ANS-3.5 WORKING GROUP

AMERICAN NUCLEAR SOCIETY

A N S

ANSI/ANS-3.5 Discussion

Organizational Definitions

ANS-3.5 Working Group Members

ANSI/ANS-3-5 Usage Update

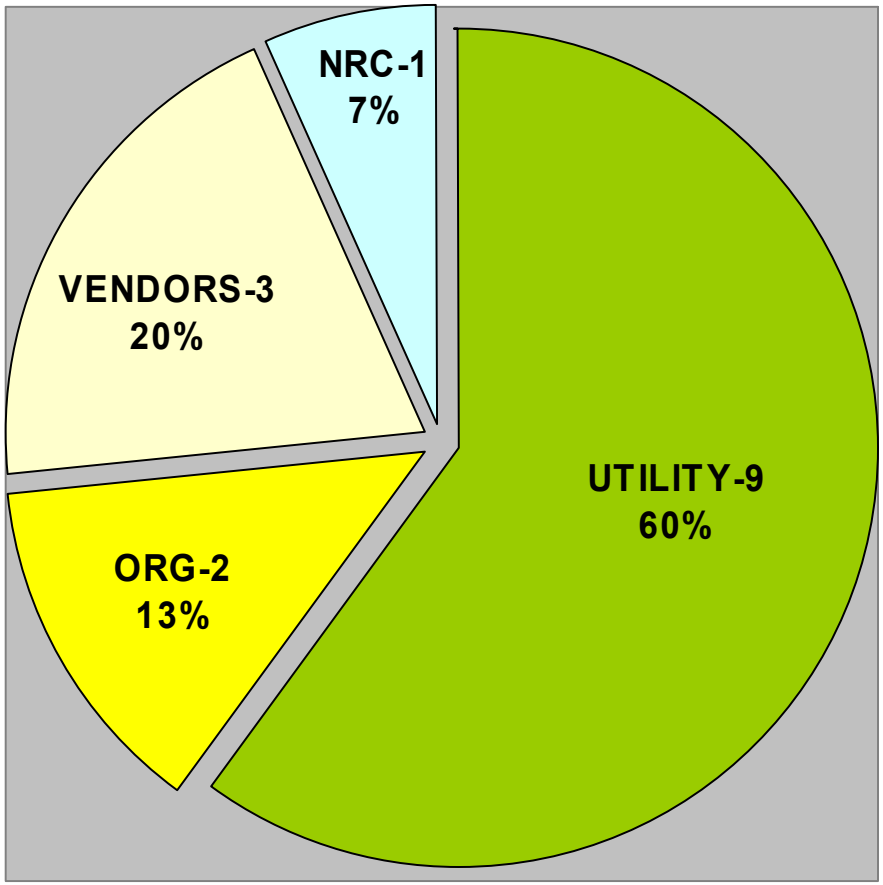
Summary of Changes

ANSI/ANS-3.5 Organizational Definitions

- ANS - American Nuclear Society
- ANSI - American National Standards Institute
- ANS-3.5 - Working Group is comprised of Industry, Regulatory, and Organizational/Individual Volunteers

ANS-3.5 Working Group Membership

ANS-3.5 Working Group Balance of Interests



ANS-3.5

Working Group

Members

ANS-3.5 Officers List

- Chair - Timothy Dennis
  - *Individual (chair of ANS-21/member NFSC executive committee)*
- Vice-chair - Jim Florence
  - *Nebraska Public Power District - Cooper Nuclear Station*
- Secretary - Keith Welchel
  - *Duke Energy - Oconee Nuclear Station*
- Editor - F J (Butch) Colby
  - *L3 Communications MAPPS Inc (formerly CAE)*
- Style Editor - William M (Mike) Shelly
  - *Entergy Services, Inc*
- Parliamentarian – Lawrence Vick
  - *U S Nuclear Regulatory Commission*

