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ASME Nuclear Certification Overview

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HSB – Global Inspection and Engineering Services

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Code Meets Industry Expectations

The global use of the U.S.-origin N-stamp certification supports the view that, despite the decline of the U.S. nuclear industry, the United States remains an esteemed global leader in the area of nuclear safety.

As the U.S. Government works to revitalize the U.S. nuclear industry, especially in the area of exports, it may be beneficial to leverage the global standing of the N-stamp certification.

Global Trends of ASME "N-Stamp" Certifications for Nuclear Component Vendors

August 2021 David Farley

U.S. Department of Energy
Office of Scientific and Technical Information

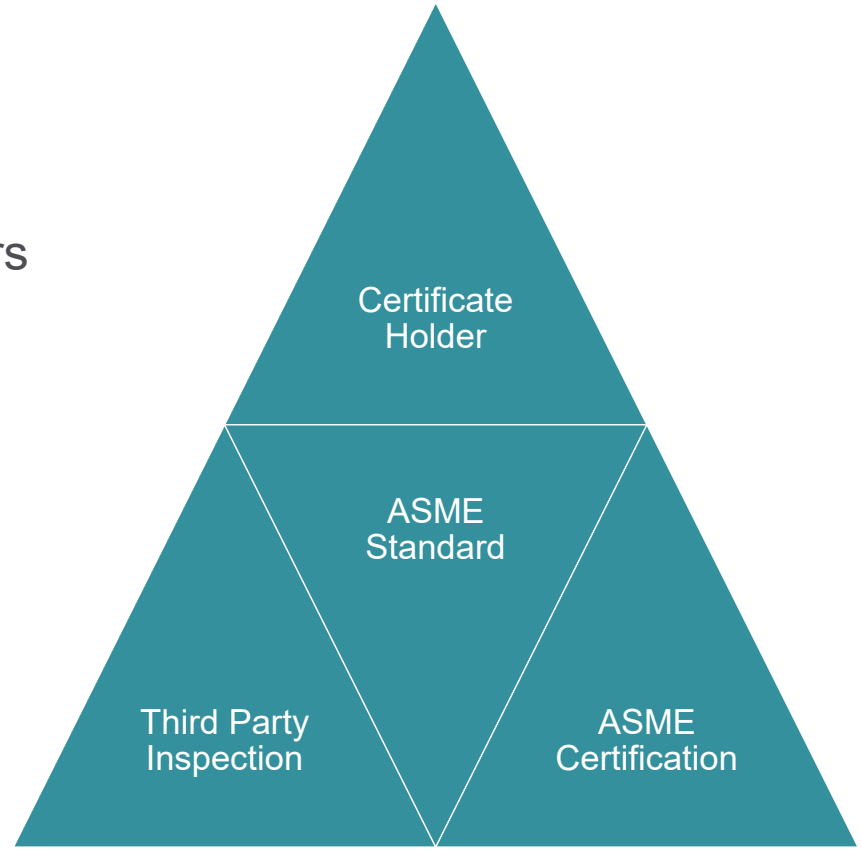
ASME Code Usage

- 60 Countries – ASME B&PV Code
- 15 Countries – Section III Nuclear Code
- 20 Countries – Section III Certificate Holders
- 30 Countries purchase items to Section III

