U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REGULATORY RESEARCH

DRAFT REGULATORY GUIDE

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# DRAFT REGULATORY GUIDE DG-1049
(Proposed Revision 31 to Regulatory Guide 1.85)

# MATERIALS CODE CASE ACCEPTABILITY ASME SECTION III, DIVISION 1

## A. INTRODUCTION

Section 50.55a, "Codes and Standards," of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," requires, in part, that components of the reactor coolant pressure boundary be designed, fabricated, erected, and tested in accordance with the requirements for Class 1 components of Section III, "Nuclear Power Plant Components,"[1] of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code or equivalent quality standards. Footnote 6 to § 50.55a states that the use of specific Code Cases may be authorized by the Commission upon request pursuant to § 50.55a(a)(3), which requires that proposed alternatives to the described requirements or portions thereof provide an acceptable level of quality and safety.

General Design Criterion 1, "Quality Standards and Records," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 requires, in part, that structures, systems, and components important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. Where generally recognized codes and standards are used, Criterion 1 requires that they be identified and evaluated to determine their applicability, adequacy, and

[1]Copies may be obtained from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, New York 10017.

sufficiency and be supplemented or modified as necessary to ensure a quality product in keeping with the required safety function.

Criterion 30, "Quality of Reactor Coolant Pressure Boundary," of the same appendix requires, in part, that components that are part of the reactor coolant pressure boundary be designed, fabricated, erected, and tested to the highest quality standards practical.

Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50 requires, in part, that measures be established for the control of special processing of materials and that proper testing be performed.

This regulatory guide lists those Section III ASME Code Cases oriented to materials and testing that are generally acceptable to the NRC staff for implementation in the licensing of light-water-cooled nuclear power plants. This guide is being revised to update the NRC staff positions on new Code Cases, revised Code Cases, and annulled Code Cases subsequent to Revision 30 of the guide.

Regulatory guides are issued to describe and make available to the public such information as methods acceptable to the NRC staff for implementing specific parts of the Commission's regulations, techniques used by the staff in evaluating specific problems or postulated accidents, and guidance to applicants. Regulatory guides are not substitutes for regulations, and compliance with regulatory guides is not required. Regulatory guides are issued in draft form for public comment to involve the public in the early stages of developing the regulatory positions. Draft regulatory guides have not received complete staff review and do not represent official NRC staff positions.

This regulatory guide contains no information collection activities and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

## B. DISCUSSION

The Boiler and Pressure Vessel Committee of the ASME publishes a document entitled "Code Cases."[1] Generally, the individual Code Cases that make up this document explain the intent of Code rules or provide for alternative requirements under special circumstances.

Most Code Cases are eventually superseded by revision to the Code and then are annulled by action of the ASME. In such cases, the intent of the annulled

Code Case becomes part of the revised Code, and therefore continued use of the Code Case intent is sanctioned under the rules of the Code. In other cases, the Code Case is annulled because it is no longer acceptable or there is no further requirement for it. A Code Case that was approved for a particular situation and not for a generic application should be used only for construction of the approved situation because annulment of such a Code Case could result in construction that would not meet Code requirements.

The Code Cases listed in this guide are limited to those cases applicable to Section III that are oriented toward materials and testing.

All published Code Cases in the area of materials and testing that are applicable to Section III of the Code and were in effect on May 12, 1994,** were reviewed for inclusion in this guide. In addition to the listing of acceptable Code Cases, this revision of the guide includes listings of (1) Code Cases that were identified as acceptable in a prior version of this regulatory guide and that were annulled after the original issuance of this guide (June 1974) and (2) Code Cases that were identified as acceptable in a prior version of this regulatory guide and that were superseded by revised Code Cases after the original issuance of this guide (June 1974). Code Cases that are not listed herein are either not endorsed or will require supplementary provisions on an individual basis to attain endorsement status.

The endorsement of a Code Case by this guide constitutes acceptance of its technical position for applications not precluded by regulatory or other requirements or by the recommendations in this or other regulatory guides. Contingent endorsement is indicated in Regulatory Position C.1.a for specific cases. However, it is the responsibility of the user to make certain that no regulatory requirements are violated and that there are no conflicts with other recommended limitations resulting from Code Case usage.

Acceptance or endorsement by the NRC staff applies only to those Code Cases or Code Case revisions with the date of ASME approval as shown in the regulatory position of this guide. Earlier or later revisions of a Code Case are not endorsed by this guide. New Code Cases will require evaluation by the NRC staff to determine if they qualify for inclusion in the approved list. Because of the continuing change in the status of Code Cases, it is planned that this guide will require periodic updating to accommodate new Code Cases and any revisions of existing Code Cases.

**Lines indicate substantive changes from Revision 30.

## C. REGULATORY POSITION

### 1. ACCEPTABLE CODE CASES

The Section III ASME Code Cases[2] listed below (by number, date of ASME approval, and title) are acceptable to the NRC staff for application in the construction of components for light-water-cooled nuclear power plants. Their use is acceptable within the limitations stated in the "Inquiry" and "Reply" sections of each individual Code Case, within the limitations of such NRC or other requirements as may exist, and within the additional limitations recommended by the NRC staff given with the individual Code Cases in the listing. The categorization of Code Cases used in this guide is intended to facilitate the Code Case listing and is not intended to indicate a limitation on its usage.

**a. Materials-Oriented Code Cases (Code Case Number, Date of ASME Approval,[3] and title):**

**(1) Code Cases Involving Plate:**

| | | |
|---|---|---|
| N-7-1 | 12-13-82<br>02-20-86<br>02-20-89<br>02-05-92 | High Yield Strength Steel, Section III, Division 1, Class 1 Vessels |

Code Case N-7-1 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: The information required to be developed by Note 1 in the Code Case should be provided in each referencing Safety Analysis Report.

**(2) Code Cases Involving Pipe and Tubes:**

| | | |
|---|---|---|
| N-20-3 | 11-30-88<br>12-16-91 | SB-163 Nickel-Chromium-Iron Tubing (Alloy 600 and 690) and Nickel-Iron-Chromium Alloy 800 at a Specified Minimum Yield Strength of 40.0 Ksi and Cold Worked Alloy 800 at a yield strength of 47.0 Ksi, Section III, Division 1, Class 1 |

[2]A numerical listing of the Code Cases appears in the appendix.

[3]When more than one date is given, the earlier date is that on which the Code Case was approved by the ASME, and the later date(s) is that on which the Code Case was reaffirmed by the ASME.

| | | |
|---|---|---|
| N-188-1 | 05-15-78<br>07-13-81<br>07-13-84<br>07-13-87<br>08-14-90<br>08-14-93 | Use of Welded Ni-Fe-Cr-Mo-Cu (Alloy 825) and Ni-Cr-Mo-Cb (Alloy 625) Tubing, Section III, Division 1, Class 2 and 3 |
| N-294 | 08-25-80<br>05-25-83<br>07-30-86<br>07-30-89<br>07-27-92 | SB-148 Alloy 952 and 954, and SB-62 Alloy 836 Fittings, Section III, Division 1, Class 2 |
| N-404 | 04-05-84<br>04-05-87<br>12-11-89<br>12-11-92 | Annealed Alloy UNS N06625 Over UNS N06600 Bimetallic Tubing, Section III, Division 1, Class 1 |

Code Case N-404 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The outside layer of the bimetallic tubing should be limited to a minimum of 5 percent and to a maximum of 40 percent of the wall thickness. The tolerance on the outside layer of material should not exceed -0.000 to +0.007 inches of the specified design wall thickness.

| | | |
|---|---|---|
| N-418-1 | 07-30-86<br>07-30-89<br>07-27-92 | Use of Seamless Ni-Fe-Cr-Mo-Cu Low Carbon (UNS N08028 and UNS N08904) Tubing, Section III, Division 1, Classes 2 and 3 |
| N-439 | 02-23-87<br>12-11-89<br>12-11-92 | Use of 20Cr-18Ni-6Mo (Alloy UNS S31254) Forgings, Plate, Seamless and Welded Pipe, and Welded Tube, Class 2 and 3 Construction, Section III, Division 1 |
| N-441-1 | 11-25-92 | Use of 20Cr-18Ni-6Mo (Alloy UNS S31254) Fittings, Class 2 and 3 Construction, Section III, Division 1 |
| N-466-1 | 04-30-90<br>02-12-93 | Modified 9Cr-1Mo Material, Section III, Division 1, Classes 1, 2, and 3 |
| N-502 | 02-05-92 | SA-268, Grade 26-3-3 (UNS S44660) Section III, Division 1, Classes 2 and 3 |

