

---

# Status Update on ANS/ANSI 2.5 Revision

**NUMUG**

**Stan Marsh, CCM**

**Southern California Edison**

---

# Background

- **Boston NUMUG Meeting  
Evaluation question,  
“What future topics or  
issues should NUMUG  
address?”**
- **Top Five Responses**
  1. **New Technologies**
  2. **NRC Guidance,  
Interpretation**
  3. **Industry  
Standardization**
  4. **Dispersion Modeling**
  5. **Collection Parameters,  
Techniques**

---

# History of Meteorological Guidance for Nuclear Applications

- **Safety Guide 23, February 1972**
- **Proposed Revision 1 to Regulatory Guide 1.23, September 1980**
- **ANS/ANSI Guide 2.5, September 1984**
- **2nd Proposed Revision 1 to Regulatory Guide 1.23, April 1986**

---

# **Why Update ANS/ANSI 2.5?**

## **Weaknesses in Current Version:**

- **Outdated (Sept. 1984)**
- **Does not reflect current operations and regulatory climate**
- **Does not reflect state-of-the-art data acquisition, processing, and recording technology**
- **Inconsistent with other guidance from USEPA and ASTM**

---

# Objective

**Update the current ANS/ANSI 2.5 standard emphasizing,**

- **clarification of existing issues**
- **providing additional guidance**

**Without imposing new requirements**



---

# History of ANS/ANSI 2.5 Revision

- **Boston NUMUG Meeting; ANSI-2.5 Subcommittee Meeting; comments requested from all NUMUG members.**
- **Stan Krivo of Dames & Moore compiled comments for submittal to ANS. (Exhibit 1)**
- **NUMUG members commented on draft letter in Jan. 1994 mailing.**
- **Letter redrafted to Dr. Frank Congel of NRC with copy to Ms. Marilyn Weber of ANS as recommended by Irv Spickler. (Exhibit 2)**
- **NRC response (Exhibit 3)**
- **ANS letter to Jean Savy, new Chair of ANS 2 (Exhibit 4)**
- **Jean Savy response**

---

# NRC Response

- **“...we are not aware of any safety issues which would suggest that a revision of this Regulatory Guide is in order.”**
- **“...NRC approval is not needed for ANS to revise the subject standard.”**
- **“We cannot make a commitment at this time to endorse the revised ANSI/ANS-2.5 without a compelling safety argument.”**
- **“...the NRC will determine how to support your activity.”**

---

# **ANS Response**

**Letter from Marilyn Weber, Mgr. of  
ANS Standards Dept. to Dr. Jean  
Savy of LLNL, Chairman of ANS  
2.0 Committee**

**ANS/ANSI 2.5 Revision will require  
the following approvals:**

- **ANS/ANSI 2.5 Subcommittee**
- **Consensus Committee  
(Nuppsco)**
- **Standards Steering Committee**
- **Nuclear Standards Board**

**“Perhaps Mr. Marsh or one of his  
group will be willing to chair the  
effort.”**



**ANS/ANSI 2.5 Revision Questionnaire**

**1. Do you and your utility support NUMUG's continued pursuit of a revision to ANS/ANSI 2.5?**

**YES**

**NO**

**COMMENTS:**

---

---

---

**2. Would you serve as a member on a new ANS/ANSI 2.5 Subcommittee?**

**YES**

**NO**

**COMMENTS:**

---

---

---

**3. Would you serve as the Chair of a new ANS/ANSI 2.5 Subcommittee?**

**YES**

**NO**

**COMMENTS:**

---

---

---

**Name:** \_\_\_\_\_

**Utility:** \_\_\_\_\_

## EXHIBIT 1

### ***Recommended Revisions To ANSI/ANS-2.5-1984 American National Standard For Determining Meteorological Information At Nuclear Power Sites***

*American National Standard For Determining Meteorological Information At Nuclear Power Sites (ANSI/ANS-2.5) will be ten years old this year. The nuclear power industry, regulatory requirements, instrumentation and equipment technology, and analysis techniques have all evolved and have different characteristics from those that existed when ANSI/ANS-2.5 was issued (September 1984). To meet the current needs of the nuclear power industry, the Nuclear Utility Meteorological Data Users Group (NUMUG) believes that the guidelines and standards for the meteorological data acquisition and processing at nuclear power sites should reflect the current operations and regulatory climate as well as the state-of-the-art data acquisition, processing, and recording technology.*

