American Nuclear Society (ANS)
STANDARDS BOARD (SB) Minutes
Town and Country Hotel and Convention Center, San Diego, California
November 13, 2012

Members Present:
Donald J. Spellman, *Standards Board Chair, Oak Ridge National Laboratory*
James K. August, *Standards Board Vice Chair, CORE, Inc.*
Robert J. Budnitz, *JCNRM Co-Chair*, *Lawrence Berkeley National Laboratory*
Robert D. Busch, *N16 Chair, University of New Mexico*
Calvin M. Hopper, *Observer, Individual*
N. Prasad Kadambi, *ISO & ANSI Liaison, Individual*
James Mallay, *Observer, Individual*
Herbert W. Massie, *Member at Large, Defense Nuclear Facilities Safety Board*
Carl A. Mazzola, *NFSC Chair, Shaw Environmental, Inc.*
Caroline McAndrews, *Southern California Edison*
Charles H. (Chuck) Moseley, *Member at Large, Individual*
R. Michael Ruby, *Member at Large, Individual*
*R. David Sachs, *Member at Large, Individual*
Andrew Smetana, *N17 Chair, Savannah River National Laboratory*
Patricia A. Schroeder, *Standards Board Secretary, American Nuclear Society*
Steven L. Stamm, *Member at Large, Individual*
William M. Turkowski, *Member at Large, Westinghouse*
Edward Wallace, *Member at Large*, *NuScale Power Inc.*

Members Absent:
William C. Gattoni, *Member at Large, Burns & Roe*
Walter M. Justice*, Member at Large, Tennessee Valley Authority*
Mathew M. Panicker, *Member at Large, U.S. Nuclear Regulatory Commission*
James Riley, *Liaison, Nuclear Energy Institute*

Guests:
Michael Corradini, ANS President, *University of Wisconsin-Madison*
* Peter S. Hastings*, Babcock & Wilcox mPower*
Donald Hoffman, ANS President-Elect, *Excel Services Corporation*
William Reuland, *Individual*

*participated by phone

1. Welcome and introductions
Chairman Donald Spellman called the meeting to order at 8:32 a.m. and welcomed all. Introductions were made. Being new to the Standards Board (SB), Ed Wallace provided the membership a brief history of his experience.

2. ANS President-Elect Report
Donald Hoffman introduced himself as the Vice-President/President-Elect of the American Nuclear Society (ANS). He addressed the recent request from the U.S. Nuclear Regulatory Commission (NRC) to develop standards to support post-Fukushima guidance as well as the request from the Nuclear Energy Institute (NEI) for ANS to defer initiation of these standards. Hoffman stated that ANS needed to take full advantage of this opportunity to support the industry. He offered the support of the ANS Executive Committee to help prepare for the upcoming Nuclear Energy Standards Coordinating Committee (NESCC) and NRC meetings on November 29, 2012, and November 30, 2012, respectively,

being held to discuss standards needed to support post-Fukushima guidance. It was important to make a strong presentation and be successful.

Hoffman expressed concern about what he saw as encroachment by the American Society of Mechanical Engineers (ASME). He believed that a Memorandum of Understanding (MOU) between the two societies was needed to define each other's territory. Steven Stamm informed Hoffman that an MOU had been prepared for the ANS/ASME Joint Committee on Nuclear Risk Management (JCNRM), but that the ASME had not yet signed. As the JCNRM Co-Chair, Robert Budnitz stated that he didn't see a concern with the JCNRM scope as new projects required approval of both societies' governing boards. Prasad Kadambi clarified that there were Probabilistic Risk Assessment (PRA) applications that have not be addressed in a procedure/agreement.

Action Item 11/12-01: Robert Budnitz and Prasad Kadambi to prepare a list of items to be defined in a MOU with the ASME. (January 2013)

At the request of Hoffman, Standards Board members identified several areas that could use Executive Committee support and backing. Members immediately requested help in making the volunteer database that was proposed eight years ago a reality. Members identified several other items needed and areas that could benefit from his involvement. Hoffman asked that a list of key items with solutions be provided to him through Spellman.

Action Item 11/12-02: Steven Stamm along with Jim August and Prasad Kadambi to develop a list of areas needing ANS Executive Committee support for Hoffman w/solutions by end of December 2012.

Hoffman asked to see the NESCC/NRC presentation prior to it being presented. He stated that he would try to rearrange his schedule to attend the meeting. He believed that it was important for industry to know that the entire ANS Society was supportive. In closing, Hoffman added that he looked forward to working with the committee to help it become successful.

Members agreed to take a few minutes to discuss what they believed were the highest priority needs to request assistance of the Executive Committee. Caroline McAndrews suggested that a strategic plan would be beneficial to direct the Standards Board. She added that we can't react to everything; we need to leverage our strength to become the Society of choice. The first step would be to develop a swat analysis and put it on a strategic map. Stamm agreed that this would be important, but feels that our first action would be to get a list of areas needing support to Hoffman and prepare for the NESCC/NRC meetings. Stamm summarized five areas that would benefit from support of the Executive Committee. They are as follows:

- ASME MOU and interface;
- NEI support of standards;
- Organizational support for volunteers and volunteer resources (utility support);
- IT resources (volunteer database and e-balloting); and,
- NESCC direction.

3. Approval of agenda

The agenda was approved as presented with the understanding that other items would be discussed under other business as time permitted.

4. Chairman's Report

A. Overview of major topics

Donald Spellman highlighted the following three focus areas for the Standards Committee as: 1) Standards Development; 2) ANS Process Improvements; and, 3) International Cooperation. See Attachment A for a list of sub-items under the main focus areas.

B. Standards Board Report to the Board of Directors
The Standards Board Report to the ANS Board of Directors was provided in the meeting materials packet for information. Members were directed to review the report on their own time. The report is provided as Attachment B.

C. Western European Nuclear Regulator's Association (WENRA) Report
Spellman informed members that he attended the WENRA meeting in Paris on October 22, 2012. He explained that they took the International Atomic Energy Agency (IAEA) safety guides and created regulations which were opposite to how we developed standards. Caroline McAndrews clarified that this was an extremely voluntary action. Spellman stated that he provided suggestions to WENRA how we could interact in the future. He would like for each organization to have a liaison and attend each other's meetings. Spellman requested Robert Budnitz to temporarily take on the liaison position as he already had interactions with WENRA.

Action Item 11/12-03: Robert Budnitz to temporarily serve as the WENRA liaison.

Spellman questioned whether ANS standards could include appendices to accommodate international use. Chuck Moseley mentioned a crosswalk matrix used by ASME for that purpose. Spellman provided a presentation on the WENRA meeting available as Attachment C.

D. ANS Tasking from NRC
Spellman elaborated on the request ANS received from the NRC to develop standards to support post-Fukushima guidance discussed earlier. He explained that there were two different tasks from the NRC. The first was a standard for Integrated Safety Analysis (ISA) for fuel cycle facilities; the second was for the development of four or five standards to address Fukushima Near Term Task Force (NTTF) Tier 3 guidance. Spellman informed members that he planned to prepare a grant request to incorporate multiple items including the ISA standard and others in support of Tier 3 needs. Budnitz stated that a JCNRM subcommittee was looking at PRA standards needed to support Fukushima NTTF. So far, the JCNRM identified a tentative need for a PRA standard for spent fuel pools, but a decision to launch such a new standard has been deferred until the next JCNRM meeting in Phoenix in February 2013.

Action Item 11/12-04: Donald Spellman to begin development of one or more grants for ANS support. (January 2013)

5. Standards Board Special Committee

Steven Stamm directed members to a presentation he provided (Attachment D). He explained that an action item was assigned at the June 2012 SB meeting creating a special committee to look at the drivers for a reorganization of the Standards Committee and to establish a path forward. Out of these discussions, the special committee also determined that there was a need for a new high-level SB committee to establish overall guidance to incorporate risk and performance principles in ANS standards where appropriate; the Risk and Performance Based Principles Policy Committee (RPBPPC). This committee would then evaluate all ANS standards based on the established principles and make recommendations for potential changes. Stamm explained that the membership of the proposed RPBPPC would be appointed by the SB. The RPBPPC was envisioned as a SB standing committee and would provide guidance for consensus committees and its working groups. Robert Budnitz stated that the JCNRM had already established a new subcommittee to perform similar activities that could coordinate with the RPBPPC. This JCNRM group would determine if they had the right expertise and would be the interface with the proposed ANS RPBPPC.

Members were reminded that procedures were drafted for the RPBPPC and had been issued earlier for ballot; however, the ballot was put on hold until a discussion could be held at this meeting. With no additional questions and a positive reaction, Stamm stated that he would incorporate comments previously received from Chuck Moseley and provide the revised procedures to Pat Schroeder to issue for approval.

Action Item 11/12-05: Steven Stamm to incorporate Chuck Moseley's comments into the RPBPPC procedures and provided to Pat Schroeder to issue for approval of the Standards Board. (December 2012)

Stamm anticipated that the RPBPPC could be up and running by February 2013. Membership would need to be appointed. Consensus committee chairs were requested to appoint at least one representative to serve as a member of the RPBPPC.

Action Item 11/12-06: Consensus committee chairs to appoint at least one representative to serve as a member of the RPBPPC. (January 2013)

6. ANS President Report

ANS President Michael Corradini was introduced. Corradini thanked the SB for accepting the NRC's request to develop standards to support post-Fukushima guidance and asked members to introduce themselves and provide a brief summary of their involvement in the ANS standards program. Corradini stated that a number of initiatives were initiated including the approval of ANS to support the International Organization of Standardization (ISO) as secretary to Technical Committee (TC) 85 Subcommittee (SC) 6. He informed the members of a meeting held that today regarding ongoing collaboration with other societies. Corradini stated that the new ANS executive director understands the significance of standards to the industry and that standards are a mission of the society regardless of the revenue produced. Robert Budnitz correlated the involvement of nearly 1000 volunteers as an indication of the significance of standards to ANS members and the industry.

Donald Spellman informed Corradini of an effort underway to promote ANS standards and increase sales both nationally and internationally. Corradini mentioned a discussion with the Chinese standards organization in which he recommended that they purchase ANS standards. He suggested working with Corey McDaniels and the ANS International Committee.

Action Item 11/12-07: Donald Spellman to request that the SB Sales TG work with Corey McDaniels and the ANS International Committee to promote ANS standards internationally. (January 2013)

Spellman reviewed plans for the developing standards requested by NRC to support post-Fukushima guidance and the related NRC public meeting. He informed Corradini that a grant proposal would be prepared and would include funds to cover travel-related expenses for working group members and include support for ANS in the area of Information Technology (IT) needs to expedite the development. Spellman anticipated requesting a total of $500,000 over a five-year period. Corradini recognized NEI's opposition to the development of consensus standards to support the NRC guidance. Kadambi believed that the risk application framework would benefit if the framework in NUREG-2150, "A Proposed Risk Management Regulatory Framework," was adopted by ANS. He would like for ANS to be an expert outsider to say that NUREG-2150 made a lot of sense. Corradini stated that he would want the consensus of the SB before making that statement. Spellman thanked Corradini for taking the time to meet with the SB.

7. Standards Committee Reorganization Special Committee Report

Steven Stamm read the action item assigned at the June 2012 meeting forming a special committee to identify drivers and a path forward for a reorganization of the Standards Committee. He recognized that any reorganization would have imperfections and was a challenge. Stamm reported that the members of the special committee were able to come to an agreement on a proposed reorganization. The sentiments of the committee were that the Nuclear Facilities Standards Committee (NFSC) was too large even with a very organized and responsive chair. The committee recognized that the N16, Nuclear Criticality Safety Committee, was very productive and would not want to harm its structure and management but needed to use volunteers efficiently. Stamm explained that the committee was concerned that the N17, Research Reactors, Reactor Physics, Radiation Shielding, and Computational Methods, scope was too varied to have sufficient knowledge on all subject matters. Stamm provided a presentation summarizing the special committee findings, a proposed numerical goal targeted for subcommittees and consensus committees for greatest productivity available as Attachment E. The proposed reorganizational structure was summarized. Stamm addressed several questions about the placement of specific standards. A question of placement for light water reactor/small modular reactor (SMRs) standards in the new structure was discussed; ANS-50.1, "Nuclear Safety Criteria for the Design of Stationary Light Water Reactor Plants," was used as an example. Donald Spellman offered to check with ANS-50.1 Working Group Chair Mark Linn to see if a rough draft was available for review by Edward Wallace and Peter Hastings as both were involved in work with SMRs.

Action Item 11/12-08: Donald Spellman to check with Mark Linn for status of the ANS-50.1 draft for preliminary review by Edward Wallace and Peter Hastings to help determine if it could applicable to SMRs.

Calvin Hopper recognized that it made sense administratively, but restructuring N16 to include a broader scope could lessen the participation of the ANS Nuclear Criticality Safety (NCS) Division with the ANS-8 criticality standards. Hopper cited the paper that he and N16 Chair Robert Busch prepared entitled "The Need and Bases for N16 Consensus Committee Autonomy within the ANS Standards Board Structure," (see Attachment F). Kadambi stated that change did not necessary mean harm. Busch expressed concern with merging N16 and diluting expertise. With the exception of ANS-1, "Conduct of Critical Experiments," he did not believe N16 members had the technical expertise to assume management responsibility for additional ANS standards. After a brief discussion, members recognized that analysis would be outside of the expertise needed for NCS standards.