(3) Codes Cases Involving Bars and Forgings:

| | | |
|---|---|---|
| 1337-11<br>(N-4-11) | 05-15-78<br>07-13-81<br>07-13-84<br>07-13-87<br>08-14-90<br>08-14-93 | Special Type 403 Modified Forgings or Bars, Section III, Division 1, Class 1 and CS |
| N-370-2 | 12-05-85<br>12-05-88<br>12-16-91 | Modified SA-705 Grade XM-13 Forgings, Section III, Division 1 |

| | | |
|---|---|---|
| N-469 | 03-08-89<br>04-30-92 | Martensitic Stainless Steel for Class 1, 2, and 3 Components, Section III, Division 1 |

(4) Code Cases Involving General Usage:

| | | |
|---|---|---|
| N-60-5 | 02-15-94 | Material for Core Support Structures, Section III, Division 1 |

Code Case N-60-5 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition. The maximum yield strength of strain-hardened austenitic stainless steel should not exceed 90,000 psi in view of the susceptibility of this material to environmental cracking.

| | | |
|---|---|---|
| N-71-16 | 02-12-93 | Additional Materials for Subsection NF, Classes 1, 2, 3 and MC Component Supports Fabricated by Welding, Section III, Division 1 |

Code Case N-71-16 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service. In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time. Paragraph 16.2.2 is not acceptable as written and should be replaced with the following: When not exempted by 16.2.1, above, the postweld heat treatment shall be performed in accordance with NF-4622 except that for ASTM A-710 Grade A material, it shall be at least 1000°F (540°C) and shall not exceed 1150°F (620°C) for Class 1 and Class 2 material and 1175°F (640°C) for Class 3 material. The new holding time at temperature for weld thickness (nominal) shall be 30 minutes for 1/2 inch or less, 1 hour per inch for thickness over 1/2 inch to 5 inches, and 5 hours plus 15 minutes for each additional inch over 5 inches. The fracture toughness requirements as listed in this Code Case apply only to piping supports and not to Class 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports shall be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis.

| | | |
|---|---|---|
| 1759-1<br>(N-131-1) | 05-15-78<br>07-13-81<br>12-11-81<br>12-05-84<br>12-05-87<br>12-03-90<br>12-03-93 | Material for Internal Pressure Retaining Items for Pressure Relief Valves, Section III, Division 1, Class 1, 2, and 3 |

Code Case 1759-1 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants using this Case should also use Code Case 1711 for the design of pressure relief valves.

| | | |
|---|---|---|
| N-205 | 05-15-78<br>07-13-81<br>07-13-84<br>07-13-87<br>08-14-90<br>08-14-93 | Use of Ductile Iron SA-395 for Section III, Division 1, Class 3 Construction |
| N-246-2 | 05-25-83<br>07-30-86<br>07-30-89<br>07-27-92 | SB-169, Alloy C61400, Section III, Division 1, Class 3 |
| N-249-13 | 05-11-94 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

Code Case N-249-13 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis. The following is to be added to paragraph (e) of the Case: For these cases, it should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

| | | |
|---|---|---|
| N-265-1 | 05-19-85<br>05-19-88<br>03-14-91<br>03-14-94 | Modified SA-487 Castings, Section III, Division 1, Class 1 |
| N-438-3 | 07-27-92 | UNS N08367 Material, Section III, Division 1, Class 2 and 3 Construction |
| N-440 | 02-23-87<br>12-11-89<br>12-11-92 | Use of 20Cr-18Ni-6Mo (Alloy UNS J93254) Castings, Class 2 and 3 Construction, Section III, Division 1 |

| | | |
|---|---|---|
| N-443-1 | 03-08-89<br>04-30-92 | High Yield Strength Cr-Mo Steel, Class 1 Components, Section III, Division 1 |
| N-474-2 | 12-09-93 | Design Stress Intensities and Yield Strength Values for UNS N06690 With a Minimum Specified Yield Strength of 35 ksi, Class 1 Components, Section III, Division 1 |
| N-492-1 | 05-11-94 | Grade 9 Titanium Alloy, Section III, Division 1, Class 1, 2, and 3 |
| N-497-1 | 12-09-93 | Use of Fe-Ni-Cr-Mo-N (CN-3MN) Cast Materials, Section III, Division 1, Class 2 and 3 Construction |

**b. Testing-oriented Code Cases:**

**(1) Code Case involving plates:**

**(2) Code Case involving bars and forgings:**

| | | |
|---|---|---|
| N-329 | 12-11-81<br>12-05-84<br>12-05-87<br>12-03-90<br>12-03-93 | Examination of Bar Material, Section III, Division 1, Class 1 |

**(3) Code Case involving pipe and tubes:**

**(4) Code Case involving general usage:**

| | | |
|---|---|---|
| N-351 | 07-16-82<br>05-19-85<br>05-19-88<br>03-14-91<br>03-14-94 | Use of Subsize Charpy V-Notch Specimens, Section III, Division 1 |
| N-484-1 | 12-16-91 | Real Time Radioscopic Examination of Welds, Class 1 Components, Section III, Division 1 |
| N-510 | 12-09-93 | Borated Stainless Steel for Class CS Core Support Structures and Class 1 Components, Section III, Division 1 |
| N-525 | 12-09-93 | Design Stress Intensities and Yield Strength Values for UNS N06690 with a Minimum Specified Yield Strength of 30 Ksi, Class 1 Components, Section III, Division 1 |

## 2. ANNULLED CODE CASES

Code Cases that were endorsed by the NRC in a prior version of this guide and were later annulled by action of the ASME should be considered as deleted from the list of acceptable Code Cases as of the date of the ASME action that

approved the annulment. Such Code Cases that were annulled on or after July 1, 1974, are listed in the following by number, effective dates,[4] and title.[5]

| | | |
|---|---|---|
| 1141-1 | 08-31-61<br>07-23-76 | Foreign Produced Steel |
| 1332-7<br>(N-1-7) | 01-08-79<br>07-01-82 | Requirements for Steel Forgings, Section III, Division 1 |
| 1334-3<br>(N-2) | 04-29-74<br>01-08-79<br>01-01-81 | Requirements for Corrosion-Resisting Steel Bars and Shapes, Section III |
| 1335-10<br>(N-3-10) | 08-28-78<br>08-28-81<br>09-16-84 | Requirements for Bolting Materials, Section III |
| N-5-1 | 12-13-82<br>12-13-85 | Nickel Chromium Age Hardenable Alloys (Alloy X750), Section III, Division 1, Classes 1, 2, 3, MC, and CS |
| 1345-2<br>(N-6) | 03-09-72<br>03-01-79 | Requirements for Nickel-Molybdenum-Chromium-Iron Alloys, Section III |
| 1395-4<br>(N-9-4) | 01-08-79<br>07-01-82 | SA-508, Class 2 Forgings with Modified Manganese Content, Section III |
| 1407-3<br>(N-10) | 07-01-74<br>01-08-79<br>01-21-82<br>09-17-84<br>09-17-87 | Time of Examination for Classes 1, 2, and 3, Section III Vessels |
| 1412-4 | 11-03-75<br>01-01-77 | Modified High Yield Strength Steel for Section III, Division 1, Class 1 Vessels |

Code Case 1412-4 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The information required to be developed by Note 1 in the Code Case should be provided in each referencing Safety Analysis Report. The material given in the Inquiry section of the Code Case should be SA-508, Class 4b, instead of SA-508, Class 4.

[4]Earlier date—date Code Case was approved by ASME; later date—date Code Case was annulled. Where more than two dates appear, the last date is the date that the Code Case was annulled. The middle date (or dates) was the date of reaffirmation of the Code Case.

[5]Code Cases 1401-1, 1493-1, and 1599, which were listed in the original issue of this guide, were annulled by ASME action prior to July 1, 1974.

| | | |
|---|---|---|
| 1414-5<br>(N-11-5) | 08-29-77<br>08-29-80 | High Yield Strength Cr-Mo Steel for Section III, Division 1, Class 1 Vessels |

Code Case 1414-5 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The information required to be developed by Note 1 in the Code Case should be provided in each referencing Safety Analysis Report.

| | | |
|---|---|---|
| 1423-2 | 03-09-72<br>07-01-77 | Wrought Type 304 and 316 with Nitrogen Added, Sections I, III, VIII, Division 1 and 2 |

Code Case 1423-2 was acceptable subject to compliance with the recommendations contained in Regulatory Guides 1.31, "Control of Ferrite Content in Stainless Steel Weld Metal," and 1.44, "Control of the Use of Sensitized Stainless Steel."

| | | |
|---|---|---|
| 1434-1 | 03-09-72<br>01-01-78 | Postweld Heat Treatment of SA-487 Class 8N Steel Castings, Section III |
| 1456-2<br>(N-15) | 06-25-73<br>03-01-79 | Substitution of Ultrasonic Examination for Progressive Penetrant or Magnetic Particle Examinations of Partial Penetration and Oblique Nozzle Attachment Welds, Section III |
| 1474-1<br>(N-17) | 10-29-71<br>01-08-79<br>01-21-82<br>01-21-85<br>01-21-88<br>01-21-91 | Integrally Finned Tubes for Section III |
| 1475-1[6] | 03-02-74<br>07-01-75 | Ferritic-Austenitic Stainless Steel Seamless Tubes for Section III, Class 2 and 3 Construction |
| 1498-1<br>(N-22) | 11-06-72<br>01-08-79<br>07-01-82 | SA-508-Class 2 and 3, Minimum Tempering Temperature, Section III |
| 1515 | 03-09-72<br>07-01-77 | Ultrasonic Examination of Ring Forgings for Shell Sections, Section III, Class 1 Vessels |
| 1521-1 | 04-29-74<br>01-01-78 | Use of H-Grades of SA-240, SA-479, SA-336, and SA- 358, Section III |

Code Case 1521-1 was acceptable subject to compliance with the recommendations contained in Regulatory Guides 1.31, "Control of Ferrite Content in Stainless Steel Weld Metal," and 1.44, "Control of the Use of Sensitized Stainless Steel."