ANS-3.5 Utilities

- James B Florence (vice-chair)
  - *Nebraska Public Power District (Cooper Nuclear Station)*
- Keith P Welchel (secretary)
  - *Duke Energy (Oconee Nuclear Station)*
- George S McCullough
  - *GSES (formerly American Electric Power - D C Cook Nuclear Station)*
- Allan A Kozak
  - *Dominion Resources (North Anna Power Station)*

ANS-3.5 Utilities

- William M (Mike) Shelly (style editor)
  - *Entergy Services, Inc*
- Oliver H (Bud) Havens Jr
  - *PSEG Power*
- Shih-Kao (SK) Chang
  - *Dominion NE (Millstone Nuclear Power Station)*
- Kevin Cox
  - *Exelon Generation (Dresden Nuclear Power Plant)*
- Jane B Neis
  - *Constellation Energy (R E Ginna Power Plant)*

ANS-3.5 Organizations

- Timothy Dennis (chair)
  - *Individual*
- J Dennis Koutouzis
  - *Institute of Nuclear Power Operations*

ANS-3.5 Vendors

- F J (Butch) Colby (editor)
  - *L-3 Communications MAPPS Inc (formerly CAE)*
- Hal O Paris
  - *GSE Systems, Inc*
- Robert A Felker
  - *Western Services, Inc (formerly ExiTech Corp)*

ANS-3.5 Regulatory

- Larry Vick (parliamentarian)
  - *U S Nuclear Regulatory Commission*

ANS-3.5 Experience

- 441 years (Nuclear and 50 Military)
- 130 years Ops/Training/Mgmt
  - 55 Ops
  - 75 Training/Management
- 216 years Simulator Tech/Eng/Mgmt

ANS-3.5 Additional Contributions

- Terry R Byron
  - *Institute of Nuclear Power Operations*
- Jeffery J Cataudella (former Chair)
  - *Dominion NE, Millstone Nuclear Power Station*
- J Frank Collins
  - *U S Nuclear Regulatory Commission*
- Michael Fedele
  - *CAE-Aviation Systems*
- Don Noe
  - *GSE Systems, Inc.*

ANS-3.5 Additional Contributions

- Barney Panfil
  - *FirstEnergy Corp FENOC (Perry Nuclear Power Plant)*
- Frank A Tarselli
  - *PP&L (Susquehanna Steam Electric Station)*
- David C Trimble Jr
  - *U S Nuclear Regulatory Commission*
- Michael Wyatt
  - *Exelon Generation (Nuclear)*

American Nuclear Society

5yr Standards Development Process

American Nationals Standards Institute

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American Nuclear Society Standards Committee

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Nuclear Facility Standards Committee

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ANS-21 Standards Sub-Committee