A variation of the reorganization proposal was discussed keeping N16 intact as is. Members did not want to approve the reorganization before seeing how working groups and subcommittees would be assigned, but a straw man's vote showed that the majority were in agreement at a high level that a restructuring had value. Stamm summarized the sentiments of the SB was to put N16 as a standalone consensus committee and make assignments to see how the numbers worked out.

As part of the reorganization discussion, the following motion was made and seconded:

> MOTION:
> To approve the formation of the RPBPPC as a standing committee to the Standards Board.

The motion to approve the RPBPPC was approved unanimously.

In addition to the RPBPPC, the following four additional special committees were suggested:

- Policy & Procedures Standing Committee;
- NRC Interface Management Standing Committee;
- U.S. Department of Energy (DOE) Interface Management Standing Committee; and,
- Beyond Design Basis/Defense in Depth (DID) Ad hoc Committee.

Carl Mazzola informed members that a white paper on DID was under development with the NFSC. Once complete, he offered to share with the SB.

Action Item 11/12-09: Carl Mazzola to provide the SB the NFSC DID white paper, when available.

Edward Wallace added that he was involved with work in the area of DID and offered to share a paper of his.

Action Item 11/12-10: Edward Wallace to provide the SB a copy of his DID paper. (December 2012)

Prasad Kadambi suggested for members to go to www.regulations.gov and look for NRC-2012-0173 to offer comments on how the NRC should address DID.

A motion was made to

> MOTION:
> To approve the Policy & Procedures Standing Committee, the NRC interface, and the DOE Interface Standing Committee

The motion was amended to

> MOTION:
> To approve the Policy & Procedures Standing Committee and the combined NRC Interface/DOE Interface Standing Committee.

The amended motion was approved unanimously.

8. Current Topics

A. Issues Related to Balloting of Standards for Reaffirmation

Stamm explained that he requested an opportunity to address concerns related to a recent reaffirmation ballot under the NFSC. The ballot failed due to comments on the age of the referenced documents as they may no longer be relevant and that there may be new data.

Stamm stated that a similar discussion was held at yesterday's NFSC meeting and that members agreed that age alone should not disqualify a standard for reaffirmation. The NFSC recommended that a checklist be created to determine if a standard should be reaffirmed. Stamm reminded SB members that a reference statement was included in each standard per policy to direct users to review references as they may have been superseded. He believed that the action taken by the NFSC to develop a checklist satisfied his concern. Carl Mazzola added that he would be requesting all subcommittee chairs review their standards annually to determine if any reaffirmations or revisions should be initiated. The presentation on this subject provided at the meeting is available as Attachment G. Stamm stated that the checklist will be brought to the SB for consideration as a Standards Committee policy. Robert Budnitz interjected that the JCNRM Subcommittee on Maintenance was tasked with putting together a list of requirements for reaffirmation and revision.

Action Item 11/12-11: Robert Budnitz and Carl Mazzola to exchange their consensus committees' reaffirmation/revision checklists, when available.

Stamm added that a significant amount of NFSC ballot comments were based on incorrect use of shall, should, and may. An additional action item was assigned at the NFSC meeting for a guidance document to be prepared to provide direction on stating requirements, recommendation, and permissions for working groups.

B. Information on Referenced Standards

Spellman explained that increasing referenced standards was discussed at the last SB meeting and received positively. Stamm was tasked with drafting a letter requesting subcommittee chairs provide this information (See Attachment H). Spellman asked whether it was feasible to make the request of subcommittee chairs and whether they would be aware if and where their standards were referenced. Ed Wallace offered to provide information on standards referenced by NRC in its Standard Review Plan. A second step would be to review the list of standards referenced and identify other standards that should be referenced. Members questioned the value of accumulating this information. Kadambi asked members to keep in mind that this task was underway by the NRC and would be completely inclusive of all documents. The sentiment of the SB was that the effort to acquire the information would have a poor response and would not be productive.

C. Standards Board Task Group (TG) Reports
(Reports from TGs with progress to report)

Priority TG
Jim August requested a list of priority standards from all. He believed that the Fukushima issue was being address well. August would like for members to consider standards needed for new construction.

Action Item 11/12-12: SB members to provide Jim August a list of standards deemed a priority for new construction. (April 2013)

External Communications (EC) TG
Herbert Massie explained the process that the TG went through to determine if existing liaisons were appropriate and whether there was a need for additional liaisons. Massie offered a spreadsheet with a list of current liaisons available as Attachment I. Spellman asked the TG to add WENRA to the list.

Action Item 11/12-13: EC TG to add WENRA to the liaison list.

9. Consensus Committee Chair Reports

A. JCNRM Report
Robert Budnitz reported that Addendum B of the joint standard ASME/ANS RA S-2008, "Standard for Level 1 / Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," reached consensus and was with the editor. Documents would be provided to the SB shortly with a request to certify the ballot. He stated that five standards had been in development for many years and were nearing fruition. The new standards were anticipated to be approved for release for trial use and pilot application. An agreement was being finalized for ASME to take on the secretary role and the ANS to be responsible for publishing. Budnitz informed members that the JCNRM membership had been reduced to a more manageable number of 31 members. An effort to bring in young professionals had resulted in several very bright new members that were proving to be great additions. See Attachment J for more details.

B. N16 Report
Robert Busch reported that a revision of ANSI/ANS-8.1-1998 (R2007), "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors," was issued for subcommittee ballot. He believed that resolutions were found to subcommittee comments permitting the draft to be issued for N16 ballot shortly. Busch added that N16 Committee did not have a lot of young professionals but their working groups did. He mentioned that one of their working group chairs, Dale Lancaster, was a member of the ANS-57.11 Working Group and would serve a NCS liaison. More details about specific N16 project are provided in the written report available as Attachment K.

C. N17 Report

Donald Spellman informed members that Andrew Smetana had been elected as the new N17 Chair. In accordance with Standards Committee procedures, Spellman called for a motion for the SB to approve Smetana as N17 Chair. The following motion was made:

> MOTION:
> Andrew Smetana be approved as N17 Chair.

The motion approving Smetana as N17 Chair was approved unanimously.

Smetana reported that Mathew Hutmaker retired from DOE and from the N17 Committee. David Lawson was approved as a new member to represent the DOE. He stated that a brief N17 meeting was scheduled for the following day and invited members to attend. He recognized that participation from young professionals and utilities in N17 was limited. Smetana planned to work with the membership to encourage broader participation. A written report with committee activities is available as Attachment L.

D. NFSC Report

Carl Mazzola stated that the NFSC had a nine-hour meeting the previous day. He highlighted significant standards achievements noted on his report (Attachment M). Mazzola reported that three new standards were being proposed and seeking approval to initiate. Four standards were published in 2012. The NFSC devoted a significant amount of time to discuss comments from a recent ballot of ANS-58.16, "Safety Classification and Design Criteria for Non-Reactor Nuclear Facilities," (new standard). Two other standards were balloted recently and were expected to achieve consensus before the end of the year or early-2013. Several drafts were close to completing including ANS-2.8, "Guidelines for Design Basis and Beyond Design Basis External Flood Evaluation at Nuclear Facilities." The committee was working to provide responses to several standards inquiries. Mazzola closed in saying that a special committee was formed to develop a list of standards related to Fukushima issues, chaired by William Reuland.

10. Liaison Reports

ISO TC 85/SC 5 and SC 6 Report

Calvin Hopper informed members that SC 5 would be meeting in Atlanta at Georgia Tech the Thursday and Friday before the ANS annual meeting. SC 6 would be meeting in parallel. Prasad Kadambi stated that as overall advisor, he was encouraging James Saldarini (Bechtel) to become involved along with Mark Salley (NRC).

Nuclear Risk Management Coordination Committee Report (NRMCC)

Chuck Moseley reported that the ASME Chair of NRMCC was recently transferred to Ralph Hill. The last few NRMCC meetings were held concurrently with the JCNRM. Consideration had previously been given to dissolving the NRMCC once the merger of the JCNRM has been completed. After consideration, the NRMCC membership concluded that the oversight was important to retain. More details are provided in the written report – See Attachment N.

American National Standards Institute (ANSI) Liaison Report

Kadambi reported as a member of the ANSI Policy Committee. He stated that the last meeting was canceled due to Hurricane Sandy. At present, he did not believe that many issues of the Policy Committee would be of interest to ANS. He explained that the committee was very interested in the process and bringing people together to find common ground. He found most discussion at a very high philosophical level. Kadambi offered to bring any policy issues to ANSI. Hopper wondered if someone at ANSI could be an arbitrator between ANS and ASME in defining territory. Kadambi explained that ANSI tried the mediator role in the past but found that they were not effective. He believed that ANSI encouraged all participation and felt that the market place would determine the best standard.

11. Other Business

A. Miscellaneous
Herbert Massie questioned whether a response would be issued to the recent NEI letter requesting that ANS defer development of standards to support post-Fukushima guidance. Carl Mazzola confirmed that he would draft a response to NEI to be issued under the signature of either Donald Spellman or Donald Hoffman.

Action Item 11/12-14: Carl Mazzola to draft a response to the 11/6/12 NEI letter regarding the ISA for fuel cycle facilities standard, ANS-57.11.

Kadambi recalled the previous NEI liaison Jack Roe stating that NEI wanted to change its mission to support standards development at a meeting a few years back. He asked Pat Schroeder to review archived minutes to confirm.

Action Item 11/12-15: Pat Schroeder to review archived SB minutes for statement from Jack Roe expressing NEI support for consensus standards.

B. Staff/Secretary's Report, Sales Report
Pat Schroeder directed members to the Staff/Secretary's Report and Sales Report provided in the meeting materials. The reports are available as Attachments O and P.

C. Outstanding Action Items
Open action items were reviewed and closed if completed. A list of action items and their status are provided at the end of the minutes.

D. Open Discussion
Jim August asked members to reconsider the proposed standard on Reliability Assessment Program (RAP). Several members saw a need for a RAP standard. August was recommended to prepare a white paper and business case on the proposed standard for consideration by the SB.

Spellman questioned whether conformity assessment should be readdressed as well. Kadambi reiterated his belief that a conformity assessment program would be of benefit to the Society, if established. He thought that an N16 standard would be a good fit for conformity assessment. Robert Busch confirmed that professional development certification was provided for training. Members questioned the marketability of an ANS conformity assessment program. Spellman suggested that the two sponsors prepare a business case and present to the standards board at the next meeting. Moseley suggested that the program be geared to national labs and universities.

Action Item 11/12-16: Jim August to prepare a white paper and business case on RAP for SB members to reconsider decision to hold off initiating standards on RAP.

Action Item 11/12-17: Prasad Kadambi to prepare a business case for initiating an ANS conformity assessment program.

E. Next SB Meeting
Donald Spellman announced that the next SB meeting would be held on June 18, 2013, at the Atlanta Hyatt Regency Hotel, Atlanta, GA.

12. Adjourn
The meeting was adjourned at 4:51 p.m.

Standards Board (SB) Action Items

Status of Action Items are reported as OPEN until formally CLOSED at SB Meetings.

