ASME BPVC.III.NCA-2021

SECTION III

Rules for Construction of Nuclear Facility Components

2021 ASME Boiler and Pressure Vessel Code

An International Code

Subsection NCA

General Requirements for Division 1 and Division 2

ACI Standard 359–21

American Concrete Institute
Advancing concrete knowledge

ASME
SETTING THE STANDARD

AN INTERNATIONAL CODE

2021 ASME Boiler & Pressure Vessel Code

2021 Edition July 1, 2021

(ACI Standard 359-21)

III

RULES FOR CONSTRUCTION OF NUCLEAR FACILITY COMPONENTS

Subsection NCA

General Requirements for Division 1 and Division 2

ASME Boiler and Pressure Vessel Committee
on Construction of Nuclear Facility Components

ACI-ASME Joint Technical Committee

The American Society of Mechanical Engineers

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This international code or standard was developed under procedures accredited as meeting the criteria for American National Standards and it is an American National Standard. The Standards Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment that provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

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The endnotes and preamble in this document (if any) are part of this American National Standard.

ASME Collective Membership Mark

ASME Single Certification Mark

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INTERPRETATIONS

Interpretations are issued in real time in ASME's Interpretations Database at http://go.asme.org/Interpretations. Historical BPVC interpretations may also be found in the Database.

CODE CASES

The Boiler and Pressure Vessel Code committees meet regularly to consider proposed additions and revisions to the Code and to formulate Cases to clarify the intent of existing requirements or provide, when the need is urgent, rules for materials or constructions not covered by existing Code rules. Those Cases that have been adopted will appear in the appropriate 2021 Code Cases book: "Boilers and Pressure Vessels" or "Nuclear Components." Each Code Cases book is updated with seven Supplements. Supplements will be sent or made available automatically to the purchasers of the Code Cases books up to the publication of the 2023 Code. Annulments of Code Cases become effective six months after the first announcement of the annulment in a Code Case Supplement or Edition of the appropriate Code Case book. Code Case users can check the current status of any Code Case at http://go.asme.org/BPVCCDatabase. Code Case users can also view an index of the complete list of Boiler and Pressure Vessel Code Cases and Nuclear Code Cases at http://go.asme.org/BPVCC.

FOREWORD*

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In 1911, The American Society of Mechanical Engineers established the Boiler and Pressure Vessel Committee to formulate standard rules for the construction of steam boilers and other pressure vessels. In 2009, the Boiler and Pressure Vessel Committee was superseded by the following committees:

(a) Committee on Power Boilers (I)
(b) Committee on Materials (II)
(c) Committee on Construction of Nuclear Facility Components (III)
(d) Committee on Heating Boilers (IV)
(e) Committee on Nondestructive Examination (V)
(f) Committee on Pressure Vessels (VIII)
(g) Committee on Welding, Brazing, and Fusing (IX)
(h) Committee on Fiber-Reinforced Plastic Pressure Vessels (X)
(i) Committee on Nuclear Inservice Inspection (XI)
(j) Committee on Transport Tanks (XII)
(k) Committee on Overpressure Protection (XIII)
(l) Technical Oversight Management Committee (TOMC)

Where reference is made to "the Committee" in this Foreword, each of these committees is included individually and collectively.

The Committee's function is to establish rules of safety relating to pressure integrity, which govern the construction** of boilers, pressure vessels, transport tanks, and nuclear components, and the inservice inspection of nuclear components and transport tanks. For nuclear items other than pressure-retaining components, the Committee also establishes rules of safety related to structural integrity. The Committee also interprets these rules when questions arise regarding their intent. The technical consistency of the Sections of the Code and coordination of standards development activities of the Committees is supported and guided by the Technical Oversight Management Committee. This Code does not address other safety issues relating to the construction of boilers, pressure vessels, transport tanks, or nuclear components, or the inservice inspection of nuclear components or transport tanks. Users of the Code should refer to the pertinent codes, standards, laws, regulations, or other relevant documents for safety issues other than those relating to pressure integrity and, for nuclear items other than pressure-retaining components, structural integrity. Except for Sections XI and XII, and with a few other exceptions, the rules do not, of practical necessity, reflect the likelihood and consequences of deterioration in service related to specific service fluids or external operating environments. In formulating the rules, the Committee considers the needs of users, manufacturers, and inspectors of components addressed by the Code. The objective of the rules is to afford reasonably certain protection of life and property, and to provide a margin for deterioration in service to give a reasonably long, safe period of usefulness. Advancements in design and materials and evidence of experience have been recognized.

This Code contains mandatory requirements, specific prohibitions, and nonmandatory guidance for construction activities and inservice inspection and testing activities. The Code does not address all aspects of these activities and those aspects that are not specifically addressed should not be considered prohibited. The Code is not a handbook and cannot replace education, experience, and the use of engineering judgment. The phrase *engineering judgment* refers to technical judgments made by knowledgeable engineers experienced in the application of the Code. Engineering judgments must be consistent with Code philosophy, and such judgments must never be used to overrule mandatory requirements or specific prohibitions of the Code.

The Committee recognizes that tools and techniques used for design and analysis change as technology progresses and expects engineers to use good judgment in the application of these tools. The designer is responsible for complying with Code rules and demonstrating compliance with Code equations when such equations are mandatory. The Code neither requires nor prohibits the use of computers for the design or analysis of components constructed to the requirements of the Code. However, designers and engineers using computer programs for design or analysis are cautioned that they are

* The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Code.

** *Construction*, as used in this Foreword, is an all-inclusive term comprising materials, design, fabrication, examination, inspection, testing, certification, and overpressure protection.

responsible for all technical assumptions inherent in the programs they use and the application of these programs to their design.

The rules established by the Committee are not to be interpreted as approving, recommending, or endorsing any proprietary or specific design, or as limiting in any way the manufacturer's freedom to choose any method of design or any form of construction that conforms to the Code rules.

The Committee meets regularly to consider revisions of the rules, new rules as dictated by technological development, Code Cases, and requests for interpretations. Only the Committee has the authority to provide official interpretations of this Code. Requests for revisions, new rules, Code Cases, or interpretations shall be addressed to the Secretary in writing and shall give full particulars in order to receive consideration and action (see Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees). Proposed revisions to the Code resulting from inquiries will be presented to the Committee for appropriate action. The action of the Committee becomes effective only after confirmation by ballot of the Committee and approval by ASME. Proposed revisions to the Code approved by the Committee are submitted to the American National Standards Institute (ANSI) and published at http://go.asme.org/BPVCPublicReview to invite comments from all interested persons. After public review and final approval by ASME, revisions are published at regular intervals in Editions of the Code.

The Committee does not rule on whether a component shall or shall not be constructed to the provisions of the Code. The scope of each Section has been established to identify the components and parameters considered by the Committee in formulating the Code rules.

Questions or issues regarding compliance of a specific component with the Code rules are to be directed to the ASME Certificate Holder (Manufacturer). Inquiries concerning the interpretation of the Code are to be directed to the Committee. ASME is to be notified should questions arise concerning improper use of the ASME Single Certification Mark.

When required by context in this Section, the singular shall be interpreted as the plural, and vice versa, and the feminine, masculine, or neuter gender shall be treated as such other gender as appropriate.

The words "shall," "should," and "may" are used in this Standard as follows:

- *Shall* is used to denote a requirement.
- *Should* is used to denote a recommendation.
- *May* is used to denote permission, neither a requirement nor a recommendation.

STATEMENT OF POLICY ON THE USE OF THE ASME SINGLE CERTIFICATION MARK AND CODE AUTHORIZATION IN ADVERTISING

ASME has established procedures to authorize qualified organizations to perform various activities in accordance with the requirements of the ASME Boiler and Pressure Vessel Code. It is the aim of the Society to provide recognition of organizations so authorized. An organization holding authorization to perform various activities in accordance with the requirements of the Code may state this capability in its advertising literature.

Organizations that are authorized to use the ASME Single Certification Mark for marking items or constructions that have been constructed and inspected in compliance with the ASME Boiler and Pressure Vessel Code are issued Certificates of Authorization. It is the aim of the Society to maintain the standing of the ASME Single Certification Mark for the benefit of the users, the enforcement jurisdictions, and the holders of the ASME Single Certification Mark who comply with all requirements.

Based on these objectives, the following policy has been established on the usage in advertising of facsimiles of the ASME Single Certification Mark, Certificates of Authorization, and reference to Code construction. The American Society of Mechanical Engineers does not "approve," "certify," "rate," or "endorse" any item, construction, or activity and there shall be no statements or implications that might so indicate. An organization holding the ASME Single Certification Mark and/or a Certificate of Authorization may state in advertising literature that items, constructions, or activities "are built (produced or performed) or activities conducted in accordance with the requirements of the ASME Boiler and Pressure Vessel Code," or "meet the requirements of the ASME Boiler and Pressure Vessel Code." An ASME corporate logo shall not be used by any organization other than ASME.

The ASME Single Certification Mark shall be used only for stamping and nameplates as specifically provided in the Code. However, facsimiles may be used for the purpose of fostering the use of such construction. Such usage may be by an association or a society, or by a holder of the ASME Single Certification Mark who may also use the facsimile in advertising to show that clearly specified items will carry the ASME Single Certification Mark.

STATEMENT OF POLICY ON THE USE OF ASME MARKING TO IDENTIFY MANUFACTURED ITEMS

The ASME Boiler and Pressure Vessel Code provides rules for the construction of boilers, pressure vessels, and nuclear components. This includes requirements for materials, design, fabrication, examination, inspection, and stamping. Items constructed in accordance with all of the applicable rules of the Code are identified with the ASME Single Certification Mark described in the governing Section of the Code.

Markings such as "ASME," "ASME Standard," or any other marking including "ASME" or the ASME Single Certification Mark shall not be used on any item that is not constructed in accordance with all of the applicable requirements of the Code.

Items shall not be described on ASME Data Report Forms nor on similar forms referring to ASME that tend to imply that all Code requirements have been met when, in fact, they have not been. Data Report Forms covering items not fully complying with ASME requirements should not refer to ASME or they should clearly identify all exceptions to the ASME requirements.

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SUBMITTAL OF TECHNICAL INQUIRIES TO THE BOILER AND PRESSURE VESSEL STANDARDS COMMITTEES

1 INTRODUCTION

(a) The following information provides guidance to Code users for submitting technical inquiries to the applicable Boiler and Pressure Vessel (BPV) Standards Committee (hereinafter referred to as the Committee). See the guidelines on approval of new materials under the ASME Boiler and Pressure Vessel Code in Section II, Part D for requirements for requests that involve adding new materials to the Code. See the guidelines on approval of new welding and brazing materials in Section II, Part C for requirements for requests that involve adding new welding and brazing materials ("consumables") to the Code.

Technical inquiries can include requests for revisions or additions to the Code requirements, requests for Code Cases, or requests for Code Interpretations, as described below:

(1) Code Revisions. Code revisions are considered to accommodate technological developments, to address administrative requirements, to incorporate Code Cases, or to clarify Code intent.

(2) Code Cases. Code Cases represent alternatives or additions to existing Code requirements. Code Cases are written as a Question and Reply, and are usually intended to be incorporated into the Code at a later date. When used, Code Cases prescribe mandatory requirements in the same sense as the text of the Code. However, users are cautioned that not all regulators, jurisdictions, or Owners automatically accept Code Cases. The most common applications for Code Cases are as follows:

(-a) to permit early implementation of an approved Code revision based on an urgent need

(-b) to permit use of a new material for Code construction

(-c) to gain experience with new materials or alternative requirements prior to incorporation directly into the Code

(3) Code Interpretations

(-a) Code Interpretations provide clarification of the meaning of existing requirements in the Code and are presented in Inquiry and Reply format. Interpretations do not introduce new requirements.

(-b) Interpretations will be issued only if existing Code text is ambiguous or conveys conflicting requirements. If a revision of the requirements is required to support the Interpretation, an Intent Interpretation will be issued in parallel with a revision to the Code.

(b) Code requirements, Code Cases, and Code Interpretations established by the Committee are not to be considered as approving, recommending, certifying, or endorsing any proprietary or specific design, or as limiting in any way the freedom of manufacturers, constructors, or Owners to choose any method of design or any form of construction that conforms to the Code requirements.

(c) Inquiries that do not comply with the following guidance or that do not provide sufficient information for the Committee's full understanding may result in the request being returned to the Inquirer with no action.

2 INQUIRY FORMAT

Submittals to the Committee should include the following information:

(a) Purpose. Specify one of the following:

(1) request for revision of present Code requirements

(2) request for new or additional Code requirements

(3) request for Code Case

(4) request for Code Interpretation

(b) Background. The Inquirer should provide the information needed for the Committee's understanding of the Inquiry, being sure to include reference to the applicable Code Section, Division, Edition, Addenda (if applicable), paragraphs, figures, and tables. This information should include a statement indicating why the included paragraphs, figures, or tables are ambiguous or convey conflicting requirements. Preferably, the Inquirer should provide a copy of, or relevant extracts from, the specific referenced portions of the Code.

(c) Presentations. The Inquirer may desire to attend or be asked to attend a meeting of the Committee to make a formal presentation or to answer questions from the Committee members with regard to the Inquiry. Attendance at a BPV Standards Committee meeting shall be at the expense of the Inquirer. The Inquirer's attendance or lack of attendance at a meeting will not be used by the Committee as a basis for acceptance or rejection of the Inquiry by the Committee. However, if the Inquirer's request is unclear, attendance by the Inquirer or a representative may be necessary for the Committee to understand the request sufficiently to be able to provide an Interpretation. If the Inquirer desires to make a presentation at a Committee meeting, the Inquirer should provide advance notice to the Committee Secretary, to ensure time will be allotted for the presentation in the meeting agenda. The Inquirer should consider the need for additional audiovisual equipment that might not otherwise be provided by the Committee. With sufficient advance notice to the Committee Secretary, such equipment may be made available.

3 CODE REVISIONS OR ADDITIONS

Requests for Code revisions or additions should include the following information:

(a) Requested Revisions or Additions. For requested revisions, the Inquirer should identify those requirements of the Code that they believe should be revised, and should submit a copy of, or relevant extracts from, the appropriate requirements as they appear in the Code, marked up with the requested revision. For requested additions to the Code, the Inquirer should provide the recommended wording and should clearly indicate where they believe the additions should be located in the Code requirements.

(b) Statement of Need. The Inquirer should provide a brief explanation of the need for the revision or addition.

(c) Background Information. The Inquirer should provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request, that will allow the Committee to adequately evaluate the requested revision or addition. Sketches, tables, figures, and graphs should be submitted, as appropriate. The Inquirer should identify any pertinent portions of the Code that would be affected by the revision or addition and any portions of the Code that reference the requested revised or added paragraphs.

4 CODE CASES

Requests for Code Cases should be accompanied by a statement of need and background information similar to that described in 3(b) and 3(c), respectively, for Code revisions or additions. The urgency of the Code Case (e.g., project underway or imminent, new procedure) should be described. In addition, it is important that the request is in connection with equipment that will bear the ASME Single Certification Mark, with the exception of Section XI applications. The proposed Code Case should identify the Code Section and Division, and should be written as a Question and a Reply, in the same format as existing Code Cases. Requests for Code Cases should also indicate the applicable Code Editions and Addenda (if applicable) to which the requested Code Case applies.

5 CODE INTERPRETATIONS

(a) Requests for Code Interpretations should be accompanied by the following information:

(1) Inquiry. The Inquirer should propose a condensed and precise Inquiry, omitting superfluous background information and, when possible, composing the Inquiry in such a way that a "yes" or a "no" Reply, with brief limitations or conditions, if needed, can be provided by the Committee. The proposed question should be technically and editorially correct.

(2) Reply. The Inquirer should propose a Reply that clearly and concisely answers the proposed Inquiry question. Preferably, the Reply should be "yes" or "no," with brief limitations or conditions, if needed.

(3) Background Information. The Inquirer should include a statement indicating why the included paragraphs, figures, or tables are ambiguous or convey conflicting requirements. The Inquirer should provide any need or background information, such as described in 3(b) and 3(c), respectively, for Code revisions or additions, that will assist the Committee in understanding the proposed Inquiry and Reply.

If the Inquirer believes a revision of the Code requirements would be helpful to support the Interpretation, the Inquirer may propose such a revision for consideration by the Committee. In most cases, such a proposal is not necessary.

(b) Requests for Code Interpretations should be limited to an Interpretation of a particular requirement in the Code or in a Code Case. Except with regard to interpreting a specific Code requirement, the Committee is not permitted to consider consulting-type requests such as the following:

(1) a review of calculations, design drawings, welding qualifications, or descriptions of equipment or parts to determine compliance with Code requirements

(2) a request for assistance in performing any Code-prescribed functions relating to, but not limited to, material selection, designs, calculations, fabrication, inspection, pressure testing, or installation

(3) a request seeking the rationale for Code requirements

6 SUBMITTALS

(a) Submittal. Requests for Code Interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt. If the Inquirer is unable to use the online form, the Inquirer may mail the request to the following address:

Secretary
ASME Boiler and Pressure Vessel Committee
Two Park Avenue
New York, NY 10016-5990

All other Inquiries should be mailed to the Secretary of the BPV Committee at the address above. Inquiries are unlikely to receive a response if they are not written in clear, legible English. They must also include the name of the Inquirer and the company they represent or are employed by, if applicable, and the Inquirer's address, telephone number, fax number, and e-mail address, if available.

(b) Response. The Secretary of the appropriate Committee will provide a written response, via letter or e-mail, as appropriate, to the Inquirer, upon completion of the requested action by the Committee. Inquirers may track the status of their Interpretation Request at http://go.asme.org/Interpretations.

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January 1, 2021

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THE AMERICAN CONCRETE INSTITUTE

The American Concrete Institute was organized in 1905 to provide industry standards in the field of concrete usage. The organization, which was formed as a result of meetings begun during the Engineering Congress at the Louisiana Purchase Exposition in St. Louis in 1904, was initially entitled the National Association of Cement Users. In 1913, the name of the Society was changed to the American Concrete Institute to better fit the actual scope of its activities and aims, which are to further engineering education, scientific investigation, and scientific research by organizing the efforts of its members for a nonprofit, public service in gathering, correlating, and disseminating information for the improvement of the design, construction, manufacture, use, and maintenance of concrete products and structures.

The day-to-day operation of ACI is administered by an Executive Director, under general supervision of its 18-member Board of Direction, which assigns a part of its administrative duties to standing committees, the ACI Standards Board, and various technical committees.

ACI — TECHNICAL ACTIVITIES COMMITTEE

The Technical Activities Committee, which is appointed by the Board of Direction, is responsible for Institute technical publications, review of standards, the technical program at conventions, and continuing studies of technical committees, from which arise recommendations for the activities, and the formation or discharge of these groups. TAC members are selected by the ACI Board to represent ACI's varied interests.

ACI — STANDARDS BOARD

The Standards Board, also appointed by the Board of Direction, is responsible for matters of policy, procedure, and appeal pertaining to ACI Standards. All proposed new standards or revisions to existing standards, including minority reports from sponsoring technical committees, are forwarded to the Standards Board through the Technical Activities Committee. On release by the Standards Board, these are published, and after ratification by letter ballot of the ACI membership at large are then available for public use. The primary functions of the Standards Board are to verify that proper standardization procedures have been followed and to rule on matters of policy as related to standards.

ACI — TECHNICAL AND EDUCATIONAL COMMITTEES

Much of the important work of the American Concrete Institute is performed by technical committees that prepare committee reports and standards. Technical committees, composed of volunteer personnel, develop ACI recommendations in their respective fields. Their work, subject to review and approval by the Board of Direction through the Technical Activities Committee and the Standards Board, forms the basis for Institute Standards.

Educational committees, also composed of volunteer personnel, develop seminars, workshops, curriculum guides, and student manuals to further ACI's involvement in education. Their work, subject to review and approval by the ACI Educational Activities Committee, forms the basis for Institute manuals and training programs.

ORGANIZATION OF SECTION III

(21)

1 GENERAL

Section III consists of Division 1, Division 2, Division 3, and Division 5. These Divisions are broken down into Subsections and are designated by capital letters preceded by the letter "N" for Division 1, by the letter "C" for Division 2, by the letter "W" for Division 3, and by the letter "H" for Division 5. Each Subsection is published separately, with the exception of those listed for Divisions 2, 3, and 5.

- Subsection NCA — General Requirements for Division 1 and Division 2
- Appendices
- Division 1
  - Subsection NB — Class 1 Components
  - Subsection NCD — Class 2 and Class 3 Components*
  - Subsection NE — Class MC Components
  - Subsection NF — Supports
  - Subsection NG — Core Support Structures
- Division 2 — Code for Concrete Containments
  - Subsection CC — Concrete Containments
- Division 3 — Containment Systems for Transportation and Storage of Spent Nuclear Fuel and High-Level Radioactive Material
  - Subsection WA — General Requirements for Division 3
  - Subsection WB — Class TC Transportation Containments
  - Subsection WC — Class SC Storage Containments
  - Subsection WD — Class ISS Internal Support Structures
- Division 5 — High Temperature Reactors
  - Subsection HA — General Requirements
    - Subpart A — Metallic Materials
    - Subpart B — Graphite Materials
    - Subpart C — Composite Materials
  - Subsection HB — Class A Metallic Pressure Boundary Components
    - Subpart A — Low Temperature Service
    - Subpart B — Elevated Temperature Service
  - Subsection HC — Class B Metallic Pressure Boundary Components
    - Subpart A — Low Temperature Service
    - Subpart B — Elevated Temperature Service
  - Subsection HF — Class A and B Metallic Supports
    - Subpart A — Low Temperature Service
  - Subsection HG — Class SM Metallic Core Support Structures
    - Subpart A — Low Temperature Service
    - Subpart B — Elevated Temperature Service
  - Subsection HH — Class SN Nonmetallic Core Components
    - Subpart A — Graphite Materials
    - Subpart B — Composite Materials

* In the 2021 Edition, Subsections NC and ND have been incorporated into one publication, Subsection NCD (BPVC.III.1.NCD), Class 2 and Class 3 Components.

2 SUBSECTIONS

Subsections are divided into Articles, subarticles, paragraphs, and, where necessary, subparagraphs and subsubparagraphs.

3 ARTICLES

Articles are designated by the applicable letters indicated above for the Subsections followed by Arabic numbers, such as NB-1000. Where possible, Articles dealing with the same topics are given the same number in each Subsection, except NCA, in accordance with the following general scheme:

Article Number	Title
1000	Introduction or Scope
2000	Material
3000	Design
4000	Fabrication and Installation
5000	Examination
6000	Testing
7000	Overpressure Protection
8000	Nameplates, Stamping With Certification Mark, and Reports

The numbering of Articles and the material contained in the Articles may not, however, be consecutive. Due to the fact that the complete outline may cover phases not applicable to a particular Subsection or Article, the rules have been prepared with some gaps in the numbering.

4 SUBARTICLES

Subarticles are numbered in units of 100, such as NB-1100.

5 SUBSUBARTICLES

Subsubarticles are numbered in units of 10, such as NB-2130, and generally have no text. When a number such as NB-1110 is followed by text, it is considered a paragraph.

6 PARAGRAPHS

Paragraphs are numbered in units of 1, such as NB-2121.

7 SUBPARAGRAPHS

Subparagraphs, when they are *major* subdivisions of a paragraph, are designated by adding a decimal followed by one or more digits to the paragraph number, such as NB-1132.1. When they are *minor* subdivisions of a paragraph, subparagraphs may be designated by lowercase letters in parentheses, such as NB-2121(a).

8 SUBSUBPARAGRAPHS

Subsubparagraphs are designated by adding lowercase letters in parentheses to the *major* subparagraph numbers, such as NB-1132.1(a). When further subdivisions of *minor* subparagraphs are necessary, subsubparagraphs are designated by adding Arabic numerals in parentheses to the subparagraph designation, such as NB-2121(a)(1).

9 REFERENCES

References used within Section III generally fall into one of the following four categories:

(a) References to Other Portions of Section III. When a reference is made to another Article, subarticle, or paragraph, all numbers subsidiary to that reference shall be included. For example, reference to Article NB-3000 includes all material in Article NB-3000; reference to NB-3100 includes all material in subarticle NB-3100; reference to NB-3110 includes all paragraphs, NB-3111 through NB-3113.

(b) References to Other Sections. Other Sections referred to in Section III are the following:

(1) Section II, Materials. When a requirement for a material, or for the examination or testing of a material, is to be in accordance with a specification such as SA-105, SA-370, or SB-160, the reference is to material specifications in Section II. These references begin with the letter "S."

(2) Section V, Nondestructive Examination. Section V references begin with the letter "T" and relate to the nondestructive examination of material or welds.

(3) Section IX, Welding and Brazing Qualifications. Section IX references begin with the letter "Q" and relate to welding and brazing requirements.

(4) Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components. When a reference is made to inservice inspection, the rules of Section XI shall apply.

(c) Reference to Specifications and Standards Other Than Published in Code Sections

(1) Specifications for examination methods and acceptance standards to be used in connection with them are published by the American Society for Testing and Materials (ASTM). At the time of publication of Section III, some such specifications were not included in Section II of this Code. A reference to ASTM E94 refers to the specification so designated by and published by ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

(2) Dimensional standards covering products such as valves, flanges, and fittings are sponsored and published by The American Society of Mechanical Engineers and approved by the American National Standards Institute.[**] When a product is to conform to such a standard, for example ASME B16.5, the standard is approved by the American National Standards Institute. The applicable year of issue is that suffixed to its numerical designation in Table NCA-7100-1, for example ASME B16.5-2003. Standards published by The American Society of Mechanical Engineers are available from ASME (https://www.asme.org/).

(3) Dimensional and other types of standards covering products such as valves, flanges, and fittings are also published by the Manufacturers Standardization Society of the Valve and Fittings Industry and are known as Standard Practices. When a product is required by these rules to conform to a Standard Practice, for example MSS SP-100, the Standard Practice referred to is published by the Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS), 127 Park Street, NE, Vienna, VA 22180. The applicable year of issue of such a Standard Practice is that suffixed to its numerical designation in Table NCA-7100-1, for example MSS SP-58-2009.

(4) Specifications for welding and brazing materials are published by the American Welding Society (AWS), 8669 NW 36 Street, No. 130, Miami, FL 33166. Specifications of this type are incorporated in Section II and are identified by the AWS designation with the prefix "SF," for example SFA-5.1.

(5) Standards applicable to the design and construction of tanks and flanges are published by the American Petroleum Institute and have designations such as API-605. When documents so designated are referred to in Section III, for example API-605–1988, they are standards published by the American Petroleum Institute and are listed in Table NCA-7100-1.

(d) References to Appendices. Section III uses two types of appendices that are designated as either Section III Appendices or Subsection Appendices. Either of these appendices is further designated as either Mandatory or Nonmandatory for use. Mandatory Appendices are referred to in the Section III rules and contain requirements that must be followed in construction. Nonmandatory Appendices provide additional information or guidance when using Section III.

