

ANSI/ANS-3.11

**American National Standard for
Determining Meteorological Information
at Nuclear Facilities**

**Carl A. Mazzola, Stone & Webster
Stanley R. Marsh, Southern California Edison**

**6th NUMUG Meeting
Syracuse, NY
May 13, 1999**

OVERVIEW

1• BACKGROUND

2• WORKING GROUP PARTICIPANTS AND STRUCTURE

3• DOE TECHNICAL STANDARDS PROGRAM

4• ANSI/ANS STANDARDS PROCESS

5• 1996-1998 WORKING GROUP MEETINGS

6• WORKSCOPE AND STATUS

GOAL: PUBLICATION OF ANSI/ANS-3.11
BY 12/31/98

7 FIFTH DRAFT ANSI/ANS-3.11

BACKGROUND

- 9/84: ANSI/ANS-2.5 ISSUED TO MEET COMMERCIAL NUCLEAR INDUSTRY METEOROLOGICAL SITING NEEDS
- 8/90: ANSI/ANS-2.5 REAFFIRMED
- 7/93: NUMUG DEVELOPS RECOMMENDED REVISIONS TO ANSI/ANS-2.5
- 9/94: ANSI/ANS-2.5 SHELF LIFE EXPIRES
- 6/96: NUMUG-DMCC WG AD HOC MEETING IN RENO, NV
- 9/96: FIRST NUMUG-DMCC WG MEETING AT ANS/HQ IN CHICAGO, IL
- 10/96: DMCC DEVELOPS RECOMMENDED REVISIONS TO ANSI/ANS-2.5
- 11/96: ANS-3.11 PINS SUBMITTED/SSC MEETING

CONCLUSION: NEW STANDARD FOR OPERATIONAL METEOROLOGICAL MONITORING PROGRAMS NEEDED FOR BOTH PUBLIC AND PRIVATE SECTOR NUCLEAR PROGRAMS

WHY REPLACE ANSI/ANS-2.5?

- No longer active and technically outdated
- Emphasis change from siting to operations
- Does not consider remote sensing technology
- Does not address life cycle considerations
- Does not consider complex terrain siting issues

WHY REPLACE ANSI/ANS-2.5? (CONTINUED)

- Does not contain current meteorological instrumentation standards
- Does not reflect state-of-the-art data acquisition, processing, and archiving technology
- Inconsistent with NEXRAD, ASOS, EPA, and ASTM guidance
- Addresses civilian nuclear facilities only.

FUTURE ANSI/ANS-3.11 USERS

• Approximately 70 utility nuclear power generation facilities

• More than 20 DOE reservations/offices

• At least 4 DoD ranges

• 1000's of industry

• Private Sector (Utilities, Consultants)
• Public Sector (Federal Agencies)

WG ELEMENT III: REVIEWERS (20)

• Private Sector (Utilities, Consultants)
• Public Sector (Federal Agencies)
• Regulators (EPA, NRC)

WG PARTICIPANTS AND STRUCTURE

THREE-TIERED WORKING GROUP STRUCTURE

- * **WG ELEMENT I: CHAIRMEN (2)**
 - NUMUG
 - DMCC

- * **WG ELEMENT II: TECHNICAL RESEARCHERS AND WRITERS (7)**
 - Private Sector (Utilities, Consultants)
 - Public Sector (Federal Agencies)

- * **WG ELEMENT III: REVIEWERS (20)**
 - Private Sector (Utilities, Consultants)
 - Public Sector (Federal Agencies)
 - Regulators (EPA, NRC)

RESPONSIBILITIES OF EACH
WORKING GROUP ELEMENT

* **WG ELEMENT I**

- Scoping
- Oversight
- Facilitation

* **WG ELEMENT II**

- Development of Technical Materials and Information

* **WG ELEMENT III**

- Peer Review of all Draft Standards

WG PARTICIPANTS AND STRUCTURE

- **WG ELEMENT I: OVERSIGHT AND FACILITATION**

- * **NUMUG Rep: Stan Marsh (SCE)**
- * **DMCC Rep: Carl Mazzola (SWEC)**

- **WG ELEMENT II: DEVELOPMENT OF TECHNICAL MATERIALS**

- * **Mark Abrams Vendor PLG**
- * **Bob Banta Fed Research ERL/ETL**
- * **Tom Bellinger Fed Pgm IDNS**
- * **Paul Fransioli Consultant SAIC**
- * **Brad Harvey Util Pgm Mgr DESI**
- * **Matt Parker Fed Pgm WSRC**
- * **Ken Wastrack Util/Fed Pgm TVA**

