Robert Felker	EXITECH Corporation 102 E. Broadway Maryville,TN 37804		Email: rfelker@EXITECH.com Phone: 410-461-4295 Fax: 410-730-4008
Present	Allan A. Kozak	Dominion Generation North Anna power Station P.O. Box 402 Mineral, VA 23117-0402		Email: allan_kozak@dom.com Phone: 540-894-2400 Fax:540-894-2441
Present	Dennis Koutouzis	INPO 700 Galleria Parkway, NW Atlanta, GA 30339-5957		Email: koutouzisjd@inpo.org Phone: 770-644-8838 Fax: 770-644-8120

Present	Oliver Havens, Jr	PSEG Power Hope Creek Generating Station, NTC 244 Chestnut St. Salem, NJ 08079		Email: Oliver.Havens@pseg.com Phone: 856-339-3797 Fax: 856-339-3997
Resigned	Kevin Cox	Exelon Generation Dresden Nuclear Power Station 6500 North Dresden Rd. Morris, IL 60450		Email: kevin.cox@exeloncorp.com Phone: 815-942-2920 x-2109 Fax: 815-941-7121
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	Jane Neis	R.E. Ginna Nuclear Power Plant Training Center 1517 Lake Rd Ontario, NY 14519		Email: jane_neis@rge.com Phone: (585) 771-6646 Fax: (585) 724-8278
NA	Suriya Ahmad	Standards Administrator American Nuclear Society 555 North Kensington avenue La Grange Park, IL 60526-5592		Email: sahmad@ans.org Phone: 708-579-8269 Fax: 708 352 6464

7 Action Item List

7.1 Action Item Quick-look Table

Open	Complete	Carried to 2008

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~~	~~70~~
~~71~~	~~72~~	~~73~~	~~74~~	~~75~~	~~76~~	~~77~~	~~78~~	~~79~~	~~80~~
~~81~~	~~82~~	~~83~~	~~84~~	~~85~~	~~86~~	~~87~~	~~88~~	~~89~~	~~90~~
~~91~~	~~92~~	~~93~~	~~94~~	~~95~~	~~96~~	~~97~~	~~98~~	99	~~100~~
~~101~~	102	103	104	105	106	107	108	109	110
111	112	113							

7.2 Action Items

No.	Status	Date	Assigned To:	Work Assignment
1	**Dennis** contacted Mike Wright. No Input from Mike. The Scope change should be approved soon. 2001Apr05 Scope statement will be revised based on SubCommittee-1 comments that ANS 3.1 is not Training Criteria	Priority 1 – PINS form will be completed by next meeting (15min)	**Dennis**	DOE Nuclear Facility vs. Power Plant Simulators – Check with ANS 3. Inquire as to whether other simulator issues are addressed/referenced in other ANS 3 standards Dennis will contact Mike Wright (ANS-3 chair). Are DOE issues referencing simulators? 2001Apr05 Dennis Dennis attended the SubCommittee-1 meeting and was informed the PINS form needs to be completed. Additionally, the scope statement states ANS 3.1 establishes Training Criteria, but does not. Accepted 3.5 Scope change and Appendix D **2000mar09** Chandler Comments (NUPPSCO) relating to DOE simulators. We need to resolve Open NUPPSCO comments from the 1998 standards approval process.
8		Priority 1 – PINS form will be completed by next meeting (15min)	**Dennis**	Contact Mike Wright about the scope change Scope and Background submitted to Shawn and Mike. No schedule at present for ANS-3 to review scope change. 2002Oct29 PINs form completed and ready to send to ANS. 2001Apr05

				Contacted Sub-Committee-1 and Dennis needs to complete PINS forms;
99			**Vick Koutouzis**	Vick and Koutouzis will have Standard reviewed by Technical Editors for consistency 2003Mar10 Initial Action Item.
102			**Colby Paris Dennis Koutouzis Shelly Cox Vick - Coordinator**	Review Sections 3, 4, 5 and 6 for alignment and consistency and possible merge. **2003Jul21** **Colby** **Distributed comparison and groups were formed to review and report next meeting** Inform Tim Cassidy that Sections are under review. Options: • This Standard • Next Standard Formatting • Keep the Sections separate but aligned • Merge the Sections **2003Mar10** **Initial Action Item.**
103			**Colby**	Will create two Revised Standards Versions Version 1 1998 versus 2003 No History Version 2 1998 versus 2003 with Revision History

				2003Mar10 **Initial Action Item.**
104			**Vick**	Review the parliamentarian procedure for motion approval (75% Consensus Rule of the Chair) Rule of the Chair: Interim Voting (Motions) shall be by Consensus Action: Vick will review and advise at future meetings **2003Jul24** **Initial Action Item**
105			**Shelly** **Neis** **Koutouzis**	Incorporate technical writing editor modifications for committee review Refer to Colby AI-102 handout (Comment 1 and 2) concerning technical editor review and suggested changes **2003Jul24** **Initial Action Item**
106			**Shelly-Lead** **Committee**	Working Group will review tech Editing markup Marked up version was distributed to committee members Comments to Shelly by 2003Sep01 **2003Jul24** **Initial Action Item**
107			**Wyatt-Lead** **Neis** **Vick** **Koutouzis**	Determine what may be acceptable performance test documentation and evaluation test results documentation to take credit for a scenario-based test. Provide a white paper to the Working group for discussion at the next meeting.

			Havens **Florence**	**2003Jul24** **Initial Action Item**
108			**Felker** **Vick**	Review Section Comparison Section 3.0 Section 3.1 Section 3.1.1 Section 3.1.2 Format of change: • Reline changes (Track Changes) • Add "why change is made" comment for each change • Email changes to Florence for consolidation by 2003Oct01 Be prepared to present to WG at next meeting **2003Jul24** **Initial Action Item**
109			**Havens** **McCullough**	Review Section Comparison Section 3.1.3 Section 3.1.4 **2003Jul24** **Initial Action Item**
110			**Welchel** **Paris/Noe**	Review Section Comparison Section 3.2 **2003Jul24** **Initial Action Item**
111			**Neis** **Kozak**	Review Section Comparison Section 3.3 **2003Jul24**

				Initial Action Item
112			**Florence** **Tarselli** **Chang**	Review Section Comparison Section 3.4 **2003Jul24** **Initial Action Item**
113			**Havens** **McCullough** **Tarselli** **Kozak**	Appendix B Revision to Appendix B will address requirements as a result of AI-100 **2003Jul24** **Initial Action Item**

8 Working Group Procedural Rules

8.1 Rules of the Chair

- Interim Voting (Motions – Substantive Changes) shall be by Consensus (75% [rounded up] of quorum in session)
- The Chairman 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 not have voting privileges;
- Members attend the full length of the meeting;
- Word 7.0 will be the document format;
- The Host will collect and send all handout material for absent members without proxy;
- Robert's Rules of Order will be used as a general guide;
- Guest Individual Contributors may receive working copy of the draft standard based on need;
- Chair approval required for distribution of working copies of the draft standard;

8.2 Rules Enacted by the Working Group

Missing two consecutive meetings in a row with out representation could result in loss of membership on the committee.

9 Monday 2003Jul21 (Day 1)

9.1 Introduction to Exitech (Felker)

Lloyd – Introduction and Welcome.

9.2 Opening Comments (Dennis):

- Called Meeting to order
- Welcomed Visitors
- 13 Voting members
- 10 Members for consensus (75% Rule of the Chair)
- WG 3.5 has requested a one year extension from ANS-21. No justification is required for a one year extension. Requesting another year, will require written justification. Standard is valid for 5 years from the date of issue. The WG will need to finish business by calendar year 2003 in order for approval bodies to complete the necessary work.

9.3 Roll Call

Absent Members (2):

Cox (2) Proxy Mike Wyatt
Paris (1) Proxy Don Noe

Voting: 75% of 11 members present requires 9 for consensus.

Discussion on simple majority versus consensus voting: **AI-104** Larry will review and advise at future meetings.

9.4 Review of Meeting minutes Dated 2003Mar10

- Motion to Accept Minutes Rev 07 as amended
- Minutes Rev 07 Accepted as amended

9.5 Officers:

Officer Reports:

- Dennis
  - Attended MANTG meeting
  - Attend NSFC meeting in San Diego. Group is reorganizing. Trying to facilitate smoother operation of standard committees. Significant DOE involvement at this level.
  -
- Florence:
  - Nothing to report
- Welchel:
  - Nothing to report
- Colby:
  - Distributed a list of approved changes to the 98 standard.
  - Present Standards revision is Eleven.
  - New revision after this meeting will be Twelve.

9.6 Review of Mission Statement: (Dennis)

<u>Action Item Screening Criteria:</u>

Committee agreed to use the screening criteria for considering standard language changes.

If the action facilitates clarification of the existing document

AND
If Clarification results in minimal impact to the 1998 standard

AND
If work is doable by December 31, 2003

THEN
ACCEPT Action Item for 2004

ELSE
TABLE Item until 2009

9.7 AI-99 Koutouzis/Vick

- Comment 1 – Koutouzis (INPO technical writer review)
  - Review was completed by non-standards
  - Standards document is wordy
- Comment 2 – Vick (INPO technical writer review)
  - Generally readable
  - Verb Tense needs work

Colby – These changes are minor and therefore they should be included in the new standard.

9.8 AI-102 Colby Review of Section 3 and Section 4 testing versus testing requirements

Refer to Appendix for AI-102 handout

Colby – Reviewed examples where requirements may be in Section 3 and testing may be in Section 4. Also reviewed recommended changes.

Florence – Committee should divide into groups and review the Section alignments as presented by Colby.

Expectations:

Section 4 defines test and criteria that satisfies the physical and functional requirements of Section 3

Sections	Group
3.1 3.1.1 3.1.2	Vick Felker
3.1.3	Havens McCullough
3.2	Welchel Noe
3.3	Neis Kozak
3.4	Tarselli Chang Florence

9.9 Section 3.1.4 Item 20 - Felker

Felker questioned Item 20 in Section 3.1.4. Are members testing this as individual component failures?

On the 1985 standard, these were tested individually.

9.10 Scenario Based Testing - Koutouzis

Koutouzis presented Power Point Slide Show

Florence – Do INPO evaluators understand SBT

Koutouzis –

INPO looks mainly from a performance standpoint and would not necessarily delve into SBT unless performance problems were noted that would trigger concern and a more in-depth look.

As a general rule, evaluators will look at simulator Work Request back logs and plant modifications to get a feel for the input and work flow. This would get more scrutiny if there were observed deficiencies or interviews with operators indicated potential fidelity, realism or instructor preparation weaknesses.

Koutouzis – Proposed two SBT questions for consideration

What are the minimum documentation requirements?

What would be the most appropriate method for communicating a standard?

More than just a scenario validation checklist and SME input on simulator performance will probably be needed to SBT as part of the overall simulator test program. There will probably need to be some level of data analysis by simulator groups depending on how comprehensive the validation process is at each site. Validation practices vary over the industry. Weaker validation practices at some sites may require a higher degree of simulator group analysis of selected data. Strong validation practices may require less data analysis. Each site simulator group will probably have to assess their training departments' validation practices to determine the extent of their sites specific analysis needs.

