AMERICAN NUCLEAR SOCIETY

STANDARDS COMMITTEE
REPORT OF ACTIVITIES

2007

AMERICAN NUCLEAR SOCIETY STANDARDS COMMITTEE

Report of Activities

2007

Prepared by:

Patricia Schroeder, Standards Administrator

Report updated information to standards@ans.org

A Special Thanks to the Standards Committee Chairs that submitted reports

Alexander Adams, ANS-15.21
James Baker, ANS-8.23
Carl Beyer, ANS-5.4
Debdas Biswas, ANS-8.12
Nick Brown, ANS-8.1
Robert Busch, ANS-8.24
Bill Carson, ANS-8.19
Dimitrios Cokinos, ANS-19.4
Michael Crouse, ANS-8.22
Timothy Dennis, ANS-3.5
Linda Farrell, ANS-8.10
Ian Gauld, ANS-5.1
Jerry Hicks, ANS-8.5
Brian Kidd, ANS-8.17
Ronald Knief, ANS-8.20
Charles Martin, ANS-10.7
James Morman, ANS-8.26
Russell Mosteller, ANS-19.11
David Murphy, ANS-51.10
Bill Myers, ANS-8.6
Tom Myers, ANS-15.4
Sean O'Kelly, ANS-15.10
Norman Pruvost, ANS-8.15
Charles Rombough, ANS-19.6.1
Benjamin Rouben, ANS-19.3
Andrew Smetana, ANS-10.4
Hans Toffer, ANS-8.21
John Wagner, ANS-6.6.1

TABLE OF CONTENTS

INTRODUCTION

The Report of Activities of the American Nuclear Society Standards Committee represents a record of the Committee's achievements for the calendar year 2007. The Report is presented to provide information on ANS standards projects.

Nearly 800 volunteer members participate in the development of ANS-sponsored nuclear standards, of which there are over 120 in various phases of development. As of the end of 2007, there were 75 current standards offered for sale.

The ANS Standards Committee develops standards in accordance with the accredited organization method for developing evidence of consensus for their approval as American National Standards.

The work of the Standards Committee is managed by four consensus committees:

N16, Nuclear Criticality Safety

N17, Research Reactors, Reactor Physics, Radiation Shielding & Computational Methods

NFSC, Nuclear Facilities Standards Committee

RISC, Risk Informed Standards Committee

This report is presented in four Individual sections, each of which sets forth the details on those subcommittees and working groups active under its respective consensus committee.

ANS Standards Development Process

The mission of the American Nuclear Society (ANS) Standards Committee is to develop voluntary consensus standards to be certified by the American National Standards Institute (ANSI) as American National Standards. The ANSI has served as administrator and coordinator of the United States private sector voluntary standardization system for more than 90 years. Founded in 1918 by five engineering societies and three government agencies, the Institute remains a private, nonprofit membership organization supported by a diverse constituency of private and public sector organizations. Its prescribed process is set forth in the ANS Standards Committee Rules and Procedures, and it is also illustrated in the following flow chart.

The National Technology Transfer and Advancement Act of 1995 (NTTAA) requires all federal agencies and departments to use technical standards that are developed or adopted by voluntary consensus standards bodies, unless such use is impractical or inconsistent with law. To implement the Act, the Office of Management and Budget issued Circular A-119, which provides guidance to promote consistent application of the Act across federal agencies and departments. The NTTAA is available at http://standards.gov/standards_gov/nttaa.cfm. OMB Circular A-119 can be found at http://www.whitehouse.gov/omb/circulars/a119/a119.html.

The process to produce an American National Standard requires much time, patience, most of all dedication. The birth of a standard begins with recognizing a need for a particular standard. Any individual or committee within the ANS Standards Committee may identify this need by completing a Project Initiation Notification System (PINS) form, which declares the purpose and need of the proposed standard. The document is reviewed, discussed, and most often approved by a select subcommittee (SC) and a consensus committee (CC) that will parent the standard. Last, the Standards Board (SB) will review the PINS form before it is submitted to ANSI.

Once the PINS form is approved and submitted to ANSI, a working group (WG) is assembled to commence the standard development process. Working Group members comprise a small number of individuals recognized for their expertise in the subject. Although there is no requirement for a balance of representation on a WG, as required for the CC and SB, WG membership should include those organizations having a significant interest in the project.

Subcommittees (SC) consist of members who have been appointed due to their expertise in one or more areas. They manage the development of several standards in closely related disciplines. Each SC member is expected to lend his/her special expertise in the development of standards. Subsequent to drafting the standard, a formal ballot process within the SC is not required, but SC approval is often achieved via internal committee discussion.

The SB has established four consensus committees, Nuclear Facilities Standards Committee (NFSC), Nuclear Criticality Safety (N16), Research Reactors, Reactor Physics, Radiation Shielding and Computational Methods (N17), and Risk Informed Standards Committee (RISC). Consensus committees (CC) comprise a diverse balance of interest. Each CC supervises the development of proposed standards within their assigned scopes, and they achieve consensus approval of these projects. A formal ballot must be employed to ascertain each member's position on the standards brought before the committee.

The WG chair must respond to all “approved with comments” and “negative” comments received from the formal ballot period; the SC may assist in resolving comments. Balloters who ballot negative, must review the attempted resolution of his/her negative ballot vote. If the negative balloter finds the response unacceptable, then the balloter may maintain that decision by formally stating his/her reasons for doing so. Any outstanding negative positions must be circulated to all members of the CC for review. A member holding an affirmative position may change his/her vote if he/she wishes to support negative balloters.

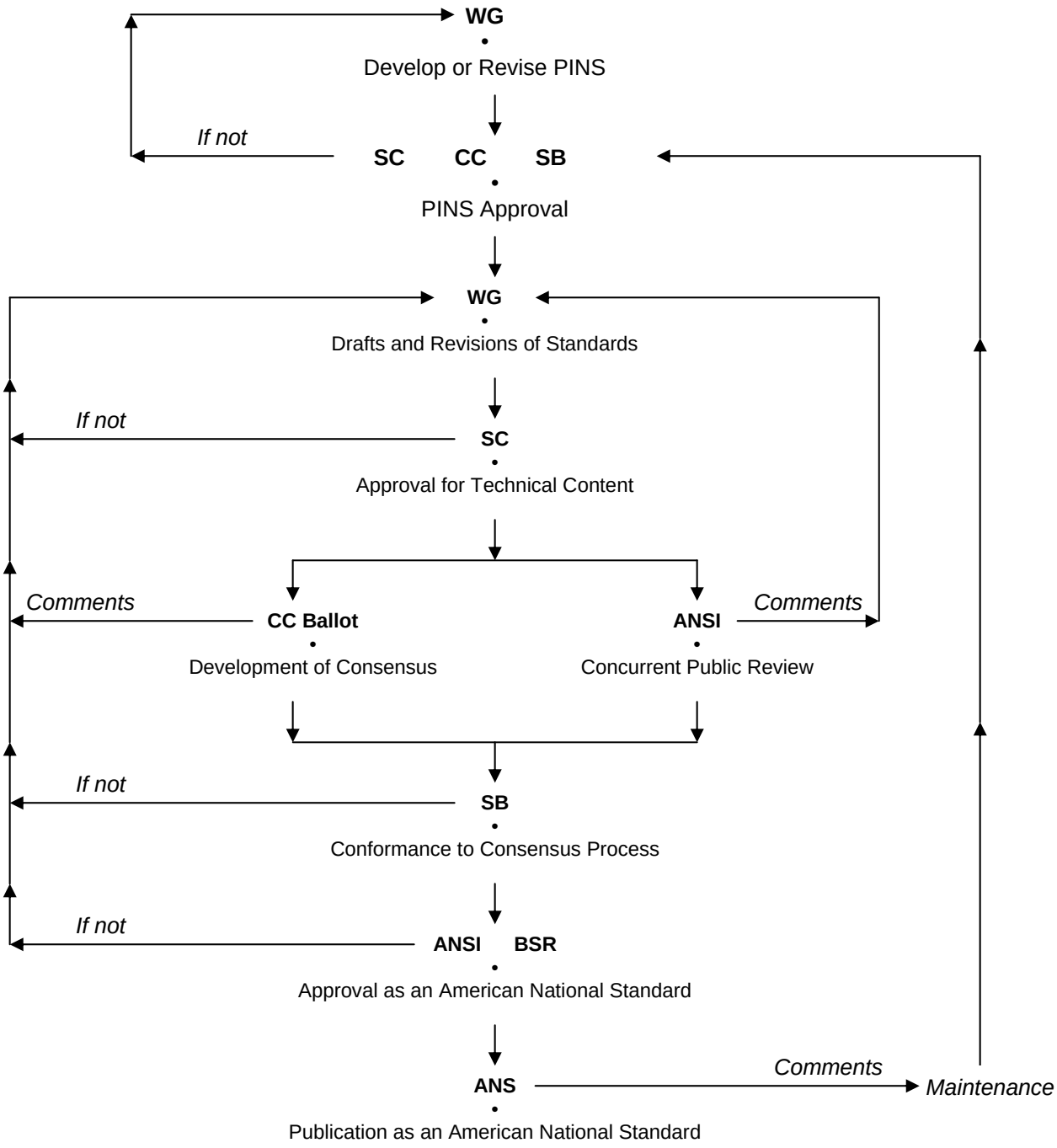
Simultaneous to the CC ballot, public review (PR) is conducted through the auspices of ANSI. ANSI announces a 60-day public review period for the proposed standard in its publication, *Standards Action*. As with CC comments, all comments from PR must be considered and resolved promptly.

Upon completion of the consensus process, a Letter Ballot is created for the SB to review and certify that all ANS procedures have been implemented to finalize the standard. The SB Letter Ballot summarizes the CC ballot tallies and other details during the ballot period.

The final step in the development of a proposed standard is to gain approval by the ANSI Board of Standards Review (BSR). Once certification by the SB has been granted, the proposed standard is sent to the BSR with documentation of the ballot results to carefully scrutinize the case.

After ANSI notifies ANS of its approval, the proposed standard emerges as an American National Standard -- a remarkable achievement and a credit to all the volunteers who made it possible.

Steps in the Development of a Standard



WG - Working Group
SC - Subcommittee
CC - Consensus Committee
SB - Standards Board
ANSI - American National Standards Institute
BSR - Board of Standards Review
ANS - American Nuclear Society

STANDARDS BOARD REPORT

Dr. N. Prasad Kadambi, CHAIR

The ANS Standards Board has continued, in 2007, to focus on the support needed for new reactor activities so that the necessary infrastructure of consensus standards would be available when needed. We have noted that the pace at which industry has been preparing license applications for the next generation of plants has been so rapid that the existing set of standards have had to be called into service. The regulatory guidance for these plants also substantially repeats the guidance used for the current fleet of operating plants. However, looking beyond the wave of current set of new applications, it is clear that there will be a need for new standards, particularly for non-light water reactor technologies. Additionally, although it is quite gradual, there is increasing use by all players of more modern techniques of risk-informed and performance-based approaches. Having taken initiatives with these approaches several years ago, the ANS Standards Committee is in a strong position, if proper resources are available, to support development of a more advanced set of standards. Specifically,

- The NFSC has approved subcommittee restructuring to make its structure better aligned with the nuclear initiatives being proposed at the national level.
- A new subcommittee on Advanced Initiatives was created within NFSC to better focus on non-LWR technologies.
- Significant progress was achieved in the collaboration of ANS with ASME, of a combined standard incorporating the ANS external events and ANS fire PRA standards with the ASME internal events standard.

We continue to work with the Standards Executive of the Nuclear Regulatory Commission to address issues of mutual interest and concern. The ANS is fully supporting the NRC initiatives to bring standards development organizations together in support of the regulatory needs for consensus standards. The issue of endorsement of ANS standards in regulatory documents continues to be addressed on a case basis.

We are continuing to strengthen and broaden our contacts with other stakeholders. While we continue our participation in the Nuclear Risk Management Coordinating Committee, we are finding new areas of potential cooperation with ASME such as with gas-cooled reactors and in quality assurance standards. The liaison with the Nuclear Energy Institute has been extremely helpful.

We continue to participate in ANS governance and division activities. We use the ANS Strategic Plan to set the direction of our activities.

In recognition of the volunteer nature of most of the participation by the members of the standards committee, we pay close attention to the Individuals involved as well as offer new opportunities. Along these lines we take note of the following:

- Dr. William Whittemore, who was the founder and first chair of the N17 Committee, received the 2007 Standards Service Award posthumously.
- Dr. Jack D. McLendon passed away. He was a pioneer and early contributor to ANS nuclear criticality standards.

- RISC Chair William Burchill stepped down to assume the role as ANS President-Elect. Allen Camp was elected RISC Chair with Robert Budnitz as Vice Chair.

- The Standards Board approved an "associate member" category with details to be determined.

During 2007, 17 standards were certified as American National Standards including three new standards, four revised standards, and ten reaffirmed. The American Nuclear Society Standards Committee published three new standards and five revisions. Eleven PINS forms were approved for new and revised standards.

ANS Standards Committee

Scope:

The American Nuclear Society Standards Committee is responsible for the development and maintenance of standards that address the design, analysis, and operation of components, systems, and facilities related to the application of nuclear science and technology. The scope of the Standards Committee includes the development and maintenance of standards on the following subjects and closely related activities:

a. *Nuclear criticality safety*
b. *Definitions of terminology used in nuclear science and technology*
c. *Facilities for handling radioactive isotopes, including the remote handling of radioactive materials*
d. *Research reactors and critical facilities*
e. *Reactor physics and radiation shielding*
f. *Ensuring the integrity of computer programs in the nuclear field*
g. *Siting requirements for nuclear facilities*
h. *Nuclear facility design, including safety criteria for the facility*
i. *Reactor operation, including operator training and selection*
j. *Fuel design, handling, and storage*
k. *Radioactive waste management*
l. *Remediation and restoration of sites used for nuclear facilities*
m. *Fission product behavior*
n. *Probabilistic risk assessment, risk management, and risk criteria*

The Standards Committee does not develop standards for the application of radiation for medical purposes.

The Standards Committee reviews standards being developed or issued by other organizations on related topics to help ensure consistency and completeness and to avoid duplication.

Standards developed by the Standards Committee are intended to be issued as American National Standards.

The Standards Committee consists of consensus committees, subcommittees, and working groups, all of which are under the administrative control and policy direction of the ANS Standards Board (SB).

STANDARDS BOARD
MEMBERSHIP

N. Prasad Kadambi, **Chairman,** U.S. Nuclear Regulatory Commission

Donald J. Spellman, Vice Chairman, Oak Ridge National Laboratory

Allen L. Camp, Ex Officio Member (RISC), Sandia National Laboratories

Dimitrios M. Cokinos, Member at Large, Brookhaven National Laboratory

Peter S. Hastings, Member at Large, Duke Energy

Calvin M. Hopper, Ex Officio Member (N16), Oak Ridge National Laboratory

Carl A. Mazzola, Ex Officio Member (NFSC), Shaw Environmental & Infrastructure, Inc.

Charles H. Moseley, Member at Large, Individual

Tawfik M. Raby, Ex Officio Member (N17), National Institute of Standards and Technology

R. Michael Ruby, Member at Large, NFSC Vice Chairman, Constellation Energy

Stephen H. Shepherd, Member at Large, Southern California Edison Company

Steven L. Stamm, Member at Large, Shaw, Stone & Webster, Inc.

R. Michael Westfall, Member at Large, Oak Ridge National Laboratory

Michael J. Wright, Member at Large, Entergy Nuclear South Grand Gulf

---

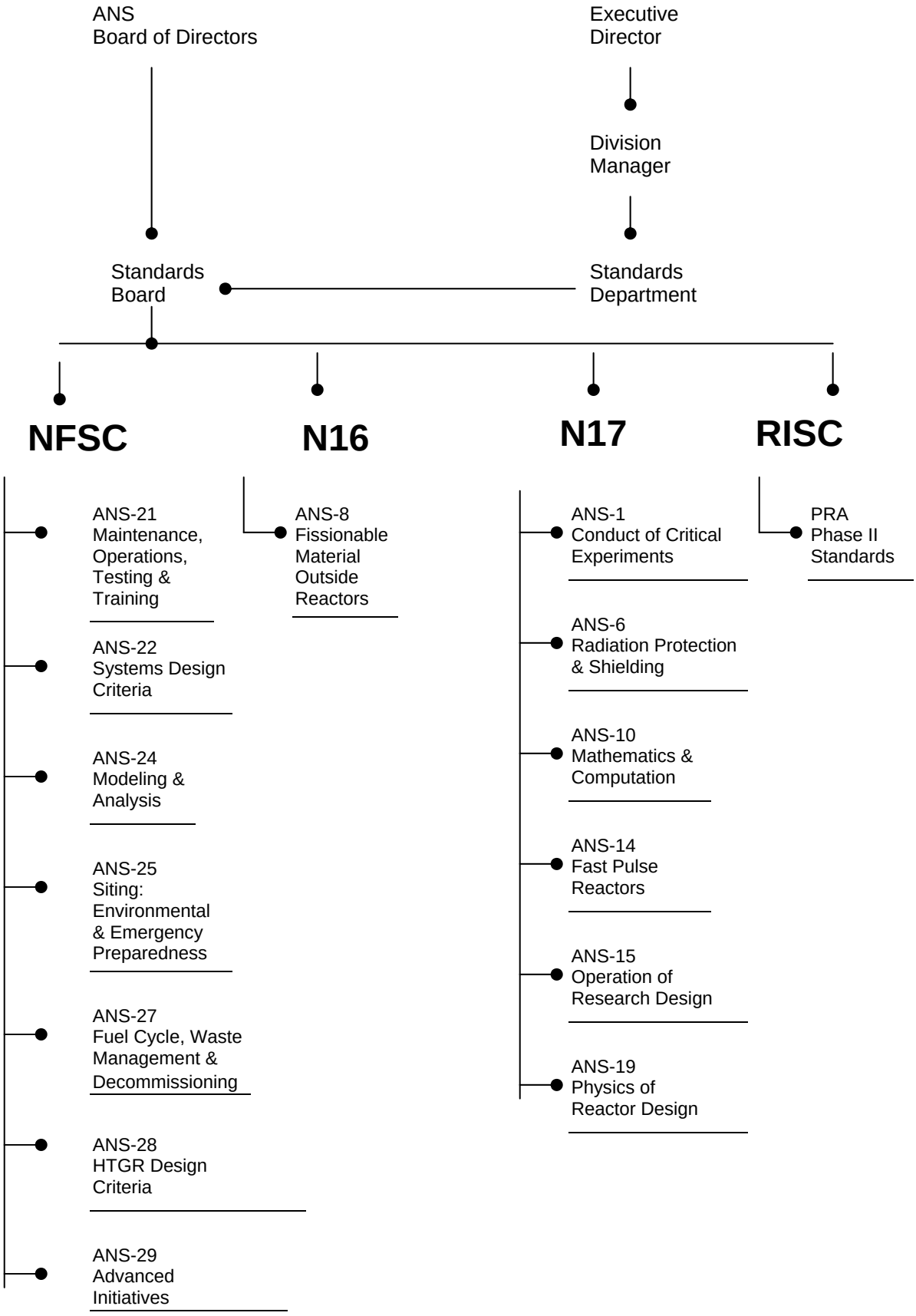
Nolan Hertel, NCRP & N13 Liaison, Georgia Institute of Technology

Stanley H. Levinson, ASME Liaison, AREVA-NP

Jack W. Roe, NEI Liaison, Nuclear Energy Institute

Ex Officio Member = Consensus Committee Chair

ANS Standards Committee: Organizational Chart



SUBCOMMITTEES
Chairmen

ANS-1 Conduct of Critical Experiments……..……T. R. Schmidt

ANS-6 Radiation Protection & Shielding……W. C. Hopkins

ANS-8 Fissionable Material Outside Reactors……T. P. McLaughlin

ANS-10 Mathematics & Computation……..….A. O. Smetana

ANS-14 Fast Pulse Reactors……..….T. R. Schmidt

ANS-15 Operation of Research Design…… W. J. Richards

ANS-19 Physics of Reactor Design…… D. Cokinos

ANS-21 Maintenance, Operations, Testing & Training ……..….T. Dennis

ANS-22 System Design Criteria …… D. G. Newton

ANS-24 Modeling & Analysis ……..….J. A. Wehrenberg

ANS-25 Siting: Environmental & Emergency Preparredness …..K. R. Bryson

ANS-27 Fuel Cycle, Waste Management & Decommissioning … J. R. Brault

ANS-28 HTGR Design Criteria ……..……..J. K. August

ANS-29 Advanced Initiatives …… D. J. Spellman

APPROVED
ANS STANDARDS
Produced by the ANS Standards Committee
(through December 2007)

ANS-1-2000; R2007	Conduct of Critical Experiments
ANS-2.2-2002	Earthquake Instrumentation Criteria for Nuclear Power Plants
ANS-2.10-2003	Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation
ANS-2.23-2002	Nuclear Plant Response to an Earthquake
ANS-2.26-2004	Categorization of Nuclear Facility Structures, Systems, and Components For Seismic Design
ANS-3.1-1993; R1999	Selection, Qualification, and Training of Personnel for Nuclear Power Plants
ANS-3.2-2006	Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
ANS-3.4-1996; R2002	Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants
ANS-3.5-1998	Nuclear Power Plant Simulators for Use in Operator Training and Examination
ANS-3.8.7-1998	Criteria for Planning, Development, Conduct, and Evaluation of Drills and Exercises for Emergency Preparedness
ANS-3.11-2005	Determining Meteorological Information at Nuclear Facilities
ANS-5.1-2005	Decay Heat Power in Light Water Reactors
ANS-5.10-1998; R2006	Airborne Release Fractions at Non-Reactor Nuclear Facilities
ANS-6.1.2-1999	Neutron and Gamma-Ray Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants
ANS-6.3.1-1987; R1998; R2007	Program for Testing Radiation Shields in Light Water Reactors (LWR)

ANS-6.4-2006	Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants
ANS-6.4.2-2006	Specification for Radiation Shielding Materials
ANS-6.6.1-1987; R1998; R2007	Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants
ANS-8.1-1998; R2007	Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors
ANS-8.3-1997; R2003	Criticality Accident Alarm System
ANS-8.5-1996; R2002; R2007	Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material
ANS-8.6-1983; R1988; R1995; R2001	Safety in Conducting Subcritical Neutron-Multiplication Measurements In Situ
ANS-8.7-1998; R2007	Nuclear Criticality Safety in the Storage of Fissile Materials
ANS-8.10-1983; R1988; R1999; R2005	Criteria for Nuclear Criticality Safety Controls in Operations With Shielding and Confinement
ANS-8.12-1987; R1993 R2002	Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors
ANS-8.14-2004	Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors
ANS-8.15-1981; R1987; R1995; R2005	Nuclear Criticality Control of Special Actinide Elements
ANS-8.17-2004	Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors
ANS-8.19-2005	Administrative Practices for Nuclear Criticality Safety
ANS-8.20-1991; R1999; R2005	Nuclear Criticality Safety Training
ANS-8.21-1995; R2001	Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors
ANS-8.22-1997; R2006	Nuclear Criticality Safety Based on Limiting and Controlling Moderators

ANS-8.23-2007	Nuclear Criticality Accident Emergency Planning and Response
ANS-8.24-2007	Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations
ANS-8.26-2007	Criticality Safety Engineer Training and Qualification Program
ANS-10.2-2000	Portability of Scientific and Engineering Software
ANS-10.4-1987; R1998	Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry
ANS-10.5-2006	Accommodating User Needs in Scientific and Engineering Computer Software Development
ANS-14.1-2004	Operation of Fast Pulse Reactors
ANS-15.1-2007	The Development of Technical Specifications for Research Reactors
ANS-15.2-1999	Quality Control for Plate-Type Uranium-Aluminum Fuel Elements
ANS-15.4-2007	Selection and Training of Personnel for Research Reactors
ANS-15.8-1995; R2005	Quality Assurance Program Requirements for Research Reactors
ANS-15.11-1993; R2004	Radiation Protection at Research Reactor Facilities
ANS-15.16-1982; R1988; R2000	Emergency Planning for Research Reactors
ANS-15.17-1981; R1987; R2000	Fire Protection Program Criteria for Research Reactors
ANS-15.21-1996; R2006	Format and Content for Safety Analysis Reports for Research Reactors
ANS-16.1-2003	Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure
ANS-18.1-1999	Radioactive Source Term for Normal Operation for Light Water Reactors
ANS-19.1-2002	Nuclear Data Sets for Reactor Design Calculations
ANS-19.3-2005	Determination of Steady State Neutron Reaction Rate Distributions and Reactivity of Nuclear Power Reactors

ANS-19.3.4-2002	The Determination of Thermal Energy Deposition Rates in Nuclear Reactors
ANS-19.4-1976; R1983; R1989; R2000	A Guide for Acquisition and Documentation of Reference Power Reactor Physics Measurements for Nuclear Analysis Verification
ANS-19.6.1-2005	Reload Startup Physics Tests for Pressurized Water Reactors
ANS-19.11-1997; R2002	Calculations and Measurement of the Moderator Temperature Coefficient of Reactivity for Water Moderated Power Reactors
ANS-51.10-2002	Auxiliary Feedwater System for Pressurized Water Reactors
ANS-55.1-1992; R2000	Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants
ANS-55.4-1993; R1999 R2007	Gaseous Radioactive Waste Processing Systems for Light Water Reactor Plants
ANS-55.6-1993; R1999 R2007	Liquid Radioactive Waste Processing System for Light Water Reactor Plants
ANS-56.8-2002	Containment System Leakage Testing Requirements
ANS-57.1-1992; R1998; R2005	Design Requirements for Light Water Reactor Fuel Handling Systems
ANS-57.5-1996; R2006	Light Water Reactors Fuel Assembly Mechanical Design and Evaluation
ANS-57.8-1995; R2005	Fuel Assembly Identification
ANS-57.9-1992; R2000	Design Criteria for an Independent Spent Fuel Storage Installation (Dry Type)
ANS-57.10-1996; R2006	Design Criteria for Consolidation of LWR Spent Fuel
ANS-58.3-1992; R1998	Physical Protection for Nuclear Safety-Related Systems and Components
ANS-58.6-1996; R2001	Criteria for Remote Shutdown for Light Water Reactors
ANS-58.8-1994; R2001	Time Response Design Criteria for Safety-Related Operator Actions
ANS-58.9-2002	Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems
ANS-58.11-1995; R2002	Design Criteria for Safe Shutdown Following Selected Design Basis Events in Light Water Reactors

ANS-58.21-2007	External-Events PRA Methodology
ANS-58.23-2007	Fire PRA Methodology
ANS-59.3-1992; R2002	Nuclear Safety Criteria for Control Air Systems
ANS-59.51-1997; R2007	Fuel Oil Systems for Safety-Related Emergency Diesel Generators
ANS-59.52-1998; R2007	Lubricating Oil Systems for Safety-Related Emergency Diesel Generators

Nuclear Criticality Safety
N16

Calvin M. Hopper, Chairman
Oak Ridge National Laboratory

Scope:

To develop standards for determining the potential for nuclear criticality of fissile fissionable material outside reactors, for the prevention of accidental criticality, and for coping with accidents should they occur.

N16 Membership:

Calvin M. Hopper, Chairman, Oak Ridge National Laboratory
Ronald A. Knief, Vice Chairman, INMM Representative (employed by XE Corp.)
George H. Bidinger, Individual
Robert D. Busch, University of New Mexico
Robert S. Eby, AIChE Representative (employed by USEC)
Melanie A. Galloway, US Nuclear Regulatory Commission
Calvin D. Manning, AREVA NP
Scott P. Murray, HPS Representative (employed by General Electric Co.)
Ronald E. Pevey, University of Tennessee
Raymond L. Reed, Washington Safety Management Solutions, LLC
Burton M. Rothleder, U.S. Department of Energy
William R. Shackelford, Nuclear Fuel Services, Inc.
Richard G. Taylor, INM Nuclear Safety Services
R. Michael Westfall, Oak Ridge National Laboratory
Larry L. Wetzel, Babcock & Wilcox Fuel Services
Robert E. Wilson, U.S. Department of Energy

Report of N16

The N16 Nuclear Criticality Safety Committee met in Boston, Massachusetts, on June 25, 2007, and in Washington, DC, on November 12, 2007. The Committee addressed ballot comments on the draft of ANS-8.27,the draft N16 Policies and Procedures, consistency issues in ANS-8 standards, and definitions for consensus committee balance of interest categories. More detail can be found in the provided working group reports.

Approved in 2007:

ANSI/ANS-8.1-1998; R2007, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors" (reaffirmation of ANSI/ANS-8.1-1998)

ANSI/ANS-8.5-1996; R2002; R2007, "Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material" (reaffirmation of ANSI/ANS-8.5-1996; R2002)

ANSI/ANS-8.7-1998; R2007, "Nuclear Criticality Safety in the Storage of Fissile Materials" (reaffirmation of ANSI/ANS-8.7-1998)

ANSI/ANS-8.23-2007, "Nuclear Criticality Accident Emergency Planning and Response" (revision of ANSI/ANS-8.23-1997)

ANSI/ANS-8.24-2007, "Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations" (new standard)

ANSI/ANS-8.26-2007, "Criticality Safety Engineer Training and Qualification Program" (new standard)

Published in 2007:

ANSI/ANS-8.23-2007, "Nuclear Criticality Accident Emergency Planning and Response" (revision of ANSI/ANS-8.23-1997)

ANSI/ANS-8.24-2007, "Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations" (new standard)

ANSI/ANS-8.26-2007, "Criticality Safety Engineer Training and Qualification Program" (new standard)

Active Standards/Projects:

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; R1988; R1999; R2005)

ANS-8.12, "Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors" (revision of ANSI/ANS-8.12-1987; R1993; R2002)

ANS-8.15, "Nuclear Criticality Control of Special Actinide Elements" (revision of ANSI/ANS-8.15-1981; R1987; R1995; 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; R1999; R2005)

ANS-8.21, "Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors" (revision of ANSI/ANS-8.21-1995; R2001)

ANS-8.22, "Nuclear Criticality Safety Based on Limiting and Controlling Moderators" (revision of ANSI/ANS-8.22-1997; R2006)

ANS-8.25, "Criticality Safety Postings, Labels & Related Issues" (new standard)

ANS-8.27, "Burnup Credit for LWR Fuel" (new standard)

Subcommittee 8 – Fissionable Material Outside Reactors

(This subcommittee is sponsored by the ANS Nuclear Criticality Safety Division.)