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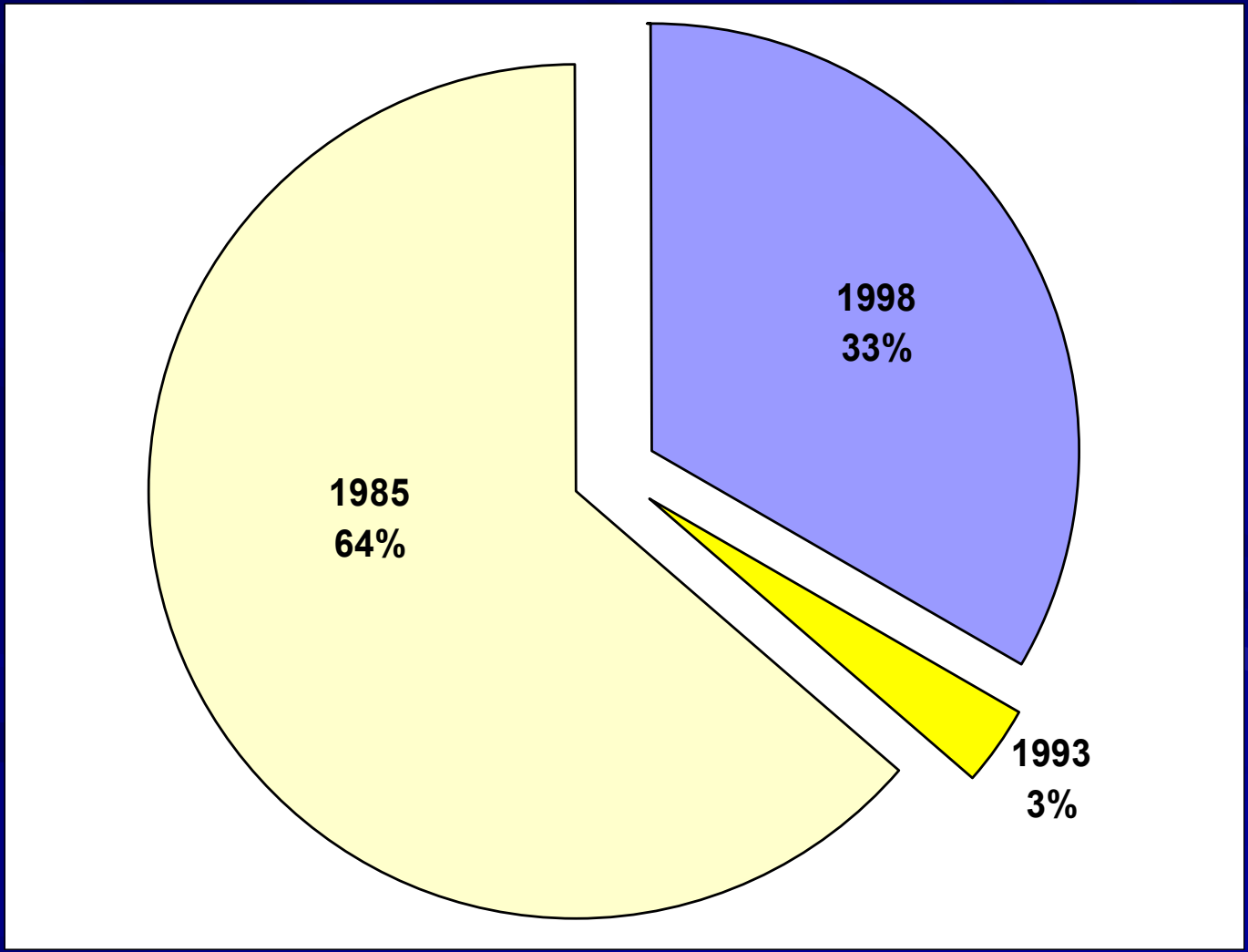
ANS-3.5 Working Group