More may be asked of instructors when validating scenarios. Instructors will need to understand better how they fit into the simulator testing process. Some training organizations, and some simulator groups, have the impression that simulator testing is being turned over to training. Simulator groups need to better understand and communicate that training needs to better document what they do during validation. For example, documentation of procedures being used, entry conditions being satisfied and simulator parameter performance during the validation may be necessary. Additional analysis of selected parameters for a given scenario may need to be conducted by the simulator group.

Felker –

Is it possible to separate scenario validation and SBT?

The 1985 testing methods were not finding the problems that SBT is discovering.

Tarselli –

SBT introduces the human element into the scenario which results makes the scenario significantly more difficult to compare as is completed with Operability testing.

9.11 Adjourned 2003Jul21 at 1730

10 **Tuesday 2003Jul22 (Day 2 8:30am)**

10.1 Parliamentary Procedure - Vick

Kozak – Recommends that we continue with consensus defined as 75% voting members present

Abstention does not change the quorum count.

Consensus is required for:

- All Standard changes other than Style Editing
- Substantive changes
- 75% rounded up

10.2 AI-105 Technical Editing Example - Shelly

Shelly will make editorial changes suggested in the INPO/NRC editorial review and present to committee for later review.

Welchel expressed concern the standard will be a mix of active and passive voice and that with the limited time, the committee should be concerned with priority items.

AI-105 (Shelly) - Incorporate suggested technical editor's modifications for committee review

10.3 AI-100 Core Performance Testing - McCullough

McCullough gave history of Core Performance Testing issue.

Core Performance driving influence: Rule Change

How Core changes are handled with the 1998 Standard:

Core Model Change – Presently handled by Standard

Core Cycle Update – Note presently addressed

Havens lead discussion of Core Performance testing (Refer to Appendix AI-100) and presented possible changes to the Standard.

McCullough – Core parameters are determined differently by different plants

Tarselli – Consider using the plant procedures from CSD (Cold Shutdown) to FPSS (Full Power Steady State) to validate core thermal power.

Havens – This will not be sufficient.

Florence – The only testing that should be done is to use the procedures that operators already use.

Tarselli – We need to use more procedures than just operating procedures. i.e. Reactor Engineering procedures for Core Reactivity Anomaly Check such as In Sequence Critical, etc,

Koutouzis – How often should the simulator core performance testing be completed. One case is where a unit is up-rated and the core is deviating from core predicted data, indicating potential weaknesses in plant core design change or modification processes.

Recommended changes would not require a core reload, but would require that a core performance test be conducted on the present load and compare the results against the new core load parameters.

Performance criteria will not be addressed with these changes

McCullough – Their site validates against predicted data and after startup, then validates against actual unit core data

Vick - Simulator core performance testing should be validated against unit data.

Havens – We need to make sure no Core specific type criteria (PWR BWR) is placed in the Standard. We should not be developing criteria for fuel/core\NSSS hydraulic performance. Criteria vary among fuel vendors as well as among NSSS vendors. Use should be made reference unit core testing criteria, or other industry standards for criteria.

Felker – Section 3.13 Bullet 5 should stay unit performance testing and core performance testing should be added as Bullet 6

Florence – The simulators were required to support the conduct of reference unit evolutions (Normal Evolutions). We have shown that simulators are capable of performing normal evolutions via the initial certification process. Normal evolutions are not part of Operability Testing. The normal evolutions are conducted in operator training via the SAT and essentially are performed via SBT. Recommend item 5 under 3.1.3 be removed from Normal Evolutions and added to Operability Testing (Steady State, SBT and Core Performance Testing).

McCullough – Why was a change made from 1985 to 1993 in Section 3.1.3 that changed core performance testing to unit performance testing?

Felker – In some instances heat balance meant more than just the core, basically is it the Primary and Secondary.

A discussion ensued concerning where to place core performance testing. Since this is not a general requirement, the discussion was concerned with dealing with whether or not to move Bullet 5 in Section 3.13 to another location.

Wyatt - Heat balance testing is an evolution. It's a procedure based activity.

Motion – (McCullough) (See Amended Motion below)

Delete Section 3.1.3 Bullet 5

(5) Unit performance testing such as heat balance, determination of shutdown margin, and measurement of reactivity coefficients and control rod worth through the use of permanently installed instrumentation

Motion Discussion:

McCullough –

- This section will not be located somewhere else
- Intent is to add another section for Core performance testing.

Amended Motion – (McCullough)

Delete Section 3.1.3 Bullet 5

> (5) Unit performance testing such as heat balance, determination of shutdown margin, and measurement of reactivity coefficients and control rod worth through the use of permanently installed instrumentation

Modify Section 4.1.3.2

> **4.1.3.2 Normal Evolutions.** The performance of procedures on the simulator shall be compared and demonstrated to represent correctly the response of the reference unit at the same power level consistent with reference unit procedures and data availability

Vote (Not Carried):
For – 5
Against – 3
Abstain - 4

Felker – Does Fed Regulation require a most recent core load
Vick – No.

After much discussion, the committee revised several sections incorporating core performance Testing.

Kozak – We still haven't defined what should be tested. The industry is asking for the committee to define what is a good "Core Performance Test"

Core Performance Testing discussion will continue as the first item on Wednesday.

10.4 Adjourned 2003Jul22 at 1730

11 **Wednesday 2003Jul23 (Day 3 8:30am)**

11.1 AI–100 - Core Performance Testing Section 3.1.5 - McCullough

Resumed discussion of adding Core Performance Testing to the standard.

Lengthy discussion concerning whether or not to include a section 3.1.5 Reactor Core Performance Testing. Several straw votes were taken

McCullough took a straw poll on whether or not the standard should include Section 3.1.5 "Reactor Core." The committee was basically unanimously in favor of adding Section 3.1.5

Motion – (McCullough)

Modify Section 3.1.3 - Remove Item 5

3.1.3 (1) Unit startup from cold shutdown to rated power conditions; (2) Unit shutdown from rated power to cold shutdown conditions; (3) Load changes; (4) Operator-conducted surveillance testing on safety related equipment or systems.

Add Section 3.1.5

3.1.5 Reactor Core. The simulator shall utilize models relating to the nuclear and thermal hydraulic characteristics that replicate the reference unit within the limits of simulation.

Modify 4.1.3.2 to read

> 4.1.3.2 Normal Evolutions. The performance of procedures on the simulator shall be compared and demonstrated to represent correctly the response of the reference unit at the same power level consistent with reference unit procedures and data availability

Add 4.1.5

> 4.1.5 Reactor Core Performance Testing. It shall be demonstrated that simulator response during conduct of core performance testing meets the reference unit acceptance criteria.

Modify Section 4.4.3.1 to read

> 4.4.3.1 Simulator Operability Testing. A simulator operability test[1] shall be conducted on a frequency as indicated below. A record of the conduct of this test and its evaluation shall be maintained.
>
> The intent of the operability test is to demonstrate overall simulator model completeness and integration by testing the following:
>
> (1) Simulator steady-state performance (once per year on a calendar basis);
> (2) Simulator transient performance for a benchmark set of transients (once per year on a calendar basis), and;
> (3) Simulator Reactor Core Performance (each reference unit fuel cycle)

Comment [bjc1]: Approved change of deleting the words "on either" and "or certification" from April 22-25 meeting. Action item # from April 22-25 meeting. Action item #40. The rule change has eliminated the requirement for certification and the option of either per year or calendar basis.

[1] Appendix B provides examples of acceptable simulator operability tests.

The working group discussed whether testing is required when the unit fuel cycle changes. Havens recommends that simulator core cycle testing is required when the present simulated core cycle acceptance falls within the acceptance criteria.

Amended Motion – (McCullough)

Modify Section 3.1.3 - Remove Item 5

> 3.1.3
>
> (1) Unit startup from cold shutdown to rated power conditions;
> (2) Unit shutdown from rated power to cold shutdown conditions;
> (3) Load changes;
> (4) Operator-conducted surveillance testing on safety related equipment or systems.

Add Section 3.1.5

> 3.1.5 Reactor Core. The simulator shall utilize models relating to the nuclear and thermal hydraulic characteristics that replicate the reference unit within the limits of simulation.

Modify 4.1.3.2 to read

> 4.1.3.2 Normal Evolutions. The performance of procedures on the simulator shall be compared and demonstrated to represent correctly the response of the reference unit at the same power level consistent with reference unit procedures and data availability

Add 4.1.5

4.1.5 Reactor Core Performance Testing. It shall be demonstrated that the simulator response during conduct of core performance testing meets the reference unit acceptance criteria.

Modify Section 4.4.3.1 to read

4.4.3.1 Simulator Operability Testing. A simulator operability test[2] shall be conducted on a frequency as indicated below. A record of the conduct of this test and its evaluation shall be maintained.

The intent of the operability test is to demonstrate overall simulator model completeness and integration by testing the following:

(1) Simulator steady-state performance (once per year on a calendar basis);
(2) Simulator transient performance for a benchmark set of transients (once per year on a calendar basis), and;
(3) Simulator Reactor Core Performance (each reference unit fuel cycle)

Comment [bjc2]: Approved change of deleting the words "on either" and "or certification" from April 22-25 meeting. Action item # from April 22-25 meeting. Action item #40. The rule change has eliminated the requirement for certification and the option of either per year or calendar basis.

Modify Section 5.3.2 to read

5.3.2 Performance-Based Simulator Changes. Simulator changes that are based upon items such as revised reference unit performance data, a reference unit core reload, student feedback, simulator performance tests, and LERs, and that are determined to be relevant to the training program as a result of a training needs assessment, shall be implemented based upon their training impact.

Comment [BC3]: Approved change from Training Needs Assessment to Training Impact Assessment from March 08-10, 2000 - Action item #48. The term Needs may have other meanings based on the reader. The term Needs carries additional baggage and has other connotations. The working group agreed that the word impact better describes the intent of requiring a Training Value Assessment. NOTE: The Training Needs Assessment is based on whether training decides that simulation is the best way to teach according to guidance provided by the accredited training program. Approved change back to Training Needs Assessment from October 25-26, 2000 meeting. Action item #48.

[2] Appendix B provides examples of acceptable simulator operability tests.

Vick - Point of order – This motion contains language from a Motion that was "Not carried" in a vote yesterday (Section 3.1.3 and Section 4.1.3.2). Vick stated this motion is voting again on a Motion that was previously "Not Carried" during this session.
The Chair overruled the Point-of-Order based on the need to bring the issue to resolution and to move on.

The Chair ruled to Table the Motion, until tomorrow morning, in order to give committee members additional time to consider the Motion.

11.2 Scenario Based Testing - Koutouzis

Koutouzis - Distributed examples is Utility SBT checklist forms, training association SBT guideline.

Potential impact on training using SBT. There will be some impact, but the current perception is there could be a **significant** impact

The intention is to take testing credit when training is validating the scenario

There's a perceived burden on training using SBT

Validation is an Instructor function

Koutouzis reviewed several utility supplied SBT Checklist forms

- One training association guideline appears to be using the Checklist to determine whether or not the Scenario can be used in training and not whether the scenario validation indicated a passed or failed simulator test.

- Present words are probably too simulator specific and this makes it difficult for training to interpret in the training validation context. Need to be sure validation is done first to ensure the scenario can be used for training or examination. If credit is to be taken as a SBT, other data or documentation may be needed.