Scope:

The aim of this committee is to establish standards providing guidance in the prevention of nuclear chain reactions in all procedures for handling, storing, transporting, processing, and treating fissionable nuclides. ANS-8 is responsible to the consensus committee N16, Nuclear Criticality Safety.

ANS-8 Membership:

Thomas McLaughlin, Chairman, Individual
Brian Kidd, Vice Chairman, BWX Technologies
Michael Crouse, Secretary, Washington Safety Management Solutions, LLC
Francis Alcorn, Individual
Adolf Garcia, U.S. DOE
Neil Harris, BNFL
Richard Libby, Individual
Davis Reed, Oak Ridge National Laboratory
Thomas Reilly, Individual
Hans Toffer, Individual
Elliott Whitesides, Individual

Status: Dennis Morey was nominated by the U.S. NRC to replace Harry Felsher. John Schlesser retired as ANS-8 Secretary effective June 24, 2007, having served in this capacity since 1993. Michael Crouse accepted the position of ANS-8 Secretary in September 2007.

Current Standards and Active Projects:

ANSI/ANS-8.1-1998; R2007, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors" (revision of ANSI/ANS-8.1-1983; R1988)

Scope:

This standard is applicable to operations with fissionable materials outside nuclear reactors, except for the assembly of these materials under controlled conditions, such as in critical

experiments. Generalized basic criteria are presented and limits are specified for some single fissionable units of simple shape containing ^{233}U, ^{235}U, or ^{239}Pu, but not for multiunit arrays. Requirements are stated for establishing the validity and areas of applicability of any calculational method used in assessing nuclear criticality safety. This standard does not include the details of administrative controls, the design of processes or equipment, the description of instrumentation for process control, nor detailed criteria to be met in transporting fissionable materials.

Membership:
Doug Bowen, Co-chairman, Los Alamos National Laboratory; Nicholas Brown, Co-chairman, Nuclear Fuel Services; Adolf Garcia, U.S. Department of Energy; Clint Gross, Paschal Solutions; Neil Harris, British Nuclear Fuels P.L.C; Jerry Hicks, U.S. Department of Energy.; Richard Lell, Argonne National Laboratory; Maria LeTellier, CE Engineering; John Miller, Los Alamos National Laboratory; Lee Montierth, BBWI; Dennis Morey, U.S. Nuclear Regulatory Commission; James Morman, Argonne National Laboratory; Donald Mueller, ORNL; Lane Paschal, Paschal Solutions, Inc.; Lon Paulson, GNF; Mike Corum, Nuclear Safety Associates; Kevin Reynolds, BWXT Y12; Ellen Saylor, BWXT Y12; Dennis Tollefson, Navarro Res.; Ken Woods, Paschal Solutions

Status: Reaffirmation received ANSI approval 5/16/2007. The reaffirmation will allow time for a revision to be completed. A PINS form that defines the next revision of the standard was submitted to ANS-8 on May 3, 2007. On June 20th, ANS-8 approved the PINS form and the PINS was submitted to N16 for approval. As a result of a working group meeting in Washington in November, it was decided to prioritize the work defined in the PINS form into two distinct phases: 1) Revise the Standard with editorial changes and clarifications, as directed by the reaffirmation comments in 2006, and 2) Calculate new subcritical limits for low-enriched (<10% enriched) uranium metal and compounds. This approached was approved via verbal discussions with the ANS-8 Chair based on input from various working group members that there was no immediate need for these subcritical limits. The editorial changes and clarifications were considered to have more of an immediate need to the NCS community.

ANSI/ANS-8.3-1997; R2003, "Criticality Accident Alarm System" (revision of ANSI/ANS-8.3-1986)

Scope:
This standard is applicable to all operations involving fissionable materials in which inadvertent criticality can occur and cause personnel to receive unacceptable exposure to radiation.

This standard is not applicable to detection of criticality events where no excessive exposure to personnel is credible, nor to nuclear reactors or critical experiments. This standard does not include details of administrative actions or of emergency response actions that occur after alarm activation.

Membership:
Shean Monahan, Chairman, Los Alamos National Laboratory; Richard Anderson, Los Alamos National Laboratory; Peter Angelo, BWXT Y-12; Debdas Biswas, Lawrence Livermore National Laboratory; Warner Blyckert, Mohr and Associates; Wesley Don Dotson, AREVA NP; Ed Kendall, DOE YSO (Y-12 NSC); Clinton King, BWXT Lynchburg; Bill Lee, BWXT Y-12; John McMahan, Westinghouse Savannah River Co.; Ron Pevey, University of Tennessee; Tamara Powell, U.S. Nuclear Regulatory Commission; Valerie Putman, Idaho National Laboratory; Davis Reed, Oak Ridge National Laboratory

Status: Reaffirmation received ANSI approval 6/12/2003. Shean Monahan took over as working group chair in September 2007.

ANSI/ANS-8.5-1996; R2002; R2007, "Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material" (revision of ANSI/ANS-8.5-1986)

Scope:

This standard provides guidance for the use of borosilicate-glass Raschig rings as a neutron absorber for criticality control in ring-packed vessels containing solutions of ^{235}U, ^{239}Pu, or ^{233}U. The chemical and physical environment, properties of the rings and packed vessels, maintenance inspection procedures, and operating guidelines are specified.

Membership:

Jerry Hicks, Chairman, U.S. Department of Energy; Christopher Tripp, U.S. Nuclear Regulatory Commission; Robert Wilson, U.S. Department of Energy; Robert Rothe, Individual; Carol Cise, Nuclear Associates; Bruce Ernst, Louisiana Enrichment Services

Status: Reaffirmation received ANSI approval 5/14/2007. There has been no significant activity recently on this standard. The working group is working with the ANS-8.21 working group to combine ANS-8.5 with ANS-8.21. Reaffirmation will be sought again in 2012 if the combination with 8.21 is still in works.

ANSI/ANS-8.6-1983; R1988; R1995; R2001, "Safety in Conducting Subcritical Neutron-Multiplication Measurements in Situ" (revision of N16.3-1975)

Scope:

This standard provides safety guidance for conducting subcritical neutron-multiplication measurements where physical protection of personnel against the consequences of a criticality accident is not provided. The objectives of in situ measurements are either to confirm an adequate safety margin or to improve an estimate of such a margin. The first objective may constitute a test of the criticality safety of a design that is based on calculations. The second may affect improved operating conditions by reducing the uncertainty of safety margins and providing guidance to new designs.

Membership:

William Myers, Chairman, Los Alamos National Laboratory; Timothy Valentine, Oak Ridge National Laboratory

Status: Reaffirmation received ANSI approval 7/23/2001. During the past year, the ANS-8.6 Working Group Chair has changed hands from Timothy E. Valentine to William L. Myers of Los Alamos National Laboratory. There has been no substantive activity, and the working group membership is being reconstituted.

ANSI/ANS-8.7-1998; R2007, "Nuclear Criticality Safety in the Storage of Fissile Materials" (revision of N16.5-1975; R1982; R1987)

Scope:

This standard is applicable to the storage of fissile materials. Mass and spacing limits are tabulated for uranium containing greater than 30 wt-% ^{235}U, for ^{233}U, and for plutonium, as metals and oxides. Criteria for the range of application of these limits are provided.

Membership:

Calvin Hopper, Chairman, Oak Ridge National Laboratory; James Bazley, Parallax Inc.; Charles Crume, Jr., Kim Hammer, U.S. Nuclear Regulatory Commission; Kevin Kimball, NISYS Corporation; Brian Koponen, Individual; Jeffrey Philbin, Sandia National Laboratories; Joseph Thomas, individual; Hans Toffer, Fluor Handford; Stuart Vessard, Los Alamos National Laboratory; David Williams, Westinghouse Electric Corporation

Status: Reaffirmation received ANSI approval 9/12/2007. Recent reviews of the standard's bases documents were conducted and remain to be validated.

_____

ANSI/ANS-8.10-1983; R1988; R1999; R2005, "Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement" (revision of N16.8-1975)

Scope:

This standard provides criteria that may be used for operations outside of nuclear reactors with ^{235}U, ^{233}U, ^{239}Pu, and other fissile and fissionable materials in which shielding and confinement are provided for protection of personnel and the public, except for the assembly of these materials under controlled conditions (e.g., critical experiments). The standard does not include details of administrative procedures for control (ie., management prerogatives) nor details regarding design of processes and equipment or descriptions of instrumentation for process control.

Membership:

Linda M. Farrell, Chair, AREVA NP, Inc.; Warner Blyckert, Individual; Ernest Elliott; Defense Nuclear Facilities Safety Board; Darcy Kimball, Bechtel; Pran Paul, U.S. Department of Energy-Y12; Andrew Prichard, Pacific Northwest National Laboratories; Todd Taylor, Idaho National Laboratory

Status: A reaffirmation received ANSI approval 4/1/2005. Linda Farrell was appointed working group chair replacing Harry Felscher whose NRC responsibilities were reassigned.

_____

ANSI/ANS-8.12-1987; R1993; R2002, "Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors" (revision of ANSI/ANS-8.12-1978)

Scope:

This standard is applicable to operations with homogeneous mixtures of plutonium and uranium. The mixtures may be solutions, suspended solids, precipitates, or may have been formed mechanically. Basic criteria are presented for plutonium-uranium fuel mixtures containing no more than 30 wt% plutonium combined with uranium containing no more than 0.71 wt% ^{235}U. This standard does not include the details of administrative controls, the design of processes or equipment, the description of instrumentation for process control, or detailed criteria to be met in transporting fissionable materials. The limits of this standard are not applicable to heterogeneous systems such as lattices of rods in water, mixtures in which particles are large enough to introduce

lumping effects, or mixtures in which the concentrations of components are nonuniform. The limits are applicable, however, to homogeneous mixtures and slurries in which the particles constituting the mixture are uniformly distributed and have a diameter no larger than 127 mm (0.005 in.), i.e., are capable of being passed through a 120 mesh screen.

Membership:
Debdas Biswas, Chairman, Lawrence Livermore National Laboratory; Larry Berg, U.S. Department of Energy; David Erickson, Fluor Federal Services; Song Huang, Individual; Richard Libby, Pacific Northwest National Laboratory; Dennis Mennerdahl, EMS-Sweden; Lester Petrie, Oak Ridge National Laboratory; Burton Rothleder, U.S. Department of Energy; Christopher Tripp, U.S. Nuclear Regulatory Commission

Status: Reaffirmation received ANSI approval 3/20/2002. ANS-8.12 was first published in 1978, and it obtained its last reaffirmation in 2002. Since then we were watching the progress of the ISO MOX standard. A draft of the ISO MOX standard was made available, and we have decided to follow the specifications of the ISO MOX standard for a revision of ANS-8.12. This will be an extension of the current ANS-8.12 standard. A new PINS was drafted, submitted, and finally approved for the revision process. Current work consists of running computer calculations to obtain subcritical limits based on ISO MOX standard specifications.

ANSI/ANS-8.14-2004, "Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors" (new standard)

Scope:
This standard provides guidance for the use of soluble neutron absorbers for criticality control. This standard addresses neutron absorber selection, system design and modifications, safety evaluations, and quality control programs.

Membership:
Lawrence Berg, Chairman, U.S. Nuclear Regulatory Commission; Adolf Garcia, U.S. Department of Energy, Idaho Operations; James Morman, Argonne National Laboratory; Robert McBroom, U.S. Department of Energy; Ronald Knief, XE Corporation; Vince Risner, USEC; Robert Wilson, U.S. Department of Energy; Samuel Skiles, Nuclear Safety Associates; Thomas Reilly, Individual

Status: Received ANSI approval 5/25/2004. No recent working group activity.

ANSI/ANS-8.15-1981; R1987; R1995; R2005, "Nuclear Criticality Control of Selected Actinide Nuclides" (new standard)

Scope:
This standard is applicable to operations with the following nuclides:

^{232}U, ^{234}U, ^{237}Np, ^{236}Pu, ^{238}Pu, ^{240}Pu, ^{241}Pu, ^{242}Pu, ^{241}Am, ^{242m}Am, ^{243}Am, ^{242}Cm, ^{243}Cm, ^{244}Cm, ^{245}Cm, ^{246}Cm, ^{247}Cm, ^{249}Cf, and ^{251}Cf

Subcritical mass limits are presented for isolated units. The limits are not applicable to interacting units.

Membership:
Norman Pruvost, Chairman, Los Alamos National Laboratory – retired; Roger Brewer, Los Alamos National Laboratory; Angela Clayton, Atomic Weapons Establishment-United Kingdom; Hiroshi Okuno, Japan Atomic Energy Research Institute; Charles Rombough, CTR Technical Services, Inc.; Victor Sviridov, IPPE-Obininsk, Russia; Michael Westfall, Oak Ridge National Laboratory; Kenneth Yates, Savannah River Company

Status: Reaffirmation received ANSI approval 7/15/2005. A new PINS form was approved and submitted to ANSI in 2006. The ANS-8.15 Working Group is finalizing the revision of Americium and Curium subcritical values.

_____

ANSI/ANS-8.17-2004, "Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors" (revision ofANSI/ANS-8.17-1984; R1989; R1997)

Scope:
This standard provides nuclear criticality safety criteria for the handling, storage, and transportation of light water reactor fuel rods and units outside reactor cores.

Membership:
Brian Kidd, Chairman, BWX Technologies, Inc.; Dale Lancaster, NuclearConsultants.com; Calvin Manning, AREVA; Blake Purnell, U.S. Nuclear Regulatory Commission; Cecil Parks, Oak Ridge National Laboratory; Stanley Turner, Holtec International

Status: Received ANSI approval 11/3/04 and was published February 2005. In accordance with a request from the ANS-8 Subcommittee, the working group is considering the consolidation of ANS-8.17 with other approved or emerging standards in the ANS-8 series. Blake Purnell of the U.S. NRC has been added to the working group roster replacing Kevin Morrissey.

_____

ANSI/ANS-8.19-2005, "Administrative Practices for Nuclear Criticality Safety" (revision of ANSI/ANS-8.19-1996)

Scope:
This standard provides criteria for the administration of a nuclear criticality safety program for outside-of-reactor operations in which there exists a potential for criticality accidents.
Responsibilities of management, supervision, and the nuclear criticality safety staff are addressed. Objectives and characteristics of operating and emergency procedures are included.

Membership:
Bill Carson, Chairman, NISYS Corporation; Bill Anderson, AREVA; Jim Baker, Los Alamos National Laboratory; Leslie Davenport, Individual

Status: Approved 5/16/05 and published October 2005. The ANS-8.19 Working Group had very little activity in 2007. A meeting was planned during the ANS November Meeting in Washington but was cancelled as members were unable to attend. Blake Purnell of the U.S. Nuclear Regulatory Commission was nominated to the working group and is being considered.

_____

ANSI/ANS-8.20-1991; R1999; R2005, "Nuclear Criticality Safety Training" (new standard)

Scope:

This standard provides criteria for nuclear criticality safety training for personnel associated with operations outside reactors where a potential exists for criticality accidents. It is not sufficient for the training of nuclear criticality safety staff.

Membership:

Ronald A. Knief, Chair, XE Corporation/Sandia National Laboratories; Nichole Ellis, Vice Chair, Ellis Nuclear Engineering; Paul Burdick, Washington Safety Management Solutions; Doug Harris, Washington Management Solutions/WIPP; Deborah Hill, Nexia Solutions; Dennis Morey, U.S. NRC; Lane Paschal, Paschal Solutions; Chad Pope, Idaho National Laboratory; Valerie Putman, Idaho National Laboratory; Randy Shackelford, Nuclear Fuel Services

Status: Reaffirmation received ANSI approval 9/16/2005. Nichole Ellis has accepted the position of ANS-8.20 Vice Chair. Working group members in attendance at the November 2007 ANS Meeting in Washington, DC, met to continue ANS-8.20 revision. The group is currently focusing on the definition of representative nuclear-facility NCS training constituencies and identification of associated training content requirements and recommendations. Next meetings are scheduled to be in June and November of 2008 at the ANS Meetings in Anaheim and Reno, respectively.

ANSI/ANS-8.21-1995; R2001, "Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors" (new standard)

Scope:

This standard provides guidance for the use of fixed neutron absorbers as an integral part of nuclear facilities and fissionable material process equipment outside reactors, where such absorbers provide criticality safety control.

Membership:

Hans Toffer, Chairman, Individual; Kevin Carroll, LLNL; Phillip Chou, LLNL; Bruce Ernst, National Enrichment Facility; Harry Felsher, U.S. NRC; Adolf S. Garcia, U.S. DOE; Katherin Goluoglu, ORNL; Jerry Hicks, U.S. DOE; Ed Kendall, U.S. DOE; Dennis Mennerdahl, E. M. Systems-Sweden; Robert Tayloe, Tayloe Engineering Consultancy; Robert Wilson, U.S. DOE

Status: Reaffirmation received ANSI approval 7/23/2001. A revised PINS for incorporating ANS-8.5 into ANS-8.21 has been approved by all required entities. Changes to the text of the standard are in progress. There are four appendices readied for the revised ANS-8.21: two examples of fixed neutron absorber applications, an expanded bibliography and special technical details and instructions pertaining to Raschig rings. There were four meetings of the working group during CY07, two at each national ANS meetings. The working group discussed and resolved comments on the PINS, made text changes, structure of the appendices and completed plans for a special session on fixed neutron absorber applications at the 2008 ANS summer meeting. The revised standard is anticipated to be approved by CY2009.

ANSI/ANS-8.22-1997; R2006, "Nuclear Criticality Safety Based on Limiting and Controlling Moderators" (new standard)

Scope:

This standard applies to limiting and controlling moderators to achieve criticality safety in operations with fissile materials in a moderator control area. This standard does not apply to concentration control of fissile materials.

Membership:

Michael Crouse, Chairman, Washington Safety Management Solutions; Gerard Couture, Westinghouse Electric Company; Burton Rothleder, U.S. DOE; Richard Stachowiak, Fluor Government Group

Status: Reaffirmation received ANSI approval on 12/08/2006. The working group has been quiet in 2007, but a meeting is tentatively planned for the June 2008 ANS Meeting in Anaheim. The working group will work on adding an appendix to the standard with calculations and additional details regarding amounts of moderator that remain subcritical under different conditions.

ANSI/ANS-8.23-2007, "Nuclear Criticality Accident Emergency Planning and Response" (revision of ANSI/ANS-8.23-1997)

Scope:

This standard provides criteria for minimizing risks to personnel during emergency response to a nuclear criticality accident outside reactors. This standard applies to those facilities for which a criticality accident alarm system, as specified in American National Standard Criticality Accident Alarm System, ANSI/ANS-8.3-1997, is in use.

This standard does not apply to nuclear power plant sites, or to those licensed research reactor facilities, which are addressed by the provisions of other standards. This standard does not apply to offsite accidents, or offsite emergency planning and response.

Membership:

James Baker, Chairman, Los Alamos National Laboratory; Dennis Cabrilla, U.S. Department of Energy; Bill Carson, NISYS Corporation; Donna D'Aquila, U.S. Enrichment Corporation; Calvin Hopper, Oak Ridge National Laboratory; George Lim, AECL Chalk River Laboratories; Valerie Putman, Idaho National Laboratory; Raymond Reed, Washington Safety Management Solutions; Robert Tayloe, Jr., R. Tayloe Engineering Consultancy, Inc.; Harry Webb, Nuclear Fuel Services, Inc.

Status: The first revision of ANSI/ANS-8.23 was approved by ANSI on March 23, 2007, and was published in September 2007. The working group plans to meet in November 2008 to begin work on the next revision of the standard.

ANSI/ANS-8.24-2007, "Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations" (new standard)

Scope:

This standard provides requirements for validation, including establishing applicability, of neutron transport calculational methods used in determining critical or subcritical conditions for nuclear criticality safety analyses.

Membership:

Robert Busch, Chairman, University of New Mexico; Jack Bullington, Washington Safety Management Solutions LLC; Chuck Harmon, Los Alamos National Laboratory; Jerry Hicks,U.S. DOE.; Kevin Kimball, NISYS Corporation; Dennis Morey, U.S. Nuclear Regulatory Commission; Cecil Parks, Oak Ridge National Laboratory; Andy Prichard, Pacific NW National Laboratory; Burt Rothleder, U.S. Department of Energy; Nigel Smith, Serco Assurance; Robert Tayloe, R. Tayloe Engineering Consultancy, Inc.; Chris Tripp, U.S. Nuclear Regulatory Commission; Fitz Trumble, Washington Safety Management Solutions; Larry Wetzel, BWX Technologies, Inc.

Status: New standard received ANSI approval 3/16/07.

_____

ANS-8.25, "Development of Nuclear Criticality Safety Related Postings" (new standard)

Scope:

From 2006 unapproved draft PINS: This standard provides a basic reference source to aid industry and governmental agencies in providing criteria and guidance on the proper development and placement of Nuclear Criticality Safety (NCS) limits and related postings for maximum effectiveness. The factors that may impinge on safety effectiveness must be considered in the final operational use of NCS limits and related postings.

Membership:

Gerard Couture, Chairman, Westinghouse Electric Company; Amadeo Ramos, CH2M-WG Idaho, LLC; Chris Haught, BWX Technologies, Inc.; Mark Jensen, Flour Hanford Company; Amadeo Ramos, CH2M-WG-Idaho, LLC; Rachel E. (Beth) Vail, Washington Safety Management Solutions

Status: The PINS was approved by the N16 Committee and sent to the Standards Board for review. Comments from Standards Board members are currently being considered.

_____

ANSI/ANS-8.26-2007, "Criticality Safety Engineer Training and Qualification Program*" (new standard)*

Scope:

Scope: This standard presents the fundamental content elements of a training and qualification program for Individuals with responsibilities for performing the various technical aspects of criticality safety engineering. The standard presents a flexible array of competencies for use by management to develop tailored training and qualification programs applicable to site-specific job functions, facilities and operations.

Membership:

James Morman, Chairman, Argonne National Laboratory; Warner Blyckert, Mohr and Associates; Kevin Carroll, BWXT Y12 LLC; Lawrence Livermore National Laboratory; Mayme Crowell, Individual; James Felty, U.S DOE.; Adolf Garcia, US DOE NE-ID; Calvin Hopper, Oak Ridge

National Laboratory; Steve Kessler, Lawrence Livermore National Laboratory; Ronald Knief, XE Corporation; Bill Lee, U.S. DOE; Jerry McKamy, U.S. DOE; Lon Paulson, GNF; Ronald Pevey, University of Tennessee - Nuclear Engineering Dept.; Chad Pope, Idaho National Laboratory; Tamara Powell, U.S. Nuclear Regulatory Commission; Christa Reed, BWX Technologies, Inc.; Kevin Reynolds, BWXT Y12 LLC; Bonnie Rumble, NISYS Corporation; Norm Schwers, Sandia National Laboratories; Jim Stewart, Department for Transport - UK; Fitz Trumble, Washington Safety Management Solutions; Robert Wilson, U.S. Department of Energy

Status: ANSI/ANS-8.26-2007 was approved June 20, 2007, and subsequently published.

ANS-8.27, "Brunup Credit for LWR Fuel" (new standard)

Scope:

The standard provides criteria for processes and techniques used for criticality safety evaluations of irradiated light water reactor fuel assemblies in storage, transportation and disposal.

Membership:

Dale Lancaster, Chairman, NuclearConsultants.com; Charles Rombough, Secretary, CTR Technical Services, Inc.; Stefan Anton, Hotlec International; Tony Attard, U.S. Nuclear Regulatory Commission; Steve Baker, TransWare Enterprises; Robert Beall, Constellation Energy; Mikey Brady Raap, Battelle-Pacific Northwest National Lab; Joe Coletta, Duke Power; Bob Hommerson, Individual; Larry Kopp, Individual; Zita Martin, Tennessee Valley Authority; John Massari, Constellation Energy; Richard McKnight, Argonne National Laboratory; Dennis Mennerdahl, Individual; Prakash Narayanan, TransNuclear Inc.; Cecil Parks, Oak Ridge National Laboratory; Holger Pfiefer, Nuclear Analysis Company International; Meraj Rahimi, U.S. Nuclear Regulatory Commission; Dan Thomas, AREVA NP; Stan Turner, Individual; Gary Walden, Duke Power; Alan Wells, Electric Power Research Institute; Carl Withee, U.S. Nuclear Regulatory Commission; Al Zimmer, General Atomics; John Zino, GE Nuclear

Status: The draft was issued for ballot to N16 on 3/22/07 and closed 5/24/07 with significant comments. Acceptance of several comments resulted in substantive changes to the draft, and it is being finalized to be submitted to N16 for reballot in early 2008.

Research Reactors, Reactor Physics, Radiation Shielding and Computational Methods
N17

Tawfik M. Raby, Chairman
National Institute of Standards and Technology

Scope:

To develop standards for the location, design, construction, operation, and maintenance of all nuclear reactors for training and research, both as mechanisms for investigating reactors per se and as sources of radiation, and excluding reactors designed for the production of electrical energy; standards for the location, design, construction, operation, and maintenance of critical facilities; standards for calculational methods and computer codes for use in nuclear-reactor and reactor-physics calculations, including shielding. Inputs into calculations and codes, such as nuclear cross sections, are included in this scope.

The N17 consensus committee supervises the work of six subcommittees. These are as follows:

ANS-1, Conduct of Critical Experiments
ANS-6, Radiation Protection and Shielding
ANS-10, Mathematics and Computation
ANS-14, Fast Pulse Reactors
ANS-15, Operation of Research Reactors
ANS-19, Physics of Reactor Design

N17 Membership:

Tawfik M. Raby, Chairman, National Institute of Standards and Technology
Abraham Weitzberg, Vice Chairman, Individual
David R. Anderson, Electric Boat Corporation
William H. Bell, AIChE Representative (employed by South Carolina Electric & Gas Co.)
Robert E. Carter, Individual
Dimitrios M. Cokinos, Brookhaven National Laboratory
Michael L. Coradini, NCRP Representative (employed by University of Wisconsin-Madison)
Brian Dodd, HPS Representative (employed by BD Consulting)
Edward Ehrlich, General Electric
Brian K. Grimes, Individual
Nolan Hertel, Georgia Institute of Technology
Chris Heysel, McMaster University
William A. Holt, Individual
William C. Hopkins, Individual
Matthew A. Hutmaker, U.S. Department of Energy
Andrew Kadak, Massachusetts Institute of Technology
Laurence I. Kopp, Individual
Patrick M. Madden, U.S. Nuclear Regulatory Commission
James F. Miller, IEEE Representative (employed by James F. Miller Consulting Services)
Jack E. Olhoeft, Individual
Ronald E. Pevey, University of Tennessee

Wade J. Richards, National Institute of Standards & Technology
Charles Rombough, CTR Technical Services
Theodore R. Schmidt, Sandia National Laboratory
Stephen Shepherd, Southern California Edison
Andrew O. Smetana, Savannah River National Laboratory
Ray Tsukimura, Aerotest Operations
Anthony R. Veca, General Atomics
Seymour H. Weiss, National Institute of Standards and Technology

Alternates:
Alexander Adams (for Patrick Madden), U.S. Nuclear Regulatory Commission
Thomas J. Myers (for Seymour Weiss), National Institute of Standards and Technology
Robert D. Zimmerman (for William Bell), American Institute of Chemical Engineers

Report of N17

The N17 Committee met in Washington DC, November 14, 2007. Over the course of 2007, N17 published three standards and approved three reaffirmations and one revision to a current standard. Additionally, N17 approved five PINS forms two of which are for new standards. Comments from an additional two ballots are being resolved.

The committee welcomed eight new members; David R. Anderson, Michael L. Coradini, Edward Ehrlich, Chris Heysel, Andrew Kadak, Ronald E. Pevey, Charles Rombough, and Stephen Shepherd.

