
ASME
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ASME
Nuclear Conformity Assessment

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Conformity Assessment

- What is it?
- What are the key elements of a Conformity Assessment program?
- Who is responsible for Conformity Assessment?

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Conformity Assessment Defined

Simply:

Programs, processes and procedures for ascertaining Code compliance.

Definition (ISO/IEC 17000)

- Demonstration that specified requirements relating to a product, process, system, person or body are fulfilled
- Examples: testing, inspection, certification, registration, accreditation

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ASME Section III – Subsection NCA

General Requirements for Division 1 & 2 for manufacturers, fabricators, installers, designers, material manufacturers, material suppliers, and owners of nuclear facilities.

Articles

1000	Introduction and Scope
2000	Classification of Components and Supports
3000	Responsibility and Duties
4000	Quality Assurance
5000	Authorized Inspection
8000	Certificates, Nameplates, Code Symbol Stamping, and Data Reports

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ASME Section III Rules for Construction - Code Books

- **Subsection NCA –** General Requirements for Div. 1 & 2
- DIVISION 1
  - Subsection NB Class 1 Components
  - Subsection NC Class 2 Components
  - Subsection ND Class 3 Components
  - Subsection NE MC Components
  - Subsection NF Supports
  - Subsection NG Core Support Structures
  - Subsection NH Class 1 Components in Elevated Temperature

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Section III Rules for Construction Code Books

- DIVISION 2
  - Code for Concrete Reactor Vessels and Containments

- DIVISION 3
  - Containment Systems and Transpiration Packaging for Spent Nuclear Fuel and High-Level Radioactive Waste

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ASME Conformity Assessment Elements

- **Regulatory Authorities (Jurisdictions)**
  - NRC
  - States
  - Local Jurisdiction
- **Certification and Examination Bodies**
  - ASME
  - National Board of Boiler and Pressure Vessel Inspectors
- **Third Party Independent Inspection**
  - Authorized Inspection Agencies (AIA)
- **Certificate Holder**
  - Manufacture

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Rolls and Responsibilities

- **Certification & Examination Bodies**
  - ASME
    - Develops Codes and Standards
    - Authorizes Manufacturers
    - Accredits Authorized Inspection Agencies
  - National Board of Boiler and Pressure Vessel Inspectors
    - Examination and Certification of Inspectors
    - ASME's Designated Organization

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Rolls and Responsibilities

- **Regulatory Authorities (Jurisdictions)**
  - Adopt Code as Law
  - May participate in Joint Surveys

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Rolls and Responsibilities

- **Certificate Holder**
  - Manufacture
    - Controls Activities:
      - All Examinations
      - All Tests
      - Final Stamping

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Rolls and Responsibilities

- **Third Party Independent Inspection**
  - Authorized Inspection Agencies (AIA)
    - Provide third party inspection (oversight) to ensure the ASME Certificate Holder is in compliance with Scope of Authorization

Controls all Inspections

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AUTHORIZED INSPECTION AGENCY (AIA)

Accreditation:

ASME Accredits agencies or other bodies to perform the inspections required by one or more sections of the ASME Boiler and Pressure Vessel Code.

Applicability

- Government agencies which adopt and enforce the ASME Boiler and Pressure Vessel Code. **"Jurisdictions"**
- Companies licensed in U.S. or Canada to write Boiler and Pressure Vessel insurance.

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AUTHORIZED INSPECTION AGENCY (AIA)

Defining Standards for AIA Accreditation

ASME QAI-1 Standard for Qualifications for Authorized Inspection

- Nuclear (originally based on N626.1)
- Boiler and Pressure Vessel (non-nuclear)

National Board of BPV Inspectors Rules and Regulations

History

– 1992 – Nuclear program implemented

– 1997 – Boiler and Pressure Vessel program implemented

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Authorized Inspection Agency - Quality Control NCA 5000

Scope and Purpose:

Shall identify the activities of application and shall provide for planning, control, and accomplishment of activities and implementation.