*NUMUG members, in both written communication and at the April 1993 NUMUG meeting in Boston, have identified specific ANSI/ANS-2.5 topics and issues that they believe need to be revised or updated subsequent to review by the ANS-2.5 Working Group. The following summary of NUMUG identified updates is provided to support our recommendation that the current ANSI/ANS-2.5 document be revised to reflect current operational, regulatory, and technological climates.*

#### ***Section 1    General Recommendations***

- 1) Meteorological data are currently provided at nuclear facilities to support three functions: 1) Probable Risk Assessments, 2) Emergency Release Assessments, and 3) Routine Release Assessments. It is important that the standards and guidelines for meteorological data at nuclear facilities reflect their current nuclear applications (i.e., stress operations rather than licensing).*
- 2) The ANSI/ANS-2.5 document should provide the complete guidelines and acceptance criteria for meteorological data acquisition programs at nuclear power plants. This document, as well as Regulatory Guides 1.23 and 1.97, are used as the basis of each plant's meteorological program.*
- 3) Advancements in instrumentation, data processing, and recording equipment, and in remote interrogation capabilities have made some parts of ANSI/ANS-2.5 dated.*
- 4) ANSI/ANS-2.5 guidelines and standards should include, or be more consistent with, more recent ASTM and USEPA references that address sensors, recording, testing, and processing of meteorological variables. (See Section 9 for references)*

## **Section 2     Definitions**

- 1) *Redefine definitions to be more consistent with ASTM and USEPA standards (e.g., damping ratio, delay constant, starting threshold, system accuracy, and sigma theta).*
- 2) *Include remote sensing techniques (e.g., Doppler radar, profilers, acoustic sounders, etc.) in both the definitions and in the monitoring sections.*
- 3) *Define specific methods and techniques for the determination of system accuracy.*
- 4) *Because of the recommended increased content of this section, include the more definitive definitions as an appendix to the document.*

## **Section 3     Meteorological Parameters**

- 1) *Remove references to air quality monitoring. ANSI/ANS-2.5 should address nuclear issues only.*
- 2) *Accepted alternate methods of determining site specific atmospheric stability should be given (other than differential temperature and sigma theta). The use of an alternate method for stability should be allowed only if it has been demonstrated to be comparable to the basic differential temperature method or proven superior for a given application.*
- 3) *Address the scalar and vector wind speed/direction processing and the appropriate application of each.*
- 4) *Provide guidance on the meteorological variables that need to be measured for various plant configurations. Specify required verses optional meteorological variables.*

## **Section 4     Siting of Meteorological Instruments**

- 1) *Clarify the criteria and guidelines for the evaluation of obstructions to meteorological sensor exposure. This is especially important for plants with natural draft cooling towers. (Obtaining representative site meteorological observations verses meeting the guideline separation).*
- 2) *Clarify the instrument monitoring requirements for elevated sensors. A 60 meter sensor height should not be mandatory as the upper level should be determined on a case-by-case basis. The upper level measurement height should coincide with the height of release.*
- 3) *Supplemental or satellite meteorological monitoring systems to better define the atmospheric conditions at or around sites should be tied into the purpose/applications of the program (e.g., the estimates of dispersion and transport).*

## **Section 5 Data Presentation**

- 1) *Add data display requirements for the emergency assessments (i.e., frequency, averaging times, and display characteristics for the EOF, TSC, and CR). A hierarchy of alternate sources of meteorological data should be considered for this guidance document.*
- 2) *The issue of requiring dual, independent recording equipment should be revisited due to the improved reliability of state-of-the-art digital recorders. The data recovery rate requirement should be given but the method of accomplishment should be left to the individual utility.*
- 3) *The minimum data collection sampling rate as well as the averaging/summation periods for each variable should be provided.*

## **Section 6 System Performance**

- 1) *Additional guidelines should be provided giving minimum and maximum ranges for each measurement, and minimum recording and/or reduction precision for each meteorological variable for both digital and analog recording systems.*
- 2) *Add a more detailed discussion of data reduction errors including examples.*
- 3) *Improve the system accuracy guidance by adding equations and example calculations in an appendix.*
- 4) *Improve the accuracy presentation, as well as range and precision guidance, by providing the information in a summary table.*
- 5) *Add discussions and guidelines on the types of calibrations and associated content required for the meteorological systems. Include each sensor and associated processing/recording equipment in the calibration discussion.*
- 6) *The parameter accuracies should be reviewed to ensure they reflect the current sensor designs. Where possible, the accuracies should be made less restrictive. Dew-point temperature and precipitation are two examples where less stringent accuracies would not detract from the overall system performance but add to the ease of maintenance and calibration.*