[6]Code Case was annulled on date as indicated, but the annulment was first so indicated in Revision 12 of this guide.

| | | |
|---|---|---|
| 1527<br>(N-26) | 06-26-72[7]<br>01-08-79<br>01-21-82<br>01-21-85<br>01-21-88<br>01-21-91 | Integrally Finned Tubes, Section III |
| 1528-3 | 11-03-75<br>01-01-78 | High Strength Steel SA-508, Class 2 and SA-541, Class 2 Forgings, Section III, Class 1 Components |

Code Case 1528-3 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The information required to be developed by Note 1 in the Code Case should be provided in each referencing Safety Analysis Report.

| | | |
|---|---|---|
| 1529[6] | 06-29-72<br>07-01-73 | Materials for Instrument Line Fittings, Section III |
| 1531 | 08-14-72<br>03-21-77 | Electrical Penetrations, Special Alloys for Electrical Penetration Seals, Section III |
| 1532 | 08-14-72<br>01-01-78 | Section III, Class 3 Components Made of 8 Percent and 9 Percent Nickel Steel |
| 1542-1<br>(N-33) | 04-29-74<br>01-08-79<br>01-21-82<br>01-21-85 | Type 403 Forgings or Bars for Bolting Material, Section III |
| 1557-3<br>(N-37-3) | 01-08-79<br>07-01-82 | Steel Products Refined by Secondary Remelting, Section III and VIII, Division 1 and 2 |
| 1567 | 03-03-73<br>01-01-78 | Testing Lots of Carbon and Low Alloy Steel Covered Electrodes, Section III |
| 1568 | 03-03-73<br>01-01-78 | Testing Lots of Flux Cored and Fabricated Carbon and Low Alloy Steel Welding Electrodes, Section III |
| 1571<br>(N-41) | 03-03-73<br>01-08-79<br>01-21-82<br>01-21-85 | Additional Material for SA-234 Carbon Steel Fittings, Section III |
| 1578<br>(N-43) | 06-25-73<br>01-08-79<br>07-01-82 | SB-167 Nickel-Chromium-Iron (Alloy 600) Pipe or Tube, Section III |
| 1583 | 06-25-73<br>03-21-77 | Use of 80-40 Carbon Steel Castings, Section III |
| 1587[6] | 08-13-73<br>12-31-75 | SA-508 Class 3 Forgings with 0.4/1.0 Ni for Section III and VIII, Division 2 Construction |

[7]Corrected Date.

| | | |
|---|---|---|
| 1590 | 08-13-73<br>03-21-77 | Chemical Analysis Variations, Section III Construction |
| 1602-1 | 04-29-74<br>12-31-74 | Use of SB-42 Alloy 122, SB-111 Alloys 122, 715 and 706, SB-171 Alloys 715 and 706 and SB-466 Alloys 706 and 715, Section III, Class 2 and 3 Components |
| 1603 | 12-17-73<br>07-01-74 | Toughness Tests When Cross-Section Limits Orientation and Location of Specimens |
| 1605 | 11-05-73<br>11-20-78<br>03-17-80 | Cr-Ni-Mo-V Bolting Material for Section III, Class 1 Components |
| 1608-1 | 12-17-73<br>03-21-77 | Use of ASME SB-265, SB-337, SB-338, SB-348, and SB-381, Grades 1, 2, 3, and 7 Unalloyed Titanium and ASTM B-363 Titanium Welding Fittings, Section III, Class 2 and 3 Components |
| 1612<br>(N-56) | 12-17-73<br>07-01-78 | Use of Type 308 Stainless Steel Rod and Bar for Section III, Class 1, 2, 3, and CS Construction |
| 1613 | 12-17-73<br>01-01-78 | Use of SA-372 Class IV Forgings, Section III Construction |
| 1615 | 12-17-73<br>01-01-78 | Use of A587-73, Section III, Class 3 Construction |
| 1616[6] | 12-17-73<br>07-01-75 | Ultrasonic Examination of Seamless Austenitic Steel Pipe, Section III, Class 1 Construction |
| 1622[6] | 03-02-74<br>01-01-76 | PWHT of Repair Welds in Carbon Steel Castings, Section III, Class 1, 2, and 3 |
| 1625 | 03-02-74<br>12-31-74 | Repair of Section III Class 2 and 3 Tanks |
| 1626-1<br>(N-65-1) | 01-08-79<br>01-21-82<br>01-21-85 | Normalized and Tempered 1-1/4 Cr Low Alloy Steel Forgings, Section I and Section III |
| 1634-2<br>(N-68) | 08-13-76<br>07-01-78 | Use of SB-359 for Section III, Division 1, Class 3 Construction |
| 1637[8] | 04-29-74<br>01-01-75 | Effective Date for Compliance with NA-3700 of Section III |
| 1645[6] | 08-12-74<br>01-01-76 | Use of DeLong Diagram for Calculating the Delta Ferrite Content of Welds in Section III, Class 1, 2, and CS Construction |

[8]Code Case 1637 was accepted only on a case-by-case basis.

| | | |
|---|---|---|
| 1648 | 08-12-74<br>07-01-76 | SA-537 Plates for Section III, Class 1, 2, 3, and MC Components |
| 1649[6] | 08-12-74<br>01-01-76 | Modified SA 453-GR 660 for Class 1, 2, 3, and CS Construction |
| 1650 | 08-12-74<br>12-31-74 | Use of SA-414 Grade C for Class 2 and 3 Components, Section III, Division 1 |
| 1664 | 11-04-74<br>03-21-77 | Use of Cr-Ni-Fe-Mo-Cu-Cb Stabilized Alloy Cb-3 for Section III Class 2 and 3 Construction |
| 1666 | 11-04-74<br>07-01-75 | Use of SB-12, Alloy 122 for Class 2 and 3 Construction |
| 1682-1 | 08-11-75<br>12-31-75 | Alternate Rules for Material Manufacturers and Suppliers, Section III, Subarticle NA-3700 |
| 1684[6] | 03-03-75<br>01-01-76 | A637 Grade 718 for Bolting Class 1 and 2 Construction |
| 1690[6] | 04-28-75<br>01-01-77 | Stock Materials for Section III Construction, Section III, Division 1 |
| 1691 | 04-28-75<br>01-01-78 | Ultrasonic Examination in Lieu of Radiography of Repair Welds for Vessels, Section III, Class 1 |
| 1698<br>(N-92) | 06-30-75[7]<br>11-20-78<br>07-13-81 | Waiver of Ultrasonic Transfer Method, Section III, V, and VIII, Division 1 |

Code Case 1698 was acceptable subject to the following conditions in addition to those specified in the Code Case: The material from which the basic calibration block is fabricated should be of the same product form, alloy, and heat treatment as the material being examined. Alloys of equivalent P-number grouping may be used for the fabrication of calibration blocks if adjustments to signal height can be made to compensate for sound beam attenuation difference between the calibration block and the material under examination by following the transfer method procedure of T-535.1(d), Article 5, Section V, ASME B&PV Code, 1977 edition.