(1) Section III Appendices are contained in a separate book titled "Appendices." These appendices have the potential for multiple subsection applicability. Mandatory Appendices are designated by a Roman numeral followed, when appropriate, by Arabic numerals to indicate various articles, subarticles, and paragraphs of the appendix, such as II-1500 or XIII-1210. Nonmandatory Appendices are designated by a capital letter followed, when appropriate, by Arabic numerals to indicate various articles, subarticles, and paragraphs of the appendix, such as D-1200 or Y-1440.

[**] The American National Standards Institute (ANSI) was formerly known as the American Standards Association. Standards approved by the Association were designated by the prefix "ASA" followed by the number of the standard and the year of publication. More recently, the American National Standards Institute was known as the United States of America Standards Institute. Standards were designated by the prefix "USAS" followed by the number of the standard and the year of publication. While the letters of the prefix have changed with the name of the organization, the numbers of the standards have remained unchanged.

(2) Subsection Appendices are specifically applicable to just one subsection and are contained within that subsection. Subsection-specific mandatory and nonmandatory appendices are numbered in the same manner as Section III Appendices, but with a subsection identifier (e.g., NF, NH, D2, etc.) preceding either the Roman numeral or the capital letter for a unique designation. For example, NF-II-1100 or NF-A-1200 would be part of a Subsection NF mandatory or nonmandatory appendix, respectively. For Subsection CC, D2-IV-1120 or D2-D-1330 would be part of a Subsection CC mandatory or nonmandatory appendix, respectively.

(3) It is the intent of this Section that the information provided in both Mandatory and Nonmandatory Appendices may be used to meet the rules of any Division or Subsection. In case of conflict between Appendix rules and Division/Subsection rules, the requirements contained in the Division/Subsection shall govern. Additional guidance on Appendix usage is provided in the front matter of Section III Appendices.

SUMMARY OF CHANGES

Errata to the BPV Code may be posted on the ASME website to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in the BPV Code. Such Errata shall be used on the date posted.

Information regarding Special Notices and Errata is published by ASME at http://go.asme.org/BPVCerrata.

Changes given below are identified on the pages by a margin note, **(21)**, placed next to the affected area.

Page	*Location*	*Change*
v	List of Sections	(1) Listing for Section III updated (2) Section XIII added (3) Code Case information updated
vii	Foreword	(1) Subparagraph (k) added and subsequent subparagraph redesignated (2) Second footnote revised (3) Last paragraph added
x	Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees	Paragraphs 1(a)(3)(-b), 2(b), and 5(a)(3) revised
xiii	Personnel	Updated
xxxv	Organization of Section III	(1) In para. 1, Division 1 listing updated (2) In para. 9(c)(3), "MSS SP-89-2003" corrected by errata to "MSS SP-58-2009"
1	NCA-1110	Revised and restructured to add NCA-1111 and NCA-1112
1	NCA-1130	In subpara. (a), last sentence revised
1	NCA-1140	(1) Subparagraphs (a)(2)(-a), (a)(2)(-b), and (h) revised (2) Subparagraph (i) added
3	NCA-1210	In first sentence, cross-references updated
4	NCA-1230	(1) In NCA-1231 and NCA-1232, first sentence, cross-references updated (2) In NCA-1233, first paragraph, first two cross-references updated
4	NCA-1260	First three cross-references updated
6	NCA-2110	(1) In subpara. (c), last line revised (2) In subpara. (d), first sentence revised
6	NCA-2131	Subparagraph (a) revised in its entirety
6	NCA-2134	In subpara. (b), last cross-reference updated
10	NCA-3110	Second line revised
11	NCA-3130	(1) In NCA-3131(b) and NCA-3131(g), cross-references updated (2) In NCA-3132(b), first sentence, cross-references updated
12	NCA-3200	(1) Revised in its entirety (2) In endnote 7, cross-reference updated (see Endnotes) (3) Former Table NCA-3200-1 redesignated as Table NCA-3200-2 and new Table NCA-3200-1 added
23	NCA-3300	Deleted
23	NCA-3400	Deleted
23	NCA-3500	Deleted
23	NCA-3600	Deleted
23	NCA-3700	Deleted
23	NCA-3810	Second sentence revised
23	NCA-3812	In first paragraph, second line, cross-references updated
23	NCA-3820	In first two lines, cross-references updated
24	NCA-3841	Subparagraph (g) revised and subparas. (h) through (j) added
24	NCA-3842.2	Subparagraph (g) revised
26	NCA-3862.1	In subpara. (b), cross-reference to NC/ND updated

Page	Location	Change
26	NCA-3862.2	Subparagraphs (a) and (c) revised
27	NCA-3920	In subparas. (a) and (b), second line revised
28	NCA-4110	In subpara. (c), first cross-reference updated
29	NCA-4134.2	Subparagraph (b) revised
29	NCA-4134.3	Subparagraph (d) revised
29	NCA-4134.6	First sentence deleted by errata
31	NCA-4134.18	Subparagraphs (b) and (c) revised
32	Table NCA-4134.17-1	In Records 3, 4, 6, 7, 8, 9, 16, and 18, cross-references updated
32	Table NCA-4134.17-2	In first column, cross-references updated for Records 3, 4, and 11
33	NCA-4252.1	Subparagraphs (b) and (c) revised
35	NCA-4255.5	Subparagraphs (a)(3), (a)(3)(-a), (a)(3)(-b), (a)(3)(-c), and (a)(4) revised
48	NCA-5121	In subpara. (b), last sentence revised
48	NCA-5125	(1) Subparagraph (f) revised and corrected by errata (2) Subparagraphs (g) and (i) revised
49	NCA-5131	In subpara. (a), fourth line revised
49	NCA-5210	Cross-references updated
49	NCA-5220	In subparas. (i) and (m), cross-reference updated
49	NCA-5230	In subpara. (b), cross-references updated
51	NCA-5300	Subparagraph (a) revised
54	Table NCA-7100-1	Revised
57	Table NCA-7100-3	Revised
63	Table NCA-8100-1	In Notes (7) and (11), cross-references to NC/ND updated
62	NCA-8151	Second paragraph added
67	NCA-8161	In subpara. (b), cross-references updated
67	NCA-8162	Revised
69	NCA-8322.1	In subparas. (a) and (d), cross-references updated
70	NCA-8412	Revised
70	NCA-8500	Added
71	NCA-9200	(1) Definition of *combined license* added (2) Definitions of *certificate, construction permit, enforcement authority, Inspector, nuclear facility, Quality System Certificate,* and *regulatory authority* revised (3) In definition of *fabricator (Division 2)*, last cross-reference updated

LIST OF CHANGES IN RECORD NUMBER ORDER

DELETED

CROSS-REFERENCING AND STYLISTIC CHANGES IN THE BOILER AND PRESSURE VESSEL CODE

There have been structural and stylistic changes to BPVC, starting with the 2011 Addenda, that should be noted to aid navigating the contents. The following is an overview of the changes:

Subparagraph Breakdowns/Nested Lists Hierarchy

- First-level breakdowns are designated as (a), (b), (c), etc., as in the past.
- Second-level breakdowns are designated as (1), (2), (3), etc., as in the past.
- Third-level breakdowns are now designated as (-a), (-b), (-c), etc.
- Fourth-level breakdowns are now designated as (-1), (-2), (-3), etc.
- Fifth-level breakdowns are now designated as (+a), (+b), (+c), etc.
- Sixth-level breakdowns are now designated as (+1), (+2), etc.

Footnotes

With the exception of those included in the front matter (roman-numbered pages), all footnotes are treated as endnotes. The endnotes are referenced in numeric order and appear at the end of each BPVC section/subsection.

Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees

Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees has been moved to the front matter. This information now appears in all Boiler Code Sections (except for Code Case books).

Cross-References

It is our intention to establish cross-reference link functionality in the current edition and moving forward. To facilitate this, cross-reference style has changed. Cross-references within a subsection or subarticle will not include the designator/identifier of that subsection/subarticle. Examples follow:

- *(Sub-)Paragraph Cross-References.* The cross-references to subparagraph breakdowns will follow the hierarchy of the designators under which the breakdown appears.
  - If subparagraph (-a) appears in X.1(c)(1) and is referenced in X.1(c)(1), it will be referenced as (-a).
  - If subparagraph (-a) appears in X.1(c)(1) but is referenced in X.1(c)(2), it will be referenced as (1)(-a).
  - If subparagraph (-a) appears in X.1(c)(1) but is referenced in X.1(e)(1), it will be referenced as (c)(1)(-a).
  - If subparagraph (-a) appears in X.1(c)(1) but is referenced in X.2(c)(2), it will be referenced as X.1(c)(1)(-a).
- *Equation Cross-References.* The cross-references to equations will follow the same logic. For example, if eq. (1) appears in X.1(a)(1) but is referenced in X.1(b), it will be referenced as eq. (a)(1)(1). If eq. (1) appears in X.1(a)(1) but is referenced in a different subsection/subarticle/paragraph, it will be referenced as eq. X.1(a)(1)(1).

ARTICLE NCA-1000
SCOPE OF SECTION III

NCA-1100 GENERAL

(21) ## NCA-1110 SCOPE[1, 2]

NCA-1111 Rules of Section III

The rules of this Section constitute requirements for the design, construction, stamping, and overpressure protection of items used in nuclear power plants and other nuclear facilities. This Section consists of the following four Divisions:

(a) Division 1. Metallic vessels, heat exchangers, storage tanks, piping systems, pumps, valves, core support structures, supports, and similar items.

(b) Division 2. Concrete containment vessels.

(c) Division 3. Metallic containment systems for storage or transportation of spent nuclear fuel and high level radioactive materials and waste.

(d) Division 5. Metallic vessels, heat exchangers, storage tanks, piping systems, pumps, valves, core support structures, supports, and similar items and graphite and composite core components and assemblies for High Temperature Reactors.

Except as specifically referenced in Division 3 and Division 5, the General Requirements of Subsection NCA apply to Division 1 and Division 2. General Requirements for Division 3 are in Subsection WA. General Requirements for Division 5 are in Subsection HA.

NCA-1112 Rules of Section XI

Section XI contains rules for inservice inspections and testing of items used in nuclear power plants, in two Divisions:

(a) Division 1. Rules for Inspection and Testing of Components of Light-Water-Cooled Plants

(b) Division 2. Requirements for Reliability and Integrity Management (RIM) Programs for Nuclear Power Plants

NCA-1120 DEFINITIONS

Definitions of key terms used in Subsection NCA are included in Article NCA-9000.

NCA-1130 LIMITS OF THESE RULES (21)

(a) The rules of this Section provide requirements for new construction and include consideration of mechanical and thermal stresses due to cyclic operation. They do not cover deterioration that may occur in service as a result of environmental effects such as radiation, corrosion, erosion, or instability of the material.[3] These effects shall be taken into account with a view to realizing the design or the specified life of the components and supports. The changes in properties of materials subjected to neutron radiation can be checked periodically by means of material surveillance programs. These rules provide requirements for new construction of concrete containments. They are applicable only to those components that are designed to provide a pressure-retaining or pressure-containing barrier. They are not applicable to other concrete structures in the nuclear facility, as for example to concrete shield and support structures, except as they directly affect the components.

(b) The rules are not intended to be applicable to valve operators, controllers, position indicators, pump impellers, pump drivers, or other accessories and devices, unless they are pressure-retaining parts or act as core support structures or supports. If such items are in a support load path, the provisions of NF-1100 apply.

(c) The rules of this Section do not apply to instruments, or permanently sealed fluid filled tubing systems furnished with instruments, but do apply to instrument, control, and sampling piping when specified in Design Specifications.

(d) Auxiliary systems for concrete containments that are required to assure functional adequacy of the vessels in accordance with the requirements of the Design Specification, including but not limited to concrete cooling systems, thermal insulation, corrosion protection, leakage monitors, and strain monitoring systems, must be delineated fully by appropriate performance, reliability, and test requirements. These rules are not intended to otherwise be applicable to auxiliary systems.

NCA-1140 USE OF CODE EDITIONS, ADDENDA, AND CASES (21)

(a) See (1) and (2) below.

(1) Under the rules of this Section, the Owner or his designee shall establish the Code Edition and Addenda to be included in the Design Specifications. All items of a nuclear power plant may be constructed to a single Code Edition and Addenda, or each item may be constructed to individually specified Code Editions and Addenda.

(2) In no case shall the Code Edition and Addenda dates established in the Design Specifications be earlier than:

(-a) 3 yr prior to the date that the nuclear facility construction permit application is docketed or filed with the regulatory authority

(-b) the latest edition and addenda endorsed by the regulatory authority having jurisdiction at the nuclear facility at the time the construction permit application is docketed or filed with the regulatory authority, or

(-c) the edition and addenda endorsed for a design certified or licensed by the regulatory authority

(b) Code Editions and Addenda later than those established by (a) above, including any referenced Code Edition and Addenda, may be used by mutual consent of the Owner or his designee and Certificate Holder. For Division 2 design and construction, the consent of the Designer shall also be obtained. Specific provisions within an Edition or Addenda later than those established in the Design Specifications may be used, provided that all related requirements are met. Code Editions and Addenda other than those established by (a) above may be used for materials or dimensional standards, provided the requirements of (e) for materials or (f) for dimensional standards are met.

(c) Code Cases are permissible and may be used beginning with the date of approval by the ASME Council (and the American Concrete Institute for Division 2 design and construction). Only Code Cases that are specifically identified as being applicable to this Section may be used.

(d) Code Cases may be used by mutual consent of the Owner or his designee, and the Certificate Holder on or after the date permitted by (c) above. For Division 2 design and construction, the consent of the Designer shall also be obtained.

(e) Materials produced and certified in accordance with Code Editions and Addenda other than the one specified for construction of an item may be used, provided all of the following requirements are satisfied:

(1) The material (NCA-1220) meets the applicable requirements of a material specification permitted by paragraph 2121 of the applicable Subsection of the Section III Edition and Addenda specified for construction.

(2) The material meets all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda specified for construction.

(3) The material was produced under the provisions of a Quality System Program that had been accepted by the Society or qualified by a party other than the Society (NCA-3820), in accordance with the requirements of the latest Section III Edition and Addenda issued at the time the material was produced. Material exempted from portions of the provisions of NCA-3800 by paragraph 2610 of the applicable Subsection of Section III may be used, provided the requirements of (1) and (2) above are met.

(f) Table NCA-7100-1 lists editions of dimensional standards for standard products referenced by Section III, and earlier editions considered by Section III to be acceptable for Section III construction.

(g) Code Editions, Addenda [including the use of specific provisions of Editions or Addenda permitted by (b), (e), and (f) above], and Cases used shall be reviewed by the Owner or his designee for acceptability to the regulatory and enforcement authorities having jurisdiction at the nuclear power plant site.

(h) The latest Code Edition shall become mandatory for Quality System Program (NCA-3800) and Quality Assurance (Article NCA-4000) requirements 6 months after the date of issuance.

For all other requirements of Subsection NCA, the latest Edition, or the Edition and Addenda (if applicable) identified in the Design Specification, may be used. The process for using requirements from the Edition and Addenda (if applicable) identified in the Design Specification shall be addressed in the quality program.

(i) As an alternative to the requirements of (h), a Certificate Holder may use the requirements of an earlier Edition and Addenda (if applicable) if stipulated in the Scope of their certificate.

NCA-1150 UNITS OF MEASUREMENT

U.S. Customary units, SI, or any local customary units may be used to demonstrate compliance with all requirements of this edition (e.g., materials, design, fabrication, examination, inspection, testing, certification, and overpressure protection).

In general, it is expected that a single system of units shall be used for all aspects of design except where unfeasible or impractical. When components are manufactured at different locations where local customary units are different from those used for the general design, the local units may be used for the design and documentation of that component. Similarly, for proprietary components or those uniquely associated with a system of units different from that used for the general design, the alternate units may be used for the design and documentation of that component.

For any single equation, all variables shall be expressed in a single system of units. When separate equations are provided for U.S. Customary and SI units, those equations must be executed using variables in the units associated with the specific equation. Data expressed in other units shall be converted to U.S. Customary or SI units for use in

these equations. The result obtained from execution of these equations may be converted to other units.

Production, measurement and test equipment, drawings, welding procedure specifications, welding procedure and performance qualifications, and other fabrication documents may be in U.S. Customary, SI, or local customary units in accordance with the fabricator's practice. When values shown in calculations and analysis, fabrication documents, or measurement and test equipment are in different units, any conversions necessary for verification of Code compliance and to ensure that dimensional consistency is maintained shall be in accordance with the following:

(a) Conversion factors shall be accurate to at least four significant figures.

(b) The results of conversions of units shall be expressed to a minimum of three significant figures.

Conversion of units, using the precision specified above, shall be performed to assure that dimensional consistency is maintained. Conversion factors between U.S. Customary and SI units may be found in Section III Appendices, Nonmandatory Appendix AA, Guidance for the Use of U.S. Customary and SI Units in the ASME Boiler and Pressure Vessel Code. Whenever local customary units are used, the manufacturer shall provide the source of the conversion factors that shall be subject to verification and acceptance by the Authorized Nuclear Inspector.

Material that has been manufactured and certified to either the U.S. Customary or SI material specification (e.g., SA-516M) may be used regardless of the unit system used in design. Standard fittings (e.g., flanges, elbows, etc.) that have been certified to either U.S. Customary units or SI units may be used regardless of the units system used in design.

All entries on a Manufacturer's Data Report and data for Code-required nameplate marking shall be in units consistent with the fabrication drawings for the component using U.S. Customary, SI, or local customary units. It is acceptable to show alternate units parenthetically. Users of this Code are cautioned that the receiving Jurisdiction should be contacted to ensure the units are acceptable.

NCA-1200 GENERAL REQUIREMENTS FOR ITEMS AND INSTALLATION

(21) NCA-1210 COMPONENTS

Each component of a nuclear power plant shall require a Design Specification (NCA-3211.19), Design Report (NCA-3211.29, NCA-3211.40), and other design documents specified in Article NCA-3000. Data Reports and stamping shall be as required in Article NCA-8000.

NCA-1220 MATERIALS

NCA-1221 Metallic Materials

Metallic materials shall be manufactured to an SA, SB, or SFA Specification,[4] or any other material specification permitted by this Section. Such material shall be manufactured, identified, and certified in accordance with the requirements of this Section. Tubular products and fittings welded with filler metal require Certification Mark with NPT Designator but do not require nameplates.

NCA-1221.1 Metallic Material, ASTM Specification. Metallic materials produced under an ASTM designation may be accepted as complying with the corresponding ASME Specification, provided the ASME Specification is designated as being identical with the ASTM Specification for the grade, class, or type produced and provided that the material is confirmed as complying with the ASTM Specification by a Certified Material Test Report or Certificate of Compliance from the Material Organization. When a material does not have a corresponding ASME Specification, it may be accepted for Section III, Division 2 construction if it is specified in the Design Documents, provided all materials comply with all of the requirements of Article CC-2000 for concrete containments.

NCA-1221.2 Welding Material, AWS Specification. Welding material produced under an AWS designation may be accepted as complying with the corresponding ASME Specification, provided the latter Specification is indicated to be identical with the AWS Specification and provided the welding material is confirmed as complying with the AWS Specification by a Certified Material Test Report or Certification from the Material Organization.

NCA-1222 Nonmetallic Materials — Division 2

NCA-1222.1 Concrete and Grout. Plastic concrete and grout shall be manufactured to material specifications permitted by this Section. Plastic concrete and grout shall be manufactured and identified in accordance with the requirements of this Section.

NCA-1222.2 Concrete and Grout Constituents. The constituents of plastic concrete and grout shall be manufactured to material specifications permitted by this Section. Constituents shall be manufactured and identified in accordance with the requirements of this Section.

NCA-1223 Nonmetallic Materials — Division 1

NCA-1223.1 Polyethylene Compound and Polyethylene Material. Polyethylene compound and polyethylene material shall be manufactured to material specifications permitted by this Section. Polyethylene compound and polyethylene material shall be manufactured and identified in accordance with the requirements of ASTM

polyethylene materials standards, Plastics Pipe Institute TR-3 and TR-4 (Table NCA-7100-2), and this Section.

NCA-1223.2 Polyethylene Source Material. Products used for conversion to polyethylene material, including natural compound and pigment concentrate compound, shall be manufactured and identified in accordance with the requirements of ASTM materials standards, Plastics Pipe Institute TR-3 and TR-4 (Table NCA-7100-2), and this Section.

(21) ## NCA-1230 PARTS, PIPING SUBASSEMBLIES, AND SUPPORTS

NCA-1231 Parts

The Design Specifications (NCA-3211.19) and Design Report, Load Capacity Data Sheet, or Design Report Summary (NCA-3211.29, NCA-3211.40) for components and supports shall apply to the parts of such components and supports. Data Reports and stamping shall be as required in Article NCA-8000.

NCA-1232 Piping Subassemblies

The Design Specifications (NCA-3211.19) and Design Report [NCA-3211.40(b)] for the piping system shall apply to the piping subassemblies of that system. Data Reports and stamping shall be as required in Article NCA-8000.

NCA-1233 Supports

The Design Conditions for supports shall be included in either the component or piping Design Specifications (NCA-3211.19) or in a separate Design Specification. A Design Report, Load Capacity Data Sheet, or Design Report Summary (NCA-3211.40) for each support or group of supports shall be furnished. Certification documents shall be as required by Article NCA-8000.

Section III Appendices, Nonmandatory Appendix CC contains alternative rules for Linear Piping Supports that can be used as an alternative to the requirements of Subsection NCA and Subsection NF when permitted by the Owner's Design Specification.

(21) ## NCA-1260 APPURTENANCES

The design conditions for appurtenances shall be included in either the component Design Specification (NCA-3211.19) or a separate Design Specification. A Design Report [NCA-3211.40(f)] for each appurtenance or group of identical appurtenances for each component shall be furnished, if not included in the component Design Report. The Owner, directly or through his designee, shall be responsible for the overall correlation of the component and appurtenance Design Reports (NCA-3211.20). Data Reports and stamping shall be as required by Article NCA-8000.

NCA-1270 MISCELLANEOUS ITEMS

NCA-1271 Control Rod Drive Housings

Control rod drive housings attached to a reactor vessel shall be considered in the Design Specification as a part, as an appurtenance, or as a separate vessel. The rules of Subsection NB shall apply to those portions of the housings forming a pressure-retaining boundary.

NCA-1272 Heater Elements

That portion of heater elements forming a pressure-retaining boundary of a nuclear power system shall be considered in the Design Specification either as a part or as an appurtenance.

NCA-1273 Fluid Conditioner and Flow Control Devices Other Than Valves

That portion of fluid conditioners or flow control devices, such as filters, demineralizers, traps, strainers, flow nozzles, flow restrictors, venturis, orifice plates (except orifice plates connecting piping of the same design pressure that are clamped between flanges), eductors, and similar devices that form the pressure boundary, shall be considered as a piping subassembly, part, appurtenance, component, or material in accordance with the rules of this Section.

NCA-1274 Penetration Assemblies

Penetration assemblies shall be considered in the Design Specification to be either parts or appurtenances.

NCA-1275 Rupture Disk Devices

The inlet and outlet portions of a rupture disk holder shall be considered as material, a part, or an appurtenance, and are considered to be part of the pressure-retaining boundary. The rupture disks and attachments to the rupture disk holder associated only with rupture disk device assembly or disk function are not required to be considered as material, a part, or an appurtenance, and are not considered to be part of the pressure-retaining boundary.

NCA-1280 INSTALLATION

NCA-1281 Activities and Requirements

The requirements pertaining to installation governing materials, fabrication, examination, testing, inspection, stamping, and reporting shall be in accordance with the rules applicable to the classification and type of component involved. When joining components of different classifications, the more restrictive requirements shall govern, except that connections between piping and other components shall be considered part of the piping. Data Reports and stamping shall be as required in Article NCA-8000.

NCA-1282 Support Installation

Installation of supports consists of those activities required to attach supports to the building structure and join parts and materials by welding or mechanical means by the NA Certificate Holder at the location authorized by its Certificate. Attachment of supports to building structure may also be performed during support fabrication by the NS Certificate Holder at the location authorized by its Certificate. The requirements pertaining to installation governing materials, fabrication, examination, inspection, stamping, and reporting shall be in accordance with the rules applicable to the classification and type of support involved.

NCA-1283 Services

Services such as handling, rigging, setting, and temporary bolting and temporary aligning may be performed by organizations who are non-Certificate Holders as provided for in NCA-3125.

ARTICLE NCA-2000
CLASSIFICATION OF COMPONENTS AND SUPPORTS

NCA-2100 GENERAL REQUIREMENTS

(21) NCA-2110 SCOPE

(a) Division 1 specifies rules for

(1) nuclear power system metal components, parts, and appurtenances

(2) metal containment vessels

(3) supports

(b) Division 2 specifies rules for concrete containments.

(c) While providing for several classes of construction (NCA-2120, NCA-2130), this Section does not provide guidance in the selection of a specific classification to fit a component in a given system. Such guidance is derived from systems safety criteria for specific types of nuclear power systems, such as pressurized water reactors, boiling water reactors, or high temperature gas-cooled reactors, and may be found in engineering standards or in the requirements of regulatory and enforcement authorities having jurisdiction over the nuclear facility.

(d) The Owner of a nuclear facility shall be responsible for applying system safety criteria to classify the equipment in the nuclear facility to be constructed in accordance with the rules of this Section (NCA-2120 and NCA-2130). Classification shall be included in the Design Specification.

NCA-2120 PURPOSE OF CLASSIFYING ITEMS OF A NUCLEAR POWER PLANT

Construction rules are specified for items that are designated Code Classes 1, 2, 3, CS, MC, and CC. These Code classes are intended to be applied to the classification of items of a nuclear power system and containment system. Within these systems the Code recognizes the different levels of importance associated with the function of each item as related to the safe operation of the nuclear power plant. The Code classes allow a choice of rules that provide assurance of structural integrity and quality commensurate with the relative importance assigned to the individual items of the nuclear power plant.

NCA-2130 CLASSIFICATIONS AND RULES OF THIS SECTION

NCA-2131 Code Classes and Rules of Division 1 (21)

(a) Division 1 provides rules for the construction of items in the following Code classes:

(1) Class 1 — items constructed in accordance with the rules of Subsection NB

(2) Class 2 or Class 3 — items constructed in accordance with the rules of Subsection NCD

(3) Class MC — metal containment vessels constructed in accordance with the rules of Subsection NE

(4) Class CS — core support structures constructed in accordance with the rules of Subsection NG

(b) Division 1 also provides rules for

(1) supports constructed in accordance with the rules of Subsection NF

(2) internal structures constructed in accordance with the rules of Subsection NG

NCA-2132 Rules of Division 2

Division 2 of this Section provides rules for concrete containments designed and constructed in accordance with the rules of Subsection CC.