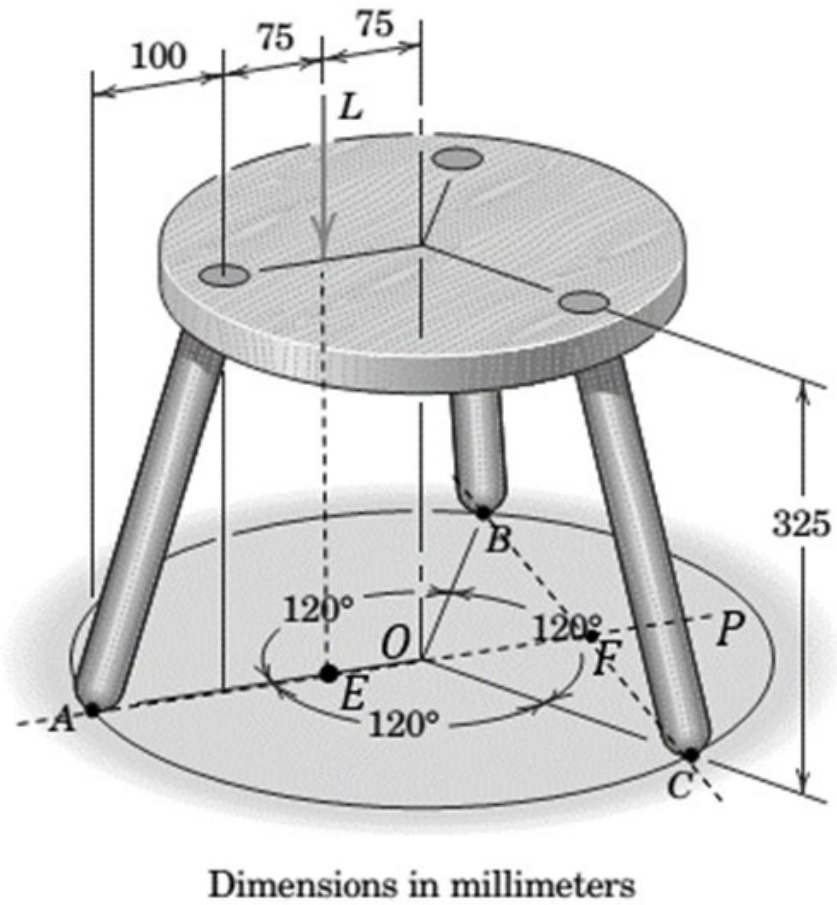
Conformity Assessment

“Any activity concerned with determining directly or indirectly that requirements are fulfilled”

“Conformity Assessment, when properly applied, provides regulators and purchasers of products confidence that the products were manufactured in accordance with the applicable standard, regardless of where in the world they were manufactured.



Conformity Assessment



Dimensions in millimeters

- Design
- Material
- Fabrication

Certificate Holder

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Written Process

QA Program

Manual
Procedures
Travelers

Training

Qualifications

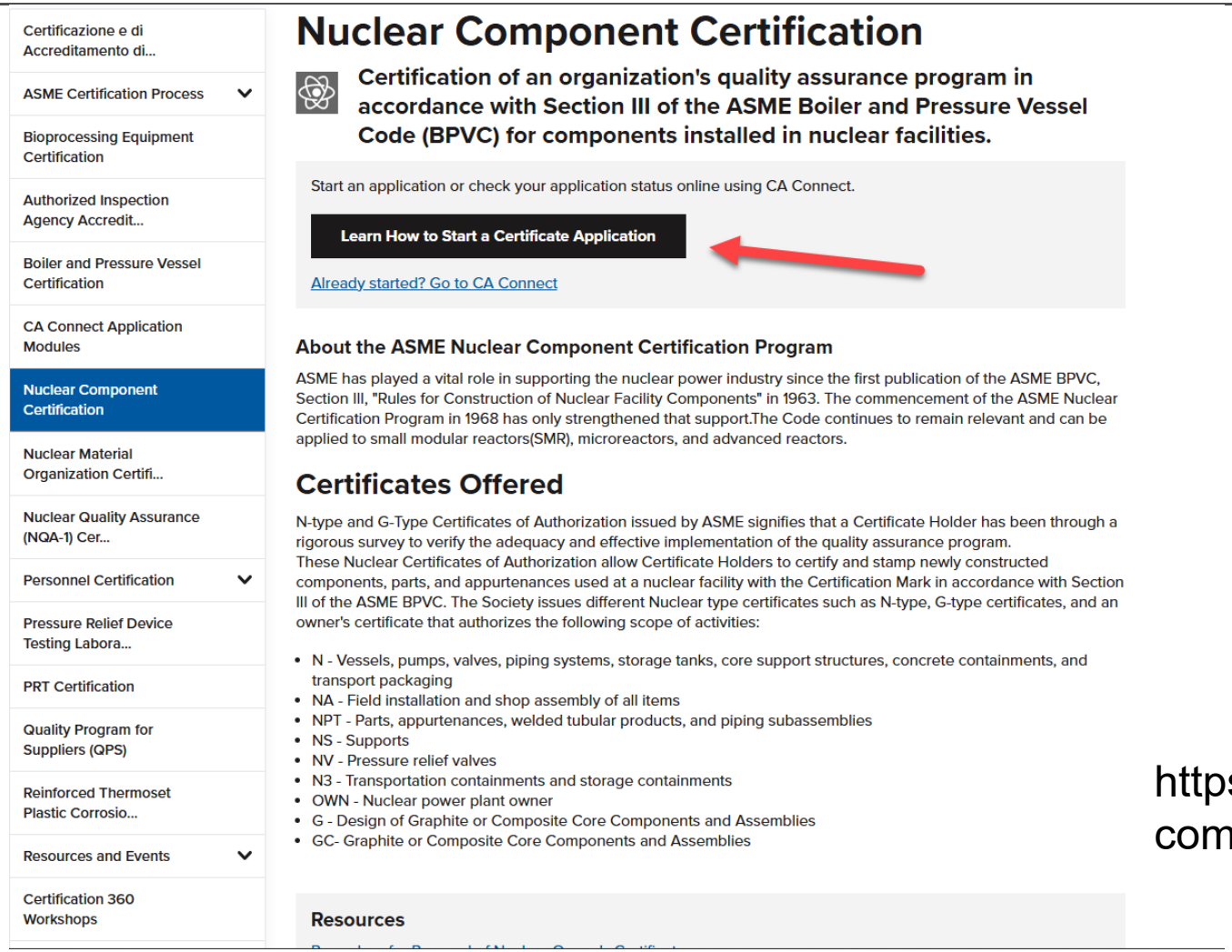
Certified Engineers, NDE, testing, inspection, welding personnel
Welding and NDE procedures
All personnel