Action Item	Description	Responsibility	Status
11/12-01	Robert Budnitz and Prasad Kadambi to prepare a list of items to be defined in a MOU with the ASME. Due: January 2013	Robert Budnitz, Prasad Kadambi	OPEN
11/12-02	Steven Stamm along with Jim August and Prasad Kadambi to develop a list of areas needing ANS Executive Committee support for Hoffman w/solutions. Due: December 2012	Steven Stamm, Jim August, Prasad Kadambi	OPEN
11/12-03	Robert Budnitz to temporarily serve as the WENRA liaison.	Robert Budnitz	On-going
11/12-04	Donald Spellman to begin development of one or more grants for ANS support. Due: January 2013	Donald Spellman	OPEN
11/12-05	Steven Stamm to incorporate Chuck Moseley's comments into the RPBPPC procedures and provided to Pat Schroeder to issue for approval of the Standards Board. Due: December 2012	Steven Stamm	OPEN
11/12-06	Consensus committee chairs to appoint at least one representative to serve as a member of the RPBPPC. Due: January 2012	Robert Budnitz, Robert Busch, Carl Mazzola, Andrew Smetana	OPEN
11/12-07	Donald Spellman to request that the SB Sales TG work with Corey McDaniels and the ANS International Committee to promote ANS standards internationally. Due: January 2013	Donald Spellman, SB Sales TG	OPEN
11/12-08	Donald Spellman to check with Mark Linn for status of the ANS-50.1 draft for preliminary review by Edward Wallace and Peter Hastings to help determine if applicable (or could be) to SMRs. Due: December 2012	Donald Spellman	OPEN
11/12-09	Carl Mazzola to provide the SB the NFSC DID white paper when Available. (Requires completion of NFSC action item.)	Carl Mazzola	OPEN
11/12-10	Edward Wallace to provide the SB a copy of his DID paper. Due: December 2012	Edward Wallace	OPEN
11/12-11	Robert Budnitz and Carl Mazzola to exchange their consensus committees' reaffirmation/revision checklists when available.	Robert Budnitz, Carl Mazzola	OPEN
11/12-12	SB members to provide Jim August a list of standards deemed a priority for new construction. Due: April 2013	ALL Standards Board Members	OPEN
11/12-13	External Communication (EC) Task Group (TG) to add WENRA to the liaison list. Due: November 30, 2012	EC TG	OPEN
11/12-14	Carl Mazzola to draft a response to the 11/6/12 NEI letter regarding the ISA standard (ANS-57.11). Due: December 2012	Carl Mazzola	OPEN
11/12-15	Pat Schroeder to review archived SB minutes for statement from Jack Roe expressing NEI support for consensus standards.	Pat Schroeder	OPEN
11/12-16	Jim August to prepare a white paper/business case on RAP for SB members to reconsider decision to hold off initiating standards on	Jim August	OPEN

	RAP. Due: June 2012		
11/12-17	Prasad Kadambi to prepare a business case for initiating an ANS conformity assessment program. Due: June 2012	Prasad Kadambi	OPEN
6/12-01	Ad hoc task group to 1) identify drivers for reorganization, 2) create a logical approach to apply those drivers to the ANS Standards Committee organization, 3) review organization with existing consensus committee chairs and address comments, and 4) provide evaluation to the SB how the proposed organizational changes improve the Standards Committee. Task group to provide an interim report to the SB one month before the November meeting and to provide a draft transition plan with impact. (Members include Jim August, Robert Budnitz, Carl Mazzola, Prasad Kadambi, Steven Stamm, James Mallay, and William Reuland – chair TBD) Due Date: November 2012	Jim August, Robert Budnitz, Carl Mazzola, Prasad Kadambi, Steven Stamm, James Mallay and William Reuland	OPEN
6/12-02	Pat Schroeder to request a copy of WENRA safety references for distribution to the SB.	Pat Schroeder	CLOSED
6/12-03	Steven Stamm to draft a letter to consensus committee chairs to provide the following information in order to increase the number of standards referenced by the U.S. Nuclear Regulatory Commission (NRC), IAEA, international regulators, U.S. Department of Energy, and other standards development organizations (SDOs): a) Create a listing of standards currently referenced b) Create a list of standards that should / could be referenced but are not	Steven Stamm	CLOSED
6/12-04	Donald Spellman to review the "Toolkit" for potential improvements as suggested by David Sachs. Due Date: June 2013	Donald Spellman	OPEN
6/12-05	Internal Communications TG to request that the web-based online standards membership database be completed.	Robert Busch, Walter Justice, Michael Ruby, William Turkowski	CLOSED
6/12-06	Pat Schroeder to send Internal Communications TG previous presentations on ANS standards for reference.	Pat Schroeder	CLOSED
6/12-07	Internal Communications TG to prepare presentation on standards for ANS members.	Robert Busch, Walter Justice, Michael Ruby, William Turkowski	CLOSED
6/12-08	Prasad Kadambi to prepare a statement defining the need for a standard on DID.	Prasad Kadambi	CLOSED
6/12-09	Donald Spellman to follow up with William Bell on whether his company finds the need for standards to support SMRs. Due Date: June 2013	Donald Spellman	OPEN
6/12-10	Pat Schroeder to correct 2011 Standards Committee Report of Activities to recognize that the N16 Committee met at the 2011 ANS Winter Meeting in Washington D.C. Due Date: July 2012	Pat Schroeder	CLOSED

Focus Areas

Standards Development

- NRC Order Tier 3
- NRC Request for ISA for FFF
- Defense in Depth/Extended Design Basis

ANS Process Improvements

- Reduce standards development time
- Standards Committee realignment
- Links between NRC/NEI/ANS

International Cooperation

- WENRA
- IAEA
- ISO TC85

ANS Standards Board Report of Activities for the ANS Board of Directors

ANS Standards Board Coordinates Submission of Comments to NRC on Post-Fukushima Draft Guidance

The ANS Standards Board organized a response to a Federal Register notice from the U.S. Nuclear Regulatory Commission (NRC) request for comments on draft guidance documents regarding post-Fukushima requirements. The ANS response issued under the signature of ANS President Michael Corradini offered its support to the NRC in the development of voluntary consensus standards to implement improvements to safety in light of the knowledge gained from the Fukushima events as well as others such as those at North Anna and Fort Calhoun. The NRC responded with their support for the development of consensus standards in this area. The ANS Standards Committee has already initiated a standard on integrated safety assessments for fuel fabrication facilities and is considering other standards to support post-Fukushima requirements. A grant proposal is in development to support this effort.

Standards Board Activities

Events of the last few years have required an evaluation of our entire standards program. Five task groups under the Standards Board were created. These task groups have been very active working to increase communication on standards within the Society as well as externally both nationally and internationally. Task groups are also reviewing standards to determine whether revisions are needed or if new standards should be developed. They are also looking at ways to increase revenue and find solutions to expedite the standards development process through information technology. A new special committee has been proposed with the responsibility of identification and oversight for ANS risk and performance-based standards. This committee would report to the Standards Board and may lead to a fifth ANS consensus committee. A reorganization of the Standards Committee (collection of working groups, subcommittees, consensus committees) is being considered to increase efficiency and use of volunteer resources.

Formation of ANS/American Society of Mechanical Engineers (ASME) Joint Consensus Committee

The formation of the ANS/ASME Joint Committee on Nuclear Risk Management (JCNRM) continues. Draft procedures for the operation of the JCNRM have been drafted and will be issued to the committee for approval shortly. A draft business agreement between the two societies has been initiated.

Grant Activities

The U.S. Nuclear Regulatory Commission issued ANS a grant to cover travel-related and meeting expenses for working group members to develop three probabilistic risk assessment standards. The grant was effective July 31, 2009, for a three-year period. A two-year extension was granted to use the remaining funds.

Standards Development

The American National Standards Institute approved four new/ revised standards and six reaffirmations of current standards in 2012. Four standards have been published this year including one that was granted approval just before the end of 2011. An additional standard is in production and should be published before the end of the year. Work continues on the development of over 60 drafts for new standards and revisions to current standards. Many have completed drafts that are in the review and approval process. The Standards Committee is responsible for the maintenance of 75 current American National Standards.

ANS Standards Committee Support of Other Committees

The ANS continues to co-chair the Nuclear Risk Management Coordinating Committee (NRMCC) along with the American Society of Mechanical Engineers. This committee coordinates the development and maintenance of codes and standards that address risk-management and risk-informed decision making for nuclear power plants and other nuclear facilities. Participation on the committee includes members from industry, regulators, other

standards development organizations, and national laboratories involved in risk-informed, performance-based activities with the goal of harmonization and reduction of redundancy. The next NRMCC meeting is scheduled for February of 2013.

Members of the ANS Standards Board regularly attend meetings of the Nuclear Energy Standards Coordination Collaborative (NESCC). The NESCC is supported by the American National Standards Institute and the National Institute of Standards and Technology. The purpose is similar to the NRMCC in that it brings together all segments of the nuclear industry for the purpose of harmonization and collaboration but has a broader scope inclusive of all nuclear industry standards. As requested by the NESCC, the Standards Board Chair will be providing NESCC members a report of ANS Standards Committee activities in the development of standards to support NRC post-Fukushima guidance at the upcoming meeting on November 29, 2012.

At the invitation of the Western European Nuclear Regulators Association (WENRA) Chairman, the ANS Standards Board Chair attended the WENRA meeting on October 23 and 24, 2012, in Paris, France, and participated in the plenary session as a representative of the ANS Standards Board.

Transfer of SC 6 Responsibilities to ANS

Secretarial support of the Subcommittee (SC) 6 of the International Organization of Standardization Technical Committee 85 is being transferred from the American Society of Testing and Materials to the ANS. Formalities of the transfer are in progress with the anticipation of taking over secretary duties by January of 2013. The commitment of ANS to take on the role of secretary enables the United States to retain the secretariat for the international subcommittee and guide development of international standards on reactor technology.

Report of Meeting with WENRA
Paris, France October 22, 2012

TO

ANS Standards Board

November 13, 2012

Don Spellman, Chair

ANS Standards Board

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Relations with European Nuclear Safety Regulators Group (ENSREG)

- **Independent, authoritative expert body formed by a decision of the EU Commission in 2007.**
- **ENSREG - All 27 EU Members States**
  - **Assigns Technical Tasks to WENRA**

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ENSREG Members

ENSREG Observers

AMERICAN NUCLEAR SOCIETY

Western European Nuclear Regulators Association (WENRA)

WENRA Organization

- **Association of the heads of Nuclear Regulatory Authorities of the EU countries with NPPs plus Switzerland**
- **Original Terms of Reference signed 04 February 1999**
- **17 Members, 9 Observers**

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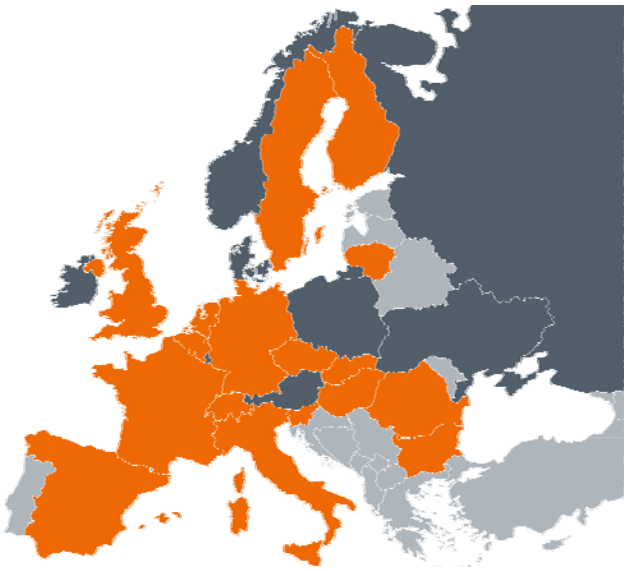
17 Members
9 Observers



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WENRA Working Groups

- **RHWG Reactor Harmonization Working Group**
- **WGWD Working Group on Waste and Decommissioning**
- **WIG WENRA Inspection Group (EU Stress Test - mandate fulfilled)**

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RHWG Published Documents

- Formulation of Safety Reference Levels (SRLs)
  - Use of IAEA safety standards & good national practices
- WENRA Reactor Safety Reference Levels January 2008
- Safety Objectives for New Power Reactors December 2009
- *Progress towards harmonisation of safety for existing reactors in WENRA countries*
  - *January 2011*

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- **A Safety Policy**
- **B Operating Organisation**
- **C Management System**
- **D Training and Authorization of NPP staff**
- **E Design Basis Envelope for Existing Reactors**
- **F Design Extension of Existing Reactors**
- **G Safety Classification of Structures, Systems and Components**
- **H Operational Limits and Conditions**
- **I Ageing Management**
- **J System for Investigation of Events and Operational Experience Feedback**
- **K Maintenance, In-service inspection and Functional Testing**
- **LM Emergency Operating Procedures and Severe Accident Mgmt. Guidelines**
- **N Contents and updating of Safety Analysis Report**
- **O Probabilistic Safety Analysis**
- **P Periodic Safety Reviews**
- **Q Plant Modifications**
- **R On-site Emergency Preparedness**
- **S Protection against Internal Fires**

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- *WENRA SRLs IAEA NS-G-1.2, Para 4.*
- For each plant design, a specific PSA shall be developed for levels 1 and 2, including all modes of operation, all relevant initiating events and hazards, including internal fire, internal flooding, severe weather conditions and seismic events.
- Level 1 PSA has now been carried out for most NPPs worldwide. However, in recent years, the emerging standard is for level 2 PSA to be carried out for many types of nuclear power plants.

RHWG Current Activities

- **Preparation of a Booklet containing:**
  - **safety objectives for new reactors**
  - **related technical position paper**
  - **one chapter on the Lessons Learned from Fukushima**

WORKING GROUP ON WASTE AND DECOMMISSIONING (WGWD)

- **WENRA Reactor Safety Reference Levels February 2011**
- **Decommissioning safety reference levels November 2011**

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WENRA Inspection Group

- **Benchmarking the European inspection practices for components and structures of nuclear facilities March 2012**

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Selected Items from Index

Appendix 5: International standards that define general requirements for conformity assessment

- EN ISO/IEC 17011, Conformity assessment. General requirements for accreditation bodies accrediting conformity assessment bodies
- EN ISO/IEC 17020, General criteria for the operation of various types of bodies performing inspection
- EN ISO/IEC 17021, Conformity assessment. Requirements for bodies providing audit and certification of management systems
- EN ISO/IEC 17024, Conformity assessment. General requirements for bodies operating certification of persons
- EN ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories
- EN 45011, General requirements for bodies operating product certification systems

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Elements of a Long-term Relationship Between WENRA and ANS Standards Board

Request that WENRA set up a like Task Group to conduct regular liaison with the ANS Standards Board

- **Provide liaison reports through the ANS External Communications Task Group at each semi-annual board meeting.**
- **Work with ANS to match international user needs with standards that ANS can support**
- **ANS may be able to significantly assist WENRA with standards issues that need to be brought before IAEA or ISO TC-85.**

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Elements of a Long-term Relationship Between WENRA and ANS Standards Board

When requested, the ANS Standards Board can comment on standards needs of WENRA and its members and can comment on WENRA policy and technical positions related to ANS standards or ISO standards

ANS may be able to approve appendixes to ANS standards that address EU specific requirements.