NCA-2133 Multiple Code Class Components

(a) Compartments in components consisting of multiple compartments such as heat exchangers may be assigned different Code classes, provided any interactions between compartments produced by service conditions are taken into account and these conditions are specified in the Design Specifications.

(b) Supports for multiple Code class components shall be constructed in accordance with the rules of Subsection NF for the more restrictive class.

NCA-2134 Optional Use of Code Classes (21)

(a) Items classified as Class 2 in their Design Specifications may be constructed and stamped in accordance with the rules of Subsection NB.

(b) Items classified as Class 3 in their Design Specifications may be constructed and stamped in accordance with the rules of Subsection NB or NCD.

(c) Containment vessels classified as Class MC in their Design Specification may be constructed and stamped in accordance with the rules of Subsection NB, provided the rules of Article NE-7000 are applied in lieu of the rules of Article NB-7000 for protection against overpressure.

(d) When an item is optionally classified to a higher class, the Design Specifications shall identify the minimum required class as well as the optionally selected higher class.

(e) Those items designated as parts (Division 1) or appurtenances (Division 1) when used in a Division 2 component, if stamped as parts (Division 1), may be used without further stamping under Division 2 requirements, provided

(1) the Designer identifies the parts to be stamped under Division 1 requirements in the Construction Specification

(2) the Designer separately establishes that the use of such parts satisfies the requirements of the Design Specification, the Construction Specifications, and the Design Drawings

NCA-2135 Code Cases for Division 2 Parts

Parts specified to meet the requirements of Division 1 for material, design, fabrication, and examination may be stamped CC in accordance with Division 2 when used in a Division 2 component (Article CC-1000). For these parts, Division 1 Code Cases that are applicable for material, design, fabrication, and examination may be used for Division 2 construction in accordance with NCA-1140.

NCA-2140 DESIGN BASIS

NCA-2141 Consideration of Plant and System Operating and Test Conditions[5]

(a) Components and supports of a nuclear power system (NCA-1110) may be subjected to plant and system operating and test conditions that are required to be considered in the design and overpressure protection of the components and the design of supports in order to satisfy applicable systems safety criteria. The significance of plant and system operating and test conditions upon design may vary from item to item within a system for a specific operating or test condition experienced by the plant or system. The temperatures, pressures, and mechanical loads to which components and supports are subjected in consequence of plant or system operating and test conditions are referred to in this Section as component or support Design, Service, or Test Loadings.

(b) The definition of plant and system operating and test conditions, and the determination of their significance to the design and operability of components and supports of a nuclear power system, are beyond the scope of this Section. Appropriate guidance for the selection of plant or system operating and test conditions, that may be determined to be of significance in the selection of component or support Design, Service, or Test Loadings, the combinations thereof, and the corresponding acceptable Limits, may be derived from systems safety criteria documents for specific types of nuclear power systems and may be found in the requirements of regulatory and enforcement authorities having jurisdiction at the site.

NCA-2142 Establishment of Design, Service, and Test Loadings and Limits

In the Design Specification, the Owner or his designee shall identify the loadings and combinations of loadings and establish the appropriate Design, Service, and Test Limits for each component or support.

(a) Loadings. The Design, Service, and Test Loadings shall be identified considering all plant or system operating and test conditions anticipated or postulated to occur during the intended service life of the component or support. Service Loadings are not required to be identified for Class 2 and 3 components, Class 2 and 3 component supports, and Class MC supports, when the Design Pressure and Design Mechanical Loads result in stresses of greater magnitude, relative to the allowable stress or stress intensity at the Design Temperature, than would the Service Loadings relative to the allowables for the appropriate Service Level. When this is not the case, and for piping and its supports, Service Loadings shall be identified in the Design Specification. For the Class MC containment vessel, loadings associated with the containment function shall be identified as Design Loadings, except as provided in Article NE-3000.

(b) Limits. The selection of Design, Service, and Test Limits for each item shall be established in accordance with NCA-2142.4. The rules of this Section do not assure operability of components in which mechanical motion is required. The selection of limits for Design, Service, or Test Loadings to assure operability is beyond the scope of this Section. However, the rules of this Section do require operability of pressure relief valves. When assurance of operability is required, it is the responsibility of the Owner to define the appropriate limiting parameters by referring to documents that specify the requirements for operability. Such parameters are outside the scope of this Section [NCA-1130, NCA-2160, and NCA-5210(b)].

NCA-2142.1 Design Loadings. Design Loadings for components and supports shall be in accordance with (a), (b), and (c) below and the additional requirements of the applicable Subsections of this Section.

(a) Design Pressure. The specified internal and external Design Pressure shall not be less than the maximum difference in pressure between the inside and outside of the item, or between any two chambers of a combination unit, that exists under the most severe loadings for which the Level A Service Limits are applicable. The Design Pressure shall include allowances for pressure

surges, control system error, and system configuration effects such as static pressure heads.

(b) Design Temperature. The specified Design Temperature shall not be less than the expected maximum mean metal temperature through the thickness of the part considered for which Level A Service Limits are specified. Where a component is heated by trace heating, such as induction coils, jacketing, or by internal heat generation, the effect of such heat input shall be considered in establishing the Design Temperature. The Design Temperature shall consider control system error and system configuration effects.

(c) Design Mechanical Loads. The specified Design Mechanical Loads shall be selected so that when combined with the effects of Design Pressure, they produce the highest primary stresses of any coincident combination of loadings for which Level A Service Limits are designated in the Design Specification.

NCA-2142.2 Service Loadings. When the Design Specification or applicable Subsection of this Section requires computations to demonstrate compliance with specified Service Limits, the Design Specification shall provide information from which Service Loadings can be identified (pressure, temperature, mechanical loads, cycles, or transients). The Design Specification shall designate the appropriate Service Limit (NCA-2142.4) to be associated with each Service Loading or combination of Loadings.

NCA-2142.3 Test Loadings.

(a) Test Loadings include pressure tests required by this Section.

(b) Loads due to other types of tests as may be required by the Owner shall be included in the Design Specification.

NCA-2142.4 Design, Service, and Test Limits.

(a) Design Limits. The limits for Design Loadings shall meet the requirements of the appropriate Subsection of this Section.

(b) Service Limits. The Design Specification may designate Service Limits as defined in (1) through (4) below.

(1) Level A Service Limits. Level A Service Limits are those sets of limits that must be satisfied for all Level A Service Loadings identified in the Design Specifications to which the component or support may be subjected in the performance of its specified service function.

(2) Level B Service Limits. Level B Service Limits are those sets of limits that must be satisfied for all Level B Service Loadings identified in the Design Specifications for which these Service Limits are designated. The component or support must withstand these loadings without damage requiring repair.

(3) Level C Service Limits. Level C Service Limits are those sets of limits that must be satisfied for all Level C Service Loadings identified in the Design Specifications for which these Service Limits are designated. These sets of limits permit large deformations in areas of structural discontinuity that may necessitate the removal of the component or support from service for inspection or repair of damage to the component or support. Therefore, the selection of this limit shall be reviewed by the Owner for compatibility with established system safety criteria (NCA-2141).

(4) Level D Service Limits. Level D Service Limits are those sets of limits that must be satisfied for all Level D Service Loadings identified in the Design Specifications for which these Service Limits are designated. These sets of limits permit gross general deformations with some consequent loss of dimensional stability and damage requiring repair, that may require removal of the component or support from service. Therefore, the selection of this limit shall be reviewed by the Owner for compatibility with established system safety criteria (NCA-2141).

(c) Alternative Service Limits. Components or supports may be alternatively designed using more restrictive Service Limits than specified in the Design Specification. For example, Level B Service Limits may be used where Level C Service Limits have been specified.

(d) Test Limits

(1) The limits for Test Loadings shall meet the requirements of the appropriate Subsection of this Section.

(2) The selection of Limits for other tests defined by the Owner [NCA-2142.3(b)] shall be included in the Design Specification.

NCA-2143 Acceptance Criteria

(a) Components and supports shall comply with the design rules established for Design, Service, and Test Loadings in the appropriate Subsections.

(b) It is the responsibility of the Owner to define acceptance criteria for the Service Level Loading for which acceptance criteria are not contained in this Section.

(c) Design documentation shall be completed in accordance with the requirements of the Subsection applicable to the component or support.

NCA-2144 Concrete Containments

Concrete containments, in addition to satisfying the structure design allowables (CC-3400), shall be evaluated for load categories in CC-3200.

NCA-2160 SPECIAL REQUIREMENTS APPLIED TO CODE CLASSES

Contractual arrangements between the Owner and Certificate Holder that specify requirements in addition to or more restrictive than those specified by the rules of this Section for the applicable class of an item may be applied, provided such requirements do not negate any rules of this Section. Such special contractual requirements are beyond the scope of this Section and shall not apply as conditional requirements for Code construction of items.

ARTICLE NCA-3000
RESPONSIBILITIES AND DUTIES

NCA-3100 GENERAL

(21) ### NCA-3110 RESPONSIBILITIES VS. LEGAL LIABILITIES

The various parties involved in the construction of a nuclear facility or items that come under the jurisdiction of this Section have specific responsibilities for complying with these requirements. The responsibilities set forth herein relate only to Code compliance and are not to be construed as involving contractual or legal liabilities.

NCA-3120 CERTIFICATION

NCA-3121 Types of Certificates

Table NCA-8100-1 lists the types of certificates issued by the Society and indicates the responsibilities assumed by each Certificate Holder. Further details of these responsibilities are contained in this Article.

NCA-3125 Subcontracted Services

(a) Services may be subcontracted that are both within and beyond the scope of this Section. There are no requirements for the subcontracting of services beyond the scope of this Section. Services covered by this Section may be of a type for which the Society issues certificates, or may be of the type for which the Society does not issue a certificate. Subcontracts for activities for which certificates are required shall be made only to Certificate Holders. A Certificate Holder may subcontract to another organization the surveying and auditing of its subcontractors and Material Organizations, but must retain the responsibility for these activities and for the qualification of these subcontractors and Material Organizations.

(b) It is the right of an N Certificate Holder to subcontract stress analysis or complete design of all or a portion of a component. However, the N Certificate Holder is responsible for the design of the component and for the design output documents.

(c) The Quality Assurance Manual shall describe the manner in which the Certificate Holder controls and accepts the responsibility for the subcontracted activities.

NCA-3126 Subcontracted Calibration Services

As an alternative to survey and audit of suppliers of subcontracted services, a Certificate Holder, Material Organization, or approved supplier may accept accreditation by accrediting bodies recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), provided the requirements of (a) through (d) are met:

(a) A documented review of the supplier's accreditation shall be performed and shall include verification

(1) that the accreditation is to ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," from an accredited body recognized by the ILAC MRA and

(2) that the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

(b) The procurement documents shall specify

(1) that the service must be provided in accordance with the accredited ISO/IEC 17025 program and scope of accreditation, and

(2) that the calibration certificate/report shall include identification of the laboratory equipment/standards used, and

(3) that the calibration certificate/report shall include as-found calibration data when calibrated items are found to be out-of-tolerance, and

(4) that the service supplier shall not subcontract the service to any other supplier, and

(5) that the Certificate Holder, Material Organization, or approved supplier must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation, and

(6) additional technical and quality requirements, as necessary, based on a review of the procured scope of services, including, but not limited to, tolerances, accuracies, ranges, and industry standards.

(c) At receipt inspection, the Certificate Holder, Material Organization, or approved supplier shall be responsible for validating that the supplier's documentation certifies

(1) that the subcontracted calibration was performed in accordance with the supplier's ISO/IEC 17025 program and scope of accreditation and

(2) conformance to the procurement document's requirements.

(d) This activity shall be documented in the Certificate Holder's Quality Assurance Program, the Material Organization's Quality System Program, or the approved supplier's quality program.

NCA-3127 Subcontracted Testing Services

As an alternative to survey and audit of suppliers of subcontracted services, a Certificate Holder, Material Organization, or approved supplier may accept accreditation by accrediting bodies recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), provided the requirements of (a) through (d) are met.

(a) A documented review of the supplier's accreditation shall be performed and shall include verification

(1) that the accreditation is to ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," from an accredited body recognized by the ILAC MRA and

(2) that the published scope of accreditation for the testing laboratory covers the needed testing services including test methodology and tolerances/uncertainties.

(b) The procurement documents shall specify

(1) that the service must be provided in accordance with the accredited ISO/IEC 17025 program and scope of accreditation, and

(2) that the service supplier shall not subcontract the service to any other supplier, and

(3) that the Certificate Holder, Material Organization, or approved supplier must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation, and

(4) additional technical and quality requirements, as necessary, based on a review of the procured scope of services, including, but not limited to, tolerances, accuracies, ranges, and industry standards.

(c) At receipt inspection, the Certificate Holder, Material Organization, or approved supplier shall be responsible for validating that the supplier's documentation certifies

(1) that the subcontracted testing was performed in accordance with the supplier's ISO/IEC 17025 program and scope of accreditation and

(2) conformance to the procurement document's requirements.

(d) This activity shall be documented in the Certificate Holder's Quality Assurance Program, the Material Organization's Quality System Program, or the approved supplier's quality program.

NCA-3130 WELDING[6] AND SUBCONTRACTING DURING CONSTRUCTION (21)

NCA-3131 Welding During Construction

For Divisions 1 and 2, it is required that all shop and field welding during Code construction be done only by a Certificate Holder holding a certificate appropriate to the scope of welding to be performed. A Certificate Holder may engage individuals by contract for their services as welders or welding operators at the site location shown on the certificate, provided conditions of (a) through (g) below are met. This is an acceptable method of complying with Section IX requirements concerning responsibility for welding.

(a) The work to be done by such welders and welding operators is within the scope of the certificate.

(b) The use of such welders and welding operators is contained in the Quality Assurance Program of the Certificate Holder. The Quality Assurance Program [NCA-3211.1(a)] shall include a requirement for direct supervision and direct technical control of the welders and welding operators by the Certificate Holder during such welding operations, and this program shall be acceptable to the Certificate Holder's Authorized Inspection Agency (NCA-5121) performing the inspections.

(c) The welding procedures have been properly qualified by the Certificate Holder, and Code responsibility for such procedures is retained by the Certificate Holder.

(d) The welders and welding operators are qualified by the Certificate Holder to perform such procedures.

(e) The Certificate Holder shall have contractual control of the welding operation, including authority to assign or remove welders and welding operators at his discretion.

(f) The Certificate Holder shall be responsible for Code compliance of the completed item or installation including Certification Mark and providing the completed appropriate Data Report Form.

(g) Exceptions to the requirements of this paragraph for furnace brazing operations are specified in NCA-3211.1(g).

NCA-3132 Subcontracted Construction Services — Division 2

A Certificate Holder may engage individuals or organizations not holding a certificate to provide subcontracted construction services other than welding at the site location shown on the certificate, provided all of the following conditions are met:

(a) The activities, such as placement of concrete or reinforcing steel, to be performed by subcontracted individuals or organizations are included within the Scope of the certificate of the Certificate Holder, and a description of the subcontracted activities is contained in the Certificate Holder's Quality Assurance Program.

(b) The Quality Assurance Program [NCA-3211.1(a)] shall include requirements for direct technical control of such individuals or organizations. Technical control by the Certificate Holder includes controlling the performance of all Code-required examinations, inspections, and tests including documentation and record retention. The Quality Assurance Program shall be acceptable to the Society (NCA-8120) and to the Authorized Nuclear Inspector Supervisor (NCA-5122).

(c) The construction procedures have been approved by the Certificate Holder, and Code responsibility for such procedures is retained by the Certificate Holder.

(d) Splicers for sleeve filler metal splices or mechanical reinforcing bar splices are qualified as required by this Section, provided their qualifications are reviewed and approved by the Certificate Holder.

(e) The Certificate Holder shall have contractual control of the construction operation, including authority to assign or remove individuals or organizations at his discretion.

(f) The Certificate Holder shall be responsible for Code compliance of the completed item including Certification Mark and providing the completed, applicable Data Report Form.

(g) Provisions shall be made by the Certificate Holder for the Authorized Inspector to have access to all areas and functions required to perform his duties, including those of procedure development and qualification performed by a subcontractor for the Certificate Holder.

(21) # NCA-3200 RESPONSIBILITIES OF THE CERTIFICATE HOLDER OR DESIGNER

NCA-3210 ORGANIZATION OF NCA-3200

Table NCA-3200-1 identifies the types of Certificate Holder or Designer and paragraph numbers. Where an "X" appears in the column under the type of Certificate Holder, the paragraph reference on the left side of the Table is required for the associated Certificate of Authorization.

NCA-3211 Responsibilities

NCA-3211.1 Establishing, Documenting, and Maintaining a Quality Assurance Program

(a) The Owner is responsible for documenting a Quality Assurance Program (NCA-4133).

(b) Certificate Holders are responsible for establishing, documenting, and maintaining a Quality Assurance Program in accordance with NCA-4134 for N, NV, NPT, NS, and NA Certificate Holders.

(c) This Quality Assurance program shall be evaluated and accepted by the Society. The Certificate Holder shall file the Quality Assurance Manual with the Authorized Inspection Agency (NCA-5121), and a copy shall be made available to the Inspector (NCA-5123) and the Authorized Nuclear Inspector Supervisor (NCA-5123).

(d) The Certificate Holder shall be responsible for surveying, qualifying, and auditing suppliers of subcontracted services (NCA-3125), including nondestructive examination contractors and Material Organizations. Material Organizations holding a Quality System Certificate (Materials) and Certificate Holders whose scope includes supply or furnishing material need not be surveyed nor audited for work or material covered by the scope of their certificate. Subcontractors holding an N-Type Certificate of Authorization or NS Certificate of Authorization do not need to be surveyed or audited by the NPT Certificate Holder for work within the scope of the subcontractor's certificate.

(e) An N or NV Certificate Holder may qualify vendors of subcontracted services (NCA-3125) other than those requiring a Certificate, such as Material Organization, for another Certificate Holder doing work for that N or NV Certificate Holder. The qualification documentation shall be supplied to the other Certificate Holder prior to their use of the subcontracted service or Material Organization.

(f) For NS Certificate Holders, the qualification of organizations not certified by the Society shall be limited to the furnishing of material and subcontracted services to the NS Certificate Holder doing the qualifying.

(g) An N, NPT, NA, or NV Certificate Holder may subcontract furnace-brazing operations involving uniform heating to an organization not holding a certificate, provided the following requirements are met:

(1) The work performed shall be within the scope of activities of the Certificate Holder's Certificate of Authorization.

(2) The Certificate Holder's Quality Assurance Program shall provide for the subcontracting of furnace-brazing operations, including Authorized Inspection, and these provisions shall be acceptable to the Certificate Holder's Authorized Inspection Agency.

(3) The Certificate Holder's Quality Assurance Program shall provide for surveillance by the Certificate Holder at their subcontractor's facility during the brazing operation.

(4) The Certificate Holder shall be responsible for surveying and accepting the Quality System Programs of the subcontractor.

(5) The Certificate Holder shall ensure that the subcontractor uses written procedures and brazing operators that have been qualified as required by the Code.

(6) The Certificate Holder shall be responsible for controlling the quality and for ensuring that all materials and parts that are submitted to the Inspector for acceptance, including those brazed by subcontractors, conform to all applicable requirements of this Section.

Table NCA-3200-1
Responsibilities of the Certificate Holder or Designer

Paragraph Number	Owner	Designer (Division 2)	N Certificate Holder (Division 2)	N Certificate Holder (Division 1)	NPT Certificate Holder	NS Certificate Holder	NA Certificate Holder	NV Certificate Holder
NCA-3211.1	X		X	X	X	X	X	X
NCA-3211.2	X	X	X	X	X	X	X	X
NCA-3211.3	X		X	X	X	X	X	X
NCA-3211.4	X		X	X	X	X	X	X
NCA-3211.5	X		X	X	X	X	X	X
NCA-3211.6			X	X	X	X	X	X
NCA-3211.7			X	X	X	X	X	X
NCA-3211.8			X	X	X	X	X	X
NCA-3211.9			X	X	X	X	X	X
NCA-3211.10			X	X	X		X	X
NCA-3211.11				X				X
NCA-3211.12			X		X			
NCA-3211.13	X							
NCA-3211.14	X							
NCA-3211.15	X							
NCA-3211.16	X							
NCA-3211.17	X							
NCA-3211.18	X							
NCA-3211.19	X							
NCA-3211.20	X							
NCA-3211.21	X							
NCA-3211.22	X							
NCA-3211.23	X							
NCA-3211.24	X							
NCA-3211.25	X							
NCA-3211.26	X							
NCA-3211.27		X						
NCA-3211.28		X						
NCA-3211.29		X						
NCA-3211.30		X						
NCA-3211.31		X	X					
NCA-3211.32		X						
NCA-3211.33		X						
NCA-3211.34	X	X	X					
NCA-3211.35			X					
NCA-3211.36			X					
NCA-3211.37			X					
NCA-3211.38			X					
NCA-3211.39			X					X
NCA-3211.40				X				
NCA-3211.41					X			
NCA-3211.42					X			
NCA-3211.43						X		
NCA-3211.44						X		
NCA-3211.45						X		
NCA-3211.46						X		

Table NCA-3200-1
Responsibilities of the Certificate Holder or Designer (Cont'd)

Paragraph Number	Owner	Designer (Division 2)	N Certificate Holder (Division 2)	N Certificate Holder (Division 1)	NPT Certificate Holder	NS Certificate Holder	NA Certificate Holder	NV Certificate Holder
NCA-3211.47						X		
NCA-3211.48						X		
NCA-3211.49								X
NCA-3211.50								X

(h) The N or NV Certificate Holder may supply replacement material without material supply being shown in the scope of their certificate, provided the following apply:

(1) Supply of replacement material is included in their Quality Assurance Program.

(2) The replacement material conforms to all applicable requirements of this Section.

(3) The replacement material is provided exclusively for incorporation into items originally manufactured or fabricated and furnished by the Certificate Holder under their certificate.

(4) Certified Material Test Reports or other documentation shall identify that replacement material is intended exclusively for incorporation into items originally manufactured by the Certificate Holder.

NCA-3211.2 Making Documents Available to the AIA. The Certificate Holder or Designer is responsible for making documents specified by this Section available to the AIA (the Inspector or the Authorized Nuclear Inspector Supervisor) including those requested by the Inspector to ensure compliance with Code requirements and, for NS Certificate Holders, the performance of the annual audit (NCA-5242).

NCA-3211.3 Compliance With this Section

(a) For Division 2 construction, the N Certificate Holder has the responsibility for constructing the concrete containment in accordance with the Design Drawings and Construction Specification and in accordance with this Section. The N Certificate Holder's responsibilities do not include design of the component.

(b) The N and NV Certificate Holder have the responsibility for the structural integrity using the Design Specification as a basis of design, complying with this Section, and furnishing a Design Report if required.

(c) The NPT and NS Certificate Holders shall have all work performed in accordance with the applicable requirements of this Section.

(d) The NA Certificate Holder has responsibility for those activities required to place and attach components to their support structures or join items in accordance with the applicable requirements of this Section.

NCA-3211.4 Obtaining a Certificate. The appropriate Certificate (NCA-8100) shall be obtained for

(a) the Owner, after an application for a construction permit or combined license for a specific nuclear facility is docketed or filed with the regulatory authority, shall obtain an Owner's certificate from the Society for each unit or facility to be constructed prior to beginning field installation. The information to be supplied by the Owner when making applications is given in forms issued by the Society. A written agreement with an Authorized Inspection Agency (NCA-8130) is required prior to application.

(b) the construction of any concrete containment intended to be in compliance with the requirements of this Section and to be stamped with a Certification Mark with N Designator.

(c) the construction of any item intended to be in compliance with the requirements of this Section and to be stamped with a Certification Mark with N Designator. An N Certificate Holder may do all of the work of an NPT, NS, or NA Certificate Holder at the location shown on their certificate, provided that the scope of work is included in this certificate.

(d) the construction of any item intended to be in compliance with the requirements of this Section and to be stamped with a Certification Mark with NPT Designator.

(e) an NS Certificate shall be obtained for the construction of any support intended to be in compliance with the requirements of this Section.

(f) the installation of any item intended to be in compliance with the requirements of this Section and to be stamped with the Certification Mark with NA Designator.

(g) the construction of any item intended to be in compliance with the requirements of this Section and to be stamped with a Certification Mark with NV Designator. An NV Certificate Holder may do all of the work of an NPT or NA Certificate Holder at the location shown on their certificate, provided that the scope of work is included in this certificate.

NCA-3211.5 Obtaining a Written Agreement With an Authorized Inspection Agency (NCA-8130)

(a) The Owner and Certificate Holder are responsible for obtaining a written agreement with an Authorized Inspection Agency (NCA-8130) prior to application.

(b) After receipt of notification from the regulatory authority that an application for a construction permit or combined license for a specific nuclear facility has been docketed, the Owner shall obtain an Owner's certificate from the Society for unit(s) docketed concurrently for each site prior to beginning field installation. The information to be supplied by the Owner when making applications is given in forms issued by the Society.

NCA-3211.6 Filing of the Quality Assurance Manual. The Certificate Holder shall file with the Authorized Inspection Agency (NCA-5121) copies of the Quality Assurance Manual. The Certificate Holder shall keep a copy on file available to the Inspector (NCA-5123) or the Authorized Nuclear Inspector Supervisor (NCA-5123).

NCA-3211.7 Certified Material Test Reports and Certificates of Compliance. The Certificate Holder is responsible for review of Certified Material Test Reports and Certificates of Compliance for materials (NCA-1220) used by them.

NCA-3211.8 Control of Records. The Certificate Holder is responsible for the preparation, accumulation, control, and protection of required records while in their custody (NCA-4134.17).

NCA-3211.9 Approval of Material. The Certificate Holder is responsible for the documentation of review and approval of material used by them as permitted by NCA-1140(e).

NCA-3211.10 Data Report. The N, NPT, NA, and NV Certificate Holder shall certify compliance with this Section by signing the appropriate Data Report Form and applying the appropriate stamping (Article NCA-8000).

NCA-3211.11 Subcontracted Services. The Certificate Holder is responsible for subcontracting (NCA-3125) for materials, design, fabrication, installation, examination, testing, and inspection. The Certificate Holder shall retain overall responsibility, including certification and stamping.

NCA-3211.12 Preparing Construction Procedures, and Shop and Field Drawings.

(a) Construction procedures shall give sufficient detailed information about the methods of construction and fabrication to enable those reviewing the procedures to determine whether the requirements of the Design Specification, the Construction Specification, and the Design Drawings will be satisfied. Construction procedures will include test procedures to be performed by the Certificate Holder that are needed to establish conformance with the requirements of the documents listed in this Article. Distribution of procedures is shown in Table NCA-3200-2.