Quality Checks

Checks

Inspections
Testing
NDE
Review and approvals

ASME Nuclear Certification Process



https://www.asme.org/certification-accreditation/nuclear-component-certification

ASME Nuclear Certification Process

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- Nuclear Material Organization Certifi...
- Nuclear Quality Assurance (NQA-1) Cer...
- Personnel Certification
- Pressure Relief Device Testing Labora...
- PRT Certification
- Quality Program for Suppliers (QPS)
- Reinforced Thermoset Plastic Corrosio...
- Resources and Events
- Certification 360 Workshops
- ASME Digital Badging Program
- Why "Demand The Mark"

Certificates Offered

N-type and G-Type Certificates of Authorization issued by ASME signifies that a Certificate Holder has been through a rigorous survey to verify the adequacy and effective implementation of the quality assurance program.
These Nuclear Certificates of Authorization allow Certificate Holders to certify and stamp newly constructed components, parts, and appurtenances used at a nuclear facility with the Certification Mark in accordance with Section III of the ASME BPVC. The Society issues different Nuclear type certificates such as N-type, G-type certificates, and an owner's certificate that authorizes the following scope of activities:

- N - Vessels, pumps, valves, piping systems, storage tanks, core support structures, concrete containments, and transport packaging
- NA - Field installation and shop assembly of all items
- NPT - Parts, appurtenances, welded tubular products, and piping subassemblies
- NS - Supports
- NV - Pressure relief valves
- N3 - Transportation containments and storage containments
- OWN - Nuclear power plant owner
- G - Design of Graphite or Composite Core Components and Assemblies
- GC- Graphite or Composite Core Components and Assemblies

Resources

Procedure for Renewal of Nuclear Owner's Certificates

Nuclear Component Checklist

Nuclear Owner's Checklist

Nuclear Component Pre-Survey Questionnaire

Frequently Asked Questions

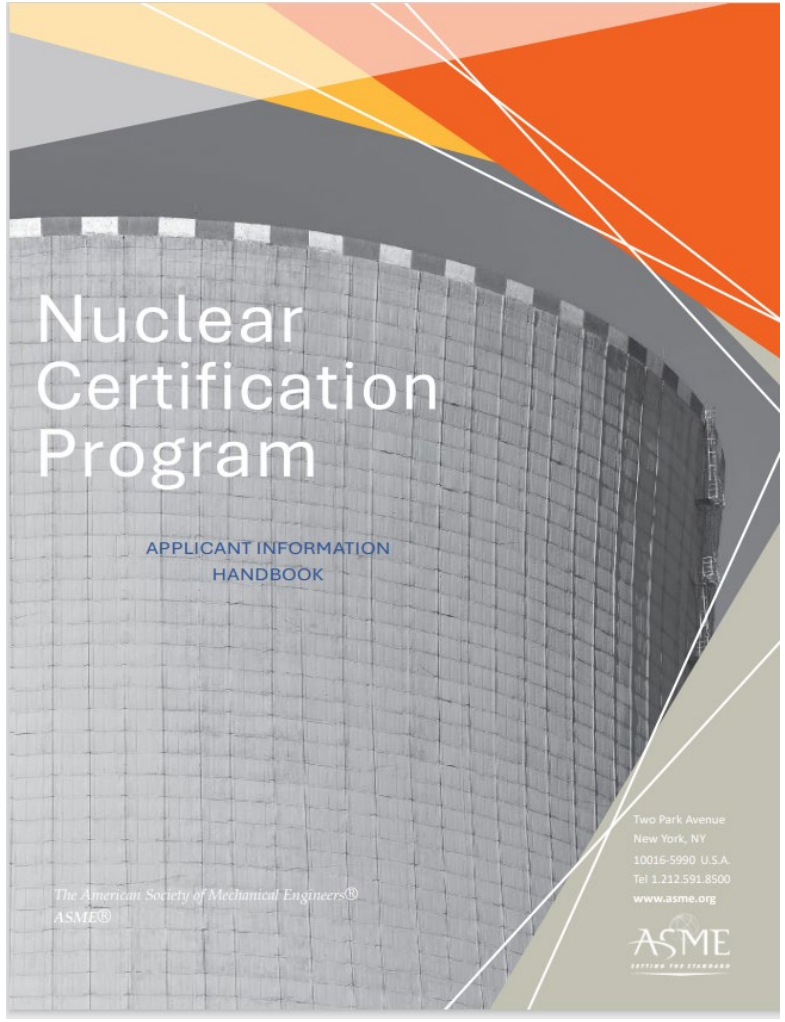
Applicant Information Handbook

ASME Data Report Forms

Policy on Horizontal NPT Stamps

Code Case N-822-4

Start an application or check your application status online using CA Connect.