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| 1713 | 08-11-75<br>12-31-75 | Small Material Items, Section III, Division 1, Class 1, 2, 3, CS and MC |
| 1714-2<br>(N-102-2) | 08-28-78<br>07-13-81<br>06-30-84 | Postweld Heat Treatment of P-1 Material, Section III, Class MC |
| 1722-1<br>(N-107-1) | 01-08-79<br>01-08-82 | Vacuum, Carbon Deoxidized SA-508 Forgings, Section III, Division 1 |
| 1724<br>(N-108) | 11-03-75<br>07-01-78 | Deviation from the Specified Silicon Ranges in ASME Material Specifications, Section III, Division 1, and VIII, Division 1 and 2 |

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| 1728 | 11-03-75<br>07-01-77 | Steel Structural Shapes and Small Material Products for Component Supports, Section III, Division 1 Construction |
| 1740 | 12-22-75<br>07-01-76 | Weld Metal Test, Section III, Class 1, 2, 3, MC and CS |
| 1741-1 | 01-14-77<br>01-01-78 | Interim Rules for the Required Number of Impact Tests for Rolled Shapes, Section III, Division 1, Subsection NF, Component Supports |
| 1742 | 03-01-76<br>07-01-76 | Use of SB-75 Annealed Copper Alloy 122, Section III, Division 1, Class 2 Construction |
| 1743 | 03-01-76<br>07-01-76 | Use of SB-98 Cu-SiB Rod CDA651 Section III, Division 1, Class 2 Components |
| 1746<br>(N-123) | 03-01-76<br>03-01-79 | Leak Testing of Seal Welds, Section III, Division 1, Class 1, 2, and 3 Construction |
| 1747<br>(N-124) | 03-01-76<br>01-08-79<br>07-13-81<br>07-13-84<br>07-13-87 | Requirements for Martensitic Stainless Steel Forgings with 13% Chromium and 4% Nickel, Section III, Division 1 |
| 1748<br>(N-125) | 03-01-76<br>07-01-78 | Low Carbon Austenitic Stainless Steel Pipe Welded With Filler Metal, Section III, Division 1, Construction |
| 1754<br>(N-126) | 01-14-77<br>01-07-80<br>12-13-82<br>02-20-86<br>12-07-87<br>07-01-88 | Hard Surfacing by the Spray-Fuse Method, Section III, Class 1, 2, and 3 Construction |
| 1755-1<br>(N-127) | 01-14-77<br>01-07-80<br>02-14-83<br>02-20-86<br>02-20-89<br>02-20-92 | Alternative Rules for Examination of Welds in Piping, Section III, Class 1 and 2 Construction |
| 1760 | 04-26-76<br>01-01-78 | Maximum Dimensions for Isolated Pores in Welds-- Class 1 Components, Section III, Division 1 |
| 1766 | 04-26-76<br>07-01-77 | Testing Requirements for Welding Materials, Class 1, 2, 3, MC and CS Construction, Section III, Division 1 |
| 1767 | 04-26-76<br>01-01-77 | Examination of Tubular Products Without Filler Metal- Class 1 Construction, Section III, Division 1 |
| 1770<br>(N-139) | 08-13-76<br>01-01-79 | Testing of Electroslag Wire and Flux for Class 1, 2, 3, MC, and CS Construction, Section III, Division 1 |

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| 1772<br>(N-140) | 08-13-76<br>08-30-79<br>07-16-82<br>12-31-85 | Use of SA-453 Bolts in Service Below 800°F Without Stress Rupture Tests, Section III, Division 1 |
| 1773 | 08-13-76<br>07-01-77 | Use of Other Product Forms of Materials for Valves, Section III, Division 1 |
| 1777 | 08-13-76<br>07-01-77 | Use of SA-106, Grade C in Class MC Construction, Section III, Division 1 |
| 1781<br>(N-147) | 09-10-76<br>07-01-78 | Use of Modified SA-487 Grade CA6NM, Section III, Division 1, Class 1, 2, 3, MC or CS |
| 1782<br>(N-148) | 09-10-76<br>08-30-79<br>07-16-82<br>06-30-83 | Use of Copper-Nickel Alloy 962 for Castings, Section III, Division 1, Class 3 Construction |
| 1787 | 09-10-76<br>01-01-78 | Depth of Weld Repairs for Forgings, Section III, Division 1, Class 1, 2, 3, MC and CS Construction |
| 1793<br>(N-156) | 01-14-77<br>01-07-80<br>02-14-83<br>02-14-86 | Structural Steel Rolled Shapes, Section III, Division 1, Class 2, 3, and MC |
| 1794<br>(N-157) | 01-14-77<br>01-07-80<br>01-07-83 | Use of Seamless Al-Br, Alloy CDA 614 Pipe, Section III, Division 1, Class 3 |
| 1795<br>(N-158) | 01-14-77<br>07-01-78 | Examination of Weld Repairs in Forgings, Section III, Division 1, Class 1, 2, 3, MC and CS |
| 1798 | 01-14-77<br>01-01-78 | Use of ASTM A352-75, Grades LCA and LCC, Section III, Division 1, Class 1, 2, and 3 |
| 1810 | 03-03-77<br>03-03-80 | Testing Lots of Carbon Steel Solid, Bare Welding Electrode or Wire, Section III, Division 1, Class 1, 2, 3, MC, and CS |
| 1819[9] | 03-23-77<br>01-01-78 | Use of Type XM-19 for Construction, Section III, Division 1, Class 1, 2, 3 |

[9]This Code Case was reaffirmed as Case 1819-1. See Regulatory Position 2, Case 1819-1, for the effective dates.

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| 1819-1[10,11]<br>(N-176-1) | 03-23-77<br>03-23-80<br>08-25-80<br>08-25-83 | Use of Type XM-19 for Construction, Section III, Division 1, Class 1, 2, and 3 |
| 1820<br>(N-177) | 03-23-77<br>03-17-80<br>02-14-83<br>01-01-84 | Alternative Ultrasonic Examination Technique, Section III, Division 1 |
| N-178 | 05-25-77<br>01-01-80 | Use of ASTM B271, CDA 954, Alloy 9C for Class 3 Construction, Section III, Division 1 |
| N-180 | 07-11-77<br>07-01-78 | Examination of Springs for Class 1 Component Standard Supports, Section III, Division 1 |
| N-181 | 07-11-77<br>07-11-80 | Steel Castings Refined by the Argon Decarburization Process, Section III, Division 1, Construction |
| N-183 | 07-11-77<br>01-01-80 | Use of Modified SA-182 Grade F22 for Section III, Division 1, Class 1, 2 and 3 Construction |
| N-190 | 08-29-77<br>07-01-78 | Use of SA-455 for Class 3 Components, Section III, Division 1 |
| N-204 | 03-20-78<br>01-01-81 | Use of Modified SA-508, Class 3, and SA-541, Class 3 for Section III, Division 1, Class 1, 2, and 3 Construction |
| N-206 | 03-20-78<br>03-16-81<br>06-30-83 | Use of ASTM B151-75 Copper-Nickel Alloy 706 Rod and Bar for Section III, Division 1, Class 3 Construction |
| N-207-1 | 03-19-79<br>01-21-82<br>01-21-85 | Use of Modified SA-479 Type XM-19 for Section III, Division 1, Class 1, 2, 3, or CS Construction |
| N-223 | 11-30-78<br>11-20-81 | Requirements for Stainless Steel Precipitation Hardening, Section III, Division 1, Class MC |
| N-224-1 | 05-11-81<br>04-05-84<br>04-05-87<br>04-05-90 | Use of ASTM A500 Grade B and ASTM A501 Structural Tubing for Welded Attachments for Section III, Class 2, 3, and MC |
| N-225 | 11-20-78<br>01-01-81 | Certification and Identification of Material for Component Supports, Section III, Division 1 |

[10]Case 1819 (N-176) was annulled December 31, 1977. However, it was later reaffirmed to continue providing rules pertaining to external pressure charts.

[11]Code Case N-176-1: The 3-23-80 is an annulment date. This Case was allowed to expire on 3-23-80 because of an administrative error. It was reinstated on 8-25-80 with no technical changes. It is, therefore, considered to be in effect during that lapse in time. The 8-25-83 is the mandatory annulment date. The Case did not appear in Revisions 18-21 of this guide because of the ASME administrative error.

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| N-227 | 07-09-79<br>07-09-82 | Examination of Repair Welds, Section III, Class 2 and 3 Tanks |
| N-242-1 | 04-10-80<br>05-06-83<br>06-30-84 | Materials Certification, Section III, Division 1, Classes 1, 2, 3, MC, and CS Construction |

Code Case N-242-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants should identify in their Safety Analysis Reports the components and supports for which the Code Case is being applied and should specify the respective paragraphs of the Code Case.

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| N-245 | 07-09-79<br>07-16-82<br>07-17-85 | Use of ASTM B61-76 and B62-76 Copper Alloy Castings for Section III, Division 1, Class 3 Construction |
| N-246 | 07-09-79<br>09-07-82 | Use of SB-169, Alloy CA 614, Section III, Division 1, Class 3 |
| N-248 | 08-30-79<br>07-01-80 | Alternative Reference Radiographs, Section III, Division 1, Classes 1, 2, 3, MC, and CS Construction |
| N-259 | 01-07-80<br>02-14-83<br>01-01-84 | Ni-Cu-Al Bolting Material SB 164 Modified, Section III, Division 1, Class 3 |
| N-265[12] | 01-07-80<br>09-01-83<br>12-31-84<br>05-19-85 | Modified SA-487 Castings, Section III, Division 1, Class 1 |
| N-267 | 01-07-80<br>07-01-81 | Double-Wall Radiography, Section III, Division 1, Class 1 and 2 |
| N-274 | 03-17-80<br>09-07-82<br>06-30-86 | Alternative Rules for Examination of Weld Repairs for Section III, Division 1 Construction |

Code Case N-274 was acceptable subject to the following condition[13] in addition to those conditions specified in the Code Case. Paragraph 6 should be expanded as follows: The ultrasonic examination procedures shall be proven by actual demonstration, to the satisfaction of the Authorized

[12]Code Case N-265 was allowed to expire on 1-7-83 because of an administrative error. It was reinstated on 9-1-83 with no technical changes. The Case is, therefore, considered in effect during that period of time. Again, Code Case N-265 was allowed to expire on 12-31-84 (mandatory annulment date). It was reinstated as N-265-1 on 5-19-85. Because of the circumstances and because there were no changes in the Code Case, the NRC considers that this Case was in effect during the period of 12-31-84 through 5-19-85.

