

**Addendum to
American Nuclear Society
Nuclear Facilities Standards Committee
Policy and Procedures Manual**

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FOREWORD

The American Nuclear Society (ANS) is accredited by the American National Standards Institute, Inc. (ANSI), for the purpose of developing standards useful to the nuclear community.

The ANS Standards Committee supports the following consensus committees:

N16	Nuclear Criticality Safety;
N17	Research Reactors, Reactor Physics, Radiation Shielding, and Computational Methods
NFSC	Nuclear Facilities Standards Committee, and
RISC	Risk Informed Standards Committee.

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.

The purpose of this manual is to provide guidance to all members of the NFSC, including its Subcommittees and Working Groups, regarding how the Committee desires to conduct its business. By following the policies and procedures contained herein, it is the Committee's expectations that a more uniform and predictable consensus standards process can be achieved. The Committee also hopes that consistent use of this manual will better facilitate the timely identification, review, approval, and maintenance of those new and existing standards within the scope of the Committee.

1.0 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.

2.0 ORGANIZATION

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 four consensus committees report directly to the Standards Board as shown in Figure 1.

The NFSC consists of the consensus committee (the "Committee"), eight 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.

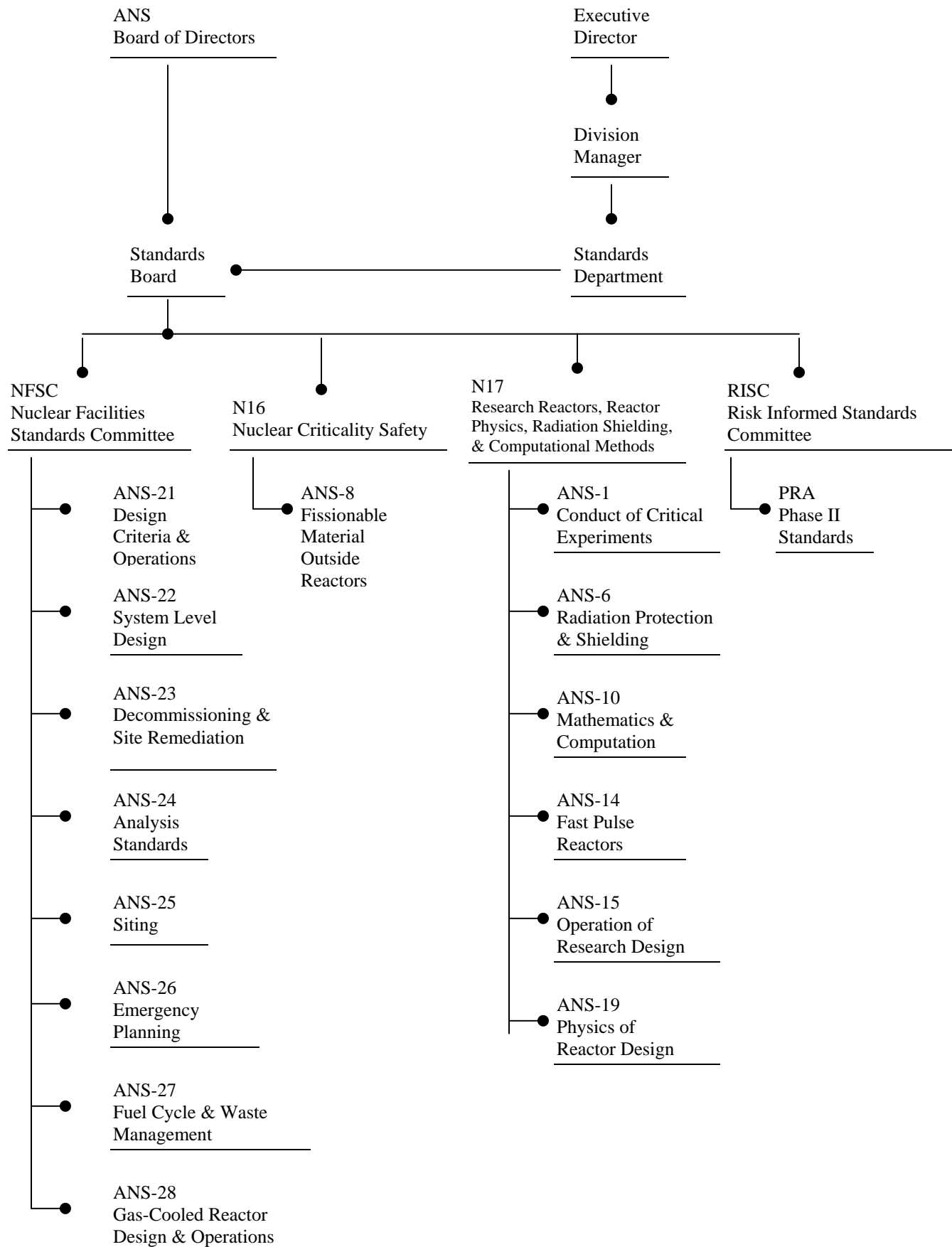
Subcommittees have been established to manage the activities of Working Groups and to perform detailed reviews of proposed standards for technical need, relevance, and acceptability. Each Subcommittee has been assigned a unique and specific area of technical responsibility. These Subcommittees have been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

ANS-21	Nuclear Facility Design Criteria & Operations
ANS-22	Nuclear Facility System Level Design Standards
ANS-23	Decommissioning & Site Remediation
ANS-24	Analysis Standards
ANS-25	Siting
ANS-26	Emergency Planning
ANS-27	Fuel Cycle & Waste Management
ANS-28	Gas-Cooled Reactor Design & Operations

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.

Information regarding the NFSC and its Subcommittee activities, including a calendar of upcoming events, can found on the ANS Standards Development Web site at <http://www.ans.org/standards/committees/nfsc>.

Figure 1 ANS Standards Committee Organization



3.0 MEMBERSHIP

3.1 NFSC Committee

The NFSC Chair shall appoint each member of the Committee. Members are selected to provide a broad spectrum of experience and expertise to the Committee. Opportunity for membership is provided to individuals and organizational representatives willing to participate and technically contribute to supporting standards activities. These include nuclear utilities, reactor suppliers, architect engineering construction companies, federal and state government agencies, national laboratories, the Nuclear Energy Institute, the Institute for Nuclear Power Operations, consultants, vendors, and individual subject matter experts.

Representation on the NFSC is kept as broad as possible, including having a representative from each type of organization (to the extent possible) and other nuclear related standards developing organizations. Multiple representation from a single organization is discouraged. To ensure a proper balance of interests, not more than one-third of the membership shall be drawn from any particular interest group.

3.2 Subcommittees

The NFSC Chair shall establish Subcommittees as needed to accomplish Committee objectives. A Chair for each Subcommittee is appointed for a term of three years. Each Subcommittee Chair shall also be a member of the NFSC and its Executive Committee. The NFSC Chair's organization plan and Subcommittee appointments shall be with the concurrence of the Committee.

Each member of a Subcommittee shall have experience and competence in the areas for which the Subcommittee is responsible. Multiple representation from a single organization is discouraged and an effort shall be made to include a representative from each type of organization that has a material interest in the standards that are within the scope of the Subcommittee. To ensure a proper balance of interests, not more than 40% of the Subcommittee membership should be from any particular interest group.

3.3 Working Groups

Subcommittee Chairs shall establish Working Groups as needed to discharge Subcommittee responsibilities. A Chair for each Working Group is appointed for a term of three years. Each Working Group Chair should be a member of the Subcommittee. The Subcommittee Chair's organization plan and Working Group appointments shall be with the concurrence of the Subcommittee.

The Working Group Chair shall be responsible for the selection of its members. The Chair should request assistance in this selection from the responsible Subcommittee. The composition of the Working Group should include a balanced representation from the principal designers of the system or technology that is the subject of the standard and the user community. Each member should have a direct interest and expertise in the area under consideration.