ASME Nuclear Certificate

- Granted by the Society for a 3-year period
- Issued for a specific shop or field location and specific scope of activities
- Certificate Holder assumes responsibility for full Code Compliance
- Certificate of Authorizes allows Code Stamp and certifying data report forms for completed items.

Types of Certificate

- Certificate of Authorization
- Certificate of Authorization Corporate:
- Quality Assurance Program Certificates
- Quality Systems Certificate
- Owner

Scope of Activities

- N - Vessels, pumps, valves, piping systems, storage tanks, core support structures, concrete containments, and transport packaging
- NA - Field installation and shop assembly of all items
- NPT - Parts, appurtenances, welded tubular products, and piping subassemblies
- NS - Supports
- NV - Pressure relief valves
- N3 - Transportation containments and storage containments
- G - Design of Graphite or Composite Core Components and Assemblies
- GC- Graphite or Composite Core Components and Assemblies

- QSC – Manufacture and supply of material
- OWN - Nuclear power plant owner

Certification Process

Preparation

Application

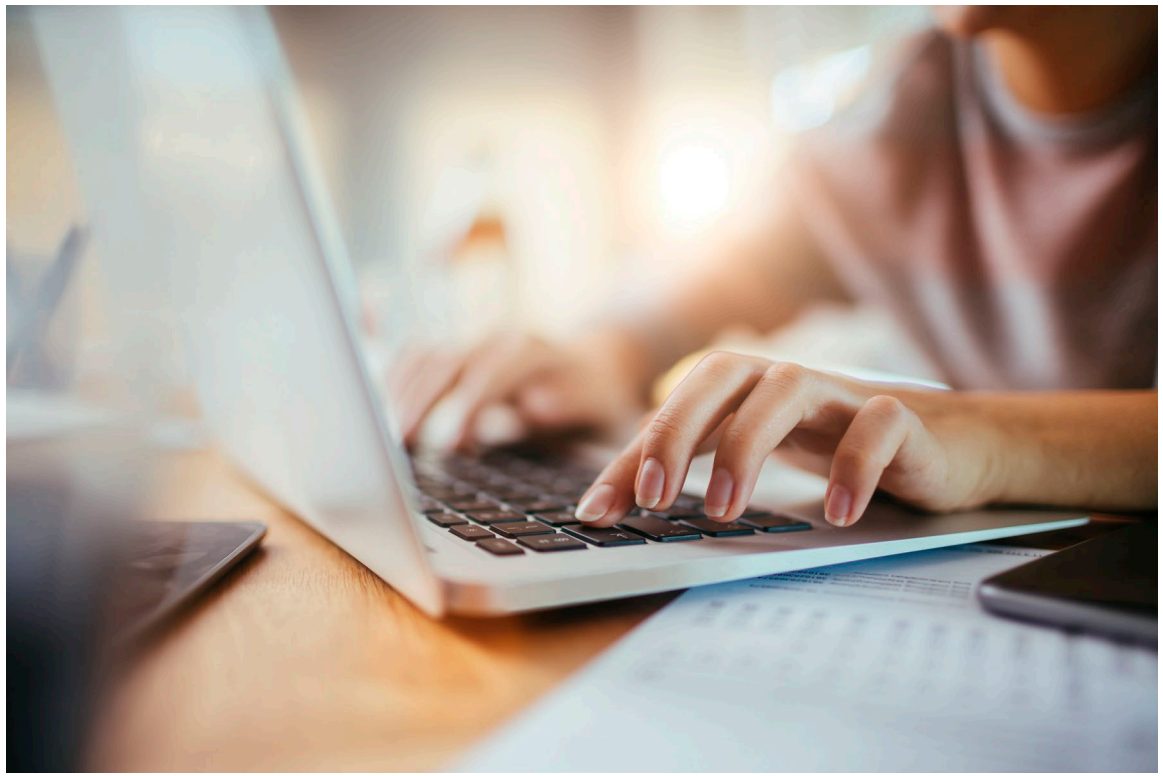
Assessment

Certification

Preparation

- Review relevant information about the certification program on ASME's website,
- Decide on the scope of work that will be identified on the ASME certificate
- Obtain required standards
- Enter into an agreement with an Authorized Inspection Agency if required by the
- Prepare the quality manual, a written description of the quality program
- Indoctrinate and train personnel who will implement the quality program.