WG PARTICIPANTS AND STRUCTURE

• **WG ELEMENT III: PEER REVIEWERS**

* Rob Addis	Fed Pgm Mgr	WSRC
* Ron Baskett	Fed Pgm Mgr	LLNL
* Leta Brown	Regulator	NRC
* Bruce Carson	Util Pgm	PP&L
* Tom Coulter	Regulator	EPA
* Jerry Crescenti	Fed Pgm Mgr	INEEL
* Jim Fairobent	Fed Pgm	DOE
* Jim Holian	Consultant	SAIC
* John Irwin	Regulator	EPA
* Bob Kornasiewicz	Regulator	NRC
* Stanley Krivo	Regulator	EPA IV
* Tom Lockhart	Consultant	MSI
* Doyle Pittman	Util/Fed Pgm	TVA
* D. Randerson	Fed Pgm Mgr	NTS
* Gene Shelar	Util Pgm	PG&E
* Irv Spickler	Fed Pgm	DOE
* Bob Swanson	Consultant	CCC
* Ping Wan	Consultant	Bechtel
* Marvin Wesely	Fed Pgm	ANL
* Bob Yewdall	Util Pgm Mgr	PSE&G

DOE TECHNICAL STANDARDS PROGRAM (TSP)

- TSP MANAGER, RICK SERBU (EH-31)
- TSP VISION
 - * DOE COMMUNITY CULTURE WILL BE BASED ON STANDARDS BY YEAR 2000
 - * TECHNICAL STANDARDS WILL BE FORMALLY INTEGRATED INTO ALL DOE FACILITY, PROGRAM & PROJECT ACTIV.
- TSP MISSION
 - * DOE WILL PROVIDE INFORMATION & COORDINATING ACTIVITIES
 - * DOE WILL PROMOTE USE OF NATIONAL CONSENSUS STANDARDS
- OMB A-119: ENCOURAGES FEDERAL PARTICIPATION IN THE DEVELOPMENT AND USE OF VOLUNTARY STANDARDS

CONCLUSION: ANSI/ANS-3.11 WITHIN SCOPE OF DOE TSP STRATEGIC PLAN AND OMB A-119

DOE METEOROLOGY TOPICAL COMMITTEE CHARTER

1.0 PURPOSE

The purpose of the DOE Meteorology Topical Committee of the Technical Standards Program (TSP) is to facilitate the interaction between DOE and DOE contractor personnel with common interests regarding the identification and resolution of meteorological standards-related issues for the DOE TSP Office (TSPO). DOE will use the technical expertise of the DOE Meteorological Coordinating Council (DMCC) to achieve this purpose.

2.0 BACKGROUND

The DMCC, established in 1994 to coordinate the activities of DOE meteorological programs, consists of DOE and DOE contractors associated with meteorological programs at more than 15 DOE facilities. The DMCC fosters an increased level of discussion and coordination on environmental, safety, and health matters, that require meteorological information and guidance. The DMCC, through the DOE Meteorology Topical Committee, will provide a mechanism to gain an operational perspective in the development of meteorological standards and in the resolution of program issues, and will aid in ensuring consistent meteorological program criteria throughout the DOE complex.

3.0 VALUE STATEMENT

The DOE Meteorology Topical Committee will promote a coordinated meteorological standards program for DOE.

4.0 OBJECTIVES

- 1) Function as the Preparing Activity/Reviewing Activity for developing and implementing meteorological standards for the DOE TSPO. In this capacity the committee will provide assistance to the Office(s) of Primary Interest with coordination of newly-published standards.
- 2) Interface with non-DOE standards development bodies [e.g., American Nuclear Society (ANS), Nuclear Regulatory Commission (NRC), Environmental Protection Agency (EPA)] on activities that may impact on DOE environment, safety, and health directives requiring meteorological support. Be prepared to define the DOE-wide position on DOE, non-DOE government, and non-government consensus meteorology standards published or in comment coordination.
- 3) Serve as an advisory group for the development and review of standards, directives, guides, and handbooks associated with the atmospheric sciences, for national or international use.

DOE METEOROLOGY TOPICAL COMMITTEE CHARTER

- 4) Partner and interface with non-DOE Standards Development Organizations (SDO's) [i.e., American National Standards Institute (ANSI), ANS, and American Society for Testing and Materials (ASTM)]. Develop, when the need arises, a government-wide technical position on meteorology standards for adoption by non-DOE technical standards entities.
- 5) Establish and maintain liaison with other DOE topical committees having mutual interests through the TSPO. [The Committee shall advise all other DOE technical committees on the preparation of standards related in subject matter and the correlation and consolidations of similar standards prepared by these committees, and promote cooperation between these technical committees in areas of common interest.]
- 6) Form direct ties with counterpart standards development organization topical committees to participate in the development and review of national and international technical standards.
- 7) Participate with representatives of other topical committees and the TSP manager to establish guidance and protocols for topical committee operations under the TSP.

