



Standards and Certification Training

Module A – Administrative A2. Standards and Certification Products

REVISIONS

4/8/14	Title revised. Removed Pop Quiz material and updated the background format throughout. Updated Module Learning Objectives on Slide 3 and Module Summary on Slide 27. Revised slides 4, 14, and 15. Deleted former slides 14-17 - information is already covered in B11. Deleted former slide 20 on addenda service. Revised notes throughout.
12/2/11	Revised title, Slides 2, 3,4 &34, revised Slides 10-20 entirely 24 Revised to add ANSI registration of Technical Reports 26-30 Revised to incorporate wording from CA guidelines remove ISO 9000 and add NQA-1 (in development) 32-33 Added ASME Training and Certificate Programs 35 Updated links
12/21/07	39, 41 & Notes Change "Certificate(s) of Authorization" to "Product Certification" 41 Notes changed "Accreditation" to "Certification"

Module A Course Outline

- A1. Tools and Resources
-  A2. Standards and Certification Products
- A3. Membership Maintenance
- A4. Honors and Awards
- A5. Publishing Codes and Standards
- A6. Productive Meetings and Appropriate Ballot Comments

Module A contains six modules. This is Module A2 Standards and Certification Products and Services

Learning Objectives

At the end of this module you will be able to:

- Define the ASME use of the term “Standard”
- Identify the standardized format used on ASME Codes and Standards
- Describe how various types of Inquiries are identified and handled.
- Describe the difference between a standard, guide and technical report.
- Identify the 4 types of conformity assessment programs available.
- Describe the ASME Training and Certificate Programs

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- Identify the 4 types of conformity assessment programs available
- Describe the ASME Training and Certificate Programs

ASME Standards and Certification Products

- I. Codes and Standards
- II. Guides/Reports
- III. Conformity Assessment
- IV. ASME Training and Certificate Programs

Standards and Certification is responsible for the following products:

- I. Codes and Standards
- II. Guides/Reports
- III. Conformity Assessment
- IV. ASME Training and Certificate Programs

I. CODES AND STANDARDS

Let's begin by taking a look at the codes and standards and their ancillary products.

STANDARD

- Definitions of the term "Standard" varies depending on the source.
- Compare the definition of Standard within:
 - ISO/IEC Guide 2
 - OMB Circular A-119
 - ASME

- It is important to establish the definition of a standard, but it is inevitable that such a definition will vary, depending on its source.
- Let's look at definitions of a "standard" from different sources and note the similarities and differences.

"STANDARD" (ISO / IEC GUIDE 2)

Definition

Document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

NOTE – Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.

ISO's definition of a standard is extremely general.

- This is due to the fact that ISO writes standards that cover a wide array of products and activities.

"STANDARD" (OMB CIRCULAR A-119*)

Definition

(i) Common and repeated use of rules, conditions, guidelines or characteristics for products or related processes and production methods, and related management systems practices

(ii) The definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance, designs, or operations; measurement of quality and quantity in describing materials, processes, products, systems, services, or practices; test methods and sampling procedures; or descriptions of fit and measurements of size or strength

(iii) Terminology, symbols, packaging, marking or labeling requirements as they apply to a product, process, or production method.

** OMB A-119 = Federal Participation in the Development and Use of Voluntary Consensus Standards and Conformity Assessment*

The US Office of Management and Budget (OMB) Circular A-119 Federal Participation in the Development and Use of Voluntary Consensus Standards and Conformity Assessment Activities defines a standard as a:

(i) Common and repeated use of rules, conditions, guidelines or characteristics for products or related processes and production methods, and related management systems practices

(ii) The definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance, designs, or operations; measurement of quality and quantity in describing materials, processes, products, systems, services, or practices; test methods and sampling procedures; or descriptions of fit and measurements of size or strength.

(iii) Terminology, symbols, packaging, marking or labeling requirements as they apply to a product, process, or production method.

It also

- Directs U.S. government agencies to use voluntary consensus standards in lieu of government-unique standards except where inconsistent with law or otherwise impractical
- Includes a description of what is not a standard, and the various types of standards that can coexist.