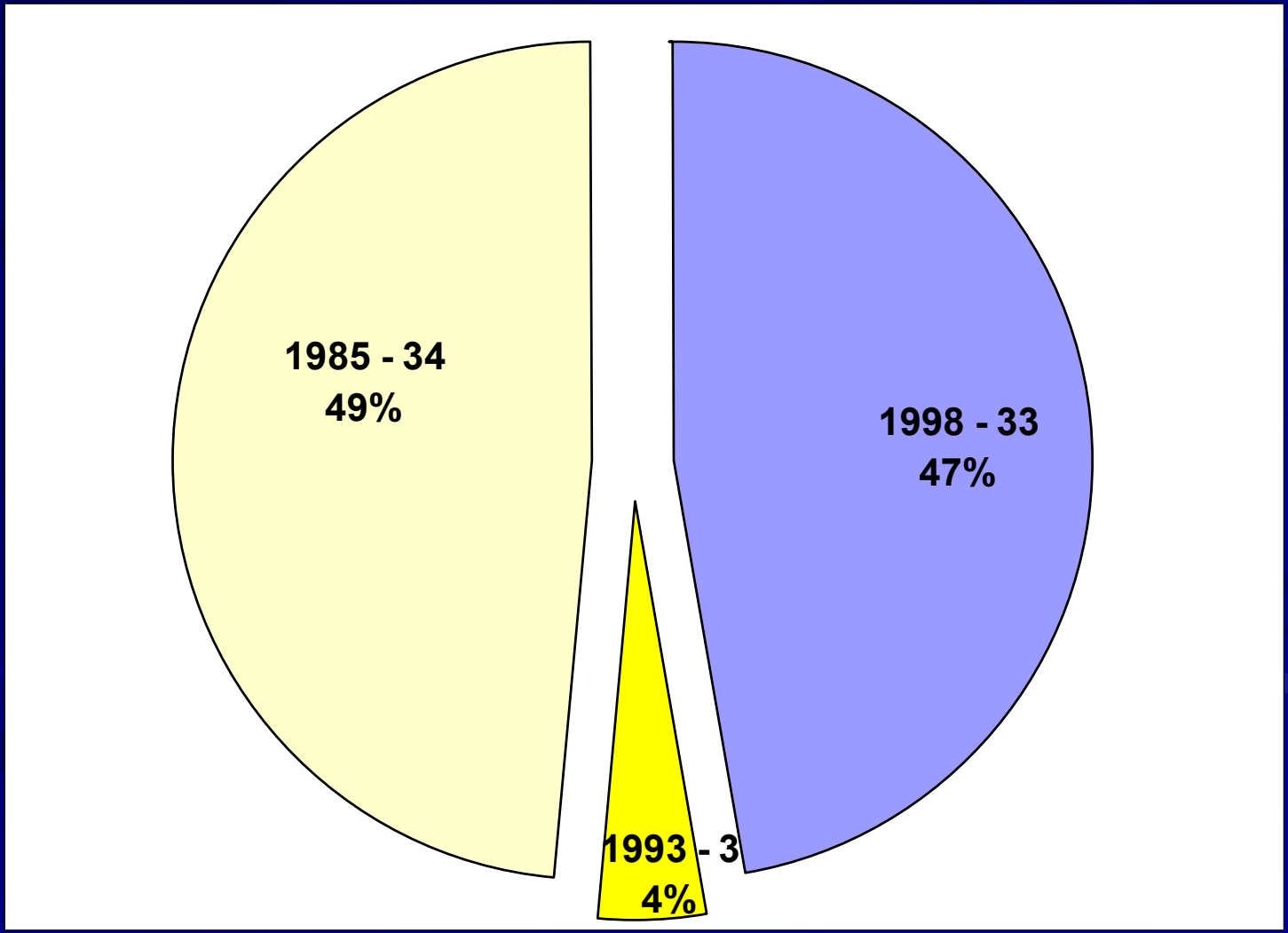
ANS 3.5 Working Group Meetings

1) ANS Headquarters, La Grange Park, Illinois
2) Oconee Nuclear Station, Oconee County, South Carolina
3) Cooper Nuclear Station, Brownville, Nebraska
4) Virginia Power Innsbrook Technical Center, Richmond, Virginia
5) D.C. Cook Nuclear Plant, Bridgman, Michigan
6) INPO, Cobb County, Georgia
7) CAE, Montreal, Quebec, Canada
8) Entergy, Jackson, Mississippi
9) AEP Simulator Learning Center, St. Albans, West Virginia
10) GSE Systems, Columbia, Maryland
11) Exitech, Maryville, Tennessee
12) Exelon, Kennett Square, Pennsylvania
13) DS&S, Frederick, Maryland
14) Constellation Energy, R E Ginna Power Plant, Ontario, New York
15) PSE&G Salem/Hope Creek, Salem, New Jersey