[13]The reason for the conditional acceptance of paragraph 6 is to make certain that there is a qualified ultrasonic testing procedure capable of detecting small flaws and differentiating the small flaws from geometric reflectors. This paragraph does not in any way alter the acceptance criteria as specified in paragraph 3.

Nuclear Inspector, that the procedures are capable of detecting unacceptable cracks according to Section XI requirements.

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| N-277 | 03-17-80<br>09-17-80 | Use of Type XM-19 Austenitic Stainless Steel for Section III, Division 1, Class MC Construction |
| N-295 | 01-15-81<br>12-11-81<br>06-30-82 | NCA-1140, Materials, Section III, Division 1 |
| N-296 | 11-17-80<br>12-01-83 | Welding Material, Section III, Division 1 Construction |
| N-298 | 11-17-80<br>12-01-83 | Examination of Component Supports, Section III, Division 1, Class 1, 2, 3, and MC |
| N-299-1 | 07-18-85<br>02-23-87 | Use of Nickel-Chromium-Molybdenum-Columbium Alloy 625 Forgings, Section III, Division 1, Class 2 and Class 3 Components |
| N-310-1 | 08-14-81<br>07-01-82 | Certification of Bolting Materials, Section III, Division 1, Class 1, 2, 3, MC and CS |

Code Case N-310-1 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: Each applicant who applies the Code Case should indicate in the referencing Safety Analysis Report (1) in what way the bolting does not meet NCA-3800 (or NA-3700), (2) where the bolting will be used in the plant, and (3) how it will be shown that the bolting material properties required by the Equipment Support Design Specification are present in the actual bolting material.

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|---|---|---|
| N-317 | 07-13-81<br>07-01-82 | ASTM A276 Bar Section III, Division 1 |
| N-321-1 | 12-05-85<br>12-05-88 | Use of Modified SA-249, Grade TP 304, Section III, Division 1, Class 1 |
| N-337-1 | 07-18-85<br>07-18-88<br>03-14-91<br>03-14-94 | Use of ASTM B525-70 Grade 11, Type II, Sintered Austentic Stainless Steel for Class 2, 3, and MC Component Standard Supports, Section III, Division 1 |
| N-342 | 04-02-82<br>04-02-85 | Use of SA-249 and SA-312 Type 317 Stainless Steel, Section III, Division 1, Classes 1, 2, and 3 |
| N-348 | 09-09-82<br>09-07-85[14] | Use of SA-574 Socket Head Cap Screws, Section III, Division 1 |

Code Case N-348 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants should

[14]Code Case N-348 was annulled on 9-7-85. It was reinstated as N-348-1 on 2-20-86. Because of the circumstances and because there were no changes in the Code Case, the NRC considers that the Code Case was in effect during the period 9-7-85 through 2-20-86.

justify in their Safety Analysis Reports why use of these socket head cap screws will not result in early failure from stress corrosion cracking.

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|---|---|---|
| N-348-1 | 09-07-85[14]<br>02-20-86<br>02-20-89 | Use of SA-574 Socket Head Cap Screws, Section III, Division 1 |

Code Case N-348-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants should justify in their Safety Analysis Reports why use of these socket head cap screws will not result in early failure from stress corrosion cracking.

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|---|---|---|
| N-348-2 | 08-14-90<br>08-14-93 | Use of SA-574 Socket Head Cap Screws, Section III, Division 1 |

Code Case N-348-2 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants should justify in their Safety Analysis Reports why use of these socket head cap screws will not result in early failure from stress corrosion cracking.

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| N-352-1 | 07-18-85<br>06-30-86 | Use of SA-638 Grade 660 Forgings and Bars Below 700°F Without Stress Rupture Tests, Section III, Division 1 |
| N-353 | 07-16-82<br>05-19-85<br>09-05-88 | Marking of SA-354 Grade BD Bolting, Section III, Division 1 |
| N-367 | 02-14-83<br>02-19-86<br>02-19-89 | SA-372 Type V, Grade 1, Class B, Section III, Division 1 |
| N-371-1 | 07-18-85<br>07-18-88 | 12CR-1W-1Mo-1/4V Martensitic Stainless Steel Valve Internals, Section III, Division 1 |
| N-372 | 02-14-83<br>12-31-83 | SB-163 Ni-Fe-Cr-Mo-Cu Alloy 825 (UNS N08825) Tubing, Section III, Division 1 |
| N-378 | 10-28-83<br>10-28-86[15] | Examination of Piping Support Material, Section III, Division 1, Class 1 |
| N-379-1 | 07-18-85<br>07-18-88<br>03-14-91<br>07-18-91 | Bimetallic Tubing Section III, Division 1, Class 1 |
| N-388 | 07-25-83<br>07-30-86<br>02-23-87 | Component Support Bolting, Section III, Division 1, Classes 2, 3, and MC |
| N-398 | 02-20-84<br>02-20-87 | Reporting of Charpy-V Notch Test Results, Section III, Division 1 |

[15]The annulment date of 12-31-84 that was listed in Revisions 24 and 25 was in error. The annulment date should be 10-28-86.

Code Case N-398 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The Code Case is not acceptable to steam generator or reactor coolant pump supports. Applicants wishing to use this Code Case should indicate in the Safety Analysis Report the component supports to which the case is applied for review on a case-by-case basis.

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|---|---|---|
| N-459 | 05-04-88<br>03-14-91<br>03-14-94 | SA-508 Basic Oxygen-Ladle Furnace Process for Code Construction, Section III, Division 1 |
| N-470 | 03-08-89<br>03-08-92 | Class MC Material Requirements [NE-2121(c)], Section III, Division 1 |
| N-475 | 12-11-89<br>12-11-92 | Materials in Inventory, Section III, Division 1 |
| N-482 | 03-05-90<br>03-05-93 | Direct Quenched Stainless Bar, ASTM A 479-88b, Section III, Division 1 |
| N-501 | 07-27-92<br>12-31-93 | Alternative Rules to NCA-3800, 1990 Addenda Section III, Division 1 |

## 3. REVISED CODE CASES

Code Cases that were endorsed by the NRC in a prior version of this guide and were superseded by revised Code Cases on or after July 1, 1974, should be considered as not endorsed as of the date of the ASME action that approved the revised version of the Code Cases. These Code Cases that are no longer endorsed are listed in the following by number, effective dates,[16] and title.[17]

| | | |
|---|---|---|
| 1332-6 | 03-09-72<br>01-08-79 | Requirements for Steel Forgings, Section III and VIII, Division 2 |
| 1335-9 | 04-29-74<br>08-28-78 | Requirements for Bolting Materials |
| 1337-9 | 04-29-74<br>04-28-75 | Special Type 403 Modified Forgings or Bars, Section III |
| 1337-10 | 04-28-75<br>05-15-78 | Special Type 403 Modified Forgings or Bars, Section III |

[16]Earlier date--date Code Case was approved by ASME; later date--date revision of Code Case was approved by ASME.

[17]Code Cases 1334-2, 1337-7, 1344-3, 1484, 1521, and 1542, which were listed in the original issue of this guide, were revised by the ASME prior to July 1, 1974.

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|---|---|---|
| 1344-5<br>(N-5) | 04-29-74<br>01-08-79<br>01-21-82<br>12-13-82 | Nickel-Chromium, Age-Hardenable Alloys (Alloy X750), Section III |
| 1358-5<br>(N-7) | 11-03-75<br>01-08-79<br>01-21-82<br>12-13-82 | High Yield Strength Steel, Section III, Division 1, Class 1 Vessels |

Code Case 1358-5 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The information required to be developed by Note 1 in the Code Case should be provided in each referencing Safety Analysis Report.

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|---|---|---|
| 1395-3 | 11-06-72<br>01-08-79 | SA-508, Class 2 Forgings with Modified Manganese Content, Section III or Section VIII, Division 2 |
| 1407-2 | 06-26-72<br>07-01-74 | Time of Examination for Class 1, 2, and 3, Section III Vessels |
| 1414-3 | 11-03-75<br>03-01-76 | High Yield Strength Cr-Mo Steel for Section III, Division 1, Class 1 Vessels |

Code Case 1414-3 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The information required to be developed by Note 1 in the Code Case should be provided in each referencing Safety Analysis Report.