"STANDARD"

(ASME)

Definition

A set of technical definitions, instructions, rules, guidelines, or characteristics set forth to provide consistent and comparable results, including:

- Items manufactured uniformly, providing for interchangeability
- Tests and analyses conducted reliably, minimizing the uncertainty of the results
- Facilities designed and constructed for safe operation

By custom, some standards are called codes.

ASME defines a standard as:

A set of technical definitions, instructions, rules, guidelines, or characteristics set forth to provide consistent and comparable results, including:

- Items manufactured uniformly, providing for interchangeability
- Tests and analyses conducted reliably, minimizing the uncertainty of the results
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By custom, some standards are called codes.

IMPACT OF CODES AND STANDARDS

- Affects all interested parties for the given piece of equipment, work process or technology such as:
 - Manufacturers
 - Installers
 - Enforcing Authorities & Inspection Agencies
 - Specialists having expert knowledge
 - Designers
 - Users or owners of equipment
- Market impact has legal implications
- Basis for regulatory requirements

Codes and standards have multiple impacts:

- Codes and standards can have a major impact on the market for the equipment, work process or technology to which the code or standard applies.
- It is the potential market impact that is behind many of the legal implications that are addressed in other sessions in this training program.
- Codes and standards often form the basis for government regulatory requirements, particularly where safety is involved.

ASME CODES AND STANDARDS

- Developed under the ANSI accredited Procedures for Codes and Standards Development Committees
- Process consistent with WTO criteria for development of international standards
- Standardized Format
- Key Content Characteristics
 - Clear consistent style
 - Well-defined scope
 - Realistic
 - Enforceable

- ASME Codes and Standards are developed using the key principles of the consensus process discussed further in Module B5 including:
 - 1) Openness
 - 2) Transparency
 - 3) Balance of Interest
 - 4) Due Process
- The process is consistent with World Trade Organization criteria for development of international standards.
- ASME standards have a standardized format and these key characteristics:
 - They are written in a clear consistent style that makes them suitable for repeated use.
 - They have a well-defined scope, but provide complete coverage of the topics within that scope.
 - They define realistic requirements suited to the intended purpose of the standard. This means not being arbitrary or overly restrictive.
 - They define enforceable requirements. That is, they allow anyone auditing the use of the standard, such as an inspector or a purchaser, to clearly determine where the standard has been followed.

ASME Codes and Standards Standardized Format

- Front Matter
 - Copyright, Contents, Foreword, Roster, Committee Correspondence, Preface, Introduction, Summary of Changes, Organization Page
- Chapters
- Back Matter
 - Appendices (Mandatory and Non Mandatory)
 - Interpretations, Code Cases, Annexes, Informational pages

ASME Codes and Standards follow the same standardized format which includes:

- Front material such as copyright page, Contents, Foreword, Roster, Committee Correspondence, Preface, Introduction, Summary of Changes, Organization Page
- The content of the standard is divided into Chapters, sections and paragraphs for easy reference.
- Back Material could include Appendices (Mandatory and Non Mandatory), Interpretations, Cases, Annexes, Informational pages

INQUIRIES to ASME DEVELOPMENT COMMITTEES

Due to the impact ASME Codes and Standards have on various industries, development committees may be requested to respond to the following types of inquiries:

- Informal Inquiries
- Interpretations
- Cases
- Requests for Revision

Due to the impact ASME Codes and Standards have on various industries, there are a few avenues interested parties can use to question the development committees such as:

- 1) Informal Inquiries
- 2) Interpretations – An “Interpretation” is a formal response to a written inquiry. Clarifies existing requirements where there is ambiguous wording in the standard.
- 3) Cases – Cases are used to provide alternatives to the existing requirements of the code, such as to grant permission to use new materials or alternative constructions

All of these services are covered in more detail in Module B11 Standards Inquiries, Interpretations and Cases

Requests for Revision will be covered in the next slide.

REQUESTS FOR REVISION

- Requests may be initiated by:
 - Committee member
 - Staff
 - General Public
- Standards committees may have specific format requirements for this type of inquiry.
- All requests are forwarded to the appropriate committee for consideration.

- Requests for Revision can be initiated by committee members, staff or the general public.
- Standards committees may have specific format requirements for this type of inquiry. These requirements can be posted in the Introduction or Foreword of the Standard.
- Requests for revision to the standard, such as proposed technical changes, editorial changes or errata, are forwarded to the appropriate committee for consideration.