Elements:

1. Organization
2. Program Description
3. Document Control
4. Training
5. Records
6. Corrective Action
7. Audits
8. Forms

Authorized Inspection Agency - AIA

- Accreditation process
  - On-site Survey (2-3 days)
  - Survey Team: ASME Consultants (2)
- Certificate
  - Valid for 3 years
- Audits
  - “For cause” only
- Currently: 24 Organizations

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Authorized Inspection Agency - Duties

- Maintain a staff of Qualified Inspectors and Supervisors
- Participate in ASME shop surveys
- Review and accept Quality Assurance Manual and all revisions
- Assure proper execution of responsibilities
- Conduct annual audits of Inspector's Activities
- Submit to National Board application for endorsements
- Verity to National Board that audits have been conducted
- Provide ongoing training and technical supervision

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Inspector Qualification Requirements

- To initially qualify as a **National Board Commissioned Inspector**, the applicant must possess a high school diploma (or equivalent educational background) and some combination of the following areas of education and experience:
  - Technical training in inspection
  - Technical curriculum
  - Some combination of college or university exposure
  - College or university degree
  - Technical experience in:
    - ✓ Engineering design and Inspection
    - ✓ Manufacturing
    - ✓ Operation of boilers exceeding 50,000 pounds
    - ✓ Repair, alteration or maintenance of boilers/pressure vessels
    - ✓ Quality control systems
    - ✓ NDE Level II examiner of boilers/pressure vessels
  - **NB Commissioned Written Examination** - Administered by The National Board of Boiler and Pressure Vessel Inspectors.

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Authorized Nuclear Inspector (ANI) Qualifications “N” Endorsement

- Comply with NB Rules for Commissioned Inspectors
- Minimum 1 year diversified experience Section I and/or VIII Shop or 1 year diversified experience as an Inspector trainee under the direct Supervision of an Authorized Nuclear Inspector.
- Demonstrated knowledge and experience
  - Quality Assurance Manuals
  - Evaluation of shop and field procedures
  - Perform shop and field inspections
- Pass written examination administered by the National Board

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Authorized Nuclear Supervisor Inspector Qualifications “S” Endorsement

Must be qualified as an Authorized Nuclear Inspector (ANI)

To be considered the Candidate must satisfy <u>one</u> of the following requirements:

- 4 year degree engineering or science plus 5 years experience at least two years should be associated with a nuclear facility
- High School degree plus 10 years experience, general QA or Engineering at least two years should be associated with a nuclear facility
- At least 5 years ASME Code related work

In Addition:

- Have knowledge of Nuclear surveys – serve on at least two nuclear surveys as a member or observer
- Pass a written examination administered by the National Board
- Basic knowledge of health physics as far as exposure to radiation

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Authorized Nuclear Inspector's Duties (General)

- Verify Scope of Work
- Review drawings
- Verify Design Specifications & Design Reports are certified
- Monitor QA Program
- Review qualification record
- Verify Materials complies with Code requirements
- Verify material traceability
- Verity that cut edges are examined
- Verify welding procedures
- Verify welder qualifications
- Verify required heat treatments have been preformed
- Verify NDE examinations and tests have been performed
- Witness and/or verify in process activities
- Witness final pressure tests
- Review and sign data report
- Keep a bound diary

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Authorized Nuclear Inspector Supervisor's Duties and Responsibilities (General)

- Maintain a record of assigned ANI and description of assignment
- Maintain a record of Certificate Holders and visits made
- Assist in maintaining the ANI's competency
- Technical performance
- Audit and document the performance of each ANI
- Investigate and report (in writing) to management significant Code and/or QA Program nonconformance

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ASME Quality Assurance Program

Scope and Purpose:

Quality Assurance Program for

- Construction/Fabrication Process
- Materials
- Design
- Inspection and Testing
- Assures rules for Code compliance are part of the QC System
- Assures ASME that proper use of the Stamp is maintained
- A means to verify compliance to Code requirements

Overall - A Quality Assurance Program to ensure the end product complies to the Code

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Control of Conformity Assessment

Quality Programs are required for:

- Manufacturers activities, e.g., NQA-1
- Nuclear Component manufacture
  - Section III, NCA-4000 Program
- Nuclear Material Manufacture, supply & services
  - Section III, NCA-3800