(b) The Certificate Holder shall provide shop and field drawings. Distribution of shop and field drawings is shown in Table NCA-3200-2.

NCA-3211.13 Certifying and Filing of the Owner's Data Report. The Owner or their designee shall prepare Form N-3 (Section III Appendices, Mandatory Appendix V).

NCA-3211.14 Establishing the Code Editions, Addenda, and Code Cases to Be Used. The Owner is responsible for establishing the Code Editions, Addenda, and Code Cases to be used in Design Specifications, and determining that they are acceptable to the regulatory and enforcement authorities having jurisdiction over the nuclear facility (NCA-1140).

NCA-3211.15 Verifying Code Editions, Addenda, and Code Cases. The Owner is responsible for verifying through a review of the required documentation that the Code Editions, Addenda, and Code Cases used for completed components and supports, and materials satisfy NCA-1140 and are acceptable to the regulatory and enforcement authorities having jurisdiction over the nuclear facility.

NCA-3211.16 Classifying Equipment. The Owner, either directly or through their designee, shall establish the Code classification of the items that comprise the nuclear facility.

NCA-3211.17 Designating the Designer, Constructor, and Fabricators for Division 2 Construction. The Owner is responsible for designating the Designer, Constructor, and Fabricators for Division 2 construction and verifying through a review of the required documentation that the Designer has fulfilled their responsibilities for Division 2 construction.

NCA-3211.18 Providing Adequate Structures, Foundations, and Auxiliary Systems for the Items Covered by Divisions 1 and 2 of This Section. It is the responsibility of the Owner to ensure that intervening elements, foundations and building structures adequate to support the items covered by this Section are provided, and to ensure that jurisdictional boundary interfaces for Code items are defined and compatible. Loads imposed upon structures outside the scope of this Section by items covered by this Section shall be defined in the Design Specification. Concrete reactor vessels or concrete containments bearing on soil, rock, caissons, or piles require an allowable bearing pressure or allowable load per caisson or pile to be determined by the Owner and furnished to the Designer.

Table NCA-3200-2
Document Distribution for Division 2 Construction

Document	Prepared by	Reviewed by	Certified by	Approved by	Provided to [Note (1)]	Available on Request
Design Specification (NCA-3211.19)	O	O	O	...	D, C, I, J	...
Construction Specification (NCA-3211.28)	D	O	D	O	O, C, F, M	I, J
Design Drawings (NCA-3211.28)	D	O	D	O	O, C, F, M	I, J
Design Report (NCA-3211.29)	D	O	D	O	O	I, J
Construction procedures [Note (1)] (NCA-3211.31)	C, F	D	...	D	D, O	I, J
Certified Material Test Reports or Certificates of Compliance [Note (1)] (CC-2130)	M	C, F	M	...	C, F, O	I, J, D
Shop and field drawings [Note (1)] (NCA-3211.33)	C, F	D	...	D	C, F	I
Construction Report (NCA-3211.23, NCA-3211.31)	C	O, D	D	O	D, O, J	I, J
Data Report Form C-1 (NCA-8410)	C	...	D, C, I	...	O	I, J
Data Report Form N-2 (NCA-8410)	F	...	F, I	...	C	I, J
Data Report Form N-3 (NCA-8420)	O	I	O, I	...	...	I, J

Legend:
O — Owner or his designee
D — Designer
C — Constructor
F — Fabricator
M — Material manufacturer
I — Inspector
J — Enforcement authority

NOTE: (1) Information provided to the indicated participants when required to satisfy their designated responsibilities under this Section. Other information provided only by specific arrangement with the Owner. Participants are required to furnish only such information as is necessary to permit the recipient to perform his duties in conformance with this Section. Other information may be furnished at the discretion of the responsible parties.

NCA-3211.19 Provisions of the Design Specifications

(a) Provision and Correlation. It is the responsibility of the Owner to provide, or cause to be provided, Design Specifications for components, supports, and appurtenances. The Owner, either directly or through their designee, shall be responsible for the proper correlation of all Design Specifications. Separate Design Specifications are not required for parts, piping subassemblies, appurtenances, or supports when they are included in the Design Specification for a component (NCA-1210). However, the applicable data from the component Design Specification (Division 1) or the Construction Specification and Design Drawings (Division 2) shall be provided in sufficient documented detail to form the basis for fabrication in accordance with this Section.

(b) Contents of Design Specifications[7]

(1) The Design Specifications shall contain sufficient detail to provide a complete basis for Division 1 construction or Division 2 design in accordance with this Section. Such requirements shall not result in construction that fails to conform with the rules of this Section. All Design Specifications shall include (-a) through (-h) below.

(-a) the functions and boundaries of the items covered [NCA-3211.19(d)]

(-b) the design requirements [NCA-2110(a), NCA-2110(b), and NCA-2140] including all required overpressure protection requirements [NCA-3211.21]

(-c) the environmental conditions[8] that would have an effect on material deterioration, including radiation

(-d) the Code classification of the items covered (Article NCA-2000)

(-e) material requirements including impact test requirements

(-f) additional fracture mechanics data for base metal, weld metal, and heat-affected zone required to use Section III Appendices

(-1) Nonmandatory Appendix G, Figure G-2210-1 in accordance with Section III Appendices

(-2) Nonmandatory Appendix G, G-2110(b), when the methods of Section III Appendices

(-3) Nonmandatory Appendix G are used to provide protection against nonductile fracture for materials that have specified minimum yield strengths at room temperature greater than 50.0 ksi (345 MPa) but not exceeding 90.0 ksi (620 MPa)

(-4) where these materials of higher yield strengths are to be used in conditions where radiation may affect the material properties, the effect of radiation

on the K_{Ic} curve shall be determined for the material prior to its use in construction

(-g) when operability of a component is a requirement, the Design Specification shall make reference to other appropriate documents that specify the operating requirements

(-h) the effective Code Edition, Addenda, and Code Cases to be used for construction

(2) A Design Specification shall be provided for each concrete containment serving in a single power-generating unit or for multiple concrete containments at the same site. In addition to the requirements of (a) above, the Design Specifications for Division 2 items shall include (-a) through (-g) below.

(-a) design life

(-b) corrosion effects

(-c) structural acceptance testing requirements (Division 2, Article CC-6000)

(-d) shielding requirements

(-e) construction surveillance required by the Designer

(-f) foundation type and allowable loading, if applicable (NCA-3211.18)

(-g) loads from internal structures (NCA-2132)

(3) The Design Specification shall identify those components and/or parts that require a preservice examination and shall include the following:

(-a) examination

(-1) Edition and Addenda of Section XI to be used

(-2) category and method

(-3) qualifications of personnel, procedures, and equipment

(-b) welds

(-1) surface conditioning requirements

(-2) identification/marking system to be used

(c) Boundaries of Jurisdiction[8]

(1) In order to define the boundaries of components with respect to adjacent components, intervening elements, and other structures, the Design Specifications shall include

(-a) the locations of each such boundary

(-b) the forces, moments, strains, or displacements that are imposed at each such boundary

(-c) the structural characteristics of the attached components or structures, whether or not they are within this Section's jurisdiction when such components or structures provide constraints to the movement of components or appurtenances

(-d) when the foundation support is constructed as an integral part of the concrete containment, it shall be included within this Section's Division 2 jurisdiction to the extent required by NCA-2132

(2) Definition of Division 1 Boundaries.

(-a) The boundaries for Class 1 components are given in NB-1130.

(-b) The boundaries for Class 2 or Class 3 components are given in NCD-1130.

(-c) The boundaries for metal containment vessels are given in NE-1132.

(-d) The boundaries for supports are given in NF-1130.

(-e) The boundaries for core support structures are given in NG-1130.

(3) Definition of Division 2 Boundaries. The Design Specification shall define the boundaries of Division 2 in accordance with the limits defined in CC-1140; it shall also show the external boundaries of the component with respect to its supporting structures. Where the support is constructed as an integral part of the concrete containment, it shall be included within the jurisdiction of Division 2 to the extent required by CC-1140. The Design Specification shall include the specific dimensional location of each boundary, including the boundaries for parts and appurtenances designated to meet the requirements of Division 1.

(d) Certification of the Design Specifications. The Design Specifications shall be certified to be correct and complete and to be in compliance with the requirements of NCA-3211.19 by one or more Certifying Engineers, on behalf of the Owner or their designee. The Certifying Engineers shall be competent in the applicable field of design and related nuclear facility requirements and qualified by the Owner or their designee in accordance with the requirements of Section III Appendices, Mandatory Appendix XXIII. These Certifying Engineers are not required to be independent of the organization preparing the Design Specifications. Document distribution for Division 2 construction is shown in Table NCA-3200-2.

(e) Filing of Design Specifications

(1) The Design Specifications in their entirety shall become a principal document governing design and construction of items. A copy of the Design Specification shall be made available to the Inspector at the manufacturing site before fabrication begins, and a copy shall be filed at the location of the installation and made available to the regulatory and enforcement authorities having jurisdiction over the nuclear facility before components or appurtenances are placed in service. In the case of parts, piping subassemblies, appurtenances, and supports, the Design Specifications need not be made available to the Inspector at the fabrication site [NCA-3211.19(a)]. However, the applicable data from the Design Specifications that form the basis for fabrication shall be made available to the Inspector at the fabrication site. Document distribution for Division 2 construction is shown in Table NCA-3200-2.

(2) For pumps and valves 4 in. nominal pipe size (DN 100) and less, for linear supports used as mechanical snubbers, and for standard supports, the Certificate Holder may provide their own Design Specification in accordance with NCA-3211.19(b) as a basis for

construction. Prior to installation, the Owner or their designee shall be responsible for reconciling the Certificate Holder's Design Specification with their own Design Specification.

NCA-3211.20 Reviewing Design Reports

(a) The Design Report that the Certificate Holder or the Designer provides shall be reviewed by the Owner or their designee to determine that all the Design and Service Loadings as stated in the Design Specification have been evaluated, and that the acceptance criteria explicitly provided for in this Section, or additional acceptance criteria permitted by this Section when established in the Design Specification, associated with the specified Design and Service Conditions, have been considered. The responsibility for the method of analysis and the accuracy of the Design Report remains with the Certificate Holder or the Designer.

(b) Except as provided for in (c) below, documentation shall be provided by the Owner or their designee to indicate that the review required by (a) above has been conducted. Prior to the stamping of the component, a copy of this documentation shall be attached to the copy of the Design Report that is made available to the Inspector. A copy of this documentation shall be included with the Design Report that is filed at the location of the installation in accordance with NCA-4134.17 and made available to the regulatory and enforcement authorities having jurisdiction over the nuclear facility. Document distribution for Division 2 construction is shown in Table NCA-3200-2.

(c) When a Certified Design Report Summary [NCA-3211.40(d)] is furnished in lieu of a Design Report [NCA-3211.40(b)], for standard supports, documentation shall be provided by the Owner or the Owner's designee to indicate that the Certified Design Report Summary has been reviewed in accordance with (a) above. Prior to stamping of the component, including piping systems, a copy of this documentation shall be attached to the Certified Design Report Summary that is made available to the Inspector. A copy of this documentation and the Certified Design Report Summary shall be filed at the location of the installation in accordance with NCA-4134.17 and made available to the regulatory and enforcement authorities having jurisdiction over the nuclear facility.

NCA-3211.21 Designating Overpressure Protection Requirements. The Owner is responsible for designating the overpressure protection requirements for each component or system, including the Class of overpressure protection rules assigned to each component or system and the location of the overpressure protection devices.[9]

NCA-3211.22 Providing and Filing the Overpressure Protection Report

(a) It is the responsibility of the Owner to provide, or cause to be provided, an Overpressure Protection Report for each component or system (NB-7200, NCD-7200, or NE-7200).

(b) The report shall be certified as specified in NB-7230, NCD-7230, or NE-7230.

(c) The report shall be filed as specified in NB-7250, NCD-7250, or NE-7250.

NCA-3211.23 Division 2 Construction. The Owner is responsible for reviewing and approving the Construction Specification, Design Drawings, and Construction Report for Division 2 construction (Table NCA-3200-2).

NCA-3211.24 Section XI Accessibility. The Owner is responsible for providing for the design and arrangement of components to permit accessibility in accordance with Section XI.

NCA-3211.25 Designating Records to Be Maintained and Providing for Their Maintenance. The Owner shall be responsible for designating the records to be maintained (NCA-4134.17). The Owner shall also be responsible for continued maintenance of the records required by this Section and Section XI at the nuclear facility, the Certificate Holder's shop or facility, or other locations determined by the Owner. The Owner shall advise the regulatory and enforcement authority having jurisdiction over the nuclear facility in writing regarding the location of the records.

NCA-3211.26 Performing or Assigning a Designee for Other Duties as Defined Throughout this Section. The activities necessary to provide compliance with responsibilities assigned to the Owner by Table NCA-3200-2 may be performed on the Owner's behalf by a designee; however, the responsibility for compliance remains with the Owner. When the Owner assigns any of the responsibilities listed in Table NCA-3200-2, such assignment shall contain, as a minimum, the name and address of the designee, the responsibilities being assigned, and the applicable nuclear facility or facilities.

NCA-3211.27 Structural Design Preparation. The Designer is responsible for preparing the structural design of the component in conformance with this Section and the Design Specification (NCA-3211.19).

NCA-3211.28 Prepare the Design Drawings and Construction Specification. The Designer is responsible for the preparation of Design Drawings and the Construction Specification.

(a) Design Drawings. The Design Drawings shall contain the following:

(1) concrete and steel liner thickness
(2) size and location of reinforcing steel
(3) size and location of prestressing tendons

(4) size and location of penetrations

(5) all other details necessary to construct the item in accordance with the requirements of the Design Specification, the Construction Specification, and this Section

(b) Construction Specification. The Construction Specification shall contain the following:

(1) material specifications

(2) material shipping, handling, and storage requirements

(3) inspection requirements

(4) appropriate Code references

(5) requirements for personnel or equipment qualification

(6) material or part examination and testing requirements

(7) acceptance testing requirements

(8) leak testing requirements

(9) requirements for shop drawings

(10) requirements for batching, mixing, placing, and curing concrete

(11) requirements for the fabrication and installation of the prestressing system, reinforcing steel, embedments, and all other parts

(12) identification of parts requiring a Certification Mark

(13) design life for parts and materials where necessary to establish compliance with the Design Specification

(14) construction surveillance to be performed by the Designer as required by the Design Specification

(15) construction documents that require review by the Designer and those that require both review and approval by the Designer — as a minimum, these will include the requirements of Table NCA-3200-2.

NCA-3211.29 Prepare and Submit the Design Report. The Designer shall prepare a Design Report in sufficient detail to show that the applicable stress limitations are satisfied when the component is subject to the loading conditions specified in the Design Specification and this Section. The Design Report prepared by the Designer shall contain calculations and sketches substantiating that the design is in accordance with the Design Specification and this Section. Distribution of the Design Report is shown in Table NCA-3200-2.

NCA-3211.30 Surveillance of Construction. The Designer is responsible for performing surveillance of construction to the extent designated by the Owner in the Design Specification (Table NCA-3200-2).

NCA-3211.31 Review of Construction Documents as Specified in the Construction Specification. The Designer is responsible for the following:

(a) Construction Procedures. Construction procedures give sufficient detailed information about the methods of construction and fabrication to enable those reviewing the procedures to determine whether the requirements of the Design Specification, the Construction Specification, and the Design Drawings will be satisfied. Construction procedures will include test procedures to be performed by the Certificate Holder that are needed to establish conformance with the requirements of the documents listed in this Article. Distribution of procedures is shown in Table NCA-3200-2.

(b) Shop and Field Drawings. The Division 2 N Certificate Holder shall provide shop and field drawings. Distribution of shop and field drawings is shown in Table NCA-3200-2.

(c) Material Documentation. The Division 2 N Certificate Holder shall collect records to verify that materials comply with the requirements of this Section and the Construction Specification.

(d) Contents of the Construction Report. The Division 2 N Certificate Holder shall provide a Construction Report. The report shall include the following:

(1) a summary of construction progress showing key dates of major construction activities

(2) a complete and detailed record of all containment acceptance testing

(3) a summary of quality control records for components and parts

(4) a list of as-built, design, field, and shop drawings showing the latest revision used for construction and date

(5) a summary of deviations (nonconformances) giving a brief description of the nature of the deviations (nonconformances) and the corrective actions and the date when the corrective actions were taken

(6) distribution and approvals as shown in Table NCA-3200-2.

NCA-3211.32 Modifications of Design Drawings and Construction Specification.

(a) Revision of Design Drawings and Construction Specification. Design Documents issued for use in construction shall be revised to reflect any change in the Design. Changes to Design Documents shall be reviewed and certified in accordance with (b).

(b) Certification of the Construction Specification, Design Drawings, and Design Report

(1) The Construction Specification, Design Drawings, and Design Report shall be reviewed and certified to be correct and in accordance with the Design Specification and this Section by one or more Certifying Engineers, on behalf of the Designer. The Certifying Engineers shall be competent in the field of design of concrete components and qualified by the designer in accordance with the requirements of Section III Appendices, Mandatory Appendix XXIII. These Certifying Engineers are not required to be independent of the organization designing the component. Distribution of Construction Specification, Design Drawings, and the Design Report is shown in Table NCA-3200-2.

(2) In order for the Certifying Engineer to certify the Construction Specification and Design Drawings, it is necessary that the Design Specification has been certified. For the Constructor or Fabricator to do work in accordance with Construction Specifications and Design Drawings, it is necessary that these documents have been certified.

NCA-3211.33 Certification of the Construction Report. The Construction Report shall be evaluated by the Designer, who shall certify that the Construction Report conforms to the requirements of Division 2 and the Design Specification. They shall also provide any supplemental analysis needed to substantiate this evaluation. Prior to certification, they shall review the file of as-built, design, shop, and field drawings to establish that the list provided by the Constructor in the Construction Report corresponds to the as-built, design, shop, and field drawings that will be maintained as a file by the Owner. Distribution of the Construction Report is shown in Table NCA-3200-2.

NCA-3211.34 Document Distribution. The Owner, Designer, and N-2 Certificate Holder are responsible for document distribution as shown in Table NCA-3200-2.

NCA-3211.35 Construction of Components and Parts. The Division 2 N Certificate Holder is responsible for constructing the components and parts in accordance with the Design Drawings and Construction Specification(s) and in accordance with this Section.

NCA-3211.36 Qualification of Material Organizations. The Division 2 N Certificate Holder is responsible for qualification of Metallic Material Organizations (NCA-3800) and manufacturers of nonmetallic material (NCA-3900).

NCA-3211.37 Preparing the Construction Report. The Division 2 N Certificate Holder shall provide a Construction Report. The report shall include

(a) a summary of construction progress showing key dates of major construction activities

(b) a complete and detailed record of all containment acceptance testing

(c) a summary of quality control records for components and parts

(d) a list of as-built, design, field, and shop drawings showing the latest revision used for construction and date

(e) a summary of deviations (nonconformances) giving a brief description of the nature of the deviations (nonconformances) and the corrective actions and the date when the corrective actions were taken

(f) distribution and approvals as shown in Table NCA-3200-2

NCA-3211.38 Structural Integrity Testing. The Division 2 N Certificate Holder is responsible for structural integrity testing in accordance with Article CC-6000.

NCA-3211.39 Contributing Information to the Constructor Needed for the Preparation of the Construction Report for Division 2 Construction. The N Certificate Holder shall provide a Construction Report. The report shall include

(a) a summary of construction progress showing key dates of major construction activities

(b) a complete and detailed record of all containment acceptance testing

(c) a summary of quality control records for components and parts

(d) a list of as-built, design, field, and shop drawings showing the latest revision used for construction and date

(e) a summary of deviations (nonconformances) giving a brief description of the nature of the deviations (nonconformances) and the corrective actions and the date when the corrective actions were taken

(f) distribution and approvals as shown in Table NCA-3200-2

NCA-3211.40 Provision of a Design Report When One Is Required. The Division 1 N Certificate Holder is responsible for the following:

(a) The Preparation of Drawings. The drawings used for construction shall comply with the Design Specifications and the rules of this Section and shall be in agreement with the other design output documents.

(b) The Design Report.[10] The drawings used for construction shall be in agreement with the Design Report before it is certified and shall be identified and described in the Design Report. It is the responsibility of the N Certificate Holder to furnish a Design Report for each component and support, except as provided in (b) and (c). The Design Report shall be certified on behalf of the N Certificate Holder by a Certifying Engineer when it is for Class 1 components and supports, Class CS core support structures, Class MC vessels and supports, Class 2 vessels designed to NCD-3200 (NCD-3131.1), or Class 2 or Class 3 components designed to Service Loadings greater than Design Loadings. A Class 2 Design Report shall be prepared for Class 1 piping NPS 1 (DN 25) or smaller that is designed in accordance with the rules of Subsection NCD.

(c) The Load Capacity Data Sheet. The Load Capacity Data Sheet shall state the load capacity of the support and identify the tests and calculations used to establish the load capacity. The Load Capacity Data Sheet shall adequately identify the support. The Load Capacity Data Sheet for supports for Class 1 components, Class MC vessels, and Class 2 vessels designed to NCD-3200 shall be certified by a Certifying Engineer on behalf of the N or NS Certificate Holder. The Certifying Engineer shall be qualified by the N or NS Certificate Holder in accordance with the requirements of Section III Appendices, Mandatory Appendix XXIII. The Load Capacity Data Sheet shall specify the organization responsible for

retaining the data substantiating the stated load capacity. Such data shall be on file and available for review.

(d) Certified Design Report Summary. For standard supports designed by analysis, a Certified Design Report Summary may be furnished in lieu of a Design Report when the manufacturer of the standard support provides their own Design Specification [NCA-3211.19]. The Certified Design Report Summary and the Design Report used to justify the Certified Design Report Summary shall be certified by a Certifying Engineer on behalf of the N or NS Certificate Holder. The Certifying Engineer shall be qualified by the N or NS Certificate Holder in accordance with the requirements of Section III Appendices, Mandatory Appendix XXIII. The Certified Design Report Summary shall include (1) through (7) below.

(1) a description or sketch of the standard support including the manufacturer's catalog item number or identification number

(2) identification and location of the standard support manufacturer's applicable Design Specification

(3) identification and location of the standard support manufacturer's applicable Design Report

(4) the classification (Class 1, 2, 3, or combination) of the standard support

(5) a summary of allowable loads, temperatures, and associated Service Level Limits that the designer of the piping system or other component may use in their design

(6) applicable Code Editions and Addenda (if applicable)

(7) the date of certification of the Certified Design Report Summary

(e) Stress Analysis of Parts. When the N Certificate Holder purchases parts from an NPT Certificate Holder, it is the responsibility of the N Certificate Holder to provide or cause to be provided the calculations for the parts and to incorporate them into the design output documents.

(f) Stress Analysis of Appurtenances. The design output documents for each appurtenance that is to be attached to a completed component shall be provided unless they are already included in the component design output documents.

(g) Reconciliation of Design Drawing Changes With Design Report. Any modification of any document used for construction, from the corresponding document used for design analysis, shall be reconciled with the Design Report by the person or organization responsible for the design. A revision or addenda to the Design Report shall be prepared and [if required by (a)] certified to indicate the basis on which this has been accomplished. All such revised documentation shall be filed with the completed Design Report.

(h) Certification of Design Report

(1) The Design Report for Class 1 components and supports, Class CS core support structures, Class MC vessels and supports, Class 2 vessels designed to NCD-3200 (NCD-3131.1), or Class 2 or Class 3 components designed to Service Loadings shall be certified by one or more Certifying Engineers, on behalf of the N Certificate Holder. The Certifying Engineers shall be competent in the applicable field of design and qualified by the N Certificate Holder in accordance with the requirements of Section III Appendices, Mandatory Appendix XXIII. The Design Report shall be certified only after all design requirements of this Section have been met. Such Certifying Engineers shall be other than the individuals certifying the Design Specifications [NCA-3211.19(e)] but are not required by these rules to be independent of the organization holding the certificate.

(2) It is the intent of this Section that the certification of the Design Report shall in no way relieve the N Certificate Holder of the responsibility for the structural integrity of the completed item for the conditions stated in the Design Specifications.

(i) Availability of Design Report and its Documentation of Review. The N Certificate Holder shall make a copy of the completed Design Report, Load Capacity Data Sheets, Certified Design Report Summaries, and the drawings used for construction available to the Inspector.

(j) Provision of the Design Report to the Owner or Their Designee. The N Certificate Holder shall submit to the Owner or their designee a copy of the completed Design Report for all components and supports for review and documentation of review to the extent required by NCA-3211.20.

(k) Filing the Design Report or Certified Design Report Summary. The N Certificate Holder shall file the Design Report or Certified Design Report Summary at the site of installation.

NCA-3211.41 Fabricating Parts. The NPT Certificate Holder shall fabricate parts assigned to him in accordance with the Design Drawings, Construction Specification(s), and this Section.

NCA-3211.42 Provision of Design Report for Appurtenances When Not Included in the Component Design Report. The Design Documents for each appurtenance that is to be attached to a completed component shall be provided unless they are already included in the component Design Documents.

NCA-3211.43 Completing a Certificate of Conformance.

(a) The NS Certificate Holder shall certify compliance with this Section by signing the NS-1 Certificate of Conformance for welded items (Article NCA-8000).

(1) Multiple supports of the same type can be listed by attaching additional sheets to the NS-1 Certificate of Conformance.

(2) The NS-1 Certificate of Conformance shall be forwarded to the Purchaser prior to or with the shipment.

(3) Each welded support shall be traceable to the NS-1 Certificate of Conformance using a permanent marking method that is not detrimental to the support being supplied.

(b) For those items not requiring an NS-1 Certificate of Conformance (i.e., nonwelded supports), a Certificate of Compliance shall be supplied.

(1) The Certificate of Compliance shall include the Certificate of Authorization number and expiration date. When the Certificate Holder has design responsibility, the Certificate of Compliance shall include the number and revision level of the Design Report, the Certified Design Report Summary, or Load Capacity Data Sheet.

(2) For organizations that are not certificate holders, the Certificate of Compliance shall reference the Quality System Program, revision level, and date to which the work was performed that was approved by the organization to whom the supports are supplied. This shall be considered the manufacturing organization's certification that all activities have been performed in accordance with this Article.

NCA-3211.44 Supports for Piping Subassemblies or Parts. The NS Certificate Holder is responsible for compliance with NCA-1230 for supports supplied as parts or supports that are part of the piping subassemblies or component, with the exception that no stamping is required.

NCA-3211.45 Fabrication of Supports. The NS Certificate Holder is responsible for fabricating in accordance with the Design Drawings, Design Specification(s), and this Section.

NCA-3211.46 Providing a Design Specification. The NS Certificate Holder is responsible for providing a Design Specification for standard supports in accordance with NCA-3211.19 and, when required, preparation of design output documents for standard supports in accordance with NCA-3211.40.