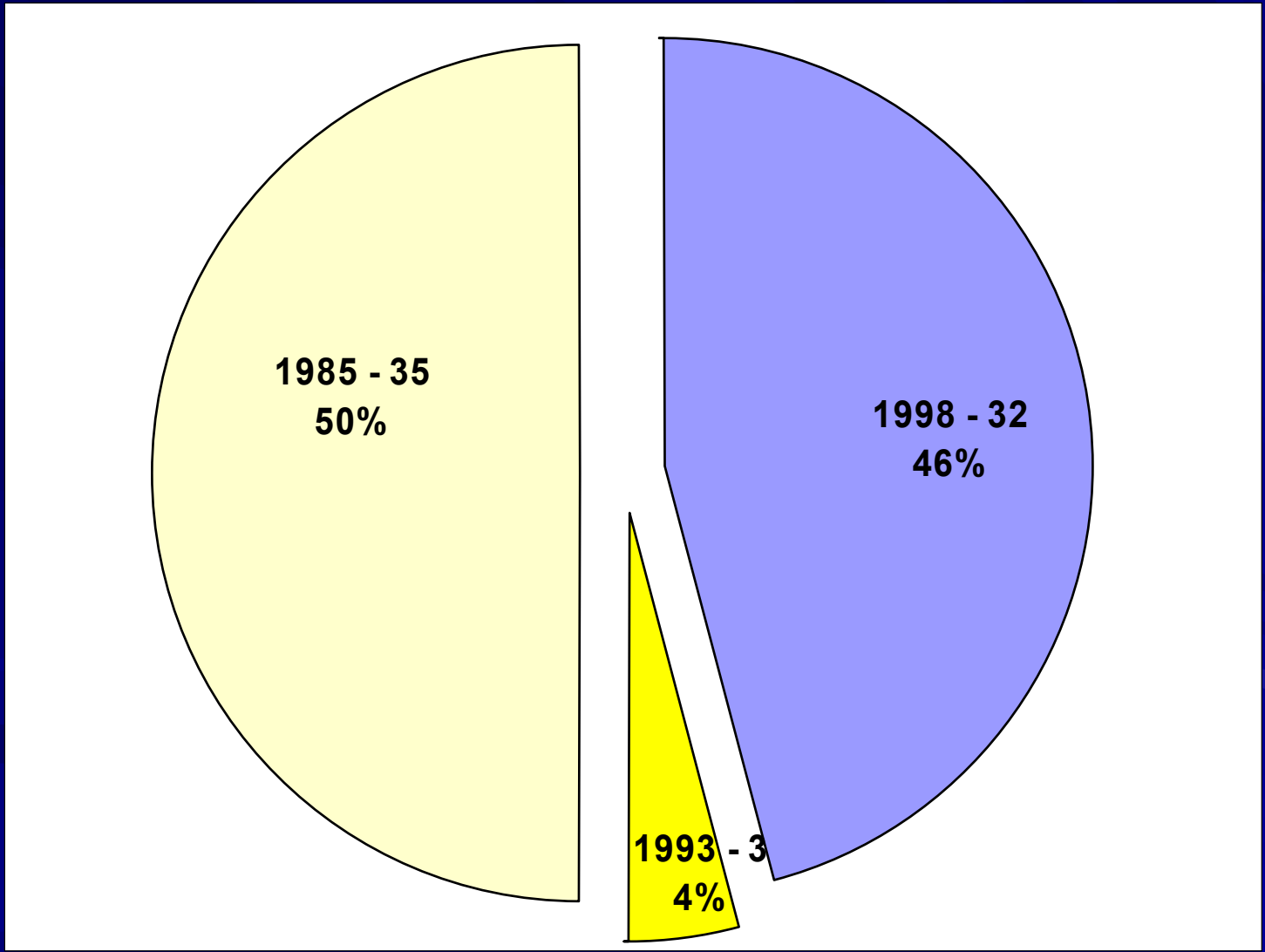
Standards Transition Status 2003



Standards Transition Status 2004



Standards Transition Status 2005



Standard Adoption by Utility

Company	Simulator	1998	1993	1985
Exelon	10	0	1	9
Entergy	10	6	0	4
NMC	6	3	0	3
FENOC	4	2	0	2

Standard Adoption by Utility

Company	Simulator	1998	1993	1985
Progress	4	4	0	0
Dominion	4	4	0	0
Constellation	4	3	0	1
TVA	3	0	0	3

Standard Adoption by Utility

Company	Simulator	1998	1993	1985
Duke Energy	3	2	0	1
Southern	3	0	0	3
Florida	3	3	0	0
PSE&G	2	0	2	0
Independent	14	6	0	8