The size and diversity of the Working Group shall be flexible, consistent with the goals of efficiency, user interest, and useful technical content of the proposed standard. Although members should be drawn from a spectrum of involved interests, the total membership should be kept as small as possible to enhance close working relationships and good communication (four to eight people, including a member of the responsible regulatory agency). This balanced representation is different from the concept of balance used in establishing consensus bodies, which involves representation from all interested parties.

4.0 NFSC OFFICERS AND EXECUTIVE COMMITTEE

4.1 Officers

The officers of the NFSC shall consist of a Chair, Vice-Chair, and Secretary. The Chair and Vice-Chair shall be members of the Committee and be elected by the Committee for terms of three years.

The Chair shall preside at all meetings of the Committee and perform such duties as are customarily required by this office.

Duties of the Vice-Chair are to conduct Committee meetings in the absence of the Chair and to serve as the NFSC Standards Coordinator. The NFSC Standards Coordinator shall assist the NFSC Secretary in maintaining the current status of all NFSC standards and also assist Subcommittee Chairs with issues related to standards development and maintenance. As requested, the Vice-Chair shall also serve as Chair of Special Committees.

The ANS Standards Administrator serves on the Committee as its Secretary and assists in administrative matters. The Secretary is responsible for required notification of the consensus balloting process, including the distribution of drafts of proposed standards and ballot forms and collection and documentation of balloting results. The Secretary shall also record and distribute minutes of meetings to all members and maintain the records of the Committee.

4.2 Executive Committee

The NFSC Chair shall appoint an Executive Committee, which consists of the Chair and Vice-Chair, each Subcommittee Chair, and other designated individuals, as the NFSC Chair deems appropriate. The duties of the Executive Committee are to assist the NFSC Chair in strategic decisions regarding ongoing and planned activities of the Committee and support the Vice-Chair and Secretary in maintaining the status of NFSC standards.

5.0 NFSC BUSINESS CONDUCT

5.1 Quorum and Meeting Requirements

The Committee shall meet at least twice in each calendar year, and members are expected to attend all meetings. When it is not possible to attend a particular meeting, the member is expected to be represented by a designated alternate, who shall have all the privileges and obligations of the member during the period of service in this capacity.

A quorum must be present for the Committee to conduct a formal vote. A quorum consists of over 50% of the voting membership of the Committee.

When discussion indicates a pronounced difference of opinion on any question, the NFSC Chair shall call for a formal vote and that vote shall be recorded in the minutes. An affirmative vote requires a majority of those present at a meeting voting in favor. A simple majority of those present applies to all official actions except the consensus balloting on standards.

The NFSC Chair periodically reviews the effectiveness of each member's participation, including voting records and attendance at meetings, and has the authority and obligation to adjust the Committee membership as deemed necessary to ensure the continued effectiveness of the NFSC.

5.2 Schedule for Review of Proposed Standards

The time provided to NFSC members for review or to ballot a proposed standard should be at least six weeks prior to the meeting at which the comments are scheduled to be discussed or the ballot closing date, as appropriate. The NFSC Chair may, if necessary, shorten the period for the ballot review if the Committee had recently reviewed an earlier draft and there is a substantial demand for the standard by the user community.

Every effort should be made by the Working Group Chair, Subcommittee Chair, NFSC Chair, and Secretary to expedite the process so that review or ballot comments can be made available to the Working Group at least ten days prior to the Committee meeting at which the comments are scheduled to be discussed.

5.3 Balloting Process

Proposed revisions, reaffirmations, and new standards shall be submitted for letter ballot approval by the members of the Committee. Unless considered inappropriate by the Chair, concurrent public review procedures, through the Board of Standards Review of the American National Standards Institute, shall be employed. All proposed revisions, reaffirmations, and new standards shall be announced in Nuclear News in conjunction with the announcement made for concurrent public review in the ANSI Reporter.

The NFSC Ballot Form shall be used to record the vote of each voting member. This form is available electronically on the ANS Standards Development Web site (see Section 8.0 of this manual). Completed (signed) ballots may be returned to the Secretary either by mail, fax, or electronically. As shown on the Ballot Form, Committee members shall use one of the following categories to record their vote:

Approved.

The balloter marking this choice is declaring satisfaction with the draft as written.

Approved with Comments.

The balloter marking this choice is declaring acceptability of the draft and is requesting that the Working Group consider the balloter's written comments and proposed solutions, which shall be appended to the ballot.

Not Approved.

The balloter marking this choice is declaring the unacceptability of the draft as written and that no standard at all is preferable to the current draft. The balloter shall append written comments and proposed solutions. The balloter shall also clearly identify those contingent comments, the satisfactory resolution of which would elevate the ballot to "Approved with Comments," or if not resolved to the balloter's satisfaction, would permit the balloter the right to submit, for the final record, the "Not Approved" status.

Not Voting.

The balloter marking this choice is declaring that, upon due consideration, no other ballot choice is appropriate. The reason for this choice shall be appended (e.g., lack of necessary expertise). Lack of time to review the draft is not an acceptable reason. Ballots marked "Not Voting" are included in the ballot tally for determining whether consensus has been achieved.

Copies of ballots containing comments shall be sent to the Subcommittee and Working Group for action and resolution (see Section 6.4 of this manual). The Working Group must attempt to

resolve all “Not Approved” (negative) ballots and adverse comments. Other comments may be grouped and responded to collectively. A summary of these communications shall be retained as a part of the consensus-forming history of the proposed standard.

If a substantive change is made to a document to resolve a negative vote, the proposed standard shall be resubmitted to the NFSC for either formal (i.e., written) vote or letter ballot. The NFSC Chair, in consultation with the Subcommittee Chair, shall determine if the change is substantive. Final determinations shall be made by the NFSC Chair.

Each negative balloter shall review the resolutions proposed by the Working Group and, if acceptable, change the ballot to an “Approved” or “Approved with Comments” status. The balloter shall do so in writing to the Secretary, with a copy to the Subcommittee and Working Group Chair. If not acceptable, the balloter should notify the Subcommittee and Working Group Chair in writing of the basis for this decision. The balloter and the Subcommittee and/or Working Group Chair shall make a reasonable attempt to resolve any such issues. If, in the opinion of the Subcommittee and Working Group Chair, the issues cannot be resolved, they shall notify the Secretary in writing and provide copies of relevant materials. The Secretary shall inform all of the members of the Committee in writing, including supporting materials for reconsideration. The Committee members shall be given a reasonable opportunity to revise their ballots in light of the disagreement existing on the proposed standard.

The NFSC Chair shall use the formula shown below, in conjunction with the definitions provided in this section, to determine if consensus has been reached.

- a. Consensus for approval permitted if the following equation is satisfied and if the vote count represents a reasonable balance of interests of the entire committee:

$$\frac{A}{A+D+B+N} > 1/2.$$

- b. Consensus for approval dictated if the following equation is satisfied:

$$\frac{A}{A+D+B+N} \geq 2/3,$$

where

A - Approved, including approved with comments
 D - Not Approved
 B - Not Voting
 N - Ballots not received.

If, in the final ballot tally, a majority of all ballots received are affirmative, and if these ballots represent a reasonable balance of interests of the entire Committee, the NFSC Chair may determine that consensus for approval exists. If two-thirds or more of all eligible balloters have balloted affirmatively, it is mandatory that consensus for approval be declared by the NFSC Chair.

After Committee approval, proposed standards, revisions, and reaffirmations are submitted to the Standards Board. The Standards Board shall certify that the governing procedures have been followed and that consensus has been achieved. The Standards Administrator then submits the proposed standards, revisions and reaffirmations to the Board of Standards Review of ANSI for approval as American National Standards. The steps in the development of a standard identifying how consensus is achieved are illustrated in Figure 2.