Florence gave a quick summary of SBT. As written it could be misinterpreted that all scenarios have to be validated before used in training. (Training Context and not Simulator Testing Context)

Felker – Utilities may run any scenario they want at any time… validated or not. But utilities must validate the scenario before being used in training before they can take **"testing credit"**.

Felker – "tested" in Appendix E bullet (1) really refers to validation but the committee decided not to use validation since validation is used earlier in V&V

Koutouzis

- There are two independent processes going on during validation
  (1) Scenario Validation from the training standpoint
  (2) Scenario testing from the ANS 3.5 standpoint

Vick

- For SBT NRC is coming from a standpoint of performance testing
- Over relying on SME's and not comparing to plant data
- SBT reviewed today are no different to those used to evaluate operators, no empirical data used.
- NRC views SBT as operability testing and supporting data must be used to validate the scenario against.

Four areas of concern from the NRC as summarized by Koutouzis:

- There may not be enough emphasis on acceptance criteria given the varying levels and limitations of validation in the industry
- There could be an over reliance on SME's opinion
- Current validation processes at some plants may not be sufficient for SBT
- Assessment of validation results may not adequately assess simulator performance

Koutouzis

Maybe the Appendix E form needs two signatures, one for the tester and one for the validator. Each signature would be attesting to the performance of specific activities… the combination comprises SBT

Felker – The evaluation of SBT is a site's call.

Florence – Assumption that the lesson plan refers to the procedure that have sufficient performance criteria and critical steps.

Tarselli – SBT may not capture sufficiently (slopes, mass balances, etc)

Felker – One needs to keep in perspective that SBT is but one piece of the total testing.

Florence – If the upfront work has been completed sufficiently, the SBT is a check that utilizes the plant procedures as a general check of simulator response.

Havens – We've probably sold this to the trainers as no additional work and therefore SBT does not require any additional thought or consideration. This is probably not the case. SBT will require additional work and analysis.

Neis – Asked the committee to refer to the definition of "Performance Testing"

> Testing characterized by a comparison of the results of integrated operation of the simulator to actual or predicted reference unit data. Performance testing encompasses testing other than software development testing.

Comment [bjc4]: Approved change of replacing "simulator facility" to "simulator" from the March 10-13, 2003 meeting. Simulation facility was originally placed in the Standard: (1) Certification was the law of the land and "Simulation Facility" was the term used by the NRC; (2) The Working Group was trying to align the Standard language with regulation; (3) Align the Standard to capture other devices that are used in training and examination that were captured by the regulations use of the term "Simulation Facility"; (4) The Standard body did not capture the other devices and Appendix D was created to capture these. The reasons for this change: (1) Align the use of Simulator in the Scope and Standard Body; (2)simulator will refer to the full scope simulator. Simulation facility refers to other simulators, not just the full scope simulator, and the Standard as written today refers to "The Full Scope Simulator"

The committee attempted to validate a scenario from Kozak. The committee used this as a hands-on example of SBT

- Kozak led the committee in reviewing the structure of the scenario
  - Expected actions
  - Events
  - References to procedures
  - Attachments
  - Instructor Scenario Setup Instructions
  - Performance Objectives
  - Critical task
- Evaluation of the Scenario
  - Reviewed the expected action
  - The Expected Action Form time tags each event
  - Scenario is validated in real-time
  - Takes about two days to validate the three or four scenarios for this cycle
  - Identified scenario steps that may be considered simulator performance data.
  - Discussed the types and possibilities of injecting additional performance data steps

  - Final perception was that the scenario did not contain sufficient simulator performance data to satisfy SBT criteria.
  - Committee agreed the exercise was a good learning exercise and helpful feedback was obtained from the NRC
- Florence – The instructor can assume that for breaks and other malfunctions, the design basis initial checkout has already validated this.

SBT discussion was tabled and will be resumed on Thursday.

11.3 Adjourned 2003Jul23 at 1730

12 **Thursday 2003Jul24 (Day 4 8:30am)**

12.1 AI-97 – Dennis

At the NFSC meeting in June 2003, there was discussion concerning INPO and other documents.

NFSC minutes excerpt:

> Referencing EPRI Documents in ANS Standards
>
> The NFSC committee concluded that it is best to warn working groups about referencing EPRI documents in ANS standards due to the high cost it imposes onto the end-user to obtain these documents if not an EPRI member. Don Spellman stated that working groups should not exclude EPRI documents in ANS standards, but to try and refrain from citing them as a reference for a requirement in the standard that would require that the user to purchase the EPRI document in order to meet the standard. General reference to EPRI documents is encouraged due to their excellent information related to the nuclear industry. Also, many industry members are EPRI members and the cost of these documents to these people is much less than it is to the general public.

It was noted that INPO documents are not generally available to the public at large and therefore should be avoided as references. But, they may be used if required.

EPRI documents are available to the general public, however, they are costly to non-members. Therefore, a citation that requires acquisition is discouraged but the documents should be used if they have information of necessary value to the Standard.

Dennis presented excerpt from June 2003 NFSC meeting. NFSC discussion basically discouraged use of documents that are not generally available to the public at large.

AI-97 Closed

12.2 AI-101 – Neis

Needs assessment required for deviations. New wording should add clarity that deviations must be assessed and not just documented.

New proposed wording:

> 3.2.1.4 Simulator Control Room Deviations
>
> Where deviations exist between the reference unit and the simulator in control panels, instrumentation, and audio-visual cues provided to the operator, such deviations may remain if a training needs assessment is performed in accordance with 4.2.1.4.

Motion to accept new wording

Amended Motion to revise the wording in Section 3.2.1.4:

> 3.2.1.4 Simulator Control Room Deviations
>
> Where physical fidelity and human factors deviations exist between the reference unit and the simulator, such deviations may remain if a training needs assessment is performed in accordance with 4.2.1.4.

Vote:

For – 11
Against – 1
Abstain – 0

Reason for change: Changed wording from “among” to “between” to show that the physical fidelity of the simulator should be compared to the reference unit rather than performing a comparison of one component to another within the simulator environment. The individual elements referred to were removed and replaced with one encompassing statement of “physical fidelity and human factors” to eliminate repetition.

Negative Vote Comment: Appears to be a loophole that a deviation exists has to be assessed, but does not have to be resolved and can remain open.

AI-101 Closed

12.3 AI-106 – Shelly

Shelly – Tech Editing Homework

Review markups

1. General feeling that we should continue with the tech editing
2. Does the mark-up change the meaning

Comments back to Shelly by Sept 1

12.4 SBT - Koutouzis

Resumed SBT discussion.

Koutouzis – Unclear and undefined requirements were placed on the training organization.

Felker – There was no intent to place additional requirements on training.

Florence

Intent was not to place additional requirements on training programs

Appendix E in the new standard is sufficient.

Welchel – Reviewed a quick summary of how SBT was developed.

Koutouzis – The instructor validating the scenario is basically doing a data comparison on the fly.

Welchel – Concerned that the committee's intent for SBT is not what the regulation has interpreted.

Florence – Recently perceived regulator expectations appear to be expecting more from SBT than was originally intended by the working group. Florence recommended that the working group consider removing SBT from the standard. A previous statement made by Koutouzis that unclear and undefined requirements were placed on the training organization is valid. It is a perception in the industry that the regulator's expectations are imposing additional requirements above the original intent of the working group. It appears that the regulator is expecting more SBT interface from those that perform scenario validation for SBT credit, namely, nuclear training department programs. This expectation is inconsistent with a recent clarification from ANS that stated that SBT does not impose additional requirements on training programs. The working group did not accept Florence's recommendation.

12.5 AI-102 – Florence Section Comparison (Home Work)

New AI-108 through 112 that creates Sub-Groups to report Section comparisons

Sub-Groups will report next meeting.

12.6 AI-100 McCullough Core performance testing

Core Performance Testing Discussion Continued

Florence – Recommends amending the Core Performance "Tabled" Motion from yesterday.

Amended Motion – (McCullough)

Add Section 3.1.5

3.1.5 Reactor Core. The simulator shall utilize models relating to the nuclear and thermal hydraulic characteristics that replicate the reference unit within the limits of simulation.

Section 3.1.5 was added to provide section consistency in the standard with section 4.1.5. This also utilizes some of the same verbiage as the current CFR.

Add 4.1.5

4.1.5 Reactor Core Performance Testing. It shall be demonstrated that the simulator response during conduct of core performance testing meets the reference unit acceptance criteria.

Section 4.1.5 was added in response to industry feedback requesting core testing criteria. Because the BWRs don't have an industry standard for actual core testing as the PWRs do, it was decided to make the acceptance criteria the same as the reference unit core testing criteria. "Why should the simulators be held to a higher standard than the actual plant?"

Modify Section 4.4.3.1 to read

4.4.3.1 Simulator Operability Testing. A simulator operability test[3] shall be conducted on a frequency as indicated below. A record of the conduct of this test and its evaluation shall be maintained. The intent of the operability test is to demonstrate overall simulator model completeness and integration by testing the following: (1) Simulator steady-state performance (once per year on a calendar basis);

Comment [bjc5]: Approved change of deleting the words "on either" and "or certification" from April 22-25 meeting. Action item # from April 22-25 meeting. Action item #40. The rule change has eliminated the requirement for certification and the option of either per year or calendar basis.

[3] Appendix B provides examples of acceptable simulator operability tests.

(2) Simulator transient performance for a benchmark set of transients (once per year on a calendar basis), and;
(3) Simulator Reactor Core Performance (each reference unit fuel cycle)

Section 4.4.3.1 was reworded for clarity (reads easier). In addition, a new operability testing requirement was added to perform core testing. (Note: core testing is in the 1985 standard under "Normal Evolutions", this was changed in the 1993 standard to "Unit Performance Tests". This, in essence, brings back the core testing requirement and delineates the periodicity.

Modify Section 5.3.2 to read

5.3.2 Performance-Based Simulator Changes. Simulator changes that are based upon items such as revised reference unit performance data, a reference unit core reload, student feedback, simulator performance tests, and LERs, and that are determined to be relevant to the training program as A result of a training needs assessment, shall be implemented based upon their training impact.

Comment [BC6]: Approved change from Training Needs Assessment to Training Impact Assessment from March 08-10, 2000 - Action item #48. The term Needs may have other meanings based on the reader. The term Needs carries additional baggage and has other connotations. The working group agreed that the word impact better describes the intent of requiring a Training Value Assessment. NOTE: The Training Needs Assessment is based on whether training decides that simulation is the best way to teach according to guidance provided by the accredited training program. Approved change back to Training Needs Assessment from October 25-26, 2000 meeting. Action item #48.

Section 5.3.2 was modified to include "reference unit core reload" as "trigger" to initiate a simulator change based upon training needs. Additionaly, the entire motion addresses the whole core issue and does not imply that you have to change the core, just that you have to run a core test compared to new core load data and evaluate the need from a training perspective as to whether to make a change to the simulator for the core.

Motion McCullough – Accept changes to sections: 3.1.5, 4.1.5, 4.4.3.1, 5.3.2

Vote:

For – 11
Against – 1
Abstain – 0

McCullough - Industry feedback that the standard does not adequately address Core Performance Testing.

Negative Vote Comment: The new requirement in the Standard would impose a more stringent requirement to replicate the core, rather than the noticeable difference with training needs assessment qualifier applicable in the previous Standards. This would also apply to all training simulators under ANS-3.5-200x, including those that do not perform reactivity manipulations for experience credit on the simulator. This requirement should be separated from training and examinations requirements with whatever is an appropriate testing requirement for replication of dynamic data for the purpose of experience acquisition.