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Risk and Performance Based Principles Policy Committee

The Reorg Task Group identified a need for someway to help ANS Standards Committee on a high priority basis:

- Evaluate and make recommendations to the SB on implementation approach for incorporating Risk and Performance Based principles into ANS Standards
- Implement these principles in a consistent way across ANS Standards
- Set related priorities
- Oversee implementation (schedule and technical)

Considerations

- This is a SB function as it applies to all ANS Standards
- This needs a group of people that are knowledgeable of the overall body of ANS Standards and the subject of Risk and Performance Based principles and approaches
- This will be a considerable effort
- Assignment of additional responsibilities will detract from goals
- Function as a direct arm of SB
- ANS CCs and SCs retain responsibility for standards development in their areas of expertise
- Interfaces with all standards CCs on risk and performance based implementation
- Technical support on risk related issues exists within JCNRM.

Risk and Performance Based Principles Policy Committee

Recommendations:

- Create a dedicated Risk and Performance Based Principles Policy Committee (RPBPPC) (Policy used to emphasize that this is an important high level committee)
- Created by and reports directly to SB
- Members nominated by consensus committees and approved by SB
- Additional members selected by SB
- Chair and vice chair appointed by SB
- Voting member on each CC
- SB review JCNRM MOU and charter and revise as appropriate to clarify interfaces and eliminate redundancy

Responsibilities

- Development of *ANS Risk and Performance Based Standards Plan*
- Oversee implementation (schedule and technical)
- Interface closely with ANS WGs, SCs and CCs on R&PB implementation
- Provide R&PB Training
- Review & ballot PINS and R&PB requirements in all ANS Standards
  - Manage the use of JCNRM inputs in such reviews
- Interface with industry groups, representing the ANS SB, for R&PB discussions
- Identify and define any new standards that are related to risk and performance based principles that are not assigned to other standards writing groups and prepare draft PINS forms for each

Reorganization Task Group Report 10/23/2012

Reorganization Task Group established at June 2012 SB meeting

Action Item 6/12-01: "Ad hoc task group to 1) identify drivers for reorganization, 2) create a logical approach to apply those drivers to the ANS Standards Committee organization, 3) review organization with existing consensus committee chairs and address comments, and 4) provide evaluation to the SB on how the proposed organizational changes would improve the Standards Committee. Task group to provide an interim report to the SB one month before the November meeting and to provide a draft transition plan with impact. (Members include Jim August, Robert Budnitz, Carl Mazzola, Prasad Kadambi, Steven Stamm, James Mallay, and William Reuland – chair TBD)"

Conclusions of evaluation conducted by Reorganization Task Group to determine the drivers that should govern the reorganization

- NFSC is too large and diverse to maintain a proactive standards effort
- N16 structure of basically a single subcommittee needs to be looked at
- N17 has a large range of diverse topics making it difficult for a single consensus committee to manage with little synergy between them. It has a very unbalanced load between subcommittees.
- JCNRM scope is appropriate and the committee appears to be structured correctly; however, it is too large.
- NRC Interface is good at the writing group and subcommittee level. However, more could be done at the management levels.
- Risk and performance based principles are not being proactively applied.

Reorganization Numerical Goals

The following are suggested as goals for our reorganization. (There are 194 current, active and historical ANS Standards)

ITEM	NUMERICAL GOALs
Number of Standards per Subcommittee including Inactive Standards	5 to 10
Number of Subcommittees per Consensus Committee	3 to 6
Number of Consensus Committees	5 to 8
Number of Standards under Consensus Committee including Inactive Standards	6 to 12
Number of person on a Subcommittee	15 to 40
Number of Persons on a Consensus Committee	10 to 20

Proposed SC Organization – High Level

Consensus Committees	Subcommittee Topical Areas				
LWR Design and Operation CC	LWR Design Criteria	Facility Design	System Design	Plant Operations, Emergency Planning Training (Consider Separate Consensus Comm)	
Non Large LWR Rx CC	SMR	Research Rx	LM Rx	Gas Rx	
Fuel & Waste CC	LWR Fuel Design	Waste Management	Decommissioning		
Analysis & Criticality Safety CC	Safety Analysis	Radiological Safety	Criticality Safety 1	Criticality Safety 2	
Non Rx Facilities CC	Fuel Cycle Facilities	Wast Processing Facilities	Reprocessing	Fuel Transport, Long Term Storage and Disposal	Research Facilities
Environmental and Siting CC	Siting Criteria	Geohydrology	Transport	Monitoring	General design criteria for external hazards
ASME/ANS Risk CC (JCNRM)	Standards Maintenance	Standards Development	Planning and Interpretations	Risk Applications	

Notes:
Evaluated several options and took the best parts to create the above organization which includes the following changes from the current structure:

- LW Power Rx CC excludes Small LWRs, Fuel Design, Waste Facilities and Non Rx Facilities
- Created Fuel and Waste Management CC
- Created Env. & Siting CC that includes rad. transport
- Combined Analysis & Criticality Safety into one CC
- Separated Criticality Safety into 2 SCs (CC to consider if these should be one)
- No RASC CC at this time

Next steps:

- Obtain SB approval (11/13/2012)
- Assign all of the 194 ANS standards (including historical standards) to specific CCs and SCs
- Assign CC Chairs and reallocate existing personnel to new CCs
- CC Chairs to assign review and adjust subcommittee scopes using the numerical goals provided
- Supplement with additional personnel as required

Reorganization Comparison

	Existing SC Organization	Proposed Reorganization
Number of CCs	4	7
SCs per CC	1 to 7	4 to 5
NFSC Active Standards	~62	
LW Power RX Active Standards		~28

Other Proposed SB Committees

Committee	Functions	Comments
Risk & Perf. Based Principles Policy Committee	• Develop R&PB Plan • Oversee implementation	• Bylaw has been circulated for SB review
Policy & Procedures Standing Committee	• Expand SB procedures to reduce individual CC procedures • Manage review and updating SB Policies and Procedures	• Dedicated subcommittee of SB • Continuous Policy and Procedure focus
NRC Interface Management Standing Committee	• Develop and manage high level NRC interfaces	• Two or three high level Washington area personnel
DOE Interface Management Standing Committee	• Develop and manage high level DOE interfaces	• Two or three high level Washington area personnel
Beyond Design Basis/ Defense in Depth - Ad HOC Committee	• Develop BDB/DID Plan • Oversee implementation	• Similar to R&PB Principles Policy Committee

The need and bases for N16 Consensus Committee autonomy within the ANS Standards Board structure
as viewed by N16, Subcommittee 8, and WGs-8.XX

C. M Hopper and R.D. Busch
7 November 2012

- ANSI administrative and technical standards should be produced by developers/suppliers, users, and interested parties at the lowest standards-organizational level having the greatest educational, technical, applications knowledge, and expertise of the standard subject matter while meeting the ANSI Essential Requirements for Balance of Interest and Balloting. That includes authoring and interpreting the standards.
- For ANSI/ANS-8.XX Nuclear Criticality Safety (NCS) Outside of Reactors Standards, the lowest organizational level of expertise for the development of standards is the Working Group. The Working Group is comprised of experts in the specific administration and/or technical application of the subject matter. Almost all of these experts are volunteers from the membership of the ANS Nuclear Criticality Safety [Professional] Division.
- The next ANSI/ANS NCS organizational level of administrative and technical expertise is the Subcommittee ANS-8. ANS-8 has the immediate and specific mediation and arbitration authority over the organizational structure and interfaces of the various ANSI/ANS-8.XX standards Working Groups. The ANS-8 Subcommittee (SC) is comprised of senior experienced nuclear criticality safety experts having a broad, and specific, educational, technical and applications knowledge, and expertise with the main purposes of:
    - Identifying, recommending, and encouraging the development of needed ANSI/ANS-8.XX standards,
    - Maintaining a corporate knowledge about the interfaces of the various ANS-8.XX standards, and
    - Internally balloting and commenting upon the structure, content, and relevance of a Working Group standard to other ANS-8 standards.
- The next ANSI/ANS organizational level of administrative and technical expertise is the N16 Consensus Committee. N16 has the final mediation and arbitration authority over ANS Subcommittee 8 Working Groups' standard scopes and content as assessed by a Balance of Interest N16 Membership, primarily comprised of very senior NCS persons, representatives from other standards development organizations (SDOs) and other interested parties/stake-holders.
- The next ANSI/ANS organizational level is the ANS Standards Board (ASB) that is authorized to be comprised of a very broad array of 14 members and ex officio consensus committee Chairs in accordance with the POLICY MANUAL FOR THE ANS STANDARDS COMMITTEE.

1. Donald J. Spellman
   Oak Ridge National Laboratory
2. James K. August
   CORE, Inc.
3. William C. Gattoni
   Worley Parsons Group
4. Walter M. Justice, II
   Tennessee Valley Authority
5. Herbert W. Massie, Jr.
   Defense Nuclear Facilities Safety Bd.
6. Caroline M. McAndrews
   Southern California Edison
7. Charles H. Moseley, Jr.
   Individual
8. Mathew M. Panicker
   U.S. Nuclear Regulatory Commission
9. R. Michael Ruby
   Individual
10. Robert D. Sachs
    Individual

11. Steven L. Stamm
    Individual
12. William M. Turkowski
    Westinghouse Electric Co.
13. Edward G. Wallace
    NuScale Power Inc.

Consensus Committee Chairs -

1. Robert J. Budnitz
   RISC Chair
   Lawrence Berkeley National Laboratory
2. Robert D. Busch
   N16 Chair
   University of New Mexico
3. Carl A. Mazzola
   NFSC Chair
   Shaw Environmental & Infrastructure, Inc.
4. Andrew O. Smetana
   N17 Interim Chair
   Savannah River National Laboratory

Along with the ANS Standards Administrator, the ASB has reasonably exercised the verification of ASB and Consensus Committee compliance with ANSI's Essential Requirements, mediation, and arbitration authority over the Consensus Committees. Historically, the ASB mediated in the dispute between Consensus Committee N17/Subcommittee N19 and N16 regarding the development of ANSI/ANS-8.24 addressing the verification and validation of computer codes used in nuclear criticality safety calculation applications outside of reactors. Though the ASB was not expert in the details of N17/N19 and N16, the ASB was able to discern the differences in scope, applications, and the community served by N17/N19 and N16 thereby arbitrated the dispute.

- The next ANSI standard development organization level is ANSI itself. Its authority is self defined with the acceptance of its membership and recognition by the US National Technology Transfer and Advancement Act of 1995 (P.L. 104-113) (NTTAA) as well as the issuance of The Office of Management and Budget Circular A-119. Relative to the ASB, ANSI is directly engaged in accrediting and auditing the ANS standards policy, process, procedures, and conduct of standards development. Additionally, ANSI acts as the mediator and arbiter of disputes between SDOs regarding scope and content of standards. Though the ANSI Board of Directors and Board Committees can in no way be competent in the specific administrative and technical details and content of specialized standards proposals or developments, they are able to establish dialogues for mediation among SDOs to evaluate and arbitrate such disputes. Such a dispute was resolved between the American Society of Safety Engineers (ASSE) and the ANS N16 regarding the final development of ANSI/ANS-8.*26:R2012: Criticality Safety Engineer Training and Qualification Program*.

It is judged that, aside from the funded RISCC standards development work, the above N16 standards development structure has been and is, perhaps, the most successful ANS standards development consensus committee providing benefit to the ANS and the ASB for the past 30 years. ANSI/ANS-8.XX standards have been developed, reaffirmed and/or revised based upon community need (not ASB perception of need or perception of regulatory need). The ANSI/ANS-8.XX standards are WG expert and ANS Professional Division developed, ANS SC 8 senior expert concurred, N16 approved by a balance of interest experts, and monitored by the ASB for due process.

A question – Why should such a very effective and working system of standards development by a specific ANS Professional Division (NCSD) membership and oversight be altered to satisfy a undemonstrated administrative structure as recently proposed by the ASB administration and members?

Observations/Questions –

1. The decline of ANS standards development and maintenance surely could be attributed to the reduction of industrial and government support for various *nuclear programs* but also the consolidation of consensus committees that were once clearly supported by ANS Professional Divisions, into administrative super committees – for what reasons?
2. Consensus Committees need to be comprised of experts that are competent to evaluate the content and relevance of the standards that are developed under their purview, not to simply rubber stamp the products of the subcommittee(s) unless the SCs comply with the ANSI Essential Requirements. Otherwise, the super-CC becomes an entity much as the ASB.
3. A reasonable expectation is for a CC to maintain a balance of interest and a majority of senior experts that are competent in the content and relevance of their standards. One may argue that each SC should perform that function. However, it is the view of N16 and SC 8 that there is significant value in:
    a. a SC, and its WGs, maintaining a pure expertise in the development and interrelationships of their subject standards
    b. a CC providing final mediation, arbitration, and approval authority with a membership that is competent, and having an appropriate balance of interest, in the subject of the subject matter of the standards.
4. There is no reasonable expectation that a CC can maintain an effective and competent membership without a majority of subject matter experts and balance of interest that can address, mediate, and arbitrate among numerous SCs of super-variant subjects.