5.4 Preparation of Review and Ballot Comments

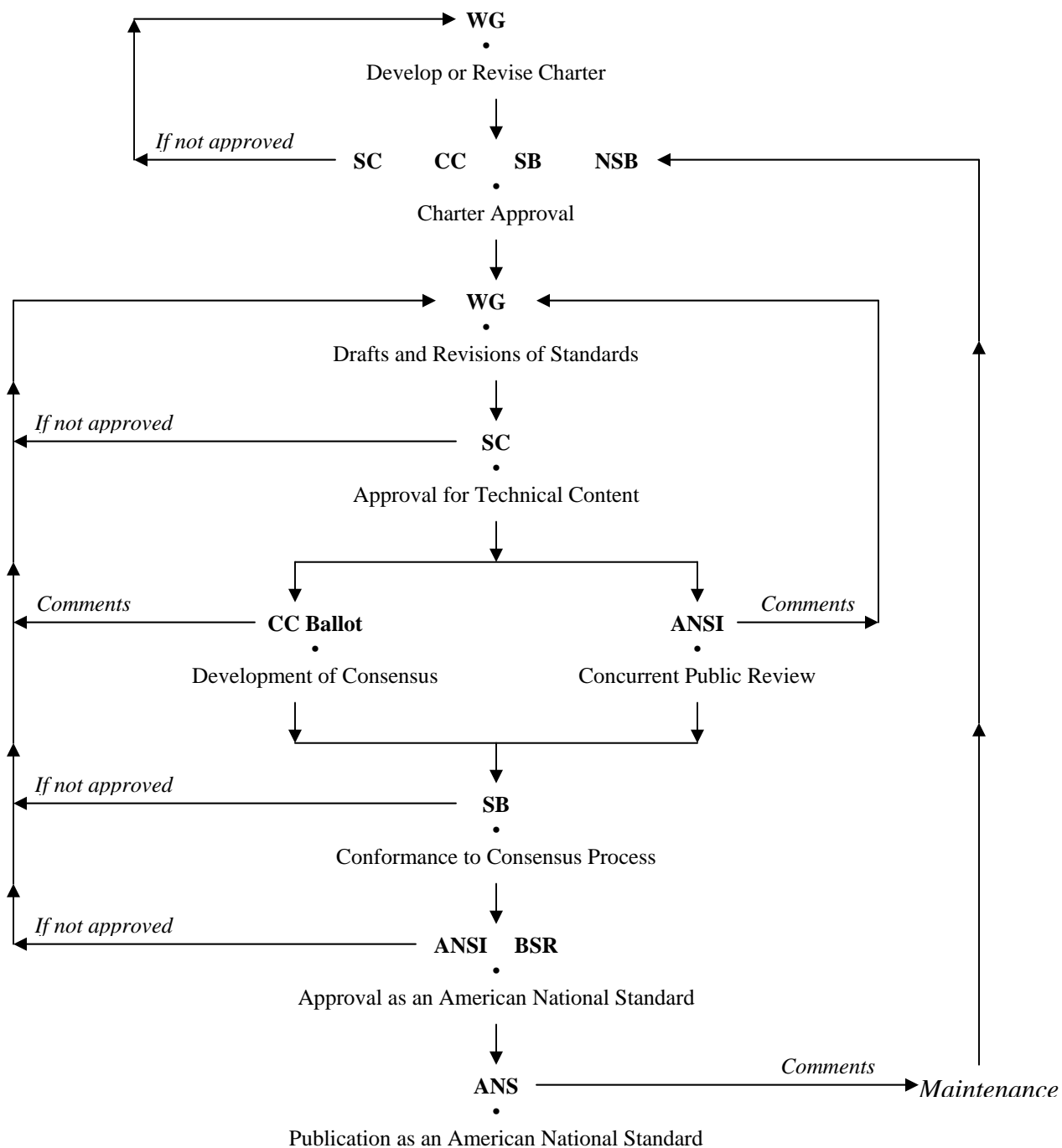
The NFSC Standards Comments and Resolutions Form shall be used to document comments and their resolution during review and balloting of proposed new, revised, or reaffirmed Standards. This form is to accompany the Ballot Form when members record their votes as either "Approved with Comments" or "Not Approved." The form is available electronically on the ANS Standards Development Web site (see Section 8.0 of this manual).

When using this form, the balloter should perform all of the following steps:

- a. Enter the title of the standard on the first line, including personal data (name, phone number, organization, and address). To guard against the sheets getting separated, show at least the balloter's name and the standard number on each successive sheet. Indicate sheet number of each sheet.
- b. Consolidate the comments received from within the balloter's organization and record these comments on the form. Clearly identify and articulate the basis for all "Not Approved" (negative) ballot comments and what must be done to correct the standard. Offer a suggested solution (i.e., recommendation) for each comment.
- c. Indicate each separate comment with a sequential number in the first column. Identify a page number reference for each comment in the second column. Where no page number exists in a draft standard, use Roman lower case numerals for all preliminaries from the title sheet to the body and Arabic numbers for the text of the standard itself.
- d. Indicate the location of the comment in the third column (Sec/Para) to identify more narrowly than can be done with a page number. When considered necessary, use the first part of the comment to refine further the exact location of a given comment.

Copies of the completed forms should be attached to the Ballot Form and sent to the Secretary prior to the consensus ballot closing date. These forms may be returned either by mail, fax, or electronically.

Figure 2 **Steps in the Development of a Standard**



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

6.0 SUBCOMMITTEE AND WORKING GROUP CONDUCT

6.1 Identification of Need and Approval to Develop a New Standard

Proposals for the writing of a new standard may be made by any individual and should be made to the NFSC or one of its Subcommittees. The first detailed discussion of the need for and feasibility of a proposed standard should take place in the appropriate Subcommittee. If the discussion results in a positive decision by the Subcommittee, the proposal is presented to the NFSC for its consideration. If the Committee is also favorable toward proceeding with the development of a new standard, the responsible Subcommittee Chair shall be directed to identify and select a Working Group Chair and request that the selected Chair prepare a project charter and initiate preparation of a Project Initiation Notification System (PINS) Form. The PINS Form is available electronically on the ANS Standards Development Web site (see Section 8.0 of this manual).

Detailed instructions for properly completing the PINS Form are provided below. If requested by the Working Group Chair, the NFSC Secretary and/or responsible Subcommittee Chair shall provide assistance in the timely completion of the PINS Form.

Top of Form

Enter the date that the form was completed for transmittal to ANSI.

1. Designation of Proposed Standard:
This is the unique alphanumeric code used by the standards developer to refer to the project. It is the reference usually used when inquiries are received. "ANSI" should not be included in this designation as the pending project is not yet an American National Standard.
2. Title of Standard:
This is the full title of the standard that is the subject of the form.
3. Project Intent:
Check the line that corresponds to the type of action intended. The project intent relates to the status of the standard within the American National Standards process only. Note that a PINS Form is required only for a new ANS Standard or a revision to an existing ANS Standard. Include the designation of the standard being acted upon. If an International Standard is to be adopted as an American National Standard, please indicate the designation of the International Standard on the appropriate line and be sure that your organization is eligible to adopt the standard in compliance with applicable policies approved by the ANSI Board of Directors.
4. This standard contains excerpted text from an international standard but is not an ISO or IEC adoption.

Check here if this standard includes excerpted text from an ISO (International Organization for Standardization) or IEC (International Electro-technical Commission) standards but is not an identical or modified adoption of an international standard.
5. Provide an explanation of the need for the project:
State the need and benefits of developing the standard for the industry.
6. Identify the stakeholders likely to be directly impacted by the standard:
State those likely to be directly impacted by the standard (e.g., nuclear utilities, federal and/or state agencies, reactor designer, regulatory agencies, environmental, etc.).