## **Section 7     Period of Record, Data Reduction, Compilation, and Storage**

- 1) *The format of the JFD tables should be presented as a guideline for use. Also, the time periods for JFD compilation should be given as examples and not as specific requirements. The plant specific applications define both the format and time periods.*
- 2) *The uses and limitations of offsite, supplemental meteorological data for emergency response activities should be addressed.*
- 3) *The requirement for multiple years of meteorological data for the licensing of a plant appears to no longer be necessary and should be removed from the document. The number of annual cycles of meteorological data needed should be left to plant licensing documents.*
- 4) *Other guideline documents (e.g., Regulatory Guides 1.111, 1.21, 1.145, etc.) that address the application of meteorological data to nuclear power plant assessments should be at least referenced in ANSI/ANS-2.5.*
- 5) *Acceptable procedures and techniques for the replacement of meteorological data for various plant application should be included (e.g., dose assessments and site historical records).*
- 6) *Data validation guidelines and techniques should be included in this document.*
- 7) *In the archival guidance of site meteorological data, "original recorded form and structure" should be defined.*

## **Section 8     Documentation**

- 1) *The application of the ANSI/ASME NQA-1-1983 quality assurance (QA) program to meteorological data acquisition and processing at nuclear power plants has not been addressed by the NRC. Currently, the need to include the meteorological program under QA requirements has been defined by each individual utility. This issue needs to be addressed and clarified by the NRC and such clarification included in the revised document.*
- 2) *Clarify the meaning of the "meteorological acquisition program operations period".*



## Section 9      *References*

*ASTM, D5096-90: Standard Test Method for Determining the Performance of a Cup Anemometer or Propeller Anemometer, American Society for Testing and Materials, Philadelphia, PA.*

*ASTM, D4480-93: Standard Test Methods for Measuring Surface Winds by Means of a Wind Vane and Rotating Anemometer, American Society for Testing and Materials, Philadelphia, PA.*

*ASTM, D5366-93: Standard Test Methods for Determining the Performance of a Wind Vane, American Society for Testing and Materials, Philadelphia, PA.*

*USEPA, 1989: Quality Assurance Handbook for Air Pollution Measurement Systems: Vol. IV. Meteorological Measurements, EPA/600/4-90/003, Research Triangle Park, NC.*

*USEPA, 1987: On-Site Meteorological Program Guidance for Regulatory Modeling Applications, EPA/450/4-87/013, Office of Air Planning and Standards, Research Triangle Park, NC.*

*US Department Of Energy, 1991: Environmental Regulatory Guide For Radiological Effluent Monitoring and Environmental Surveillance, (DOE/EH-0173T).*

EXHIBIT 2

April 27, 1994

Dr. Frank Congel  
Director, Division of Radiation Safety and Safeguard  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Dr. Congel:

*The Nuclear Utility Meteorological Data Users Group (NUMUG) was founded in 1991 to provide a forum to address problems and exchange ideas/information among individuals who collect and utilize meteorological data at nuclear facilities, primarily nuclear utilities. NUMUG members are the individuals responsible for implementing and operating the meteorological data acquisition programs at nuclear power plants including consultants and instrument manufacturers with the same common interests.*

*At the last NUMUG workshop held in Boston in April 1993, the membership concluded that ANSI/ANS-2.5, American National Standard For Determining Meteorological Information at Nuclear Power Sites, should be updated to meet the current needs of the nuclear industry and to reflect the state-of-the-art of meteorological data acquisition and processing instrumentation and equipment. The purpose of this letter is to request the reconvening of Working Group ANS-2.5 of the American Nuclear Society Standards Committee to review the contents of ANSI/ANS-2.5 and to subsequently update this document to meet the current needs of nuclear utilities.*

*In support of this request, attached please find a summary of specific revisions suggested by NUMUG members. We would be pleased to provide more detailed information to you or the Working Group on any of these topics.*

Please let us know if you have any questions concerning our request. We hope the attached list of recommended revisions provides sufficient justification for this action. The NUMUG Steering Committee and general membership are available to assist you in this activity. The NUMUG Steering Committee members are as follows:

Northeast region: Brad Harvey, Yankee Atomic Electric Co.  
(508) 779-6711, ext. 2727

Mid-east Region: Jim Holian, Halliburton NUS Corp.  
(301) 258-8705

Southeast Region: Nick Keener, Duke Power Co.  
(704) 594-0289

Mid-west Region: Eugene Shelar, Pacific Gas & Electric Co.  
(510) 866-5994

West Region: Stan Marsh, Southern California Edison Co.  
(818) 302-9711

Please contact any of the Steering Committee members should you have any questions. Thank you in advance.