TECHNICAL/EDITORIAL CHANGES AND ERRATA

- Technical Changes
 - Change the requirements of the standard in any way
- Editorial Changes
 - Do not change the requirements in any way
- Errata
 - Typographical errors or misspellings, grammatical errors, publication errors (omission by staff, printer errors)
 - Errata are posted online and are sent to all purchasers of the code or standard

Requests for revision can fall into one of three categories:

- Technical changes affect the requirements of the standard.
- Editorial changes *do not* change the requirement of the standards in any way. Most editions contain a number of editorial changes and perhaps some errata.
- Errata include the following:
 - Typographical errors or misspelling
 - Grammatical errors
 - Incorrect publication of approved items, omission by staff of approved items, printer errors, or incorrect publication of an item that was not approved.
 - Cross reference errors

The changes described in Errata apply retroactively.

II. GUIDES and TECHNICAL REPORTS

We've now covered our most important group of products – codes and standards and the ancillary products used to update and expand on them.

Let's move on to another important category of products: Guides and Reports.

GUIDES

Characteristics

- Provide recognized and generally accepted good engineering practices
- Provide suggestions, alternatives rather than directives
- Are occasionally updated

- Guides describe recognized and generally accepted good engineering practices
- Guides give suggestions and or choices of solutions to engineering problems, but are less authoritative and definitive than a standard.
- Like standards, guides can be used repetitively within their clearly defined scopes, and are occasionally updated.

TECHNICAL REPORTS

Characteristics

- Informational or tutorial in nature
 - Technical research reports
 - Methods for applying a standard
- These are handled differently depending on the department
- Should be reviewed every 5 years
- Can be registered with ANSI

- Technical Reports are Informational or tutorial in nature, technical reports may include reports of technical research or explanations of methods for applying a code or standard.
- Since each Department handles this differently, and most committees have not actually issued technical reports, this will be covered in the specific committee training sessions where appropriate.
- It is suggested that technical reports be reviewed at least once every five years for continued relevance and appropriate action.
- Technical Reports can be registered with ANSI. Procedures for Technical Reports are available on CS Connect.

III. CONFORMITY ASSESSMENT

Part III of this module will cover ASME's Conformity Assessment Programs.

CONFORMITY ASSESSMENT

Types

- Accreditation
- Product Certification
- Personnel Certification
- Management Systems Certification

To facilitate demonstration of compliance by users of some ASME codes and standards, ASME develops and administers programs to assess conformity with some of its standards. ASME Standards and Certification issues conformity assessment certificates in four areas: accreditation, product certification, personnel certification and management system certification.

These programs are administered by ASME Conformity Assessment under the Board on Conformity Assessment (BCA). An associated Accreditation or Certification Committee is typically formed under BCA to provide guidance for the program.

Let's take a brief look at each of these. Training modules B3 and B9 will cover them more completely.

CONFORMITY ASSESSMENT

Accreditation

- ASME assesses and verifies an organization's competence to serve as a conformity assessment body.
- ASME-accredited organization may develop and administer a conformity assessment program (e.g., testing, inspection, or certification) in accordance with program requirements contained in an ASME standard.
- Certificate of Accreditation awarded for successful review and organizations are referred to as "ASME-accredited".

ASME Accreditation is an independent assessment and verification of an organization's competence to serve as a conformity assessment body. The accreditation assessment is performed by an ASME audit team which reviews quality system documentation and verifies implementation. The ASME-accredited organization may develop and administer a conformity assessment program (e.g., testing, inspection, or certification) in accordance with program requirements contained in an ASME standard developed through the consensus process. A "Certificate of Accreditation" is typically issued and organizations are referred to as "ASME accredited".

An example of an accreditation program is the Pressure Relief Device Laboratories (PRD) which accredits testing laboratories to perform capacity verification tests as required by the BPV Code. Tests are required to be conducted as specified in the ASME PTC 25 standard.

CONFORMITY ASSESSMENT

Product Certification

- ASME certifies that a manufacturer is capable of constructing equipment and fulfilling requirements of an ASME standard.
- Supplier is responsible for ensuring that individual products meet the requirements on which the certification is based.
- ASME “Certificate of Authorization” is issued where there is a certification mark (stamp) and product designator that may be placed on the product.