Bottom line recommendations –

1. The ASB should constrain itself to ensuring that:
    a. ANS complies with ANSI Essential Requirements regarding the development of standards by subject matter expert WGs and SCs who are invited from the ANS Professional Divisions
    b. Standards are approval by CCs comprised of a balance of interest membership and having a majority of subject matter experts regarding standards under development or maintenance.
    c. Perceived needed standards be suggested or encouraged for development by WGs, SCs, and CCs. Reconstructing or redirecting volunteer standards development is/will be destructive to consensus standards development.
2. Do not disturb the successful structure of the ANSI, ASB, N16, Subcommittee 8, WG-8.XX.
3. Model other ANS standards organizations similarly by moving the authority and approval of standards to the lowest level of competence and avoid raising the authority and approval of standards to the highest level of incompetence.

Standards for Reaffirmation

NFSC member comments raised during the reaffirmation of ANSI/ANS-59.3-1992 (R2002), "Nuclear Safety Criteria for Control Air Systems"

- There should be a limit on the age of standards since they were last revised.
- Overall age of the document with concerns that new information may be relevant in today's world.
- Operating experience since the last revision may provide insights into possible new content for the standard.
- The status of the references called out in the standard (despite the disclaimer typically included in the Foreword).
- The high level (vanilla) nature of the standard and questions as to whether there should there be additional detail to make the standard more useful for newer designs.

Standards for Reaffirmation

Concerns/Issues:

- Current ANS policy includes specific criteria to determine if a standard should be revised, reaffirmed or withdrawn.
- The decision is to be made annually well in advance of required action by working group (WG)/subcommittee chairs and approved by consensus committee.
- Use of out dated references as a criteria completely invalidates the reaffirmation approach as a large number of the references will have been revised during the 5 year life of a standard.
- ANS Standards Committee (SC) had established a policy to deal with outdated references to alleviate this concern.
- It is counterproductive for a consensus body to make a decision that reaffirmation is not appropriate overriding the WG and subcommittee at the ballot stage not allowing time for revision and forcing a standard to be withdrawn.
- There is currently no limit on the number of times a standard can be reaffirmed.
- Reaffirmation policy on the above items should be clear in ANS SC policies and should not be made via the ballot process by a few individuals.
- Negative ballots based on policy issues counter to written ANS Policies and Procedures should be considered invalid

Standards for Reaffirmation

Suggested Actions

- Recommend to SB that it revise the existing policy on Standards Maintenance to clearly state that outdated references is not a criteria of non-reaffirmation.
- Recommend to SB that it revise the existing policy on Standards Maintenance to limit the life of a standard to xx years.
- Schedule decisions on reaffirmation to allow sufficient time to revise a standard.
- Recommend to SB that it revise the existing policy on Standards Maintenance to clearly state that there must be a clear significant technical issue with a standard proposed for reaffirmation to justify overriding the Subcommittee decision to reaffirm a standard.

Additional background information is provided in the following slides

Standards for Reaffirmation

ANS SC Policies on Maintenance of Standards (Excerpts)

- ...the initiation of the maintenance process should begin in time to permit the approval of a reaffirmation or withdrawal within six years or approval of a revision within seven years of the last approval.
- The responsible chairs of the subcommittee and working group shall confer and shall decide which maintenance procedure is the most appropriate (revision, reaffirmation, or withdrawal).
- If reaffirmation or withdrawal is the planned action, a technical justification shall be provided that specifies why a revision is not appropriate. Reaffirmation should be completed within six years and withdrawal within nine years of the last approval.
- The subcommittee chair shall decide whether to revise, reaffirm, or withdraw a standard and shall conduct a vote of the subcommittee for concurrence in the decision. Also, the consensus committee chair may seek the advice or a vote of concurrence of the consensus committee on the option approved by the subcommittee.
- If any of the evaluations in the following list indicates that withdrawal is the most appropriate choice, then a broader assessment shall be conducted to determine the viability of making a revision that would avoid withdrawal. Unless the standard is deemed to be of no practical value to potential users, every effort shall be made to revise the standard.

Standards for Reaffirmation

Criteria for Deciding on the Most Effective Maintenance Action

- ***(1) Usefulness***. The usefulness of the standard shall be evaluated. Usefulness shall be gauged using the knowledge of the task group members (and others they are able to consult), the sales record of the standard, and its apparent applicability to activities currently being pursued (or expected in the near future). If the standard is deemed useful, either currently or within the next five years, a recommendation shall be made for revision or reaffirmation. If the standard is no longer useful or its usefulness is highly questionable, withdrawal should be recommended.

  In assessing the usefulness of a standard, it shall be considered separately from other documents that are not consensus standards but address the same topic, such as regulatory guidance or NEI documents. Interfaces with other consensus standards are also pertinent to this assessment. In addition, the evaluation of usefulness shall address the potential application of the standard to the siting, design, manufacture, construction, and operation of nuclear facilities, even though the original objective of the standard may have been to focus on one or two of these areas only.

- ***(2) Purpose***. The purpose of the standard shall be evaluated. The task group shall determine whether the purpose is valid for application currently or within the next five years based on the knowledge of the task group members (and others they are able to consult). If the purpose appears valid, a recommendation for revision or reaffirmation shall be made.

Standards for Reaffirmation

Criteria for Deciding on the Most Effective Maintenance Action (continued)

- ***(3) Technical Content***. The technical content of the standard shall be evaluated and a determination shall be made on whether the criteria (that is, the requirements) are still valid and are expected to remain valid for several years. This evaluation shall include requirements that affect or interface with other standards. If the criteria are expected to remain valid, reaffirmation should be recommended. If any criteria are believed to be invalid or inappropriate, revision shall be recommended. 17

- The technical content of the standard shall be compared to current, documented regulatory expectations (regulations and regulatory guidance). If the criteria contained in the standard are inconsistent with these expectations, the task group shall assess whether a revision is appropriate to include modified criteria. If the criteria remain applicable, reaffirmation should be recommended. If the criteria need to be modified, revision should be recommended.

- If the evaluation of technical content reveals that strict application of one or more criteria could result in equipment inoperability or a violation of a safety or technical specification, withdrawal shall be recommended. If the standard continues to be useful, however, immediate action shall be taken by the subcommittee to establish a working group and to gain a commitment that a suitable revision will be developed and issued within 24 months.

Standards for Reaffirmation

- ***(4) References***. The validity of the references shall be evaluated, including whether they are adequately current. If the references are invalid, revision shall be recommended. If they are adequate, reaffirmation should be recommended.

- ***(5) Contingency.*** If a decision is not reached on the most appropriate maintenance action within the standard's five-year anniversary or even several years later, the decision options become increasingly constrained, and the situation could force an inappropriate action (had a timely decision been made). To preserve the viability of a standard that continues to be useful, the subcommittee chair and the appointed task group could conclude that reaffirmation is the only reasonable choice to serve current users. Under these circumstances, a decision to reaffirm shall be made only if a working group has been established and a commitment obtained to develop and issue a suitable revision within 24 months of initiating a committee vote on reaffirmation.

Marking Statement for References

- The user is advised to review each of the following references to determine whether it, a more recent version, or a replacement document is the most pertinent for each application. When alternate documents are used, the user is advised to document this decision and its basis.

Completion of Action Item 6/12-03 by Steven L. Stamm

Action Item 6/12-03: Steven Stamm to draft a letter to consensus committee chairs to provide the following information in order to increase the number of standards referenced by the U.S. Nuclear Regulatory Commission (NRC), IAEA, international regulators, U.S. Department of Energy, and other standards development organizations (SDOs):

a) Create a listing of standards currently referenced
b) Create a list of standards that should / could be referenced but are not

To ANS Consensus Committee Chairpersons;

cc: Subcommittee Chairs

An action item from the June 2012 ANS SB meeting was to have the consensus committee chairs develop data to enable the Standards Committee to implement efforts to increase the number of standards referenced by the U.S. Nuclear Regulatory Commission (NRC), IAEA, international regulators, U.S. Department of Energy, and other standards development organizations (SDOs).

In order to initiate this effort each consensus committee chair is requested to provide the following information:

a) Create a listing of standards currently referenced by the above organizations

b) Create a list of standards that should / could be referenced but are not

Please submit your lists to Pat Schroeder with a copy to me by December 31, 2012.

Thank you

Don Spellman
Chair, ANS Standards Board

Links Between ANS Standards Board and Other Standards Development Organizations (SDOs)/Other Related Organizations

Name of SDO/and Other Related Organizations	Lead TF Person	Standards Committee Liaison	Link Adequate Y or N?	Next Actions
ASME NQA	Mazzola	Moseley	Y	
ASTM-C26	Massie	Blauvelt	Y	
NEI	McAndrews	Jim Riley	Y	
ANSI	Mazzola	Prasad	Y	
IEEE	Levinson	Spellman	Y	
ASCE	Massie	John Stevenson	Y	
AIChE	McAndrews	Bell (N17) & NFSC	Y	
HPS/NCRP	Mazzola	Brey (N17)	N	Per Pat S. no HPS person on SB
INMM	Massie	Knief (N16)	Y	
NESCC	McAndrews	Prasad	Y	
JCNRM	Levinson	Budnitz	Y	
NRMCC	Budnitz	Moseley	Y	
ACI/AISC	Massie	John Stevenson	Y	
ISO TC-85	Budnitz	Prasad	Y	
NFPA	Wallace	??????	N	Check with TG
Acronyms				
ACI - American Concrete Institute				
AIChE - American Institute of Chemical Engineers				
AISC - American Institute of Steel Construction				
ANSI - American National Standards Institute				
ASCE - American Society of Civil Engineers				
ASTM- American Society for Testing and Materials				
C26 - Nuclear Fuel Cycle				
HPS-Health Physics Society				
IEEE - Institute of Electrical and Electronics Engineers				
INMM-Institute of Nuclear Materials Management				
ISO - International Organization for Standardization				
JCNRM-Joint Committee on Nuclear Risk Management				
NCRP-National Council on Radiation Protection				
NEI - Nuclear Energy Institute				
NFPA - National Fire Protection Association				
NESCC - Nuclear Energy Standards Coordination Collaborative				
NRMCC - Nuclear Risk Management Coordinating Committee				

JCNRM Chairman's Report to the Standards Board
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Standards in Development

[This list includes only those standards under development by the JCNRM which began under ANS-RISC before the ANS-ASME merger. Two others being developed under JCNRM began under ASME before the merger, and are not covered here. These two cover PRA methodology for advanced LWRs in the design and construction phase, and PRA methodology for non-LWR power reactors.]

ANS-58.22-201x, "Low Power Shutdown PRA Methodology"

- Working group is led by Don Wakefield, underway since 1999.
- An earlier ballot resulted in substantive changes.
- A reballot (#2) closed in October 2008 resulting in 674 committee comments and 116 public comments.
- Comment responses and a revised draft were issued to RISC in November 2009. Since then, considerable additional work has been done to improve the draft.
- The working group completed a revised draft in early October 2012, and has submitted it to the JCNRM for a "readiness review."
- Assuming that the draft passes the "readiness review," the next ballot (#3) is anticipated for late 2012; the ballot will be issued to approve release of the standard for Trial Use and Pilot Application (TUPA) – not for approval as an American National Standard by the American National Standards Institute.

ANS/ASME-58.24-201x, "Severe Accident Progression and Radiological Release (Level 2) PRA Methodology to Support Nuclear Installation Applications"

- Writing group is led by Mark Leonard, underway since 2005.
- A draft was issued to ANS RISC & ASME CNRM for preliminary review in January 2010.
- Comments were provided to the working group for consideration in May 2010.
- The revised draft was issued for ballot (#2) to the ANS RISC & ASME CNRM for approval to be released for TUPA. The ballot closed and comments were provided to the working group for resolution in May 2012.
- Significant comments were received. It is expected that incorporating comments will result in substantive changes requiring an additional ballot (#3).
- Recent multi-day working group meetings were held in June 2012 at the ANS Headquarters in La Grange Park, IL, and in September 2012 in Washington, DC.
- A revised draft incorporating comments from the TUPA ballot could be available for a "readiness review" by the JCNRM in the first quarter of 2013, followed by a ballot in the second quarter.