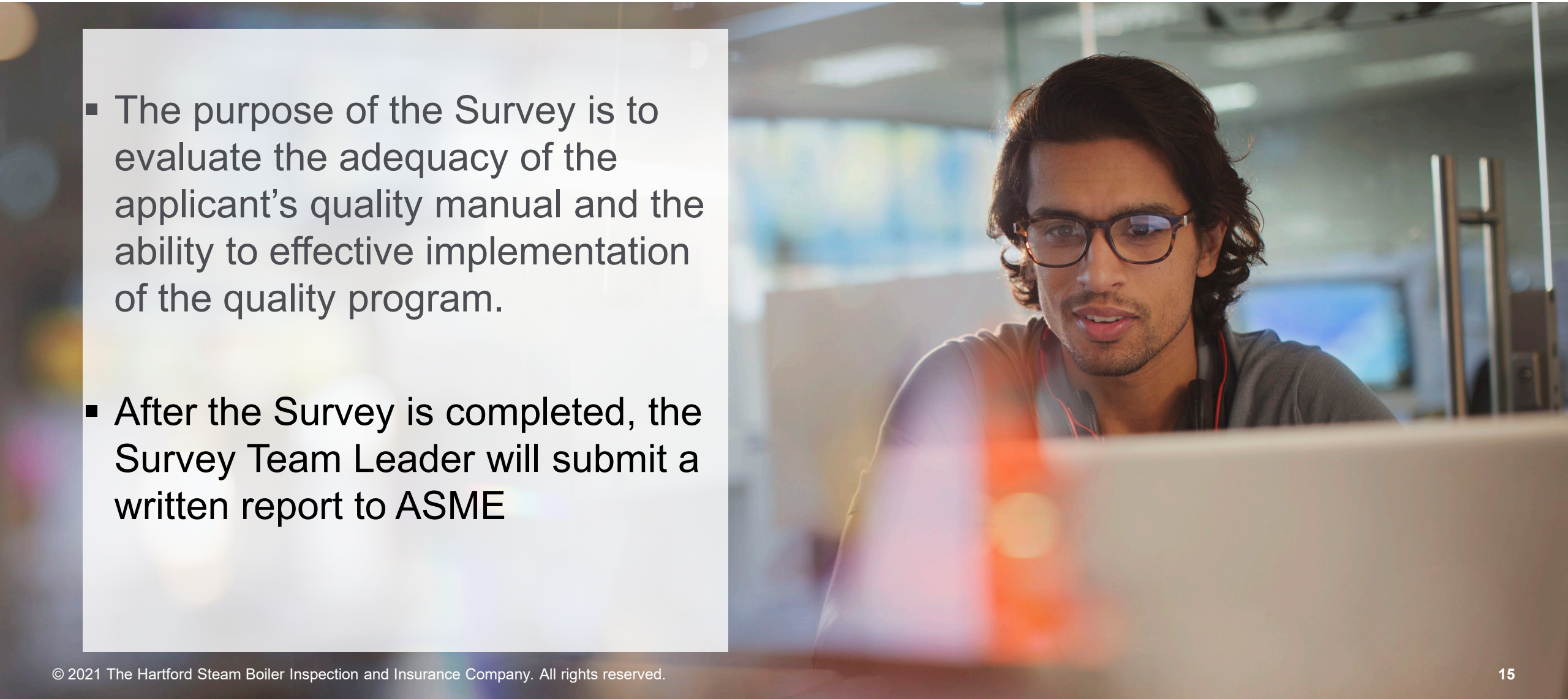
Application



Organization submits online application forms

Pays Fees

Assessment



- The purpose of the Survey is to evaluate the adequacy of the applicant's quality manual and the ability to effective implementation of the quality program.
- After the Survey is completed, the Survey Team Leader will submit a written report to ASME