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|---|---|---|
| 1414-4 | 03-01-76<br>08-09-77 | High Yield Strength Cr-Mo Steel for Section III, Division 1, Class 1 Vessels |

Code Case 1414-4 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The information required to be developed by Note 1 in the Code Case should be provided in each referencing Safety Analysis Report.

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|---|---|---|
| 1484-1 | 04-29-74<br>11-04-74 | SB-163 Nickel-Chromium-Iron Tubing (Alloy 600) at a Specified Minimum Yield Strength of 40.0 Ksi, Section III, Class 1 |
| 1484-2 | 11-04-74<br>08-13-76 | SB-163 Nickel-Chromium-Iron Tubing (Alloy 600 and 690) at a Specified Minimum Yield Strength of 40.0 Ksi, Section III, Class 1 |
| 1484-3<br>(N-20) | 08-13-76<br>08-30-79<br>07-16-82<br>05-19-85<br>09-05-85 | SB-163 Nickel-Chromium-Iron Tubing (Alloy 600 and 690) and Nickel-Iron-Chromium Alloy 800 at a Specified Minimum Yield Strength of 40.0 Ksi, Section III, Division 1, Class 1 |
| N-20-1 | 09-05-85<br>12-07-87 | SB-163 Nickel-Chromium-Iron Tubing (Alloy 600 and 690) and Nickel-Iron-Chromium Alloy 800 at a Specified Minimum Yield Strength of 40.0 Ksi, Section III, Division 1, Class 1 |

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|---|---|---|
| N-20-2 | 12-07-87<br>11-30-88 | SB-163 Nickel-Chromium-Iron Tubing (Alloy 600 and 690) and Nickel-Iron-Chromium Alloy 800 at a Specified Minimum Yield Strength of 40.0 Ksi, and Cold Worked Alloy 800 at a Yield Strength of 47.0 Ksi, Section III, Division 1, Class 1 |
| 1492[18] | 10-29-71<br>03-03-75 | Post Weld Heat Treatment, Section I, III and VIII, Division 1 and 2 |
| 1557-2 | 12-17-73<br>01-08-79 | Steel Products Refined by Secondary Remelting |
| 1618 | 03-02-74<br>03-03-75 | Material for Core Support Structures—Section III, Subsection NG |

Code Case 1618 was acceptable subject to the following conditions in addition to those specified in the Code Case: a. Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition. b. Use of alloy ASTM A-564 Grade 631 is not acceptable on a generic basis.

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| 1618-1 | 03-03-75<br>03-01-76 | Material for Core Support Structures, Section III, Subsection NG |

Code Case 1618-1 was acceptable subject to the following condition in addition to those specified in the Code Case: Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition.

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|---|---|---|
| 1618-2<br>(N-60) | 03-01-76<br>01-08-79<br>01-21-82<br>05-25-83 | Material for Core Support Structures—Section III, Division 1, Subsection NG |

Code Case 1618-2 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition.

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|---|---|---|
| N-60-1 | 05-25-83<br>09-17-84 | Material for Core Support Structures, Section III, Division 1 |

Code Case N-60-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition.

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| N-60-2 | 09-17-84<br>09-05-85 | Material for Core Support Structures, Section III, Division 1 |

[18]Code Case 1492 is no longer listed by ASME as a Section III Code Case and is therefore deleted from the acceptable listing.

Code Case N-60-2 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition. For SA-479 material, the maximum yield strength should not exceed 90,000 psi in view of the susceptibility of this material to environmental cracking.

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| N-60-3 | 09-05-85<br>07-27-88<br>05-13-91 | Material for Core Support Structures, Section III, Division 1 |

Code Case N-60-3 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition. For SA-479 material, the maximum yield strength should not exceed 90,000 psi in view of the susceptibility of this material to environmental cracking.

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|---|---|---|
| N-60-4 | 05-13-91<br>02-15-94 | Material for Core Support Structures, Section III, Division 1 |

Code Case N-60-4 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Welding of age-hardenable alloy SA-453 Grade 660 and SA-637 Grade 688 should be performed when the material is in the solution-treated condition. The maximum yield strength of strain-hardened austenitic stainless steel should not exceed 90,000 psi in view of the susceptibility of this material to environmental cracking.

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|---|---|---|
| 1626 | 03-02-74<br>01-08-79 | Normalized and Tempered 1-1/4 Cr Low Alloy Steel Forgings, Section 1, Section III, and Section VIII, Division 1 and 2 |
| 1634 | 07-01-74<br>08-12-74 | Use of SB-359 for Section III, Class 3 Construction |
| 1634-1 | 08-12-74<br>08-13-76 | Use of SB-359 for Section III, Class 3 Construction |
| 1644 | 08-12-74<br>04-28-75 | Additional Materials for Component Supports—Section III, Subsection NF, Class 1, 2, 3, and MC Construction |

Code Case 1644 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength of the component support material should not exceed 170 Ksi.

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| 1644-1 | 04-28-75<br>06-30-75 | Additional Materials for Component Support—Section III, Subsection NF, Class 1, 2, 3, and MC Construction |

Code Case 1644-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength of the component support material should not exceed 170 Ksi.

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|---|---|---|
| 1644-2 | 06-30-75<br>11-03-75 | Additional Materials for Component Supports—Section III, Subsection NF, Class 1, 2, 3 and MC Construction |

Code Case 1644-2 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength of the component support material should not exceed 170 Ksi.

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|---|---|---|
| 1644-3 | 11-03-75<br>03-01-76 | Additional Materials for Component Supports—Section III, Subsection NF, Class 1, 2, 3 and MC Construction |

Code Case 1644-3 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength of the component support material should not exceed 170 Ksi.

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| 1644-4 | 03-01-76<br>08-13-76 | Additional Materials for Component Supports and Alternate Design Requirements for Bolted Joints, Section III, Division 1, Subsection NF, Class 1, 2, 3 and MC Construction |

Code Case 1644-4 was acceptable subject to the following conditions in addition to those specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| 1644-5 | 08-13-76<br>03-03-77 | Additional Materials for Component Supports and Alternate Design Requirements for Bolted Joints, Section III, Division 1, Subsection NF, Class 1, 2, 3 and MC Construction |

Code Case 1644-5 was acceptable subject to the following conditions in addition to those specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material

has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| 1644-6 | 03-03-77<br>11-21-77 | Additional Materials for Component Supports and Alternate Design Requirements for Bolted Joints, Section III, Division 1, Subsection NF, Class 1, 2, 3 and MC Construction |

Code Case 1644-6 was acceptable subject to the following conditions in addition to those specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| 1644-7<br>(N-71-7) | 11-21-77<br>05-15-78 | Additional Materials for Component Supports, Section III, Division 1, Subsection NF, Class 1, 2, 3 and MC Component Supports |

Code Case 1644-7 was acceptable subject to the following conditions in addition to those specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| 1644-8<br>(N-71-8) | 05-15-78<br>01-07-80 | Additional Materials for Component Supports, Section III, Division 1, Subsection NF, Class 1, 2, 3 and MC Component Supports |

Code Case 1644-8 was acceptable subject to the following conditions in addition to those specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the

material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| 1644-9 (N-71-9) | 01-07-80 05-11-81 | Additional Materials for Component Supports Fabricated by Welding, Section III, Division 1, Subsection NF, Class 1, 2, 3, and MC Component Supports |

Code Case 1644-9 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time.

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| N-71-10 | 05-11-81 06-17-82 | Additional Materials for Component Supports Fabricated by Welding, Section III, Division 1, Subsection NF, Class 1, 2, 3, and MC Component Supports |

Code Case N-71-10 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service. In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time.

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| N-71-11 | 06-17-82 02-14-83 | Additional Materials for Component Supports Fabricated by Welding, Section III, Division 1, Subsection NF, Class 1, 2, 3, and MC Component Supports |

Code Case N-71-11 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a

corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service. In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time.

N-71-12 02-14-83 02-20-84 Additional Materials for Component Supports Fabricated by Welding, Section III, Division 1, Class 1, 2, 3, and MC

Code Case N-71-12 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service. In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time. The provisions of paragraph 4.3 are not acceptable on a generic basis. Paragraph 16.2.2 is not acceptable as written and should be replaced with the following: When not exempted by 16.2.1, above, the postweld heat treatment shall be performed in accordance with NF-4622 except that for ASTM A-710 Grade A material it shall be at least 1000°F (540°C) and shall not exceed 1150°F (620°C) for Class 1 and Class 2 material and 1175°F (640°C) for Class 3 material. The new holding time at temperature for weld thickness (nominal) shall be 30 minutes for 1/2 inch or less, 1 hour per inch for thickness over 1/2 inch to 5 inches, and 5 hours plus 15 minutes for each additional inch over 5 inches.