Published in 2007:
ANSI/ANS-6.4-2006, "Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants" (revision of ANSI/ANS-6.4-1997; R2004)

ANSI/ANS-6.4.2-2007, "Specification for Radiation Shielding Materials" (revision of ANSI/ANS-6.4.2-1985; R1997; R2004)

ANSI/ANS-15.1-2007, "The Development of Technical Specifications for Research Reactors" (revision of ANSI/ANS-15.1-1990; R1999)

Approved in 2007:
ANSI/ANS-1-2000; R2007, "Conduct of Critical Experiments" (reaffirmation of ANSI/ANS-1-2000)

ANSI/ANS-6.3.1-1987; R1998; R2007, "Program for Testing Radiation Shields in Light Water Reactors (LWR)" (reaffirmation of ANSI/ANS-6.3.1-1987; R1998)

ANSI/ANS-6.6.1-1987; R1998; R2007, "Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants" (reaffirmation of ANSI/ANS-6.6.1-1987; R1998)

ANSI/ANS-15.1-2007, "The Development of Technical Specifications for Research Reactors" (revision of ANSI/ANS-15.1-1990; R1999)

ANSI/ANS-15.4-2007, "Selection and Training of Personnel for Research Reactors" (revision of ANSI/ANS-15.4-1988; R1999)

Active standards/projects:

ANS-5.1, "Decay Heat Power in Light Water Reactors" (revision of ANSI/ANS-5.1-2005)

ANS-6.1.1, "Neutron and Gamma-Ray Fluence-To-Dose Factors" (historical revision of ANSI/ANS-6.1.1-1991; W2001 – new standard)

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)

ANS-6.3.1, "Program for Testing Radiation Shields in Light Water Reactors (LWR)" (revision of ANSI/ANS-6.3.1-1987; R1998; R2007)

ANS-6.4.3, "Gamma-Ray Attenuation Coefficients & Buildup Factors for Engineering Materials" (historical revision of ANSI/ANS-6.4.3-1991; W2001 – new standard)

ANS-10.3, "Documentation of Computer Software" (historical revision of ANSI/ANS-10.3-1995; W2005)

ANS-10.4, "Verification and Validation of Non-Safety Related Scientific and Engineering Computer Programs for the Nuclear Industry" (revision of ANSI/ANS-10.4-1987; R1998)

ANS-10.7, "Non-Real Time, High Integrity Software for the Nuclear Industry" (new standard)

ANS-15.2, "Quality Control for Plate-Type Uranium-Aluminum Fuel Elements" (revision of ANSI/ANS-15.2-1999)

ANS-15.8, "Quality Assurance Program Requirements for Research Reactors" (revision of ANSI/ANS-15.8-1995)

ANS-15.10, "Decommissioning of Research Reactors" (historical revision of ANSI/ANS-15.10-1994; W2004 – new standard)

ANS-15.11, "Radiation Protection at Research Reactor Facilities" (revision of ANSI/ANS-15.11-1993; R2004)

ANS-15.16, "Emergency Planning for Research Reactors" (revision of ANSI/ANS-15.16-1982; R1988; R2000)

ANS-15.17, "Fire Protection Program Criteria for Research Reactors" (revision of ANSI/ANS-15.17-1981; R1987; R2000)

ANS-15.19, "Shipment and Receipt of Special Nuclear Material (SNM) by Research Reactor Facilities" (historical revision of ANSI/ANS-15.19-1991; W2001 – new standard)

ANS-15.20, "Criteria for the Reactor Control and Safety Systems of Research Reactors" (new standard)

ANS-15.21, "Format and Content for Safety Analysis Reports for Research Reactors" (revision of ANSI/ANS-15.21-1996; R2006)

ANS-19.1, "Nuclear Data Sets for Reactor Design Calculations" (revision of ANSI/ANS19.1-2002)

ANS-19.3, "Determination of Steady State Neutron Reaction Rate Distributions and Reactivity of Nuclear Reactors" (revision of ANSI/ANS-19.3-2005)

ANS-19.4, "A Guide for Acquisition and Documentation of Reference Power Reactor Physics Measurements for Nuclear Analysis Verification" (revision of ANSI/ANS-19.4-1976; R1983; R1989; R2000 and incorporation of reinvigoration of historic standard ANSI/ANS-19.5-1995; W2005)

ANS-19.6.1, "Reload Startup Physics Tests for Pressurized Water Reactors" (revision of ANSI/ANS-19.6.1-2005)

ANS-19.9, "Delayed Neutron Parameters for Light Water Reactors" (new standard)

ANS-19.10, "Methods for Determining Neutron Fluence in BWR and PWR Pressure Vessel and Reactor Internals" (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; R2002)

ANS-19.12, "Nuclear Data for the Production of Radioisotope" (new standard)

Subcommittee ANS-1 – Conduct of Critical Experiments

This subcommittee oversees a single project ANSI/ANS-1-2000. The members of the subcommittee are also the members of the working group.

Membership:
Theodore Schmidt, Chairman, Sandia National Laboratories
Robert Busch, University of New Mexico
Ronald Knief, XE Corporation
Thomas McLaughlin, Los Alamos National Laboratory
Richard Paternoster, Los Alamos National Laboratory
Steven Payne, U.S. Department of Energy
Jeffrey Philbin, Sandia National Laboratories
Robert Seale, University of Arizona

ANSI/ANS-1-2000; R2007, "Conduct of Critical Experiments" (revision of ANSI/ANS-1-1987; R1992)

Scope:

This standard provides for the safe conduct of critical experiments. Such experiments study neutron behavior in a fission device where the energy produced is insufficient to require auxiliary cooling, and the power history is such that the inventory of long-lived fission products is insignificant.

Membership:

Theodore Schmidt, Chairman, Sandia National Laboratories; Robert Busch, University of New Mexico; Ronald Knief, XE Corporation; Thomas McLaughlin, Los Alamos National Laboratory; Richard Paternoster, Los Alamos National Laboratory; Steven Payne, U.S. Department of Energy; Jeffrey Philbin, Sandia National Laboratories; Robert Seale, University of Arizona

Status: Reaffirmation received ANSI approval 10/11/07.

Subcommittee ANS-6 – Radiation Protection and Shielding

Scope:

The purpose of this committee is to establish standards in connection with radiation shields, radiation analysis, and radiation protection insofar as it affects design of structures or equipment containing or near radiation sources, to provide shielding information to other standards groups, and to prepare and make available recommended related nuclear data and test problem solutions.

Membership:

William Hopkins, Chairman, Individual
Arzu Alpan, Westinghouse Electric Company
Richard Faw, Individual
Nolan Hertel, Georgia Institute of Technology
Jeffrey C. Ryman, Chairman, Bechtel SAIC
Jennifer Tanner, Pacific Northwest National Laboratory
John Wagner, Oak Ridge National Laboratory
Michael Westfall, Oak Ridge National Laboratory

ANS-6 manages the following active projects and current standards:

ANS-6.1.1, "Neutron and Gamma-Ray Fluence-To-Dose Factors" (historical revision of ANSI/ANS-6.1.1-1991; W2001 – new standard)

Scope:

This standard presents data recommended for computing the biologically relevant dosimetric quantity in neutron and gamma-ray radiation fields. Specifically, this standard is intended for use by shield designers to calculate effective dose equivalent. Values are given for effective dose equivalent per unit fluence for neutron energies from 1eV to 14 MeV and for gamma-ray energies from 0.01 to 12 MeV. Establishing maximum permissible exposure limits is outside the scope of this standard.

Membership:

Nolan Hertel, Chairman, Georgia Institute of Technology

Status: This standard was withdrawn in 2001. The working group is reviewing the logistics of a reinvigoration or a reinstatement of ANS-6.1.1-1991.

ANSI/ANS-6.1.2-1999, "Neutron and Gamma-Ray Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants" (revision of ANSI/ANS-6.1.2-1989)

Scope:

This standard provides information on acceptable evaluated nuclear data and group-averaged neutron and gamma-ray cross section libraries based on the energy range and materials of importance in nuclear radiation protection and shielding calculations for nuclear power plants.

Membership:

Arzu Alpan, Chair, Westinghouse Electric Company; Hamid Abderrahim, Belgian Nuclear Research Center, SCK.CEN; James Adams, National Institute of Standards and Technology; Stanwood Anderson, Westinghouse Electric Company; John Carew, Brookhaven National Laboratory; Juan-Luis Francois, UNAM, Mexico; Patrick Griffin, Sandia National Laboratories; Alireza Haghighat, University of Florida; Yuri Orechwa, U.S. Nuclear Regulatory Commission; Robert Roussin, Oak Ridge National Laboratory; Mark Williams, Oak Ridge National Laboratory

Status: Current standard received ANSI approval 2/11/1999. The working was reconstituted. A PINS form was approved and a new draft is in development.

ANSI/ANS-6.3.1-1987; R1998; R2007, "Program for Testing Radiation Shields in Light Water Reactors (LWR)" (revision of ANSI/ANS-6.3.1-1980)

Scope:

This standard describes a test program to be used in evaluating biological radiation shielding in nuclear reactor facilities under normal operating conditions including anticipated operational occurrences. The program encompasses examining and testing to be performed before startup, during startup, and testing subsequent to the startup phase. Post startup tests are required for the shielded components which do not contain sufficient radioactivity during the startup phase to allow valid testing. Shielding of these components is to be tested when radiation sources develop or are introduced into sufficient strength to allow meaningful measurements. Post startup shield tests are also required whenever radioactive or potentially radioactive equipment which could affect the adequacy of the installed shielding is introduced into the plant or relocated within the plant, or when previously tested shielding has been modified. One special category of post start-up testing is the testing of shielding during refueling operations.

Membership:

Jennifer Tanner, Chair, Pacific Northwest National Laboratory

Status: Reaffirmation received ANSI approval 4/20/07. A revision is to be initiated, and a PINS form will be developed.

ANSI/ANS-6.4-2006, "Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants" (revision of ANSI/ANS-6.4-1997; R2004)

Scope:

This standard contains methods and data needed to calculate the concrete thickness required for radiation shielding in nuclear power plants. Where possible, specific recommendations are made regarding radiation attenuation calculations, shielding design, and standards of documentation. The standard provides guidance to architect engineers, utilities, and reactor vendors who are responsible for the shielding design of stationary nuclear plants. This standard does not consider sources of radiation other than those associated with nuclear power plants. It also excludes considerations of economic aspects of shielding design.

Concrete is a mixture of materials, the exact proportions of which will differ from application to application. This standard includes a discussion of the nature of concrete, emphasizing those variable aspects of the material which are important to the shield designer. The document discusses methods of analysis and the shielding input data appropriate to each method. Applications of the analytical methods are given, including bulk transport, radiation heating, streaming, and reflection problems.

Membership:

Richard Faw, Chairman, Individual; Richard Donahue, Lawrence Berkeley National Laboratory; Karl Warkentin, Individual; Stanley Haynes, Sandia National Laboratories; Timothy Lloyd, Energy Solutions; Jason Olson, Black & Veatch Corporation; Christopher Graham, AmerenUE Callaway Plant; Kenneth Shultis, Kansas State University; Robert Roussin, Individual

Status: ANSI/ANS-6.4-2006 received ANSI approval 9/29/2006.

ANSI/ANS-6.4.2-2006, "Specification for Radiation Shielding Materials" (revision of ANSI/ANS-6.4-2-1985; R1997; R2004)

Scope:

This standard sets forth physical and nuclear properties that shall be reported by the supplier as appropriate for a particular application in order to form the basis for the selection of radiation shielding materials.

Membership:

Richard Faw, Chairman, Individual; Nancy Willoughby, New York City Department of Design & Constr.; Karl Warkentin, Individual; Stanley Haynes, Sandia National Laboratories; Timothy Lloyd, Energy Solutions; Jason Olson, Black & Veatch Corporation; Christopher Graham, AmerenUE Callaway Plant; Kenneth Shultis, Kansas State University; Robert Roussin, Individual

Status: ANSI/ANS-6.4.2-2006 received ANSI approval 9/28/2006.

ANS-6.4.3, "Gamma-Ray Attenuation Coefficients & Buildup Factors for Engineering Materials" (historical revision of ANSI/ANS-6.4-3-1991; W2001)

Scope:

This standard presents evaluated gamma-ray elemental attenuation coefficients and single-material buildup factors for selected engineering materials for use in shielding calculations of structures in power plants and other nuclear facilities. The data cover the energy range 0.015-15 MeV and up to 40 mean free paths (mfp). These data are intended to be standard reference data for use in radiation analyses employing point-kernel methods.

Membership:

Jeffrey C. Ryman, Chairman, Bechtel SAIC

Status: Jeff Ryman has agreed to reform a working group and initiate a revision to this historical standard. A PINS is in development.

ANSI/ANS-6.6.1-1987; R1998; R2007, "Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants" (revision of ANSI/ANS-6.6.1-1979)

Scope:

This standard defines calculational requirements and discusses measurement techniques for estimates of dose rates near light water reactor (LWR) nuclear power plants due to direct and scattered gamma-rays from contained sources onsite. Onsite locations outside plant buildings and locations in the offsite unrestricted area are considered. All sources that contribute significantly to dose rates are identified and methods for calculating the source strength of each are discussed. Particular emphasis is placed on 16N sources as they are significant sources of direct and scattered radiation for boiling water reactors (BWR). The standard specifically excludes radiation from gaseous and liquid effluents. The standard describes the considerations necessary to compute dose rates, including component self-shielding, shielding afforded by walls and structures, and scattered radiation. The requirements for measurements and data interpretation of measurements are given. The standard includes normal operation and shutdown conditions but does not address accident or normal operational transient conditions.

Membership:

John Wagner, Chairman, Oak Ridge National Laboratory
Balance of membership OPEN

Status: Reaffirmation received ANSI approval 3/5/07. The standard was reaffirmed in 2007. The working group chair plans to retire from the project soon. A new working group chair will be sought.

Subcommittee ANS-10 – Mathematics and Computation

Scope:

The scope of the ANS-10 Subcommittee includes the development of standards which will promote effective utilization and enhance the reliability of computer programs throughout the nuclear community. The intent of such standards is to improve the ease of use, facilitate the exchange, and simplify the conversion of programs.

Membership:
Andrew Smetana, Chairman, Savannah River National Laboratory
Byron Frank, Westinghouse Electric Company
Bernadette Kirk, Oak Ridge National Laboratory
Jennifer Manneschmidt, Oak Ridge National Laboratory
Charles Martin, Defense Nuclear Facilities Safety Board
Yuri Orechwa, U.S. Nuclear Regulatory Commission
Edward (Ted) Quinn, Longenecker and Associates
Robert Singleterry, National Aeronautics and Space Administration
Charlie Sparrow, Mississippi State University
Paul Wilson, University of Wisconsin, Madison

ANS-10 manages the following active projects and current standards:

ANSI/ANS-10.2-2000, "Portability of Scientific and Engineering Software" (revision of ANSI/ANS-10.2-1988)

Scope:
This standard provides recommended programming practices and requirements to facilitate the portability of computer programs prepared for scientific and engineering computations.

Membership:
Robert Singleterry, Chairman
Balance of membership OPEN

Status: Received ANSI approval 12/20/2000. No current activity.

ANS-10.3, "Documentation of Computer Software" (historical revision of ANSI/ANS-10.3-1995; W2005)

Scope:
This standard addresses the documentation of computer software prepared for scientific and engineering applications.

Membership:
Edward (Ted) Quinn, Chairman, Longenecker and Associates
Balance of membership OPEN

Status: Ted Quinn volunteered to lead a historical revision. A working group will be formed.

ANSI/ANS-10.4-1987; R1998, "Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry" (new standard)

Scope:
This standard provides guidelines for the verification and validation (V&V) of scientific and engineering computer programs developed for use by the nuclear industry.

Membership:
Andrew Smetana, Chairman, Savannah River National Laboratory; Bernadette Kirk, Oak Ridge National Laboratory; Jennifer Manneschmidt, Oak Ridge National Laboratory; Charles Martin, Defense Nuclear Facilities Safety Board ; Keith Morrell, Westinghouse Savannah River Company

Status: Reaffirmation received ANSI approval 8/12/1998. Andrew Smetana replaced Charles Martin as working group chair in 2007. A revision of ANS-10.4 titled "Verification and Validation of Non-Safety Related Scientific and Engineering Computer Programs for the Nuclear Industry" will be balloted by ANS-10 in January 2008. It is expected to be balloted by N17 in February or March 2008.

A revised PINS form was approved and submitted to ANSI 11/1/07 for the revision. The title was revised to "Verification and Validation of Non-Safety-Related Scientific and Engineering Computer Programs for the Nuclear Industry " The scope of the revision is restricted to research and other non-safety-related, non-critical applications. A new standard, ANS-10.7, will focus on safety class, high integrity software.

ANSI/ANS-10.5-2006, "Accommodating User Needs in Computer Program Development" (historical revision of ANSI/ANS-10.5-1994; W2004 – new standard)

Scope:
This standard presents criteria for accommodating user needs in the preparation of computer software for scientific and engineering applications.

Membership:
Andrew Smetana, Chairman, Savannah River National Laboratory; Bernadette Kirk, Oak Ridge National Laboratory; Jennifer Manneschmidt, Oak Ridge National Laboratory; Charles Martin, Defense Nuclear Facilities Safety Board; Keith Morrell, Westinghouse Savannah River Company

Status: The revision of ANSI/ANS-10.5-1994; W2004 received ANSI final approval on April 17, 2006, and was published July 2006.

ANS-10.7, "Non-Real Time, High Integrity Software for the Nuclear Industry" (new standard)

Unapproved Scope:
This standard addresses rigorous, systematic development of high integrity, non-real time safety analysis, design, simulation software which includes calculations or simulations that can have critical consequences if errors are not detected, but that are so complex that typical peer reviews are not likely to identify errors. This may include nuclear design and performance codes, codes used to assign safety classification levels to systems, structures and components at nuclear facilities, computational fluid dynamics or structural mechanics codes, complex Monte Carlo simulations, radiation dosimetry analysis codes, and nuclear medical physics analytical codes.

Membership:
Charles Martin, Chairman, Defense Nuclear Facilities Safety Board; Toni Austin, U.S. Department of Energy; Sherry Hardgrave, U.S. DOE Y-12; Bernadette Kirk, Oak Ridge National Laboratory; Timothy Lloyd, BNFL Fuel Solutions; Jennifer Manneschmidt, Oak Ridge National Laboratory;

Keith Morrell, Westinghouse Savannah River Company; Yuri Orechwa, U.S. Nuclear Regulatory Commission; Subir Sen, U.S. DOE; Shivaji Seth, U.S. Department of Energy; Robert Singleterry, NASA Langley Research Center; Andrew Smetana, Savannah River National Laboratory; Bob Stevens; U.S. DOE

Status: Because of the potential consequences of errors and the difficulty of timely detection and correction of errors in such software, this standard will need to go beyond verification and validation to include quality provisions not currently found in ANS-10.4. A PINS was approved and submitted to ANSI 11/16/07. The working group met for several days from March 5-7 in Washington, DC, and produced a first rough draft for the standard based largely on an assessment of the proposed requirements outlined in NUREG/CR 6263. They will meet again at the ANS Annual Meeting in Anaheim, CA, in June 2008.

Subcommittee ANS-14 – Fast Pulse Reactors

Scope:

The aim of this committee is to establish standards for the safe and responsible design and operation of fast burst reactors, including performance of associated experimental programs and maintenance operations.

ANS-14 oversees one standard. The members of the subcommittee and the working group are the same.

Membership:

Theodore Schmidt, Chairman, Sandia National Laboratories
Rick Anderson, Los Alamos National Laboratory
James Bryson, Sandia National Laboratories
Michael Burger, Sandia National Laboratories
Armando De La Paz, Vista Technologies
James Felty, Science Applications International Corporation
Michael Flanders, White Sands Missile Range
Abdul Kazi, Individual
Ronald Knief, XE Corporation
Robert Long, Nuclear Stewardship, LLC
Marvin Mendonca, U.S. Nuclear Regulatory Commission
Douglas Minnema, National Nuclear Security Administration
Gerald Schlapper, National Nuclear Security Administration

ANSI/ANS-14.1-2004, "Operation of Fast Pulse Reactors" (revision of ANSI/ANS-14.1-1975; R1982; R1989; R2000)

Scope:

This standard is for those involved in the design, operation, and review of fast pulse reactors. It has been formulated in general terms to be applicable to all current fast pulse reactors. This standard does not apply to periodically pulsed reactors or booster assemblies.

Membership:

Theodore Schmidt, Chairman, Sandia National Laboratories; Rick Anderson, Los Alamos National Laboratory; James Bryson, Sandia National Laboratories; Michael Burger, Sandia National

Laboratories; Armando De La Paz, Vista Technologies; James Felty, Science Applications International Corporation; Michael Flanders, White Sands Missile Range; Abdul Kazi, Aberdeen Pulse Radiation Facility; Rondal Knief, XE Corporation; Robert Long, Nuclear Stewardship, LLC; Marvin Mendonca, U.S. Nuclear Regulatory Commission; Douglas Minnema, National Nuclear Security Administration; Gerald Schlapper, National Nuclear Security Administration

Status: Received ANSI approval 4/23/2004. No current activity.

Subcommittee ANS-15 – Operation of Research Reactors

Scope:

The purpose of this committee is to develop, prepare, and maintain standards for the design, construction, operation, maintenance, and decommissioning of nuclear reactors intended for research and training. The reactor may be used for research per se, or as a source of radiation for experimental purposes. Excluded are pulse reactors comprised of unmoderated fissile material in which fissions are produced predominately by high energy fissions.

Membership:

Wade Richards, Chairman, National Institute of Standards and Technology
Alexander Adams, U.S. Nuclear Regulatory Commission
Leo Bobek, University of Massachusetts - Lowell
James Bryson, Sandia National Laboratories
Clinton Dana Cooper, Idaho National Laboratory
Max Gildner, Oak Ridge National Laboratory
Charles McKibben, University of Missouri - MURR
Steve Miller, AFRRI/NNMC
Thomas Myers, National Institute of Standards and Technology
Sean O'Kelly, University of Texas - Austin
Theodore Schmidt, Sandia National Laboratories
John Sease, Oak Ridge National Laboratory

ANS-15 manages the following current standards and active projects:

ANSI/ANS-15.1-2007, "The Development of Technical Specifications for Research Reactors" (revision of ANSI/ANS-15.1-1990; R1999)

Scope:

This standard identifies and establishes the content of technical specifications (TS) for research and test reactors. Areas addressed are: Definitions, Safety Limits (SL), Limiting Safety System Settings (LSSS), Limiting Conditions for Operation (LCO), Surveillance Requirements (SR), Design Features, and Administrative Controls. Sufficient detail is incorporated so that applicable specifications can be derived or extracted.

Membership:

Theodore Schmidt, Co-chairman, Sandia National Laboratories; Alexander Adams, Jr., Co-chairman, U.S. Nuclear Regulatory Commission; Tawfik Raby, National Institute of Standards and Technology; Wade Richards, National Institute of Standards and Technology

Status: Revision approved by ANSI 4/20/07 and published July 2007.

ANSI/ANS-15.2-1999, "Quality Control for Plate-Type Uranium-Aluminum Fuel Elements" (revision of ANSI/ANS-15.2-1990)

Scope:

This standard sets forth general requirements for the establishment and execution of a program designed to verify that the qualify of plate-type uranium-aluminum fuel elements being purchased for research reactors conforms to the requirements of the contract and applicable technical documents, including specifications, standards, and drawings.

Membership:

John Sease, Co-chairman, Oak Ridge National Laboratory; Clinton Dana Cooper, Co-chairman, Idaho National Laboratory

Status: Received ANSI approval 3/11/1999. A PINS form for a revision was submitted to ANSI in 2007. A draft was distributed to N17 for ballot but found to need significant amount of work to correct grammatical errors. Due to the editorial condition and the expected progress on the new high power LEU conversion fuel, the revision is on hold until the editorial errors can be corrected and the new LEU fuel development is complete. The current standard ANSI/ANS-15.2-1999 is adequate until the editorial actions are completed and the process controls for the new fuel are developed, approved, and incorporated into ANS-15.2.

ANSI/ANS-15.4-2007, "Selection and Training of Personnel for Research Reactors" (revision of ANSI/ANS-15.4-1988; R1999)

Scope:

This standard sets the qualification, training, and certification criteria for operations personnel at research reactors and establishes the elements of a program for periodic re-qualification and re-certification. The standard is predicated on levels of responsibility rather than on a particular organizational concept.

Membership:

Thomas Myers, Chairman, National Institute of Standards and Technology; Ed Ehrlich, General Electric Company; Donald Feltz, Individual; Christopher Heysel, McMaster University; Mathew Hutmaker, U.S. Department of Energy; Sean O'Kelly, University of Texas; Wade Richards, National Institute of Standards and Technology; Tawfik Raby, National Institute of Standards and Technology; Thoedore Schmidt, Sandia National Laboratories; Robert Seale, University of Arizona; William Vernetson, University of Florida

Status: The revision to ANSI/ANS-15.4-1988 (R1999) was approved by ANSI 8/17/07 and will be published early 2008. Several members left the group and two members were added. We were and are seeking a replacement U. S. NRC representative.

ANSI/ANS-15.8-1995; R2005, "Quality Assurance Program Requirements for Research Reactors" (revision of ANSI/ANS-15.8-1976; R1986)

Scope:

The standard provides criteria for quality assurance in the design, construction, operation, and decommissioning of research reactors.

Membership:

Sean O'Kelly, Chairman, University of Texas - Austin

Status: Reaffirmation received ANSI approval 9/12/2005. A PINS form was approved and submitted to ANSI 1/11/2007. The working group is drafting the revision.

ANS-15.10, "Decommissioning of Research Reactors" (historical revision of ANSI/ANS-15.10-1994; W2004 – new standard)

Scope:

This standard provides requirements and criteria for the decommissioning of research reactors and includes decommissioning alternatives, planning, radiation criteria, surveillance and maintenance, environmental impacts, quality assurance, and reports and documentation.

Membership:

Sean O'Kelly, Chairman, University of Texas, Austin; Christopher W. Becker, University of Michigan; Larry Boing, Argonne National Laboratory; Richard Holms, University of Illinois – Urbana; Kenneth Kasper, EnergySolutions; Don McGee, AREVA

Status: This standard was administratively withdrawn 11/14/2004. A PINS form was approved and submitted to ANSI in 2007. The working group is reviewing the old standard to evaluate the need for update and major revision. It is anticipated that an initial draft will be submitted to ANS-15 in September 2008.

ANSI/ANS-15.11-1993; R2004, "Radiation Protection at Research Reactor Facilities" (revision of ANSI/ANS-15.11-1987)

Scope:

This standard establishes the elements of a radiation protection program and the criteria necessary to provide an acceptable level of radiation protection for personnel at research reactor facilities and the public consistent with keeping exposures and releases as low as is reasonably achievable (ALARA).

Membership:

Steve Miller, Chairman, AFRRI/NNMC; Donald Feltz, Individual, Tawfik Raby, National Institute of Standards and Technology; Wade Richards; National Institute of Standards and Technology; Theodore Schmidt, Sandia National Laboratories

Status: Reaffirmation received ANSI approval 5/27/2004. Minor revisions have been made to the standard. A PINS form was approved and submitted to ANSI 1/11/07. The draft was sent to N17 for ballot with a due date of 12/3/07. Comments are being resolved.

ANSI/ANS-15.16-1982; R1988; R2000, "Emergency Planning for Research Reactors" (revision of ANSI/ANS-15.16-1978)

Scope:

This standard identifies the elements of an emergency plan which describes the approach to coping with emergencies and minimizing the consequences of accidents at research reactor facilities. The emphasis given each of these elements shall be commensurate with the potential risk involved. The emergency plan shall be implemented by emergency procedures.

Membership:

Max Gildner, Chairman, Oak Ridge National Laboratory

Status: Reaffirmation received ANSI approval 5/3/2000. A PINS form was approved and submitted to ANSI 1/11/07. The draft was approved by ANS-15 and scheduled to be issued for N17 ballot after the first of the year (2008).

ANSI/ANS-15.17-1981; R1987; R2000, "Fire Protection Program Criteria for Research Reactors" (new standard)

Scope:

This standard provides criteria for a fire protection program for research reactor facilities and for the reactor safety-related systems included in those facilities. It stresses preservation of the capability to achieve and maintain safe shutdown of the reactor, and includes consideration of both direct fire hazards and indirect or consequential hazards.

Membership:

Leo Bobek, Chairman, University of Massachusetts – Lowell; Charles McKibben, University of Missouri - MURR

Status: Reaffirmation received ANSI approval 5/3/2000. A PINS form was approved and submitted to ANSI in 2004 for a revision. The working group is writing the draft.

ANS-15.19, "Shipment and Receipt of Special Nuclear Material (SNM) by Research Reactor Facilities" (historical revision of ANSI/ANS-15.19-1991; W2001 – new standard)

Scope:

This standard provides the necessary information for the shipping, receiving, and storing of fuel and other fabricated special nuclear material for research reactors. The areas addressed are data collection and analysis, packaging selection, preparation of the package or shipment, or both, safeguards, internal material control, records, and quality assurance for shipping.

Membership:

Charles McKibben, Chairman, University of Missouri-MURR

Status: This standard was administratively withdrawn in 2001. A PINS form was approved and submitted to ANSI 1/11/07. The draft was sent to N17 for ballot with a due date of 7/8/07. As of the end of 2007, comments remain unresolved.

_____

ANS-15.20, "Criteria for the Reactor Control and Safety Systems of Research Reactors" (new standard)

***Scope**:*

From 1988 PINS --This standard sets forth the criteria from which design and review requirements can be established for the reactor control and safety system of a research reactor.

Membership:

Thomas Myers, Chairman, National Institute of Standards and Technology

Status: This is a new standard that is being initiated. Thomas Myers replaced Robert Nelson as project chair. The PINS form submitted to ANSI in 1988 is no longer acceptable and an updated PINS form needs to be drafted for approval.

ANSI/ANS-15.21-1996; R2006, "Format and Content for Safety Analysis Reports for Research Reactors" (new standard)

Scope:

This standard identifies specific information and analyses for inclusion in the safety analysis report for research reactors and establishes a uniform format for the repot. This standard provides the criteria for the format and content for safety analysis reports for research reactors.

Membership:

Alexander Adams, Chairman, U.S. Nuclear Regulatory Commission

Status: Reaffirmation received ANSI approval 9/29/06. A PINS form was approved by ANS-15 and was sent to N17 in 2007 for approval. N17 had comments on the PINS form that are being addressed.