7. Scope Summary (Description of Contents of Standard):
For the purpose of coordination of standards activity, this section of the form is a key element. The information should clearly indicate what is covered by the standard in order to differentiate it from similar standards on file at ANSI. (500 character maximum)
8. Consumer Product or Service:
Check the box provided if the project covers a consumer product or service.
9. Units of Measurement:²
Check the unit of measure used in the project (i.e., metric units, English, both). If no measurements are included in the project, select "NA."
10. Accredited Standards Developer Acronym:
The acronym of the standards developer having responsibility for the project should be entered here. If the project is a joint project, the standards developer assuming administrative responsibility for the project should be entered.
11. Submitter:
This is typically the ANS Standards Administrator who will be contacted should there be a need for additional information or consideration with regard to the project.

When completed, the PINS Form should be reviewed by all Working Group members to the extent practical. The form should then be reviewed by the responsible Subcommittee. The Subcommittee Chair shall also ensure that the instructions for completing the PINS Form have been appropriately followed. Following Subcommittee Chair review, the PINS Form is submitted for approval to the NFSC, the Standards Board, and ANSI. During this review period, the Working Group shall proceed with preparation of the draft standard unless directed otherwise by the NFSC.

6.2 Standards Development Activities

After the selection of the Working Group membership and the preparation of a draft project charter, the Working Group Chair should hold a group meeting to complete and agree on the final project charter. A membership list is prepared, including name, affiliation, address, and telephone number. This list is then sent to the NFSC Secretary and the responsible Subcommittee Chair.

The content of the standard should be set at the first meeting of the Working Group and a tentative schedule established. A standard format guide shall be used where available in establishing the projected content. The Subcommittee Chair shall attend this first meeting to explain to the Working Group how the NFSC conducts its business and all related policies. The Subcommittee Chair will also instruct that a copy of all correspondence prepared by the Working Group in the development of the proposed standard is sent directly to the NFSC Secretary and that all correspondence to the NFSC is sent through the Subcommittee Chair. Lastly, the Subcommittee Chair shall encourage the Working Group to establish a schedule that results in a draft standard ready for review within 12 to 18 months from the date of this kickoff meeting.

Members of the Working Group should leave the first meeting with an in-depth understanding of the project, its expected end use, and a specific assignment for preparing a portion of the standard. A general outline of the draft standard and schedule for completion shall be developed and provided to the

*A "soft" conversion is the change in the description, but not in the dimension, of an existing measurement to express it in metric terms. A soft conversion results from the mathematical conversion of inch-pound units to SI.

A "hard" conversion is the change of dimensions and/or properties of a product into new sizes that may not be interchangeable with the sizes of the existing measurement produced under inch-pound specifications.

For metric usage, please refer to ANSI/ASTM/IEEE SI-10.

responsible Subcommittee Chair who, in turn, shall inform the NFSC at its next scheduled meeting. The outline and schedule for developing the standard is expected to be sufficiently detailed and should be reviewed at each Working Group meeting or teleconference. Significant changes to the schedule shall be promptly communicated to the Subcommittee Chair who shall keep the NFSC apprised of the most realistic schedule.

At this initial meeting, the Working Group shall carefully evaluate whether or not a performance-based approach lends itself to the development of the draft standard. The adoption of a performance-based standard may help make the ANS standards effort more effective and efficient. A performance-based standard focuses on attaining specific objectives. Identifying these objectives clearly is one of the most important functions of the Working Group. Once a standard is developed with properly identified objectives and approved for use, it is anticipated that there would be no need to make further revisions to the standard, unless the objectives themselves change, which is highly unusual. Hence, a performance-based standard can be expected to be valid for much longer periods of time. A structured approach for developing a performance-based standard is presented in Appendix A. Should the Working Group elect to develop a performance-based standard, the Subcommittee Chair shall be notified and the PINS Form modified accordingly.

The Working Group should meet until a thorough draft is prepared, consistent with the appropriate format and style guides. The group may include more material in this draft than is realistically expected to be contained in the final document. The group should consider use of a value-impact assessment in preparing the standard and in responding to the comments received. The assessment should be reserved for consideration of the major problem areas and major topics of controversy. It consists of the following five steps:

- a. Define the problem to be solved. Designs, methods, and tests called for by a standard can usually be specified in more than one acceptable way and it is not always clear which choice is preferred.
- b. Identify the different approaches that can be taken to solve the problem.
- c. Attempt to determine the impact of each approach on safety and other safety systems, cost, schedule, regulatory acceptance, and engineering feasibility. Care should be taken not to become too involved or detailed in this process or the technique will lose its effectiveness. It is more important to assess the relative importance of these factors for the problems being considered.
- d. Determine the relative effectiveness of each alternative considering the potential impact and priority of each factor identified in step (c) above.
- e. Make a selection based on step (d) and by comparing the overall impact of each proposed solution to the importance of the problem itself.

6.3 Subcommittee Review of Draft Standards

When the Working Group has reached agreement that a draft standard is ready for external review and comment, the draft shall be sent to the responsible Subcommittee Chair for Subcommittee review. Technical comments are provided back to the Working Group for resolution. At this time, the Subcommittee Chair may elect to send the draft standard to the NFSC Secretary for an editorial review, as appropriate. When the Working Group has satisfactorily addressed Subcommittee comments, the draft standard is considered ready for NFSC review.

6.4 Review and Approval Process

Depending on its workload and member availability, the NFSC may elect to perform two reviews:

- a. A technical review in parallel with or following the Subcommittee review and
- b. A review to form the basis for the consensus ballot. Note that a public review is held by ANSI in parallel with or following this ballot.

When the results of an NFSC review or ballot are to be discussed at a scheduled Committee meeting, the Working Group Chair (or designated alternate) shall be present to clarify the intent of the draft standard and help resolve the comments. In addition, the entire Working Group is encouraged to attend the NFSC review session(s) to better understand the comments and to hold a concurrent meeting to resolve Committee comments and revise the draft standard. The Working Group shall respond to all ballot comments within 90 days after ballot closure.

When a draft standard is submitted for ballot, all technical changes made from the previously reviewed draft shall be clearly indicated (e.g., by sidebars and showing any deleted or inserted text). In the case of a consensus ballot, it is necessary to respond to each negative comment, but other comments may be consolidated into a single reply for the purpose of responding to all commenters.

In the case of “Not Approved” (negative) ballots from the consensus ballot, the Working Group shall write to each negative balloter and request that the ballot be reconsidered based on the new draft prepared in response to all comments. If this process results in one or more negative ballots being retained, all NFSC members shall be given an opportunity to reconsider their ballots, taking into account the negative ballots and the reasons therefore.

In the case of comments received from the ANSI public review, the Working Group shall respond to each commenter with a copy to ANSI. The letter of response shall include notification that the commenter has 15 working days in which to reply if not satisfied with the attempted resolution of the comments.

Utilization of the Standards Comments and Resolutions Form (see Section 6.5 of this manual) eliminates having to write individual letters of response. The Working Group should prepare a general cover letter, a copy of the comment resolution forms, and a copy of the revised draft standard to send to each commenter. As a minimum, the Working Group shall include the rewritten portion of the standard when a substantial change has been made to resolve one or more comments.

After completion of the consensus ballot, completion of the required response to each commenter (with formal requests for withdrawal of any negative ballots), and reconsideration of ballots has been permitted (if needed because of outstanding negative ballots), the NFSC Chair shall determine if consensus has been achieved (see Section 5.3 of this manual).

Upon determination of consensus, the Standards Board shall certify that all consensus procedures have been followed. ANSI is then notified that consensus for approval has been achieved, and approval by the ANSI Board of Standards Review is requested.

The Working Group Chair assists the ANS staff with editing and publication details, as necessary, and shall have the opportunity to review the document prior to release for printing. ANS staff then proceeds with final publication of the standard. All Working Group members receive a copy of the printed standard. In addition, members of NFSC may request a copy.

6.5 Resolution of Review and Ballot Comments

As stated earlier in Section 5.5, the NFSC Standards Comments and Resolutions Form is used to document comments and their resolution during review and balloting of proposed new, revised, or

reaffirmed Standards. This form is to accompany the Ballot Form when members record their votes as either "Approved with Comments" or "Not Approved."