Quality Programs are Monitored

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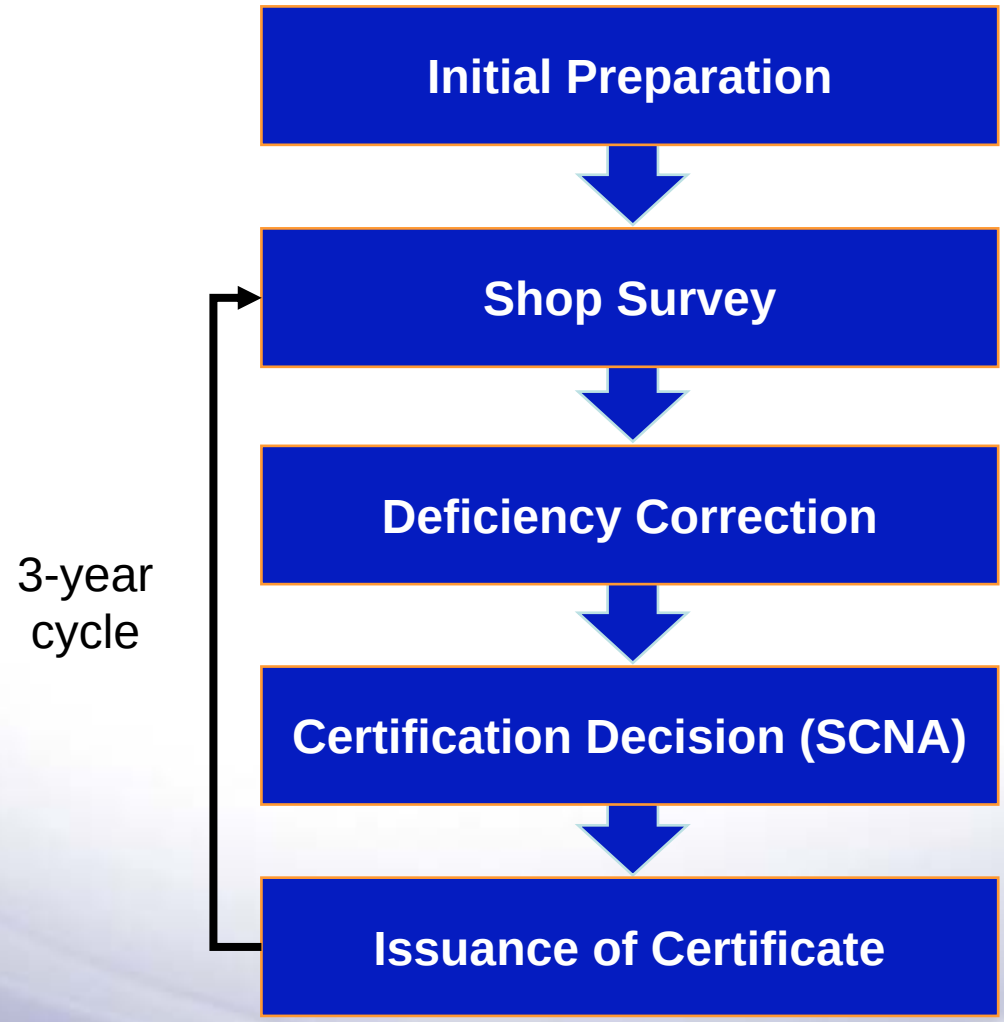
Manufacture Certification Process



Certificate Holder - Manufacturer

Authorization process

- On-site Survey (3-5 days)
- Joint Survey Team (min 5)
  - ASME Team Leader
  - 2 ASME Team Members
  - ANIS
  - ANI
    - Jurisdictional Authority is invited to participate

Certificate

- Valid for 3 years

Audits

- “For cause” only

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ASME Nuclear Authorization & Accreditation

Types of Certification

Accreditation - Approval of QA Program - No Stamping

Accreditation - Quality System – Supplier of Material – No Stamping

Authorization – Implementation (survey) – Stamping N, NA, NPT, NV, and N3

Authorization - NS – Supplier of nuclear supports – No Stamping

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Nuclear Components N-type Certificates

Nuclear vessels, pumps, valves, piping systems, storage tanks, core support structures, concrete containments, and transport packaging