Subcommittee ANS-19 – Physics of Reactor Design

Scope:

Identify needed standards relating to physics calculations for reactor core design, formulate such standards and specify their range of applicability. Such standards will (a) provide criteria for the selection of nuclear data and computational methods; (b) provide appropriate benchmark problem specifications for verification of calculational methods used by reactor core designers; (c) provide criteria for evaluation of accuracy and the range of applicability of data methods; (d) define methods of verification and of estimating uncertainties. Remain cognizant of and coordinate activities with other standards committees involved in more general development of nuclear standards, such as for units and terminology, reactor design criteria, and mathematics and computational methods.

Membership:
Dimitrios Cokinos, Chairman, Brookhaven National Laboratory
Charles Rombough, Secretary, CTR Technical Services, Inc.
Steven Baker, Transware Enterprises Inc.
Michaele Brady Raap, Pacific Northwest National Laboratory
Richard Cacciapouti, AREVA NP
Yung An Chao, Westinghouse
William Charlton, Texas A&M University
Ren-Tai Chiang, GE Nuclear Energy
David Diamond, Brookhaven National Laboratory
Jun-ichi Katakura, Japan Atomic Energy Research Institute
Robert Little, Los Alamos National Laboratory
Lambros Lois, U.S. Nuclear Regulatory Commission
Richard McKnight, Argonne National Laboratory
Russell Mosteller, Los Alamos National Laboratory
Robert Perry, Los Alamos National Laboratory
Benjamin Rouben, Atomic Energy of Canada, Limited
Abraham Weitzberg, Individual
Seymour Weiss, National Institute of Standards and Technology

The following current standards and active projects are under the management of ANS-19.

ANSI/ANS-5.1-2005, "Decay Heat Power in Light Water Reactors" (historical revision of ANSI/ANS-5.1-1994; W2004 – new standard)

Scope:
This standard sets forth values for the decay heat power from fission products and 239U and 239Np following shutdown of light water reactors containing 235U, 238U, and plutonium. The decay heat power from fission products is presented in tables and equivalent analytical representations. Methods are described that account for the reactor operating history, for the effect of neutron capture in fission products, and for assessing the uncertainty in the resultant decay heat power. Decay heat power from other actinides and activation products in structural materials, and fission power from delayed neutron-induced fission, are not included in this standard.

Membership:
Ian Gauld, Chairman, Oak Ridge National Laboratory; Mourad Aissa, U.S. Nuclear Regulatory Commission; Richard Ankney, Westinghouse; Chas Boss, Atomic Energy of Canada Ltd.; David Carpenter, Bettis Atomic Power Laboratory; Michaele Brady Raap, Pacific Northwest National Laboratory; Kirk Dickens, Retired from ORNL; Arnold Fero, Westinghouse Electric Company, LLC; Jun-ichi Katakura, Japan Atomic Energy Agency; Ed Knuckles, Florida Power and Light; Robert Schenter, Pacific Northwest National Laboratory; Holly Trellue, Los Alamos National Laboratories; Sylvia Wang, General Electric; William Wilson, Los Alamos National Laboratorys; Tadashi Yoshida, Musashi Institute of Technology

Status: Approved by ANSI 5/1/05. A PINS form to update the standard was submitted and approved by N17 and sent to the Standards Board for approval. The proposed revision will address expanding the decay heat standard to include several components of decay heat that are not

currently considered in the standard. Three new members representing the NRC, Westinghouse, and General Electric joined the working group.

ANSI/ANS-19.1-2002, "Nuclear Data Sets for Reactor Design Calculations" (revision of ANSI/ANS-19.1-1983; R1989)

Scope:

This standard identifies and describes the specifications for developing, preparing, and documenting nuclear data sets to be used in reactor design calculations. The specifications include (a) criteria for acceptance of evaluated nuclear data sets, (b) criteria for processing evaluated data and preparation of processed continuous data and averaged data sets (c) identification of specific evaluated, processed continuous, and averaged data sets that meet these criteria for specific reactor types.

Membership:

Bob Little, Chairman, Los Alamos National Laboratory; Michael Dunn, ORNL; Donald Harris, RPI - Retired; Richard McKnight, ANL; Russell Mosteller, LANL; Ben Rouben, AECL

Status: Received ANSI approval 7/23/2002. A PINS form for revision was approved and submitted to ANSI September 2006. The working group has been constituted but still looking for a working group member from the NRC. The group will meet in Anaheim June 2008 during the ANS meeting. A draft could be provided to ANS-19 for review by the middle of 2008.

ANSI/ANS-19.3-2005, "Determination of Steady-State Neutron Reaction-Rate Distributions and Reactivity of Nuclear Reactors" (revision of ANSI/ANS-19.3-1983; R1989; R1995)

Scope:

This standard provides guidance for performing and validating the sequence of steady state calculations leading to prediction, in all types of nuclear reactors of 1) reaction rate spatial distributions, 2) reactivity, and 3) change of isotopic compositions with time.

The standard provides 1) guidance for the selection of computational methods, 2) criteria for verification of calculational methods used by reactor core analysts, 3) criteria for evaluation of accuracy and range of applicability of data and methods, and 4) requirements for documentation of the preceding.

Membership:

Benjamin Rouben, Chairman, Atomic Energy of Canada Limited-retired; Steven Baker,Transware Enterprises; Ren-Tai Chiang, General Electric; Dimitrios Cokinos, Brookhaven National Laboratory; Ronald Ellis, Oak Ridge National Laboratory; Philip Finck, Idaho National Laboratory; Donald Harris, Rensselaer Polytechnic Institute -retired; Greg Hobson, AREVA NP; Russell Mosteller, Los Alamos National Laboratory; Scott Palmtag, General Electrics; Charles Rombough, CTR Technical Services; W. Shen, Atomic Energy of Canada; Robert St. Clair, Duke Energy; Scott Thomas, Duke Power

Status: ANSI/ANS-19.3-2005 was approved by ANSI 9/16/2005. A PINS form needs to be completed for a revision that has been initiated.

ANSI/ANS-19.3.4-2002, "The Determination of Thermal Energy Deposition Rates in Nuclear Reactors" (revision of ANSI/ANS-1976; R1983; R1989)

Scope:

It is the purpose of this standard to provide criteria for 1) determination of the energy allocation among the principal particles and photons produced in fission, both prompt and delayed; 2) adoption of appropriate treatment of heavy charged particle and electron slowing down in matter; 3) determination of the spatial energy deposition rates resulting from the interactions of neutrons; 4) calculation of the spatial energy deposition rates resulting from the various interactions of photons with matter; and 5) presentation of the results of such computations, including verification of accuracy and specification of uncertainty. This standard addresses the energy generation and deposition rates for all types of nuclear reactors where the neutron reaction rate distribution and photon and beta emitter distributions are known. Its scope is limited to the reactor core, including blanket zones, control elements and core internals, pressure vessel, and the thermal and biological shielding.

Membership:

Dimitrios Cokinos, Temporary Chairman, Brookhaven National Laboratory

Status: Received ANSI approval 3/20/2002. ANS-19 Subcommittee Chair Dimitrios Cokinos will serve as temporary chair to facilitate review to determine if appropriate for reaffirmation.

ANSI/ANS-19.4-1976; R1983; R1989; R2000, "A Guide for Acquisition and Documentation of Reference Power Reactor Physics Measurements for Nuclear Analysis Verification" (formerly known as N652-1976)

Scope:

This standard applies to measurements of reactor parameters in light water power reactors that are intended to serve as reference measurements to be used in evaluating reactor physics computational procedures. It includes: identification of the types of parameters of interest as reference measurements; a brief description of test conditions and experimental data required for such reference measurements; identification of problems and concerns which may affect the accuracy or interpretation of the data; and criteria to be used in documenting the results of reference measurements.

Membership:

Dimitrios Cokinos, Chairman, Brookhaven National Laboratory
Balance of Membership OPEN

Status: Received ANSI approval 5/3/2000. Dimitrios Cokinios has agreed to chair the next revision, and working group members are being sought. This revision may incorporate withdrawn standard ANS-19.5.

ANSI/ANS-19.6.1-2005 "Reload Startup Physics Tests for Pressurized Water Reactors" (revision of ANSI/ANS-19.6.1-1997)

Scope:

This standard applies to the reactor physics tests performed following a refueling or other core alteration of a PWR for which nuclear design calculations are required. This standard does not address the physics test program for the initial core of a commercial PWR. This standard specifies the minimum acceptable startup reactor physics test program and acceptable test methods to determine if the operating characteristics of the core are consistent with the design predictions, and to provide assurance that the core can be operated as designed. The standard does not address surveillance of reactor physics parameters during operation or other required tests such as mechanical tests of system components (for example, the rod drop time test), visual verification requirements for fuel assembly loading, or the calibration of instrumentation or control systems, even though these tests are an integral part of an overall program to ensure that the core behaves as designed.

This standard assumes that the same previously accepted analytical methods are used for both the design of the reactor core and the startup test predictions. It also assumes that the expected operation of the core will fall within the historical database established for the plant or sister plants. When major changes are made in the core design, the test program should be reviewed to determine if more extensive testing is needed. Typical changes that might fall in this category are the initial use of novel fuel cycle designs, significant changes in fuel enrichments, fuel assembly design changes, burnable absorber design changes, or cores resulting from unplanned short cycles, etc. Changes of this nature may lead to operation in regions outside of the plant's database and, therefore, it may be necessary to expand the test program.

Membership:

Charles Rombough, Chairman, CTR Technical Services, Inc.; Paul Adam, Wolf Creek NOC; Tony Attard, U.S. NRC; Robert Borchert, Dominion Nuclear Connecticut; Jason Dever, AREVA; Louis Grobmyer, Westinghouse Electric, LLC; Johnny Henderson, Dominion; Moussa Mahgerefteh, Exelon Corp.; Hugh McKenney, Dominion; Danny Powers, Southern California Edison; Michael Presnell, Duke Power Company; Paul Rohr, Westinghouse Electric Co.; Ken Sahadewan, Exelon Nuclear; John Singleton, Constellation Energy; Carl Stafford, Arizona Public Service Co.; Dan Wellbaum, Duke Energy; Corresponding Members: Robert Borland, FENOC; Edward Knuckles, Florida Power & Light Nuclear Fuels; Robert McAndrew, Dominion Generation; Scott Robertson, AREVA NP; Robert St. Clair, Duke Power; Undine Shoop, U.S. NRC

Status: The revised standard received ANSI approval 11/29/05. The working group met in San Onofre February 25-26. A major new revision is underway. The next meeting is scheduled for late in the year in Lynchburg, VA. A draft for ANS-19 review should be ready by the end of 2008.

ANS-19.8, “Fission Product Yields for 235U, 238U, and 239P” (new standard)

Scope:

From November 1989 Rough draft—This standard provides a reference set of fission yield data for thermal and fast neutron-induced fission of ^{233} U, ^{235}U, ^{239}Pu, and ^{241}Pu; fast neutron-fission of ^{232}Th, ^{238}U, and ^{240}PU; and spontaneous fission of ^{252}CF. The data for these 12 fissioning systems are given as mass chain yields and their uncertainties and are presented in tabular form. Discussions are presented and references given concerning the application of the data. Concerns associated with the uncertainties in the mass chain yields are also discussed.

A set of cumulative fission yields and uncertainties are included explicitly for a number of special purpose fission-product nuclides, particularly those important to dosimetry.

Membership:
OPEN

Status: ANS-19.8 was redesignated ANS-5.2. A working group chair and working group members are being sought. A PINS will be needed for this project. The data in the old draft will be examined for comparison with recently released JEFF3.1 before being considered for ANS-19 review.

_____

ANS-19.9, "Delayed Neutron Parameters for Light Water Reactors" (new standard)

Scope:
This standard provides energy-dependent delayed neutron yield and decay data for Light Water Reactor design and control. The standard addresses the identification and characterization of fission products leading to delayed neutron emission; the total delayed neutron yield as a function of energy for U-233, U-235, U-238 and Pu-239; and fractions associated with Individual emitters, half-lives and spectra for the classical group representation of delayed neutron data.

Membership:
Michaele Brady Raap, Chair, Pacific Northwest National Laboratory; Anthony Attard, U.S. Nuclear Regulatory Commission; Robert Busch, University of New Mexico; Yung-An Chao, Westinghouse; William Charlton, Texas A&M University; Dimitrios Cokinos, Brookhaven National Laboratory; Felix Difillipo, Oak Ridge National Laboratory; Talmadge England, retired - Los Alamos National Laboratory; Ed Knuckles, Florida Power & Light Co.; David Loiaza, Los Alamos National Laboratory; Cecil Lubitz; Knolls Atomic Power Laboratory; Richard McKnight, Argonne National Laboratory; Peter Moller, Los Alamos National Laboratory; Robert Perry, retired – Los Alamos National Laboratory; Ben Rouben, retired -Atomic Energy of Canada - AECL CANDU; John Rowlands, retired - UKAEA; Yoland Rugama, OECD/NEA; Bill Wilson, retired - Los Alamos National Laboratory; Alejandro Sonzogni, BNL

Status: Formerly ANS-5.8. An outline for the standard has been developed but volunteers are needed to write specific sections.

_____

ANS-19.10, "Methods for Determining Neutron Fluence in BWR and PWR Pressure Vessel and Reactor Internals" (new standard)

Scope:
This standard provides criteria for performing and validating the sequence of calculations required for the prediction of the fast neutron fluence t in the reactor vessel. Applicable to PWR and BWR plants the standard addresses flux attenuation from the core through the vessel to the cavity and provides criteria for generating cross sections, spectra, transport and comparisons with in- and ex-vessel measurements, validation, uncertainties and flux extrapolation to the inside vessel surface.

Membership:
Lambros Lois, Chairman, U.S. Nuclear Regulatory Commission; James Adams, NIST; Stanley Anderson, Westinghouse; Steven Baker, Transware Enterprises; Richard Cacciapouti, Duke Engineering; John Carew, BNL; Alireza Haghighat, University of Florida; William Hopkins, Individual;

Robert Little, LANL; Moussa Mahgerefteh, Exelon Corp; Yuri Orechwa, NRC; John Wagner, ORNL; Tuck Worsham, AREVA

Status: Project started in June 1991 with the original project charter (PINS) approved in November 1991. Work has continued since that time and the scope/title has changed to include BWRs. The draft has been reviewed by ANS-19 and is being finalized before submittal to N17.

ANSI/ANS-19.11-1997; R2002, "Calculation and Measurement of the Moderator Temperature Coefficient of Reactivity for Water Moderated Power Reactors" (new standard)

Scope:

This standard provides guidance and specifies criteria for determining the MTC in water moderated power reactors. Measurement of the isothermal temperature coefficient of reactivity (ITC) at hot zero power (HZP) conditions is covered in American National Standard Reload Startup Physics Tests for Pressurized Water Reactors, ANSI/ANS-19.6.1-1997. This standard therefore addresses the calculation of the ITC at HZP and the calculation and measurement of the MTC at power. At present, this standard addresses the calculation and measurement of the MTC only in PWRs, because that is the only type of power reactor currently sited in the United States for which measurement of the MTC is required.

Membership:

Russ Mosteller, Chairman, Los Alamos National Laboratory; Steven Baker, Transware Enterprises; Robert Borland, First Energy Nuclear Operating Company; James Brittingham, Arizona Public Service Company; Doug Brown, AREVA NP; Robert Hall, Dominion Energy; Robert St. Clair, Duke Power Company; Michael Todosow, Brookhaven National Laboratory

Status: Reaffirmation received ANSI approval 12/17/2002. A revised PINS was approved in March with a revised title of "Calculation and Measurement of the Moderator Temperature Coefficient of Reactivity for Pressurized Water Reactors." Work is underway on a revised version of the standard that will incorporate several minor changes and clarifications. It's possible that the section regarding the "boron replacement" measurements will be deleted, and the standard may be restricted to PWRs. A draft should be ready for ANS-19 review before the end of 2008.

ANS-19.12, "Nuclear Data for the Production of Radioisotope" (new standard)

Scope:

This standard establishes criteria for developing evaluated neutron cross section and branching ratio data for isotope production pathways for fast and thermal reactor systems, providing the data needed to calculate production of the desired medical and other isotopes and associated impurities.

Membership:

Marc Garland, Co-chairman, Oak Ridge National Laboratory; Robert Schenter, Co-chairman, Smart Bullets, Inc.; Steve Binney, Oregon State University – retired; Ken Krane, Saed Mirzadeh, Oak Ridge National Laboratory; Frank Schmittroth, Westinghouse; Chuck Alexander; Oak Ridge National Laboratory

Status: The PINS form was approved and submitted to ANSI 11/1/2007. Measurements will be reviewed and recommended values for the thermal cross section and resonance integral of selected nuclides will comprise the standard. The working group is developing the draft.

2007 Nuclear Facilities Standards Committee Organizational Chart

ANS-21	ANS-22	ANS-24	ANS-25	ANS-27	ANS-28	ANS-29
Maintenance, Operations, Testing & Training	*Systems Design Criteria*	*Modeling & Analysis*	*Siting: Environmental & Emergency Preparedness*	*Fuel Cycle, Waste Management & Decommissioning*	*HTGR Design Critera*	*Advanced Initiatives (Gen III-A/IV, GNEP)*
Tim Dennis (Chairman)	Dennis Newton (Chairman)	Andy Wehrenberg (Chairman)	Kevin Bryson (Chairman)	Jeff Brault (Chairman)	Malcolm LaBar (Chairman)	Don Spellman (Chairman)
Chuck Moseley (Vice-Chairman)	Mike Ruby (Vice-Chairman)	Richard Hall (Vice-Chairman)	Carl Mazzola (Vice-Chairman)	Don Eggett (Vice-Chairman)	Jim August (Vice-Chairman)	Vacant (Vice-Chairman)
2.10-2003 Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation	2.26-2004 Categorization of Nuclear Facility Structures, Systems and Components For Seismic Design	2.15-(NEW) Criteria for Modeling and Calculating Atmospheric Transport of Routine Releases from Nuclear Facilities	2.2-2002 Earthquake Instrumentation Criteria for Nuclear Power Plants	40.35 -(W2001) Volume Reduction of Low-Level Radioactive Waste or Mixed Waste	53.1-(NEW) Nuclear Safety Criteria for the Design of Modular Helium-Cooled Reactor Plants	ANS-29.1 (NEW) Operational Reactivity Management and Oversight at Light Water, Pressurized Water Power Reactors
2.23-2002 Nuclear Plant Response to an Earthquake	51.10-2002 (reapproval of 51.10-1991) Auxiliary Feedwater Systems for PWR	2.16-(NEW) Criteria for Modeling Design-Basis Accidental Releases From Nuclear Facilities	2.3-(W1993) Determining Tornado and Other Extreme Wind Characteristics at Nuclear Facility Sites	40.37-(W2003) Mobile Radioactive Waste Processing Systems	Note: After 53.1 is completed, additional series-53 HTGR standards to be developed	Note: ANS-29 will be submitting a plan to establish which standards should be developed
3.1-1993; R1999 Selection, Qualification and Training of Personnel for Nuclear Power Plants	55.1-1992; R2000 Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants	2.29-(NEW) Probabilistic Seismic Hazard Analysis	2.6-(NEW) Guidelines for Estimating Present and Forecasting Future Population Distributions Surrounding Power Reactor Sites	57.1-1992; R2005 Design Requirements for LWR Fuel Handling Systems		
3.2-2006 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants	55.4-1993; R1999; R2007 Gaseous Radioactive Waste Processing Systems for LWR Plants	3.8.5-(W2005) Criteria for Emergency Radiological Field Monitoring, Sampling and Analysis	2.8-(W2002) Determining Design Basis Flooding at Power Reactor Sites	57.2-(W1983) Design Requirements for LWR Spent Fuel Facilities at Nuclear Power Plants		
3.4-1996; R2002 Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants	55.6-1993; R1999; R2007 Liquid Radioactive Waste Processing System for LWR Plants	3.8.10-(NEW) Criteria for Modeling Real-Time Accidental Release Consequences at Nuclear Facilities	2.9-(W2000) Evaluation of Ground Water Supply for Nuclear Facilities	57.3-(W1993) Design Requirements for New Fuel Storage Facilities at LWR Plants (N209)		
3.5-1998 Nuclear Power Plant Simulators for Use in Operator Training and Examination	58.3-1992; R1998 Physical Protection for Nuclear Safety-Related Systems and Components	5.4-(W1993) Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel	ANS-2.13 (W1998) Evaluation of Surface-Water Supplies for Nuclear Power Sites	57.5-1996; R2006 LWRs Fuel Assembly Mechanical Design and Evaluation		
3.7.1-(W2005) Facilities and Medical Care for On-Site Nuclear Power Plant Radiological Emergencies	58.8-1994; R2001 Time Response Design Criteria for Safety-Related Operator Actions	5.10-1998; R2006 Airborne Release Fractions at Non-Reactor Nuclear Facilities	2.17-(W2000) Evaluation of Radionuclide Transport in Ground Water for Nuclear Facilities	57.7- (W2007) Design Criteria for an ISFSI (Water Pool Type)		
3.8.2-(W2005) Criteria for the Functional and Physical Characteristics of Radiological Emergency Response Facilities	58.9-2002 (reapproval of 58.9-1981) Single Failure Criteria for LWR Safety-Related Fluid Systems	16.1-2003 Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure	2.18-(NEW) Standards for Evaluating Radionuclide Transport in Surface Water for Nuclear Power Sites	57.8-1995; R2005 Fuel Assembly Identification		
3.8.4- (W2005) Criteria for Maintaining Radiological Emergency Response Capability	58.11-1995; R2002 Design Criteria for Safe Shutdown Following Selected Design Basis Events in LWRs	18.1-1999 Radioactive Source Term for Normal Operation of Light Water Reactors	2.21-(NEW) Criteria for Assessing Atmospheric Effects on the Ultimate Heat Sink	57.9-1992; R2000 Design Criteria for an Independent Spent Fuel Storage Installation (Dry Type)		
3.11-2005 Determining Meteorological Information at Nuclear Facilities	58.14-(W2003) Safety and Pressure Integrity Classification Criteria for Light Water Reactors	41.5-200X (NEW) Verification and Validation of Radiological Data for Use in Waste Management and Environmental Remediation	2.22-(NEW) Environmental Radiological Monitoring at Nuclear Facilities	57.10-1996; R2006 Design Criteria for Consolidation of LWR Spent Fuel		
3.12.3-(NEW) Decommissioning of Nuclear Production and Utilization Facilities: Operator Training	58.16- (NEW) Safety and Pressure Integrity Classification Loads and Behavior Criteria for Nuclear Facilities Other Than Large Nuclear Reactors	58.2-(W1998) Design Basis for Protection of Light Water Nuclear Power Plants Against the Effects of Postulated Pipe Rupture	2.25-(W1999) Surveys of Terrestrial Ecology Needed to License Thermal Power Plants			
56.8-2002 Containment System Leakage Testing Requirements	59.3-1992; R2002 Nuclear Safety Criteria for Control Air Systems		2.27-(NEW) Criteria for Investigations of Nuclear Facility Sites for Seismic Hazard Assessments			
58.6-1996; R2001 Criteria for Remote Shutdown for LWRs	59.51-1997; R2007 Fuel Oil Systems for Emergency Diesel Generators		2.30-(NEW) Assessing Capability for Surface Faulting at Nuclear Facilities			
	59.52-1998; R2007 Lubricating Oil Systems for Safety-Related Emergency Diesel Generators		3.8.1-(W2005) Criteria for Radiological Emergency Response Functions and Organizations			
			3.8.3-(W2005) Criteria for Establishing Radiological Emergency Response Plans and Implementing Procedures			
			3.8.6-(W2005) Criteria for the Conduct of Offsite Radiological Assessment for Emergency Response for Nuclear Power Plants			
			3.8.7-1998 Criteria for Planning, Development, Conduct, & Evaluation of Drills and Exercises for Emergency Preparedness			
			40.21-(NEW) Siting, Construction, and Operation of Commercial Low Level Radioactive Waste Burial Grounds			

Nuclear Facilities Standards Committee
NFSC

Carl A. Mazzola, Chairman
Shaw Environmental & Infrastructure, Inc.

The NFSC was formed by the merger of two earlier ANS consensus committees; namely, the Nuclear Power Plant Standards Committee (NUPPSCO) and the Radioactive Waste Management Committee (N48). The current scope of the NFSC reflects the full range of topics previously covered by its predecessor consensus committees.

***Scope*:**

The NFSC is responsible for the preparation and maintenance of standards associated with nuclear facilities. The Committee's standards address siting, design, operation, and waste management activities at these facilities, as well as remediation and restoration of formerly utilized sites.

The ANS Standards Committee, through its Standards Board, coordinates all aspects of standards activities and interests within ANS and makes recommendations to the Society on matters involving standards.

The NFSC consists of the consensus committee (the "Committee"), seven subcommittees, and various working groups. The NFSC is responsible for establishing and managing the activities of the subcommittees and working groups needed to develop proposed standards within its scope of responsibility.

Subcommittees have been established to manage the activities of working groups and to perform detailed reviews of proposed standards for technical need, relevance, and acceptability. Each subcommittee has been assigned a unique and specific area of technical responsibility. These subcommittees have been organized as follows:

ANS-21	*Maintenance, Operations, Testing & Training*
ANS-22	*Systems Design Criteria*
ANS-24	*Modeling & Analysis*
ANS-25	*Siting: Environmental & Emergency Preparedness*
ANS-27	*Fuel Cycle, Waste Management & Decommissioning*
ANS-28	*HTGR Design Criteria*
ANS-29	*Advanced Initiatives*

Each subcommittee has established various working groups to develop specific proposed standards and maintain existing standards within its respective area of responsibility. These working groups create the text of NFSC standards and resolve review and ballot comments.

NFSC Membership:

Carl A. Mazzola, Chairman, Shaw Environmental & Infrastructure, Inc.
R. Michael Ruby, Vice Chairman, Constellation Energy
James K. August, CORE, Inc.
William H. Bell, South Carolina Electric & Gas Co.
Jeffery R. Brault, Shaw AREVA MOX Project
Charles K. Brown, Southern Nuclear Operating Company
Kevin R. Bryson, Shaw Environmental, Inc.
Timothy Dennis, Individual
Donald R. Eggett, AES Engineering
Richard W. Englehart, U.S. Department of Energy
Richard Hall, Exelon Generation Company, LLC
Peter S. Hastings, Duke Energy (NuStart Liaison)
Richard A. Hill, ERIN Engineering
N. Prasad Kadambi, U.S. Nuclear Regulatory Commission
Malcolm P. LaBar, Individual
Evan M. Lloyd, Exitech Corporation
Eric P. Loewen, General Electric
Sheila A. Lott, Los Alamos National Lab
Jesse E. Love, Bechtel Power Corporation
Robert H. McFetridge, Westinghouse Electric Company, LLC
Charles H. Moseley, Jr., ASME/NQA Liaison
Dennis G. Newton, AREVA NP
W. Norm Prillaman, AREVA NP
William B. Reuland, Individual
Stephen Shepherd, Southern California Edison Co.
Steven L. Stamm, Shaw, Stone & Webster, Inc.
Donald J. Spellman, Oak Ridge National Laboratory
John D. Stevenson, Individual (J.D. Stevenson Consultants)
Charles D. (Tom) Thomas, Jr., Individual
J. Andrew Wehrenberg, Southern Nuclear Operating Company
Michael J. Wright, Entergy Operations, Inc.

Alternates

C.E. (Gene) Carpenter, Jr., U.S. Nuclear Regulatory Commission (Alternate for Prasad Kadambi)
Ralph Surman, Westinghouse Electric Corporation, LLC (Alternate for Robert McFetridge)
Allen T. Vieira, Bechtel Power Corporation (Alternate for Jesse Love)

Liaisons

Rick Doremus, INPO
Shami Dua, Atomic Energy of Canada Ltd. (CSA Liaison)
Jack W. Roe, Nuclear Energy Institute

Observers

Robert H. Bryan, Jr., Individual
Donald M. Reynerson, The Phoenix Index, Inc.
James C. Saldarini, Bechtel SAIC Company, LLC
Robert E. Scott, Individual

Report of NFSC

The NFSC Committee met twice during 2007; June 25, in Boston, Massachusetts, and November 12, in Washington, DC. Stephen Shepherd and James August were approved as new members, and Rick Doremus joined the committee as INPO Liaison. Several members of the committee accepted positions as observers to maintain committee communication without the requirement of meeting attendance. Michael Cross retired from the NFSC. The committee reviewed five PINS forms and saw eight ballots. Comments remain unresolved on four of the PINS and four of the ballots. ANSI approval was received on four reaffirmations. More detail can be found in the provided working group reports.