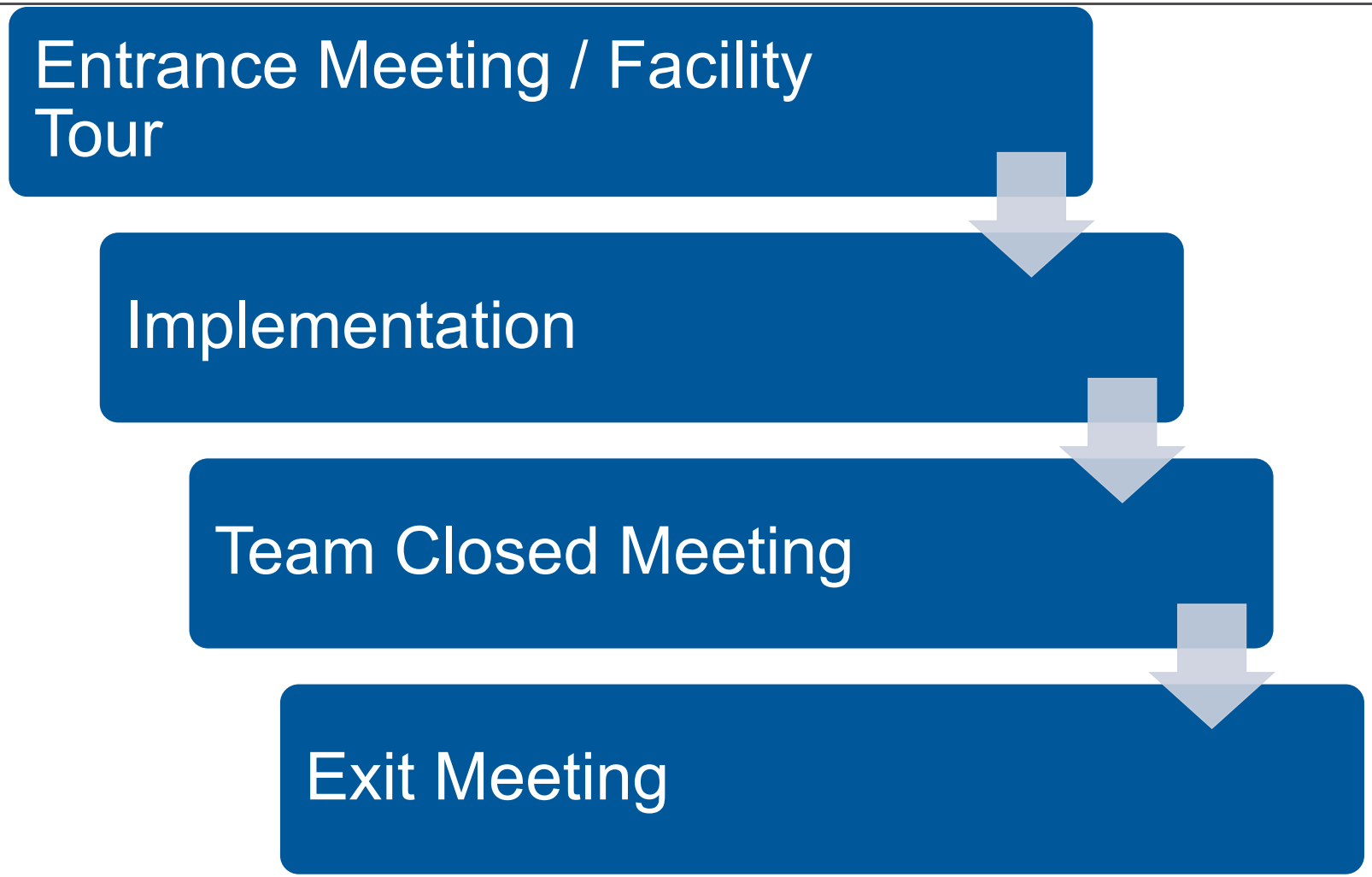
Assessment - Process

The first day is usually offsite reviewing Quality Program Manual and completed ASME “Guide” questionnaire