12.7 Adjourned 2003Jul24 at 1200

13 Appendix

13.1 AI-102 (Colby)

Action Item 102

To: 3.5 Working Group
From: Sub-Group AI-102 (Format and Content Clarification).

Our thoughts on approaching this task – compare section 3 in the standard to section 4 of the standard.

1. **Comments from a review by an INPO technical writing editor:**

   - **Several wording and format suggestions, i.e., use simulate (approximate) or emulate (approximate) versus replicate (exact). From an order standpoint – exact, emulate, then simulate**
   - **The document appears to be able to be followed (reasonably logical) and a one for one correlation between sections 3 & 4 is not necessary**
   - **The Standard is very wordy – The same thing can be stated with fewer words**
   - **Several areas border on procedure (prescriptive in nature)**
   - **Numerous editorial/stylistic issues**

2. **Comments from a review by a NRC technical writing editor:**

   - **Same as above, plus**
     - **Use of the term "application" versus "use of"**
     - **Use of lists should be annotated correctly (e.g., small/large case, colons/semicolons)**
     - **Use of active versus passive verbs**
     - **Should limit use of negative statements**
     - **Use "correctly represent" versus "represent correctly"**
     - **Don't "block" addresses**

Bases for our action item 102 is contained in the following statement below:

> **NOTE: in section 1.2 Scope and background it states "This standard is organized so that simulator functional and physical requirements are described in Section 3, while the corresponding testing and validation requirements are described in Section 4. The sub-numbering of Sections 3 and 4 is consistent so that corresponding section paragraphs address the same subject matter from a requirements and testing standpoint."**
>
> **Sub-Group AI-102 agrees that clarifications to the Standard will benefit the industry.**
>
> **Recommendations:**

1. **Reaffirm that the information in section 3 is to be only the requirements for a simulator.**
2. **Reaffirm that the information in section 4 is to be only the testing to meet the requirements**
3. **Possible actions by the 3.5 Working Group**
   - **Sub-Group AI-102 recommends clarifying the general lead in paragraph for section 3 and 4. (e.g. stating the purpose and/or intent of the section}**
   - **If you agree lead in paragraphs need to be clarified, then the associated sub sections will have to be revised accordingly.**
4. **NOTE: It appears that requirements for a simulator are found in both sections 3 and 4. Also testing to meet the requirements are found in sections 3 and 4.**

13.2 **AI-102 (Shelly)**

3.1.3 Normal Evolutions. The simulator shall support the conduct of the reference unit evolutions listed in this section in a continuous manner, without any mathematical model or initial condition changes. The simulator shall calculate	**3.1.3 Normal Evolutions.** The simulator shall support the conduct of the reference unit evolutions listed in this section in a continuous manner, without any mathematical model or initial condition changes. The simulator shall calculate

system parameters corresponding to particular operating conditions, display these parameters on the appropriate instrumentation, and provide proper alarms and protective system actions. The minimum evolutions that shall be supported by the simulator, using only operator action normal to the reference unit, are as follows:	system parameters corresponding to particular operating conditions, display these parameters on the appropriate instrumentation, and provide proper alarms and protective system actions. The minimum evolutions that shall be supported by the simulator, using only operator action normal to the reference unit, are as follows:
(1) Heatup from cold shutdown to hot standby;	(1) heatup from cold shutdown to hot standby
(2) Unit startup from hot standby to rated power;	(2) unit startup from hot standby to rated power
(3) Turbine/generator startup and generator synchronization;	(3) turbine/generator startup and generator synchronization
(4) Operator-conducted surveillance testing on safety related equipment or systems;	(4) operator conducted surveillance testing on safety related equipment or systems
(5) Operations at hot standby;	(5) operations at hot standby
(6) Load changes;	(6) load changes
(7) Startup, shutdown, and power operations with less than full reactor coolant flow;	(7) startup, shutdown, and power operations with less than full reactor coolant flow
(8) Unit shutdown from rated power to hot standby and cooldown to cold shutdown conditions;	(8) unit shutdown from rated power to hot standby and cooldown to cold shutdown conditions
(9) Unit performance testing such as heat balance, determination of shutdown margin, and measurement of reactivity coefficients and control rod worth, through the	(9) unit performance testing such as heat balance, determination of shutdown margin, and measurement of reactivity coefficients and control rod worth, through the

use of permanently installed instrumentation; and (10) Recovery to rated power after a reactor trip.	use of permanently installed instrumentation (10) recovery to rated power after a reactor trip

3. General Requirements A nuclear power plant simulator is intended to be used as a training device in support of initial and requalification training, as well as a device for the examination of operators. The simulator shall be referenced to a specific unit. The scope of simulation shall be such that the operator is required 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 conduct of all of the evolutions required in this section until a stable condition is obtained.	**3. General Requirements** A nuclear power plant simulator is intended to be used as a training device in support of initial and requalification training, as well as a device for examining ~~the examination of~~ operators. The simulator shall be referenced to a specific unit. The scope of simulation shall be such that the operator is required 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 conduct of all of the evolutions required in this section until conditions are stable.

13.3 **AI-100 McCullough and Havens**

3.1.3 Normal Evolutions. The simulator shall support the conduct of the reference unit evolutions listed in this section in a continuous manner, without any mathematical model or initial condition changes. The simulator shall calculate system parameters corresponding to particular operating conditions, display these parameters on the appropriate instrumentation, and provide proper alarms and protective system actions. The minimum evolutions that shall be supported by the simulator, using only operator action normal to the reference unit, are as follows: (1) Unit startup from cold shutdown to rated power conditions; (2) Unit shutdown from rated power to cold shutdown conditions; (3) Load changes; (4) Operator-conducted surveillance testing on safety related equipment or systems; and (5) Unit performance testing such as	If the reference unit is to get to rated power, it must calculate the thermal power, and display the information – this should be sufficient to calculate the thermal power from a CMS or from a back-up calculation; this calculation should be proceduralized – but may not be in Operations procedures. "using only operator action normal to the reference unit" - since it may be required to use procedures from other disciplines to perform Core Performance Tests; what does this phrase mean? I think it means: **"…using only reference unit procedures for normal evolutions,..."** Note that 4.4.3.1 uses the term normal evolutions. Note- the word "Operator" may be important here should not include I&C Need to reword – remove the such as – Note – Performance Testing is in the

heat balance, determination of shutdown margin, and measurement of reactivity coefficients and control rod worth through the use of permanently installed instrumentation	definitions relates to simulator performance testing only Suggested: **(5) Reference Unit Core Performance Testing to the extent supported by permanently installed Simulator instrumentation.** This should not be viewed as constrictive to have to include sophisticated computer monitoring systems that may not be effective in monitoring plant conditions due to limited simulator data availability. IE CMS systems w/o a core model that can provide all the dynamic LPRM/TIP inputs. Included in this set of performance tests are the RE /Fuels Tests that would be used for Core Design Verification (SDM/Reactivity Anomalies), as well as the procedures that are used to calculate Heat Balances (Core Thermal Power Determination). Note that the only specific procedures required for Core Verification are SDM/Reactivity Anomalies, the remainder have data collected in during Start-up and power escalation. Note that hydraulic comparisons are part of data collected during
For evolutions not listed above, such as reactor core end-of-cycle coastdown, mid-loop operations, refueling operations, or evolutions where the reactor vessel head is removed, conditions may be achieved in a non-continuous manner and mathematical model or initial condition changes are permitted.	

Comment [bjc7]: Approved change of 3.1.3 items 1 trough 5 from April 22-25, 2002: Action item #13. The new words in Item 1 includes the intent of old items #1, 2, 3, 5, 7, and 10 and as a result has replaced them. Old item # 8 wording changed in new item #2 to be consistent with wording in new #1. Old item # 4, # 6 and #9 were not changed and are now new item #3, 4, and 5. The main reason for the change is to eliminated unnecessary wording contained within various tables of the Standard and to make them a little more in tune with the industry as it exist in today's environment. This was also the consensus of the industry peer group based on a survey conducted by the ANS Working Group.

	surveillance tests (Jet Pump), and steady state data (core plate D/P), and performance of startup. The words here seem appropriate, these are typically beyond the scope of simulation???
4.1.3.2 Normal Evolutions. The performance of procedures on the simulator, such as heat balance and determination of shutdown margin, shall be compared and demonstrated to represent correctly the response of the reference unit at the same power level consistent with reference unit procedures and data availability. It shall be demonstrated that simulator response during conduct of the normal evolutions identified in 3.1.3 meet the following acceptance criteria: (1) Be the same as the reference unit startup test procedure acceptance criteria. (2) Be the same as the reference unit surveillance procedure acceptance criteria. (3) Be the same as the reference unit normal operating	Another "such as". Suggested change: **4.1.3.2 Normal Evolutions. The performance of normal evolutions on the simulator shall be compared and demonstrated to represent correctly the response of the reference unit consistent with reference unit procedures and available data.** Actually, the above could be the lead in statement for 4.1.3, with the following addition: **… Steady state comparisons to reference unit data as well as conduct of evolutions shall be performed to test the simulator ability meet the requirements of Section 3.1.3.** These words can be confusing – does this mean the initial plant startup testing, or the acceptance criteria that are current – in startup procedures, performance tests, etc. Suggested wording: **(1) Be the same as the Reference Unit Core**

procedure acceptance criteria….	**Performance Test acceptance criteria.** Note that much of the Core verification data is imbedded in the performance of normal startup procedures.
4.4.3 Simulator Performance Testing. Simulator performance testing shall be conducted as specified below. A record of the conduct of these tests, and data comparison that the results meet reference unit data, shall be maintained.[4] Simulator performance testing shall be conducted in a fully integrated mode of operation. Simulator performance testing comprises operability and scenario-based testing. **4.4.3.1 Simulator Operability Testing.** A simulator operability test[5] shall be conducted once per	Is this grammatically correct? Seems that **"Simulator performance testing is comprised of operability and scenario-based testing."** would be better A possible change to operability testing could be to introduce the completion of Reference Unit Core Performance Testing as part of the Operability Tests. **Suggestion:** **4.4.3.1 Simulator Operability Testing. A**

[4] Appendix A provides examples of acceptable simulator performance test documentation.

[5] Appendix B provides examples of acceptable simulator operability tests.

year on a calendar basis, to confirm overall simulator model completeness and integration. A record of the conduct of this test and its evaluation shall be maintained. The intent of the operability test is to demonstrate the following: (1) Overall simulator model completeness and integration; (2) Simulator steady-state performance; and (3) Simulator transient performance for a benchmark set of transients.	**simulator operability test[6] shall be conducted on a frequency as indicated below. A record of the conduct of this test and its evaluation shall be maintained.** **The intent of the operability test is to demonstrate overall simulator model completeness and integration by testing the following:** **(4) Simulator steady-state performance (once per year on a calendar basis);** **(5) Simulator transient performance for a benchmark set of transients (once per year on a calendar basis), and;** (6) **Simulator Core Performance (each reference unit refuel cycle).**

Comment [bjc8]: Approved change of deleting the words "on either" and "or certification" from April 22-25 meeting. Action item # from April 22-25 meeting. Action item #40. The rule change has eliminated the requirement for certification and the option of either per year or calendar basis.