ANS/ASME-58.25-201x, "Standard for Radiological Accident Offsite Consequence Analysis (Level 3 PRA) to Support Nuclear Installation Applications"

- Working group is led by Keith Woodard, underway since 2005.
- Draft issued to ANS RISC & ASME CNRM for preliminary review in October 2009.
- Comments were provided to the working group for consideration in February 2010, and the NRC comments were made available in April 2010.
- Draft issued for TUPA ballot (#2) to RISC & CNRM; ballot closed March 2011.
- Recent multi-day working group meetings were held in January 2012 in Atlanta, GA, and in June 2012, at the ANS Headquarters in La Grange Park, IL.
- A revised draft incorporating comments from the 2011 ballot was completed and will be submitted for a "readiness review" by the JCNRM in November 2012.
- Provided that the "readiness review" finds the draft ready for ballot (#3), a ballot will be issued for TUPA release in early 2013.

ANS RISC merger with ASME CNRM to form a new "Joint Committee on Nuclear Risk Management"

The merger has two aspects, an "organizational" aspect and a "business" aspect.

The "organizational" aspect, which was completed in early 2012 after about two years of work, involved developing a "Rules and Operating Procedure" and a new structure for the joint committee. The structure consists of three subcommittees and a series of about ten writing groups, project teams, and working groups. The two societies' Boards approved the "Rules and Operating Procedure" in final form about a year ago, and the new structure has also been put into place. The new JCNRM is now formally in existence and has been operating as such since spring 2012, after having operated informally as a single joint entity for over e year prior to spring 2012. With this series of steps in place, the former ANS RISC Committee and the former ASME Committee on Nuclear Risk Management have effectively ceased to exist. Their two memberships have been merged to form the membership of the new JCNRM, and each of the subsidiary writing groups, working groups, and project teams has come under the JCNRM. The JCNRM "secretariat" is under ASME, although ANS (Pat Schroeder) continues to play an important role to support the JCNRM.

The JCNRM "business" aspect is not yet in place. Issues of revenue sharing and sharing of administrative tasks still need to be formally resolved. Negotiations have been advancing recently after more than a year during which they had not advanced at all due to ASME's not having been ready to negotiate. The outlines of the final business arrangement are now in place, although nothing has been "approved" in final form yet. The tentative arrangement consists of 50-50 revenue and cost sharing; ANS assumption of the administrative work of editing and publishing all new JCNRM standards; and ASME assumption of the work of arranging meetings, managing the finances, managing the ballot process, and a few other administrative tasks.

It is a pleasure to report that there seems to be almost no "friction" between the two societies in terms of how this merger has worked so far or will work in the future. The two co-chairs are working well together and rather little in the way of a legacy of the former two societies' former roles remains as an impediment.

Standards Inquiries and Delinquent Standards

The JCNRM has not received any standards inquiries and does not have any delinquent standards in need of maintenance.

Future Plans

The JCNRM's Executive Committee has been meeting more-or-less bi-weekly by conference call to plan the next two years' activities. The main effort is to develop the next version of the main PRA Combined Standard, which is planned now for spring 2015. This next version, which we will call a "new edition" instead of a "revision", is expected to have substantial changes to the format as well as to the content, based largely on feedback received in the past 2-3 years as this standard has been used by the commercial nuclear power operating fleet and by the NRC. During this use, many areas have been identified where inconsistencies exist between different parts of the large PRA standard, mostly due to variable interpretations, although a few problems have been discovered during use. A number of what the JCNRM has called "cross cutting issues" have also been identified, each of which is being evaluated and worked on by one of several *ad hoc* project teams within the larger JCNRM. Some of these issues have policy implications for how the standard is to be used, but mostly these are issues with technical substance.

The other major JCNRM task is to ballot and issue the five new standards under development that are discussed in the opening section of this report. This is a major effort, involving a few dozen volunteers.

The JCNRM has also embarked on an evaluation as to whether it should begin the development of a new standard for PRA to evaluate the risk from spent fuel pools. A decision on this will be debated by the JCNRM at its upcoming meeting in Phoenix in February 2013.

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PINS in Development (3)

- ANS-8.22, "Nuclear Criticality Safety Based on Limiting and Controlling Moderators" (revision of ANSI/ANS-8.22-1997 (R2006))
- ANS-8.24, "Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations" (revision of ANSI/ANS-8.24-2007)
- ANS-8.27, "Burnup Credit for LWR Fuel" (revision of ANSI/ANS-8.27-2007)

PINS in Approval Process/Resolving Comments (1)

- ANS-8.29, "Nuclear Criticality Safety in Fuel Reprocessing Facilities" (new standard)

Standards in Development – Approved PINS (9)

- ANS-8.1, "Nuclear Criticality Safety in Operations With Fissionable Materials Outside Reactors" (revision of ANSI/ANS-8.1-1998 (R2007))
- ANS-8.3, "Criticality Accident Alarm System" (revision of ANSI/ANS-8.3-1997 (R2003))
- ANS-8.10, "Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement" (revision of ANSI/ANS-8.10-1983 (R2005))
- ANS-8.12, "Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors" (revision of ANSI/ANS-8.12-1987 (R2011))
- ANS-8.15, "Nuclear Criticality Control of Selected Actinide Nuclides" (revision of ANSI/ANS-8.15-1981 (R2005))
- ANS-8.19, "Administrative Practices for Nuclear Criticality Safety" (revision of ANSI/ANS-8.19-2005)
- ANS-8.20, "Nuclear Criticality Safety Training" (revision of ANSI/ANS-8.20-1991 (R2005))
- ANS-8.21, "Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors" (revision of ANSI/ANS-8.21-1995 (R2011))
- ANS-8.28, "Administrative Practices for the Use of Non-Destructive Assay Measurements for Nuclear Criticality Safety" (new standard)

Standards Approved by N16/Reaffirmations Approved by ANSI in 2012 (6)

- ANSI/ANS-8.3-1997 (R2012), "Criticality Accident Alarm System"
- ANSI/ANS-8.5-1996 (R2012), "Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material"
- ANSI/ANS-8.7-1998 (R2012), "Nuclear Criticality Safety in the Storage of Fissile Materials"
- ANSI/ANS-8.23-2007 (R2012), "Nuclear Criticality Accident Emergency Planning and Response"
- ANSI/ANS-8.24-2007 (R2012), "Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations"
- ANSI/ANS-8.26-2007 (R2012), "Criticality Safety Engineer Training and Qualification Program"

Responses to Inquiries (in development: 1)

- An inquiry was received 1/11/12 on ANSI/ANS-8.3-1997 (R2003), "Criticality Accident Alarm System Inquiry." A response was drafted; comments from the ANS-8 Subcommittee are being resolved.

Delinquent Standards – 5+ Years Since ANSI Approval (5)

- ANSI/ANS-8.1-1998 (R2007), "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors" (revision at ballot with ANS-8)
- ANSI/ANS-8.10-1983 (R2005), "Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement" (revision initiated)
- ANSI/ANS-8.15-1981 (R2005), "Nuclear Criticality Control of Special Actinide Elements" (revision initiated)
- ANSI/ANS-8.19-2005, "Administrative Practices for Nuclear Criticality Safety" (revision initiated)
- ANSI/ANS-8.20-1991 (R2005), "Nuclear Criticality Safety Training" (revision balloted by ANS-8; comments being resolved)

Future Plans

Thomas McLaughlin has stepped in as interim chair of ANS-8 effective at the end of the June 2012 ANS meeting. An effort is underway to find a permanent chair.

The draft for the revision of ANSI/ANS-8.1-1998 (R2007) was completed and issued to the ANS-8 Subcommittee for approval. Significant energies were expended on revising ANS-8.1. Revisions and contents for other ANS-8 standards are highly dependent on what is included in ANS-8.1.

Reaffirmations of 6 standards were approved in 2012 maintaining their status as current American National Standards. Revisions of all 5 standards considered delinquent by ANSI have been initiated. Efforts continue with WGs for the delinquent standards to speed up the revision process and determine what resources need to be made available so these revisions move forward as quickly as possible.

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PINS in Development (6)

- ANS-6.1.1, "Neutron and Gamma-Ray Fluence-To-Dose Factors" (reinvigoration of historical standard ANSI/ANS-6.1.1-1991)
- ANS-6.6.1, "Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants" (revision of ANSI/ANS-6.6.1-1987 (R2007))
- ANS-15.4, "Selection and Training of Personnel for Research Reactors" (revision of ANSI/ANS-15.4-2007)
- ANS-15.15, "Criteria for the Reactor Safety Systems of Research Reactors" (reinvigoration of historical standard ANSI/ANS-15.15-1978 (R1986))
- ANS-15.16, "Emergency Planning for Research Reactors" (revision of ANSI/ANS-15.16-2008)
- ANS-15.20, "Criteria for the Reactor Control and Safety Systems of Research Reactors" (new standard)

PINS in Approval (2)

- ANS-10.8, "Non-Real Time, High Integrity Software for the Nuclear Industry-User Requirements" (new standard)
- ANS-19.5, "Requirements for Reference Reactor Physics Measurements" (reinvigoration of historical standard ANSI/ANS-19.5-1995)

PINS submitted to ANSI (1)

- ANS-6.4.2, "Specification for Radiation Shielding Materials" (revision of ANSI/ANS-6.4.2-2006)

Standards in Development – Approved PINS (9)

- ANS-5.1, "Decay Heat Power in Light Water Reactors" (revision of ANSI/ANS-5.1-2005)
- ANS-6.4.2, "Specification for Radiation Shielding Materials" (revision of ANSI/ANS-6.4.2-2006)
- ANS-6.4.3, "Gamma-Ray Attenuation Coefficients & Buildup Factors for Engineering Materials" (reinvigoration of historical standard ANSI/ANS-6.4.3-1991)
- ANS-15.2, "Quality Control for Plate-Type Uranium-Aluminum Fuel Elements" (revision of ANSI/ANS-15.2-1999 (R2009))
- ANS-15.8, "Quality Assurance Program Requirements for Research Reactors" (revision of ANSI/ANS-15.8-1995 (R2005))
- ANS-19.1, "Nuclear Data Sets for Reactor Design Calculations" (revision of ANSI/ANS-19.1-2002 (R2011))
- ANS-19.9, "Delayed Neutron Parameters for Light Water Reactors" (new standard)
- ANS-19.11, "Calculation and Measurement of the Moderator Temperature Coefficient of Reactivity for Pressurized Water Reactors" (revision of ANSI/ANS-19.11-1997 (R2011))
- ANS-19.12, "Nuclear Data for the Production of Radioisotope" (new standard)

Standards Projects being Considered for Termination (2)

- ANS-15.17, "Fire Protection Program Criteria for Research Reactors" (reinvigoration of historical standard ANSI/ANS-15.17-1981 (R2000))
- ANS-15.19, "Shipment and Receipt of Special Nuclear Material (SNM) by Research Reactor" (reinvigoration of historical standard ANSI/ANS-15.19-1991)

Standards at Ballot/Resolving Comments (2)

- ANS-6.1.2, "Neutron and Gamma-Ray Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants" (revision of ANSI/ANS-6.1.2-1999 (R2009))
- ANS-10.7, "Non-Real Time, High Integrity Software for the Nuclear Industry" (new standard)

Standards Approved by N17/ANSI (2)

- ANSI/ANS-1-2000 (R2012), “Conduct of Critical Experiments” (reaffirmation of ANSI/ANS-1-2000 (R2007))
- ANSI/ANS-15.21-2012, “Format and Content for Safety Analysis Reports for Research Reactors” (revision of ANSI/ANS-15.21-1996 (R2006))

Delinquent Standards — 5+ Years Since ANSI Approval (8)

- ANSI/ANS-5.1-2005, “Decay Heat Power in Light Water Reactors” (revision initiated)
- ANSI/ANS-6.3.1-1997 (R2007), “Program for Testing Radiation Shields in Light Water Reactor (LWR)” (chair needed)
- ANSI/ANS-6.4-2006, “Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants” (chair needed)
- ANSI/ANS-6.4.2-2006, “Specification for Radiation Shielding Materials” (revision initiated)
- ANSI/ANS-6.6.1-1987 (R2007), “Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants” (Revision being initiated)
- ANSI/ANS-15.1-2007, “The Development of Technical Specifications for Research Reactors”(reaffirmation to be initiated)
- ANSI/ANS-15.4-2007, “Selection and Training of Personnel for Research Reactors” (revision being initiated)
- ANSI/ANS-15.8-1995 (R2005), “Quality Assurance Program Requirements for Research Reactors” (revision initiated)

Responses to Inquiries (1)

- An inquiry was received 7/23/12 on ANSI/ANS-19.6.1-2011, “Reload Startup Physics Tests for Pressurized Water Reactors.” The response was approved by N17 and sent to the Standards Board for certification.

Future Plans

- An N17 Committee meeting will be held Wednesday, November 14, 2012, during the ANS Winter Meeting in San Diego. Members will be asked for feedback on future plans.

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NRMCC Report to the ANS Standards Board San Diego California

November 13, 2012

REPLY TO:

Charles H. Moseley, Jr
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This report is from the NRMCC Co Chair representing ANS. The other Co Chair represents ASME.

Risk Based Standards
The ASME Board on Nuclear Codes and Standards (BNCS) and American Nuclear Society (ANS) Standards Board mutually agreed in 2004 to form a Nuclear Risk Management Coordinating Committee (NRMCC). This committee was chartered to coordinate Standards activities related to probabilistic risk assessment (PRA) between the two Standards development organizations.