NCA-3211.47 Compliance With Design Output Documents. The NS Certificate Holder is responsible for complying with the provisions of design output documents (NCA-3211.40).

NCA-3211.48 Supply of Supports Constructed to Previous Boiler Code Editions and Addenda. The NS Certificate Holder may supply supports constructed to previous Boiler Code editions and addenda without stamping and ANI inspection.

NCA-3211.49 Provision of a Design Report When One Is Required. The NV Certificate Holder is responsible for:

(a) Preparation of Drawings. The drawings used for construction shall comply with the Design Specifications and the rules of this Section and shall be in agreement with the other design output documents.

The drawings used for construction shall be in agreement with the Design Report before it is certified and shall be identified and described in the Design Report. It is the responsibility of the NV Certificate Holder to furnish a Design Report for each component. The Design Report shall be certified by a Certifying Engineer when it is for Class 1 components, or Class 2 or Class 3 components designed to Service Loadings greater than Design Loadings.

(b) Preparation of Design Output Documents for Parts and Appurtenances

(1) When the NV Certificate Holder purchases parts from an NPT Certificate Holder, it is the responsibility of the NV Certificate Holder to provide or cause to be provided the calculations for the parts and to incorporate them into the design output documents.

(2) The design output documents for each appurtenance that is to be attached to a completed component shall be provided unless they are already included in the component design output documents.

(c) Reconciliation of Design Drawing Changes With the Design Report. Any modification of any document used for construction, from the corresponding documents used for design analysis, shall be reconciled with the Design Report by the person or organization responsible for the design. A revision or addenda to the Design Report shall be prepared and [if required by (b)] certified to indicate the basis on which this has been accomplished. All such revised documentation shall be filed with the completed Design Report.

(d) Certification of the Design Report

(1) The Design Report for Class 1 components, or Class 2 or Class 3 components designed to Service Loadings, shall be certified by one or more Certifying Engineers competent in the applicable field of design and qualified in accordance with the requirements of Section III Appendices, Mandatory Appendix XXIII. The Design Report shall be certified only after all design requirements of this Section have been met. Such Certifying Engineers shall be other than the individuals certifying the Design Specifications [NCA-3211.19] but are not required by these rules to be independent of the organization holding the certificate.

(2) It is the intent of this Section that the certification of the Design Report shall in no way relieve the NV Certificate Holder of the responsibility for the structural integrity of the completed item for the conditions stated in the Design Specifications.

(e) Availability of the Design Report and Its Documentation of Review. The NV Certificate Holder shall make a copy of the completed Design Report and the drawings used for construction available to the Inspector.

(f) Provision of a Design Report to Owner or Their Designees for Review, and Documentation of Review. The NV Certificate Holder shall submit to the Owner or their designee a copy of the completed Design Report for all components for review and documentation of review to the extent required by NCA-3211.20.

(g) Filing the Design Report. The NV Certificate Holder is responsible for filing the Design Report at the site of installation.

NCA-3211.50 Capacity Certification Tests. The NV Certificate Holder is responsible for completing capacity certification tests in accordance with the requirements of this Section (NB/NCD/NE-7700).

(21) NCA-3300 RESPONSIBILITIES OF A DESIGNER — DIVISION 2

DELETED

(21) NCA-3400 RESPONSIBILITIES OF AN N CERTIFICATE HOLDER — DIVISION 2

DELETED

(21) NCA-3500 RESPONSIBILITIES OF AN N CERTIFICATE HOLDER — DIVISION 1

DELETED

(21) NCA-3600 RESPONSIBILITIES OF AN NPT CERTIFICATE HOLDER

DELETED

(21) NCA-3700 RESPONSIBILITIES OF AN NA CERTIFICATE HOLDER

DELETED

NCA-3800 METALLIC MATERIAL ORGANIZATION'S QUALITY SYSTEM PROGRAM

NCA-3810 SCOPE AND APPLICABILITY (21)

The requirements of NCA-3800 provide for various entities known as Certificate Holders, Material Organizations (NCA-3820), and approved suppliers (NCA-4255.3). These entities are involved in the performance of operations, processes, and services related to the procurement and furnishing of material, source material, and unqualified source material as defined in the Glossary (NCA-9200).

NCA-3811 Limitations

The following limitations apply to approved suppliers:

(a) approved suppliers shall not approve other suppliers of materials or services that affect materials

(b) approved suppliers may adopt a limited scope quality system program as approved by the Certificate Holder or Material Organization [NCA-4255.3(b)]

NCA-3812 Exclusions (21)

Material falling within the small products exclusion of NB/NCD/NE/NF/NG-2610 or material that is allowed by this Section to be furnished with a Certificate of Compliance, is exempted from the requirements of NCA-3800, except

(a) Certified Material Test Reports or Certificates of Compliance shall meet the requirements of NCA-3862.1

(b) for Class 1 construction only, material identification and marking shall meet the requirements of NCA-4256.3

NCA-3820 CERTIFICATION OR QUALIFICATION OF MATERIAL ORGANIZATIONS (21)

(a) A Material Organization shall be certified by obtaining a Quality System Certificate (QSC) issued by the Society verifying the adequacy of the Material Organization's Quality System Program. The certified Material Organization that maintains an ASME Quality System Certificate is also known as a QSC (Quality System Certificate) Holder.

(b) Alternatively, the Certificate Holder [NCA-3211.1(d) and NCA-3211.1(e)] or, when included in its scope of activities, the certified Material Organization [(a)] may qualify Material Organizations not certified by the Society by evaluation of the organization's Quality System Program in accordance with the requirements of NCA-3842.

(c) A Certificate Holder may furnish material when stated in the scope of its certificate. If not stated in the scope of its certificate, a Certificate Holder may provide material to another Certificate Holder to be used in the fabrication, assembly, or installation of an

item that will be stamped by the original Certificate Holder who provided the material. In either case, a Quality System Certificate is not required, nor is the user of the material required to survey, qualify, or audit such a Certificate Holder.

NCA-3830 RESPONSIBILITIES OF MATERIAL ORGANIZATIONS

The Material Organization shall be responsible for establishing, documenting, implementing, and maintaining a Quality System Program in accordance with the requirements of NCA-4250, and as applicable to its scope of activities

(a) establishing and maintaining measures for the traceability of material or source material while under its control (NCA-4256)

(b) controlling quality during manufacture, including control of testing, examination, repair, and treatment of the material or source material (NCA-4257, NCA-4258)

(c) evaluating, qualifying, and auditing Material Organizations (NCA-3842), as provided by NCA-3820(b), except when the party holds a Quality System Certificate that covers the operations performed

(d) approving and controlling operations performed by suppliers of source material and subcontracted services (NCA-4255)

(e) preparing Certified Material Test Reports and Certificates of Compliance (NCA-3860)

(f) shipment of material (NCA-4257.4)

NCA-3840 EVALUATION OF THE PROGRAM

(21) NCA-3841 Evaluation by the Society

(a) The Society, when requested by the applicant on forms issued by the Society, will arrange for a survey of the Material Organization's Quality System Program for the scope of activities at the locations listed on the application. The Program will be evaluated on the basis of its compliance with the applicable material requirements of this Section and the requirements of NCA-4200. The Quality System Certificate, which is issued for a 3-year period, will describe and specify the scope and limits of work and locations for which the certified Material Organization is qualified and will be subject to a planned audit program by the Society. Not later than 6 months prior to the expiration of the certificate, the certified Material Organization shall apply for a renewal evaluation and for issuance of a new certificate.

(b) The applicant shall supply all information required by forms provided by the Society.

(c) The applicant's Quality System Program shall be accepted by the Society prior to the issuance of a certificate.

(d) A controlled copy of the certified Material Organization's Quality System Manual shall be filed with the Society. The Manual shall be the Society's guide for surveying and auditing the certified Material Organization's continued compliance with the accepted Quality System Program.

(e) The certified Material Organization shall make available for on-site review by the Society any procedures, process sheets, or drawings as are necessary to understand the Program. Detailed technical procedures will not be approved by the Society. The certified Material Organization shall keep a controlled copy of the Manual on file and in a place and manner readily available to the Society's audit team.

(f) The certified Material Organization shall obtain the Society's review and acceptance of proposed revisions to the Quality System Manual prior to implementation.

(g) When the applicant requests that the scope of the Quality System Certificate include shipment of material from qualified Material Organizations to parties other than the applicant, the control of this activity shall be included in the Manual and will be reviewed by the Society.

(h) When the applicant requests that the scope of the Quality System Certificate include qualification of noncertified Material Organizations (NCA-3842), this activity shall be included in the Manual and will be reviewed by the Society.

(i) When the applicant requests that the scope of the Quality System Certificate include implementation of NCA-4255.5, Utilization of Unqualified Source Material, this activity shall be included in the Manual and will be reviewed by the Society.

(j) When the applicant requests that the scope of the Quality System Certificate include approval and control of suppliers (NCA-4255.3), this activity shall be included in the Manual and will be reviewed by the Society.

NCA-3842 Evaluation by Parties Other Than the Society

NCA-3842.1 Qualification of Material Organizations.

(a) The qualification of Material Organizations by parties other than the Society shall be limited to the furnishing of source material, material, or subcontracted services to the certified Material Organization or Certificate Holder performing the evaluation, or their designee.

(b) When a Material Organization has been qualified by a certified Material Organization or Certificate Holder, it is not necessary for another party to requalify that organization for materials or services that are to be furnished to the party that performed the evaluation.

NCA-3842.2 Evaluation of the Qualified Material Organization's Program by Certified Material Organizations or Certificate Holders. (21) Evaluation of a Material Organization's Quality System Program by parties other than the Society, as provided by NCA-3820(b), shall be performed in accordance with the requirements of (a) through (i) below.

(a) The Quality System Program shall be surveyed, accepted, and audited by the party performing the evaluation on the basis of its compliance with the applicable material requirements of this Section and the requirements of NCA-4250.

(b) The Quality System Manual (NCA-4253.1) shall be the party's guide for surveying and auditing the qualified Material Organization's continued compliance with the accepted Quality System Program.

(c) The qualified Material Organization shall make available for on-site review by the party performing the evaluation any procedures, process sheets, or drawings as are necessary to understand the Program. The qualified Material Organization shall keep a controlled copy of the Manual on file and in a place and manner readily available to the party performing the audit.

(d) The qualified Material Organization shall notify purchasers of material, source material, or subcontracted services accepting its Program of proposed revisions to its Quality System Manual. The party accepting the Program shall evaluate and accept such revisions prior to the implementation of the revisions on purchased materials or services.

(e) When the qualified Material Organization's scope of activities includes utilization of unqualified source material (NCA-4255.5), this activity shall be included in the Quality System Manual, and shall be reviewed by the party accepting the Program.

(f) When the qualified Material Organization's scope of activities includes approval and control of suppliers (NCA-4255.3), this activity shall be included in the Quality System Manual, and shall be reviewed by the party accepting the Program. During surveys or audits of qualified Material Organizations, the party performing the evaluation shall review objective evidence that the qualified Material Organization's control of suppliers is adequate to assure compliance with the applicable material requirements of this Section.

(g) When the qualified Material Organization's scope of activities includes shipment of material to parties other than the party performing the qualification, the party performing the qualification shall evaluate the qualified Material Organization's activities to determine that the control of shipments is adequate to ensure compliance with the applicable material requirements of this Section.

(h) Audits and performance assessments by parties performing evaluations of qualified Material Organizations shall meet the following requirements:

(1) The party performing the evaluation shall include the audit or performance assessment frequency in their Manual.

(-a) Audit frequencies shall be commensurate with the schedule of production or procurement, but shall be conducted at least once triennially during the interval in which materials are controlled or services are performed by the Material Organization being evaluated.

(-b) The party performing the evaluation shall supplement triennial audits covering all the elements of a previously approved Quality System Program with annual audits or performance assessments documenting the effectiveness of the qualified Material Organization's Quality System Program.

(-c) When the supply of materials or services is dormant and audits or performance assessments are not performed in the first or second year from the triennial audit, an audit or performance assessment shall be used to requalify the supplier.

(2) Audits shall meet the requirements of NCA-4259.1(a) through NCA-4259.1(c).

(i) Performance assessments shall meet the following requirements:

(1) Assessments shall include a documented review of the qualified Material Organization's history of conditions adverse to quality, nonconformances, and corrective actions.

(2) Assessments shall include a documented review of periodic testing performed since the last assessment to demonstrate conformance of sample materials to selected requirements of the material specification. Such testing shall be conducted during the period since the last assessment by the party performing the evaluation.

NCA-3850 QUALITY SYSTEM PROGRAM REQUIREMENTS

See NCA-4200 for Quality System Program Requirements.

NCA-3860 CERTIFICATION REQUIREMENTS

NCA-3861 Certification Requirements for Material Organizations

(a) The Material Organization whose scope of activities includes NCA-3830 shall provide a Certified Material Test Report or Certificate of Compliance, as applicable (NCA-3862), for the material.

(1) The certification affirms that contents of the report are correct and accurate and that all test results and operations performed by the Material Organization or its subcontractors are in compliance with the material specification and the specific applicable material requirements of this Section.

(2) Chemical analyses, tests, examinations, and heat treatments required by the material specification that were not performed shall be listed on the Certified Material Test Report or Certificate of Compliance, as applicable, or may be listed on an identified attachment.

(3) When the Material Organization's scope of activities includes product form conversion, the Material Organization shall also certify that the material conforms to the applicable dimensional requirements.

(b) Except where Certificates of Compliance are acceptable [NCA-3862.1(g)], the Material Organization shall transmit all certifications required by NCA-3862.1(b), received from other Material Organizations or approved suppliers in accordance with (a) above, to the purchaser at the time of shipment.

(c) The Certificate Holder shall complete all operations not completed by the Material Organization and shall provide a Certified Material Test Report for all operations performed by him or his approved suppliers. The Certificate Holder shall certify that the contents of the report are correct and accurate and that all test results and operations performed by the Certificate Holder or his approved suppliers are in compliance with the requirements of the material specification and this Section. Alternatively, the Certificate Holder shall provide a Certified Material Test Report for the operations it performed and at least one Certified Material Test Report from each of its approved suppliers for the operations they performed.

NCA-3862 Certification of Material

NCA-3862.1 Material Certification. (21)

(a) The Certified Material Test Report shall include the actual results[11] of all required chemical analyses, tests, and examinations.

(b) When required chemical analyses (including melting mill heat analysis report except as provided in NCA-4255.5), heat treatment, tests, examinations, or repairs are subcontracted, the approved supplier's certification for the operations performed shall be furnished as an identified attachment to the Certified Material Test Report. For welding materials (NCA-1221.2, WA-1223) only, when permitted by the material specification and the rules of this Section [NB/NCD/NE/NF/NG-2400, HBB-2121(g), CC-2600, WB/WC-2400], the Material Organization or Certificate Holder may provide a chemical analysis of the welding material in lieu of furnishing the melting mill heat analysis. When operations other than chemical analysis, heat treatment, tests, examination, or repairs, that require maintenance of traceability are subcontracted, these operations and the approved suppliers performing them shall be listed on the Certified Material Test Report, or the approved suppliers certification for the operation may be furnished as an attachment to the Certified Material Test Report.

(c) The Certified Material Test Report shall also include a report of all weld repairs performed on the material as required by this Section. Radiographic film required for the examination of material repair welds shall be included as a part of the Certified Material Test Report, except for those radiographs required for the testing of welding or brazing materials.

(d) When specific times or temperatures (or temperature ranges) of heat treatments are required by material specifications, they shall be reported. For austenitic stainless steels and high nickel alloys, a statement of the minimum solution annealing temperature is a sufficient statement of heat treatment. When specific times and temperatures (or temperature ranges) are not required by the material specification, a statement of the type of heat treated condition shall be reported. Additionally, the times and temperatures of postweld heat treatments of weld repaired materials as required by the fabrication requirements of this Section shall be reported.

(e) Reporting of actual dimensions and visual examination results is neither required nor prohibited by this paragraph.

(f) Notarization of the Certified Material Test Report is not required.

(g) A Certificate of Compliance with the material specification, grade, class, and heat treated condition, as applicable, may be provided in lieu of a Certified Material Test Report for material NPS ¾ (DN 20) and less (pipe, fittings, flanges, materials for valves and tubes except heat exchanger tubes), bolting 1 in. (25 mm) and less, as applicable.

(h) Material identification shall be described in the Certified Material Test Report or Certificate of Compliance, as applicable. Heat or lot traceability to the Certificate of Compliance is not required.

NCA-3862.2 Quality System Program Statement. (21)

(a) When an organization is a Quality System Certificate Holder or is a Certificate Holder, the Certificate number and expiration date shall be shown on the Certified Material Test Report or Certificate of Compliance, as applicable, or on a certification included with the documentation that accompanies the material.

(b) When the Material Organization has been qualified by a party other than the Society, the revision and date of the applicable written Quality System Program shall be shown on the Certified Material Test Report or Certificate of Compliance, as applicable, or on a certification included with the documentation that accompanies the material.

(c) The inclusion of the Certificate number and expiration date or reference to revision and date of the applicable written Quality System Program shall be considered certification that all activities have been performed in accordance with the applicable requirements of this subarticle.

NCA-3900 NONMETALLIC MATERIAL MANUFACTURER'S, CONSTITUENT SUPPLIER'S, AND POLYETHYLENE MATERIAL ORGANIZATION'S QUALITY SYSTEM PROGRAM

NCA-3910 APPLICABILITY

This Subsection sets forth the quality system program requirements for manufacture and supply of nonmetallic material. The rules of NCA-3920 through NCA-3960 and NCA-4350 though NCA-4358 are applicable to manufacturers and constituent suppliers of concrete and cement grout. The rules of NCA-4470 are applicable to manufacturers and suppliers of natural compound, pigment concentrate compound, polyethylene compound, and polyethylene material.

(21) NCA-3920 QUALITY SYSTEM CERTIFICATE (NONMETALLIC MATERIALS)

(a) A Nonmetallic Material Manufacturer may obtain a Quality System Certificate issued by the Society verifying the adequacy of the Nonmetallic Material Manufacturer's Quality System Program. Alternatively, the Nonmetallic Material Manufacturer shall have his Quality System Program surveyed and qualified by the Constructor or Fabricator of the concrete component.

(b) A Nonmetallic Material Constituent Supplier may obtain a Quality System Certificate issued by the Society verifying the adequacy of the Nonmetallic Material Constituent Supplier's Quality System Program. Alternatively, the Nonmetallic Material Constituent Supplier shall have his Quality System Program surveyed and qualified by the Nonmetallic Material Manufacturer of the concrete. Additionally, both the Constructor or Fabricator and the Nonmetallic Material Manufacturer shall be responsible for assuring that the constituents supplied meet the applicable requirements of CC-2100 and CC-2200.

(c) A Constructor or Fabricator may furnish nonmetallic material when stated in the scope of its certificate. In this case, a Quality System Certificate is not required, nor is the user of the nonmetallic material required to survey, qualify, or audit such a Certificate Holder.

NCA-3923 Evaluation for Quality System Certificates

(a) The Society, when requested by the Nonmetallic Material Manufacturer on forms issued by the Society, will arrange for an evaluation of the applicant's Quality System Program. The Program will be evaluated on the basis of its compliance with the applicable material requirements of this Section. The certificate that is issued for a 3-year period will describe and specify the scope and limits of work for which the applicant is qualified and will be subjected to a planned audit program by the Society. Not later than 6 months prior to the expiration of the certificate, the Nonmetallic Material Manufacturer shall apply for a renewal evaluation and for the issuance of a new certificate.

(b) The Society, when requested by the Nonmetallic Material Constituent Supplier on forms issued by the Society, will arrange for an evaluation of the applicant's Quality System Program. The Program will be evaluated on the basis of its compliance with the applicable requirements of this Section. The certificate that is issued for a 3-year period will describe and specify the material constituent that the applicant is qualified to supply and will be subject to a planned audit program by the Society. Not later than 6 months prior to the expiration of the certificate, the Nonmetallic Material Constituent Supplier shall apply for a renewal evaluation and for the issuance of a new certificate.

NCA-3950 QUALITY SYSTEM PROGRAM REQUIREMENTS

See NCA-4300 for Nonmetallic Material Organization's Quality System Program Requirements.

NCA-3960 RESPONSIBILITY

See NCA-4300 for Nonmetallic Material Organization's Quality System Program Requirements.

NCA-3970 POLYETHYLENE MATERIAL ORGANIZATION'S QUALITY SYSTEM PROGRAM

See NCA-4470 for Polyethylene Material Organization's Quality System Program Requirements.

ARTICLE NCA-4000
QUALITY ASSURANCE REQUIREMENTS

NCA-4100 REQUIREMENTS

(21) ## NCA-4110 SCOPE AND APPLICABILITY

(a) This Article sets forth the requirements for planning, managing, and conducting Quality Assurance Programs for controlling the quality of activities performed under this Section and the rules governing the evaluation of such Programs prior to the issuance of certificates for the construction, fabrication, manufacture, and installation of Class 1, 2, 3, CS, MC, and CC items. The Quality Assurance requirements for Material Organizations (Metallic) for all Classes of construction are provided in NCA-3800. The Quality Assurance requirements for Nonmetallic Material Organizations, Polyethylene Material Organizations, and Constituent Suppliers for all Classes of construction are provided in NCA-3900. Certificate Holders are advised to consult other regulations for Quality Assurance requirements governing activities beyond the scope of this Section.

(b) As identified, modified, and supplemented in NCA-4120 and NCA-4134, N-Type Certificate Holders shall comply with the requirements of ASME NQA-1, Quality Assurance Requirements for Nuclear Facility Applications, Part I and when specifically stated, Part II[12] .

(c) The Quality Assurance Program requirements for an NS Certificate Holder shall comply with Table NCA-3200-1 and (b) above. Inspection by an ANI and Certification Mark is not required for supports.

NCA-4120 DEFINITIONS

(a) The definitions in Article NCA-9000 shall apply.

(b) The terms and definitions of NQA-1 shall apply unless defined in Article NCA-9000.

(c) For the following terms, which are defined in both NQA-1 and Article NCA-9000, the definitions in Article NCA-9000 shall apply:

(1) item
(2) Owner
(3) quality assurance
(4) repair
(5) rework
(6) service
(7) use-as-is
(8) nonconformance

NCA-4130 ESTABLISHMENT AND IMPLEMENTATION

NCA-4131 Material Organizations, Division 1

The requirements of NCA-3800 and NCA-4200 apply.

NCA-4131.1 Polyethylene Material Organizations. The requirements of NCA-4470 apply.

NCA-4132 Material Organizations for Division 2

NCA-4132.1 Material Organizations. The requirements of NCA-3800 and NCA-4200 apply.

NCA-4132.2 Nonmetallic Material Organizations for Division 2. The requirements of NCA-3900 and NCA-4300 apply.

NCA-4133 Owner's Quality Assurance Program

NCA-4133.1. The Owner shall maintain a Quality Assurance Program. For this purpose, the Owner may use a Quality Assurance program accepted by the regulatory authority.

NCA-4133.2. The Owner shall maintain either a Quality Manual or procedure accepted by the AIA that describes how the Owner will meet his Code responsibilities, NCA-3200, including control of his designee(s).

NCA-4133.3. Owners performing activities that require an N-type Certificate or Quality System Certificate shall include the requirements of NCA-3800 or NCA-4100, as applicable, in its Quality Assurance Program, and obtain the appropriate Certificate(s).

NCA-4133.4. The Owner shall assure that organizations performing activities requiring an N-type Certificate or Quality System Certificate have a Quality Assurance Program meeting the requirements of NCA-3800 or NCA-4100, as applicable.

NCA-4134 N, NV, NPT, NS, and NA Certificate Holders for Class 1, 2, 3, MC, CS, and CC Construction

NCA-4134.1 Organization. The provisions of NQA-1, Requirement 1, shall apply.

(21) **NCA-4134.2 Quality Assurance Program.**

(a) The provisions of NQA-1, Requirement 2, shall apply and the system used to meet these requirements shall be described in the Quality Assurance Manual. The Quality Assurance Manual shall also include a statement of policy and authority indicating management support. The specific responsibilities of the quality assurance organization of the Certificate Holder shall also include the review of written procedures and monitoring of the activities concerned with the Quality Assurance Program as covered in this Article.

(b) In lieu of Requirement 2, para. 301, the qualification of nondestructive examination personnel shall be as required by NB/NCD/NE/NF/NG-5520.

(c) The controls used in the Quality Assurance Program shall be documented in the Quality Assurance Manual. The Quality Assurance Manual may be hard copy or electronic, provided the controls are described to assure approved revisions are made available for use by the Certificate Holder personnel. The Program need not be in the same format or sequential arrangement as the requirements in this Article, as long as all applicable requirements of this Article have been covered. A copy, including all changes that are made, shall be made available to the Inspector. The Certificate Holder shall make available to the Inspector such drawings and process sheets as are necessary to make the Quality Assurance Program intelligible.

(d) The Certificate Holder shall be responsible for advising its Authorized Inspection Agency of any changes that are proposed to be made to the Quality Assurance Manual, and shall have acceptance of the Authorized Inspection Agency's Authorized Nuclear Inspector Supervisor before putting such changes into effect. The Certificate Holder shall be responsible for promptly notifying the Inspector of such accepted changes, including evidence of acceptance by the Authorized Inspection Agency, and for simultaneously reconciling copies of the Quality Assurance Manual.

(21) **NCA-4134.3 Design Control.**

(a) The provisions of NQA-1, Requirement 3, shall apply.

(b) Measures shall be established to ensure that applicable requirements of the Design Specifications and of this Section for items are correctly translated into specifications, drawings, procedures, and instructions.

(c) Design documents shall be verified for adequacy and compliance with the Design Specification and this Section.

(d) Computer programs used for design analysis shall meet the requirements of NQA-1, Part II, Subpart 2.7 when specified by NQA-1, Requirement 3, para. 401 for controlled programs.

(e) Paragraph 601, Configuration Management of Operating Facilities, is not applicable.

NCA-4134.4 Procurement Document Control. The provisions of NQA-1, Requirement 4, shall apply, except that

(a) procurement documents shall require suppliers to provide a Quality Assurance Program consistent with the applicable requirements of this Section.

(b) this requirement does not apply to Authorized Inspection Agency services.

NCA-4134.5 Instructions, Procedures, and Drawings. The provisions of NQA-1, Requirement 5, shall apply.

NCA-4134.6 Document Control. The provisions of (21) NQA-1, Requirement 6, shall apply. If electronic controls are used, the Certificate Holder shall describe the review, approval, and control process to assure correct documents are being used at the location where the activity is performed.

NCA-4134.7 Control of Purchased Items and Services. The requirements of NCA-3125 shall be used for subcontracted services. The provisions of NQA-1, Requirement 7, shall apply, except that

(a) this requirement does not apply to Authorized Inspection Agency services.