ASME certification related to products means that a manufacturer is capable of constructing equipment and fulfilling requirements of a certain ASME standard. Certification is performed by an ASME audit team which reviews quality systems documentation and verifies implementation. The supplier is responsible for ensuring that individual products meet the requirements on which the certification is based. An ASME “Certificate of Authorization” is issued where there is a certification mark and product designator that may be placed on the product.

An example of product certification is the Boiler and Pressure Vessel (BPV-non nuclear) - ASME BPV certification is a means of complying with the laws and regulations in most of the U.S. and Canada, as well as other countries throughout the world. There is a separate ASME certification designator used in conjunction with the certification designator for each type of equipment covered by the BPV Code.

CONFORMITY ASSESSMENT

Personnel Certification

- Certifies that an individual meets the qualification criteria specified in an ASME standard.
- Evaluation includes an examination or series of examinations.
- Individual receives Certificate or Certification Card upon successful completion and is referred to as “Certified”.

ASME Personnel Certification means that an individual’s qualifications have been reviewed, proficiency has been demonstrated, and the individual has been accepted by ASME as meeting all requirements of the relevant ASME Standard. ASME serves as the conformity assessment (certification) body and assesses the conformity of the personnel to requirements of the certification criteria document (an ASME standard), which includes independent job-specific assessment of an individual’s qualification (knowledge, skills, and abilities). Documented training and experience prerequisites are typically established to become eligible for the certification. Written and practical assessment examinations are utilized and based on the required body of knowledge and skills contained in the referenced certification criteria document. An individual receives a Certificate or Certification Card upon successful completion and is referred to as “Certified

An example of personnel certification is the Geometric Dimensioning and Tolerancing Professionals (GDTP) program. Criteria for this program is contained in ASME Y14.5.2, Certification of Geometric Dimensioning and Tolerancing Professionals.

CONFORMITY ASSESSMENT

Management Systems Certification

- Certifies the organization’s quality management system, not its products
- ASME audit team reviews system documentation and implementation
- ASME “Certificate of Registration” is granted and the company may be referred to as “Registered”.

Management System Certification means an organization’s management system (e.g., quality assurance program) has been reviewed and accepted by ASME as meeting the requirements of the relevant standard. Certification involves an ASME audit team reviewing system documentation and implementation. Organizations receive an ASME “Certificate of Registration” and may be referred to as “Registered”.

ASME NQA-1 (Quality Assurance Requirements for Nuclear Facility Applications) is an example of this type of program.

IV. ASME Training and Certificate Programs

In this last part of this module, we'll cover ASME Training and Certificate Programs.

ASME Training and Certificate Programs

Certificate Programs

- Training-based individual credentialing programs
- ASME curriculum is developed and administered by ASME Training and Development
- Individuals successfully completing the program receive a Certificate or Qualification Card and are referred to as “Qualified”
- Authorized Training Providers (ATPs) may be engaged to administer programs

ASME Certificate Programs are training-based individual credentialing programs, and are not considered Conformity Assessment Programs. Certificate Programs include a series of rigorous and mandatory learning events (training) as well as individual assessments to determine attainment of learning objectives. A volunteer Oversight Group is typically established to support program development, perform peer review of the program plan, course material, and assessment exams, and provide due process for the certificate program. Authorized Training Providers (ATPs) may be engaged to administer programs. A common ASME curriculum is developed and administered by ASME Training and Development to ensure consistency between ATPs. Individuals successfully completing the program receive a Certificate or Qualification Card and are referred to as “Qualified”. Current certificate programs include:

Engineering Management Certificate program (EMCP) and Nuclear Construction Certificate program (NCCP)

MODULE SUMMARY

- Standards are a set of technical definitions, instructions, rules, guidelines, or characteristics set forth to provide consistent and comparable results. By custom some standards are called Codes
- Guides give suggestions and or choices of solutions to engineering problems, but are less authoritative and definitive than a standard.
- Technical Reports are Informational or tutorial in nature, and may include reports of technical research or explanations of methods for applying a code or standard.
- Conformity Assessment covers 4 areas; Accreditation, Product Certification, Personnel Certification, and Management Systems Certification
- ASME Training and Certificate Programs are training-based individual credentialing programs.

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- ASME Training and Certificate Programs are training-based individual credentialing programs.

REFERENCES

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