N-71-13 02-20-84 12-05-85 Additional Materials for Subsection NF, Classes 1, 2, 3 and MC Component Supports Fabricated by Welding, Section III, Division 1

Code Case N-71-13 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not

subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service. In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time. Paragraph 16.2.2 is not acceptable as written and should be replaced with the following: When not exempted by 16.2.1 above, the postweld heat treatment shall be performed in accordance with NF-4622 except that for ASTM A-710 Grade A material, it shall be at least 1000°F (540°C) and shall not exceed 1150°F (620°C) for Class 1 and Class 2 material and 1175°F (640°C) for Class 3 material. The new holding time at temperature for weld thickness (nominal) shall be 30 minutes for 1/2 inch or less, 1 hour per inch for thickness over 1/2 inch to 5 inches, and 5 hours plus 15 minutes for each additional inch over 5 inches. The fracture toughness requirements as listed in this Code Case apply only to piping supports and not to Class 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports shall be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis.

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| N-71-14 | 12-05-85<br>12-16-86 | Additional Materials for Subsection NF, Classes 1, 2, 3 and MC Component Supports Fabricated by Welding, Section III, Division 1 |

Code Case N-71-14 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that(a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service. In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time. Paragraph 16.2.2 is not acceptable as written and should be replaced with the following: When not exempted by 16.2.1, above, the postweld heat treatment shall be performed in accordance with NF-4622 except that for ASTM A-710 Grade A material, it shall be at least 1000°F (540°C) and shall not exceed 1150°F (620°C) for Class 1 and Class 2 material and 1175°F (640°C) for Class 3 material. The new holding time at temperature for weld thickness (nominal) shall be 30 minutes for 1/2 inch or less, 1 hour per inch for thickness over 1/2 inch to 5 inches, and 5 hours plus 15 minutes for each additional inch over 5 inches. The fracture toughness requirements as listed in this Code Case apply only to piping supports and

not to Class 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports shall be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis.

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| N-71-15 | 12-16-86<br>12-16-89<br>02-12-93 | Additional Materials for Subsection NF, Classes 1, 2 3 and MC Component Supports Fabricated by Welding, Section III, Division 1 |

Code Case N-71-15 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The maximum measured ultimate tensile strength (UTS) of the component support material should not exceed 170 Ksi in view of the susceptibility of high-strength materials to brittleness and stress corrosion cracking. Certain applications may exist where a UTS value of up to 190 Ksi could be considered acceptable for a material and, under this condition, the Design Specification should specify impact testing for the material. For these cases, it should be demonstrated by the applicant that (1) the impact test results for the material meet code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service. In the last sentence of paragraph 5.3, reference should be made to paragraph 4.5.2.2, "Alternate Atmosphere Exposure Time Periods Established by Test," of the AWS D.1.1 Code for evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for longer periods of time. Paragraph 16.2.2 is not acceptable as written and should be replaced with the following: When not exempted by 16.2.1, above, the postweld heat treatment shall be performed in accordance with NF-4622 except that for ASTM A-710 Grade A material, it shall be at least 1000°F (540°C) and shall not exceed 1150°F (620°C) for Class 1 and Class 2 material and 1175°F (640°C) for Class 3 material. The new holding time at temperature for weld thickness (nominal) shall be 30 minutes for 1/2 inch or less, 1 hour per inch for thickness over 1/2 inch to 5 inches, and 5 hours plus 15 minutes for each additional inch over 5 inches. The fracture toughness requirements as listed in this Code Case apply only to piping supports and not to Class 1, 2, and 3 component supports. The fracture toughness of Classes 1,2, and 3 component supports shall be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis.

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| 1682 | 01-29-75<br>08-11-75 | Alternate Rules for Material Manufacturers and Suppliers, Section III, Subarticle NA-3700 |
| 1714 | 08-11-75<br>07-11-77[7] | Postweld Heat Treatment of P-1 Material, Section III, Class MC |
| 1714-1<br>(N-102-1) | 07-11-77[7]<br>08-28-78 | Postweld Heat Treatment of P-1 Material, Section III, Class MC |
| 1722 | 11-03-75<br>01-08-79 | Vacuum, Carbon Deoxidized SA-508 Forgings, Section III, Division 1, and VIII, Division 1 and 2 |

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| 1741 | 12-22-75<br>01-14-77 | Interim Rules for the Required Number of Impact Tests for Rolled Shapes, Section III, Division 1, Subsection NF, Component Supports |
| 1755 | 04-26-76<br>01-14-77 | Alternative Rules for Examination of Welds in Piping, Class 1 and 2 Construction, Section III, Division 1 |
| 1759 | 08-13-76<br>05-15-78 | Material for Internal Pressure Retaining Items for Pressure Relief Valves, Section III, Division 1, Class 1, 2, and 3 |

Code Case 1759 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants using this Case should also use Code Case 1711 for the design of pressure relief valves.

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| N-188 | 08-29-77<br>05-15-78 | Use of Welded Ni-Fe-Cr-Mo-Cu (Alloy 825) and Ni-Cr-Mo-Cb (Alloy 625) Tubing, Section III, Division 1, Class 3 |
| N-207 | 03-20-78<br>03-19-79 | Use of Modified SA-479 Type XM-19 for Section III, Division 1, Class 1, 2, or 3 Construction |
| N-224 | 11-20-78<br>05-11-81 | Use of ASTM A500 Grade B and ASTM A501 Structural Tubing for Welded Attachments for Section III, Class 2 and 3 Construction |
| N-242 | 04-12-79<br>04-10-80 | Materials Certification, Section III, Division 1, Classes 1, 2, 3, MC, and CS Construction |

Code Case N-242 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants should identify the components and supports requiring the use of paragraphs 1.0 through 4.0 of the Code Case in their Safety Analysis Reports.

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| N-246-1 | 09-07-82<br>05-25-83 | SB-169, Alloy C 61400, Section III, Division 1, Class 3 |
| N-249 | 01-07-80<br>05-11-81 | Additional Materials for Component Supports Fabricated Without Welding, Section III, Division 1, Subsection NF, Class 1, 2, 3, and MC Component Supports |

Code Case N-249 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Footnote 2 of the Code Case should apply to all materials listed in Tables 1, 2, 3, 4, and 5 of the Code Case and should be so indicated on line 5 of the "Reply."

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| N-249-1 | 05-11-81<br>06-17-82 | Additional Materials for Component Supports Fabricated Without Welding, Section III, Division 1, Subsection NF, Class 1, 2, 3, and MC Component Supports |

Code Case N-249-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Paragraph 7 of the "Reply" should reference the requirements of NF-2600 instead of NF-2800. This is a typographical error in that NF-2800 does not exist.

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| N-249-2 | 06-17-82<br>02-14-83 | Additional Materials for Subsection NF Class 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |
| N-249-3 | 02-14-83<br>02-20-84 | Additional Materials for Subsection NF Class 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |
| N-249-4 | 02-20-84<br>09-17-84 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

The fracture toughness requirements as listed in Code Case N-249-4 apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis.

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| N-249-5 | 09-17-84<br>04-08-85 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

The fracture toughness requirements as listed in Code Case N-249-5 apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis.

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| N-249-6 | 04-08-85<br>09-05-85 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

Code Case N-249-6 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis. The following is to be added to paragraph (5) of the Case: For these cases, it should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| N-249-7 | 09-05-85<br>12-05-85 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

Code Case N-249-7 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph

5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis. The following is to be added to paragraph (5) of the Case: For these cases, it should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| N-249-8 | 12-05-85<br>12-16-86 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

Code Case N-249-8 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis. The following is to be added to paragraph (5) of the Case: For these cases, it should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| N-249-9 | 12-16-86<br>05-06-89 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

Code Case N-249-9 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis. The following is to be added to paragraph (5) of the Case: For these cases, it should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

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| N-249-10 | 05-06-89<br>05-13-91 | Additional Material for Subsection NF, Classes 1, 2, 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1 |

Code Case N-249-10 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case

basis. The following is to be added to paragraph (5) of the Case: For these cases, it should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

N-249-11 05-13-91 Additional Material for Subsection NF, Classes 1, 2, 3
02-12-93 and MC Component Supports fabricated Without Welding, Section III, Division 1

Code Case N-249-11 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis. The following is to be added to paragraph (e) of the Case: For these cases, it should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

N-249-12 02-12-93 Additional Material for Subsection NF, Classes 1, 2,
05-11-94 3, and MC Component Supports Fabricated Without Welding, Section III, Division 1

Code Case N-249-12 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: the fracture toughness requirements apply only to piping supports and not to Classes 1, 2, and 3 component supports. The fracture toughness of Classes 1, 2, and 3 component supports should be characterized in accordance with paragraph 5.3.4 of the USNRC Standard Review Plan (NUREG-0800) or on a case-by-case basis. The following is to be added to paragraph (e) of the Case: For these cases, is should be demonstrated by the owner that (1) the impact test results for the material meet Code requirements and (2) the material is not subject to stress corrosion cracking by virtue of the fact that (a) a corrosive environment is not present and (b) the component that contains the material has essentially no residual stresses or assembly stresses, and it does not experience frequent sustained loads in service.