Sincerely,

*Stan Marsh, Jr.*

Stanley L. Marsh, Jr., CCM  
NUMUG Steering Committee

cc: Carl Johnson (USNRC)  
Bob Kornasiewicz (USNRC)  
Marilyn Weber (ANS)  
Barry Zalcman (USNRC)  
NUMUG Steering Committee



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

JUL 27 1994

Stanley L. Marsh, Jr., CCM  
NUMUG Steering Committee  
Southern California Edison Co.  
P.O. Box 800  
2244 Walnut Grove Ave.  
Rosemead, CA 91770

Dear Mr. Marsh:

This in response to your letter of April 27, 1994, in reference to a proposed revision of ANSI/ANS-2.5, "American National Standard for Determining Meteorological Information at Nuclear Power Sites." We appreciate your consideration of NRC interest in the standard in your decision whether to commit ANS resources to revise it.

As you are aware, Regulatory Guide 1.23 is the comparable document vis-a-vis ANSI/ANS-2.5. While there have been improvements in the state-of-the-art regarding meteorological monitoring programs during the last 20 years, we are not aware of any safety issues which would suggest that a revision of this Regulatory Guide is in order. If you are aware of any such issues, we would appreciate your calling them to our attention. We appreciate the suggestion that consistency with other standards (e.g., ASTM) and guidance (e.g., EPA), clarifying requirements, and reflecting technological advances are recommended industry goals. As you are aware, regulatory guides are not requirements; they identify methods acceptable to the staff. If found acceptable by the NRC, licensees and applicants can elect to use alternate methods.

We recognize that there may be institutional requirements to revisit ANS standards on a periodic basis. In spite of our position regarding the adequacy of Regulatory Guide 1.23, you should be aware that NRC approval is not needed for ANS to revise the subject standard. We cannot make a commitment at this time to endorse the revised ANSI/ANS-2.5 without a compelling safety argument. Should you proceed with a decision to update the meteorological measurement guidance and technology data base in ANS 2.5, the NRC will determine how to support your activity.

Your interest in these matters is appreciated.

Sincerely,

Frank J. Congel, Director  
Division of Radiation Safety  
and Safeguards  
Office of Nuclear Reactor Regulation





**AMERICAN NUCLEAR SOCIETY**  
STANDARDS COMMITTEE

August 16, 1994

Headquarters:  
555 North Kensington Avenue  
LaGrange Park, Illinois 60525 USA  
Telephone: 708/579-8268 or 8269  
Fax: 708/352-6464 or 0499  
Telex 4972673

Jean Savy  
Lawrence Livermore National Lab.  
MC 631  
P.O. Box 808  
Livermore, CA 94551

Dear Mr. Savy:

You will find enclosed copy of a transmittal from Mr. Stan Marsh of SCE. The NUMUG group is extremely interested in getting a revision of ANS-2.5 underway, to the extent that a first draft is also enclosed with his letter.

Irv Spickler is the chairman of record for ANS-2.5. I believe Mr. Marsh said that Irv is now with the NRC; I will try to get a current address for you. However, I'm not certain that Irv will be interested in pursuing a revision. Perhaps Mr. Marsh or one of his group will be willing to chair the effort.

I have enclosed a project charter (PINS) form. The instruction sheet is also enclosed. These go through a mini-consensus process for any work to begin a standard, whether new or revised. I have sent the same material to Mr. Marsh since I'm sure he can assist in completing it. It will require approval by the subcommittee, consensus committee (Nuppsco), and the Standards Steering Committee prior to its being sent to ANSI for review by the Nuclear Standards Board.

Good luck, and don't hesitate to contact me if I can be of assistance.

Sincerely,

Mrs. Marilyn D. Weber  
Manager, Standards Department

cc: Stan Marsh w/enc.





**Standards Activities Tracking System  
Project Initiation Notification System (PINS) Form**

One form is required for each project,

Date: \_\_\_\_\_

Name of Accredited Standards Developer:

American Nuclear Society

Date of Accreditation: 3/14/85

Operating Procedures (circle one) Have Have not been revised since that date  
These revisions (circle one) Have Have not been submitted to ANSI for review

Designation of Project (35 characters maximum, with spaces):

Title of Project (300 characters maximum, with spaces)\*:

Scope Summary or Abstract of Project (1200 character maximum, with spaces)\*:

Additional Keywords (not contained in title or scope summary/abstract, seven words maximum):

Intent: \_\_\_ Develop a new American National Standard \_\_\_ Discontinue a project previously initiated  
\_\_\_ Revise an existing American National Standard \_\_\_ Reaffirm an existing American National Standard  
\_\_\_ Withdraw an existing American National Standard \_\_\_ Adoption of an International Standard

Expected Initiation: \_\_\_\_\_ and completion: \_\_\_\_\_ of this project

Contact (Staff person responsible for this technical area):

Name Marilyn D. Weber Title Manager, Standards Dept.