(b) in para. 300, Bid Evaluation, the decision to perform bid evaluation for materials to confirm conformance to procurement documents shall remain the responsibility of the Certificate Holder.

(c) in para. 503, Certificate of Conformance, changes, waivers, or deviations are not acceptable unless they meet the requirements of this Section.

(d) in para. 503(c), Certificate of Conformance, the resolution of nonconformances shall be in conformance with the requirements of this Section.

(e) Other than as provided in NCA-4134.3, the use of NQA-1, Requirement 7, para. 700, Commercial Grade Items and Services, is not permitted.

(f) documentary evidence that items conform to the requirements of this Section shall be available at the construction or installation site before use or installation. Requirements for documentary evidence are satisfied for material when the applicable rules of NCA-3800 and NCA-3900 for material certification are met. For stamped items, the requirements are satisfied by a Data Report.

(g) the requirements of NCA-3126 and NCA-3127 may be used.

NCA-4134.8 Identification and Control of Items.

(a) The provisions of NQA-1, Requirement 8, shall apply.

(b) Welding and brazing materials for all Classes of construction shall be controlled.

(c) All characteristics required to be reported by the material specifications and by this Section shall appear on checklists, and each such characteristic shall be examined by accepted procedures as required and the results

recorded. Characteristics included on Certified Material Test Reports or Certificates of Compliance need not be duplicated in the checklists. Checklists shall provide for a record that the Certified Material Test Reports and Certificates of Compliance have been received, reviewed, and found acceptable. When the results of the examination or test procedure conducted by the Certificate Holder are necessary to show compliance with material specification or other requirements, the checklists shall show the required range of values. The checklists shall include spaces for: inclusion of document number and revision to which examination or tests were made; a signature, initials, or stamp; the date of the examination performed by the Certificate Holder's representative; an Authorized Nuclear Inspector's signature, initials, or stamp; and the date on which those activities were witnessed.

NCA-4134.9 Control of Processes.

(a) The provisions of NQA-1, Requirement 9, shall apply.

(b) The Certificate Holder shall prepare instructions, procedures, drawings, checklists, travelers, or other appropriate documents, including the document numbers and revisions to which the process conforms, with space provided for reporting results of completion of specific operations at checkpoints of fabrication, manufacture, or installation. The documents shall include space for: a signature, initials, or stamp; the date that the activity was performed by the Certificate Holder's representative; the Authorized Nuclear Inspector's signature, initials, or stamp; and the date on which those activities were witnessed.

NCA-4134.10 Inspection.

(a) The provisions of NQA-1, Requirement 10, shall apply, except for para. 700, Inspections During Operations.

(b) The Certificate Holder shall prepare process sheets, travelers, or checklists, including the document numbers and revision to which the examination or test is to be performed, with space provided for recording results of examinations and tests. The documents shall include space for: a signature, initials, or stamp; the date that the activity was performed by the Certificate Holder's representative; the Authorized Nuclear Inspector's signature, initials, or stamp; and the date on which those activities were witnessed. The examination checklist for construction of items shall be filled in and completed by the Certificate Holder who applies the appropriate Certification Mark to the item.

(c) Mandatory hold points at which witnessing is required by the Certificate Holder's representative or the Authorized Nuclear Inspector shall be indicated in the controlling documents (NCA-4134.9). Work shall not proceed beyond mandatory hold points without the consent of the Certificate Holder's representative or the Authorized Nuclear Inspector, as appropriate.

NCA-4134.11 Test Control. The provisions of NQA-1, Requirement 11, shall apply.

NCA-4134.12 Control of Measuring and Test Equipment.

(a) The provisions of NQA-1, Requirement 12, shall apply.

(b) The Certificate Holder may perform periodic checks on equipment to determine that calibration is maintained. When periodic checking is used, discrepancies need only be resolved to the prior check, provided the discrepancy is discovered by the periodic check. The methods and frequency of periodic checking, when used, shall be included in the Certificate Holder's Quality Assurance Program.

NCA-4134.13 Handling, Storage, and Shipping. The provisions of NQA-1, Requirement 13, shall apply.

NCA-4134.14 Inspection and Test Status. The provisions of NQA-1, Requirement 14, shall apply for inspections and tests but not for operating status.

NCA-4134.15 Control of Nonconforming Items. The provisions of NQA-1, Requirement 15, shall apply, except that the definition of *repair* given in this Section shall apply in lieu of *repair* and *rework* given in NQA-1.

NCA-4134.16 Corrective Action.

(a) The provisions of NQA-1, Requirement 16, shall apply.

(b) The requirements shall also extend to the performance of the subcontractor's corrective action measures.

NCA-4134.17 Quality Assurance Records.

(a) General. The provisions of NQA-1, Requirement 17, shall apply, except that the requirements of para. 400, Classification; para. 500, Receipt Control of Records; and para. 600, Storage, are not applicable. Such records shall be classified and maintained as required by this Section.

(b) Records Index. The records shall be indexed. The records and the indices thereto shall be accessible to the Owner, Owner's designee, and Authorized Nuclear Inspector.

(c) Reproduction of Electronic and Digital Radiographic Images and Radiographic Film. Radiographic film and images may be reproduced provided the following requirements are met:

(1) the reproduction process shall be subject to the Owner's approval;

(2) when radiographic film or images are reproduced for either an Owner or Certificate Holder, the Quality Assurance Program of the Certificate Holder responsible for the reproduction process shall include

a system for controlling and monitoring the accuracy of the process so that the image, when reproduced to its original size, will provide the same information retrieval capability as the original radiographic film or images;

(3) procedures shall contain applicable requirements pertaining to exposure, scanning, focusing, contrast, resolution, and distinguishing film artifacts or system induced images that might appear as material discontinuities in the reproduced image.

(d) Lifetime Records. For Classes 1, 2, CS, MC, and CC, the records listed in Table NCA-4134.17-1 shall be classified as lifetime records. For Class 3, only records 1, 2, 3, 4, 8, 9, 15, 16, and 20 in Table NCA-4134.17-1 shall apply. The Certificate Holder shall be responsible for the retention and maintenance of these records while they are under his control. The Owner shall be responsible for retention and maintenance of those records that are transferred to him.

(e) Nonpermanent Records. For Classes 1, 2, CS, MC, and CC, the records listed in Table NCA-4134.17-2 shall be classified as nonpermanent records. For Class 3, only records 3, 7, and 8 in Table NCA-4134.17-2 shall apply. The Certificate Holder shall be responsible for their retention for the period specified in Table NCA-4134.17-2. In no case need nonpermanent records be retained for longer than 10 yr after completion of applicable Code Data Report.

(21) **NCA-4134.18 Audits.**

(a) The provisions of NQA-1, Requirement 18, shall apply.

(b) The Certificate Holder shall specify internal and supplier audit frequencies in their Quality Assurance Manual. The Certificate Holder shall schedule internal audits such that each ongoing Code activity is audited at least once annually.

(c) Results of audits shall be made available to the Authorized Nuclear Inspector.

NCA-4200 METALLIC QUALITY SYSTEM PROGRAM REQUIREMENTS

NCA-4250 QUALITY SYSTEM PROGRAM REQUIREMENTS

NCA-4251 Responsibility and Organization

NCA-4251.1 General.

(a) The Material Organization shall establish a Quality System Program for the control of quality during manufacture or during other work it proposes to perform, and for the traceability of material or source material under its control. The Program shall be planned, documented, implemented, and maintained in accordance with the requirements of NCA-4250.

(b) The establishment of the Program shall include consideration of the technical aspects and provide for planning and accomplishment of activities affecting quality. The Program shall provide for any special controls, processes, test equipment, tools, and skills to attain the required quality and for verification of quality.

NCA-4251.2 Scope and Applicability.

(a) The Quality System Manual shall define the specific activities included in the scope of the work the Material Organization proposes to perform, including any combination of

(1) operations performed during the melting and heat analysis, affecting the mechanical properties, conversion from one product form into another product form including applicable dimensional requirements, and certification to the applicable material specification

(2) testing, examination, repair, or treatments required by the material specification or the specific applicable material requirements of this Section and certification of the results of such tests, examinations, repairs, or treatments

(3) receipt, identification, verification, handling, storage, and shipment of material or source material

(4) qualification of Material Organizations permitted by NCA-3820(b), including control of shipments of material from Qualified Material Organizations to parties other than the party performing the qualification

(5) approval and control of suppliers of source material or subcontracted services (NCA-4255.3)

(6) utilization of unqualified source material (NCA-4255.5)

(b) The Program shall include measures to comply with all requirements of NCA-4200 to the extent necessary to assure compliance with the requirements of this Section.

NCA-4251.3 Organization.

(a) The organizational structure for executing the Program may take various forms, provided the persons and organizations assigned the quality system functions have the required authority and organizational freedom.

(b) Persons or organizations responsible for defining and measuring the overall effectiveness of the Program shall

(1) be designated

(2) be sufficiently independent from the pressures of production

(3) have direct access to responsible management at a level where appropriate action can be initiated

(4) report regularly on the effectiveness of the Program

(21)

Table NCA-4134.17-1
Lifetime Quality Assurance Records

Record	Record
1. Index to lifetime records (NCA-4134.17)	12. Qualification test reports such as for concrete design mixes (CC-2460) and safety valves (NB-7700)
2. Code Data Reports (NCA-8400)	13. Structural integrity test reports (CC-6260)
3. Design Specification (NCA-3211.29) [Note (1)]	14. Final hydrostatic and pneumatic test results (NCA-5280)
4. Design output documents, Division 1 (NCA-3211.29 and NCA-3211.40)	15. Final nondestructive examination reports; final radiographic film or images as specified by the Owner for Section XI applications
5. Design Report, Division 2	16. Repair records when required by Code (NB/NCD/NE/NG-4130)
6. Overpressure Protection Report (NB/NCD/NE/HBB-7200)	17. Weld procedures
7. Construction Specification (NCA-3211.28)	18. Construction Report [NCA-3211.31(d)]
8. As-built drawings [NCA-3211.31(d)]	19. NS-1 Certificate of Conformance (NCA-8440)
9. Certified Material Test Reports (CMTR) and documentation providing traceability to location used, when required (NB/NCD/NE/NF/NG-4122)	20. Certificate of Analysis (NCA-4474.1) and Certified Polyethylene Test Report (NCA-4474.2)
10. Records of post-tensioning sequence, procedure, and loads	
11. Heat treatment records [Note (2)]	

GENERAL NOTE: Nonconformance reports that affect those records listed shall be incorporated into the record or be retained with the records. Records generated in compliance with Division 5, Subsection HB, Subpart B (referred to as HBB above) rules shall also comply with the record requirements of the referenced Subsections that contain additional rules.

NOTES:
(1) For supports designed by load rating, the Load Capacity Data Sheet is the design output document to be maintained as a lifetime quality assurance record. For standard supports designed by analysis and supplied with a Certified Design Report Summary, the Certified Design Report Summary is the design output document to be maintained as a lifetime quality assurance record.
(2) Either heat treatment charts or certified summaries of time and temperature data may be provided. These data may be included as part of the CMTR.

(21)

Table NCA-4134.17-2
Nonpermanent Quality Assurance Records

	Record	Retention Period
1.	QA Program Manual	3 yr after superseded or invalidated
2.	Design procurement and QA procedures (NCA-4134.5)	3 yr after superseded or invalidated
3.	Installation and NDE procedures (NB/NCD/NE/NF/NG-5112)	10 yr after superseded or invalidated
4.	Personnel qualification records (NB/NCD/NE/NF/NG-5520 and NB/NCD/NE/NF/NG-4322)	3 yr after superseded or invalidated
5.	Purchase orders	10 yr after superseded or invalidated
6.	Audit and survey reports (NCA-4134.18)	3 yr after completion of report
7.	Final radiographs not covered in Table NCA-4134.17-1, Record 15	10 yr after completion
8.	Calibration records (NCA-4134.12)	Until recalibrated
9.	Process sheets, travelers, or checklists (NCA-4134.10)	10 yr after completion
10.	Rebar splice test reports (CC-4330)	10 yr after completion of report
11.	Joint-welder identification records when such records are used in lieu of physical marking of welds (NB/NCD/NE/NF/NG-4322)	10 yr after completion of report
12.	Certifying Engineer qualification records (Mandatory Appendix XXIII)	3 yr after superseded or invalidated

GENERAL NOTE: Nonconformance reports, which affect those records listed and are not incorporated into the record, shall be retained for the retention period applicable to the record the nonconformance report affects.

(c) The organizational structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality shall be documented. Persons or organizations responsible for assuring that an appropriate Quality System Program has been established and verifying that activities affecting quality have been correctly performed shall have sufficient authority, access to work areas, and organizational freedom to

(1) identify quality problems

(2) initiate, recommend, or provide solutions to quality problems through designated channels

(3) verify implementation of solutions

(4) assure that further processing, delivery, or use is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred

(d) Individuals or groups assigned the responsibility of checking, auditing, or otherwise verifying that production and quality control activities have been correctly performed shall be independent of the individual or group directly responsible for performing the specific activity. Such persons shall not report directly to the supervisor with immediate responsibility for the work being verified.

(e) Management shall regularly review the status and adequacy of the Program.

NCA-4252 Personnel

(21) **NCA-4252.1 Indoctrination, Training, and Qualification of Personnel.**

(a) Measures shall be established to assure that all personnel performing or managing activities affecting quality are indoctrinated and trained. The assignment of personnel shall be at the discretion of the organization's management. Indoctrination and training measures shall reflect the following requirements:

(1) Personnel to be indoctrinated or trained shall be identified.

(2) The extent of indoctrination and training shall be commensurate with the scope, complexity, and nature of the activity as well as the education, experience, and proficiency of the person.

(3) Personnel shall be indoctrinated in the general criteria, applicable codes, standards, company procedures, Quality System Program requirements, job responsibilities, and authority as they relate to a particular function.

(4) Training shall be provided, as needed, to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, and job responsibilities.

(b) All nondestructive examination personnel shall be qualified in accordance with NB/NCD/NE/NF/NG-5521 of the applicable Subsection.

(c) Personnel who lead audits shall be qualified on the basis of education, experience, training, audit participation, and examination in accordance with the organization's Quality System Program.

NCA-4252.2 Personnel Records.

(a) Records shall be maintained of the implementation of indoctrination and training of personnel. Records of indoctrination and training may take the form of attendance sheets, training logs, or personnel training records.

(b) Qualification records of all nondestructive examination personnel shall be documented and maintained.

(c) Qualification records of personnel who lead audits shall be documented and maintained and shall include education, experience, audit training and examination, and audit participation used as the basis of qualification.

NCA-4253 Program Documentation

NCA-4253.1 Quality System Manual.

(a) The Quality System Program shall be described and summarized in a Quality System Manual that shall be a major basis for demonstration of compliance with the rules of this Section.

(b) The Program documented in the Manual shall be implemented by written procedures that are maintained either separately or in the Quality System Manual.

(c) Detailed technical procedures and processes, such as those for nondestructive examination, are not considered part of the Manual; however, the controls of such procedures and processes shall be covered by the Manual.

(d) The Quality System Manual may be hard copy or electronic, provided the controls are described to assure approved revisions are made available for use by the Material Organization personnel.

NCA-4253.2 Procedures, Instructions, and Drawings.

(a) Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances.

(b) These documents shall include or reference appropriate acceptance criteria for determining that the prescribed activities have been satisfactorily completed.

NCA-4253.3 Document Control. The preparation, issue, and change of documents, including electronic documents, that specify quality requirements or prescribe activities affecting quality, such as Quality System Program Manuals, purchase specifications, instructions, procedures, and drawings shall be controlled to assure that the correct documents are being used at the location where the activity is performed. Such documents, including changes thereto, shall be reviewed for adequacy and approved for release by authorized personnel.

NCA-4253.4 Quality Assurance Records. Records that furnish documentary evidence of quality shall be specified, prepared, controlled, and maintained. Records shall be legible, identifiable, and retrievable. Records shall be protected against damage, deterioration, or loss. Requirements and responsibilities for record

transmittal, distribution, retention, maintenance, and disposition shall be established and documented.

NCA-4253.5 Records of Examinations and Tests. All characteristics required to be reported by the material specification and this Section shall be verified and the results recorded. Records shall be traceable to the document and revision to which an inspection, examination, or test was performed.

NCA-4255 Control of Purchased Materials, Source Materials, and Services

NCA-4255.1 General.

(a) Measures shall be established to assure that all purchased material, source material, and subcontracted services conform to the requirements of this Section.

(b) Welding material used in the repair of material or source material shall be controlled in accordance with this Section.

(c) These measures shall be designed to prevent the use of incorrect or defective material or source material, or materials that have not received the required examinations or tests.

NCA-4255.2 Sources of Material, Source Material, and Services.

(a) Material shall be furnished by a Material Organization [NCA-3820(a) or NCA-3820(b)], or by a Certificate Holder [NCA-3820(c)].

(b) Except as provided in NCA-4255.5, qualified source material shall be furnished by a Material Organization, by an approved supplier (NCA-4255.3), or by a Certificate Holder.

(c) Services including performance and certification of operations, processes, the results of tests, examinations, repairs, or treatments required by the material specification or by this Section shall be furnished by a Material Organization, by an approved supplier, or by a Certificate Holder.

NCA-4255.3 Approval and Control of Suppliers of Source Material and Services.

(a) The Material Organization or Certificate Holder shall be responsible for the approval of and control of activities performed by suppliers of source materials and subcontracted services. Such control shall provide for source evaluation and selection, evaluation of objective evidence of quality, survey, audit, and examination of items and services upon delivery, as applicable, in accordance with requirements documented in the Material Organization's or Certificate Holder's Program.

(b) The Material Organization or Certificate Holder shall be responsible for establishing and verifying that the supplier's controls applicable to the activities performed are adequate by

(1) performing a survey of the supplier's quality system, and performing triennial audits covering applicable elements of the approved supplier's established quality system that is consistent with the requirements of this subarticle supplemented by annual evaluations of the approved supplier's quality system, including a review of the history of conditions adverse to quality, nonconformances, and corrective actions, or

(2) having the supplier perform the activities in accordance with controls established by the Material Organization's or Certificate Holder's Program.

(c) As an alternative to survey and audit of suppliers of subcontracted calibration services, a Material Organization, approved supplier, or Certificate Holder may accept accreditation by accrediting bodies recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), provided the following requirements are met:

(1) A documented review of the calibration supplier's accreditation shall be performed and shall include verification

(-a) that the accreditation is to ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," from an accredited body recognized by the ILAC MRA and

(-b) that the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

(2) The procurement documents shall specify

(-a) that the service must be provided in accordance with the accredited ISO/IEC 17025 program and scope of accreditation, and

(-b) that the calibration certificate/report shall include identification of the laboratory equipment/standards used, and

(-c) that the calibration certificate/report shall include as-found calibration data when calibrated items are found to be out-of-tolerance, and

(-d) that the service supplier shall not subcontract the service to any other supplier, and

(-e) that the Material Organization, approved supplier, or Certificate Holder must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation, and

(-f) additional technical and quality requirements, as necessary, based on a review of the procured scope of services, including, but not limited to, tolerances, accuracies, ranges, and industry standards.

(3) At receipt inspection, the Material Organization, approved supplier, or Certificate Holder shall be responsible for validating that the calibration supplier's documentation certifies

(-a) that the subcontracted calibration was performed in accordance with the supplier's ISO/IEC 17025 program and scope of accreditation and

(-b) conformance to the procurement document's requirements.

(4) This activity shall be documented in the Material Organization's Quality System Program Manual, the approved supplier's quality program, or the Certificate Holder's Quality Program Manual.

(d) As an alternative to survey and audit of suppliers of subcontracted testing services, a Material Organization, approved supplier, or Certificate Holder may accept accreditation from accrediting bodies recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), provided the following requirements are met:

(1) A documented review of the supplier's accreditation shall be performed and shall include verification

(-a) that the accreditation is to ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," from an accredited body recognized by the ILAC MRA and

(-b) that the published scope of accreditation for the testing laboratory covers the needed testing services, including test methodology and tolerances/uncertainties.

(2) The procurement documents shall specify

(-a) that the service must be provided in accordance with the accredited ISO/IEC 17025 program and scope of accreditation, and

(-b) that the service supplier shall not subcontract the service to any other supplier, and

(-c) that the Material Organization, approved supplier, or Certificate Holder must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation, and

(-d) additional technical and quality requirements, as necessary, based on a review of the procured scope of services, including, but not limited to, tolerances, accuracies, ranges, and industry standards.

(3) At receipt inspection, the Material Organization, approved supplier, or Certificate Holder shall be responsible for validating that the supplier's documentation certifies

(-a) that the subcontracted testing was performed in accordance with the supplier's ISO/IEC 17025 program and scope of accreditation and

(-b) conformance to the procurement document's requirements.

(4) This activity shall be documented in the Material Organization's Quality System Program Manual, the approved supplier's quality program, or the Certificate Holder's Quality Assurance Program Manual.

(e) The Material organization or Certificate Holder shall be responsible for assuring that all material and activities conform to all applicable requirements of this Section.

NCA-4255.4 Procurement Document Control.

(a) Procurement documents shall include requirements necessary to assure compliance with the requirements of this Section.

(b) Except as provided in NCA-4255.5, procurement documents shall require material, source material, or subcontracted services to be furnished in accordance with the applicable requirements of this subarticle.

(c) Procurement documents shall require approved suppliers to reference the accepted quality system or controls established by the Material Organization or Certificate Holder on documentation that accompanies the source material or services furnished.

(d) Procurement documents that specify quality requirements or prescribe activities affecting quality shall be reviewed for adequacy and approved for release by authorized personnel.

NCA-4255.5 Utilization of Unqualified Source Material. (21)

(a) As an alternative to NCA-4255.2(b), when included in its scope of activities as permitted by the provisions of this subarticle, a Material Organization may accept certification of the requirements of the material specification that must be performed during the melting, heat analysis, and heat treatment of the material, and may use or furnish unqualified source material, provided the requirements of (1) through (5) below are met.

(1) No welding with filler metal has been performed on the unqualified source material. The organization that establishes the material form and issues the source material test report shall not perform any welding with filler metal and shall confirm that no welding with filler metal has been performed.

(2) The Material Organization performs or subcontracts a product analysis to verify the chemical composition of each piece of unqualified source material.

(3) The Material Organization performs or subcontracts all other testing and examination requirements of the material specification on each piece of unqualified source material. Alternatively, the Material Organization may perform or subcontract all other testing and examination requirements of the material specification on each heat and lot of unqualified source material provided

(-a) a source material test report is provided with the unqualified source material that attests that the material is in accordance with the requirements of the material specification that must be performed during the melting, heat analysis, and heat treatment of the material, including the actual results of all required chemical analyses, tests, and examinations as applicable to the product form.

(-b) the unqualified source material is traceable to the source material test report

(-c) procurement documents require that suppliers of unqualified source material establish written procedures for identifying source materials in

a manner that provides traceability to the source material test report

(-d) the Material Organization reviews and accepts the supplier's identification and traceability procedures and performs an on-site verification for compliance with the procedures at a frequency commensurate with the schedule of production or procurement, but at least once triennially

(-e) upon receipt, the Material Organization shall verify by review of objective evidence, that the requirements of the procurement document have been met

(4) If Certificates of Compliance [NCA-3862.1(g), NF-2130(b)] are acceptable, in lieu of (3) above, the Material Organization may perform or subcontract all other requirements of the material specification on each heat and lot of unqualified source material.

(5) The provisions of (1) through (4) above are performed in accordance with the Material Organization's Quality System Program.

(b) The provisions of (a)(1) through (a)(4) above may be performed by the Certificate Holder in accordance with his Quality Assurance Program.

NCA-4256 Identification, Marking, and Material Control

NCA-4256.1 General.

(a) Control shall be established to assure that only correct and accepted material or source material is used. Identification shall be maintained on these materials or on documents traceable to these materials, or in a manner that assures that the identification is established and maintained.

(b) Measures shall be established for controlling and identifying material or source material, including that which is partially processed, throughout the manufacturing process, during the performance of tests, examinations, repairs, and treatments, and during receipt, storage, handling, and shipment.

(c) Identification marking shall be transferred to all pieces when material or source material is divided.

NCA-4256.2 Marking Method. Materials and source materials shall be marked by any method acceptable to the purchaser that will not result in harmful contamination or sharp discontinuities and will identify these materials in accordance with the material specification.

NCA-4256.3 Identification of Completed Material.

(a) The identification of completed material shall consist of marking the material with the applicable specification and grade of the material, the heat number or heat code of the material, and any additional marking required by this Section to facilitate traceability of the material to reports of the results of all tests and examinations performed on the material.

(b) For those materials where Certificates of Compliance [NCA-3862.1(g)] are allowed, heat-number identification need not be indicated on the material or the certificate.

(c) A marking symbol or code may be used that identifies the material, provided such code or marking symbol is explained in the Certified Material Test Report (NCA-3862.1) or Certificate of Compliance [NCA-3862.1(g)], as applicable.

(d) All requirements of the material specification shall be met except where specifically exempted or superseded by a provision of this Section. When special requirements or provisions of this Section conflict with the requirements of the material specification, the material specification and grade number shall be followed with an asterisk (*) to indicate that the material specification has been revised as shown on the material certification.

(e) For nonferrous materials manufactured in accordance with material specifications that do not provide for heat identification, the material shall be marked with a symbol or code that identifies the lot, as defined in the material specification, with the Certified Material Test Report.

(f) Except as required by the material specification, bolts and nuts 1 in. (25 mm) nominal diameter and smaller and other products where the largest space available for marking is less than 1 in. (25 mm) in any one direction need not be individually marked, provided they are packed in packages or containers that shall be clearly identified by legible marking to ensure positive identification of the material. The markings on the containers shall identify the material with the Certificate of Compliance [NCA-3862.1(g)] or Certified Material Test Report (NCA-3862.1), as applicable.

NCA-4256.4 Welding and Brazing Materials Identification. Welding and brazing materials shall be clearly identified by legible marking on the package or container to ensure positive identification of the material. The marking shall include the heat or lot number as applicable, a control marking code that identifies the material with the Certified Material Test Report (NCA-3862.1), and other information such as specification, grade and classification number, Material Organization's name, and trade designation.

NCA-4257 Process Control

NCA-4257.1 General. Processes affecting quality of materials, source materials, or services shall be controlled. Special processes that control or verify quality, such as those used in welding, heat treating, or nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with specific requirements.

NCA-4257.2 Manufacturing Process Control. Operations shall be performed under a controlled system such as process sheets, shop procedures, checklists, travelers, or equivalent procedures. Measures shall be established to ensure that processes, including heat treatment, are controlled in accordance with the material specification and the rules of this Section.