5.0 MEMBERSHIP

Membership in the DOE Meteorology Topical Committee will be comprised of selected DOE/HQ, DMCC, and DOE field meteorological personnel. Membership in the DMCC is open to all DOE and DOE contractors with responsibility for managing and overseeing implementation of meteorological programs at DOE facilities.

6.0 DMCC INTERFACE

The DOE Meteorology Topical Committee will be governed by the DMCC. The DMCC will prepare recommendations for the DOE sponsor, who retains the final authority for policy decisions affecting DOE standards.

ANSI/ANS-STANDARDS PROCESS

- **COMPREHENSIVE REVIEW AND OVERSIGHT PROCESS TO ENSURE INTEGRITY AND TECHNICAL ACCURACY**

- **ANSI ELEMENTS**

- * **Board of Standards Review (BSR)**

- * **Nuclear Standards Board (NSB)**

- **ANS ELEMENTS**

- * **Standards Steering Committee (SSC)**

- * **Consensus Committee (CC) [NFSC]**

- * **Standards Subcommittee (SC) [ANS-3]**

- * **Working Group (WG) [ANS-3.11]**

DOE METEOROLOGY TOPICAL COMMITTEE CHARTER

7.0 SPONSORSHIP

The Meteorology Topical Committee is a standing topical standards committee sponsored by the DOE Technical Standards Program. The following principles will govern its operation:

- 1) Openness: Participation in committee standards development process will be open to all persons who are directly and materially affected by the activity in question.
- 2) Balance of Interests: Any standards development activities undertaken by the committee will be comprised of representatives of all categories of interest that relate to the subject matter.
- 3) Due Process: The committee will ensure that any individual or organization within DOE who believes that an action or inaction of the committee causes unreasonable hardship or potential harm is provided the opportunity to have a fair hearing of his/her concerns.
- 4) Reporting: The DMCC will report on meteorological standards-related activities to the DOE TSPO on a frequency that is appropriate to the activity and consistent with the needs of the TSPO.

8.0 TOPICAL COMMITTEE MEETINGS

Committee meetings will normally be held in conjunction with regularly scheduled workshops and conferences at which meteorological program managers attend (e.g., DMCC Annual Meeting). The DMCC Steering Committee will also meet via teleconference quarterly, or when issues require resolution. When the physical presence of the Steering Committee is required, special meetings will be scheduled, as appropriate.

This Charter was adopted by the DOE Meteorology Topical Committee on

____ August 26, 1998 ____
Date

Approved by the DOE Technical Standards Program Office (TSPO)

Richard, J. Serbu, TSP Manager

WORKING GROUP MEETINGS
9/25/96 KICKOFF MEETING (CHICAGO, IL)

• **PARTICIPANTS**

- * WG Element I, II, III Representatives (11)
- * Marilyn Weber, ANS Standards Staff

• **ACCOMPLISHMENTS**

- * NUMUG-recommended revisions enumerated
- * DMCC perspective and support of initiative
- * DOE Standards Program (NN-60)
- * NRC and OFCM perspectives (NRC)
- * ANSI/ANS process/protocol discussed (ANS)
- * Working Group I, II, and III responsibilities
- * Meteorological standards/guidance review
- * Review of draft SOW
- * Assignment of tasks
- * Writing assignments, milestones, schedule
- * Assignment of path forward action items
- * Established future meetings (4/97; 10/97)

WORKING GROUP MEETINGS
6/20/96 AD HOC MEETING (RENO, NV)

• **PARTICIPANTS**

- * **WG Element I, II , III Representatives**
- * **Jean Savy - ANS-2 Chair**
- * **Marilyn Weber - ANS Standards Staff**

• **ACCOMPLISHMENTS**

- * **Established NUMUG-DMCC WG and planned initial kickoff (9/25/96) meeting**
- * **Learned ANS-2.5 was inactive**
- * **New standard may need to be broken into 3 (i.e., siting, operations, emergency management)**
- * **New standard must be voluntary**
- * **New standard to address comprehensive complex terrain monitoring needs**
- * **New standard to address remote sensing technology**
- * **NUMUG review identified as starting point for SOW development**

2 WORKSCOPE AND STATUS

- SCOPE OF WORK (GOAL)