Comment [bjc9]: Approved change of deleting the words "on either" and "or certification" from April 22-25 meeting. Action item # from April 22-25 meeting. Action item #40. The rule change has eliminated the requirement for certification and the option of either per year or calendar basis.

Appendix B (This Appendix is not a part of American National Standard for Nuclear Power Plant Simulators for Use in Operator Training and Examination,, ANSI/ANS-3.5-2003, but is included for information purposes only.) **Guidelines for the Conduct of Simulator Operability Testing** The purpose of this Appendix	Changes in 4.4.3.1 need to be reflected

Comment [bjc10]: Approved change from October 2002 meeting. Action item #97. Add the words "and Examination" to be consistent with the approved title for the ANS 3.5 Standard.

Comment [bjc11]: Approved change from October, 2002 meeting. Action item #94. Change the Standard date from 1998 to 2003 to be consistent with the current Standard revision.

[6] Appendix B provides examples of acceptable simulator operability tests.

	is to provide examples of tests, parameters to be recorded, and time resolution for demonstration of simulator operability. The example tests documented herein will clarify the scope and intent of simulator operability testing required by 4.4.3.1 of the standard. **B1. Categories of Operability Tests.** Formal test procedures should be generated for steady-state and transient tests, and acceptance criteria should be established for operability validation, commensurate with the requirements of 4.4 of the standard.		here. Suggested Change: **B1. Categories of Operability Tests. Formal test procedures should be generated for steady-state, transient and Core Performance tests, and acceptance criteria should be established for operability validation, commensurate with the requirements of 4.4 of the standard.** Suggested addition: **B1.3 Core Performance Test. This test consists of performing the normal evolutions and/or tests that are performed in the Reference Unit following refueling to verify the current core meets the design basis. This test verifies the Simulator Core models properly simulate the Reference Unit. Refer to 4.1.3.2 for acceptance criteria.** **NOTE: performance tests have inherent acceptance criteria – this is part of 4.1.3.2.**

14 Action Items Carried to 2008 Standard

20	**Date: 2002oct29** **Status: Deferred to 2008**	Priority 1 –	**Paris** **Colby** **Kozak**	Exploiting technology changes and future industry trends. What's coming around the corner; 2002oct29 Paris Deferred to 2008. Additional technologies will need to be considered (e.g. Virtual reality, DCS, WEB based training) 2001Apr05 Paris Presentation: What is Around the Corner (See Attachments Section) **2001Aug09** Paris Presentation – Distributed Control Systems scope needs to be considered in the standard (Hal will e-mail his presentation to Butch).
25	**Moved to 2008**	Priority 2 –	**Dennis**	Process Guidelines (Mods and Testing) ;Institutionalizing Procedures 2002apr24 Dennis Gave presentation on Millstone experience Defer AI-25 to 2008 2001Apr05 Dennis Deferred
36	**Date: 2003Mar10** **Status: Deferred until 2008**	Priority 2	**Koutouzis** **Havens**	Questions from Review of INPO Documents:

				• Timeline for incorporation of Plant design changes into the simulator • Instructor Performance • Long Term Open Simulator Fidelity Issues This is an information AI **2003Mar10** **Koutouzis** **No INPO statements on Simulator Fidelity.** **INPO is concerned with performance based issues only.** 2002Apr24 Havens – Keep this AI open pending additional input and data. Koutouzis is gathering additional data. Recommends to do nothing right now No Update 2001Apr05 Koutouzis No Update Related AI: 34
60	**Moved to 2008**	Priority 1	**McCullough Shelly**	Define the Term **Training Needs Assessment** in such a manner that it is clear in intent to both Training and Simulator staffs 2002apr23 McCullough History presentation of Training Need Assessment. See Appendix 2001Apr05

				McCullough Trainers and Simulator personel view Training Needs Assesments Differently; Training Needs Analysis and Training Needs Assessment are npot used consistently. McCullough will revisit this item in a future date; Reference: ACAD-85-006 "A Suppliment to Principles of Training Systems Development"
80	**Moved to 2008**		**Florence**	2008 Copy and Paste RG 1.149 Rev 3 Section 1.5 into the 2008 Standard. (Software V&V)

15 Closed Action Items

No.	Status	Date	Assigned To:	Work Assignment
2	**Date: 2000oct25** **Status:** Additional Editorial Review Required **Date: 2000mar09** **Status: Complete**		**Colby** **Welchel**	Obtain a Master Copy of the ANS 3.5 standard in Dual Column (working/1998) format. The WordPerfect copy from Shawn does not port into WORD correctly Assigned to Butch Colby.
3	**Date: 1999sep14** **Status: Complete**		**Welchel**	Get NUPPSCO comments to members
4	**Date: 1999sep14** **Status: Complete**		**Welchel**	Send copy of meeting minutes 1998Nov04 and 1999Mar02-03 to Jim Florence
5	**Date: 1999sep14** **Status: Complete**		**Florence**	Jim will look at creating a survey on the USUG WEB concerning the Action Items and for soliciting info from the industry
6	**Date: 1999sep14** **Status: Complete**		**Dennis**	Jeff will contact ANS about ANSI Historical standards Cataudella-Spoke with ANS Standards Secretary, Shawn Coyne-Nalbach Historical Standards: Past standards are retired and are only available as historical standards. 1979, 1981, 1985, and 1993 are no longer endorsed by ANSI and ANS only the 1998 standard is endorsed.
7	**Date: 2001Aug9** **Status: Complete**		**Shelly** **Vick** **Dennis**	Talk to ANS about use of footnotes, asterisks, etc in standards To review style guide. 2001Apr05 Shelly Shelly will call Shawn.
9	**Date: 2001Apr05**		**Dennis**	Is ANS 3 considering that the standard may address other

	Status: Complete **Dennis**			simulators not specific to NRC Regulatory Commission licensing? 2001Apr05 Dennis - No - per SubCommittee-1 Tamp Meeting Dennis will verify with Mike concerning additional scope (adding DOE facilities into 3.5). 2001Apr05 Dennis - No - per SubCommittee-1 Tamp Meeting **2000mar09** Dennis will check at the next ANS 3 meeting
10	**Date: 2001Apr04** **Status: Awaiting Kozak conversation with Chandler and Mallay** **Date: 2001Aug09** **Status: Closed Pending input from Alan Kozak** **Date: 2001Aug27** **Status: Complete**		**Kozak** **Collins (Vick)** **McCullough**	Propose security criteria for Simulators operating in Exam Mode 2001aug27 Kozak Contact was made with James Mallary (NUPPSCO) to clarify the comment concerning "non-prescriptive" His concern was the inclusion of further details within the body and stated that if this was not the case then he has no further comment. Contact could not be made with Harish Chandler. Information gathered via the ANS survey presents the fact that all of the responding sites are applying Exam Security measures that meet the requirements of their training programs and review from other agencies, i.e. NRC, INPO. It can be safely assumed that non responders are doing like wise. Based on this information no further action should be needed for this AI. 2001Apr04

				Kozak PPT Presentation outlining several Security concerns. The presentation is included in the AI-10 documentation dated 2001Apr04. Final conclusion was that the current wording is sufficient. AI Originator: Parking Lot Issue 2001Apr05 Kozak Two NUPPSCO comments: NUPPSCO supporting comment: James: Mallay stated that this item should be non-prescriptive. NUPPSCO supporting comment: Harish Chandler Kozak will call Chandler and Mallay and discuss their NUPPSCO **2000mar09** Determine source of Exam Security comment
11	**Date: 2001Apr05** **Status: Complete** **Moved to AI 13**		**Felker** **Collins** **(Vick)**	Standard Section 3.1.4 - Add information notices and any other information; establish threshold of documents to be reviewed. Correspondences change over time. Discuss at next meeting with Felker present. Origin: Parking Lot List 2001Apr05 Deferred for later discussion pending more important issues
12	**Date: 2001Aug09** **Status: Complete**			Intentionally Left Blank
13	**Date: 2002oct29** **Status: Complete**	Priority 1 – Waiting input from Florence on	**Felker** **Florence** **Colby**	Standard Section 3.1.3(7) - Rated coolant Flow - are BWR's OK with this? Review entire list in section 3.1.3 for applicability. Review present parameter list.

		feedback from industry		Colby has additional information for discussion at the next meeting. Consider instrument accuracy relating to different plant types. 2002OCT29 Florence Approved change of 3.1.3 items 1 trough 5 from April 22-25, 2002: Action item #13. The new words in Item 1 includes the intent of old items #1, 2, 3, 5, 7, and 10 and as a result has replaced them. Old item # 8 wording changed in new item #2 to be consistent with wording in new #1. Old item # 4, # 6 and #9 were not changed and are now new item #3, 4, and 5. The main reason for the change is to eliminated unnecessary wording contained within various tables of the Standard and to make them a little more in tune with the industry as it exist in today's environment. This was also the consensus of the industry peer group based on a survey conducted by the ANS Working Group. Origin: Parking Lot List Review all List; Combined with the 3.1.3(7) item (Moved from 23); Standard Section 3.1.4 - Add information notices and any other information; establish threshold of documents to be reviewed. Correspondences change over time. Discuss at next meeting with Felker present. Note: Review associations between removal of List and Appendix. 2001Apr05 Moved AI 11 to AI 13

				Deferred for later discussion pending more important issues Felker: The Simulator shall cause an alarm or automatic action only if the reference plant would have caused an alarm or automatic action. Suggestion to replace Sections 4.1.3 and 4.1.4 with the language above. 2001Apr05 Felker – Tables that remain in the 2003 Std should updated or noted as Historical. Florence – Recommendation for wording in Section 3.1.3. See Notes in Minutes Body. 2001Apr04 Colby Presented the History of the Critical Parameters list. 2001
14	**Closed:** **2002apr23** **Motion**	Priority 1 –	**Paris** **Felker** **Florence** **Chang**	2001Aug 09 SK Chang proposes including *synchronization* in the new definition for stimulated device. Hal Paris and SK Chang to provide working group a revised document regarding stimulated devices in one month. Members shall respond within 30 days. Review guidance on stimulated devices. Combine stimulated hardware and stimulated devices. Issues relating to various stimulated device functions and compatibility with the simulator (e.g. Run/Freeze, History retention and Recalls/Backtracks, software revision control) 2002apr23

				Motion: Change Definition of Stimulated Hardware to Stimulated Components with the definition of Stimulated Components: • **stimulated components** Hardware/software components that are integrated to the simulator process via simulator inputs/outputs which perform their functions parallel to, and either independently of or synchronized with the simulation process • Replace Stimulated hardware and Stimulated Device with Stimulated Components 2001Apr04 Paris Recommends new definition: Old Definition: "**Stimulated hardware.** Components or devices that perform their functions independently of and parallel to the simulation process" 2001Apr05 Paris Considerations for new definitions for later review New Definitions: Suggested choices for new definitions: **stimulated hardware.** Components or devices that are integrated to the simulator process via simulator inputs and/or outputs which perform their functions independently of and

				parallel to the simulation process". **stimulated components.** Hardware or software components that are integrated to the simulator process via simulator inputs and/or outputs which perform their functions independently of and parallel to the simulation process". **stimulated components.** Components or devices that are integrated to the simulator process via simulator inputs and/or outputs which perform their functions independently of and parallel to the simulation process". **stimulated components.** Hardware or software components that perform their functions independently of and parallel to the simulation process" and Change Stimulated Hardware to Stimulated Device Originator: NUPPSCO comments 1998 review process and in Butch's survey **2000mar09** Determine the source of this comment
15	**Date: 2000mar09** **Status: Complete** Presentation by Allan Kozak		**Collins (Vick)** **Kozak** **McCullough**	Numerous uses of Training Needs Assessment (TNA) Collins - Add paragraph in Section 3.0 detailing TNA and then remove all other references to TNA. Training Needs Assessment was changed to Training Impact Assessment **2000mar09** Determine Source of this comment
16	**2002apr24** **Status: Complete**	Priority 1 –	**Welchel** **Dennis**	Coordinate use of Discrepancy and Deviation. Consider Yoder #12.