NCA-4257.3 Welding. When welding is required in the repair of material or source material, it shall be performed in accordance with procedures and by welders or welding operators qualified in accordance with this Section and Section IX. The qualification of procedures and welders or welding operators shall be documented.

NCA-4257.4 Handling, Storage, Shipping, and Preservation. Instructions shall be established for handling, storage, shipping, and preservation of material or source material to prevent damage or deterioration.

NCA-4258 Control of Examinations, Tests, and Nonconforming Material

NCA-4258.1 Inspection, Examination, and Test Control.

(a) Inspections, examinations, and tests shall be established to assure conformance with the requirements of the material specification and this Section.

(b) Inspections or examinations required to verify conformance of material, source material, or an activity to specified requirements shall be planned. Characteristics to be inspected or examined, and inspection or examination methods to be employed, shall be specified. Inspection or examination results shall be documented.

(c) Tests required to verify conformance to specified requirements shall be planned. Characteristics to be tested and test methods to be employed shall be specified. Test results shall be documented and their conformance with acceptance criteria shall be evaluated.

NCA-4258.2 Control of Measuring and Test Equipment.

(a) Procedures shall be in effect to assure that tools, gages, instruments, and other measuring and testing devices used to verify compliance with the material specification and this Section are calibrated and properly adjusted at specific periods or use intervals to maintain accuracy within necessary limits. Periodic checks on equipment may be performed to determine that calibration is maintained.

(b) Calibration shall be against certified equipment having known valid relationships and documented traceability to nationally recognized standards, where such standards exist. If no known nationally recognized standards exist, the basis for calibration shall be documented.

(c) Control measures shall include provisions for measuring and test equipment identification and for determining calibration status by equipment marking or on records traceable to the equipment.

NCA-4258.3 Discrepancies in Measuring or Testing Equipment.

(a) When discrepancies in excess of tolerances for measuring or testing equipment are found at calibration, appropriate corrective action shall be taken, and material measured or tested since the previous calibration shall be reviewed to determine that all applicable requirements have been met.

(b) When periodic checks on equipment are performed to determine that calibration is maintained, potential material or source material discrepancies need only be resolved to the previous check, provided

(1) the methods used and frequency of periodic checking are described in calibration procedures, and

(2) the calibration discrepancy was found by periodic check.

NCA-4258.4 Inspection and Test Status. Measures shall be established so that the status and results of any required inspections, examinations, or tests can be determined at any time. Status shall be maintained through indicators such as physical location and tags, marking, shop travelers, stamps, inspection records, or other suitable means. The authority for application and removal of such indicators shall be specified.

NCA-4258.5 Control of Nonconforming Material.

(a) Adequate control measures shall be established to prevent the use of material that does not conform to the requirements of the material specification and this Section.

(b) Material or source material with nonconformances shall be identified, segregated when practical, and reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconformances in these materials shall be defined.

(c) Repaired material or source material shall be reexamined in accordance with applicable procedures.

(d) Measures that control further processing of nonconforming or defective material or source material, pending a decision on its disposition, shall be established and maintained. These control measures shall extend to notification of other affected organizations, as appropriate.

NCA-4259 Audits and Corrective Action

NCA-4259.1 Audits.

(a) Audits shall be performed in accordance with written procedures or checklists by personnel not having direct responsibility in the areas being audited.

(b) Audit results shall be documented by auditing personnel for review by management having responsibility in the area being audited.

(c) Procedures shall include provisions for documentation of corrective action taken in response to deficiencies. Follow-up action, including re-audit of deficient areas where indicated, shall be taken to verify implementation of such corrective actions.

(d) In addition to audits of Material Organizations and suppliers, a comprehensive system of planned internal audits shall be performed at least annually to assure compliance with all aspects of the Quality System Program and to determine the effectiveness of the Program.

(e) Internal audits shall be performed in accordance with the requirements of (a) through (d) above.

NCA-4259.2 Corrective Action.

(a) Measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deviations, defective material and equipment, nonconformances, and quality system deficiencies are promptly identified and reported to appropriate levels of management. The measures shall also assure that the cause of conditions adverse to established quality levels be determined and corrected.

(b) The identification of significant or recurring conditions adverse to quality, the cause of condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

(c) These requirements shall also extend to the performance of the approved supplier's corrective action measures.

NCA-4300 NONMETALLIC MATERIAL MANUFACTURER'S AND CONSTITUENT SUPPLIER'S QUALITY SYSTEM PROGRAM REQUIREMENTS

NCA-4350 QUALITY SYSTEM PROGRAM REQUIREMENTS

NCA-4351 General

(a) A Nonmetallic Material Manufacturer or a Nonmetallic Material Constituent Supplier, hereafter referred to as the Material Organization, need not be a Certificate Holder, but their Quality System Program shall conform to the requirements of NCA-4300 as applicable to the scope of their work.

(b) Material supplied by a Nonmetallic Material Constituent Supplier shall meet all applicable requirements of CC-2100 and CC-2200.

(c) The Material Organization shall establish a written Quality System Program for the control of quality during manufacture or during other work it proposes to perform, and for the traceability of material or source material under its control. The Program shall be planned, documented, implemented, and maintained in accordance with the requirements of NCA-4300.

(d) The Quality System Program shall include consideration of the technical aspects and provide for planning and accomplishment of activities affecting quality. The Program shall provide for any special controls, processes, test equipment, tools, and skills to attain the required quality and verification of quality.

NCA-4351.1 Scope.

(a) The Quality System Program shall define the specific activities included in the scope of the work the Material Organization proposes to perform, including any of the following:

(1) testing, examination, repair, or treatments required by the material specification or the specific applicable material requirements of this Section and certification of the results of such tests, examinations, repairs, or treatments

(2) receipt, identification, verification, handling, storage, and shipment of material or source material

(3) approval and control of suppliers and source material or subcontracted services

(b) The Program shall include measures to comply with all requirements of this subarticle, to the extent necessary to assure compliance with the requirements of NCA-4300.

NCA-4351.2 Organization.

(a) The organizational structure for executing the Program may take various forms, provided the persons and organizations assigned the quality assurance functions have the required authority and organizational freedom.

(b) Persons or organizations responsible for defining and measuring the overall effectiveness of the Program shall

(1) be designated

(2) be sufficiently independent from the pressures of production

(3) have direct access to responsible management at a level where appropriate action can be initiated

(4) report regularly on the effectiveness of the Program

(c) The organizational structure, functional responsibilities, level of authority, and lines of communication for activities affecting quality shall be documented. Persons or organizations responsible for assuring that an appropriate Quality System Program has been established and verifying that activities affecting quality have been correctly performed shall have sufficient authority, access to work areas, and organizational freedom to

(1) identify quality problems

(2) initiate, recommend, or provide solutions to quality problems through designated channels

(3) verify implementation of solutions

(4) assure that further processing, delivery, or use is controlled until proper distribution of a nonconformance, deficiency, or unsatisfactory condition has occurred

(d) Individuals or groups assigned the responsibility of checking, auditing, or otherwise verifying that production and quality control activities have been correctly performed shall be independent of the individual or group directly responsible for performing the specific activity. Such persons shall not report directly to the supervisor with immediate responsibility for the work being verified.

(e) Management shall regularly review the status and adequacy of the Program.

NCA-4352 Personnel

NCA-4352.1 Indoctrination, Training, and Qualification of Personnel. Measures shall be established to assure that all personnel performing or managing activities affecting quality are indoctrinated and trained. The assignment of personnel shall be at the discretion of the organization's management. Indoctrination and training measures shall reflect the following requirements:

(a) Personnel to be indoctrinated or trained shall be identified.

(b) The extent of indoctrination and training shall be commensurate with the scope, complexity, and nature of the activity as well as the education, experience, and proficiency of the person.

(c) Personnel shall be indoctrinated in the general criteria, applicable codes, standards, company procedures, Quality System Program requirements, job responsibilities, and authority as they relate to a particular function.

(d) Training shall be provided, as needed, to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, and job responsibilities.

(e) Personnel who lead audits shall be qualified on the basis of education, experience, training, audit participation, and examination in accordance with the organization's Quality System Program.

NCA-4352.2 Personnel Records.

(a) Records shall be maintained of the implementation of indoctrination and training of personnel. Records of indoctrination and training may take the form of attendance sheets, training logs, or personnel training records.

(b) Qualification records of personnel who lead audits shall be documented and maintained and shall include education, experience, audit training and examination, and audit participation used as the basis of qualification.

NCA-4353 Program Documentation

NCA-4353.1 Quality System Manual.

(a) The Quality System Program shall be described and summarized in a Quality System Manual that shall be a major basis for demonstration of compliance with the rules of this Section.

(b) The Program documented in the Manual shall be implemented by written procedures that are maintained either separately or in the Quality System Manual.

(c) Detailed technical procedures and processes are not considered part of the Manual; however, the controls of such procedures and processes shall be covered by the Manual.

NCA-4353.2 Procedures, Instructions, and Drawings.

(a) Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances.

(b) These documents shall include or reference appropriate criteria for determining that the prescribed activities have been satisfactorily completed.

NCA-4353.3 Document Control. The preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality, such as Quality System Program Manuals, purchase specifications, instructions, procedures, and drawings shall be controlled to assure that the correct documents are being used at the location where the activity is performed. Such documents, including changes thereto, shall be reviewed for adequacy and approved for release by authorized personnel.

NCA-4353.4 Quality Records. Records that furnish documentary evidence of quality shall be specified, prepared, controlled, and maintained. Records shall be legible, identifiable, and retrievable. Records shall be protected against damage, deterioration, or loss. Requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition shall be established and documented.

NCA-4353.5 Records of Examinations and Tests. All characteristics required to be reported by the material specification and this Section shall be verified and the results recorded. Records shall be traceable to the document and revision to which an inspection, examination, or test was performed. Certified Material Test Reports shall be prepared by manufacturers, or obtained from material suppliers, as appropriate.

NCA-4354 Control of Purchased Materials, Source Materials, and Services

NCA-4354.1 General.

(a) Measures shall be established to assure that all purchased material, source material, and subcontracted services conform to the requirements of this Section.

(b) These measures shall be designed to prevent the use of incorrect or defective material or source material, or materials that have not received the required examinations or tests.

NCA-4354.2 Sources of Material, Source Material, and Services.

(a) Services including performance and certification of operations, processes, the results of tests, examinations, repairs, or treatments required by the material specification or by this Section shall be furnished by an approved supplier.

(b) Source materials shall be tested for conformance to applicable requirements either

(1) prior to shipment

(2) upon receipt, prior to use

NCA-4354.3 Approval and Control of Suppliers of Source Material and Services.

(a) The Material Organization shall be responsible for the approval and control of activities performed by suppliers of source materials and subcontracted services. Such control shall provide for source evaluation and selection, evaluation of objective evidence of quality, audit, and examination of items and services upon delivery, in accordance with requirements documented in the Material Organization's Program.

(b) The Material Organization shall be responsible for establishing and verifying that the supplier's controls applicable to the activities performed are adequate by surveying and auditing the supplier's established quality system that is consistent with the requirements of NCA-4300.

(c) As an alternative to survey and audit of suppliers of subcontracted calibration services, a Material Organization, approved supplier, or Certificate Holder may accept accreditation by accrediting bodies recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), provided the following requirements are met:

(1) A documented review of the supplier's accreditation shall be performed and shall include

(-a) the verification that accreditation is to ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," from an accredited body recognized by the ILAC MRA and

(-b) the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

(2) The procurement documents shall specify

(-a) that the service must be provided in accordance with the accredited ISO/IEC 17025 program and scope of accreditation, and

(-b) that the calibration certificate/report shall include identification of the laboratory equipment/standards used, and

(-c) that the calibration certificate/report shall include as-found calibration data when calibrated items are found to be out-of-tolerance, and

(-d) that the service supplier shall not subcontract the service to any other supplier, and

(-e) that the Material Organization, approved supplier, or Certificate Holder must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation, and

(-f) additional technical and quality requirements, as necessary, based on a review of the procured scope of services, including, but not limited to, tolerances, accuracies, ranges, and industry standards.

(3) At receipt inspection, the Material Organization, approved supplier, or Certificate Holder shall be responsible for validating that the calibration supplier's documentation certifies

(-a) that the subcontracted calibration was performed in accordance with the supplier's ISO/IEC 17025 program and scope of accreditation and

(-b) conformance to the procurement document's requirements.

(4) This activity shall be documented in the Material Organization's Quality System Program Manual, the approved supplier's quality program, or the Certificate Holder's Quality Assurance Program.

(d) As an alternative to survey and audit of suppliers of subcontracted testing services, a Material Organization, approved supplier, or Certificate Holder may accept accreditation from accrediting bodies recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), provided the following requirements are met:

(1) A documented review of the supplier's accreditation shall be performed and shall include verification

(-a) that the accreditation is to ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," from an accredited body recognized by the ILAC MRA and

(-b) that the published scope of accreditation for the testing laboratory covers the needed testing services including test methodology and tolerances/uncertainties.

(2) The procurement documents shall specify

(-a) that the service must be provided in accordance with the accredited ISO/IEC 17025 program and scope of accreditation, and

(-b) that the service supplier shall not subcontract the service to any other supplier, and

(-c) that the Material Organization, approved supplier, or Certificate Holder must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation, and

(-d) additional technical and quality requirements, as necessary, based on a review of the procured scope of services, including, but not limited to, tolerances, accuracies, ranges, and industry standards.

(3) At receipt inspection, the Certificate Holder, Material Organization, or approved supplier shall be responsible for validating that the supplier's documentation certifies

(-a) that the subcontracted testing was performed in accordance with the supplier's ISO/IEC 17025 program and scope of accreditation and

(-b) conformance to the procurement document's requirements.

(4) This activity shall be documented in the Material Organization's Quality System Program Manual, the approved supplier's quality program, or the Certificate Holder's Quality Assurance Program.

(e) The Material Organization or Certificate Holder shall be responsible for assuring that all material and activities conform to all applicable requirements of this Section.

NCA-4354.4 Procurement Document Control.

(a) Procurement documents shall include requirements necessary to assure compliance with the requirements of this Section.

(b) Procurement documents shall require material, source material, or subcontracted services to be furnished in accordance with the applicable requirements of NCA-4300.

(c) Procurement documents shall require approved suppliers to reference the accepted quality system or controls established by the Material Organization on documentation that accompanies the source material or services furnished.

(d) Procurement documents that specify quality requirements or prescribe activities affecting quality shall be reviewed for adequacy and approved for release by authorized personnel.

NCA-4355 Identification, Marking, and Material Control

NCA-4355.1 General.

(a) Control shall be established to assure that only correct and accepted material or source material is used. Identification shall be maintained on these materials or on documents traceable to these materials, or in a manner that assures that the identification is established and maintained.

(b) Measures shall be established for controlling and identifying material or source material, including that which is partially processed, throughout the manufacturing process, during the performance of tests, examinations, repairs, and treatments, and during receipt, storage, handling, and shipment.

NCA-4355.2 Marking Method. Materials and source materials shall be marked by any method acceptable to the purchaser that will not result in harmful contamination and will identify these materials in accordance with the material specification.

NCA-4356 Process Control

NCA-4356.1 General. Processes affecting quality of materials, source materials, or services shall be controlled. Special processes that control or verify quality shall be performed by qualified personnel using qualified procedures in accordance with specific requirements.

NCA-4356.2 Manufacturing Process Control. Operations shall be performed under a controlled system such as process sheets, shop procedures, checklists, travelers, or equivalent procedures. Measures shall be established to ensure that processes are controlled in accordance with the material specification and the rules of this Section.

NCA-4356.3 Handling, Storage, Shipping, and Preservation. Instructions shall be established for handling, storage, shipping, and preservation of material or source material to prevent damage or deterioration.

NCA-4357 Control Examinations, Tests, and Nonconforming Material

NCA-4357.1 Inspection, Examination, and Test Control.

(a) Inspections, examinations, and tests shall be established to assure conformance with the requirements of the material specification and this Section.

(b) Inspections or examinations required to verify conformance of material, source material, or an activity to specified requirements shall be planned. Characteristics to be inspected or examined, and inspection or examination methods to be employed, shall be specified. Inspection or examination results shall be documented.

(c) Tests required to verify conformance to specified requirements shall be planned. Characteristics to be tested and test methods to be employed shall be specified. Test results shall be documented and their conformance with acceptance criteria shall be evaluated.

NCA-4357.2 Control of Measuring and Test Equipment.

(a) Procedures shall be in effect to assure that tools, gages, instruments, and other measuring and test devices used to verify compliance with the material specification and this Section are calibrated and properly adjusted at specific periods or use intervals to maintain accuracy within necessary limits. Periodic checks on equipment may be performed to determine that calibration is maintained.

(b) Calibration shall be against certified equipment having known valid relationships and documented traceability to nationally recognized standards, where such standards exist. If no known nationally recognized standards exist, the basis for calibration shall be documented.

(c) Control measures shall include provisions for measuring and test equipment identification and for determining calibration status by equipment marking or on records traceable to the equipment.

NCA-4357.3 Discrepancies in Measuring or Test Equipment.

(a) When discrepancies in excess of tolerances for measuring or test equipment are found at calibration, appropriate corrective action shall be taken, and material measured or tested since the previous calibration shall be reviewed to determine that all applicable requirements have been met.

(b) When periodic checks on equipment are performed to determine that calibration is maintained, potential material or source material discrepancies need only be resolved to the previous check, provided

(1) the methods used and the frequency of periodic checking are described in calibration procedures

(2) the calibration discrepancy was found by periodic check

NCA-4357.4 Inspection and Test Status. Measures shall be established so that the status and results of any required inspections, examinations, or tests can be determined at any time. Status shall be maintained through indicators such as physical location and tags, marking, shop travelers, stamps, inspection records, or other suitable means. The authority for application and removal of such indicators shall be specified.

NCA-4357.5 Control of Nonconforming Material.

(a) Adequate control measures shall be established to prevent the use of material that does not conform to the requirements of the material specification and this Section.

(b) Material or source material with nonconformances shall be identified, segregated when practical, and reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconformance in these materials shall be defined.

(c) Repaired material or source material shall be reexamined in accordance with applicable procedures.

(d) Measures that control further processing of nonconforming or defective material or source material, pending a decision on its disposition, shall be established and maintained. These control measures shall extend to notification of other affected organizations, as appropriate.

NCA-4358 Audits and Corrective Action

NCA-4358.1 Audits.

(a) Audits shall be performed in accordance with written procedures or checklists by personnel not having direct responsibility in the areas being audited.

(b) Audit results shall be documented by auditing personnel for review by management having responsibility in the area being audited.

(c) Procedures shall include provisions for documentation of corrective action taken in response to deficiencies. Follow-up action, including re-audit of deficient areas where indicated, shall be taken to verify implementation of such corrective actions.

(d) In addition to audits of Material Organizations and suppliers, a comprehensive system of planned and periodic internal audits shall be carried out to assure compliance with all aspects of the Quality System Program and to determine the effectiveness of the Program.

(e) Internal audits shall be performed in accordance with the requirements of (a) through (c) above.

NCA-4358.2 Corrective Action.

(a) Measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deviations, defective material and equipment, nonconformances, and quality system deficiencies are promptly identified and reported to appropriate levels of management. The measures shall also assure that the cause of conditions adverse to established quality levels is determined and corrected.

(b) The identification of significant or recurring conditions adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

(c) These requirements shall also extend to the performance of the approved supplier's corrective action measures.

NCA-4360 RESPONSIBILITY

NCA-4361 Constructor or Fabricator

(a) The Constructor or Fabricator responsible for the placement of nonmetallic materials (plastic concrete) shall assure that the plastic concrete meets the

requirements of the Construction Specification, and that tests performed by the manufacturer and supplier of the nonmetallic materials and constituents meet the requirements of Section III, Division 2.

(b) The Constructor or Fabricator shall survey and qualify the Quality System Program of the Nonmetallic Material Manufacturer if he does not obtain a Quality System Certificate (NCA-3923).

(c) The Constructor or Fabricator shall perform any of the functions required by NCA-4350 that are not performed and he may elect to perform any other Quality Program functions that would normally be the responsibility of the Nonmetallic Material Manufacturer or the Nonmetallic Material Constituent Supplier. He shall assure that nonmetallic material constituents have met applicable requirements of CC-2100 and CC-2200.

(d) The Constructor or Fabricator shall make all necessary provisions so that the Authorized Inspector and his Authorized Inspection Agency can make the inspections necessary to comply with this Code.

(e) The functions performed by the Constructor or Fabricator shall be clearly defined and included in his Quality System Program.

NCA-4362 Nonmetallic Material Manufacturer

(a) The Nonmetallic Material Manufacturer shall have his Quality System Program surveyed and qualified by the Constructor or Fabricator if he does not obtain a Quality System Certificate.

(b) The Nonmetallic Material Manufacturer, using the constituents, shall survey and qualify the Quality System Program(s) of Nonmetallic Material Constituent Suppliers if they do not obtain a Quality System Certificate (NCA-3923) and shall assure that the constituent materials have been tested and have met applicable requirements of CC-2100 and CC-2200.

(c) The functions performed by the Nonmetallic Material Manufacturer shall be clearly defined and included in his Quality System Program.

NCA-4363 Nonmetallic Material Constituent Supplier

(a) The Nonmetallic Material Constituent Supplier shall have his Quality System Program surveyed and qualified by the Nonmetallic Material Manufacturer if he does not obtain a Quality System Certificate.

(b) The Nonmetallic Material Constituent Supplier shall assure that constituent materials have been tested and have met applicable requirements of CC-2100 and CC-2200.

NCA-4400 POLYETHYLENE MATERIAL ORGANIZATION'S QUALITY SYSTEM PROGRAM

NCA-4470 POLYETHYLENE MATERIAL ORGANIZATION'S QUALITY SYSTEM PROGRAM

(a) The requirements of NCA-4470 provide for various entities known as Certificate Holders and Polyethylene Material Organizations. Performance of operations, processes, and services related to the procurement, manufacture, and supply of polyethylene source material and polyethylene material is limited to these entities. These terms, as well as other terms used in NCA-4470, are defined in the Glossary, Article NCA-9000.

(b) The Polyethylene Material Organization shall obtain a Quality System Certificate issued by the Society verifying the adequacy of the applicant's Quality System Program.

(c) As an alternative to (b), the Polyethylene Material Organization shall have their Quality System Program surveyed and qualified by the holder of an ASME Certificate of Authorization with responsibility for compliance with the rules of this Section.

(d) As an alternative to (b) or (c), the Polyethylene Service Supplier shall have its Quality System Program surveyed and qualified by the Polyethylene Source Material Manufacturer or Polyethylene Material Manufacturer using the services of the Polyethylene Service Supplier.

(e) Subcontracting is restricted as provided in NCA-4473(b)(2).

(f) When requirements of NCA-3800 and NCA-4200 are invoked, the term "Material Organization" in NCA-3800 and NCA-4200 shall apply to Polyethylene Material Organization. The term "material" in NCA-3800 and NCA-4200 shall apply to polyethylene material and polyethylene source material. The term "source material" in NCA-3800 and NCA-4200 is not applicable.

(g) A Certificate Holder may furnish polyethylene material when stated in the scope of its certificate. In this case, a Quality System Certificate is not required, nor is the user of the polyethylene material required to survey, qualify, or audit such a Certificate Holder.

NCA-4471 Responsibility of Polyethylene Material Organizations

Polyethylene Material Organizations shall be responsible for establishing a Quality System Program in accordance with the requirements of NCA-4472 through NCA-4474, as applicable to the scope of activities performed. Guidance on activities and Quality System Program responsibilities within the scope of a Polyethylene Material Organization may also be found in Section III Appendices, Nonmandatory Appendix DD.

NCA-4471.1 Additional Responsibility of Polyethylene Source Material Manufacturers. The Polyethylene Source Material Manufacturer's Quality System Program shall include the following, as a minimum:

(a) establishing and maintaining measures for the traceability of polyethylene source material while under its control

(b) controlling quality during manufacture, including control of testing and examination of polyethylene source material

(c) evaluation of Polyethylene Service Suppliers for calibration, testing, and nondestructive examination in accordance with the requirements of NCA-4472.3

(d) preparing Certificates of Analysis

(e) shipment of polyethylene source material

NCA-4471.2 Additional Responsibility of the Natural Compound Manufacturer. In addition to the requirements of NCA-4471.1, the Natural Compound Manufacturer shall be responsible for the following:

(a) Providing the required data, including test results from a sample of polyethylene compound, and obtaining a listing for that sample's material designation in accordance with Plastic Pipe Institute standards listed in Table NCA-7100-2.

(b) Issuing the "Natural Compound Manufacturing and Testing Procedure."

(c) Determining pigment concentrate compound that, when combined with natural compound manufactured by the Natural Compound Manufacturer, shall produce polyethylene compound that complies with a material specification permitted by this Section. This shall be done by either of the following:

(1) providing procedures to the Pigment Concentrate Compound Manufacturer for manufacture of pigment concentrate compound

(2) testing pigment concentrate compound provided and identified by the Pigment Concentrate Compound Manufacturer with a specific trade name

(d) Providing documentation to the Polyethylene Compound Manufacturer and Polyethylene Material Manufacturer specifying, by trade name, pigment concentrate compound that shall comply with a material specification permitted by this Section when combined with the natural compound manufactured by the Natural Compound Manufacturer.

(e) Certifying that natural compound is in compliance with this Section and the "Natural Compound Manufacturing and Testing Procedure."

NCA-4471.3 Additional Responsibility of the Pigment Concentrate Compound Manufacturer. In addition to the requirements of NCA-4471.1, the Pigment Concentrate Compound Manufacturer shall be responsible for the following:

(a) Issuing the "Pigment Concentrate Compound Manufacturing and Testing Procedure."

(b) Manufacturing pigment concentrate compound that shall comply with a material specification permitted by this Section when it is combined with natural compound manufactured by the Natural Compound Manufacturer. This shall be done by either of the following:

(1) manufacturing pigment concentrate compound in accordance with procedures provided by the Natural Compound Manufacturer

(2) manufacturing pigment concentrate compound that has been identified, by trade name, as acceptable by the Natural Compound Manufacturer

(c) Certifying that pigment concentrate compound is in compliance with this Section and the "Pigment Concentrate Compound Manufacturing and Testing Procedure."

NCA-4471.4 Additional Responsibility of the Polyethylene Compound Manufacturer. In addition to the requirements of NCA-4471.1, the Polyethylene Compound Manufacturer shall be responsible for the following:

(a) issuing a "Polyethylene Compound Manufacturing and Testing Procedure"

(b) using pigment concentrate compound and natural compound to manufacture polyethylene compound that complies with this Section and a material specification permitted by this Section

(c) manufacturing and testing polyethylene compound in accordance with the "Polyethylene Compound Manufacturing and Testing Procedure"

(d) certifying that polyethylene compound is in compliance with this Section, a material specification permitted by this Section, and the "Polyethylene Compound Manufacturing and Testing Procedure"

NCA-4471.5 Responsibility of Polyethylene Material Manufacturer. The Polyethylene Material Manufacturer's Quality System Program shall include the following, as a minimum:

(a) Establishing and maintaining measures for the traceability of polyethylene source material and polyethylene material while under its control.