In responding to comments, the Working Group shall take the following steps:

- a. Enter personal data (i.e., name, phone number, organization, address) in the spaces provided at the right side of the form.
- b. Clearly indicate in the box provided where acceptance of the comment is essentially total. For such cases, no explanation is needed, although explanations are welcomed.
- c. Where comments are accepted in part or not accepted, use the space under "Resolution of Comments" to set forth the rationale for nonacceptance of all or part of the comment. Do not simply indicate disagreement or the fact that such suggestions were previously considered. Offer a technical basis for not being able to accept the comment.
- d. Upon satisfactory completion of the individual forms, the Working Group Chair or other designated individual shall forward copies to the commenter and to the NFSC Secretary.

Both responses and comments may be consolidated by subject or location, if the Working Group believes this is more efficient. It is helpful to supply portions of the text that have had substantive revisions made along with comment responses. Responses other than acceptance should include a rationale, such as the technical basis, a compromise among conflicting expert opinion, or specific reference to a governing authority.

The Working Group shall send copies of all comment responses, accompanying letters, and responses back from balloters to the NFSC Secretary. Upon receipt of replies from each negative balloter, the Working Group Chair and the NFSC Secretary shall discuss the final ballot tally and agree on the results.

Frequently, a Working Group carefully addresses the comments forming the basis of a negative ballot but essentially ignores other comments offered by the balloter. It is acceptable to give priority to negative comments, but it is unacceptable to dismiss other comments as insignificant.

The responsible Subcommittee Chair carefully reviews all comment responses to ensure that the replies are affirmative, responsive, and include a rationale for decision. The NFSC Chair performs a similar review emphasizing controversial and negative comments prior to releasing each standard for final certification.

The types of comment responses to be avoided:

"This was discussed by the Working Group during preparation of the draft standard and was

- a. not used,
- b. decided against, or
- c. found not practical, etc."

"Not accepted"

"This comment disagreed with

- a. someone else's comment, or
- b. a comment made during the Subcommittee review, etc."

Appropriate replies include a technical basis for the decision, a reason for deciding on a particular phrasing, a rationale for compromising among conflicting requests, or the fact that specific direction was given by the Committee regarding scope or content.

Each balloter has an obligation to make substantial, technically based comments and to include alternate words or adequate discussion upon which new words can be logically included. Both the balloter and the Working Group shall adhere to technical issues and avoid frivolous and unsubstantiated comments.

The Working Group shall provide a written response to each negative balloter individually. This letter shall request that the balloter upgrade the "Not Approved" (negative) ballot to indicate "Approved" or "Approved with Comments" based on the Working Group's responses to the negative comments. A review period of 30 days shall be indicated for the balloter to respond. The letter shall also request that specific reasons be provided if the balloter disagrees with the Working Group's attempted resolution of the negative comments.

Any difficulty in getting timely responses from negative balloters shall be brought to the attention of the responsible Subcommittee Chair, the NFSC Secretary, and the NFSC Chair in that order and to the extent necessary.

If one or more negative ballots remain unresolved, the NFSC Secretary shall ask those Committee members who originally voted to reconsider their position in view of the outstanding negative ballots. Appropriate background material pertaining to those negative ballots shall also be sent. A review period of 30 days is set, during which members may change their votes. No response is necessary unless a balloter decides to change the initial ballot and submit supporting technical reasons. When all negative ballots have been cleared or reconsideration has been completed, the responsible Subcommittee Chair and the NFSC Chair shall review the documentation and the revised standard.

In the event major changes have been made in the standard, a rebalot shall take place and the above procedure repeated. The NFSC Chair in consultation with the cognizant Subcommittee Chair and Working Group Chair shall determine the need for rebalot.

7.0 POLICY STATEMENTS

The policies of the NFSC are presented in this section. In addition, the Standards Board has issued a separate set of policies, some of which directly relate to the way the NFSC, its Subcommittees, and Working Groups conduct business. The current Standards Board policies can be obtained directly from the NFSC Secretary.

7.1 Referencing of NRC Regulatory Guidance Documents

The purpose of this policy statement is to provide an acceptable method to Working Groups for addressing the content of existing regulatory guidance documents in the creation of standards that (a) cover essentially the same scope or requirements, (b) have requirements that overlap, or (c) have interfacing requirements.

Any criteria or passages from regulatory guidance documents should be used, either verbatim or paraphrased, that are deemed to adequately express the intent of the Working Group. There are no copyrights on regulatory guidance documents and such practice is generally acceptable to the various regulatory agencies. The content of such criteria shall be subjected to the consensus process along with the rest of the standard. The test of such a criterion is its survival in this process.

Direct referencing of regulatory guidance documents is not permitted within the text of a standard. Where the above practice is not suitable, citation of a specific regulatory guidance document shall be presented in a footnote and shall include the revision number and date of issue.

7.2 Referencing of Industry Standards and Government Regulations

The purpose of this policy statement is to provide an acceptable method to the Working Groups for referencing industry standards and government regulations. The methods outlined herein accommodate approved standards and regulations, draft standards, and proposed regulations.

Section 6.6 of the ANSI Style Manual for Preparation of Proposed American National Standards sets forth criteria for referencing American National Standards and articles in periodicals and books, but does not address draft standards, trial-use standards, proposed regulations, or approved (codified) regulations.

For the purposes of this policy, any standard not yet officially designated as an American National Standard is considered a draft or a trial-use standard. Working Groups that find it expeditious to cite in-process standards need to exercise care in this regard. Working Groups shall not make direct reference to draft or trial-use standards in the text of their standard because this has the effect of incorporating unapproved standards. Quoting or paraphrasing from a draft or trial-use standard within the text is also discouraged but such information may be located, as are direct references, in a footnote or an appendix. Information in the text of the standard shall be for guidance only, never a requirement, since the referenced draft or trial-use standard has not yet achieved consensus. The footnote or appendix note shall give complete information on the draft or trial-use standard. The note shall include the title, the proposed ANSI number or the Working Group number, the status (draft number or trial-use status, revision number, and date), and the Working Group Chair's name and contact information.

Proposed regulations (or regulation revisions) are published in the Federal Register together with a preamble that gives background information and solicits comments from interested parties within designated time limits. After that publication, the consideration of comments and clearance through the responsible regulatory organization usually takes many months before a final codified version of the regulation is issued. As with draft standards, Working Groups must recognize that substantive changes may be introduced into a proposed regulation before it becomes effective. Thus, Working Groups finding it expeditious to reference proposed regulations must be very careful about the process of referencing. The options available to the Working Group to cite proposed regulations are parallel to those for draft standards. Information in the text of the standard shall be for guidance only, never a requirement, since the regulation has not yet achieved final approval. The footnote or appendix note shall give complete information on the proposed regulation. The note shall include the title of the proposed rulemaking or rulemaking revision, the Federal Register volume number, issue number, date, and the page numbers on which the proposed regulation can be located.

Referencing of codified regulations in the text of the standard is always acceptable, and, when used, must be in terms of the mandatory verb "shall." Specific references shall give the Title, Code of Federal Regulations, and Part and may be written out in full at the initial reference and abbreviated thereafter (e.g., 10 CFR 50). If the reference is to part of the regulation, the section, subsection, etc., should be specifically designated. There is no need to specify time of codification, as the latest version is applicable.

7.3 Specifying Requirements in a Standard (Shall, Should, and May)

Much discussion has taken place regarding the proper use of the verbs "shall," "should," and "may." The purpose of this policy statement is to explicitly define the use of these three terms and how they are to be used in the development of a standard.