The Quality Program Manual should include

What	Who	When	Where	How

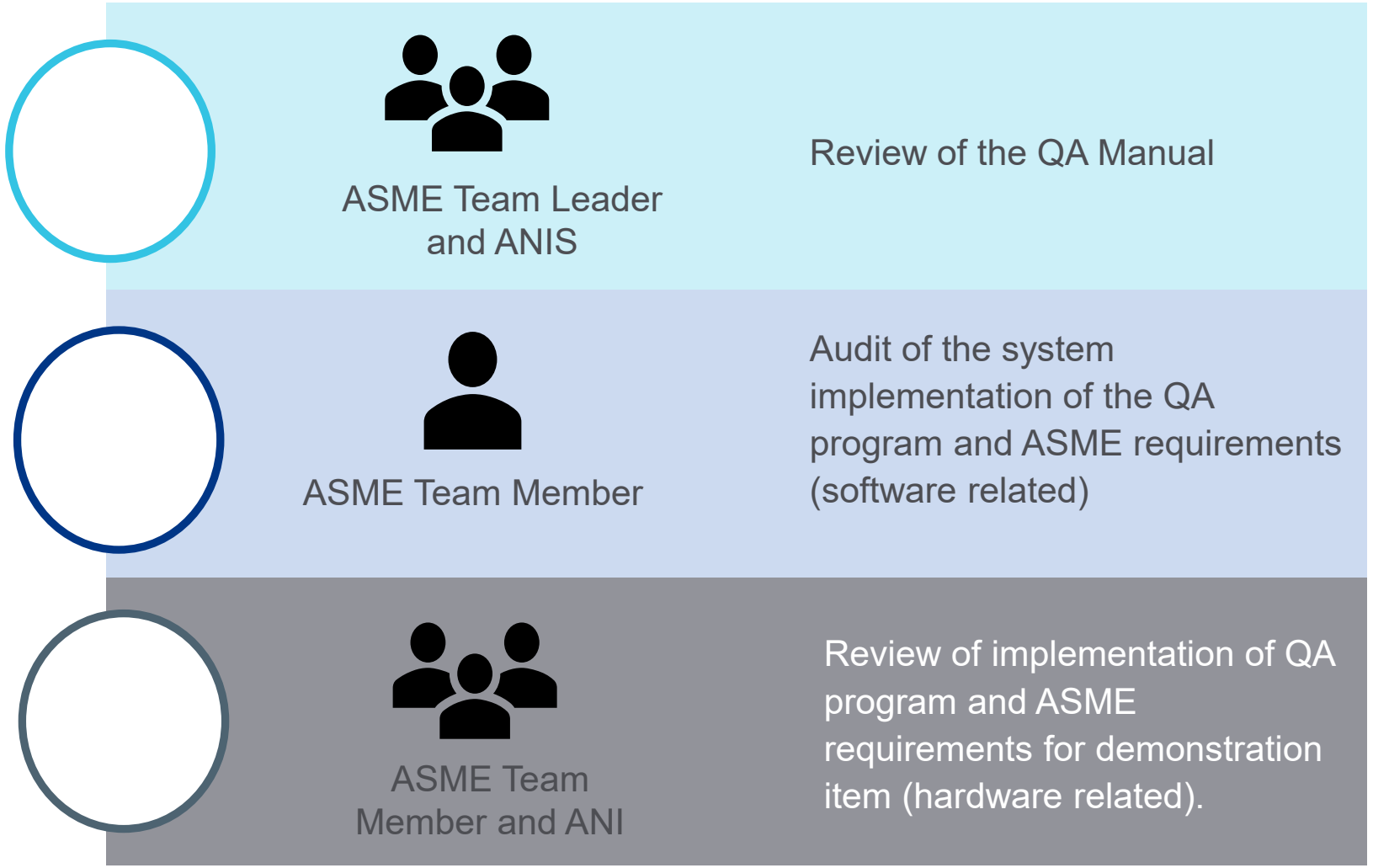
Assessment – Process
Starting Day 2.



Assessment – Team Make Up

Survey Team

- ASME Team Leader
- Team Members
  - ASME Consultants
  - NB Representatives
  - AIA
    - ANIS
    - ANI
- Invited
  - Jurisdiction
  - Regulator



Assessment – Committee on Nuclear Certification

The Committee on Nuclear Certification (CNC) consists of:

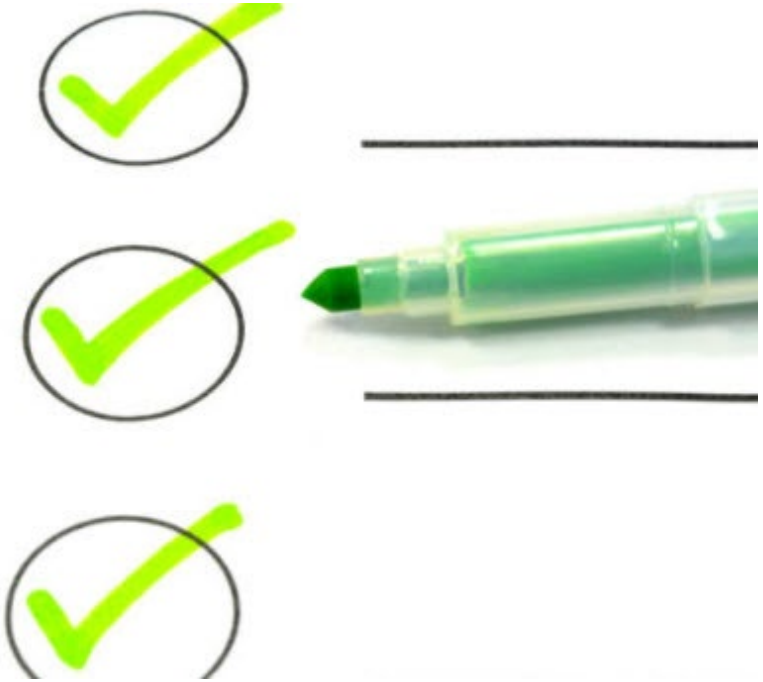
- Manufacturers
- Owners
- Users
- Jurisdictions
- Authorized Inspection Agencies
- Material Organizations
- General Interest