	Motion No Carried			NUPPSCO Comment 2002apr24 Welchel Prepared and presented Deviation/Discrepancy and Differences replacement. Closed – Motion Not Carried **2001apr03** Welchel Discrepancy is used in sections 4.4.3.2 and 5.2. Webster's definition: Discrepancy-inconsistency Deviation – diverge
17	**Date: 2001Aug09** **Status: Complete**		**Dennis Welchel**	Get feedback from industry on actually how the 1998 standard is actually used. Use USUG meetings. Cataudella – Seabrook MANTG meeting (Aug-1999) comments: How to document Scenario Based Testing? Expand on what is V&V and what is necessary. Shelly – User feedback is not available for inclusion at this time. Develop Mission statement for working group. Cataudella – Problems implementing Scenario Based Testing. Benchmarking of various sites has shown use of V&V and scenario validation. **2000mar09** Welchel – Add relevant SSNTA meeting minutes to WG minutes. Wait for industry experience 2001Apr05

				Industry Feedback Callaway has implement the 1998 Standard and presently reports no concerns. **2001apr03** Welchel As of Jan 2001, Callaway (Scott Halverson) is the only simulator presently implementing the 1998 standard. The industry consensus, as expressed at the 2001 USUG meeting, is that implementing Scenario based testing for License Class Simulator Scenarios is unworkable. It is generally agreed that the Regulatory carrot for using the simulator for License Candidate Reactivity Manipulations, is a significant positive for adopting the 1998 3.5 ANS standard. Activity: MANTG Mar 2001 SSNTA Jan 2001 SCS Jan 2001 USUG Jan 2001
18	**Date: 2000mar09** **Status:** **Closed Statement (**Do we need to put some boundaries as to the limits simulator**)**		**Kozak** **Shelly** **Cox** **Havens** **Florence**	Part-Task – Should Part-Task become part of the standard or remain as an appendix. Possibly look at tying the Standard body to the Appendix; Application of Full Scope Simulators. Outside interest are asking for uses of simulators that are not related to Operator Training. ~~Do we need to put some boundaries as to the limits simulator;~~(Closed 2001Apr05) Origin: Scope Change at Oconee Meeting 2001Apr05 Florence Moved from AI 22 Look at the use of Simulator, Simulation Facility; Definitions change Simulation Facility becomes Simulator; Simulation Facility is now defined as the collection of Simulators;

				Coordinate use of Simulator and Simulation Facility. 2001Apr05 Kozak Close the Boundry issue *Do we need to put some boundaries as to the limits simulator;* 2001Apr05 Kozak See Minutes Body **2000mar09** Presentation of Virginia Power Classroom/Part-task trainer at the 2000mar09 meeting Related AI: 41
19	**Date: 2001apr05** **Status: Complete** (This Item will be ask on Survey#2)		**Colby** **Florence**	Using the simulator for other than Operator Training. Uses in predictive analysis and design mods, SAMGS procedures changes; 2001Apr05 Colby Include this as part of Survey #2 and Closed **2000mar09** Scope change. This will require approval from ANS-3
21	Date: 2000mar10 Status: Complete Keith Welchel wanted to dismiss this item. The WG agreed.		**Collins** **(Vick)** **Welchel** **Chang**	(JFC/KPW/JS) Hybrid Simulators. Hybrid Simulator refers to a simulator that implements many different technologies, source code vendors, different operating systems, integration vendors, etc. Maybe we need to have words that stipulate that testing needs to cover all the other changes we make to the simulator that may affect the operation of the simulator: Instructor Console, Operating Systems, New I/O, etc. (Voted to Dismiss-Consensus) Comments on regulation - The Working Group will not comment on regulations. The Standards Working Group is working in

				Working Group space. **2000mar10** Keith Welchel moved to dismiss this item. Jim Florence Seconded;
22	**Date: 2001apr05** **Status: Complete**		**Florence Kozak**	~~Workshops on Testing Philosophy (what are the benefits? testing that provides results); USUG participation;~~ ~~Schedule workshop during USUG at SCS in Jan. 1999. Develop materials for handout. Florence lead material development.~~ Closed 2001Apr05 Complete Look at the use of Simulator, Simulation Facility; Definitions change Simulation Facility becomes Simulator; Simulation Facility is now defined as the collection of Simulators Coordinate use of Simulator and Simulation Facility. Closed Moved to AI 18 Jim gave a presentation at the 2000 SCS conference during the USUG meeting.
23				Intentionally Left Blank
24	**Date: 2000mar09** **Status: Complete** **No Action.** Real-time at this time does not seem to be an industry concern at this time. Committee members had no issues with the definition or Section 4.1.1. Therefore, this		**Dennis DeLuca**	Real Time - Dennis will give further consideration and he will look at industry standards; Measuring Real-Time;

	AI was Closed.			
26	**Date: 2000mar10** **Status: Complete** Historical information was presented at the SCS conference. Dennis checked with ANS Headquarters and this issue was discussed in detail		**Dennis**	1985 ANS 3.5 Standard is Historical Standard; Dennis will follow up with Shawn and Mike Wright about Historical/Active Standards and how the present process does not follow the five year; How should we handle or should we comment that the 1985 ANS/ANSI 3.5 standard is now an Historical standard and is no longer in the ANSI catalog. Does the ANS 3.5 Working Group need to comment on this issue; Utilities would need to take exception by treating Certification as other; Mark up the Form 474 and state the other that you are going to do. Scenario Based testing (> 25%/yr.); Performance Based testing Plan Dennis will call Mike Wright confirming ANS-3 understands the Historical Standard issue
27	**Date: 2001Aug09** **Status: Complete**		Collins(Vick) Dennis Koutouzis	(JFC/TD) Possible cross-pollination with other standards. Frank and Dennis will contact others 2001Apr05 Dennis Reference: ANSI/ISA–77.20–1993 Fossil Fuel Power Plant Simulators – Functional Requirements Reviewed FAA WEB Site: www.faa.gov/nsp Simulator Qualifications: www.faa.gov/nsp/ac.htm Colby –To research Navy Simulator Systems Colby – To research Germany regulatory standards
28	**Date: 1999sep15** **Status: Complete**		**Florence**	Suggested a letter to Jim Stavely asking for a commitment to attend meetings along with 02Mar1999 meeting minutes; however, Jim Stavely resigned and submitted replacement resume Oliver Havens, Jr;
29	**Date: 2000mar10**		**Florence**	Vice-chair prepare letter to Jim Davis asking for commitment to

	Status: Complete		**Dennis**	attend meetings along with 02Mar1999 meeting minutes; Chair to sign and send. Chair to send letter to Jim Davis and Ken Rach thanking them for their past participation and asking them for substitute resumes.
30	**Date: 2001Apr05** **Status: Complete**		**Florence** **Welchel**	Jim Florence suggested that the following information be placed on the USUG Web Page: ANSI-3.5 Membership List, approved meeting minutes, meeting schedules and meeting agendas. Florence/Welchel will ensure WEB page is updated Florence: Check with Shawn (ANS) for WEB space. Check with USUG for WEB Space 2001Apr05 Florence Membership List Minutes Meeting Schedules Will not use ANS WEB Site All future approved ANS WG minutes will be placed on the USUG WEB site.
31	**Date: 1999sep15** **Status: Complete**		**Dennis**	Mission statement for Working Group for the 2003 standard. AI #31 added 1999sep14 **1999sep15:** Voted not to complete
32	**Date: 2001Apr04** **Status: Closed by Motion**	**1999sep15**	**Colby** **Collins** **Koutouzis** **Havens** **Felker** **McCulough**	Description: Multi-Units. Application of reference unit simulators to non-referenced units. Butch has offered to survey the industry. INPO will assist by supplying information from their databases; Misc Info: Reg Guide 1.149 refers to Multi-Unit Plant, but 3.5 does not.

				Felker - Simulators other than the referenced unit are not covered by this standard; 2001Apr04 The WG, by Motion, closed AI 51 and 32. There was agreement that the 3.5 Standard does not cover simulator configured for Multi-Unit use. The Multi-Unit issues are basically training related and are not minimum reference unit Standard's space. Additional Survey questions will be directed by AI 50. The WG approved a motion to delete AI 32 and AI 51 and Colby will still ask survey questions concerning multi-unit plants. **2000Oct26:** **Butch will request bullets on Multi-Unit from the Group for next meeting**
33	**Date: 2001Apr04** **Status: Complete**		**Havens** **Kozak** **Shelly** **Welchel**	Change 24-month design change limit to some shorter period. **2001apr03** Welchel Proposed new wording: ***5.3.1.2 Subsequent Upgrade.*** *Following the initial upgrade, reference unit modifications determined to be relevant to the training program shall be implemented on the simulator within 24 months of their reference unit in-service dates, or earlier if warranted by a training needs assessment.* Requiring that a determination of the relevance to training and that a training needs assessment be completed should be sufficient. Recommendation is that the "24 months" be removed and that section 5.3.1.2 should read: ***5.3.1.2 Subsequent Upgrade.*** *Following the initial upgrade, reference unit modifications determined to be relevant to the training program shall be implemented on the simulator based on*

				training needs assessments in accordance with the criteria provided in 4.2.1.4. ***5.1.2.2 Subsequent Update.*** *Following the initial update, new data shall be reviewed, and the simulator design data base appropriately revised, once per calendar year. Modifications made to the reference unit shall be reviewed for determination of the need for simulator modification within 12 months.* ***5.1.2.2 Subsequent Update.*** *Following the initial update, new data shall be reviewed, and the simulator design data base appropriately revised, once per calendar year. Modifications made to the reference unit shall be implemented on the simulator based on training needs assessments in accordance with the criteria provided in 4.2.1.4.* . WG agreed to close this AI with no further discussion. The 12 and 24 month timelines could be used to ensure the modifications.
34	**Date: 2001Apr05** **Status: Complete**	**1999sep15**	**Welchel** **McCullough** **DeLuca** **Koutouzis**	Present standard does not address software bugs, discrepancies, and enhancements. Time limits only relate to plant design changes, no time limits are associated for simulator fidelity and enhancements. Origin: Welchel 2001Apr05 Closed – Other issues are handled with the Simulator Configuration Process Related AI: 36
35	**Date: 2001Apr05**	**2000mar08**	**McCullough**	Review the double column Draft Working Document prepared by