Over View

Butch Colby
ANS-3.5 Editor

Major Changes

- Scope
- Align Section's 3 and 4
- Editorial Enhancements
- Core Testing
- Scenario Based Testing
- Post Event Simulator Testing

Major Changes

Scope

Part Task Simulators

ANS 3.1 Reference

Major Changes

Align Sections 3 and 4

Section 1.2 Back Ground

Major Changes

Editorial Enhancements

Expert Technical Writers From The NRC and INPO

Major Changes

Core Testing

Section 3.4.3.3

"Simulator reactor core performance testing shall be conducted to confirm that the simulator nuclear and thermal hydraulic models replicate the reference unit core response within the scope of simulation"

Major Changes

Core Testing

Section 4.4.3.3

Simulator reactor core performance testing shall be conducted each reference unit fuel cycle. Testing shall be performed in accordance with the reference unit procedures and shall be compared and demonstrated to replicate the response of the reference unit.

It shall be demonstrated that the simulator response during conduct of simulator reactor core performance testing meets the reference unit procedures' acceptance criteria

A record of the conduct of this test and its evaluation shall be maintained.

Major Changes

Simulator Scenario-Based Testing

Section 3.4.3.2

Scenario-based testing shall be conducted to ensure the simulator is capable of producing the expected reference unit response to satisfy predetermined learning or examination objectives by utilizing the existing training and examination scenario validation process.

Major Changes

Simulator Scenario-Based Testing

Section 4.4.3.2

The intent of scenario-based testing is to ensure the simulator is capable of producing the expected reference unit response to satisfy predetermined learning or examination objectives by utilizing the existing training and examination scenario validation process to ensure the following:

(1) The scenario meets the predetermined learning or examination objectives and includes the appropriate instructor interfaces, operator actions, and operator cues; and
(2) The simulator is capable of producing the expected reference unit response without significant performance discrepancies, or deviation from an approved scenario sequence.

Major Changes

Simulator Scenario-Based Testing

Section 4.4.3.2 (Cont.)

Test data shall be acquired during scenario validation for subsequent evaluation of malfunctions, local operator actions, and other features exercised by the scenario. Evaluation of the test data shall consider:

(1) The simulator allows the use of applicable reference unit procedures;
(2) Any observable change in simulated parameters corresponds in direction to the change expected from actual or best estimate response of the reference unit to the malfunction;
(3) The simulator shall not fail to cause an alarm or automatic action if the reference unit would have caused an alarm or automatic action under identical circumstances; and
(4) The simulator shall not cause an alarm or automatic action if the reference unit would not cause an alarm or automatic action under identical circumstances.

Major Changes

Simulator Scenario-Based Testing

Section 4.4.3.2 (Cont.)

Results of this evaluation shall be documented and include:

(1) The initial conditions, description of the scenario and perturbations used to induce the transient;
(2) Positive demonstration or, alternatively, an assertion that the learning or examination objectives were met;
(3) Listing of key parameters checked and assertion that there were no unexpected changes;
(4) Listing of key alarms and automatic actions occurring and assertion that they would be expected for the scenario; and
(5) Assertion that no unexpected alarms and automatic actions occurred.

Major Changes

Post Event Simulator Testing

3.4.3.4

Certain reference unit events provide the opportunity to acquire relevant reference unit performance data. For such data, post event simulator testing should be conducted to confirm that the simulator is capable of reproducing the response of relevant reference unit parameters within the scope of simulation

Major Changes

Post Event Simulator Testing

4.4.3.4

Post event simulator testing should be conducted when a reference unit event generates relevant data for evaluating simulator performance. Such testing shall:

(1) Consider the sequence-of-events, operator actions, and be performed in accordance with reference unit procedures; and
(2) Demonstrate that post event simulator testing is conducted and relevant data compared to ensure that the simulator is capable of reproducing the response of relevant reference unit parameters within the scope of simulation.

Future Standard

- Class Room Trainers
- Digital Control Systems
- Web based or Net Work Testing/Training
- Virtual Reality
- Inputs From the Industry?
- Others

Questions