Approved in 2007:
ANSI/ANS-55.4-1993; R1999; R2007, "Gaseous Radioactive Waste Processing Systems for Light Water Reactor Plants," (reaffirmation of ANSI/ANS-55.4-1993; R1999)

ANSI/ANS-55.6-1993; R1999; R2007, "Liquid Radioactive Waste Processing System for Light Water Reactor Plants," (reaffirmation of ANSI/ANS-55.6-1993; R1999)

ANSI/ANS-59.51-1997; R2007, "Fuel Oil Systems for Safety-Related Emergency Diesel Generators," (reaffirmation of ANSI/ANS-59.51-1997)

ANSI/ANS-59.52-1998; R2007, "Lubricating Oil Systems for Safety-Related Emergency Diesel Generators," (reaffirmation of ANSI/ANS-59.52-1998)

Active standards/projects:
ANS-2.3, "Standard for Estimating Tornado and Other Extreme Wind Characteristics at Nuclear Facility Sites" (historical revision of ANSI/ANS-2.3-1983; W1993 – new standard)

ANS-2.6, "Guidelines for Estimating Present & Forecasting Future Population Distributions Surrounding Nuclear Facility Sites" (new standard)

ANS-2.8, "Determining Design Basis Flooding at Power Reactor Sites" (historical revision of ANSI/ANS-2.8-1992; W2002 – new standard)

ANS-2.9, "Evaluation of Ground Water Supply for Nuclear Facilities" (historical revision of ANSI/ANS-2.9-1980; R1989; W2000 – new standard)

ANS-2.13, "Evaluation of Surface-Water Supplies for Nuclear Power Sites" (historical revision of ANSI/ANS-2.13- 1979; R1988 – new standard)

ANS-2.15, "Criteria for Modeling & Calculating Atmospheric Transport of Routine Releases from Nuclear Facilities" (new standard)

ANS-2.16, "Criteria for Modeling Design-Basis Accidental Releases from Nuclear Facilities" (new standard)

ANS-2.17, "Evaluation of Radionuclide Transport in Ground Water for Nuclear Facilities" (historical revision of ANSI/ANS-2.17-1980; R1989; W2000 – new standard)

ANS-2.18, “Standards for Evaluating Radionuclide Transport in Surface Water for Nuclear Power Sites” (new standard)

ANS-2.21, “Criteria for Assessing Atmospheric Effects on the Ultimate Heat Sink” (new standard)

ANS-2.22, “Environmental Radiological Monitoring at Nuclear Facilities” (new standard)

ANS-2.25, “Surveys of Terrestrial Ecology Needed to License Thermal Power Plants” (historical revision of ANSI/ANS- 1982; R1989 – new standard)

ANS-2.27, “Criteria for Investigations of Nuclear Materials Facilities Sites for Seismic Hazard Assessments” (new standard)

ANS-2.29, “Probabilistic Seismic Hazard Analysis” (new standard)

ANS-2.30, “Assessing Capability for Surface Faulting at Nuclear Facilities” (new standard)

ANS-3.5, “Nuclear Power Plant Simulators for Use in Operator Training and Examination” (revision of ANSI/ANS-3.5-1998)

ANS-3.8.10, “Criteria for Modeling Real-time Accidental Release Consequences at Nuclear Facilities” (new standard)

ANS-3.12.3, “Decommissioning of Nuclear Production and Utilization Facilities: Operator Training” (new standard)

ANS-5.4, “Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel” (historical revision of ANSI/ANS-5.4-1982; W1992 – new standard)

ANS-18.1, “Radioactive Source Term for Normal Operation of Light Water Reactors” (revision of ANSI/ANS-18.1-1999)

ANS-29.1, “Operational Reactivity Management and Oversight at Light Water, Pressurized Water Power Reactors” (new standard)

ANS-40.21, “Siting and Operating Commercial Burial Grounds” (new standard)

ANS-40.35, “Volume Reduction of Low-Level Radioactive Waste or Mixed Waste” (historical revision of ANSI/ANS-40.35-1991; W2001 – new standard)

ANS-40.37, “Mobile Low-Level Radioactive Waste Processing Systems” (historical revision of ANSI/ANS-40.37-1993; W2003 – new standard)

ANS-41.5, “Verification and Validation of Radiological Data for Use in Waste Management and Environmental Remediation” (new standard)

ANS-53.1, “Nuclear Safety Criteria for the Design of Stationary Gas-Cooled Reactor Plants” (new standard)

ANS-56.8, "Containment System Leakage Testing Requirements" (revision of ANSI/ANS-56.8-2002)

ANS-58.2, "Design Basis for Protection of Light Water Nuclear Power Plants Against the Effects of Postulated Pipe Rupture" (historical revision of ANSI/ANS-58.2-1988; W1998 – new standard)

ANS-58.3, "Program for Collection of Reliability Data on Nuclear Power Plant Protection and Engineered Safety Systems and Components" (reaffirmation of ANSI/ANS-58.3-1992; R1998)

ANS-58.14, "Safety and Pressure Integrity Classification Criteria for Light Water Reactors" (historical revision of ANSI/ANS-58.14-1993 – new standard)

ANS-58.16, "Safety and Pressure Integrity Classification Loads and Behavior Criteria for Nuclear Facilities Other Than Large Nuclear Reactors" (new standard)

Subcommittee ANS-21 – Maintenance, Operations Testing & Training

***Membership*:**
Timothy Dennis, Chairman, Individual
Charles H. Moseley, Vice Chairman, BWXTY12
Donald Eggett, AES Engineering
Clinton L. Eldridge, Pacific Gas & Electric Company
James Glover, Graftel, Inc
Robert Kassawara, Electric Power Research Institute
Evan M. Lloyd, Exitech Corporation
Carl Mazzola, Shaw Environmental & Infrastructure, Inc.
Jack W. Roe, Nuclear Energy Institute
William J. Rudolph II, First Energy, Corporation

ANS-21 changes from 2007 restructuring:
4 projects/standards transferred out (ANS-2.26, ANS-58.3, ANS-58.9, ANS-58.11)
5 new projects/standards were added (ANS-3.7.1, ANS-3.8.2, ANS-3.8.4, ANS-3.11, ANS-3.12.3)
The title of the subcommittee was changed from **Nuclear Facility Design Criteria & Operation** to **Maintenance, Operations, Testing & Training.**

ANS-21 manages the following active projects and current standards:

ANSI/ANS-2.10-2003, "Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation" (revision of ANSI/ANS-2.10-1979)

Scope:
This standard provides criteria for the timely retrieval and the subsequent processing, handling, and storage of data obtained from seismic instrumentation specified in ANSI/ANS-2.2-2002. Also included are initial evaluation criteria to determine whether earthquake motion at the site has exceeded the plant's operating basis earthquake ground motion (OBE). This standard does not address procedures for plant walkdowns immediately (within 8 hours) after an earthquake, for ensuring a safe and orderly shutdown, for long-term evaluations of the building and equipment

response data, and for subsequently returning the plant to operation. These topics are addressed in ANS-2.23-2002.

Membership:
OPEN

Status: Received ANSI approval 4/14/2003. Dennis Ostrom retired as working group chair and a new chair will be sought. Per ANSI maintenance requirement, this standard should be reviewed and considered for reaffirmation in 2008.

_____

ANSI/ANS-2.23-2002, "Nuclear Plant Response to an Earthquake"

Scope:
This standard specifies actions that the owner of a nuclear power plant should take in the event of an earthquake. The requirements of this standard supplement those given in American National Standard Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation, ANSI/ANS-2.10-2003. The application of these standards provides a complete evaluation of the need for post earthquake plant shutdown in a timely manner. This standard also provides guidelines that will enable the owner to develop plant-specific procedures for determining the condition of components, systems, and structures needed for shutdown and criteria for restart when a nuclear power plant is required to shut down following an earthquake. This standard does not cover those operator actions performed in connection with the operation and control of the nuclear power plant following an earthquake. These actions are specified in plant operating procedures, emergency operating procedures, and alarm response procedures.

Membership:
Robert Kassawara, Chairman, Electric Power Research Institute
Balance of membership OPEN

Status: Received ANSI approval 5/6/2002. It is expected that the standard will be used in the immediate future at the Kashiwazaki Plant after which time, it will be reviewed to determine whether a reaffirmation or revision is appropriate.

_____

ANSI/ANS-3.1-1993; R1999, "Selection, Qualification, and Training of Personnel for Nuclear Power Plants" (revision of ANSI/ANS-3.1-1987)

Scope:
This standard provides criteria for the selection, qualification, and training of personnel for nuclear power plants. The qualifications of personnel in the operating organizations appropriate to safe and efficient operation of a nuclear power plant are addressed in terms of the minimum education, experience, and training requirements.

Membership:
OPEN

Status: Reaffirmation received ANSI approval 2/4/1999. No current activity. Needs new working group chair/members to review standard and determine if a revision or reaffirmation is appropriate.

ANSI/ANS-3.2-2006, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (revision of ANSI/ANS-3.2-1994; R1999)

Scope:

This standard provides requirements and recommendations for administrative controls and the owners' quality assurance program to help ensure that activities associated with nuclear power plant operation are carried out without undue risk to the health and safety of the public. This standard provides requirements for implementing quality assurance programs consistent with requirements of Code of Federal Regulations, Title 10, Part 50, Appendix B. This standard is not specifically intended for application to test, mobile, or experimental reactors, nor reactors not subject to U.S. Nuclear Regulatory Commission (NRC) licensing. Applicable sections of this standard can be used in those cases for activities similar to those addressed herein.

Membership:

Clint Eldridge, Chairman, PG&E; Kenneth C. Heck, U.S. Nuclear Regulatory Commission; William J. Rudolph II, First Energy Nuclear Operating Company; Dennis Winchester, Exelon; Charles H. Moseley, BWXT Y12; Marion E. Smith, STP Nuclear Operating Company; Lee Robertson, Entergy, Grand Gulf Nuclear Station; David L. Robinson, Robinson & Associates, Inc.; Dean S. Williams, Duke Energy

Status: ANSI/ANS-3.2-2006 received final ANSI approval on July 31, 2006. The working group completed a major re-write of the standard in 2006. It was re-organized so that its structure was aligned with the 18 criteria of 10 CFR 50, Appendix B. It also was revised to support implementation of 10 CFR 50.69.

ANSI/ANS-3.4-1996; R2002, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants" (revision of ANSI/ANS-3.4-1983; R1988)

Scope:

This standard defines the medical and psychological requirements for licensing of nuclear power plant reactor operators and senior operators. It also addresses the content, extent, and methods of examination.

Membership:

OPEN

Status: Reaffirmation received ANSI approval 7/23/2002. New working group chair/members needed.

ANSI/ANS-3.5-1998, "Nuclear Power Plant Simulators for Use in Operator Training and Examination" (revision of ANSI/ANS-3.5-1993)

Scope:

This standard established the functional requirements for full-scope nuclear power plant control room simulators for use in operator training and examination. The standard also establishes

criteria for the scope of simulation, performance, and functional capabilities of the simulators. This standard does not address simulators for test, mobile, and research reactors, or for reactors not subject to U.S. Nuclear Regulatory Commission licensing. This standard does not establish criteria for application of simulators in training programs.

Membership:
Timothy Dennis, Chairman, Individual; James B. Florence, Vice Chairman, Nebraska Public Power District-Cooper; Keith P. Welchel, Secretary, Duke Energy-Oconee; Shih-Kao Chang, Dominion Resources; F. J. (Butch) Colby, Editor, L-3 Communications MAAPS; Kevin J. Cox, Exelon Generation-Dresden; Robert A. Felker, Western Services Corporation; Oliver H. Havens, PSEG Nuclear-Salem/Hope Creek; J. Dennis Koutouzis, Institute of Nuclear Power Operations; Allan A. Kozak, Dominion Resources-North Anna; George S. McCullough, GSE Systems, Inc.; Jane B. Neis, Constellation Energy-Ginna; Hal Paris, GSE Systems, Inc.; M. William Shelly, Style Editor, Individual; Lawrence Vick, Parliamentarian, U.S. NRC

Status: Latest ANSI approval 4/15/1998. Beta draft revision ANS-3.5-200x was approved November 9, 2007, by ANS-21. Subsequently the draft was distributed to NFSC for ballot with concurrent public review. The ballot and public review are scheduled to close January 2008. Significant comments are anticipated. The ANS-3.5 Working Group received a request for a clarification on ANSI/ANS-3.5-1985 in December 2005. The working group has been in touch with the inquirer and was provided more detail. The working group has completed a response and ANS-21 ballot is required.

ANS-3.7.1, "Facilities and Medical Care for On-Site Nuclear Power Plant Radiological Emergencies" (historical revision of ANSI/ANS-3.7.1-1995; W2005 – new standard)

Scope:
This standard provides criteria for developing plans, and for providing facilities and equipment, for the care and transportation of Individuals exposed to unexpected radiation, or contaminated with radioactive materials either internally or externally, in nuclear power plants. The criteria address coordination of emergency response and first aid at the plant site; transportation to an offsite location, such as a local hospital; and care at the offsite location. Training of personnel in support of expected actions is also addressed.

Membership:
OPEN

Status: Reaffirmation ballot failed. An effort is under way to find an active working group chair to initiate a historical revision.

ANS-3.8.2, "Criteria for Functional and Physical Characteristics of Radiological Emergency Response Facilities" (historical revision of ANSI/ANS-1995; W2005 – new standard)

Scope:
This standard establishes the criteria for facilities needed to provide an adequate overall emergency response. The standard addresses: (1) emergency response facilities (2) facility features and requirements, and (3) parameters needed to provide a basis for determining an adequate inventory of equipment and supplies for the anticipated emergency response. Normal plant

equipment that is to be used during an emergency, such as sampling system equipment, safety-related systems, or system instrumentation, are not within the scope of this standard.

Membership:
OPEN

Status: Reaffirmation ballot failed. An effort is under way to find an active working group chair to initiate a historical revision.

_____

ANS-3.8.4, "Criteria for Maintaining Radiological Emergency Response Capability" (historical revision of ANSI/ANS-1995; W2005 – new standard)

Scope:
This standard provides criteria and recommendations for emergency preparedness exercises, drills, surveillance activities, and training. This standard does not address detailed accident scenarios, but provides criteria regarding the frequency, type, and scope of exercises, drills, and training needed, and the extent of the realism necessary for the exercise to be effective. This standard provides criteria for emergency exercises involving the facility and offsite support groups and criteria for evaluating exercises.

Membership:
OPEN

Status: Reaffirmation ballot failed. An effort is under way to find an active working group chair to initiate a historical revision.

_____

ANSI/ANS-3.11-2005, "Determining Meteorological Information at Nuclear Facilities" (revision of ANSI/ANS-3.11-2000)

Scope:
The standard includes the identification of which meteorological parameters should be measured, parameter accuracies, meteorological tower siting considerations, data monitoring methodologies, data reduction techniques and quality assurance requirements.

Membership:
Carl Mazzola, Chairman, Shaw Environmental & Infrastructure; Mark Abrams, ABS Consulting Inc.; Robert Banta, NOAA/ERL R/E/ET2; Tom Bellinger, Illinois Emergency Management Agency; Paul Fransioli, Bechtel SAIC Co. LLC; R. Brad Harvey, US Nuclear Regulatory Commission; David Katz, Climatronics; Matthew Parker, Westinghouse Savannah River Co.; Kenneth Wastrack, Tennessee Valley Authority; Dr. Robert Addis, Westinghouse Savannah River Co.; Chuck Bach, Tennessee Valley Authority; Desmond Bailey, US EPA/OAQPS; Ron Baskett, Lawrence Livermore National Laboratory; Robert Baxter, T & B Systems, Inc.; Patrick T. Brennan, Meteorological Evaluation Services Co. Inc.; Kirk Clawson, ARL FRD; Jerry Cresenti, FPL Energy; Mark Duranko; First Energy Corp.; Jim Fairobent, US Department of Energy; Clifford S. Glantz, Pacific Northwest National Laboratory; Jim Holian, Science Applications International Corp.; John Irwin, NOAA/EPA; James F. Key, Key Solutions, Inc.; Stanley Krivo, EPA, Region IV; Doyle Pittman, Tennessee Valley Authority; Darryl Randerson, NOAA-ARL-SORD; Walter Schalk, NOAA-ARL-SORD; Robert Swanson,

Climatological Consulting Corp.; Gustavo Vazquez, US Department of Energy; Steven Vigeant, Shaw Environmental & Infrastructure; Ping Wan, Bechtel Corportion, Robert Yewdall, Public Service Electric & Gas

Status: This standard received ANSI approval 12/22/2005 and was published in early 2006. Stanley Marsh retired as ANS-3.11 Working Group Chair effective October 2007.

ANS-3.12.3, "Decommissioning of Nuclear Production and Utilization Facilities: Operator Training" (new standard)

Scope:

This standard provides criteria for changes to Operator Qualification Training Requirements which will result from permanent shutdown and removal of fuel to the plant fuel pools or other locations, and from subsequent decommissioning actions. The hazards associated with a defueled, decommissioned facility are significantly less than those associated with an operating plant and the Operator Qualification and Training Requirements will be revised to reflect these reductions in risk.

Membership:

Don Eggett, Chairman, AES Consulting

Status: Active project. A rough draft was provided to the NFSC in 2007. The draft needs to be finalized.

ANSI/ANS-56.8-2002, "Containment System Leakage Testing Requirements" (revision of ANSI/ANS-56.8-1994)

Scope:

This standard specifies acceptable primary containment leakage rate test requirements to assure valid testing. The scope includes (1) Leakage test requirements; (2) Test instrumentation; (3) Test procedures; (4) Test methods; (5) Acceptance criteria; (6) Data analysis;(7) Inspection and recording of test results.

Membership:

Jim Glover, Chairman, Graftel Inc.; Ken Clark, Tennessee Valley Authority; Kelvin Green, Tennese Valley Authority; Babul Patel, Consultant; Howard Hill, BCP Technical Services; Dan Oakley, Exelon Corporation; Wendell Brown, Duke Energy Company; Dan Lurie, U.S. Regulatory Commission; Robert Shirk, ILRT, Inc.; Po Chang, Southern California Edison; James Pulsipher, U.S. Nuclear Regulatory Commission

Status: Received ANSI approval 11/27/02. A PINS form for a revision was drafted and submitted to ANS-21 for review. The working group is reviewing an inquiry received 10/19/2006.

ANSI/ANS-58.6-1996; R2001, "Criteria for Remote Shutdown for Light Water Reactors" (revision of ANSI/ANS-58.6-1983; R1989)

Scope:

This standard provides design criteria for controls and monitoring instrumentation necessary to shut down a reactor and maintain it in a safe shutdown condition from outside the control room. The design criteria require that: (a) specific controls and monitoring instrumentation be provided; (b) these controls be installed at a location (or locations) that is physically separate from the control room and cable spreading areas; (c) simultaneous control from both locations be prevented by devices for transfer of control from the control room to the remote location(s); and (d) the remote controls be used as a defense-in-depth measure in addition to the control room shutdown controls and as a minimum provide for one complete channel of shutdown equipment.

Membership

OPEN

Status: Received ANSI approval 8/31/2001. New working group chair/members needed. This standard should be reviewed and considered for reaffirmation/revision.

Subcommittee ANS-22 – System Design Criteria

Membership:

Dennis Newton, Chairman, AREVA
Mike Ruby, Vice Chairman, Constellation Energy
Neil Brown, Lawrence Livermore national Laboratory
Richard Hill, ERIN Engineering & Research
Leroy (Rocky) Kreider, Engineering Planning & Management, Inc.
Mark Linn, Oak Ridge National Laboratory
David Murphy, Bechtel Corporation
John Stevenson, J. D. Stevenson Consultants

ANS-22 changes from 2007 restructuring:
No projects/standards transferred out
4 new projects/standards were added (ANS-2.26, ANS-58.3, ANS-58.9, ANS-58.11)
The title of the subcommittee was changed from **Nuclear Facility System Level Design Standards** to **System Design Criteria.**

ANS-22 manages the following active projects and current standards:

ANSI/ANS-2.26-2004, "Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design" (new standard)

Scope:

This standard provides: (a) criteria for selecting the seismic design category1) (SDC) for nuclear facility structures, systems, and components (SSCs) to achieve earthquake safety and (b) criteria and guidelines for selecting Limit States for these SSCs to govern their seismic design. The Limit States are selected to ensure the desired safety performance in an earthquake.

Membership:

Neil W. Brown, Chairman, Lawrence Livermore National Laboratory; Steve Additon, Rocky Flats Environmental Technology Site; Harish Chander, US Department of Energy; Dan Guzy, U.S.

Department of Energy; Asadour Hadjian, Defense Nuclear Facilities Safety Board; Quazi Hossain, Lawrence Livermore National Laboratory; George B. Inch, Constellation Nuclear; Calvin Morrell, Shaw Group, Inc.; Andrew Persinko, U.S. Nuclear Regulatory Commission; Howard C. Shaffer, Consultant; Charles M. Vaughan, Global Nuclear Fuel

Status: Received ANSI approval 12/2/2004. Working group chair, Neil Brown, continues to work closely with companion draft standards ANS-2.27 and ANS-2.29 as both projects complete drafts.

ANSI/ANS-51.10-2002, "Auxiliary Feedwater System for Pressurized Water Reactors" (re-approval of ANSI/ANS-51.10-1991)

Scope:

This standard sets forth the nuclear safety-related functional requirements, performance requirements, design criteria, design requirements for testing and maintenance, and interfaces for the nuclear safety-related portion of the auxiliary feedwater system (AFS) of pressurized water reactor (PWR) plants.

Membership:

Dave Murphy, Chairman, Bechtel Corporation

Status: Reaffirmation of ANSI/ANS-51.10-1991 was not completed before standard was administratively withdrawn, therefore, ANSI/ANS-51.1-1991 was process as a new standard and received approval as ANSI/ANS-51.10-2002. ANSI/ANS-51.10-2002 is being reviewed to determine if appropriate for reaffirmation.

ANSI/ANS-55.1-1992; R2000, "Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants" (revision of ANSI/ANS-55.1-1979)

Scope:

This standard sets forth the design, construction, and performance requirements for a solid radioactive waste processing system for light-water-cooled reactor plants. For the purposes of this standard, the solid radioactive waste processing system begins at the interface with the liquid radioactive waste processing system boundary and at the inlets to the spent resin, filter sludge, evaporator concentrate, and phase separator tanks. In addition, this standard pertains to dry active waste, mixed waste, and other solid radioactive waste forms that are generated as part of the operation and maintenance of light-water-cooled reactor plants. The system includes facilities for temporary (up to 30 days of anticipated normal waste generation) on-site storage of packaged waste but terminates at the point of loading the filled drums and other containers on a vehicle for shipping off-site to a licensed disposal site or transfer to interim (up to 5 yr.) on-site storage facilities. The solid radioactive waste processing system is not a safety-class system as defined by American National Standard Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants, ANSI/ANS-51.1-1983 (R1988) or as defined in American National Standard Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants, ANSI/ANS-52.1-1983 (R1988).

Membership:

OPEN

Status: Reaffirmation received ANSI approval 6/7/2000. No current activity. With ANSI's 5 year maintenance requirement, this standard is technically delinquent. Per agreement during reaffirmation of ANSI/ANS-55.6-1993; R1999; R2007, a revision of this standard will be initiated once a working group chair is found and working group formed.

ANSI/ANS-55.4-1993; R1999; R2007, "Gaseous Radioactive Waste Processing Systems for Light Water Reactor Plants" (revision of ANSI/ANS-55.4-1979)

Scope:

This standard sets forth minimum design, construction, and performance requirements, with due consideration for operation, for gaseous radioactive waste processing systems (GRWPS) for light water reactor (LWR) plants. It is applicable for routine operation, design basis fuel leakage, and other design basis occurrences.

Membership:

OPEN

Status: Reaffirmation approved by ANSI 5/14/07.

ANSI/ANS-55.6-1993; R1999; R2007, "Liquid Radioactive Waste Processing System for Light Water Reactor Plants" (revision of ANSI/ANS-55.6-1979)

Scope:

This standard sets forth minimum design, construction, and performance requirements, with due consideration for operation, of the Liquid Radioactive Waste Processing System (LRWPS) for light water reactor (LWR) plants for design basis inputs. It is applicable to routine operation, including design basis fuel leakage and other design basis occurrences.

Membership:

OPEN

Status: Reaffirmation approved by ANSI 5/14/07. Per agreement during reaffirmation, a revision of this standard will be initiated once a working group chair is found and working group formed.

ANSI/ANS-58.3-1992; R1998, "Physical Protection for Nuclear Safety-Related Systems and Components" (revision of ANSI/ANS-58.3-1977)

Scope:

This standard sets forth physical protection criteria for nuclear safety-related systems and components in stations using light water reactors (LWRs). This standard includes an identification of potential hazards to nuclear safety-related systems and components and acceptable means of ensuring the protection of this equipment from these hazards.

Membership:

John D. Stevenson, Chairman, J.D. Stevenson Consultants

Status: Reaffirmation received ANSI approval 10/28/1998. Plans for a revision were put on hold as a very large effort by the U.S. Army Corps. Of Engineers (COE) and the American Society of Civil Engineers (ASCE) on the subject. It is believed that the COE and ASCE documents will in time cover most of the details in the current standard. In the interim, a reaffirmation ballot was issued to the NFSC. The reaffirmation ballot resulted in one maintained committee negative requiring a recirculation ballot. No votes were changed during the recirculation ballot, and the reaffirmation will proceed.

ANSI/ANS-58.8-1994; R2001, "Time Response Design Criteria for Safety-Related Operator Actions" (revision of ANSI/ANS-58.8-1984)

Scope:

This standard establishes time response design criteria for safety-related operator actions to be used in the design of light water reactor (LWR) nuclear power plants. The criteria are used to determine the minimum response time intervals for safety-related operator actions that are taken to mitigate design basis events (DBEs) which result in an automatic reactor trip. This standard specifies time requirements that are to be met to receive credit in the safety analysis for operator actions that initiate or control safety-related functions.

Specifically, the criteria provide bases: (1) For establishing certain requirements for determining whether a particular action to initiate or control a safety-related system might be accomplished by operator action or must be accomplished by an automatic action, (2) For determining when design modifications can obviate the need for automatic actions that would otherwise be required, and (3) For general guidance for hardware, such as instrumentation, controls, indicators, and annunciators necessary to support safety-related operator actions.

Membership:

Rick Hill, Chairman, ERIN Engineering

Status: Reaffirmation received ANSI approval 7/23/2001. The current standard was reviewed and determined to be acceptable for reaffirmation. A reaffirmation ballot was issued to the NFSC with a due date of 10/26/07. Comments are being resolved.

ANSI/ANS-58.9-2002, "Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems" (re-approval of ANSI/ANS-58.9-1981; R1987 -- new standard)

Scope:

This standard provides criteria for the designer which interpret the requirements of Title 10, Code of Federal Regulations, Part 50, "Licensing of Production and Utilization Facilities," Appendix A, "General Design Criteria for Nuclear Power Plants," with respect to design against single failures in safety-related Light Water Reactor (LWR) fluid systems. Means of treating both active and passive failures are addressed for safety-related fluid systems following various initiating events. Current acceptable practice is used as a basis for these criteria.

Failure criteria for the electric power systems and the protection systems are provided in IEEE Std 308-1980 "IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations", IEEE Std 279-1971 "IEEE Standard Criteria for Protection Systems for Nuclear Power Generating Stations" (N42.7-1972), IEEE Std 379-1977 "IEEE Standard for Application of the Single-Failure Criterion to Nuclear Power Generating Station Class IE Systems", and IEEE Std 603-1980

"Standard Criteria for Safety Systems for Nuclear Power Generating Stations." Failures of structural components, such as braces, supports, or restraints, as well as occurrences involving common mode failures, are excluded.

Membership:
Leroy E. Kreider, Chairman, Engineering Planning and Management, Inc.; Bob Hagar, U.S. Nuclear Regulatory Commission; Prasad Kadambi, U.S. Nuclear Regulatory Commission; Eathan Hunt, Fox Valley Project Management

Status: Reaffirmation of ANSI/ANS-58.9-1981; R1987 was not completed before the standard was administratively withdrawn, therefore, ANSI/ANS-58.9-1981; R1987 was processed as a new standard and received ANSI approval as ANSI/ANS-58.9-2002. The standard is currently being reviewed to determine if appropriate for reaffirmation.

_____

ANSI/ANS-58.11-1995; R2002, "Design Criteria for Safe Shutdown Following Selected Design Basis Events in Light Water Reactors" (revision of ANSI/ANS-58.11-1983; R1989)

Scope:
This standard provides design criteria for systems that perform the safety-related functions necessary to shut down a reactor and maintain it in a safe shutdown condition for selected design basis events; i.e., any design basis events that do not require operation of engineered safety features. For design basis events that require operation of engineered safety features, this standard can be selectively applied because of plant features specifically designed for these conditions. For systems that serve multiple functions, the design criteria associated with the most limiting function shall be applied.

The following safety-related functions are required for safe shutdown and are addressed in this standard:

(1) Reactor core reactivity control
(2) Reactor core heat removal
(3) Reactor coolant pressure boundary integrity provided by:
(a) Temperature control
(b) Pressure control, and
(c) Inventory control.

Membership:
OPEN

Status: Reaffirmation received ANSI approval 7/23/2002. Project looking for working group chair/members. This standard should be reviewed and considered for reaffirmation or revision.

_____

ANSI/ANS-58.14, "Safety and Pressure Integrity Classification Criteria for Light Water Reactors" (historical revision of ANSI/ANS-58.14-1993; W2004 – new standard)

Scope:
This standard specifies deterministic criteria for the safety classification of items (i.e., SSCs and parts (including consumables)) in a LWR NPP as either safety-related (Q), supplemented grade

(S), or non-safety-related (N). Criteria provide and establish a procurement subclassification within Class Q, called commercial grade (C). In addition, pressure integrity classification criteria provide for the assignment of Classes 1 to 5 to the pressure-retaining portion of items.