	Status: Complete		**Collins(Vick)**	Butch Colby 2001Apr05 McCullough Reviewed and recommend no changes at this time. Footnotes in the side-by-side format do not agree with the original document but this should clear up when the double format is deleted. Additional editorial work may be needed to ensure the footnotes align correctly.
37	**Date: 2001Apr05** **Status: Complete** **Group agreed to closed this item. No additional information required.**	2000mar08	**Koutouzis** **Collins(Vick)**	Five Required Control Manipulations Clarification 2001Apr05 Koutouzis No Update
38	**Date: 2001Apr05** **Status: Complete**	2000mar08	**Dennis**	Discuss the ANS definitions and process of Clarification and Interpretation 2001Apr05 Refer to Meeting Minutes {find the meeting minutes and place here}
39	**Date: 2001Apr05** **Status: Complete**	2000mar08	**McCullough** **Florence** **Felker**	Consider differentiating validation of Requal and Initial License Scenarios 2001Apr05 McCullough {Add LTI Document Here}
40	**Date: 2002oct31** **Status: Complete**	Priority 1	**Cox** **Vick** **Florence**	Appendix Update for Scenario Based Testing Documentation. 2002oct31

			Collins **McCullough**	Florence New Appendix E Accepted See Minutes Appendix 2001Apr05 Draft a Scenario Based Testing Guideline (new) Appendix
41	**Date: 2000Oct26** **Status**: **Complete**	2000mar08	**DeLuca** **Colby**	Appendices consideration up-front and not as an after thought. Tie documentation and Testing to the Standard Body Related AI: 18 **Resolution (2000Oct26 – Colby)**: Continue using Appendices A and B as is Recommendation to revisit appendices content Consider moving Appendix D (Part-Task) into standard main body Related AI-18
42	**Closed:** **2002apr23** **Motion**	Priority 1 -	**Chang** **Felker** **Cox**	Use of Verification and Validation Origination: Colby Survey **2002apr23** **Closed by Motion** **2000Oct26:** **Chang to look at Survey and determine the issues with Verification and Validation and bring to next meeting** **Origin: ANS 3.5 WG Survey #1** **2001Apr05** **Felker** **The use of V&V as espoused through the IEEE 7xxx**

				standards for SW Validation. We have outside documentation regarding the use of the term SW Validation &Verification; **It is not V&V as defined in the Nuclear Industry.** **2001Aug09** **SK will put out a revised document on V&V in one week. Members shall respond within 30 days.**
43	**Date: 2001Apr03** **Status: Complete**	2000mar08	**Welchel**	Send 1998 Standard NUPPSCO comments to: Hal Paris Bob Felker Bud Havens **2001apr03** Welchel - Delivered 2001apr03
44	**Date: 2002oct29** **Status: Complete**	Priority 1 -	**Paris** **Havens** **Chang**	Clarify Simulator Repeatability wrt to Real-time and not Scenario Based Testing. Repeatability is not specified for Scenario Based Testing but is related to Real-time. 2002oct29 Paris Closed Refer to 2002apr motion to leave wording as is. This item is closed (originated form 1998 NUPSCO comments TVA) 2001Apr05 Paris Concern: What is Repeatability? Further review is needed. See Attachment for AI 44 **2000Oct26:** **Hal and Group will review the use of these terms and consistency**

45	**Date: 2000Oct26** **Status: Complete**	2000mar08	**Shelly Chang Havens**	Clarify Overrides do not have to be tested like Malfunctions and are not Malfunctions. (Survey Comment 3.15 p20) **2000Oct26:** **Non-issue because it's related to CFR and not the standard** Not all Overrides need to be tested Only Overrides in Scenarios need to be tested AI45 Originated from Colby survey Confusion between the CFR about 25%/yr and the 98 standard linking Overrides to Malfunctions Recommend that this is a non-issue and should be closed because its not an issue with the standard but is with the 10CFR Part 55
46	**Date: 2001Aug09** **Status: Complete**		**Committee**	Request members review the other parts of the survey and comment. Members are ask to review and submit two bullets that they consider important for further ANS3.5WG consideration
47	**Date: 2000Oct26** **Status: Complete**	2000mar09	**Colby**	Send Thank You notes to all Survey Participants
48	**Date: 2000Oct26** **Status: Complete**	2000mar09	**Colby**	Modify DCD Training Needs Assessment to Training Impact Assessment **2000Oct26:** **Deleted due to Motion by Felker being Carried** **WG decided to revert back to Training Needs Assessment**
49	**Date: 2000Oct26** **Status: Complete**	2000mar09	**Kozak**	Determine source of Training Needs Assessment Related AI: 15 **2000Oct26:** **Could not determine the Source of Training Needs Assessment**
50	**Date: 2001Apr04** **Status: Complete** **Redundant to AI 10**	2000mar09	**Colby**	Additional survey concerning Exam Security Concerns 2001Apr05

				Colby Close redundant to AI 10. Closed 2001Apr04 Kozak presented a PPT presentation outlining and defining security issues Closed based on better understanding of NUPPSCO.
51	**Date: 2001Apr04** **Status: Closed by Motion**	2000mar09	**Colby**	Send out another survey concerning Multi-unit questions and will try to target Simulator, Training, and OPS 2001Apr04 The WG, by Motion, closed this AI 51 and 32. There was agreement that the 3.5 Standard does not cover simulator configured for Multi-Unit use. The Multi-Unit issues are basically training related and are not minimum reference unit Standard's space. Additional Survey questions will be directed by AI 50. The WG approved a motion to delete AI 32 and AI 51 and Colby will still ask survey questions concerning multi-unit plants;
52	**Date: 2000Oct26** **Status: Complete**	2000mar09	**Felker**	Locate previous Multi-Unit work completed by the 1993 WG. Bob will contact Bill Geiss **Resolution**: 2000Oct26 Felker Material does not exist.
53	**Date: 2001Aug09** **Status: Complete**		**Colby**	Review the Appendix A – A(3) (BOM). Consider removal of the BOM list and replace with I&C list 2001Apr05 Colby March 2000 meeting minutes Working Doc Editor to remove BOM from Appx A
54	Date: 2000Apr05	2000mar09	**Vick**	Aquire US Government Style Guide

	Status: Complete			2001Apr05 Style manual given to Style Editor.
55	Date: 2000Oct25 **Status: Complete**	2000oct25	**Dennis**	Distribute Robert Boire work assignments 2001Oct25 Completed
56	Date: 2000Oct26 **Status: Complete**	2000oct25	**Colby**	Contact Mr. Cox (Com Ed) for 3.5 WG participation. **2000Oct26** **Colby called Mr Cox but Mr Cox is out until 2000Oct30.** **Terrill Laughton attended on behalf of Mr Cox**
57	**Date: 2002Oct29** **Status: Complete**	Priority 1 -	**Dennis** **Vick** **Colby**	Remove all references to 3.1 2002oct29 Dennis - Closed Verified by working group in Standard Draft Rev 6. 2002apr24 Dennis Vick and Colby will determine the changes necessary and bring these to the committee for approval. Revised wording presented to Working Group. One negative comment resolved by personal review of ANS-3.1; Motion passed to accept wording (see 14.11 2002apr22 minutes) 2002apr23 Dennis Get Copy of 3.1 for review. 2001Apr05

				Dennis Deferred for later discussion.
58	**Date: 2002apr24** **Status: Complete**	Priority 1	**Dennis**	Send Robert Boire a note of thanks for his participation 2002apr24 Dennis Closed Letter reviewed by members. 2002apr23 Dennis Letter sent. Get copy of letter for members review. 2001Apr05 Dennis Letterhead not available. Florence will contact Shawn at ANS and request letterhead.
59	**Date: 2002apr23** **Status: Complete**	Priority 1	**Florence McCullough**	Develop a list of Action Items for 3.5-WG resulting from the 2000Oct26 USUG Ops Test Directors Meeting at DC Cook 2002apr23 Closed Closed – Items were reviewed by WG in the Oct 2000 meeting and they were incorporated into the Working Groups public comment to the NRC's proposed rule change. 2001Apr05 Florence Deferred until Florence communicates with McCullough
61	**Date: 2001apr03** **Status: Complete**	2000oct26	Welchel Dennis	Write letter to NRC concerning the WG comments on the proposed rule change 2001apr03 Welchel – Letter Written and mailed to NRC stating the three

				issues regarding the proposed rule change.
62	**Date: 2001Aug09** **Status: Complete**		Koutouzis	Send Meeting Materials to Absent members;
63	**Date: 2001Aug09** **Status: Complete**		Dennis	Address the problem of other standards placing requirements on the ANS 3.5 Standard without our knowledge. (NFSC Sub-Committee I);
64	**Date: 2001Aug09** **Status: Complete**		Florence Dennis	Florence to prepare W. DeLuca letter for T. Dennis signature;
65	**Date: 2001apr03** **Status: Complete**		Welchel	NUPPSCO comment to Kevin Cox (Complete)
66	**Date: 2001Aug09** **Status: Complete**		Havens	Scan NRC Form 398 and Email to WG members
67	**Date: 2001Aug09** **Status: Complete**		Dennis	Contact Shawn concerning Clarification Statement 2001jul11 Ms. Shawn M. Coyne-Nalbach NFSC Secretary American Nuclear Society 555 North Kensington Avenue La Grange Park, IL 60526-5592 Dear Ms. Coyne-Nalbach: Subject: Request for Clarification Reference: ANSI/ANS-3.5-1998 Standard Document, Section 4.4.3.2 I am a supervisor for the Nebraska Public Power District's Cooper Nuclear Station responsible for maintaining the functional requirements for our full-scope nuclear power plant control room simulator used for operator training and examination. I am writing this letter to your organization to request a clarification to the reference document in regards to Simulator Scenario-Based Testing.

				Section 4.4.3.2 of the reference document states that scenarios developed for the simulator, including the appropriate instructor interfaces and cueing, shall be tested before use for operator training or examination. The simulator shall be capable of being used to satisfy predetermined learning or examination objectives without exceptions, significant performance discrepancies, or deviation from the approved scenario sequence. A record of the conduct of these tests, typically in the form of a completed scenario or lesson plan checklist, and the evaluation of the test results, shall be maintained. I am concerned that the Standard requires scenarios developed for the simulator shall be tested before use for operator training or examination. It appears that this requirement may not be achievable with all operator training programs, namely initial license candidate training programs. Please clarify the preceding paragraph by addressing the following questions: 1. What is the intent of scenario-based testing? Does scenario-based testing impose additional training program requirements? ANS-3.5 Working Group answer: Scenario Based Testing is intended to best utilize, to the extent possible, the existing training scenario development process without imposing additional training program requirements. 2. How does scenario-based testing interface with simulator performance testing? ANS-3.5 Working Group answer: Simulator performance testing comprises Operability and Scenario Based Testing and establishes a test program to ensure simulator performance for the use in operator training and examination. 3. Do simulator users have to test each scenario before every use, including those utilized to support initial license candidate training programs? Can training programs that utilize simulators currently certified to previous editions of the standard take testing credit for

				simulator performance testing and simulator scenarios previously developed and approved for use in operator training or examination? ANS-3.5 Working Group answer: Users of the standard are encouraged to take testing credit for simulator performance testing and simulator scenarios previously developed and approved for use in operator training or examination. This does not imply that a scenario shall be tested before every use, however the following items should be considered before subsequent use of the approved scenario developed for operator training or examination: * If the training process requires revalidation of the scenario; * Whenever models or simulator capabilities are changed or modified in a way that affects the scenario performance. If any of the above items have occurred and impact the scenario, the scenarios shall be re-tested before use for operator training or examination. I would appreciate a clarification statement from the ANS-3.5 Working Group. Thank you for your attention to my request. Sincerely, James B. Florence Simulator Supervisor Nebraska Public Power District Cooper Nuclear Station Brownville, NE 68321 Phone: 402-825-5700 Pager: 402-977-3692 Fax: 402-825-5584 Email: jbflore@nppd.com
68	**Date: 2003Mar11** **Status: Complete** **Date: 2002oct30**	Priority 1	**Colby** **Shelly** **Felker**	Survey #2 Multi-Unit Different OPS Procedures Fuel Cycles