I serve as the ANS Co Chair; a new ASME Co Chair, Ralph Hill of Westinghouse, was named earlier this year. The last meeting of the NRMCC was in Denver in September.

Discussions were successful between ASME and ANS and the new joint technical consensus committee, the Joint Committee on Nuclear Risk Management, met for the first in February in St. Petersburg. This committee is proceeding to develop all the procedures necessary for governance. The next meeting is in Phoenix in February of 2013. The Business Agreement between the two societies still has not been signed.

There is still great concern being raised within the Risk informed standards community on the impact of the March 11, 2011 Fukishima incident on the existing scope of standards development.

C. H. Moseley, Jr.

Charles H. Moseley, Jr
ANS Standards Board Member
ANS Co Chair NRMCC
ANS Nuclear Facilities Standards Committee Member
ANS 21- Reactor Standards Member
ANS 3.2 Member

NFSC Chairman Report to the Standards Board

November 13, 2012, Meeting ● San Diego, California

Overview

The NFSC and each of its eight subcommittees were very active, as well as successful since the 2012 Annual Meeting with positive progress on 29 different ANS standards, including ANSI approval of 3 new standards and 1 revised standard and 8 new PINS activities. Listed below are the specific activities by standard.

I. PINS Activities (8)

A. PINS in Preparation (3)	Status	SC
(1) ANS-3.14, Process for Aging Management and Life Extension of Non-Reactor Nuclear Facilities (new standard)	issued to ANS-21 for approval	ANS-21
(2) ANS-40.21, Siting, Construction, and Operation of Commercial Low Level Radioactive Waste Burial Grounds (new standard)	in development by WG	ANS-25
(3) ANS-40.35, Volume Reduction of Low-Level Radioactive Waste or Mixed Waste (reinvigoration of historic standard ANSI/ANS-40.35-1991)	in development by WG	ANS-27

B. PINS in NFSC Approval Process (5)	Status	SC
(1) ANS-2.32, Guidance on the Selection and Evaluation of Remediation Methods for Subsurface Contamination (new standard)	resolving comments (lost WG Chair)	ANS-27
(2) ANS-20.1, Nuclear Safety Criteria and Design Process for Fluoride Salt-Cooled High-Temperature Reactor	resolving comments	ANS-29
(3) ANS-57.2, Design Requirements for Light Water Reactor Spent Fuel Facilities at Nuclear Power Plants	resolving comments (Fukushima-related)	ANS-27
(4) ANS-57.3, Design Requirements for New Fuel Storage Facilities at LWR Plants	resolving comments (Fukushima-related)	ANS-27
(5) ANS-57.11, Integrated Safety Assessment for Fuel Fabrication Facilities (new standard)	NFSC ballot due 11/11/12 (Requested by NRC Commissioners)	ANS-27

II. Standards Activities (29)

A. Standards and Draft Standards in Development with Approved PINS (21)	Status	SC
(1) ANS-2.2, Earthquake Instrumentation Criteria for Nuclear Power Plants (revision of ANSI/ANS-2.2-2002)	in development by WG (Fukushima-related)	ANS-25
(2) ANS-2.8, Determining External Flood Hazards for Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-2.8-1992)	in development by WG (Fukushima-related)	ANS-25
(3) ANS-2.9, Evaluation of Ground Water Supply for Nuclear Facilities (reinvigoration of historical standard ANSI/ANS-2.9-1980 (R1989))	in development by WG	ANS-25
(4) ANS-2.16, Criteria for Modeling Design-Basis Accidental Releases from Nuclear Facilities (new standard)	in development by WG	ANS-24
(5) ANS-2.25, Surveys of Terrestrial Ecology Needed to License Thermal Power Plants (reinvigoration of historical standard ANSI/ANS-2.25-1982 (R1989))	in development by WG	ANS-25
(6) ANS-2.30, Assessing Capability for Surface Faulting at Nuclear Facilities (new standard)	in development by WG (Fukushima-related)	ANS-25
(7) ANS-2.31, Standard for Estimating Extreme Precipitation at Nuclear Facility Sites (new standard)	in development by WG	ANS-25
(8) ANS-3.1, Selection, Qualification, and Training of Personnel for	in development by WG	ANS-21

Nuclear Power Plants (reinvigoration of historical standard ANSI/ANS-3.1-1993 (R1999))		
(9) ANS-3.5, Nuclear Power Plant Simulators for Use in Operator Training and Examination (revision of ANSI/ANS-3.5-2009)	in development by WG	ANS-21
(10) ANS-3.8.1, Criteria for Radiological Emergency Response Functions and Organizations for Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-3.8.1-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(11) ANS-3.8.2, Criteria for Functional and Physical Characteristics of Radiological Emergency Response Facilities at Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-3.8.2-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(12) ANS-3.8.3, Criteria for Radiological Emergency Response Plans and Implementing Procedures and Maintaining Emergency Response Capability for Nuclear Facilities (reinvigoration and consolidation of historic standards ANSI/ANS-3.8.3-1995 and ANSI/ANS-3.8.4-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(13) ANS-3.8.6, Criteria for the Conduct of Offsite Radiological Assessment for Emergency Response and Emergency Radiological Field Monitoring, Sampling and Analysis for Nuclear Facilities (reinvigoration and consolidation of historic standards ANSI/ANS-3.8.5-1992 and ANSI/ANS-3.8.6-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(14) ANS-3.8.7, Criteria for Planning, Development, Conduct, and Evaluation of Drills and Exercises for Emergency Preparedness at Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-3.8.7-1998)	in development by WG (Fukushima-related)	ANS-26
(15) ANS-3.8.10, Criteria for Modeling Real-time Accidental Release Consequences at Nuclear Facilities (new standard)	in development by WG (Fukushima-related)	ANS-24
(16) ANS-18.1, Radioactive Source Term for Normal Operation of Light Water Reactors (reinvigoration of historical standard ANSI/ANS-18.1-1999)	on-hold until new data found	ANS-24
(17) ANS-50.1, Nuclear Safety Criteria for the Design of Light Water Reactor Plants (new standard)	in development by WG	ANS-29
(18) ANS-51.10, Auxiliary Feedwater System for Pressurized Water Reactors (revision of ANSI/ANS-51.10-1991 (R2008))	in development by WG	ANS-22
(19) ANS-54.1, General Safety Design Criteria for a Liquid Sodium Reactor Nuclear Power Plants (reinvigoration of historical standard ANSI/ANS-54.1-1989)	in development by WG	ANS-29
(20) ANS-56.8, Containment System Leakage Testing Requirements (revision of ANSI/ANS-56.8-2002)	in development by WG	ANS-21
(21) ANS-58.8, Time Response Design Criteria for Safety-Related Operator Actions (revision of ANSI/ANS-58.8-1994 (R2008))	in development by WG	ANS-22

B. Standards and Draft Standards at Ballot or in Comment Resolution (4)	**Status**	**SC**
(1) ANS-2.15, Criteria for Modeling and Calculating Atmospheric Dispersion of Routine Radiological Releases from Nuclear Facilities (new standard)	comments from recirculation ballot being resolved	ANS-24
(2) ANS-3.4, Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants (reinvigoration of	ballot comments being resolved	ANS-21

historical standard ANSI/ANS-3.4-1996 (R2002))		
(3) ANS-5.10, Airborne Release Fractions at Non-Reactor Nuclear Facilities (reaffirmation of ANSI/ANS-5.10-1998(R2006))	reaffirmation ballot due 11/4/12	ANS-24
(4) ANS-58.16, Safety Classification and Design Criteria for Non-Reactor Nuclear Facilities (new standard)	ballot comments being resolved	ANS-22

C. Standards Published (4)	**Status**	**SC**
(1) ANSI/ANS-2.21-2012, Criteria for Assessing Atmospheric Effects on the Ultimate Heat Sink (new standard)	August 2012 publication	ANS-25
(2) ANSI/ANS-3.2-2012, Managerial, Administrative, and Quality Assurance Controls For the Operational Phase of Nuclear Power Plants (revision of ANSI/ANS-3.2-2006)	July 2012 publication	ANS-21
(3) ANSI/ANS-41.5-2012, Verification and Validation of Radiological Data for Use in Waste Management and Environmental Remediation (new standard)	July 2012 publication	ANS-24
(4) ANSI/ANS-53.1-2011, Nuclear Safety Design Process for Modular Helium-Cooled Reactor Plants (new standard)	August 2012 publication	ANS-28

III. Standards Inquiries (4)

A. Responses to Inquiries on Existing Standards (4)	**Status**	**SC**
(1) ANSI/ANS-2.26-2004 (R2010), Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design (Inquiry received 6/28/11)	response provided July 2012	ANS-22
(2) ANSI/ANS-3.5-2009, Nuclear Power Plant Simulators for Use in Operator Training and Examination (Inquiry received 4/3/12)	response being drafted by WG	ANS-21
(3) ANSI/ANS-18.1-1999 (W2009), Radioactive Source Term for Normal Operation of Light Water Reactors (Inquiry received 3/2/12)	response drafted in approval	ANS-24
(4) ANSI/ANS-18.1-1999 (W2009), Radioactive Source Term for Normal Operation of Light Water Reactors (Inquiry received 4/6/12)	response drafted in approval	ANS-24

IV. Delinquent Standards (9)

A. Maintenance of Delinquent Current Standards (9)	**Status**	**SC**
(1) ANSI/ANS-2.10-2003, Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation	WG reformed under new chair (Fukushima-related)	ANS-21
(2) ANSI/ANS-5.10-1998 (R2006), Airborne Release Fractions at Non-Reactor Nuclear Facilities	reaffirmation in process	ANS-24
(3) ANSI/ANS-55.4-1993 (R2007), Gaseous Radioactive Waste Processing Systems for LWR Plants	new WG chair	ANS-22
(4)ANSI/ANS-55.6-1993 (R2007), Liquid Radioactive Waste Processing system for LWR Plants	new WG chair	ANS-22
(5) ANSI/ANS-57.1-1992 (R2005), Design Requirements for Light Water Reactor Fuel Handling Systems	no WGC/WG (Fukushima-related)	ANS-27
(6) ANSI/ANS-57.5-1996 (R2006), Light Water Reactors Fuel Assembly Mechanical Design and Evaluation	no WGC/WG	ANS-22

(7) ANSI/ANS-57.10-1996 (R2006), Design Criteria for Consolidation of LWR Spent Fuel	no WGC/WG (Fukushima-related)	ANS-27
(8) ANSI/ANS-59.51-1997 (R2007), Fuel Oil Systems for Safety-Related Emergency Diesel Generators	no WGC/WG (Fukushima-related)	ANS-22
(9) ANSI/ANS-59.52-1998 (R2007), Lubricating Oil Systems for Safety-Related Emergency Diesel Generators	no WGC/WG (Fukushima-related)	ANS-22

Future Plans

Sixteen standards and standards projects have been identified as Fukushima-related, meaning that they are associated with addressing methods associated with lessons-learned from the March 11, 2011 events at the Fukushima-Dai-ichi units. These standards and standards projects are being managed by 6 of the 8 NFSC SCs. They are:

(1) ANS-57.2, Design Requirements for Light Water Reactor Spent Fuel Facilities at Nuclear Power Plants	resolving comments (Fukushima-related)	ANS-27
(2) ANS-57.3, Design Requirements for New Fuel Storage Facilities at LWR Plants	resolving comments (Fukushima-related)	ANS-27
(3) ANS-2.2, Earthquake Instrumentation Criteria for Nuclear Power Plants (revision of ANSI/ANS-2.2-2002)	in development by WG (Fukushima-related)	ANS-25
(4) ANS-2.8, Determining External Flood Hazards for Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-2.8-1992)	in development by WG (Fukushima-related)	ANS-25
(5) ANSI/ANS-2.10-2003, Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation	WG reformed under new chair (Fukushima-related)	ANS-21
(6) ANS-2.30, Assessing Capability for Surface Faulting at Nuclear Facilities (new standard)	in development by WG (Fukushima-related)	ANS-25
(7) ANS-3.8.1, Criteria for Radiological Emergency Response Functions and Organizations for Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-3.8.1-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(8) ANS-3.8.2, Criteria for Functional and Physical Characteristics of Radiological Emergency Response Facilities at Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-3.8.2-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(9) ANS-3.8.3, Criteria for Radiological Emergency Response Plans and Implementing Procedures and Maintaining Emergency Response Capability for Nuclear Facilities (reinvigoration and consolidation of historic standards ANSI/ANS-3.8.3-1995 and ANSI/ANS-3.8.4-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(10) ANS-3.8.6, Criteria for the Conduct of Offsite Radiological Assessment for Emergency Response and Emergency Radiological Field Monitoring, Sampling and Analysis for Nuclear Facilities (reinvigoration and consolidation of historic standards ANSI/ANS-3.8.5-1992 and ANSI/ANS-3.8.6-1995)	to be initiated after ANS-3.8.7 drafted (Fukushima-related)	ANS-26
(11) ANS-3.8.7, Criteria for Planning, Development, Conduct, and Evaluation of Drills and Exercises for Emergency Preparedness at Nuclear Facilities (reinvigoration of historic standard ANSI/ANS-3.8.7-1998)	in development by WG (Fukushima-related)	ANS-26
(12) ANS-3.8.10, Criteria for Modeling Real-time Accidental Release	in development by WG	ANS-24

Consequences at Nuclear Facilities (new standard)	(Fukushima-related)	
(13) ANSI/ANS-57.1-1992 (R2005), Design Requirements for Light Water Reactor Fuel Handling Systems	no WGC/WG (Fukushima-related)	ANS-27
(14) ANSI/ANS-57.10-1996 (R2006), Design Criteria for Consolidation of LWR Spent Fuel	no WGC/WG (Fukushima-related)	ANS-27
(15) ANSI/ANS-59.51-1997 (R2007), Fuel Oil Systems for Safety-Related Emergency Diesel Generators	no WGC/WG (Fukushima-related)	ANS-22
(16) ANSI/ANS-59.52-1998 (R2007), Lubricating Oil Systems for Safety-Related Emergency Diesel Generators	no WGC/WG (Fukushima-related)	ANS-22

The ad hoc Committee that was established at the 2012 Annual Meeting will discuss its recommendations regarding any additional future standards development activities in response to the NRC Near-Term Task Force Tier I, Tier II, and Tier III recommendations. Additional insight from NFSC members at the meeting will be discussed and a path forward defined.