Assessment – Committee on Nuclear Certification

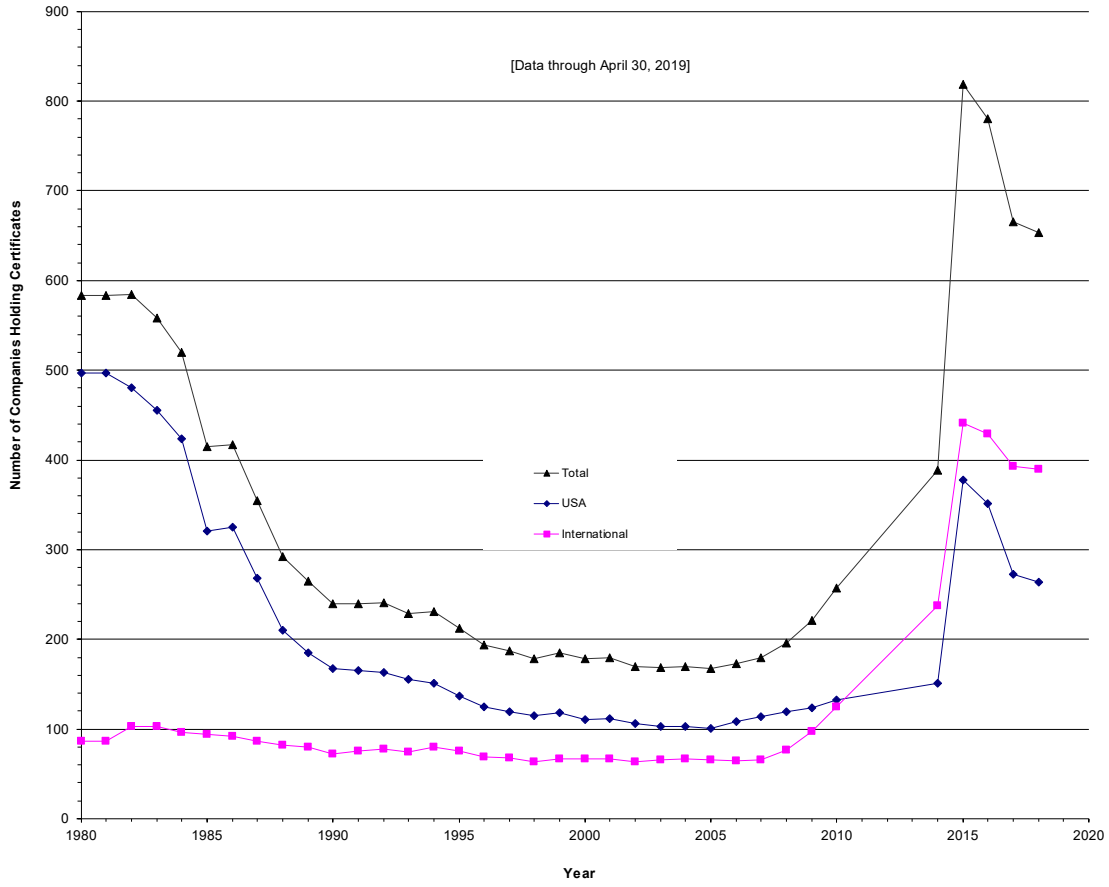
1. At the conclusion of the Survey, the Team makes a recommendation to the ASME Committee on Nuclear Certification.
2. The recommendations is normally one of the following:
   - Issue the Certificates as requested
   - Issue the certificates as requested after verification from the ANIS is received on deficiencies noted during the ASME Survey
   - Require re-survey of the applicant after the required corrections to the program have been made
3. Committee on Nuclear Certification – 2 step process
   - Step 1. Upon receipt of the recommendation the Committee on Nuclear Certification reviews the Team Leader's report, recommendation, findings and votes whether or not the agree with the recommendation.
   - Step 2. Committee on Nuclear Certification reviews closer of all findings as reported by the Team Leader and votes whether or not to issue the certificates.

Most common deficiencies found during the Survey implementation:

- Training and training records incomplete or non-existent
- CE qualification records outdated (self assessments)
- Suppliers' documents incorrect
- Manual and procedures conflict with each other
- ANI involvement in certificate holder's program
- Unqualified source materials
- Internal/External audits
- Quality Manual does not describe applicant's current practice
- Did not demonstrate "material supply" if requested in the application scope.



40-Year Nuclear Certificate Holder Trend (1980 - 2020)



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