	Status: Re-Opened **Closed** **2002apr24**			Time Delay loading Sim Fuel load Unit Procedure Differences and Training **2003Mar11** **Colby** **Presented list of survey results.** **Motion:** **Delete Malfunction List Table in Section 3.1.4 and move to Appendix A** **2003Mar10** **Colby** **Presented list of survey results.** **This item was originally discussed in AI-83.** **2002oct30** **Reopened to consider additional Survey data.** **Consider AI-83 - Malfunctions List and Survey Results** 2002apr24 Colby Recommend Closing due to information will be handled by future Action Items. 2002apr23 Colby Nothing here that would be changed in the 2003 standard. 2001AUG7 All survey's have not been received, so the final results of the survey will be discussed at our next meeting in March.
69	**Status: Complete** **2002apr24**		**Vick**	Check out and report information on SECY-01-0125 2002apr24

				Vick Simulator rule is in effect Nov 16,2001 and SECY reference is now background info only.
70	**Date: 2002oct29** **Status: Complete**		**Florence**	Come up with a set of rules for use and what will go on the web site. **2002oct29** Florence Closed WEB Site Changes: • Only latest minutes will be posted • Contact Keith Welchel to request previous minutes • ANS 3.5 WEB will not be password protected • Remove membership contact info accessible by general public 2002apr24 Florence Handout presented to members for review. AI-70 will be closed when the ANS 3.5 WEB site is password protected. Password protect the ANS 3.5 WEB site and post amended ANS 3.5 WEB page use policy.
71	**Date: 2002apr24** **Status: Complete**		**Dennis**	Vary if ANS normally provide the minutes of group meetings 2002apr24 Dennis Provided by request by ANS.
72	**Date: 2001Nov27** **Status: Complete**		**Shelly**	Check if we can add an appendix and still reaffirm **2001Nov27**

				Shelly I contacted Suriya with this question, and his response was that a standard can be reaffirmed if the appendix/annex will be informative. If the additional appendix is informative, then you should supply a statement in the foreword regarding this informative piece. The statement in the forward is NOT required but highly recommended. The standards can not be reaffirmed if the additional appendix will be normative. In this case the standard will have to be considered under the revision process through ANSI. According to Webster's, NORMATIVE means "of, relating or conforming to, or prescribing norms". Based on this, we could add an appendix to the standard and still reaffirm the current standard, but we must ensure the appendix contains clarifying information and doesn't prescribe any new requirements or parameter limits. I consider this action closed unless someone knows of a need for further research on this issue.
73	**Status: Complete 2002apr24**		**Dennis**	Send the clarification letter to ANS on the Scenario Based Testing 2002apr24 Dennis

				Published in the Nuclear Standards News, Vol. 33/No. 2 March-April 2002
74	**Status: Complete 2002apr24**		**Dennis**	Contact ANS Standards Administer to determine if we can refer to documents other than ANS Standards 2002apr24 Dennis
75	**Status: Complete 2002apr24**		**Jim Florence**	Contact the industry 2002apr24 Florence does not know what this is about. Recommend to close .
76	**Status: Complete 2002apr24**		**Butch & Hal**	To research Germany regulatory standards and navy standards 2002apr24 Colby Most International simulator customers refer to ANS 3.5 in their purchase spec
77	**Status: Complete 2002apr22 Dennis**		**Dennis**	Determine if the ANS 3.5 Working Group name will change due to the ANS 3 to ANS-21 name change. Closed 2002apr22 Dennis contacted Suriya Ahmad at ANS headquarters and no change is planned for ANS 3.5.
78	**Status: Complete 2002apr24**		**Keith Welchel**	AI16 - Prepare a document for review by ANS members that shows the result of substituting Difference for Deviation/Discrepancy. 2002apr24

				Colby Prepared summary of all Deviation/Discrepancy and Difference replacements and reviewed with members.
79	**Date: 2002oct30** **Status: Complete**		**Vick** **Cox** **Kozak**	Bring to the committee recommendation for implementing Roberts Rules or Order. (i.e. Revisiting Motions Not-carried) **2002Oct30** **Cox** **Consensus that Robert's Rules of Order will used a general guide**
81	**Date: 2002Oct29** **Status: Complete**		**Dennis**	Get copy of ANS 3.1 for members review. **2002oct29** **ANS 3.1 is no longer referenced in ANS 3.5; No need for ANS 3.1.** **2002Apr24 Closed** **Dennis** **Copy of ANS-3.1 obtained from ANS Standards Secretary.** **Copy given to requesting Working Group member for review.**
82	**Status: Complete** **2002apr24**		**Dennis**	Get copy of Letter of thanks to Robert Boire for members review 2002apr24 Dennis Members reviewed letter
83	**Date: 2002oct30** **Status: Complete**		**Colby**	Compare 3.1.4 Malfunction List with 10 CFR Part 55.59 **2002oct30** **Colby** **Reviewed items that are in 10CFR55.59 but are not in the Standard. This item was discussed before.**

				This item may be discussed in AI-68. 2002oct29 Colby Reviewed 10CFR55.59 List (See Appendix AI-83)
84	**Date: 2002oct29** **Status: Complete**		**Florence**	Review 4.4.3.1 for clarity concerning SBT and to remove Certification reference **2002oct29** **Florence** Complete Refer to AI-40 AI-84 was completed at Jackson meeting via AI-40. Cannot find reference in past minutes why this AI was created. AI-84 has been completed and is thus Closed.
85	**Date: 2002Oct28** **Status: Complete**		**Welchel**	Create another Bucket to place 2008 deferred AI's **2002Oct28 Closed** **Welchel** **New Section and Table to Hold Deferred Action Items**
86	**Date: 2002oct29** **Status: Complete**		**Colby** **Florence**	Create Frank Collins Plaque for review membership 2002oct29 Colby Colby create a plaque for the group to consider. Plaque is mahogany base with Brass ANS Logo and wording.
87	**Date: 2002oct29** **Status: Complete**		**Colby**	Review MANTG Simulator Historical base-line data 2002oct29 Colby Closed – Reference Section 5.1 "Current Simulator"
88	**Date: 2003Mar10**		**Cox**	Review simulator Fidelity. Standard does not define Software

	Status: Complete			Fidelity, only HW Fidelity **2003Mar10** **Vick** **New AI - Recommends having Document Edited by a Technical Editor** **Complete – No need to define SW fidelity.** 2002oct30 Cox Cox and Vick will recommend new definition.
89	**Date: 2002oct29** **Status: Complete**		**Shelly** **Vick**	Review 4.4.3.1 "once per year on a calendar basis language" **2002oct29** **Shelly** **Defeated on Motion**
90	**Date: 2003Mar12** **Status: Complete**		**Florence** **Colby** **Cox** **Chang**	Review all Section for alignment specifically Sections 3.4 and 4.4 and report and recommend new Section alignments **2003Mar12** **Colby** **Report to committee complete** **AI-Closed** **Refer to AI-102** **2003Mar11** **Colby** **Motion: Defer AI-90 to 2008 Standard** **Motion withdrawn pending further discussions** 2002oct30 Colby Action deferred to next meeting. See AI-90 meeting minutes

				2002oct30.
91	**Date: 2003** **Status: Complete**		**Dennis**	Call Mike Wright and get a determination on standards organizational alignment and possible standards name change **2003Mar11** **Dennis** **Refer to AI-77** **No further change from NFSC Nov 2002 meeting** 2002oct28 Dennis
92	**Date: 2003Mar11** **Status: Complete**		**Florence** **Colby** **Kozak**	Improve Definition of Simulation facility to include Part-task and limited scope. (coordinate with Scope State) **2003Mar11** **Colby** **Motion:** **Revise Scope Statement**
93	**Date: 2003Mar10** **Status: Complete**		**Shelly**	Appendix and Standard Dates referencing Are Appendices required to reference the standard's published date. **2003mar10** **Shelly** **Contacted Suriya Ahmad of ANS.** **Response: The appendix reference to the standard's published date is part of the ANSI's format when publishing a standard. Therefore, it can not be removed.**
94	**Date: 2003Mar10** **Status: Complete**		**Colby**	Align Appendix Header dates to Appropriate Published Standard Date **2003Mar11**

				Colby: **Presented New Appendix Wording**
95	**Date: 2003Mar11** **Status: Complete**		**Felker** **Florence** **Kozak**	Section 4.4.3.2 New 4.4.3.2 wording and/or integrate 4.4.3.1 and 4.4.3.2 **2003Mar11** **McCullough** **Motion to add procedural in Section 4.4.3.2 and Appendix E.** **Modify Paragraph Numbered Item (2) Section 4.4.3.2** (2) the simulator is capable of producing the expected reference unit response without procedural exception, significant performance discrepancies, or deviation from an approved scenario sequence; **Modify paragraph after "Scenario Lesson Plan Title:" in Appendix E** This test verifies that the simulator may be used to satisfy predetermined learning or examination objectives without procedural exception, significant performance discrepancies or deviation from the approved scenario sequence, including the appropriate instructor interfaces, operator actions, and operator cues.
96	**Date: 2002Oct30** **Status: Complete**		**Kozak** **Chang**	Locate a copy of INPO document concerning pre-running Scenarios and determine what validation is required. **2002Oct30** **ACAD 90-022 – "Guidelines for Simulator Training"** **The document uses the word "should" to validate scenarios before use in operator training.** **This document is only a guide.**
97	**Date: 2003Jul24**		**Dennis**	Determine reference usage within ANS Standards. Can the 3.5

	Status: Complete			Standard reference an INPO document? **2003Jul24** **Dennis presented minutes from NFSC meeting. It was noted that INPO documents are not generally available to the public at large and should be avoided. But, they may be used if required.** 2003Mar11 Dennis Researching using documents not available to general public.
100	**2003Jul24** **Status: Complete**		**<u>PWR</u>** **McCullough - Lead** **Neis** **Chang** **Kozak** **Welchel** **<u>BWR</u>** **Havens - Lead** **Felker** **Florence** **Panfil** **Tarselli** **Vick - Coordinator**	Create two subcommittee's (PWR and BWR) that will investigate Core Performance testing inclusion into the Standard. • Review Section 3.1.3 "Normal Evolutions" Item 9 ANS 3.5 1998 with regard to Core Performance testing for PWR and BWR types. • Should Core Performance be in Section 3.1.3 Is Unit Performance Testing the correct term or did the committee mean Core Performance Testing. **2003Jul24** **Closed** **Accept changes to sections: 3.1.5, 4.1.5, 4.4.3.1, 5.3.2** 2003Mar10 Initial Action Item.
101	**2003Jul24** **Status: Complete**		**Neis** **Felker** **Kozak**	Review 3.2.1.4 for language clarification **2003Jul24**

				Neis **Proposed new Wording** **Passed by Amended Motion** 2003Mar10 Initial Action Item.