Field installation and shop assembly

Fabrication, with or without design responsibility, for nuclear appurtenances and supports

Pressure relief valves

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Nuclear Components (N-type Certificates)

Nuclear supports

Containments for spent nuclear fuel and high level radioactive waste

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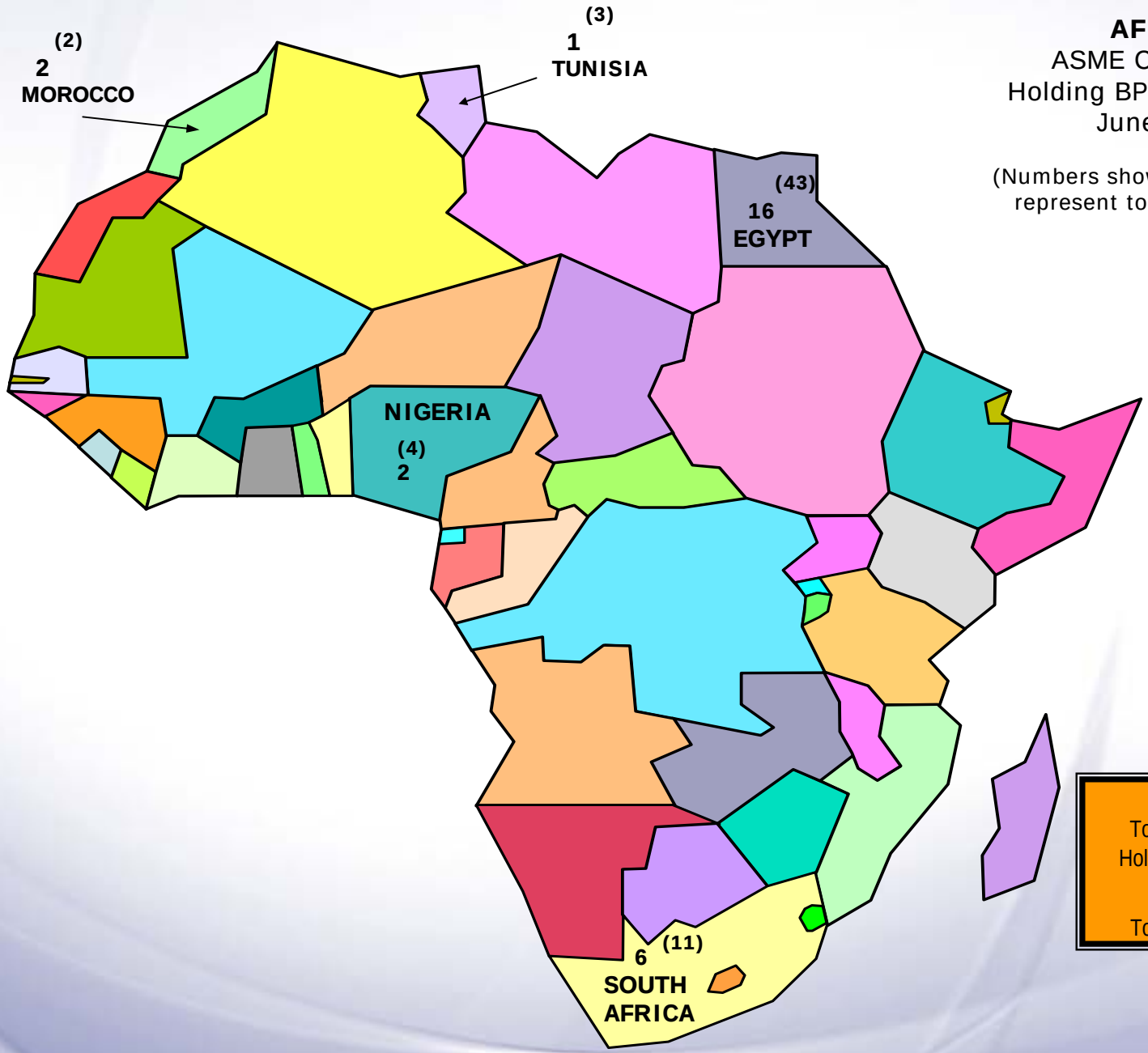