- * **New ANSI/ANS standard covering**

meteorological monitoring available for use

by private and public sector nuclear facilities

nationwide by the end of 1998

- * **Applicability to all meteorological monitoring**

applications/interfaces associated with

operations, emergency response, and siting

- * **Versatile to address needs of nuclear power**

industry, appropriate federal nuclear

facilities, and several federal agencies

WORKSCOPE AND STATUS

- SCOPE OF WORK (PURPOSE)

- * Develop new standard covering

meteorological monitoring to encompass

operational and planning needs of both

nuclear utility industry and DOE facilities

- * Users identified as meteorological staff at

nuclear electric utilities (i.e., meteorologists,

instrument technicians, health physicists,

dose assessment personnel), government

installations, meteorological instrument

manufacturers, and professional

meteorologists in general

WORKSCOPE AND STATUS

- SCOPE OF WORK (TASKS & SCHEDULES)

Task 1: Develop design criteria for the new standard (9/96 - 10/96)

STATUS: COMPLETE

Task 2: Technical evaluation of current ANSI/ANS-2.5 (10/96-11/96)

STATUS: COMPLETE

Task 3: Technical evaluation of other meteorological monitoring guidance (9/96-3/97)

STATUS: COMPLETE

WORKSCOPE AND STATUS

- SCOPE OF WORK (APPROACH)

- * Draw from and build upon existing applicable

meteorological available guidance,

incorporating, by reference, appropriate

components and developing new

components, as necessary

- * Maintain close liaison with other interested groups to facilitate endorsement of final product by other federal agencies.

OFCM WG/ATD, represents meteorological interests of 14 federal agencies

JOINT NUMUG-DMCC PROJECT
WORKSCOPE AND STATUS

Task 6: Approvals (9/98-8/99)

STATUS:

*** ANS-3.0 REVIEW MEETINGS**

- Atlanta, GA: Sept. 9-10, 1998
- Tampa, FL: Feb. 15, 1999

*** NFSC REVIEW**

- Written Comments: May 4, 1999
- Meeting: Boston; Jun. 7, 1999

*** SSC APPROVAL (Jul. 1999)**

*** ANSI PUBLICATION (Aug. 1999)**

*** DOE ADOPTION THROUGH THE
METEOROLOGY TOPICAL COMMITTEE
(Late 1999)**

JOINT NUMUG-DMCC PROJECT
WORKSCOPE AND STATUS

**Task 4: Obtain/develop technical information
(4/97-7/97)**

**STATUS: DRAFT OUTLINE RATIFIED.
WORK ON ALL 11 SECTIONS BEGAN
AFTER 4/24/97 WG MEETING**

Task 5: Draft new standard (7/97-2/99)

STATUS:

- **PRELIMINARY DRAFT (1/14/98) @ AMS MEETING**
- **FIRST DRAFT (3/17/98). OVER 250 PEER REVIEW COMMENTS.**
- **SECOND DRAFT (7/17/98).**
- **THIRD DRAFT TO ANS-3.0 (8/10/98).**
- **FOURTH DRAFT TO ANS-3.0 (1/8/99).**
- **FIFTH DRAFT TO NFSC (2/19/99).**

5TH DRAFT ANSI/ANS-3.11
TABLE OF CONTENTS (CONTINUED)

7.0 SYSTEM PERFORMANCE

- 7.1 System Accuracy
- 7.2 System Calibrations
- 7.3 System Protection, Maintenance, and Service
- 7.4 Quality Assurance and Documentation

8.0 REFERENCES

- Appendix A Supplemental Meteorological Measurements
- Appendix B Meteorological Tower Siting Considerations in Complex Terrain
- Appendix C Meteorological Monitoring for Stability Class Determination
- Appendix D Optional Site Selection Techniques
- Appendix E Guidelines for Performing Wind Computations

5TH DRAFT ANSI/ANS-3.11

TABLE OF CONTENTS

FOREWORD

1.0 SCOPE

2.0 DEFINITIONS

3.0 METEOROLOGICAL MONITORING SYSTEM

3.1 Basic Meteorological Measurements

3.2 Supplemental Meteorological Measurements (Site Specific)

3.3 Meteorological Observation Towers

3.4 Meteorological Monitoring for Stability Class Determination

4.0 SITING OF METEOROLOGICAL OBSERVATION INSTRUMENTS

4.1 Overview

4.2 Topographic Effects

4.3 Instrument Orientation

4.4 Optional Site Selection Techniques

5.0 DATA ACQUISITION

5.1 Recording Mechanisms

5.2 Sampling Frequencies

5.3 Data Processing/Statistical Methodology

6.0 DATA BASE MANAGEMENT

6.1 Site Data Base(s)

6.2 Data Validation

6.3 Data Substitution

6.4 Data Recovery Rates

6.5 Data Archiving

6.6 Data Reporting