Membership:
Mark Linn, Vice Chair, ORNL; Dave Blanchard, Applied Reliability Engineering; Kevin Boyle, Exelon; Kirti Doshi, General Electric; Zvi Eisenberg, Exelon Nuclear; Richard McNally, U.S. NRC; Sara Highley, AREVA NP; Rick Hill, ERIN; Göran Hultqvist, Forsmark Nuclear; Charles King, Westinghouse; Gary Locklear, Progress Entergy; Reiner Schmidt; Individual; Paul Sicard, Entergy; Russ Williston, Xcel Energy

Status: Since this project is a reinvigoration of a withdrawn standard, it is classified as a new standard by ANSI. A PINS form was approved and submitted to ANSI January 2007. Ken McCall stepped down as chair of this project in April 2007, and Mark Linn assumed the chair position. The group met twice in 2007 and anticipates completing a rough draft in 2008.

ANS-58.16, "Safety and Pressure Integrity Classification Loads and Behavior Criteria for Nuclear Facilities Other Than Large Nuclear Reactors" (new standard)

Draft Scope:
This standard provides guidance for the safety classification of items (structures, systems, components and parts (including consumables) in nuclear facilities other than nuclear power plants. In addition, pressure integrity classification criteria are provided for the assignment of safety design classes, SDC 1,2,3,4 or 5 to the nuclear safety related and pressure retaining portions of items and to include associated load criteria. Also identified are Limit States A, B, C, and D which provide allowable behavior criteria currently defined in ANS Standards for seismic loads.

Membership:
John D. Stevenson, Chair

Status: New project. Comments received from NFSC review of PINS form under consideration. Title and scope unapproved and may change.

ANSI/ANS-59.3-1992; R2002, "Nuclear Safety Criteria for Control Air Systems" (revision of ANSI/ANS-59.3-1984)

Scope:
This standard provides criteria for the control air system that furnishes compressed air to nuclear safety-related components and other equipment that could affect any nuclear safety-related function in nuclear power plants.

This standard provides: (1) the system nuclear safety design requirements and the non-nuclear safety design recommendations for equipment, piping, instruments, and controls that constitute the control air system; and (2) the nuclear safety design requirements and the non-nuclear safety design recommendations to accommodate the testing and maintenance necessary to ensure adequate performance of the control air system.

This standard applies only to the control air system and does not apply to air-operated devices or the emergency diesel generator starting air system.

Membership:
Richard Hill, Chairman, ERIN Engineering

Status: Reaffirmation received ANSI approval 8/30/2002. This standard will be reviewed and considered for reaffirmation or revision.

ANSI/ANS-59.51-1997; R2007, "Fuel Oil Systems for Safety-Related Emergency Diesel Generators" (revision of ANSI/ANS-59.51-1989)

Scope:
This standard provides functional, performance, and initial design requirements for the fuel oil system for diesel generators that provide safety-related emergency onsite power for light water reactor nuclear power plants. This standard addresses the mechanical equipment associated with the fuel oil system, with the exception of the engine mounted components. These components, which are mounted directly to the engine structure itself, are excluded except to define interface requirements. It also includes the instrumentation and control functional requirements. The standard excludes motors, motor control centers, switchgear, cables, and other electrical equipment used in the operation of the fuel oil system, except to define interface requirements.

Membership:
OPEN

Status: Reaffirmation received ANSI approval 10/4/07.

ANSI/ANS-59.52-1998; R2007, "Lubricating Oil Systems for Safety-Related Emergency Diesel Generators" (new standard)

Scope:
This standard provides functional, performance, and design requirements for lubricating oil systems for diesel generators that provide emergency onsite power for light water reactor nuclear power plants. The standard addresses all mechanical equipment associated with the lubricating oil system, with the exception of engine mounted components. These components, which are mounted directly to engine structure itself, are excluded, except to define interface requirements. This standard also includes the lubricating oil system instrumentation and control functional requirements. It excludes motors, motor control centers, switchgear, cables, and other electrical equipment used in the operation of the lubricating oil system, except to define interface requirements.

Membership:
OPEN

Status: Reaffirmation received ANSI approval 10/4/07.

Subcommittee ANS-23 – Decommissioning & Site Remediation

ANS-24 changes from 2007 restructuring:
This subcommittee was dissolved.
ANS-3.12.2 project was terminated.
ANS-3.12.3 was transferred to ANS-21.
ANS-41.5 was transferred to ANS-24.

Subcommittee ANS-24 – Modeling & Analysis

Membership:
Andrew Wehrenberg, Chairman, Southern Nuclear Operating Company
Richard Hall, Vice Chairman, Exelon Generation Company, LLC
Carl Beyer, Pacific NW National Laboratory
James Gilmer, Bechtel Power Corporation
Cliff Glantz, Pacific Northwest National Laboratory
Jofu Mishima, Science Applications International Corporation
Doyle Pitmann, Tennessee Valley Authority
Jean Savy, Risk Management Solutions
Saleem Salayameh, Westinghouse Savannah River Company
Jim Sejvar, Individual
Roger Spence, B&W Y-12

ANS-24 changes from 2007 restructuring:
No projects/standards transferred out
7 new projects/standards added (ANS-2.15, ANS-2.16, ANS-2.29, ANS-3.8.5, ANS-3.8.10, ANS-16.1, ANS-41.5)
The title of the subcommittee was changed from **Analysis Standards** to **Modeling & Analysis.**

ANS-24 manages the following active projects and current standards:

ANS-2.15, "Criteria for Modeling and Calculating Atmospheric Transport of Routine Releases from Nuclear Facilities" (new standard)

Scope:
This standard establishes criteria for use of meteorological data collected at nuclear facilities to evaluate the atmospheric effects on routine radioactive releases, inclusive of dilution, dispersion, plume rise, plume meander, aerodynamic effects of buildings, dry, deposition, and wet deposition (e.g., precipitation scavenging).

Membership:
Doyle Pittman, Co-Chairman, TVA; Cliff Glantz; Co-Chairman, PNNL; Mark Abrams, ABS Group; Tom Bellinger, ORNL; Roger Brode, Mactec; Jim Fairobent, NNSA/NA-41; Brad Harvey, U.S. NRC; Chuck Hunter; SRNL; Marsha Kinley, Duke Energy; Joe Laznow, Consultant; Carl Mazzola, Shaw Environmental; Ed McCarthy, PG&E; John Nasstrom, LLNL NARAC; Kevin O'Kula, WSMS; Darryl Randerson, NOAA ARL/SORD; Ali Simpkins, Southwest Research Institute; Steve Vigeant, Shaw Environmental; Ping Wan, Bechtel; Ken Wastrack, TVA; Y. J. Lin, Bechtel; Jeremy Rishel, PNNL

Status: NFSC approved the PINS in 2004. Cliff Glantz replaced Carl Mazzola as co-chair in April 2007. A rough first draft has been prepared by the authors and has been assembled into a composite. The authors currently have the composite for review/revision by the middle of December 2007. Then it will be sent out to the working group reviewers with comments due by mid February 2008. The next working group meeting is scheduled for next June in Charlotte in conjunction with the Nuclear Utilities Meteorological Data Users Group. After ANS-2.15 has progressed far enough, we will start work on ANS-2.16 using 2.15 as a template.

ANS-2.16, "Criteria for Modeling Design-Basis Accidental Releases from Nuclear Facilities" (new standard)

Scope:

This standard established criteria for use of meteorological data collected at nuclear facilities to evaluate the atmospheric effects on accidental radioactive and chemical releases, inclusive on dilution, dispersion, plume rise, plume meander, aerodynamic effects of buildings, dry deposition, and wet deposition (e.g., precipitation scavenging). These criteria may also be useful in Department of Homeland Security (DHS) consequence assessments.

Membership

Doyle Pittman, Co-Chairman, TVA; Cliff Glantz, Co-Chairman, PNNL; Mark Abrams, ABS Group; Tom Bellinger, IEMA; Roger Brode, Mactec; Jim Fairobent, NNSA/NA-41; Brad Harvey, U.S. NRC; Chuck Hunter; SRNL; Marsha Kinley, Duke Power; Joe Laznow, Consultant; Carl Mazzola, Shaw Environmental; Ed McCarthy, PG&E; John Nasstrom, LLNL NARAC; Kevin O'Kula, WSMS; Darryl Randerson, NOAA ARL/SORD; Ali Simpkins, SRNL; Steve Vigeant, Shaw Environmental; Ping Wan, Bechtel; Ken Wastrack, TVA; Y. J. Lin, Bechtel; Jeremy Rishel, PNNL; Steve Vigeant; Shaw Environmental

Status: NFSC approved the PINS in 2004. Cliff Glantz replaced Carl Mazzola as co-chair in April 2007. Work on the draft of ANS-2.16 will begin when ANS-2.15 has progressed sufficiently. ANS-2.15 will be used as a template for ANS-2.16.

ANS-2.29, "Probabilistic Seismic Hazard Analysis" (new standard)

Scope:

This standard provides criteria to establish the probabilistic basis for various levels of natural phenomena hazards at nuclear materials facility sites. It will be used with ANSI/ANS-2.26-2004, ASCE/SEI-43-05 and ANS-2.27.

Membership:

Jean Savy, Chairman, Lawrence Livermore National Laboratory; Jon Ake, U.S. Bureau of Reclamation; Kenneth Campbell, EQECAT Inc.; Nelish Chokshi, U.S. NRC; Kevin Coppersmith, Coppersmith Consulting; Carl Costantino, Individual; C.B. Crouse, URS Corp.; Asa Hadjian, Defense Nuclear Facilities Safety Board; Quazi Hossain, LLNL; Jeffrey Kimball, U.S. DOE; Jerry King, Individual; Richard Lee, Individual; Martin McCann, JBA Associates; Maurice Power, Geomatrix Consultants; Gabriel Toro, Risk Engineering; Ivan Wong, URS Corp.;Robert Youngs, Geomatrix Consultants, Inc.

Status: The draft received subcommittee approval and was distributed for formal NFSC ballot with concurrent public review with a due date of October 2007. The working group is currently resolving comments.

ANS-3.8.5, "Criteria for Emergency Radiological Field Monitoring, Sampling and Analysis" (historical revision of ANSI/ANS-3.8.5-1992; W2002 – new standard)

Scope:

This standard provides criteria for the Emergency Radiological Field Monitoring Program, which establishes the approach to field monitoring, sampling, and analysis during and after an emergency. It addresses the issues relative to the field monitoring team: 1) organization, staffing, and training 2) equipment and supplies 3) procedures and techniques and 4) sample analysis. This standard does not include either routine environmental monitoring programs used to establish baseline environmental conditions or dose assessment programs.

Membership:

OPEN

Status: Reaffirmation ballot failed. An effort is under way to find an active working group chair to initiate a historical revision.

ANS-3.8.10, "Criteria for Modeling Real-time Accidental Release Consequences at Nuclear Facilities" (new standard)

Scope:

This Standard establishes criteria for use of meteorological data collected at nuclear facilities or nearby stations to evaluate in real time the atmospheric effects on all anticipated accidental radioactive and hazardous chemical releases during emergencies, inclusive of atmospheric transport and dispersion These criteria may also be useful in Department of Homeland Security (DHS) emergency response consequence assessments.

Membership:

Doyle Pittman, Co-Chairman, TVA; Cliff Glantz, Co-Chairman, PNNL; Mark Abrams, ABS Group; Tom Bellinger, ORNL; Jim Fairobent, NNSA/NA-41; Brad Harvey, NRC; Chuck Hunter; SRNL; Marsha Kinley, Duke Power; Joe Laznow, Consultant; Carl Mazzola, Shaw Environmental;Ed McCarthy, PG&E; John Nasstrom, LLNL NARAC; Kevin O'Kula, WSMS; Darryl Randerson, NOAA ARL/SORD; Jeremy Rishel, PNNL; Ali Simpkins, SRNL; Steve Vigeant, Shaw Environmental; Ping Wan, Bechtel; Ken Wastrack, TVA

Status: PINS approved and submitted to ANSI in November 2006. Cliff Glantz replaced Carl Mazzola as co-chair in April 2007. Work will begin on draft once ANS-2.15, ANS-2.16, ANS-2.21 are completed.

ANS-5.4, "Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel" (historical revision of ANSI/ANS-5.4-1982; W1993)

Scope:

This standard provides an analytical method for calculating the release of volatile fission products from oxide fuel pellets during normal reactor operation. When used with nuclide yields, this method will give the so-called "gap activity," which is the inventory of volatile fission products that could be available for release from the fuel rod if the cladding were breached. The standard considers high-temperature (up to the melting point) and low-temperature (where temperature-independent processes dominate) releases and distinguishes between short-halflife (halflife less than one year) and long-halflife (halflife greater than one year) nuclides. This standard requires that releases for nuclides of interest be calculated with both the high-temperature and the low-temperature models, and the larger of the two calculated releases is to be taken as the result.

Membership:

Carl Beyer, Chairman, Pacific NW National Laboratory; Daniel Baron, EDF - France; Michelle Billaux, AREVA; Paul Cantonwine, GNF; Nayem Jahingir, GNF; Erik Kolstad, Institutt for Energiteknikk; Brent Lewis, Royal Military College of Canada; Yun Long, Westinghouse; Robert Montgomery, Anatech; Chuck Patterson, GNF; Chang-Seang Rim, MIT; Harold Scott, U.S. NRC; Scott Sidener, Westinghouse; Tony Turnbull, Individual; John Voglewede, U.S. NRC; Bob Weiner, K W Consulting; Shih-liang Wu, U.S. NRC

Status: Currently in the process of revising draft standard to be completed by May 2008.

ANSI/ANS-5.10-1998; R2006, "Airborne Release Fractions at Non-Reactor Nuclear Facilities" (new standard)

Scope:

This standard provides criteria for defining Airborne Release Fractions (ARFs) for radioactive materials under accident conditions (excluding nuclear criticalities) at non-reactor nuclear facilities. The criteria in this standard provide requirements for selecting ARFs based on the calculated or assumed forms of radioactive material released. This standard may be applied to determine the ARFs for certain applicable reactor plant events for which alternative methodologies are not mandated by regulatory requirements. Because the predominant physical forms of radioactive materials in non-reactor facilities are solids and liquids, the standard focuses on these forms. Criteria are also provided for gases and materials that can be converted into the form of a vapor.

Membership:

Jofu Mishima, Chairman, Science Applications International Corporation
Balance of working group OPEN

Status: Reaffirmation approved by ANSI 11/6/06.

ANSI/ANS-16.1-2003, "Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure" (revision of ANSI/ANS-16.1-1986)

Scope:

This standard provides a uniform procedure to measure and index the release of radionuclides from waste forms as a result of leaching in demineralized water for 5 days. The results of this

procedure do not apply to any specific environmental situation except through correlative studies of actual disposal site conditions. The test presented in this standard has much in common with the original International Atomic Energy Agency proposal and has by now become familiar to those working in the radioactive waste-form development field. It contains the provisions published in the original version of this standard in 1986.

Membership:
Roger D. Spence, Chairman, B&W Y-12; Oswald Anders, DL & R Michigan Applied Science & Technology Labs.; Herschel Godbee, Oak Ridge National Laboratory; Eric Sampsell, B&W Y-12

Status: Received ANSI approval 7/7/2003. A review of the standard was completed, and it was determined acceptable for reaffirmation. A reaffirmation ballot will be schedule for 2008.

ANSI/ANS-18.1-1999, "Radioactive Source Term for Normal Operation for Light Water Reactors" (revision of ANSI/ANS-18.1-1984)

Scope:
This standard provides a set of typical radionuclide concentrations for estimating the radioactivity in the principal fluid systems of light water reactors and for projecting the expected releases of radioactivity from nuclear plants. It is not intended that the values be used as the sole basis for design, but be used in environmental reports and elsewhere where expected operating conditions over the life of the plant would be appropriate.

Membership:
James Sejvar, Chairman, Individual; Olga A. Correal-Pulver, Westinghouse Electric Company Nuclear Fuels; Germina Ilas, Oak Ridge National Laboratory; Jay Y. Lee, USNRC; Erik Kirstein, GE Energy; Mark Rutherford, AREVA NP; Pavel V. Tsvetkov, Texas A&M University

Status: Received ANSI approval 9/21/1999. The PINS form for the revision was approved and submitted to ANSI March 2006. Progress on the draft has been slow due in part to difficulty gathering data for the standard.

ANS-41.5, "Verification and Validation of Radiological Data for Use in Waste Management and Environmental Remediation" (new standard)

Scope:
This standard establishes criteria and processes for determining the validity of radioanalytical data for waste management and environmental remediation. These applications include site characterization, waste acceptance, waste certification, waste treatment design, process control, risk communication, litigation, and other applications as deemed necessary.

Membership:
Saleem Salaymeh, Chairman, Savannah River National Lab.; Thomas L. Rucker, SAIC; Robert Holloway, Ann Rosecrance, Compliance Officer and Corporate QA Director Core Laboratories; Steven Bakhtiar, Waste Management, Inc.; John Griggs, Office of Radiation and Indoor Air U.S. EPA, NAREL; Chung King Liu, Office of Safety Regulation U.S. Department of Energy; David E. McCurdy, Chief Scientist, DE&S; Dennis Poyer, U.S. Army Center for Health Promotion and Preventive

Medicine; Pamela Greenlaw, US DOE/Environmental Measurements Laboratory; James E. Chambers, Fluor; Daniel Fernald

Status: Significant comments were received on the 2006 ballot of this draft standard. Acceptance of comments resulted in numerous substantive changes. ANS-24 Subcommittee Chair Andy Wehrenberg is reviewing the revised draft before it is issued to the NFSC for reballot with a second public review.

ANS-58.2, "Design Basis for Protection of Light Water Nuclear Power Plants Against the Effects of Postulated Pipe Rupture" (historical revision of ANSI/ANS-58.2-1988; W1998 – new standard)

Scope:

This standard addresses the design basis for the protection of light water reactor nuclear power plants from the potentially adverse effects of postulated pipe ruptures.

Membership:

James M. Gilmer, Chairman, Bechtel; Christopher Brennan, Exelon; John Gray, Sargent & Lundy; Bruce Hardy, Savannah River; Phil Kotwicki, Westinghouse; Mohamoud Massoud, Constellation; Wallace McAfee, ORNL; Har Mehta, GENE; Paul Miktus, Entergy; Andy Wehrenberg, Southern Company

Status: The working group has had little activity in 2007. It is recognized that the working group has several outstanding items including, a PINS for a historical revision, responding to ACRS comments, preparing an errata, and responding to a public inquiry.

Subcommittee ANS-25 – Siting: Environmental & Emergency Preparedness

Membership:

Kevin Bryson, Chairman, Shaw Environmental & Infrastructure
Carl Mazzola, Vice Chairman, Shaw Environmental & Infrastructure,Inc.
James Bollinger, Savannah River National Laboratory
Carl Costantino, Individual
Angelos Findikakis, Bechtel
Peter Fledderman, Westinghouse Savannah River
Clifford Glantz, Pacific Northwest National Laboratory
Chris Guggino, Bechtel
Daniel Hang, University of Illinois-retired
Kathyrn Hanson, Geomatrix Consultants
Joe Litehiser, Bechtel Corporation
Barbara Mohrman, Chair, Environmental Resource Management Inc.
Doyle Pittman, Tennessee Valley Authority
John Stevenson, J.D. Stevenson & Associates
Lance Vail, Pacific Northwest National Laboratory

ANS-25 changes from 2007 restructuring:
5 projects/standards transferred out (ANS-2.15, ANS-2.16, ANS-2.29, ANS-3.11, ANS-16.1)

4 new projects added (ANS-3.8.1, ANS-3.8.3, ANS-3.8.6, ANS-3.8.7)
The title of the subcommittee was changed from **Siting** to **Siting: Environmental & Emergency Preparedness.**

The U.S. NRC nominated Sujit Samaddar to the subcommittee. He will be considered once the required volunteer form is completed.

ANS-25 Subcommittee manages the following active projects and current standards:

ANSI/ANS-2.2-2002, "Earthquake Instrumentation Criteria for Nuclear Power Plants" (revision of ANSI/ANS-2.2-1988)

Scope:
This standard specifies the required earthquake instrumentation for the site and structures of light water cooled, land based nuclear power plants. It may be used for guidance at other types of nuclear facilities. This standard does not address the following: (a) Instrumentation to automatically shut down a nuclear power plant at a predetermined ground acceleration. (b) Procedures for evaluating records obtained from seismic instrumentation and instructions for the treatment of data. These procedures and instructions are specified in American National Standard, "Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation," ANSI/ANS 2.10-2003.

Membership:
OPEN

Status: Received ANSI approval 10/21/2002. Dennis Ostrom retired as working group chair but will remain a contributing member. A new working group chair will be sought. The project is being considered for reaffirmation.

_____

ANS-2.3, "Determining Tornado and Other Extreme Wind Characteristics at Nuclear Facility Sites" (historical revision of ANSI/ANS-2.3-1983; W1993 – new standard)
Scope:
This standard defines site phenomena caused by (1) extreme straight winds, (2) hurricanes, and (3) tornados in various geographic regions of the U.S. These phenomena are used for the design of nuclear facilities.

Membership:
John D. Stevenson, Chairman, J.D. Stevenson Consultants; Mo Amin, Sargent & Lundy Engineers; Art Buslick, U.S. NRC; Antonio Godoy, IAEA; Brad Harvey, U.S. NRC; Quazi A. Hossein, LLNL; Jeff Kimball, NNSA; Carl A. Mazzola, Shaw Environmental & Infrastructure, Inc.; James R. McDonald, Individual; Sujit K. Samaddar, U.S. NRC; Emil Simiu, NIST

Status: Work continues developing the draft standard. It is anticipated that a draft will be ready for subcommittee preliminary review in 2008.

_____

ANS-2.6, "Guidelines for Estimating Present and Forecasting Future Population Distributions Surrounding Power Reactor Sites" (new standard)

Scope:

This standard is designed to provide the applicant with procedures which are generally acceptable in the professional demographics community for estimating present and forecasting future population distributions in the vicinity of a site proposed for a nuclear power plant. This standard will be extended to be applicable to all nuclear facilities and will also address environmental justice considerations.

Membership:

Barbara Mohrman, Chair, Environmental Resource Management Inc.; Tom McDowell, Bechtel; additional members being sought

Status: This is a historical project being reinvigorated. A PINS form was drafted and distributed to the NFSC for approval with a due date of July 12, 2007. One negative remains unresolved.

ANS-2.8, "Determining Design Basis Flooding at Power Reactor Sites" (historical revision of ANSI/ANS-2.8-1992; W2002 – new standard)

Scope:

This document presents criteria to establish design basis flooding for nuclear safety-related features at power reactor sites. Methodology is described to evaluate the flood having virtually no risk of exceedance that can be caused by precipitation and snowmelt and any resulting dam failures; seismically induced dam failures; surge or seiche and attendant wind-generated wave activity; or a reasonable combination of these events.

Membership:

Rick Hill, Chairman, ERIN Engineering and Research; Jim August, CORE, Inc.; Catalino Cecilio, Catalino B. Cecilio Consulting; Kuo-Fu Chen, Washington Savannah River Company; John D. Stenvenson, J.D. Stevenson & Association; Bill Stillwell, South Texas Project Nuclear Operating, Co.; Kit Yin Ng, Bechtel Power Corp.; Ron Noble, Noble Consultants (potential member)

Status: Rick Hill has accepted the position of chair and solicited several members for the working group. A PINS form will be drafted for this historical reinvigoration.

ANS-2.9, "Evaluation of Ground Water Supply for Nuclear Facilities" (historical revision of ANSI/ANS-2.9-1980; R1989; W2000 – new standard)

Scope:

This standard presents guidelines for the determination of the availability of ground water supplies for nuclear power plant operations with respect to both safety and non-safety related aspects.

Membership:

James S. Bollinger, Administrative Chairman, Savannah River National Laboratory; Todd Rasmussen, Technical Co-Chairman, University of Georgia; Gudmundur S. Bodvarsson, Lawrence Berkeley National Laboratory; Dib Goswami, Washington State Department of Ecology; Dua Guvanasen, HydroGeoLogic, Inc.; Mary Beth Lloyd, Southern Company; Cyndi Martinec, Duke

Energy; Philip D. Meyer, Pacific Northwest National Laboratory; Fred J. Molz, III, Clemson University; Thomas J. Nicholson, U.S. Nuclear Regulatory Commission

Status: An initial evaluation of ANS-2.9-1980; R1989; W2000 was performed by the working group, and it was determined that a revision was needed due to change in the science of ground water transport over the past 30 years. The working group has been formed, and a PINS has been accepted by NFSC for this historical revision. The working group has decided to complete ANS-2.17 prior to initiating development of a new ANS-2.9 standard. Completion of ANS-2.17 presents a significantly more pressing need due to spent fuel pool leakage into groundwater at several operating nuclear power plants. These events have precipitated considerable public reaction and the ANS-2.17 working group has been asked by the Nuclear Regulatory Commission to expedite completion of 2.17.

ANS-2.13, "Evaluation of Surface-Water Supplies for Nuclear Power Sites" (historical revision of ANSI/ANS-2.13-1979; R1988; W2000)

Old Scope:

This standard presents criteria for determining: The availability of a surface water supply for plant operation with respect to both safety and nonsafety-related aspects. Water supply related effects of low flows and low levels on plant operation with respect to both safety and nonsafety-related systems.

Membership:

Lance Vail, Pacific Northwest National Laboratory
Balance of membership OPEN

Status: Lance Vail has committed to lead reinvigoration of this withdrawn standard. He would like to add guidance on how to address the issue of climate change on future water supplies to scope. PINS being developed.

ANS-2.17, "Evaluation of Radionuclide Transport in Ground Water for Nuclear Facilities" (historical revision of ANSI/ANS-2.17-1980; R1989; W2000)

Scope:

This standard presents guidelines for the determination of the concentration of radionuclides in the ground water resulting from both postulated accidental and routine releases from nuclear power plants.

Membership:

James S. Bollinger, Administrative Co-Chairman, Savannah River National Laboratory; Todd Rasmussen, Technical Co-Chairman, University of Georgia; Philip D. Meyer, Pacific Northwest National Laboratory; Gudmundur S. Bodvarsson, Lawrence Berkeley National Laboratory; Fred J. Molz, III, Clemson University; Thomas J. Nicholson, U.S. Nuclear Regulatory Commission; Dib Goswami, Washington State Department of Ecology; Dua Guvanasen, HydroGeoLogic, Inc.; Cyndi Martinec, Duke Energy

Status: An initial evaluation of ANS-2.17-1980; R1989; W2000 was performed, and it was determined that a revision was needed due to change in the science of ground water transport over the past 30 years. The working group has completed an initial draft of 2.17 and is currently finalizing this draft.

ANS-2.18, "Standards for Evaluating Radionuclide Transport in Surface Water for Nuclear Power Sites" (new standard)

Scope:

This standard presents guidelines for the determination of the transport of radionuclides in surface water resulting from both postulate accidental and routine releases from nuclear power plants and other nuclear facilities.

Membership:

Angelos Findikakis , Chairman, Bechtel
Balance of working group OPEN

Status: Angelos Findikakis accepted chair position 10/28/07. Working group members will be sought and a PINS will be developed.

ANS-2.21, "Criteria for Assessing Atmospheric Effects on the Ultimate Heat Sink" (new standard)

Scope:

This standard establishes criteria for use of meteorological data collected at nuclear facilities to evaluate the atmospheric effects from meteorological parameters (e.g., dry-bulb temperature/wet-bulb temperature differential, precipitation, wind speed, short wave radiation, incoming solar (short wave) radiation, surface water temperature, and atmospheric pressure) on ultimate heat sinks.

Membership:

Doyle Pittman, Co-Chairman, TVA; Cliff Glantz, Co-Chairman, PNNL; Mark Abrams, ABS Group; Tom Bellinger, IEMA; Roger Brode, Mactec; Chris Cook, PNNL; Jim Fairobent, NNSA/NA-41; Brad Harvey, U.S. NRC; Robert Kannor, Bechtel Power; Marsha Kinley, Duke Energy; Joe Laznow, Consultant; Y. J. Lin, Bechtel; Carl Mazzola, Shaw Environmental; Ed McCarthy, PG&E; John Nasstrom, LLNL NARAC; Kevin O'Kula, WSMS; Darryl Randerson, NOAA ARL/SORD; Steve Vigeant, Shaw Environmental; Ping Wan, Bechtel; Ken Wastrack, TVA

Status: NFSC approved the PINS in 2004. Cliff Glantz, replaced Carl Mazzola as Co-Chair April 2007. The working group held its first meeting in Washington, DC, in November 2004 and has developed the outlines and populated the working group. Work continues.

ANS-2.22, "Environmental Radiological Monitoring at Nuclear Facilities" (new standard)

Scope:

This standard establishes criteria for use in developing and implementing an integrated radiological environmental monitoring program focusing on ambient air, surface water, and biota. It

also provides criteria on the use of resultant environmental data collected near nuclear facilities to evaluate the impact of facility operations on the surrounding population and environment.

Membership:
Pete Fledderman, Chairman, Westinghouse Savannah River Company; T. Bowling, Duke Cogema Stone & Webster; C. Harvel, Savannah River National Laboratory; L. Haskell, Illinois Emergency Management Agency; T. Hinton, University of Georgia Savannah River Ecology Laboratory; T. Poston, Pacific Northwest National Laboratory; W. Raines, Tennessee Valley Authority; M.B. Lloyd, Southern Nuclear Co.; J. Cooper, Cabrera Services; R. Dukes, Pacific Northwest National Laboratory

Status: This new standard is currently under development. A PINS has been approved by the NFSC and the working group has been populated. Writing assignments have been made and are underway.