Standards prepared under the cognizance of the NFSC shall be written to avoid ambiguity among those actions that are mandatory, recommended, or permissive. The text shall be clear in purpose and maintain technical continuity. For example, where acceptable practice includes two or more options, these options shall be clearly stated as such in the body. The number of appendices shall be kept small and shall be used to either illustrate possible approaches or to discuss known problems when clearly acceptable practice has not been widely adopted or defined.

Direction given in a standard shall be stated using one of the following verb forms:

- a. **Shall**, to designate a mandatory action. It is not sufficient to simply use a "shall" statement. Each requirement shall be specific, unambiguous, and within the ability of a qualified auditor to determine that the requirement has been met. This means avoiding "shall consider," "shall, if possible," and similar phrases that are not quantitative. Terms like "evaluate" and "demonstrate" carry more weight but could still be considered difficult to properly audit.
- b. **Should**, to delineate a recommended action. This verb indicates that the recommended action is one of two or more acceptable actions. If the standard describes all known acceptable actions, then "shall" is to be used (in the context of "one of the following shall be done") instead of "should." Should also indicates that the issue must be addressed and that either the recommended action shall be taken or an equivalent action shall be taken and a basis given for equivalency.

This policy prohibits the use of "should" statements as a crutch in those cases where the Working Group is unwilling to exercise the needed unequivocal direction.

- c. **May**, to designate a permissive action. This verb shall not be used as a recommendation but as an indication of an added action that might otherwise be questioned as being acceptable in the context of the requirements of the standard. For example, a "may" statement might be necessary to preclude a regulatory agency from determining that such an action is not permitted simply because it was not explicitly addressed.

"The uses of the verb form "shall" is not to be used in the Foreword, Introduction, Scope, Definitions, and Appendices sections of a standard."

7.4 Use of SI Units

The use of SI units shall follow the requirements set forth in NBS Special Publication 330, "The International System of Units (SI)," U.S. Department of Commerce, 1977.

SI units shall be used in all NFSC-sponsored standards in one of two ways:

- a. SI units shall be provided parenthetically alongside conventional English units, or
- b. SI units shall be used exclusively.

Conversion of values from conventional to SI units shall be the responsibility of the Working Group.

7.5 Types of Nuclear Facility Standards

A portion of the Committee's efforts has historically been devoted to the development and maintenance of nuclear facilities performance and design standards for utilization by the nuclear industry and acceptance by the governing regulatory agencies. These standards traditionally fall into one of three general

categories. This section provides a definition of these types of standards and how these categories may be used.

The identification of new standards projects includes an evaluation of what type of standard is intended: plant criteria, design basis, or system criteria. The purpose of this categorization is to ensure that other standards exist or are planned in the other categories to adequately supplement the work to form a complete design package for the user community. It also identifies the major interfaces to be covered during the development of the standard. The categorization uses the following definitions:

Plant Criteria Standard

A standard that puts forth that set of nonhardware plant requirements that bound the plant design and that must be assumed for systems design.

This type of standard states the requirements for the level of adequacy of the plant and certain of its major systems but does not necessarily limit the components of those systems except as required to meet the performance levels specified for the plant or system. The purpose of this type of standard is to specify the overall plant criteria so that consistency is maintained among plant types, various systems of a plant, and subsystems of a major plant system. This type of standard may include rules for (a) classifying components, (b) setting plant conditions of design, (c) determining overall plant and individual system functional design criteria, and (d) preparing the plant safety analysis.

An example of this type of standard is ANS-51.1, "Nuclear Safety Criteria for the Design of Stationary PWR Plants."

Design Basis Standard

A standard that puts forth the rules and methodology for determining the need for, and the design basis of, a system or a set of related systems in a plant.

This type of standard establishes the functional foundation required to prepare the design requirements (i.e., the design basis) of the subject system(s). The specific requirements are addressed in a system criteria standard. This standard may include the plant conditions of design to be considered as design assumptions. In some cases, this information is included in a Plant Criteria Standard.

An example of this type of standard is ANS-4.1, "Design Basis Criteria for Safety Systems in Nuclear Power Generating Stations."

System Criteria Standard

A standard that puts forth the criteria by which a system and its constituent components are to be designed to fulfill the function of the system.

This type of standard contains criteria that are the design requirements for the system. Their development is governed by the requirements, rules, and methodology set forth in Plant Criteria and Design Basis Standards. This type of standard usually addresses only one functional part of a system (such as the structural requirements as opposed to the electrical, mechanical, or fluid-conveying parts). Such requirements, of course, frequently influence the design of other functional parts. Generally, standards related to plant siting and plant operation fall into this category. A typical format guide, which should be followed for preparation of a System Criteria Standard, is presented in Appendix B.

An example of this type of standard is ANS-59.51, "Fuel Oil Systems for Safety-Related Emergency Diesel Generators."

8.0 FORMS AND SUPPORTING DOCUMENTS

8.1 ANS Glossary of Definitions and Terminology

The ANS Glossary is a compilation of the “Definitions” provided in issued ANS Standards. It was prepared by the NFSC as a part of the ANS Standards Development and Maintenance “Toolkit” that provides guidance on Standards preparation to the various working groups within the NFSC.

The intent of the Glossary is to provide a consistent set of definitions, to minimize the time-consuming task of developing unique definitions and to avoid unnecessary duplication and/or potential conflict. The Glossary is intended to be a living document subject to revision as new standards are issued.

A complete description of the Glossary, including its history, can be accessed through the ANS Standards Development and Maintenance Toolkit Web site at <http://www.ans.org/standards/committees/nfsc/toolkit/>.

8.2 PINS: Project Initiation Notification System Form

The PINS Form is available on the ANS Standards Development and Maintenance Toolkit Web site at the address provided above.

8.3 Ballot Form

The NFSC Ballot Form is also available on the ANS Standards Development and Maintenance Tool kit Web site provided above.

8.4 Standards Comments and Resolutions Form

The NFSC Standards Comments and Resolutions Form is also available on the ANS Standards Development and Maintenance Toolkit Web site provided above.

8.5 Statement for Inclusion in the Foreword of New or Revised NFSC Standards

The following statement shall be included in the foreword of new or revised NFSC standards:

“This standard has been approved by the ANS Nuclear Facilities Standards Committee (NFSC) with the recognition that it may reference other standards and documents that may have been superseded or withdrawn. The requirements of this document will be met by using the version of the standards and documents referenced herein. It is the responsibility of the user to review each of the references and to determine whether the use of the original references or more recent versions is appropriate for the facility. Variations from the standards and documents referenced in this standard should be evaluated and documented.

This standard does not necessarily reflect recent industry initiatives for risk informed decision-making or a graded approach to quality assurance. Users should consider the use of these industry initiatives in the application of this standard.”

8.6 Statement for Inclusion in the Foreword of Reaffirmed NFSC Standards

The following statement shall be included in the foreword of reaffirmed NFSC standards:

“This standard has been reviewed and reaffirmed by the ANS Nuclear Facilities Standards Committee (NFSC) with the recognition that it may reference other standards and documents that may have been superceded or withdrawn. The requirements of this document will be met by using the version of the standards and documents referenced herein. It is the responsibility of the user to review each of the references and to determine whether the use of the original references or more recent versions is appropriate for the facility. Variations from the standards and documents referenced in this standard should be evaluated and documented.

This standard does not necessarily reflect recent industry initiatives for risk informed decision-making or a graded approach to quality assurance. Users should consider the use of these industry initiatives in the application of this standard.”

Appendix A

Guidance for Developing a Performance-Based Standard

The NFSC is committed to maximizing the effectiveness of its standards program so that the hard work of its many volunteers will provide the best possible standards for the user community. One measure of effectiveness is the degree to which goals and objectives defined for each standard are accomplished. A performance-based approach is a systematic way to structure the development of a standard so that goals and objectives are more readily attained. A standard that clarifies its goals and objectives in a structured manner also offers a basis for determining whether it is effective because to be effective, a standard must achieve its desired outcomes. As outcomes are generally stable over time, an effective standard is unlikely to need frequent maintenance.