ANS Standards Staff Report
November 2012

Support of Standards Board Activities

Several task groups were created by the ANS Standards Board in five key areas. A special committee was formed to consider a reorganization of the ANS Standards Committee. ANS staff supports the efforts of these groups as requested.

Formation of ANS/American Society of Mechanical Engineers (ASME) Joint Consensus Committee

The formation of the ANS/ASME Joint Committee on Nuclear Risk Management (JCNRM) continues. ANS staff supports the JCNRM as the ANS staff liaison at physical meetings and on bi-weekly teleconferences of the JCNRM Executive Committee. Staff is involved in coordination of ANS requirements for approval of joint standards and preparation of a business agreement between the two societies.

Grant Activities

The U.S. Nuclear Regulatory Commission (NRC) issued ANS a grant to cover travel-related and meeting expenses for working group members to develop three probabilistic risk assessment standards. The grant was effective July 31, 2009, for a three-year period. Staff is responsible for managing the grant and submission of financial and progress reports to the NRC. A two-year extension to use remaining funds was secured. ANS staff is supporting development of additional grant proposals.

Administrative Staff Support

Administrative support was provided to gain approval of four new/revised standards and six reaffirmations of current standards in 2012. With over 60 draft standards in development and 75 current American National Standards, the majority of staff resources have been expended on issuing ballots, volunteer record management, maintenance of standards in the ANS Store (both print and electronic), maintenance of standards information on the ANS website, and general administrative support of Standards Committee chairs.

Publication of ANS Standards

Four standards have been published this year including one that was granted approval just before the end of 2011. An additional standard is in production and should be published before the end of the year. The publication of these standards was achieved with the support of ANS editing staff and Building Services.

ANS Standards Staff Support of Other Committees

The ANS Standards Administrator supports the Nuclear Risk Management Coordinating Committee (NRMCC) as ANS staff liaison and secretary. The last meeting was held September 10, 2012, in Denver, Colorado. The next meeting is anticipated in February of 2013.

Transfer of SC 6 Responsibilities to ANS

ANS staff will be taking over secretarial support of the Subcommittee (SC) 6 of the International Organization of Standardization Technical Committee 85 from the American Society of Testing and Materials. Formalities of the transfer are in progress with the anticipation of taking over secretary duties by January of 2013.

Standards Digitization Project

Standards staff members have been working with the Building Services and Information Technology departments in creating electronic versions of ANS standards sold in the ANS Store. Several have recently been added to the store and are available for purchase. All should be available in print and electronic format by the end of the year.

Staff Change

The Scientific Publications and Standards Department welcomed Kathryn Murdoch as the new standards assistant in October.

Information Center on Nuclear Standards (ICONS) and *Nuclear Standards News* (*NSN*)

Standards staff continue to manage the ICONS program furnishing members a current ANS standards library and *NSN* , the bi-monthly newsletter providing highlights of ANS standards activities and standards issues in the nuclear standards field. Subscriptions to *NSN* were offered to ANS members for the first time in 2013.

Standards Sales Report

June 1, 2012 -October 15, 2012

Designation & Title of Standard	# of Paper/Electronic Copies Sold	Total Price
ANS-1-2000;R2007, Conduct of Critical Experiments	0/1	36.00
ANS-2.2-2002, Earthquake Instrumentation Criteria for Nuclear Power Plants	0/1	51.00
ANS-2.3-2011, Estimating Tornado, Hurricane, and Extreme Straight Line Wind Characteristics at Nuclear Power Plants	2/1	182.40
ANS-2.10-2003, Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation	0/1	43.00
ANS-2.12-1978 (W1988), Guidelines for Combining Natural & External Man-Made Hazards at POW Reactor Sites	1/0	132.80
ANS-2.17-2010, Evaluation of Subsurface Radionuclide Transport at Commercial Nuclear Power Plants	2/2	487.50
ANS-2.21-2012, Criteria for Assessing Atmospheric Effects on the Ultimate Heat Sink	1/1	100.00
ANS-2.23-2002;R2009, Nuclear Plant Response to an Earthquake	1/1	222.30
ANS-2.26-2004;R2010, Categorization of Nuclear Facility Structures, Systems, and Components For Seismic Design	4/3	696.60
ANS-2.27-2008, Criteria for Investigations of Nuclear Facility Sites for Seismic Hazard Assessments	2/6	830.50
ANS-2.29-2008, Probabilistic Seismic Hazard Analysis	1/6	837.50
ANS-3.1-1993;R1999;W2009, Selection, Qualification Training of Personnel for Nuclear Power Plants	3/0	221.20
ANS-3.2-2006, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants	1/0	132.00
ANS-3.2-2012, Managerial Administrative and Quality Assurance Controls for the Operational Phase of Nuclear Power Plants	2/2	456.00
ANS-3.4-1996;R2002, Medical Certification and Monitoring of Personnel Requiring Operator LTC	3/0	147.90
ANS-3.5-2009, Nuclear Power Plant Simulators for Use in Operator Training and Examination	1/2	313.50
ANS-3.11-2005;R2010, Determining Meteorological Information at Nuclear Facilities	0/1	123.00
ANS-5.1-1994;W2004, Decay Heat Power in Light Water Reactors	4/3	924.60
ANS-5.4-2011, Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel	2/0	142.00
ANS-5.10-1998;R2006, Airborne Release Fractions at Non-Reactor Nuclear Facilities	1/0	120.00
ANS-6.1.1-1991;W2001, Neutron and Gamma-Ray Fluence-To-Dose Factors	2/0	176.70
ANS-6.4-2006, Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants	2/1	529.20
ANS-6.4.2-2006, Specifications for Radiation Shielding Materials	1/0	71.00
ANS-6.4.3-1991;W2001, Gamma-Ray Attenuation Coefficients and Buildup Factors for Engineering Materials	2/0	424.00
ANS-8.1-1998;R2007, Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors	36/4	2670.30
ANS-8.3-1997;R2003;R2012, Criticality Accident Alarm Systems (RF of ANS-8.3-1997)	1/2	260.40

ANS-8.5-1981;R1987;R1995;R2005, Nuclear Criticality Control Spec Actinide	1/0	71.10
ANS-8.5-1996;R2002;R2007, Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material	1/0	52.20
ANS-8.6-1983;R1988;R1995;R2001;R2010, Safety in Conducting Subcritical Neutron-Multiplication	1/0	26.10
ANS-8.7-1998:R2007, Guide for Nuclear Criticality Safety in the Storage of Fissile Materials	2/0	150.10
ANS-8.10-1983;R1988;R1999;R2005, Criteria for Nuclear Criticality Safety Controls	1/2	120.40
ANS-8.12-1987;R1993;R2002;R2011, Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors	1/0	77.40
ANS-8.14-2004, Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors	1/2	120.40
ANS-8.15-1981;R1987;R1995;R2005, Nuclear Criticality Control Spec Actinide	1/0	71.10
ANS-8.17-2004;R2009, Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors		120.40
ANS-8.19-2005, Administrative Practices for Nuclear Criticality Safety	1/4	172.80
ANS-8.20-1991;R1999;R2005, Nuclear Criticality Training	2/0	81.70
ANS-8.21-1995;R2001;R2011, Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors	1/2	120.40
ANS-8.22-1997;R2006, Nuclear Criticality Safety Based on Limiting & Controlling Moderators	1/0	45.90
ANS-8.23-2007;R2012, Nuclear Criticality Accident Emergency Planning and Response	2/2	410.40
ANS-8.24-2007IR2012, Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations	1/1	180.00
ANS-8.26-2007;R2012, Criticality Safety Engineer Training and Qualification Program	1/3	133.20
ANS-8.27-2008, Burnup Credit for LWR Fuel	1/3	163.40
ANS-10.4-2008, Verification and Validation of Non-Safety Related Scientific and Engineering Computer Programs for the Nuclear Industry	0/1	118.00
ANS-10.5-2006, Accommodating User Needs in Scientific and Engineering Computer Software Development	0/1	51.00
ANS-15.1-2007, The Development of Technical Specifications for Research Reactors	0/2	172.00
ANS-15.4-2007, Selection and Training of Personnel for Research Reactors	0/3	179.20
ANS-15.8-1995;R2005, Quality Assurance Program Requirements for Research Reactors	4/0	220.40
ANS-15.11-2009, Radiation Protection at Research Reactors	1/1	214.70
ANS-15.16-2008, Emergency Planning for Research Reactors	2/1	162.40
ANS-16.1-2003;R2008, Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure	0/3	369.00
ANS-18.1-1999;W2009, Radioactive Source Term for Normal Operation of Light Water Reactors	1/0	86.00
ANS-19.3-2011, Steady State Neutronics Methods for Power Reactor Analysis	5/1	632.20
ANS-19.6.1-2011, Reload Startup Physics Tests for Pressurized Water Reactors	1/1	209.00
ANS-19.10-2009, Methods for determining Neutron Fluence	1/0	44.10
ANS-40.37-2009, Mobile Low-Level Radioactive Waste Processing System	0/3	372.40
ANS-41.5-2012, V&V of Radiological Data for Use in WAM & ENV REM	2/0	292.00

ANS 51.1-1983;R1988;W2000, Nuclear Safety Criteria for Design of Stationary	1/1	171.90
ANS-51.10-1991;R2002;R2008, Auxiliary Feedwater System for Pressurized Water Reactors	1/0	90.00
ANS-52.1-1983;R1988;W2001, Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants	1/0	189.00
ANS-53.1-2011, Nuclear Safety Design Process for Modular Helium-Cooled Reactor Plants	1/1	424.00
ANS-54.1-1989;W1999, General Safety Design Criteria for a Liquid Metal Reactor NPP	2/0	150.10
ANS-54.8-1988;W1998, Liquid Metal Fire Protection LMR Plants	1/0	71.00
ANS-55.1-1992;R2000;R2009, Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants	1/0	121.50
ANS-56.8-1994;W2002, Containment System Leakage Testing Requirements	1/0	123.00
ANS-56.8-2002;R2011, Containment System Leakage Testing Requirements	3/0	332.10
ANS-56.11-1988;W2000, Design Criteria for Protection Against the Effects of Compartment Flooding	2/0	128.00
ANS-57.2-1983,W1999;R2006, Design Requirements for LWR Spent Fuel Facilities at NPPs	2/0	228.00
ANS-57.7-1988;R1997;W2007, Design Criteria for an Ind. Spent Fuel Storage Installation (Water Pool Type)	1/0	135.00
ANS-57.8-1995;R2005, Fuel Assembly Identification	1/0	38.70
ANS-57.10-1996;R2006, Design Criteria for Consolidation of LWR Spent Fuel	1/0	110.70
ANS-58.2-1988;W1998, Design Basis for Protection of Light Water Nuclear Power Plants Against the Effects of Postulated Pipe Rupture	1/0	174.00
ANS-58.6-1996;R2001, Criteria for Remote Shutdown for Light Water Reactors	1/0	45.90
ANS-58.8-1994;R2001;R2008, Time Response Design Criteria for Safety-Related Operator Actions	1/0	79.00
ANS-58.9-2002;R2009, Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems	2/0	81.70
ANS-58.14-2011, Safety and Pressure Integrity Classification Criteria for Light Water Reactors	1/4	818.40
ANS-59.51-1997;R2007, Fuel Oil Systems for Safety-Related Emergency Diesel Generators	1/0	71.00
Misc Standards – Historical & Drafts	3/0	192.00
ASME/ANS RA-2008/2009A, Standard for Level 1/Large Early Release Frequency PRA for NPP Application	N/A	351.00
GRAND TOTAL		**$ 19,345.80**

**Any totals showing as x / x - The first number is for the quantity sold of a hard copy of the actual standard and the second number represents the quantity of electronic versions of the standard sold.