ANS-2.25, "Surveys of Terrestrial Ecology Needed to License Thermal Power Plants" (historical revision of ANSI/ANS-2.25-1982; R1989; W1999 – new standard)

Scope:
This standard discusses the need developers of thermal power plants and their associated facilities have for information on the terrestrial environment. Utilities and regulatory agencies must collect information to predict and assess real and potential environmental impacts, and to site and design generating plants that avoid or reduce adverse effects. Users of this standard will be guided through each stage of a survey with its corresponding requirements, the relationship of the terrestrial ecologist and other specialists in a major project, sources of information, and the governing laws and regulations.

Membership:
Chris Guggino, Chairman, Bechtel

Status: Chris Guggino accepted the chair position in October 2007 and drafted a PINS for review by the NFSC. The PINS was distributed to the NFSC for approval with a due date of 1/4/08. Once the PINS is approved, a working group will be formed.

ANS-2.27, "Criteria for Investigations of Nuclear Materials Facility Sites for Seismic Hazard Assessments" (new standard)

Scope:
This standard provides requirements and recommended practices for conducting investigations and acquiring data sets needed to evaluate seismic source characterization for probabilistic seismic hazard analysis (PSHA), site response and soil structure interaction (SSI) effects, and liquefaction. These data also are used to evaluate fault rupture and associated secondary deformation, and other seismically-induced ground failure hazards (i.e., ground settlement, slope failure, and subsidence and collapse).

Membership:
Kathryn Hanson, Chairperson, Geomatrix Consultants; Jon Ake, U.S. Bureau of Reclamation; Jian-Chu Chen, Lawrence Livermore National Laboratory; Carl J. Costantino, Consultant; C. B. Crouse,

URS Corporation; John Egan, Geomatrix Consultants Inc.; Jerry King, M&O/SAIC; Richard Lee, Bechtel Savannah River Inc.; William Lettis, William Lettis & Associates, Inc.; Joe Litehiser, Bechtel Corporation; Richard McMullen, Individual; William Savage, U.S. Geological Survey; David Schwartz, U.S. Geological Survey; Paul Thenhaus, ABS Consulting Inc.

Status: Significant comments were received on the draft from the 2006 NFSC ballot requiring several substantive changes. A reballot was issued to the NFSC with a concurrent public review. The NFSC ballot closed 10/26/07 with additional comments to be resolved.

ANS-2.30, "*Assessing Capability for Surface Faulting at Nuclear Facilities*" (new standard)

Scope:

This standard provides criteria and guidelines for investigations to assess potential for surface and near-surface faulting and associated near-fault deformation at nuclear facilities, referencing considerable new experience. The standard is an up-to-date compilation of techniques to evaluate fault offset potential and a valuable resource for planning and conducting site characterization studies for future nuclear facilities. It supplements a group of standards (i.e., ANS-2.26, -2.27, -2.29, ASCE 43-05) whose focus is on vibratory ground motion rather than fault offset hazard.

Membership:

Joe Litehiser, Chairman, Bechtel; Clarence Allen, Consultant; James E. Beavers, Consultant; Keith Kelson, William Lettis & Associates, Inc.; Jeffrey K. Kimball, U.S. DOE; Yong Li, U.S. Nuclear Regulatory Commission; James Miller, GeoEngineers, Inc.; Mark Petersen, U.S. Geological Survey; David Rowlands, Shaw Group; Malcolm Schaeffer, Devine, Tarbell & Associates; Paul Thenhaus, ABS Consulting, Inc.; John Wesling, Geomatrix Consultants, Inc.; Ivan Wong – URS Corporation

Status: Work has restarted in 2005. A revised PINS was approved and submitted to ANSI in August 2006.

ANS-3.8.1, "Criteria for Radiological Emergency Response Functions and Organizations (historical revision of ANSI/ANS-1995; W2005 – new standard)

Scope:

This standard establishes criteria for developing an overall preplanned emergency response organization for commercial nuclear power plants. The criteria address: (1) basic emergency response functions (2) emergency response support functions to ensure that the basic functions are adequately implemented (3) emergency response organization (4) personnel responsibilities.

Membership:

OPEN

Status: Reaffirmation ballot failed. An effort is under way to find an active working group chair to initiate a historical revision.

ANS-3.8.3, "Criteria for Radiological Emergency Response Plans and Implementing Procedures" (historical revision of ANSI/ANS-3.8.3-1995; W2005 – new standard)

Scope:

This standard establishes criteria for developing a radiological emergency response plan and implementing procedures necessary to coordinate an integrated emergency response at a commercial nuclear power plant. The radiological emergency response plan is the administrative document that establishes the licensee's commitments to emergency preparedness and response. The procedures are the licensee's documents that implement the radiological emergency response plan.

Implementing procedures address the following areas:
(1) emergency classification
(2) emergency response organization duties and responsibilities
(3) notification
(4) emergency response facilities activation and operation
(5) emergency teams
(6) personnel protection
(7) environmental assessment
(8) public information
(9) de-escalation
(10) recovery planning
(11) maintaining emergency preparedness

Membership:
OPEN

Status: Reaffirmation ballot failed. An effort is under way to find an active working group chair to initiate a historical revision.

_____

ANS-3.8.6, "Criteria for the Conduct of Offsite Radiological Assessment for Emergency Response for Nuclear Power Plants" (historical revision of ANSI/ANS-3.8.6-1995; W2005 – new standard)

Scope:

This standard describes the purpose of dose assessment and provides dose assessment criteria to be used when formulating protective action recommendations for the public. The standard describes the use of field monitoring data in support of dose assessment, and the integration of dose assessments with plant status assessments for protective action recommendations.

Membership:
OPEN

Status: Reaffirmation ballot failed. An effort is under way to find an active working group chair to initiate a historical revision.

_____

ANSI/ANS-3.8.7-1998, "Criteria for Planning, Development, Conduct, and Evaluation of Drills and Exercises for Emergency Preparedness" (new standard)

Scope:

This standard establishes criteria for the administration of a program of radiological emergency response drills and exercises in support of emergency preparedness at nuclear power plants. The topics discussed in this standard are applicable to both exercises and drills unless specifically identified otherwise. The standard addresses: (1) Types of emergency drills and exercises, and the reasons for each. (2) Planning activities associated with drills and exercises. (3) Development of scenarios for drills and exercises. (4) Conduct of drills and exercises. (5) Evaluation of drills and exercises. Simulator drills and exercises conducted as part of a larger emergency response exercise are within the scope of this standard. Simulator drills and exercises conducted as part of licensed operator training, and periodic retraining, are not within the scope of this standard. Exercise scenario artificialities needed to drive emergency response activities are often obtained by intentionally defeating operating actions or by inserting simulator manipulations. These actions or manipulations might produce responses which are in excess of the capabilities called for in American National Standard for Nuclear Power Plant Simulators for Use in Operator Training and Examination, ANSI/ANS-3.5-1993. Therefore, these exercises are not to be used to evaluate the adequacy of simulator performance or operator accident mitigation capability.

Membership:

OPEN

Status: An effort is under way to find an active working group chair to initiate a revision.

_____

ANS-40.21, "Siting, Construction, and Operation of Commercial Low Level Radioactive Waste Burial Grounds" (new standard)

Scope (unapproved):

This standard provides a matrix of minimum criteria to be met in determining the siting, construction and operation of a commercial low level radioactive waste burial ground. The standard will balance siting (i.e., natural criteria), construction (i.e., engineered safeguards) and operation (i.e., acceptance criteria) to provide a safety matrix that provides for the containment of the facility.

Membership:

Daniel F. Hang, Chair; Univ. of Illinois Urbana -retired; Richard L. Holm, Univ. of Illinois Urbana; William J. Hall, Univ. of Illinois Urbana; David W. Miller, American Electric Power; Michael D Kaminski, ANL; Tim Polich, NASA (now with USN); Roger Seitz, INL; Eric Loewen, INL

Status: A PINS was distributed to the NFSC for approval with a due date of 9/27/07. The PINS closed with significant comments that need to be resolved.

Subcommittee ANS-26 – Emergency Planning

ANS-26 changes from 2007 restructuring:
This subcommittee was dissolved.
ANS-3.7.1, ANS-3.8.2, and ANS-3.8.4 were transferred to ANS-21.
ANS-3.8.5 and ANS-3.8.10 were transferred to ANS-24.
ANS-3.8.1, ANS-3.8.3, ANS-3.8.6, and ANS-3.8.7 were transferred to ANS-25.

Subcommittee ANS-27 – Fuel Cycle, Waste Management & Decommissioning

Membership:
Jeff Brault, Chairman, AREVA Shaw MOX Project
Donald Eggett, Vice Chairman, AES Engineering
Dennis Ferrigno, CAF & Associates, LLC
Clint Miller, Pacific Gas & Electric Company

ANS-27 changes from 2007 restructuring:
The subcommittee title was changed from **Fuel Cycle & Waste Management** to **Fuel Cycle, Waste Management & Decommissioning**. No projects/current standards added or transferred.

ANS-27 manages the following active projects and current standards:

ANS-40.35, "Volume Reduction of Low-Level Radioactive Waste or Mixed Waste" (historical revision of ANSI/ANS-40.35-1991; W2001 – new standard)

Scope:
This standard sets forth the general design specifications, procurement, and performance requirements for operation of low-level waste (LLW) and mixed waste (MW) volume reduction (VR) processing systems for nuclear power plants and other nuclear facilities. This standard may be applied to the specification of other LLW VR systems (such as government nuclear facilities) if consideration is given to any additional design features required by the hazardous nature of the wastes to be processed by them. For the purpose of this standard, a nuclear facility's LLW VR processing systems begin at the point where treatment of aqueous waste generates a solid waste, or where solid, slurry, or liquid organics wastes are collected, and ends at a waste storage, shipping, or disposal area.

VR techniques may include processes such as drying, incineration, chemical decomposition, flash boiling, mechanical, or high-temperature reduction or destruction techniques, or both. Some VR systems may include, as an integral part of the system, a means for immobilization of the waste. Compaction and solidification techniques are in the scope of American National Standard Solid Radioactive Waste Processing Systems for Light Water Reactor Plants, ANSI/ANS-55.1-1992.

Membership:
Dennis Ferrigno, Chair, CAF & Associates, LLC
Balance of membership OPEN

Status: Past Working Group Chair Dennis Ferrigno agreed to lead a revision of this historical standard. Currently, the working group is being reformed.

ANS-40.37, "Mobile Low-Level Radioactive Waste Processing Systems" (historical revision of ANSI/ANS-40.37-1993; W2004 – new standard)

Scope:
This standard provides design, fabrication, and performance criteria and guidance for Mobile Low-Level Radioactive Waste Processing (MRWP) systems (including components) for nuclear

facilities. The purpose of this standard is to provide criteria to ensure that the MRWP systems are designed, fabricated, installed, and operated in a manner commensurate with the need to protect plant personnel and the health and safety of the public.

Membership:
Clint Miller, Chair, Pacific Gas & Electric Company; Paul Saunders, Suncoast Solutions, Inc.; David Vaught, Duke Energy

Status: The draft was completed and sent to NFSC for ballot and closed 4/16/07 with significant comments. Due to a heavy workload, working group members have not been able to respond to the comments. The working group chair anticipates being able to resolve comments by mid 2008.

ANSI/ANS-57.1-1992; R1998; R2005, "Design Requirements for Light Water Reactor Fuel Handling Systems" (revision of ANSI/ANS-57.1-1980)

Scope:
This standard sets forth the required functions of fuel handling systems at light water reactor nuclear power plants. It provides minimum design requirements for equipment and tools to handle nuclear fuel and control components safely.

Membership:
OPEN

Status: Reaffirmation received ANSI approval 7/20/2005. The ANS-27 Subcommitee Chair Jeff Brault is in the process of reforming this working group. An inquiry received 1/8/07 remains open.

ANS-57.2, "Design Requirements for Light Water Reactor Spent Fuel Facilities at Nuclear Power Plants" (historical revision of ANSI/ANS-57.2-1983; W1999 – new standard)

Scope:
Proposed scope: This standard presents necessary design requirements for facilities at nuclear power plants for the pool storage and preparation for shipment of spent fuel from light-water moderated and cooled nuclear power stations, including consideration of the impact of high burn-up fuels. It contains requirements for the design of the following: (1) Fuel storage pool (2) Fuel storage racks (3) Pool makeup, instrumentation and cleanup systems (4) Pool structure and integrity (5) Radiation shielding (6) Residual heat removal (7) Ventilation, filtration and radiation monitoring systems (8) Shipping cask handling and decontamination (9) Building structure and integrity (10) Fire protection and communication Design requirements for spent fuel storage in an Independent Spent Fuel Storage Installation (ISFSI) subsequent to such initial pool storage are covered in ANSI/ANS Standard 57.7.

Membership:
OPEN

Status: Project stalled at resolving NFSC comments from 2001 ballot. The working group chair resigned, and several working group members not able to participate. Comments remain unresolved.

ANS-57.3, "Design Requirements for New Fuel Storage Facilities at LWR Plants" (historical revision of ANSI/ANS-57.3 -1983; W1993 – new standard)

Scope:

Proposed Scope: This standard defines the required functions of wet or dry storage facilities for new fuel, including high burn-up fuel, at light water reactor nuclear power plants. It provides minimum design requirements for safe storage of new nuclear fuel and control components at such plants. The fuel storage facilities covered by this standard are used for receiving, inspecting and storing fuel containing new and recycled uranium and mixed oxides. The basis of this standard is that the intended function of the facilities will be performed in an efficient and economical manner to (a) preclude criticality, (b) ensure protection to new fuel assemblies, control components, plant personnel, and the public, and (c) maintain radiation exposures as low as reasonably achievable.

Membership:
OPEN

Status: Project stalled at resolving NFSC comments from 2001 ballot. The working group chair resigned, and several working group members not able to participate. Comments remain unresolved.

_____

ANSI/ANS-57.5-1996; R2006, "Light Water Reactors Fuel Assembly Mechanical Design and Evaluation" (revision of ANSI/ANS-57.5-1981)

Scope:

This standard sets forth a series of design conditions and functional requirements for the design of fuel assemblies for light water cooled commercial power reactors. It includes specific requirements for design, as well as design criteria to ensure adequate fuel assembly performance. The standard establishes a procedure for performing an evaluation of the mechanical design of fuel assemblies. It does not address the various aspects of neutronic or thermal-hydraulic performance except where these factors impose loads or constraints on the mechanical design of the fuel assemblies.

Membership:
OPEN

Status: Received ANSI approval 2/28/2006. No current activity.

_____

ANS-57.7, "Design Criteria for an Independent Spent Fuel Storage Installation (Water Pool Type)" (historical revision of ANSI/ANS-57.7-1988; R1997 – new standard)

Scope:

This standard provides design criteria for systems and equipment of a facility for the receipt and storage of spent fuel from light water reactors. It contains requirements for the design of major buildings and structures including the shipping cask unloading and spent fuel storage pools, cask decontamination, unloading and loading areas, and the surrounding buildings which contain radwaste treatment, heating, ventilation and air conditioning, and other auxiliary systems. It contains requirements and recommendations for spent fuel storage racks, special equipment and area layout

configurations, the pool structure and its integrity, pool water cleanup, ventilation, residual heat removal, radiation monitoring, fuel handling equipment, cask handling equipment, prevention of criticality, radwaste control and monitoring systems, quality assurance requirements, materials accountability, and physical security. Such an installation may be independent of both a nuclear power station and a reprocessing facility or located adjacent to any of these facilities in order to share selected support systems. Support systems shall not include a direct means of transferring fuel assemblies from the nuclear facility to the installation.

Membership:
OPEN

Status: Administratively withdrawn 5/28/2007. Per a discussion at the June 2007 NFSC meeting, ANS-27 Subcommittee Chair Jeff Brault was requested to form a working group to initiate a revision of this standard.

_____

ANSI/ANS-57.8-1995; R2005, "Fuel Assembly Identification" (revision of ANSI/ANS-57.8-1978; R1987)

Scope:
This standard describes requirements for the unique identification of fuel assemblies utilized in nuclear power plants. It defines the characters and proposed sequence to be used in assigning identification to fuel assemblies. This standard was developed primarily for commercial light-water reactor fuel, but may be used for any reactor fuel contained in discrete fuel assemblies that can be identified with a serial number as specified by this standard. Additionally, this standard describes requirements for a matrix system for identification in mapping the location of fuel rods within a fuel assembly. The matrix system establishes unique x-y coordinates for each possible rod location.

Membership:
OPEN

Status: Reaffirmation approved 1/12/2005. No current activity.

_____

ANSI/ANS-57.9-1992; R2000, "Design Criteria for an Independent Spent Fuel Storage Installation (Dry Type)" (revision of ANSI/ANS-57.9-1984)

Scope:
This standard is intended to be used by the owner and operator of a dry storage-type independent spent fuel storage installation (ISFSI) in specifying the design requirements and by the designer in meeting the minimum requirements of such installations. The standard includes requirements for the following: the design of major buildings and structures, shipping cask unloading and handling facilities, cask decontamination, loading and unloading areas, spent fuel storage areas and racks, fuel handling equipment, radiation shielding, special equipment and area layout configurations, air or gas quality, storage area integrity, air or gas cleanup, fuel inspection, ventilation, residual heat removal, radiation monitoring, prevention of criticality, radwaste control and monitoring systems, provisions to facilitate decommissioning, quality assurance, materials accountability, and physical security. This standard continues the set of American National Standards on spent fuel storage. Similar standards are: (1) Design Requirements for Light Water Reactor Spent Fuel Storage

Facilities at Nuclear Power Plants, ANSI/ANS-57.2-1983. (2) Design Criteria for an Independent Spent Fuel Storage Installation (Water Pool Type), ANSI/ANS-57.7-1988. (3) Guidelines for Establishing Site-Related Parameters for Site Selection and Design of an independent Spent Fuel Storage Installation (Water Pool Type), ANSI/ANS-2.19-1988(R1990); and (4) Design Criteria for Consolidation of LWR Spent Fuel, ANSI/ANS-57.10-1987.

Membership:
OPEN

Status: Reaffirmation received ANSI approval 6/7/2000. ANS-27 Subcommittee Chair Jeff Brault to facilitate a review of this standard to determine if revision or reaffirmation applicable.

_____

ANSI/ANS-57.10-1996; R2006, "Design Criteria for Consolidation of LWR Spent Fuel" (revision of ANSI/ANS-57.10-1987)

Scope:
This standard provides design criteria for the process of consolidating LWR spent nuclear fuel in either a wet or a dry environment. It addresses processes for consolidating fuel either horizontally or vertically. The standard sets forth requirements for utilizing equipment and systems to perform consolidation, handle fuel rods and nonfuel-bearing components, and handle broken fuel rods. This standard also contains requirements for facility or installation interfaces, nuclear safety, structural design, thermal design, accountability, safeguards, decommissioning, and quality assurance. The standard is not concerned with the storage of the spent fuel either before or after the consolidation process. These areas are covered in the following American National Standards: Design Requirements for Light Water Reactor Spent Fuel Facilities at Nuclear Power Plants, ANSI/ANS-57.2-1992. Design Criteria for an Independent Spent Fuel Storage Installation (Water Pool Type), ANSI/ANS-57.7-1992. Design Criteria for an Independent Spent Fuel Storage Installation (Dry Storage Type), ANSI/ANS-57.9-1992.

Membership:
OPEN

Status: Received ANSI approval 7/6/2006. No current activity.

Subcommittee ANS-28 – HTGR Design Criteria

Membership:
James August, Chairman, Core Inc.
Robert Bratton, Secretary, Idaho National Energy Laboratory
Sten Caspersson, Westinghouse
Michael Coyle, Nuclear Management Co., LLC
Mike Frank, Safety Factor Associates, Inc.
John Gaertner, Electric Power Research Institute
Malcolm LaBar, Individual
Lewis Lommers, AREVA
Yoshiaki Makihara, International Atomic Energy Agency
Cal Reid, Bechtel

Stuart Rubin, U.S. NRC
Farshid Shahrokhi, AREVA
Don Spellman, Oak Ridge National Laboratory
Edward Wallace, PBMR Pty.

ANS-27 changes from 2007 restructuring:
The subcommittee title was changed from **Gas-Cooled Reactor Design** to **HGTR Design Criteria**. No standards were added or transferred.

Report of Subcommittee Chair:

Subcommittee ANS-28 was formed in 2003 for the development of gas cooled reactor plants. A working group was formed, consisting of the entire ANS-28 Subcommittee, to develop a safety criteria standard identified as ANS-53.1. ANS-53.1 is intended to be the top-level, safety standard to be developed under ANS-28.

ANS-53.1, "Nuclear Safety Criteria for the Design of Modular Helium-Cooled Reactor Plants" (new standard)

Scope:
The GCR Criteria are intended for use in the design of the nuclear safety aspects of stationary GCR plants. Their objective is to provide assurance that GCR plants will be designed and constructed in such a manner that they may be operated without undue risk to the health and safety of the public.

Membership:
James August, Vice-Chair, Core Inc.; Robert Bratton, Secretary, Idaho National Laboratory; Sten Caspersson, Westighouse; Michael Coyle, Exelon Nuclear; John Gaertner, Electric Power Research Institute; Malcolm LaBar, Individual; Lewis Lommers, AREVA; Yoshiaki Makihara, International Atomic Energy Agency; Cal Reid, Bechtel Power; Stuart Rubin, U. S. NRC; Farshid Shahrokhi, AREVA; Layla Sandell, Electric Power Research Institute; Kenneth Schultz, General Atomics; Donald Spellman, Oak Ridge National Laboratory; Edward Wallace, PBMR Pty

Advisory Group: Syd Ball, Oak Ridge National Laboratory, Richard Black, U.S. DOE; Michael Frank, Safety Factor Associates, Inc.; J. Bolin, General Atomics; Prasad Kadambi, US Nuclear Regulatory Commission; N. Tricot, International Association of Energy

Status: James August replaced Malcolm LaBar as working group chair. The working group completed an integrated 102 page rough draft. The draft will be finalized for submission to NFSC for a preliminary review the beginning of 2008.

Subcommittee ANS-29 – Advanced Initiatives (GEN III-A/IV, GNEP)

Membership:
Donald Spellman, Chairman, Oak Ridge National Laboratory
Stephen Shepherd, Vice Chairman, Southern California Edison

Status: The subcommittee was approved March 2007 during the NFSC restructuring with anticipation of need in the near future. Proposed standards to be determined.

ANS-29.1, "Operational Reactivity Management and Oversight at Light Water, Pressurized Water Power Reactors" (new standard)

Scope:

This standard provides guidance for PWR operation and reactor engineering staffs regarding the care and prior planning of plant manipulations that can affect reactor reactivity as well as the review, post manipulation, to verify that reactivity performance met expectations

Membership: Stephen Shepherd, Chairman, Southern California Edison; Tentative: H. Massie, DNFSB; M. Ross-Lee, USNRC; M. Barnes, INPO/Oconee; J. Cunningham, INPO/Clinton; Adm. K. McCoy, USN; L. Grobmyer, Westinghouse

Status: A PINS form was drafted and issued to the NFSC for approval. The PINS vote closed 11/6/07, and comments are currently being resolved.

RISC
Risk Informed Standards Committee
William E. Burchill, Chairman
Brookhaven National Laboratory

Scope:

The American Nuclear Society Risk Informed Standards Consensus Committee is responsible for the development and maintenance of standards that establish safety and risk criteria and methods for probabilistic analysis, risk assessment, and risk management. These criteria and methods are applicable to design, development, construction, operation, decontamination and decommissioning, waste management, and environmental restoration for nuclear facilities.

The RISC Committee is directly responsible for the management of five working groups.

RISC Membership:

Allen L. Camp, Chairman, Sandia National Laboratory
Robert J. Budnitz, Vice Chairman, Lawrence Berkeley National Laboratory
Paul J. Amico, Science Applications International Corporation
Robert A. Bari, Brookhaven National Laboratory
Richard Black, U.S. Department of Energy
Roy E. (Biff) Bradley, Nuclear Energy Institute
Mary T. Drouin, U.S. Nuclear Regulatory Commission
Frederick A. Emerson, GE Nuclear Energy
David J. Finnicum, Westinghouse Electric Corporation
John P. Gaertner, Electric Power Research Institute
Dennis W. Henneke, GE Infra, Energy
Richard A. Hill, ERIN Engineering and Research
Gene A. Hughes, ETRANCO
Kenneth L. Kiper, FPL Energy Company
Stanley H. Levinson, AREVA NP
Mayasandra K. (Ravi) Ravindra, Individual
Mark P. Rubin, U.S. Nuclear Regulatory Commission
Jean B. Savy, Risk Management Solutions
Daniel W. (Bill) Stillwell, South Texas Project Nuclear Operating Company
Jonathon Young, Pacific Northwest National Laboratory

Alternates:
Barbara Baron (for David Finnicum), Westinghouse Electric Corporation
Doug Hance (for John Gaertner), Electric Power Research Institute
Greg Krueger (for Gene Hughes), Exelon Nuclear
Bijan Najafi (for Paul Amico), Science Applications International Corporation
Gareth Parry (for Mary Drouin/Mark Rubin) U.S. Nuclear Regulatory Commission
Doug True (for Rick Hill), ERIN Engineering & Research

Observers:
William E. Burchill, Texas A&M University
Wayne D. Holmes, HSB Professional Loss Control
Yehia F. Khalil, Yale University
Jeff T. Mitman, U.S. Nuclear Regulatory Commission

Selim Sancaktar, U.S. Nuclear Regulatory Commission
Fatma Yilmaz, Entergy Nuclear

Report of RISC Chair

The RISC Committee met twice during 2007; June 27, in Boston, Massachusetts, and November 14, in Washington, DC. William Burchill stepped down as RISC Chair to assume the role of ANS President-Elect. Allen Camp was elected RISC Chair with Robert Budnitz elected as Vice Chair. A revision to the External Events Standard was approved and published, and the Fire PRA Standard was approved and published before just before the end of the year. Several RISC members accepted positions as observers to maintain their connection with the committee without the responsibility of meeting attendance. Jon Young was added as a new member of RISC.

Published in 2007:
ANSI/ANS-58.21-2007, "External Events in PRA Methodology" (revision of ANSI/ANS-58.21-2003)

ANSI/ANS-58.23-2007, "Standard on Methodology for Fire PRA" (new standard)

Active standards/projects:

ANS-58.22, "Low-Power Shutdown PRA Methodology" (new standard)

ANS-58.24, "Severe Accident Progression and Radiological Release (Level 2) PRA Methodology to Support Nuclear Installation Applications" (new standard)

ANS-58.25, "Standard for Radiological Accident Offsite Consequence Analysis (Level 3 PRA) to Support Nuclear Installation Applications" (new standard)

The following working groups report directly to the RISC Committee:

ANSI/ANS-58.21-2007, "External-Events PRA Methodology" (revision of ANSI/ANS-58.21-2003)

Scope:

The scope of a PRA covered by this Standard is limited to analyzing accident sequences initiated by external events that might occur while a nuclear power plant is at nominal full power. It is further limited to requirements for (i) a Level 1 analysis of the core damage frequency (CDF) and (ii) a limited Level 2 analysis sufficient to evaluate the large early release frequency (LERF). The scope of a Seismic Margin Assessment (SMA) covered by this Standard is limited to analyzing nuclear power-plant seismic capacities according to either the so-called EPRI method (EPRI, 1991) or the so-called NRC method (Budnitz et al., 1985).

In some places in the standard, the phrase "seismic PRA" is used in a generic sense. Often, for example in most of the language in this introductory Section 1, the intent is to include SMA methods as well as seismic PRA methods within the scope of the phrase PRA. For example, both PRA and SMA methods are contemplated as being considered together for the broad purposes of sections 1.4 to 1.10, even though the language sometimes uses "PRA" alone.

External events covered within the Standard's scope include both natural external events (e.g., earthquakes, high winds, and external flooding) and human-made external events (e.g., airplane

crashes, explosions at nearby industrial facilities, and impacts from nearby transportation activities). Appendix A contains an extensive list of most of the external events generally included within an external-events PRA and hence within the standard's scope.

Scope Interface with ASME PRA Standard: In contrast, the scope of the ASME Standard (ASME, 2002) covers internal plant initiators (except internal fires) that might occur while the nuclear power plant is at nominal full power Accidents initiated by internal flooding are explicitly included in the ASME standard, as are accidents initiated by a loss of offsite power (LOSP), unless the LOSP is due to one of the external events covered herein that also causes other important damage to the plant, in which case the LOSP is within the scope here. Therefore, this ANS Standard and the ASME Standard, when used together, cover all potential accident initiators arising at nominal full power, except internal fires, for which a standard is currently under development under the sponsorship of the American Nuclear Society. The only initiators explicitly excluded are accidents resulting from purposeful human-induced security threats (e.g., sabotage). Although (as discussed above in section 1.2) this Standard is intended ultimately to be used with the American Nuclear Society standard covering low-power/shutdown operations when that standard is completed, accidents initiated by external events occurring during low-power/shutdown conditions are explicitly not covered by the requirements herein. Additions and modifications to the technical requirements will be necessary to cover such applications.

Membership:
Ravi Ravindra, Chairman, ABS Consulting; Robert Budnitz, Lawrence Berkeley National Laboratory; Nilesh Chokshi, U.S. Nuclear Regulatory Commission

Status: Revised standard approved by ANSI 3/1/07 and published March 2007.

ANS-58.22, “Low-Power Shutdown PRA Methodology” (new standard)

Scope:

This standard sets forth criteria and specific methods for plant-specific probabilistic risk assessments (PRAs) to be used to develop risk-informed decisions regarding low power and shutdown operations at light water nuclear power plants. It addresses those attributes of a PRA that will ensure that the scope and level of quality of the assessment are appropriate to the decision being considered. The standard addresses the use of risk information for making plant improvements, the risk, ranking of components, and the development of decisions that can benefit from risk information. The scope of this standard is limited to internal and external events while operating at low power and shutdown conditions.