In this sense, performance is the attribute that reflects accomplishment of specified goals and objectives. Most existing standards may be considered quite effective even if they do not explicitly identify and structure goals and objectives. In many such cases, the value of the standard may significantly depend on individuals with requisite background and experience providing guidance on the application of the standard. The long-term interest of the standards program may be better served by incorporating more transparency in the standards themselves so that reliance on individual interpretations is minimized.

A structured approach is proposed to revise an existing standard to be performance-based and to develop a new performance-based standard.

For the revision of an existing standard, questions need to be answered by the Working Group in order to clarify what perceived weaknesses in the existing standard would be better addressed by a performance-based approach. There are two broad categories of issues that are likely to characterize weaknesses in existing standards as follows:

- a. Issues relating to overly prescriptive requirements:
 - What requirements are identified using “shall” statements?
 - Taking each “shall” statement individually, does meeting the requirement assure that an objective of the standard is met?
 - Meeting an objective should be a means to support a higher-level goal because higher-level goals are broad and qualitative, as well as difficult to achieve directly. Hence, if the “shall” statement does accomplish an objective, is the related goal easily identified? For example, if the standard requires a system response within a specified time, is safety dependent on that specified time? In this case, safety is the goal and the objective is an appropriate system response. If the specification of the time is overly narrow, a performance-based approach using a concept of temporal margin may be considered.
 - Even if such overly prescriptive requirements exist, is it worthwhile to pursue a performance-based revision? The key consideration here may be the compounding effects of inter-related “shall” statements without a clear structure of objectives fulfilled that support goals. Whether a revised standard is worthwhile should depend on the value to the user.
- b. Issues relating to overly general requirements:
 - Is a requirement likely to be interpreted in the same way by a diverse set of users who do not necessarily communicate with each other? If the answer is in the negative, such requirements should usually be treated as desirable outcomes or goals that may not be easily achieved just by employing a “shall” statement.
 - If a user asserts that a requirement has been met, does the standard provide a sufficient basis for an independent knowledgeable reviewer to verify this assertion? An example of such an overly general requirement may be “Systems interactions shall be considered.”

- Even if such overly general requirements exist, is it worthwhile to pursue a performance-based revision, recognizing that the value added is likely to be consistency and transparency? In the above example, the question would be “How important is systems interaction for the standard?”

The Working Group should determine if a performance-based approach has merit based on potential benefits to the user of the flexibility that might be available. Sometimes flexibility translates to cost savings, and, at other times, it may permit easier use of newer technologies. Consideration should also be given to the possible avoided costs of inconsistent applications. These factors should be balanced against the need for more discussion and deliberation that may be necessary to implement the structured and disciplined process. These efforts may be viewed as investments for longer-term benefits.

For both new and existing standards, a set of five activities has been proposed, with steps within each activity. The activities are (1) Classify the issue; (2) Define the goals and objectives; (3) Identify the framework; (4) Apply the framework; and (5) Document performance-based components of the standard. Following these activities, the Working Group may then proceed to prepare the standard in the appropriate format and implement the consensus process.

It is extremely important to consider iteration as a key element of implementing this guidance. Each activity and each step should not be viewed as something to be completed once and for all. Iteration should occur within each activity, and then among the activities. In general, information developed the first time through is more wide-ranging, with increasing specificity as issues are addressed again. It is always beneficial to have more people from the Subcommittee or Working Group involved as the information becomes more specific to a standard. Lastly, the results of the analysis for Activities 1 and 2 should be reviewed with the responsible Subcommittee before significant development of a new standard.

Activity 1 - Classify the Issue

Step 1:

- Identify whether a new standard or revision to an existing standard is needed.
- Identify the following external factors:
 - applicable field experience that can be drawn on.
 - relationship to regulatory framework.
 - “political and other” sensitivities.
 - resource (budget) constraints.
 - time constraints including approximate milestones.
 - urgency factors.

Step 2:

- Identify nature of standard:
 - administrative versus technical.
 - guidance versus definition of limits.
- Classify standard by need:
 - safety (scope, technical requirements, quality, resources).
 - efficiency (scope, quality, resources, schedule).
- Evaluate expertise of Working Group:

- consider expertise of volunteers.
- consider balance of interests.

Activity 2 - Define Goals and Objectives

[DO NOT IGNORE QUALITATIVE ATTRIBUTES.]

Step 1:

- Identify goals (noncontroversial, “motherhood”).
 - “Support safe design, operation, installation, etc.”
 - “Conduct efficient activity to...”
- Identify high-level (fundamental) objectives (valuable in their own right), which directly support the goals
 - “consistent with 10 CFR...”
 - “consistent with ANSI accreditation requirement...”
- Identify lower-level (means) objectives (which lead directly to attaining fundamental objective)
 - “Assure safe functioning of...”
 - “Assure reliable operation of...”
 - “Assure timely startup of...”

Step 2:

- Structure objectives in a chart.
 - Organize goals and fundamental objectives:
 - Test for adequacy of coverage regarding scope.
 - Test for adequacy of coverage regarding technical requirements, if applicable.
 - Test for adequacy of coverage regarding other “Activity 1” factors.
 - Organize fundamental objectives and means objectives:
 - Test for adequacy of coverage regarding schedule, resources, and quality.
 - Test for adequacy of coverage regarding other “Activity 1” factors.
 - Organize means objectives and functional systems:
 - What has to work to limit radiation exposure?
 - What has to work to have key barrier systems in place?
 - What functional system has to work to prevent a postulated event from progressing to its next level of severity?
 - What is the scope of the effort?
 - Which subcommittee has the right jurisdiction?
 - Who are the right people to make the important decisions?

[THE RESULT IS AN OBJECTIVES HIERARCHY.]

Activity 3 - Identify the Framework

Step 1:

- Examine choice of frameworks:
 - If the need is safety, the framework involves, in order: margin, performance parameter, objective criteria, and flexibility.
 - If the need is efficiency, the framework involves, in order: flexibility, performance parameter, objective criteria, and margin.
- Select framework based on need:
 - For safety, focus is on margin.
 - For efficiency, focus is on flexibility.

[THE GUIDANCE, HEREAFTER, WILL CONCENTRATE ON SAFETY STANDARDS. ANALOGOUS STEPS CAN BE DEVELOPED FOR EFFICIENCY STANDARDS.]

Step 2:

- Identify the safety functions/concepts that can impact the objectives in the objectives hierarchy:
 - Include qualitative factors.
 - Level of detail commensurate with scope and quality of standard.
- Identify equipment/systems/procedures necessary to satisfy the safety functions or concepts:
 - This may require detailed knowledge and understanding of the systems involved.
 - Analysts may wish to run analytical computer models or have access to detailed analytical reports.
- Identify appropriate metrics that will enable an answer to the question, "How much is enough?"
 - Given the importance of this step, a separate consensus process may be helpful within the Subcommittee or Working Group to reach a common understanding on this question.
 - To the extent possible, the metrics should be applicable at the higher levels of the objectives hierarchy.

Activity 4 - Apply the Framework

Step 1:

- Assess margins. A generalized definition of margin is that it represents the difference between some limiting condition and a nominal or normal operating condition. For accident considerations, the accident condition is substituted for normal operating condition:
 - Use realistic estimates (best estimate calculations) to assess margin at first.

- Use PRA and appropriate metrics wherever possible.
- Include qualitative attributes.
- Consider each means objective first and then aggregate into the fundamental objective.
- Assess robustness of margin:
 - Consider operational and analytical experience.
 - Consider sensitivity studies.
 - Consider expert judgment.
- Assess consequences of reduced margin:
 - Consider rate of change of margin.
 - Consider perceptions associated with reduced margins.
- Assess possibility of restoring margin:
 - Consider how rapidly restoration must happen by, for example, taking corrective action.
 - Consider the capabilities of the user of the system for which the standard is being developed as well as the capabilities of the standards developer to assess the dynamics of the margin.
- Assess time available for restoring margin:
 - Consider manual and automatic functions.
 - Consider operator safety.