AFRICA
ASME Companies
Holding BPV Certificates
June 2008

(Numbers shown in parenthesis represent total Certificates)

27
Total Companies
Holding Certificates

63
Total Certificates

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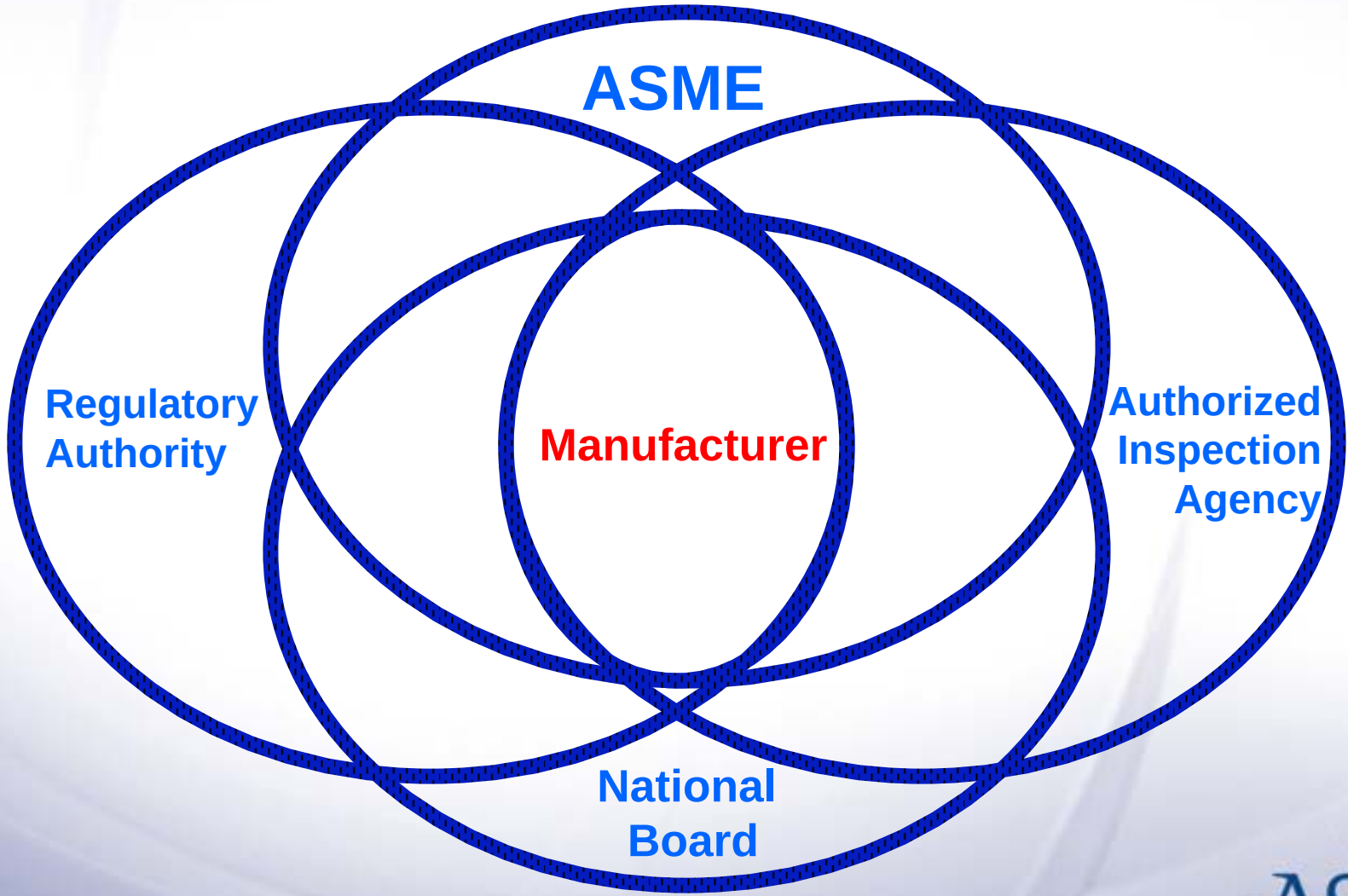
Who's Responsible



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