Membership:
Donald Wakefield, Chairman, ABS Consulting; Dennis Bley, Buttonwood Associates; Robert Budnitz, Lawrence Berkeley National Laboratory; William Burchill, Texas A&M University; Bryan Carroll, Duke; Doug Hance, EPRI; Steven Hess, Electric Power Research Institute; Jeffrey Julius, Scientech, LLC; Yehia F. Khalil, Yale University; Daniel O’Neal, U.S. Nuclear Regulatory Commission; Leo Shanley, ERIN; William Stillwell, South Texas Nuclear Utility

Status: The standard was issued for public comment and RISC Committee ballot in June 2005. A substantial number of comments were received. At the November 14, 2005, meeting of the RISC Committee, the working group was given further directions with regard to the scope of the standard, and the working group has been addressing the comments. Early this year, several members were

added to the working group to draft a qualitative portion to the standard. A draft of the qualitative portion was completed and is currently being incorporated into the existing draft.

ANSI/ANS-58.23-2007, "Fire PRA Methodology" (new standard)

Scope:

This standard provides requirements for developing a Fire Probabilistic Risk Assessment (PRA) in support of risk-informed decisions associated with fire-initiated events at light water nuclear power plants. The scope of this standard is limited to fire-related events while operating under nominally full power conditions.

Membership:

Dennis Henneke, Chairman, General Electric; Francisco Joglar, Science Applications International Corporation; Mardy Kazarians, Kazarians & Associates, Inc.; Alan Kolaczkowski, Science Applications International Corporation; Bijan Najafi, Science Applications International Corporation; Steven Nowlen, Sandia National Laboratories; Nathan Siu, U.S. Nuclear Regulatory Commission; Kiang Zee, ERIN Engineering & Research, Inc.

Review Group: Philip J. Dinenno, Hughes Associates, Inc.; Frederic Emerson, General Electric; Daniel Funk, Edan Engineering Corporation; Raymond Gallucci, U.S. Nuclear Regulatory Commission; John Hyslop, U.S. Nuclear Regulatory Commission; Shigeo Kojima, Computer Software Development Company, Ltd.; John Lambright, II, Lambright Technical Associates, Inc.; James Masterlark, NMC/Wisconsin Electric; Brian Meacham, ARUP

Status: The standard was approved by ANSI 11/20/07 and published December 2007.

ANS-58.24, "Severe Accident Progression and Radiological Release (Level 2) PRA Methodology to Support Nuclear Installation Applications" (new standard)

Scope:

Criteria and acceptable methods are defined for the evaluation of containment performance and radiological releases to the environment from accidents in a nuclear power plant that result in damage to fuel within the reactor vessel for use in risk-informed applications requiring Level 2 probabilistic risk assessment (PRA). The Standard will address sequences initiated by internal or external events during all modes of reactor operation. The initial scope will focus on full power operations.

Membership:

Mark Leonard, Chairman, dycoda, LLC; Michael Barrett, Duke Power Company; Paul Boneham, Jacobsen Engineering; David Bradley, SAIC; Edward Burns, ERIN Engineering; Randall Gauntt, Sandia National Laboratories; Robert Henry, Fauske & Associates, Inc.; John Lehner, Brookhaven National Laboratory; William Mims, Tennessee Valley Authority; Jason Petti, Sandia National Laboratories; Bob Prior, AREVA; Ray Schneider, Westinghouse Electric Corp.

Status: The working group has prepared a technical outline of the standard. Draft text, including proposed requirements in tabular form, has been prepared and submitted for four of the nine major technical sections of the standard. Progress on the remaining sections has been hampered by

increased workloads on cognizant authors. The group met twice in 2007 in each case with a portion of the working group. Two new members were recruited. Major topics need to be addressed. An initial draft by the end of 2008 is remotely possible.

ANS-58.25, "Standard for Radiological Accident Offsite Consequence Analysis (Level 3 PRA) to Support Nuclear Installation Applications" (new standard)

Scope:

This standard provides requirements for application of risk-informed decisions related to the consequences of accidents involving release of radioactive materials to the environment. The consequences to be addressed include health effects (early and late) and longer term environmental impacts. The required capabilities allow determination of the efficacy of mitigation strategies on reducing consequences.

Membership:

Keith Woodard, Chairman, ABS Consulting; Nathan Bixler, SNL; Duncan Brewer, Duke; David Johnson, ABS; Geoff Kaiser, SAIC; David Leaver, Polestar; Stanley Levinson, AREVA NP; Jocelyn Mitchell, U.S. NRC; Vinod Mubayi, BNL; Kevin O'Kula, WSMS; Doug Paul, Duke; Grant Teagarden, ERIN

Status: The working group held two very good meetings in 2007. Assignments have been out for more than a year with about 50% completed. The group is working on incorporating capability category framework into Level 3. Jan Van der Steen retired form the committee. Although two members were changed to review status, the group has sufficient coverage.

Appendix A

STANDARD SERVICE AWARD RECIPIENTS

Year Awarded	Recipients
2007	William L. Whittemore (posthumously)
2006	Robert J. Budnitz
2005	James F. Mallay
2004	Charles H. Moseley
2003	Wade J. Richards
2002	Francis M. Alcorn
2001	Michael J. Wright
2000	William C. Hopkins
1999	Dimitrios Cokinos
1998	Marilyn D. Weber
1997	David R. Smith
1996	Tawfik M. Raby
1995	Hugh K. Clark
1994	George L. Wessman
1993	Joseph T. Thomas
1992	J. Ed Smith (posthumously)
1991	David K. Trubey
1990	James F. Mallay
1989	Walter H. D'Ardenne
1988	A. Dixon Callihan Ralph G. Chalker Miles C. Leverett

Appendix B

American Nuclear Society – American National Standards

Sales List

All standards listed are available as Individual publications.

CURRENT STANDARDS

ANS Designation	Order #	Price
ANS-1-2000 Conduct of Critical Experiments (Revision of ANSI/ANS-1-1987;R1992)	240242	$30.00
ANS-2.2-2002 Earthquake Instrumentation Criteria for Nuclear Power Plants (Revision of ANSI/ANS-2.2-1988)	240246	$42.00
ANS-2.10-2003 Criteria for the Handling and Initial Evaluation of Records from Nuclear Power Plant Seismic Instrumentation (Revision of ANSI/ANS-2.10-1979)	240251	$36.00
ANS-2.23-2002 Nuclear Plant Response to an Earthquake	240244	$97.00
ANS-2.26-2004 Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design	240255	$90.00
ANS-3.1-1993;R1999 Selection, Qualification, and Training of Personnel for Nuclear Power Plants (Revision of ANSI/ANS-3.1-1987)	240188	$66.00
ANS-3.2-2006 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants (Revision of ANSI/ANS-3.2-1988)	240262	$109.00
ANS-3.4-1996;R2002 Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants (Revision of ANSI/ANS-3.4-1983;R1988)	240218	$42.00
ANS-3.5-1998 Nuclear Power Plant Simulators for Use in Operator Training and Examination	240231	$84.00
ANS-3.8.7-1998 Criteria for Planning, Development, Conduct, and Evaluation of Drills and Exercises for Emergency Preparedness	240230	$48.00
ANS-3.11-2005 Determining Meteorological Information at Nuclear Facilities (Revision of ANS-3.11-2000)	240260	$102.00
ANS-5.1-2005 Decay Heat Power in Light Water Reactors (Revision of ANSI/ANS-5.1-1994)	240256	$114.00
ANS-5.10-1998;R2006 Airborne Release Fractions at Non-Reactor Nuclear Facilities	240233	$100.00
ANS-6.1.2-1999 Neutron and Gamma-Ray Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants (Revision of ANSI/ANS-6.1.2-1989)	240236	$30.00

CURRENT STANDARDS

ANS Designation	Order #	Price
ANS-6.3.1-1987;R1998; R2007 Program for Testing Radiation Shields in Light Water Reactors (LWR) (Revision of ANSI/ANS-6.3.1-1980)	240158	$60.00
ANS-6.4-2006 Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants (Revision of ANSI/ANS-6.4-1997;R2004)	240264	$153.00
ANS-6.4.2-2006 Specification for Radiation Shielding Materials (Revision of ANSI/ANS-6.4.2-1985;R1997;R2004)	240263	$60.00
ANS-6.6.1-1987;R1998 R2007 Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants (Revision of ANSI/ANS-6.6.1-1979)	240153	$107.00
ANS-8.1-1998;R2007 Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors (Revision of ANSI/ANS-8.1-1983;R1988)	240234	$72.00
ANS-8.3-1997;R2003 Criticality Accident Alarm System (Revision of ANSI/ANS-8.3-1986)	240224	$78.00
ANS-8.5-1996;R2002 R2007 Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material (Revision of ANSI/ANS-8.5-1986)	240220	$48.00
ANS-8.6-1983;R1988; R1995;R2001 Safety in Conducting Subcritical Neutron-Multiplication Measurements In Situ (Revision of N16.3-1975)	240119	$24.00
ANS-8.7-1998;R2007 Guide for Nuclear Criticality Safety in the Storage of Fissile Materials (Revision of N16.5-1975;R1982;R1987)	240235	$66.00
ANS-8.10-1983;R1988; R1999;R2005 Criteria for Nuclear Criticality Safety Controls in Operations With Shielding and Confinement (Revision of N16.8-1975)	240123	$36.00
ANS-8.12-1987;R1993;R2002 Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors (Revision of ANS-8.12-1978)	240163	$72.00
ANS-8.14-2004 Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors	240253	$36.00

CURRENT STANDARDS

ANS Designation	Order #	Price
ANS-8.15-1981;R1987; R1999;R2005 Nuclear Criticality Control of Special Actinide Elements	240102	$66.00
ANS-8.17-2004 Criticality Safety Criteria for the Handling, Storage and Transportation of LWR Fuel Outside Reactors (Revision of ANSI/ANS-8.17-1984;R1997)	240254	$36.00
ANS-8.19-2005 Administrative Practices for Nuclear Criticality Safety (Revision of ANSI/ANS-8.19-1969)	240257	$36.00
ANS-8.20-1991;R1999; R2005 Nuclear Criticality Safety Training	240178	$30.00
ANS-8.21-1995;R2001 Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors	240204	$36.00
ANS-8.22-1997;R2006 Nuclear Criticality Safety Based on Limiting and Controlling Moderators	240227	$42.00
ANS-8.23-2007 Nuclear Criticality Accident Emergency Planning and Response (Revision of ANSI/ANS-8.23-1997)	240269	$92.00
ANS-8.24-2007 Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations	240266	$84.00
ANS-8.26-2007 Criticality Safety Engineer Training and Qualification Program	240268	$30.00
ANS-10.2-2000 Portability of Scientific and Engineering Software (Revision of ANSI/ANS-10.2-1988)	240243	$36.00
ANS-10.4-1987;R1998 Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry	240150	$104.00
ANS-10.5-2006 Accommodating User Needs in Scientific and Engineering Software Development (Revision of ANS-10.5-1994;W2004)	240261	$42.00
ANS-14.1-2004 Operation of Fast Pulse Reactors (Revision of ANS-14.1-1975;R1982;R1989;R2000)	240252	$36.00

CURRENT STANDARDS

ANS Designation	Order #	Price
ANS-15.1-2007 The Development of Technical Specifications for Research Reactors (Revision of ANSI/ANS-15.1-1990;R1999)	240176	$72.00
ANS-15.2-1999 Quality Control for Plate-Type Uranium-Aluminum Fuel Elements (Revision of ANSI/ANS-15.2-1990)	240237	$48.00
ANS-15.4-1988;R1999 Selection and Training of Personnel for Research Reactors (Revision of ANSI/ANS-15.4-1977)	240165	$48.00
ANS-15.8-1995;R2005 Quality Assurance Program Requirements for Research Reactors (Revision of ANSI/ANS-15.8-1976;R1986)	240215	$48.00
ANS-15.11-1993;R2004 Radiation Protection at Research Reactor Facilities (Revision of ANSI/ANS-15.11-1987)	240189	$92.00
ANS-15.16-1982;R1988;R2000 Emergency Planning for Research Reactors	240108	$42.00
ANS-15.17-1981;R1987;R2000 Fire Protection Program Criteria for Research Reactors	240096	$36.00
ANS-15.21-1996;R2006 Format and Content for Safety Analysis Reports for Research Reactors	240222	$107.00
ANS-16.1-2003 Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure (Revision of ANSI/ANS-16.1-1986)	240249	$114.00
ANS-18.1-1999 Radioactive Source Term for Normal Operation for Light Water Reactors (Revision of ANSI/ANS-18.1-1984)	240238	$72.00
ANS-19.1-2002 Nuclear Data Sets for Reactor Design Calculations (Revision of ANSI/ANS-19.1-1983;R1989)	240250	$54.00
ANS-19.3-2005 Determination of Steady State Neutron Reaction Rate Distributions and Reactivity of Nuclear Power Reactors (Revision of ANSI/ANS-19.3-1995)	240258	$92.00
ANS-19.3.4-2002 The Determination of Thermal Energy Deposition Rates in Nuclear Reactors (Revision of ANSI/ANS-19.3.4-1976;R1983;R1989)	240245	$42.00
ANS-19.4-1976;R1983;R1989;R2000 A Guide for Acquisition and Documentation of Reference Power Reactor Physics Measurements for Nuclear Analysis Verification (Formerly known as N652-1976)	240057	$60.00

CURRENT STANDARDS

ANS Designation	Order #	Price
ANS-19.6.1-2005 Reload Startup Physics Tests for Pressurized Water Reactors (Revision of ANSI/ANS-19.6.1-1997)	240259	$90.00
ANS-19.11-1997;R2002 Calculation and Measurement of the Moderator Temperature Coefficient of Reactivity for Water Moderated Power Reactors	240226	$72.00
ANS-51.10-1991;R2002 Auxiliary Feedwater System for Pressurized Water Reactors (Revision of ANSI/ANS-51.10-1979)	240177	840.00
ANS-55.1-1992;R2000 Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants (Revision of ANSI/ANS-55.1-1979)	240193	$112.00
ANS-55.4-1993;R1999;R2007 Gaseous Radioactive Waste Processing Systems for Light Water Reactor Plants (Revision of ANSI/ANS-55.4-1979)	240194	$97.00
ANS-55.6-1993;R1999;R2007 Liquid Radioactive Waste Processing System for Light Water Reactor Plants (Revision of ANSI/ANS-55.6-1979)	240195	$100.00
ANS-56.8-2002 Containment System Leakage Testing Requirements (Revision of ANSI/ANS-56.8-1994)	240247	$102.00
ANS-57.1-1992;R1998;R2005 Design Requirements for Light Water Reactor Fuel Handling Systems (Revision of ANSI/ANS-57.1-1980)	240186	$54.00
ANS-57.5-1996;R2006 Light Water Reactors Fuel Assembly Mechanical Design and Evaluation (Revision of ANS-57.5-1981)	240217	$66.00
ANS-57.8-1995;R2005 Fuel Assembly Identification (Revision of ANSI/ANS-57.8-1978;R1987)	240205	$36.00
ANS-57.9-1992;R2000 Design Criteria for an Independent Spent Fuel Storage Installation (Dry Type) (Revision of ANSI/ANS-57.9-1984)	240185	$130.00
ANS-57.10-1996;R2006 Design Criteria for Consolidation of LWR Spent Fuel (Revision of ANSI/ANS-57.10-1987)	240221	$85.00
ANS-58.3-1992;R1998 Physical Protection for Nuclear Safety-Related Systems and Components (Revision of ANSI/ANS-58.3-1977)	240184	$104.00
ANS-58.6-1996;R2001 Criteria for Remote Shutdown for Light Water Reactors (Revision of ANSI/ANS-58.6-1983;R1989)	240214	$42.00
ANS-58.8-1994;R2001 Time Response Design Criteria for Safety-Related Operator Actions (Revision of ANSI/ANS-58.8-1984)	240202	$66.00

CURRENT STANDARDS

ANS Designation	Order #	Price
ANS-58.9-1981;R1987;R2002 Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems	240091	$36.00
ANS-58.11-1995;R2002 Design Criteria for Safe Shutdown Following Selected Design Basis Events in Light Water Reactors (Revision of ANSI/ANS-58.11-1983;R1989)	240207	$54.00
ANS-58.21-2007 External-Events in PRA Methodology (Revision of ANSI/ANS-58.21-2003)	240265	$170.00
ANS-58.23-2007 Fire-PRA Methodology	240270	$169.00
ANS-59.3-1992;R2002 Nuclear Safety Criteria for Control Air Systems (Revision of ANSI/ANS-59.3-1984)	240187	$42.00
ANS-59.51-1997;R2007 Fuel Oil Systems for Safety-Related Emergency Diesel Generators (Revision of ANSI/ANS-59.51-1989)	240229	$30.00
ANS-59.52-1998;R2007 Lubricating Oil Systems for Safety-Related Emergency Diesel Generators	240232	$54.00

HISTORICAL STANDARDS

ANS Designation	Order #	Price
ANS-1-1987;R1992 Safety Guide for the Performance of Critical Experiments	240159	$30.00
ANS-2.2-1988 Earthquake Instrumentation Criteria for Nuclear Power Plants	240160	$60.00
ANS-2.3-1983 Standard for Estimating Tornado and Extreme Wind Characteristics at Nuclear Power Sites	240122	$60.00
ANS-2.5-1984;R1990 Standard for Determining Meteorological Information at Nuclear Power Sites	240129	$42.00
ANS-2.7-1982 Guidelines for Assessing Capability for Surface Faulting at Power Reactor Sites	240105	$42.00
ANS-2.8-1992 Determining Design Basis Flooding at Power Reactor Sites	240183	$152.00
ANS-2.9-1980;R1989 Evaluation of Ground Water Supply for Nuclear Power Sites	240005	$72.00
ANS-2.10-1979 Guidelines for Retrieval, Review, Processing and Evaluation of Records Obtained from Seismic Instrumentation	240006	$66.00

HISTORICAL STANDARDS

ANS Designation	Order #	Price
ANS-2.11-1978;R1989 Guidelines for Evaluating Site-Related Geotechnical Parameters at Nuclear Power Sites	240007	$100.00
ANS-2.12-1978 Guidelines for Combining Natural and External Man-Made Hazards at Power Reactor Sites	240008	$121.00
ANS-2.13-1979;R1988 Evaluation of Surface-Water Supplies for Nuclear Power Sites	240009	$90.00
ANS-2.17-1980;R1989 Evaluation of Radionuclide Transport in Ground Water for Nuclear Power Sites	240010	$84.00
ANS-2.19-1981;R1990 Guidelines for Establishing Site-Related Parameters for Site Selection and Design of an Independent Spent Fuel Storage Installation	240094	$107.00
ANS-2.25-1982;R1989 Surveys of Terrestrial Ecology Needed to License Thermal Power Plants (Formerly known as ANS-18.5)	240110	$92.00
ANS-3.2-1994;R1999 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants	240198	$116.00
ANS-3.3-1988 Security for Nuclear Power Plants	240169	$60.00
ANS-3.4-1983;R1988 Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants	240114	$36.00
ANS-3.5-1993 Nuclear Power Plant Simulators for Use in Operator Training and Examination	240191	$66.00
ANS-3.7.1-1995 Facilities and Medical Care for On-Site Nuclear Power Plant Radiological Emergencies	40213	$48.00
ANS-3.8.1-1995 Criteria for Radiological Emergency Response Functions and Organizations	240208	$84.00
ANS-3.8.2-1995 Criteria for Functional and Physical Characteristics of Radiological Emergency Response Facilities	240209	$48.00
ANS-3.8.3-1995 Criteria for Radiological Emergency Response Plans and Implementing Procedures	240210	$48.00
ANS-3.8.4-1995 Criteria for Maintaining Radiological Emergency Response Capability	240211	$36.00
ANS-3.8.5-1992 Criteria for Emergency Radiological Field Monitoring, Sampling, and Analysis	240190	$42.00
ANS-3.8.6-1995 Criteria for the Conduct of Offsite Radiological Assessment for Emergency Response for Nuclear Power Plants	240212	$48.00

HISTORICAL STANDARDS

ANS Designation	Order #	Price
ANS-3.11-2000 Determining Meteorological Information at Nuclear Facilities	240241	$97.00
ANS-4.5-1980;R1986 Criteria for Accident Monitoring Functions in Light-Water-Cooled Reactors	240020	$54.00
ANS-5.1-1994 Decay Heat Power in Light Water Reactors	240200	$114.00
ANS-5.4-1982 Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel	240107	$36.00
ANS-6.1.1-1991 Neutron and Gamma-Ray Fluence-to-Dose Factors	240179	$78.00
ANS-6.1.2-1989 Neutron and Gamma-Ray Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants	240174	$30.00
ANS-6.4-1997;R2004 Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants	240223	$148.00
ANS-6.4.2-1985;R1997; R2004 Specifications for Radiation Shielding Materials	240136	$140.00
ANS-6.4.3-1991 Gamma-Ray Attenuation Coefficients and Buildup Factors for Engineering Materials	240180	$168.00
ANS/HPSSC-6.8.1-1981 Location and Design Criteria for Area Radiation Monitoring Systems for Light Water Nuclear Reactors	240089	$54.00
ANS/IEEE-7.4.3.2-1982;R1990 Standard Criteria for Digital Computers in Safety Systems of Nuclear Power Generating Stations	240106	$48.00
ANS-8.1-1983;R1988 Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors	240118	$66.00
ANS-8.3-1986 Criticality Accident Alarm System	240147	$54.00
ANS-8.5-1986 Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material	240142	$48.00
ANS-8.7-1975;R1982;R1987 Guide for Nuclear Criticality Safety in the Storage of Fissile Materials (Formerly known as N16.5)	240031	$66.00
ANS-8.9-1987;R1995 Nuclear Criticality Safety Guide for Pipe Intersections Containing Aqueous Solutions of Enriched Uranyl Nitrate	240149	$42.00
ANS-8.17-1984;R1997 Criticality Safety Criteria for the Handling, Storage and Transportation of LWR Fuel Outside Reactors	240216	$30.00

HISTORICAL STANDARDS

ANS Designation	Order #	Price
ANS-8.19-1996 Administrative Practices for Nuclear Criticality Safety	240219	$24.00
ANS-8.23-1997 Nuclear Criticality Accident Emergency Planning and Response	240228	$36.00
ANS-10.2-1988 Recommended Programming Practices to Facilitate the Portability of Scientific and Engineering Computer Programs	240164	$36.00
ANS-10.3-1995 Documentation of Computer Software	240201	$42.00
ANS-10.5-1994 Accommodating User Needs in Computer Program Development	240196	$42.00
ANS-14.1-1975;R1982; R1989;R2000 Operation of Fast Pulse Reactors (Formerly known as N394)	240040	$22.00
ANS-15.1-1990;R1990 The Development of Technical Specification for Research Reactors	240176	$54.00
ANS-15.2-1990 Quality Control for Plate-Type Uranium-Aluminum Fuel Elements	240175	$42.00
ANS-15.7-1977;R1986 Research Reactor Site Evaluation	240046	$48.00
ANS-15.8-1976;R1986 Quality Assurance Program Requirements for Research Reactors (Formerly known as N402)	240047	$30.00
ANS-15.10-1994 Decommissioning of Research Reactors	240199	$90.00
ANS-15.11-1987 Radiation Protection at Research Reactor Facilities	240161	$48.00
ANS-15.12-1977 Design Objectives for and Monitoring of Systems Controlling Research Reactor Effluents	240049	$24.00
ANS-15.15-1978;R1986 Criteria for the Reactor Safety Systems of Research Reactors	240050	$48.00
ANS-15.19-1991 Shipment and Receipt of Special Nuclear Material (SNM) by Research Reactor Facilities	240181	$72.00
ANS-16.1-1986 Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure	240148	$114.00
ANS-18.1-1984 Radioactive Source Term for Normal Operation of Light Water Reactors	240130	$66.00

HISTORICAL STANDARDS

ANS Designation	Order #	Price
ANS-19.1-1983;R1989 Nuclear Data Sets for Reactor Design Calculations	240121	$48.00
ANS-19.3-1995 Determination of Steady State Neutron Reaction Rate Distributions and Reactivity of Nuclear Reactors	240216	$92.00
ANS-19.3.4-1976; R1983;R1989 The Determination of Thermal Energy Deposition Rates in Nuclear Reactors (Formerly known as N676)	240056	$42.00
ANS-19.5-1995 Requirements for Reference Reactor Physics Measurements	240206	$24.00
ANS-19.6.1-1997 Reload Startup Physics Tests for Pressurized Water Reactors	240225	$95.00
ANS-40.35-1991 Volume Reduction of Low-Level Radioactive Waste or Mixed Waste	240182	$84.00
ANS-40.37-1993 Mobile Radioactive Waste Processing Systems	240192	$104.00
ANS-51.1-1983;R1988 Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants	240116	$155.00
ANS-51.10-1979 Auxiliary Feedwater System for Pressurized Water Reactors	240062	$84.00
ANS-52.1-1983;R1988 Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants	240117	$152.00
ANS-54.1-1989 General Safety Design Criteria for a Liquid Metal Reactor Nuclear Power Plant	240171	$60.00
ANS-54.2-1985 Design Bases for Facilities for LMFBR Spent Fuel Storage in Liquid Metal Outside the Primary Coolant Boundary	240138	$54.00
ANS-54.8-1988 Liquid Metal Fire Protection in LMR Plants	240168	$60.00
ANS-55.1-1979 Solid Radioactive Waste Processing System for Light Water Reactor Plants	240065	$79.00
ANS-55.4-1979 Gaseous Radioactive Waste Processing System for Light Water Reactor Plants	240066	$121.00
ANS-55.6-1979 Liquid Radioactive Waste Processing System for Light Water Reactor Plants	240067	$112.00

HISTORICAL STANDARDS

ANS Designation	Order #	Price
ANS-56.2-1984;R1989 Containment Isolation Provisions for Fluid Systems After a LOCA	240135	$133.00
ANS-56.3-1977;R1987 Overpressure Protection of Low Pressure Systems Connected to the Reactor Coolant Pressure Boundary	240069	$42.00
ANS-56.4-1983;R1988 Pressure and Temperature Transient Analysis for Light Water Reactor Containments	240127	$104.00
ANS-56.5-1979;R1987 PWR and BWR Containment Spray System Design Criteria	240070	$97.00
ANS-56.6-1986 Pressurized Water Reactor Containment Ventilation Systems	240146	$78.00
ANS-56.7-1978;R1987 Boiling Water Reactor Containment Ventilation Systems	240072	$90.00
ANS-56.8-1994 Containment System Leakage Testing Requirements	240197	$102.00
ANS-56.10-1982;R1987 Subcompartment Pressure and Temperature Transient Analysis in LWRs	240109	$97.00
ANS-56.11-1988 Design Criteria for Protection Against the Effects of Compartment Flooding in LWR Plants	240166	$54.00
ANS-57.1-1980 Design Requirements for Light Water Reactor Fuel Handling Systems	240074	$54.00
ANS-57.2-1983 Design Requirements for Light Water Reactor Spent Fuel Storage Facilities at Nuclear Power Plants	240124	$95.00
ANS-57.3-1983 Design Requirements for New Fuel Storage Facilities at Light Water Reactor Plants	240112	$48.00
ANS-57.5-1981 Light Water Reactors Fuel Assembly Mechanical Design and Evaluation	240090	$66.00
ANS-57.7-1988;R1997 Design Criteria for an Independent Spent Fuel Storage Installation (Water Pool Type)	240170	$93.00
ANS-57.8-1978;R1987 Fuel Assembly Identification	240078	$30.00
ANS-57.9-1984 Design Criteria for an Independent Spent Fuel Storage Installation (Dry Storage Type)	240134	$130.00
ANS-57.10-1987 Design Criteria for Consolidation of LWR Spent Fuel	240162	$97.00

HISTORICAL STANDARDS

ANS Designation	Order #	Price
ANS-58.2-1988 Design Basis for Protection of Light Water Nuclear Power Plants Against the Effects of Postulated Pipe Rupture	240167	$142.00
ANS-58.3-1977 Physical Protection for Systems and Components Important to Safety (Formerly known as N182)	240080	$84.00
ANS-58.4-1979 Criteria for Technical Specifications for Nuclear Power Stations	240081	$72.00
ANS-58.6-1983;R1989 Criteria for Remote Shutdown for Light Water Reactors	240113	$42.00
ANS-58.8-1984 Time Response Design Criteria for Nuclear Safety Related Operator Actions	240131	$54.00
ANS-58.11-1983;R1989 Cooldown Criteria for Light Water Reactors	240115	$42.00
ANS-58.14-1993 Safety and Pressure Integrity Classification Criteria for Light Water Reactors	240203	$143.00
ANS-58.21-2003 External-Events in PRA Methodology	240248	$127.00
ANS-59.1-1986 Nuclear Safety Related Cooling Water Systems for Light Water Reactors	240143	$54.00
ANS-59.2-1985 Safety Criteria for HVAC Systems Located Outside Primary Containment	240141	$92.00
ANS-59.3-1984 Safety Criteria for Control Air Systems	240132	$36.00
ANS-59.51-1989 Fuel Oil Systems for Emergency Diesel Generators	240173	$60.00

Inquiries: Tel: 1 708 579 8269
Fax: 1 708 352 6464
Standards@ans.org

Phone Orders: Tel: 1 708 579 8210
Fax: 1 708 579 8314
E: scook@ans.org

Purchases can also be made through the ANS Website (ANS Store): www.ans.org