Step 2:

- Evaluate observable performance characteristics, both qualitative and quantitative, to monitor attainment of objectives. Qualitative observations present special challenges but should not be ignored. For example, quality of housekeeping in a nuclear facility is an important aspect of preventing fire hazards. Qualitative observations can be quite effective in assessing such a characteristic. A linguistically defined measure, which represents a level of impact or significance, called a constructed measure, is a way to represent qualitative observations. Quantitative parameters, which are observed directly, such as pressure, temperature, flow, incurred cost, radiation exposure, etc., are called natural measures. Some natural measures require simple calculation, such as reliability, percentage, concentration, etc.
 - Consider relationship of characteristics to margin as well as flexibility. The principle involved is that more flexibility can be given in the standard for greater levels of margin, provided the observable characteristics relate closely to both.
 - Consider human factors such as capabilities of the operator or user.
- For qualitative performance characteristics, evaluate whether constructed measures can be developed that provide qualitative expressions capable of observation with reasonable objectivity. Constructed measures become necessary when natural measures do not exist or are too difficult to use. It is used to describe performance needed to satisfy higher-level objectives. Examples are (a) impact on public confidence is high, medium, or low; (b) environmental significance is high, medium, or low. The terms high, medium, and low constitute a constructed scale because they linguistically express a clearly distinguished relationship among themselves.
- Evaluate whether the identified observable characteristics, together with objective criteria, provide measures of performance and the opportunity to take corrective action if performance is lacking.

- Evaluate objective criteria indicative of performance, which also permits corrective action. If margin is sufficient for timely corrective action flexibility may be justified.
- Evaluate the level of flexibility to the user of the standard and its relationship to the level of margin to determine whether the flexibility is technically and practically justified. If the margin is not sufficient to justify flexibility, a prescriptive approach is better. In such cases, the standards document can justify use of the word “shall” so as to meet the goal. When flexibility is justified, the statements in the standard would use the word “should.” When flexibility is conditional, the operative word is “may” when conditions specified are fulfilled.

THE RESULTS OF THE ACTIVITIES THUS FAR HAVE PROVIDED A LIST OF OBJECTIVES THAT CAN BE ATTAINED USING A PERFORMANCE-BASED APPROACH AND A LIST OF OBJECTIVES THAT JUSTIFY A PRESCRIPTIVE APPROACH USING “SHALL” STATEMENTS IN THE STANDARD. IF THE OBJECTIVE OF THE STANDARD IS TO IMPLEMENT A PERFORMANCE-BASED APPROACH, THE DIRECT IMPLICATION IS THAT “SHALLS” WILL BE MINIMIZED, AND THE “SHOULDs” AND “MAYs” WILL BE MAXIMIZED.

Activity 5 - Document Performance-Based Components of the Standard

IT IS IMPORTANT THAT A PERFORMANCE-BASED STANDARD PROVE ITSELF BY ATTAINING ITS OWN OBJECTIVES. ONE OF ITS OBJECTIVES IS TO DECREASE THE MAINTENANCE EFFORT ON STANDARDS. A PERFORMANCE-BASED STANDARD WOULD NEED TO BE CHANGED ONLY IF THE OBJECTIVES HIERARCHY CHANGES, OR IF NEW INFORMATION ALTERS THE ESTIMATE OF MARGIN. PROPER DOCUMENTATION IS MOST IMPORTANT TO PRESERVE CONFIDENCE IN A STANDARD OVER LONG PERIODS.

- Identify the objectives that require a prescriptive approach:
 - Consider what can happen to change the margin assessment, and document it.
 - Consider effects of introduction of new technology.
- Identify objectives that are to be performance-based:
 - Document details of margin assessment.
 - Document details of flexibility monitoring.
- Document elements of oversight that may be needed to deal with deviations from approved use of flexibility.

Appendix B

Typical Format Guide for System Criteria Standards

The purpose of this guide is to establish a format of organization and content in writing system criteria standards. These systems are important to safety and are identified in the plant nuclear safety design criteria standards. The major objective is to provide a logical and uniform arrangement of system safety criteria and related topics that will be consistent with and expand upon plant criteria standards.

In this appendix, a system is considered to be a major subdivision of a plant that accomplishes a safety function as defined in the plant criteria standards. This may include systems that have no defined safety function but interface with, or have the potential for affecting, systems that do have defined safety functions.

System criteria standards are intended for use by system designers and design reviewers. This format provides the user with a means of presentation that will permit ease of comparison with existing related standards and a logical method of approach to design. Uniformity of approach permits the objectives outlined in the scope to be attained to the extent practicable. The format may vary only when necessary to permit a more logical presentation of requirements for different subjects than a single outline or rigid sequence of topics would allow. Deviation should be made only with justification.

The following suggested content outline is provided below, complete with numbering designation to be assigned to each topic:

1. Introduction and Scope

The following items are to be discussed as a minimum in the Introduction and Scope:

1.1 Purpose of Standard

Summarize the system functions and conditions of design. Include a discussion of the general relationship of the standard to plant criteria standards and related standards. No requirements should be included in this section.

1.2 Limits of Application

Briefly identify systems and subsystems for which the application is intended.

2. Definitions

Define terms considered to be important to the application and understanding of the criteria. Note that the ANS Glossary of Definitions and Terminology is a compilation of the "Definitions" provided in issued ANS Standards. It was prepared by the NFSC as a part of the ANS Standards Development and Maintenance "Tool kit" and can be accessed through the ANS Standards Development and Maintenance Tool kit Web site. These definitions shall be employed in each standard where applicable unless the definition clearly does not suit the use of the term in the context of the given standard. In such cases, the altered definition shall be preceded by the words, "For the purposes of this standard...."

Other definitions should be drawn from existing standards where possible to provide uniformity of definitions among standards. Reference definitions in existing standards where applicable. When a definition is substantially different from that in existing standards, this should be clearly indicated to the user along with the basis for requiring a difference. No requirements should be included in this section.

3. System Safety Functions

Identify the system safety functions and modes of operation under which those functions must be accomplished. Where applicable, relate to the requirements of existing plant criteria standards. Subdivide as necessary for any subsystems identified in the Scope.

4. System Description

Describe the extent and boundaries of the system and identify interfaces with related systems or between subsystems. Include a description of major components or structures, or both; a typical diagram may be included in an appendix to the standard.

5. System Performance Requirements

For each safety function defined in (3) above, identify parameters important to operation of the system and an acceptable range of values where appropriate. Identify any redundancy or diversity requirements, or both, related to performance of safety functions. Include as subsections the performance requirements related to individual components of the system or subsystems.

6. Design Requirements

If convenient, subsystems defined in (4) above may be each considered separately in this section. Proper direction to material appearing in the Appendices is made by footnote.

6.1 Safety Class and Applicable Codes, Standards, or Regulations

Identify the safety class of systems, subsystems, and major components and structures. Indicate, where applicable, the system classifications under other existing standards.

6.2 Conditions of Design

Describe how the conditions of design are applied in designing the system. These conditions of design should include normal and extreme environmental conditions occurring for components of the system in performing safety functions.

6.3 Interface

Identify interface requirements on other systems or subsystems and parameters that should be specified in design. For example, will the system require emergency power and, if so, what are power and actuation time requirements?

6.4 Testing, Inspection, and Maintenance Design Criteria

Identify design features necessary to provide the capability for testing, inspection, and maintenance.

6.5 Design Documentation

Indicate what documentation and safety analyses must be included in a design description to provide information necessary to support technical specifications and interface requirements.

7. References

References shall be listed in a separate section of the document in the order in which they appear in the text. State the document identifier, complete title, publisher of the document, and where the document can be acquired. A footnote shall be placed following the first reference in the text to direct the user to the reference section.