(b) Issuing the "Polyethylene Material Manufacturing and Testing Procedure."

(c) Manufacturing polyethylene material that complies with a material specification permitted by this Section. This shall be done by either of the following:

(1) manufacturing polyethylene material using pigment concentrate compound and natural compound as specified by the Natural Compound Manufacturer

(2) manufacturing polyethylene material using polyethylene compound as specified by the Polyethylene Compound Manufacturer

(d) Manufacturing and testing polyethylene material in accordance with this Section, a material specification permitted by this Section, and the "Polyethylene Material Manufacturing and Testing Procedure."

(e) Controlling quality during manufacture, including control of testing, examination, and treatment of polyethylene source material and polyethylene material.

(f) Evaluation of Polyethylene Service Suppliers for calibration, testing, and nondestructive examination in accordance with the requirements of NCA-4472.3.

(g) Preparing Certified Polyethylene Test Reports.

(h) Certifying that all polyethylene material is in compliance with this Section, a specific material specification permitted by this Section, and the "Polyethylene Material Manufacturing and Testing Procedure."

(i) Shipment of polyethylene material.

NCA-4471.6 Responsibility of Polyethylene Material Supplier. The Polyethylene Material Supplier's Quality System Program shall include the following, as a minimum:

(a) establishing and maintaining measures for the traceability of polyethylene material while under its control, including identification established per NCA-4471.5(a)

(b) shipment of polyethylene material

NCA-4471.7 Responsibility of Polyethylene Service Supplier. The Polyethylene Service Supplier's Quality System Program shall include the following, as a minimum:

(a) establishing and maintaining measures for the traceability of polyethylene source material and polyethylene material while under its control

(b) controlling quality, including control of testing and examination of polyethylene source material and polyethylene material

(c) evaluation of Polyethylene Service Suppliers providing calibration, in accordance with the requirements of NCA-4472.3

NCA-4472 Evaluation of Quality System

NCA-4472.1 Evaluation by the Society.

(a) The Society will arrange for a survey of the applicant's Quality System Program for the scope of activities at the locations listed on the application. The evaluation will be conducted in accordance with the requirements of NCA-3841.

(b) The Quality System Certificate that is issued, for up to a 3-yr period, will describe and specify the scope and limits of work and locations for which the applicant is qualified and will be subjected to a planned audit program by the Society.

NCA-4472.2 Evaluation by ASME Certificate Holders.

(a) Except for evaluation of Polyethylene Service Suppliers, evaluation by parties other than the Society shall be performed by a Holder of a Certificate of Authorization.

(b) NCA-3842.2 applies, except for the following:

(1) The reference in NCA-3842.2(a) to NCA-4250 is changed to NCA-4472 through NCA-4474.

(2) The NCA-3842.2(i) allowance of performance assessments in lieu of annual audits is prohibited.

NCA-4472.3 Evaluation of Polyethylene Service Suppliers by the Polyethylene Source Material Manufacturer or Polyethylene Material Manufacturer.

(a) Evaluation of Polyethylene Service Suppliers may be performed by a Polyethylene Source Material Manufacturer or Polyethylene Material Manufacturer using the service.

(b) NCA-3842.2 applies, except for the following:

(1) The reference in NCA-3842.2(a) to NCA-4250 is changed to NCA-4472 through NCA-4474.

(2) The NCA-3842.2(i) allowance of performance assessments in lieu of annual audits is prohibited.

NCA-4472.4 Evaluation of Polyethylene Service Suppliers Providing Calibration Services by Other Polyethylene Service Suppliers.

(a) Evaluation of Polyethylene Service Suppliers providing calibration services may be performed by Polyethylene Service Suppliers using the calibration service.

(b) NCA-3842.2 applies, except for the following:

(1) The reference in NCA-3842.2(a) to NCA-4250 is changed to NCA-4472 through NCA-4474.

(2) The NCA-3842.2(i) allowance of performance assessments in lieu of annual audits is prohibited.

NCA-4473 Quality Program Requirements

(a) The Polyethylene Material Organization shall establish a Quality System Program for the control of quality during manufacture or during other work it proposes to perform and for the traceability of polyethylene source material and polyethylene material under its control. The controls used in the Quality System Program shall be documented in a Quality System Manual.

(b) The Quality System Program shall be planned, documented, implemented, and maintained in accordance with the requirements of NCA-4250, as applicable to the scope of activities performed except as follows:

(1) NCA-4251.2(a)(6), NCA-4255.1(b), NCA-4255.3(a) and NCA-4255.3(b), NCA-4255.5, NCA-4256.3(b) and NCA-4256.3(e), NCA-4256.4, and NCA-4257.3 do not apply, and those activities are prohibited. Provisions of NCA-4255.3(c) shall be limited to calibration services.

(2) Any subcontracting shall be to Polyethylene Service Suppliers. Subcontracting is allowed for testing, nondestructive examination, and calibration. Subcontracting of operations that affect compliance with the procedures, material property, and design requirements of this Section is prohibited.

(3) Repair is prohibited.

(4) When design of polyethylene material is within the scope of activities, design controls shall comply with the applicable requirements of ASME NQA-1, Quality Assurance Requirements for Nuclear Facilities. The applicable version of NQA-1 shall be in accordance with Table NCA-7100-2.

(5) Audits shall include a review of the implementation of all elements of the Quality System Program at the location of the work and shall be conducted at least annually.

(6) The "approved supplier" mentioned in NCA-3800 and NCA-4200 is not applicable and not allowed.

(7) Polyethylene Material Organizations are only allowed to qualify Polyethylene Service Suppliers. Polyethylene Service Suppliers are only allowed to qualify other Polyethylene Service Suppliers performing calibration services.

(8) Polyethylene material shall be permanently marked with the following, as a minimum:

(-a) Polyethylene Material Manufacturer's company name.

(-b) Polyethylene material specification as permitted by this Section.

(-c) Polyethylene compound designation as listed in Plastics Pipe Institute TR-4 (Table NCA-7100-2).

(-d) A lot number defined and described in the Polyethylene Material Manufacturer's Quality System Manual and the Certified Polyethylene Test Report that identifies the following information:

(-1) the polyethylene source material(s)

(-2) the location of manufacture

(-3) the production equipment and personnel or shift

(-4) the date of manufacture

(-e) Markings (-a) through (-d) above may be abbreviated by trademarks or codes, provided the trademarks or codes are defined and described in the Polyethylene Material Manufacturer's Quality System Manual and the Certified Polyethylene Test Report or an identified attachment to the Certified Polyethylene Test Report.

(9) Identification of polyethylene source material shall be by marking the containers or tags attached to the containers and shall include the following, as a minimum:

(-a) Polyethylene Source Material Manufacturer's company name.

(-b) Polyethylene source material designation as listed in Plastics Pipe Institute TR-4 (Table NCA-7100-2).

(-c) Location of manufacture.

(-d) Lot number identifying the polyethylene source material.

(-e) Markings (-b) through (-d) above may be abbreviated by a trademark or code on the containers or on tags attached to the containers, provided the trademarks or codes are defined and described in the Polyethylene Material Manufacturer's Quality System Manual and the Certified Polyethylene Test Report or an identified attachment to the Certified Polyethylene Test Report.

(10) Certificates of Compliance are not applicable.

(11) Welding and heat treatment are not applicable.

NCA-4474 Certification Requirements

NCA-4474.1 Certificates of Analysis. The Polyethylene Source Material Manufacturer shall provide a Certificate of Analysis.

(a) The Certificate of Analysis shall include polyethylene source material identification as required by NCA-4473(b)(9), actual test and examination results, and any other required certifications.

(b) A certification shall be included that affirms that contents of the Certificate of Analysis are correct and accurate and that all test results and examinations performed by the organization and its subcontractors are in compliance with this Section and specified requirements.

(c) Required Certificates of Analysis shall be transmitted at the time of shipment.

NCA-4474.2 Certified Polyethylene Test Reports. The Polyethylene Material Manufacturer and Polyethylene Material Supplier shall provide a Certified Polyethylene Test Report for polyethylene material.

(a) The Certified Polyethylene Test Reports shall include polyethylene material identification as required by NCA-4473(b)(8), actual test and examination results, and any other required certifications.

(b) A certification shall be included that affirms that contents of the report are correct and accurate and that all test results and operations performed by the organization and its subcontractors are in compliance with the material specification and the specific applicable requirements of this Section.

(c) The Polyethylene Material Manufacturer shall also certify that the polyethylene material conforms to the applicable dimensional requirements.

(d) The Polyethylene Material Manufacturer and Polyethylene Material Supplier shall transmit all required Certified Polyethylene Test Reports, including Certificates of Analysis from the Polyethylene Source Material Manufacturer, at the time of shipment.

NCA-4474.3 Additional Certification Requirements.

(a) The Certified Polyethylene Test Report shall include the actual results of all required physical and mechanical property tests. A certification that the polyethylene source material used was made from virgin polyethylene, not scrap or regrind polyethylene material, shall also be included.

(b) When required tests or nondestructive examinations are subcontracted, the approved Polyethylene Service Supplier's certification for the operations performed shall be furnished as an identified attachment to the Certified Polyethylene Certified Test Report.

(c) When operations other than tests or nondestructive examinations that require maintenance of traceability are subcontracted, these operations and the approved Polyethylene Service Supplier performing them shall be listed on the Certified Polyethylene Test Report, or the approved Polyethylene Service Supplier's certification for the operation may be furnished as an attachment to the Certified Polyethylene Test Report. Operations that affect design or properties of the polyethylene source material and polyethylene material shall not be performed by Polyethylene Service Suppliers.

(d) Reporting of actual dimensions and visual examination results is required.

(e) Polyethylene material identification shall be described in the Certified Polyethylene Test Report.

NCA-4474.4 Quality System Program Statement.

(a) When the Polyethylene Material Organization holds a Quality System Certificate, the organization's Quality System Certificate number and expiration date shall be shown on the Certificate of Analysis and Certified Polyethylene Test Report.

(b) When the organization has been qualified by a party other than the Society, the identification, revision, and date of the applicable Quality System Manual shall be shown on the Certificate of Analysis and Certified Polyethylene Test Report.

(c) The inclusion of the Quality System Certificate number and expiration date or reference to identification, revision, and date of the applicable Quality System Manual shall be considered the organization's certification that all activities have been performed in accordance with the applicable requirements of this Section.

ARTICLE NCA-5000
AUTHORIZED INSPECTION

NCA-5100 INTRODUCTION

NCA-5110 APPLICABILITY

(a) This Article provides the requirements for the inspection of items constructed in accordance with this Section by the Authorized Inspection Agency.

(b) When preservice examinations are required by this Section, inspection of the preservice examinations by the Authorized Inspection Agency shall be in accordance with Section XI, Subsection IWA, IWA-2100.

NCA-5120 PERFORMANCE OF INSPECTION

(21) NCA-5121 Authorized Inspection Agency

(a) The Authorized Inspection Agency shall be accredited by the Society in accordance with the provisions set forth in ASME QAI-1, Qualification for Authorized Inspection.

(b) The Authorized Inspection Agency shall notify the Society when it enters into an agreement with an Owner or a Certificate Holder, or whenever an existing agreement is terminated. The Authorized Inspection Agency shall also notify the enforcement authority having jurisdiction over the nuclear facility whenever an agreement with an Owner is written or an Owner's agreement is terminated.

NCA-5122 Authorized Nuclear Inspector Supervisor

The Authorized Inspection Agency shall employ Authorized Nuclear Inspection Supervisors qualified in accordance with ASME QAI-1, Qualification for Authorized Inspection, to supervise the Inspectors.

NCA-5123 Authorized Nuclear Inspector

The Authorized Inspection Agency shall also employ Authorized Nuclear Inspectors qualified in accordance with ASME QAI-1, Qualification for Authorized Inspection, to perform inspections required by this Section. The inspections required by this Section shall be performed by an Authorized Nuclear Inspector. Any reference to Inspector throughout this Section shall mean Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall not be in the employ of an N Certificate Holder.

NCA-5125 Duties of Authorized Nuclear Inspector Supervisors (21)

The responsibilities of the Authorized Nuclear Inspector Supervisor include the requirements of (a) through (i) below.

(a) Supervisors, in conjunction with Inspectors employed by the same Authorized Inspection Agency (NCA-5121), shall participate in the Society's review of the applicant's Quality Assurance Program (NCA-8160). In those cases where the Supervisor performs the functions of the Inspector, he may represent both during the review of the Program.

(b) A Supervisor designated by the Authorized Inspection Agency shall review and accept any proposed modifications to Quality Assurance Manuals before they are put into effect.

(c) The Authorized Nuclear Inspector Supervisor shall audit the Inspector's performance at least twice per year at locations where the Certificate Holder is actively engaged in Section III work.

(d) The Supervisor shall be available as needed for consultation and support of the local inspection staff.

(e) The Supervisor shall maintain supervisory control over one or more Authorized Nuclear Inspectors and shall perform all of the functions and maintain the records required of him in ASME QAI-1, Qualification for Authorized Inspection.

(f) The portion of a Certificate Holder's Quality Assurance Program that includes furnishing material [NCA-3211.1(d)] shall be audited by the Supervisor at least once each year, except for the year the Certificate Holder is surveyed by the Society.

(g) The NS Certificate Holder's Quality Assurance Program shall be audited by the Supervisor at least once each year, except for the year the NS Certificate Holder is surveyed by the Society.

(h) The Owner's Quality Assurance Program shall be audited annually by the Supervisor. The Supervisor shall report the results to the Society for review and determination as to whether the Owner's Certificate shall be renewed.

(i) The Certificate Holder's or Owner's (or his designee's) Certifying Engineer qualification activities shall be audited by the Supervisor at least once each year, except for the year the Certificate Holder is surveyed by the Society, to verify that the procedures are being

followed and that records exist to support the qualification activities.

NCA-5130 ACCESS FOR INSPECTION AGENCY PERSONNEL[13]

(21) ### NCA-5131 Access to the Certificate Holder's Facilities

(a) The Certificate Holder shall arrange for the Inspection Agency Personnel to have free access at all times to those locations where Code activities, including those concerned with furnishing material, are being performed on an item, when so requested. The Certificate Holder shall keep the Inspector informed of the progress of the work and shall notify him reasonably in advance when the item will be ready for any required tests or inspections.

(b) The Certificate Holder shall provide personnel to accompany the Authorized Nuclear Inspector Supervisor during his required audits.

NCA-5132 Access to the Owner's Facilities

The Owner shall arrange for the Authorized Inspection Agency Personnel to have free access to the Owner's facilities as required to perform duties under the Owner's Agreement with the Authorized Inspection Agency (NCA-5121).

NCA-5200 DUTIES OF INSPECTOR

(21) ### NCA-5210 GENERAL INSPECTION DUTIES

(a) The Inspector who performs the detailed inspections in compliance with this Section shall witness or otherwise verify all examinations and make all inspections required by this Section. He shall also make any other inspections and witness or verify (including making measurements) any other examinations and additional investigations that, in his judgment, are necessary to ascertain whether the item being inspected has been constructed[1, 2] in compliance with the rules of this Section. Parts and piping subassemblies shall be in accordance with the accepted documents [NCA-3211.19(a)]. For Division 2, this shall include verification that the items being inspected have been constructed and installed in accordance with the approved Design Drawings and Construction Specifications.

(b) The duties of the Inspector shall not be interpreted by virtue of these rules to extend to any construction requirements beyond those of this Section that may be set forth in the Design Specification [NCA-3211.19(a)] or on Design Drawings and Construction Specifications (NCA-3211.28). However, such requirements shall not result in construction that fails to conform with the requirements of this Section [NCA-3211.19(b)].

NCA-5220 CATEGORIES OF INSPECTOR'S DUTIES (21)

The duties of the Inspector shall include but not necessarily be limited to those given in (a) through (m) below

(a) verifying the scope of work to be performed [NCA-5230(a)]

(b) monitoring of the Certificate Holder's Quality Assurance Program including subcontracted activities (NCA-5240)

(c) reviewing of Certificate Holder's qualification records (NCA-5250)

(d) verifying materials (NCA-5260)

(e) witnessing or verifying in-process fabrication, nondestructive examination, and tests (NCA-5270)

(f) witnessing final pressure tests (NCA-5280)

(g) reviewing and signing Data Reports and Construction Reports (NCA-5290)

(h) reviewing drawings and inspecting in accordance with them

(i) assuring that Design Reports that are required by NCA-3211.19(b)(3) are available

(j) assuring that capacity test data has been reviewed and accepted by an ASME designee before signing the pressure and vacuum relief valve Data Report Form NV-1 (Section III Appendices, Mandatory Appendix V)

(k) monitoring the Code activities of the Owner [NCA-5242(c)]

(l) performing all other duties specifically required in ASME QAI-1, Qualification for Authorized Inspection, as applicable, and

(m) verifying all preservice examinations have been completed to Section XI edition specified [NCA-3211.19(c)]

NCA-5230 SCOPE OF WORK, DESIGN SPECIFICATIONS, AND DESIGN REPORTS (21)

(a) The Inspector shall verify that the scope stated in the certificate includes the work to be performed.

(b) The Inspector shall verify that the Design Specification, Design Drawings, Construction Specifications, Construction Reports, Design Reports, Load Capacity Data Sheets, and Certified Design Report Summaries, when required [NCA-3211.19(e) and NCA-3211.40], are on file and that they have been properly certified in accordance with NCA-3211.19(d), NCA-3211.20, NCA-3211.32(b), NCA-3211.33, and NCA-3211.40(h).

(c) The Inspector shall not be held responsible for the scope or adequacy of the Design Specifications, for the completeness or accuracy of the Design Report or calculations, or for the information reported in the Construction Report, but shall verify that the certified document has been certified by a Certifying Engineer. The Owner or his designee, Designer, or Certificate Holder, on whose behalf the document has been certified, shall provide objective evidence that the Certifying Engineer has

been qualified by the Owner or his designee, Designer, or Certificate Holder, in accordance with the requirements of this Section.

(d) The Inspector shall verify that Design Calculations have been prepared for those components and supports not requiring Design Reports. The Inspector shall not be responsible for the accuracy of the calculations.

NCA-5240 QUALITY ASSURANCE PROGRAMS

NCA-5241 Stipulation of Inspections Prior to Issuance of Process Sheets or Controls

Prior to the issuance of process sheets or controls required by NCA-4134.9, the Certificate Holder shall review them and the applicable drawings with the Inspector, who shall then stipulate the inspections he intends to make in order to fulfill the requirements of NCA-5210.

NCA-5242 Monitoring of Quality Assurance Programs

(a) The Inspector shall monitor the performance of the Certificate Holder for conformity to the requirements of their Quality Assurance Program accepted by the Society. The Inspector shall verify that all changes to the Quality Assurance Manual have been accepted by the Authorized Inspection Agency before they are put into effect.

(b) The Inspector shall assure that the procedures employed in the batching, mixing, conveyance, placing, and curing of structural concrete have been approved under the provisions of the Construction Specification and as specified in Division 2. Certificate Holders shall submit evidence to the Inspector that these requirements have been met.

(c) The Inspector shall monitor the Owner's progress in compiling supporting data needed to complete the ASME Data Report Form N-3 (Section III Appendices, Mandatory Appendix V).

NCA-5243 Process Control Checklist

The Inspector shall indicate on the Certificate Holder's process sheets or checklist his concurrence that compliance has been attained at each point stipulated by him (NCA-5241).

NCA-5250 QUALIFICATION RECORDS

NCA-5251 Review of Qualification Records

The Inspector shall review the qualification records of the Certificate Holder.

NCA-5252 Structural Concrete Placement

The Inspector shall assure that the procedures employed in the batching, mixing, conveyance, placing, and curing of structural concrete have been approved under the provisions of the Construction Specification and as specified in this Section. The Certificate Holder shall submit evidence to the Inspector that these requirements have been met.

NCA-5253 Welding Procedures

The Inspector shall assure himself that the welding procedures employed in construction have been qualified under the provisions of this Section. The Certificate Holder shall submit evidence to the Inspector that these requirements have been met. When there is a specific reason to question the welding procedure, the Inspector may require requalification as a requirement for the procedure to be used on work subject to his inspection.

NCA-5254 Welders and Welding Operators

The Inspector shall assure himself that all welding is performed by welders or welding operators qualified under the provisions of this Section. The Certificate Holder shall make available to the Inspector a certified copy of the record of performance qualification tests of each welder and welding operator as evidence that these requirements have been met. When there is a specific reason to question the ability of the welder or the welding operator to make welds that meet the requirements of the specification, the Inspector may require requalification before the welder or welding operator is permitted to continue welding on work subject to his inspection. The Inspector shall also assure himself that each welder and welding operator has been assigned an identifying symbol and that such symbols are regularly and consistently applied when required by this Section.

NCA-5255 Examination Procedures

The Inspector shall assure himself that the examination and testing procedures required by this Section have been qualified. When there is a specific reason to question whether the examination or testing procedure requirements are being met, the Inspector may require requalification of the procedure.

NCA-5256 Nondestructive Examination Personnel

The Inspector has the duty to verify the qualification and certification of nondestructive examination personnel employed by the Certificate Holder and has the duty to monitor the nondestructive examination activities and require requalification of any personnel when there is reason to question the performance of that person. In addition, the Inspector shall monitor the Certificate Holder's Quality Assurance Program as it relates to the nondestructive examination activities of Material Organizations and NDE subcontractors that the Certificate Holder qualified.

NCA-5260 MATERIALS, PARTS, AND HEAT TREATMENT

NCA-5261 Inspection of Materials for Compliance

The Inspector shall assure himself that all materials used comply with all applicable requirements of this Section. The Certificate Holder shall make available to the Inspector certified reports of the results of all tests performed in accordance with (a) and (b) below

(a) the material specifications

(b) the requirements in the applicable materials Articles of this Section, including certified reports of the results of all required tests and examinations performed

NCA-5262 Dimensional Check

The Inspector shall satisfy himself

(a) that the item is being constructed within the tolerance required by the Design Specification, Design Drawings, and Construction Specifications, and this Section

(b) that head and shell sections conform to the prescribed shape and meet the thickness requirements

(c) that nozzles and attachments to be welded to the vessel fit properly to the curvature of the vessel surface. If required by the Inspector, the Certificate Holder responsible for the vessel shall make available accurately formed templates for his use.

NCA-5263 Check of Heat Treatment Practice

The Inspector shall satisfy himself that all heat treatment operations required by this Section are correctly performed and that the temperature readings and gradients conform to the requirements.

NCA-5270 EXAMINATIONS AND TESTS

The Inspector shall witness in-process fabrication, nondestructive examinations and destructive tests, when feasible; alternatively, he shall check the examination and test records to determine the acceptability of the items involved.

NCA-5280 FINAL TESTS

The Inspector shall witness final hydrostatic, pneumatic, or structural integrity tests required by this Section and examinations performed during such tests by the Certificate Holder. Hydrostatic, pneumatic, or structural integrity tests are not required for core support structures or supports.

NCA-5290 DATA REPORTS AND CONSTRUCTION REPORTS

(a) The appropriate Data Reports prepared by the Certificate Holder shall be reviewed and signed by the Inspector only after they have been certified by a responsible representative of the Certificate Holder and after he has satisfied himself that all requirements of this Section have been met and that each Data Report certified is a correct record. For Division 2 items, certification by the Designer is also required prior to verification by the Inspector.

(b) The Inspector shall review and separately verify that the information contained in the Construction Report for Division 2 construction is valid and corresponds to the requirements of Division 2 and that the Designer's review and certification of the Construction Report have taken account of all requirements of this Section.

(c) The N-3 Data Report Form (NCA-3220) shall be reviewed and signed by the Inspector only after

(1) it has been certified by the Owner

(2) the Inspector has reviewed the N-3 Form and verified that the Data Reports referenced on the N-3 Form are on file and that such Data Reports verify Code compliance of all components, parts, appurtenances, supports, and core support structures incorporated into the nuclear power system or that portion of the system covered by the N-3 Form

(3) the Inspector has verified that required documents for overpressure protection exist and are properly filed for that portion of the system covered by the N-3 Form

NCA-5300 RESPONSIBILITIES OF THE AUTHORIZED INSPECTION AGENCY (21)

The responsibilities of the Authorized Inspection Agency shall include but not necessarily be limited to those given in (a) through (k) below.

(a) Maintain a staff of Authorized Nuclear Inspectors (NCA-5123) and Authorized Nuclear Inspector Supervisors (NCA-5122).

(b) Make agreements with Certificate Holders and Owners for inspection service (NCA-5121 and NCA-8130). Notify the Society whenever such agreements are terminated (NCA-5121).

(c) Provide for participation in the Society's review of the applicant's Quality Assurance Program (NCA-5125).

(d) Provide for the review and acceptance of any proposed modifications to Quality Assurance Manuals before they are put into effect (NCA-5125).

(e) Review and accept the Certificate Holder's method of securing the nameplate to components to which, because of size or other considerations, the nameplate cannot be directly attached [NCA-8220(b)].

(f) Review and accept the Certificate Holder's alternative method of identification, including the unique method of marking of components to which, because of size or other considerations, nameplates cannot be directly attached [NCA-8220(b)].

(g) Review and accept the Certificate Holder's alternative method of marking of parts, appurtenances, supports, and piping subassemblies (NCA-8230).

(h) Review and accept the Certificate Holder's provisions of positive identification and traceability of items from which nameplates are removed (NCA-8240).

(i) Determine by agreement with the Certificate Holder the sequence for stamping and the completion of the Code Data Report [NCA-8310(c)].

(j) Review and accept the Certificate Holder's procedure for providing traceability of parts for piping subassemblies that are furnished without stamping (NCA-8330).

(k) And all other duties specifically required in ASME QAI-1, Qualification for Authorized Inspection, as applicable.

ARTICLE NCA-7000
REFERENCE STANDARDS

NCA-7100 GENERAL REQUIREMENTS

The dimensional standards for standard products that are referenced in this Section are listed in Table NCA-7100-1. Table NCA-7100-1 lists editions of dimensional standards for standard products referenced by Section III, and earlier editions considered by Section III to be acceptable for Section III construction.

Compliance with these standards does not replace or eliminate the design requirements for stress analysis when required by this Section.

The standards and specifications referenced in the text of this Section are listed in Tables NCA-7100-2 (Division 1) and NCA-7100-3 (Division 2). For Table NCA-7100-3, when editions other than the referenced editions are used, the differences shall be reviewed to ensure that all technical requirements of the Code are satisfied. Where reference is made to requirements of the ASME Boiler and Pressure Vessel Code, they are not included in these Tables.