Affiliation American Nuclear Society

Address 555 N. Kensington

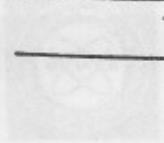
City LaGrange Park State IL Zip 60525

Telephone ( 708 ) 579 - 8268 ext FAX: 708/352-6464

Submitted by \_\_\_\_\_ Print or Type name \_\_\_\_\_

For ANSI's use only: PA \_\_\_\_\_ SB \_\_\_\_\_

\* Attach separate sheet if necessary



**1. Purpose:**

One form is required for each project.  
Date: \_\_\_\_\_  
Name of Accredited Standards Developer: \_\_\_\_\_  
American Nuclear Society

**2. Documentation of Need:**

Date of Accreditation: \_\_\_\_\_  
Operating Procedures (attach one) Have ( ) been revised since this date.  
These revisions (attach one) Have ( ) been submitted to ANSI for review.  
Designation of Project (25 character maximum, with space): \_\_\_\_\_  
Title of Project (500 character maximum, with space): \_\_\_\_\_

**3. Likely Users:**

Scope Summary or Abstract of Project (250 character maximum, with space): \_\_\_\_\_

**4. Consensus Body:**

Additional Keywords (not contained in title or scope) recommended to be used with maximum: \_\_\_\_\_

**5. Interests Represented in Development of Standard:**

Intent: \_\_\_ Develop a new American National Standard \_\_\_  
\_\_\_ Revise an existing American National Standard \_\_\_  
\_\_\_ Withdraw an existing American National Standard \_\_\_  
\_\_\_ Amend an existing American National Standard \_\_\_

**6. Coordination and Interfaces (Liaison):**

Expected initiation: \_\_\_\_\_ and completion: \_\_\_\_\_  
Contact (list person responsible for the technical work): \_\_\_\_\_  
Name: \_\_\_\_\_ Title: \_\_\_\_\_  
American Nuclear Society

**7. Related Standards or references, or both:**

Address: \_\_\_\_\_  
City: \_\_\_\_\_  
State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Telephone: ( ) \_\_\_\_\_ - \_\_\_\_\_

**8. Project Initiation Date:  
(Date Project Approved by Developer)**

Submitted by: \_\_\_\_\_  
For ANSI's use only: PA \_\_\_\_\_

# Instructions for Use of Project Charter Form

The ANS Project Charter Form is an expanded version of the PINS Form developed by ANSI for its Project Initiation Notification System. Standards Developing Organizations (SDOs) are requested by ANSI to use the PINS form to notify the Institute of the SDO's initiation of any action relative to standards work; please refer to the "Intent" section of the form.

We use the form for the ANS standards program in two ways.

- 1) To capture a proposal for a new project so it may be reviewed for development; and
- 2) To inform ANSI of our intent to develop a new standard, maintain an existing standard, etc.

The following will assist in completion of the form:

## Page 1

- ✓ **Designation of Project** -- (Leave blank)
- ✓ **Title of Project** -- Proposed title
- ✓ **Scope summary or abstract** -- Please try to keep this to one or two succinct paragraphs
- ✓ **Additional Keywords** -- Complete if appropriate
- ✓ **Intent** -- Check one as appropriate
- ✓ **Expected initiation/completion** -- Indicate proposed dates for these actions

## Page 2

This reverse side of the form has eight topics. Please complete all but items 4 and 8.

1.
  - a) Indicate what purpose the development of a new standard will serve.
  - b) Indicate why an existing standard needs to be revised or withdrawn.
  - c) Indicate why an existing standard is still viable to make reaffirmation the correct method of maintenance.
2. Indicate the reason(s) why the standard is needed. (Note: Items 1 and 2 may be combined if appropriate.)
3. Indicate categories of potential users of the standard.
5. Indicate what interest those participating directly in development of the proposed standard represent; i.e., users of standard, national laboratories, universities, governmental agencies, utilities, etc.
6. Indicate those organizations, usually other SDOs, with whom this work should be coordinated; i.e., Health Physics Society; American Society of Mechanical Engineers; Institute of Electrical and Electronic Engineers, etc.
7. Indicate what existing standards, or other references, may be related to this proposed standard.