N-265[19] 01-07-80 Modified SA-487 Castings, Section III, Division 1,
09-01-83 Class 1
12-31-84
05-19-85

[19]Code Case N-265 was allowed to expire on 1-7-83 because of an administrative error. It was reinstated on 9-1-83 with no technical changes. The Case is, therefore, considered in effect during that period of time. Again, Code Case N-265 was allowed to expire on 12-31-84 (mandatory annulment date). It was reinstated as N-265-1 on 5-19-85. Because of the circumstances and because there were no changes in the Code Case, the NRC considers that this Case was in effect during the period of 12-31-84 through 5-19-85.

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| N-299 | 11-17-80<br>11-28-83<br>07-18-85 | Use of Nickel-Chromium-Molybdenum-Columbium Alloy 625 Forgings, Section III, Division 1, Class 2 and Class 3 Components |
| N-321 | 07-13-81<br>07-13-84<br>12-05-85 | Use of Modified SA-249, Type 304 for Section III, Division 1, Class 1 Construction |
| N-337 | 04-02-82<br>05-19-85<br>07-18-85 | Use of ASTM B525-70 Grade II, Type II, Sintered Austenitic Stainless Steel for Class 2, 3, and MC Component Standard Supports, Section III, Division 1 |
| N-352 | 07-16-82<br>05-19-85<br>07-18-85 | Use of SA-638 Grade 660 Forgings and Bars Below 700°F Without Stress Rupture Tests, Section III, Division 1 |
| N-370 | 02-14-83<br>07-18-85 | Modified SA-705 Grade XM-13 Forgings, Section III, Division 1 |
| N-370-1 | 07-18-85<br>12-05-85 | Modified SA-705 Grade XM-13 Forgings, Section III, Division 1 |
| N-371 | 02-14-83<br>07-18-85 | 12 Cr-1W-1Mo-1/4V Martensitic Stainless Steel Valve Internals, Section III, Division 1 |
| N-379 | 04-04-83<br>07-18-85 | Bimetallic Tubing Section III, Division 1, Class 1 |
| N-418 | 12-05-84<br>07-30-86 | Use of Seamless Ni-Fe-Cr-Mo-Cu Low Carbon (UNS N08028 and UNS N08904) Tubing, Section III, Division 1, Classes 2 and 3 |
| N-438 | 02-23-87<br>03-08-89 | Fe-24.5Ni-21Cr-6.5 Mo-0.2N (Alloy UNS N08367) Seamless and Welded Pipe, Tube, Plate, Bar, Fittings, and Forgings, Class 2 and 3 Construction, Section III, Division 1 |
| N-438-1 | 03-08-89<br>03-05-90 | Fe-24.5Ni-21Cr-6.5Mo-0.2N (Alloy UNS N08367) Seamless and Welded Pipe, Tube, Plate, Bar, Fittings, and Forgings, Class 2 and 3 Construction, Section III, Division 1 |
| N-438-2 | 03-05-90<br>07-27-92 | UNS N08367 Material, Section III, Division 1, Class 2 and 3 Construction |
| N-441 | 02-23-87<br>12-11-89<br>11-25-92 | Use of 20Cr-18Ni-6Mo (Alloy UNS S31254) Fittings, Class 2 and 3 Construction, Section III, Division 1 |
| N-443 | 05-07-87<br>03-08-89 | High Yield Strength Cr-Mo Steel, Class 1 Components, Section III, Division 1 |
| N-466 | 03-08-89<br>04-30-90 | Modified 9Cr-1Mo Material Section III, Division 1, Classes 1, 2, and 3 |

| | | |
|---|---|---|
| N-474 | 05-06-89<br>03-05-90 | Design Stress Intensities and Yield Strength Values for Alloy 690 With a Minimum Yield Strength of 35 ksi, Class 1 Components, Section III, Division 1 |
| N-474-1 | 03-05-90<br>03-05-93<br>12-09-93 | Design Stress Intensities and Yield Strength Values for UNS N06690 With a Minmum Specified Yield Strength of 35 ksi, Class 1 Components, Section III, Division 1 |
| N-492 | 12-03-90<br>05-11-94 | Grade 9 Titanium Alloy, Section III, Division I, Class 1, 2, and 3 |
| N-497 | 05-13-91<br>12-09-93 | Use of Fe-Ni-Cr-Mo-N (CN-3MN) Cast Materials, Section III, Division 1, Class 2 and 3 Construction |

## 4. UNACCEPTABLE CODE CASES

Code Cases for Class 1 components that are not on the approved list of this guide (paragraph C.1) or other regulatory guides, or for which authorization by the Commission has not been granted, are not acceptable for Class 1 components.

Code Cases for other classes of components that are not on the approved list of this guide (paragraph C.1) or other regulatory guides should be considered not acceptable on a generic basis.

## D. IMPLEMENTATION

The purpose of this section is to provide information to applicants regarding the use of this regulatory guide.

This draft guide has been released to encourage public participation in its development. The final version of this Revision 31, reflecting public comments, will address the ASME Code Cases as follows.

1. Except for those Code Cases that have been annulled by action of the ASME, the NRC staff will find the Code Cases listed in the final version of this regulatory guide under Regulatory Position 1 acceptable for appropriate use. Other Code Cases may be considered for use in accordance with footnote 6 of the Codes and Standards rule, § 50.55a of 10 CFR Part 50.

2. Components ordered to a specific version of a Code Case need not be changed because a subsequent revision of the Code Case is listed as the approved version in this guide.

3. Components ordered to a Code Case that was previously approved for use need not be changed because the Code Case has been subsequently annulled.

4. Code Cases on the approved list may be applied to components that were in process of construction prior to the effective date of the Code Case within the limits specified in the Code Case and applicable regulations or recommended in other regulatory guides.

## APPENDIX
## NUMERICAL LISTING OF CODE CASES

N-4-11 (1337-11)
N-7-1
N-20-3
N-60-5
N-71-16
N-131-1 (1759-1)
N-188-1
N-205
N-246-2
N-249-13
N-265-1
N-294
N-329
N-351
N-370-2
N-404
N-418-1
N-438-3
N-439
N-440
N-441-1
N-443-1
N-466-1
N-469
N-474-2
N-484-1
N-492-1
N-497-1
N-502
N-510
N-525

# VALUE/IMPACT STATEMENT

## 1. PROPOSED ACTION

### 1.1 Description

Regulatory Guide 1.85, "Materials Code Case Acceptability, ASME Section III, Division 1," is being revised to reflect the current NRC acceptance of the Code Cases of the American Society of Mechanical Engineers (ASME). Code Cases are periodically published by ASME to either clarify the intent of existing code rules or to provide, when the need is urgent, rules for materials or construction not covered by existing Code Rules. These Code Cases require approval by the ASME's Main Committee and the Board of Nuclear Codes and Standards prior to their acceptance by the ASME. Use of these nonmandatory Code Cases is subject to general acceptance by the NRC staff, and the accepted Code Cases are then incorporated into Regulatory Guide 1.85. Pursuant to 10 CFR 50.55a, other Code Cases may be used provided specific NRC authorization is obtained on a case-by-cases basis.

### 1.2 Need

This Revision 31 of Regulatory Guide 1.85 is needed to present the NRC's current position on the ASME Code Cases that have been added, revised, reinstated, reaffirmed, or annulled since Revision 30 of the guide was issued.

### 1.3 Value/Impact

#### 1.3.1 NRC

The guide presents the NRC position on all acceptable and previously acceptable ASME Code Cases. From this document, the NRC reviewing staff can ascertain the NRC position on all Code Cases. Otherwise, the staff would be required to review all applications for use of a Code Case on an individual basis. Using this regulatory guide for review greatly reduces the cost and time to the staff.

### 1.3.2 Industry

The guide informs the industry of the NRC position on all acceptable and previously acceptable ASME Code Cases. This document states which Code Cases are acceptable to the NRC and which Code Cases must be accepted on a case-by-case basis. This Regulatory Guide greatly reduces time and effort for the industry.

### 1.3.3 Public

The public has access to a published document that states the NRC position on all acceptable and previously acceptable ASME Code Cases.

## 2. STATUTORY CONSIDERATION

Authority for the proposed action is derived from the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended and implemented through the Commission's regulations cited in the introduction to the guide.

## 3. SUMMARY AND CONCLUSION

The proposed regulatory guide should be issued for public comment.

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