



REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

REGULATORY GUIDE 1.84

DESIGN AND FABRICATION 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,

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

USNRC REGULATORY GUIDES

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 data needed by the NRC staff in its review of applications for permits and licenses. Regulatory Guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

This guide was issued after consideration of comments received from the public. Comments and suggestions for improvements in these guides are encouraged at all times, and guides will be revised, as appropriate, to accommodate comments and to reflect new information or experience.

Written comments may be submitted to the Rules Review and Directives Branch, DFPS, ADM, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

adequacy, and 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 design and fabrication that are generally acceptable to the NRC staff for implementation in the licensing of light-water-cooled nuclear power plants.

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 ASME Boiler and Pressure Vessel Committee 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.

The guides are issued in the following ten broad divisions:

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| 1. Power Reactors | 6. Products |
| 2. Research and Test Reactors | 7. Transportation |
| 3. Fuels and Materials Facilities | 8. Occupational Health |
| 4. Environmental and Siting | 9. Antitrust and Financial Review |
| 5. Materials and Plant Protection | 10. General |

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Issued guides may also be purchased from the National Technical Information Service on a standing order basis. Details on this service may be obtained by writing NTIS, 6285 Port Royal Road, Springfield, VA 22161.

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 design and fabrication.

All published Code Cases in the area of design and fabrication that are applicable to Section III of the Code and were in effect on July 28, 1992, 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.c 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.

C. REGULATORY POSITION

1. ACCEPTABLE CODE CASES

The Section III ASME Code Cases² 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 Case 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. Design-oriented Code Cases (Code Case number, date of ASME approval,³ and title):

(1) Code Cases applicable to piping design:

N-160-1	07-18-85 07-18-88 03-14-91	Finned Tubing for Construction, Section III, Division 1
N-453-2	04-30-92	Nickel-Chromium-Molybdenum-Copper Stainless Steel (UNS N08925 and N08926) Seamless and Welded Pipe for Class 2 and 3 Construction Section III, Division 1
N-454-1	04-30-92	Nickel-Chromium-Molybdenum-Copper Stainless Steel (UNS N08925 and N08926) Wrought Fittings for Class 2 and 3 Construction Section III, Division 1
N-455-1	04-30-92	Nickel-Chromium-Molybdenum-Copper Stainless Steel (UNS N08925 and N08926) Forged Flanges and Fittings for Class 2 and 3 Construction Section III, Division 1

(2) Code Cases applicable to valve design:

N-133-3	07-18-85 07-18-88 03-14-91	Use of SB-148 Alloys 952 and 954 Section III, Division 1, Class 3
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²A numerical listing of the Code Cases appears in the appendix.

³When 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.

*Lines indicate substantive changes from Revision 29.

N-313	05-11-81 11-28-83 11-28-86 11-28-89	Alternate Rules for Half-Coupling Branch Connections, Section III, Division 1
N-394	02-20-84 07-30-86 07-30-89 07-27-92	Restricting Lift to Achieve Reduced Relieving Capacities of Full Lift, Nozzle Type, and Flat Seated Safety and Safety Relief Valves for Compressible Fluid Applications, Section III, Division 1, Classes 2 and 3
N-410	12-05-84 07-27-88 03-14-91	Certified Relieving Capacities of Pressure Relief Valves Having Set Pressure of 3 psig up to but Not Including 15 psig Installed for Overpressure Protection of Compressible Fluid Systems, Section III, Division 1, Classes 2 and 3

(3) Other Code Cases related to design:

N-119-6	09-05-85 07-27-88 03-14-91	Pump Internal Items, Section III, Division 1, Class 1, 2, and 3
N-196-1	01-08-79 01-21-82 01-21-85 01-21-88 12-03-90	Exemption from the Shake-down Requirements When Plastic Analysis is Performed for Section III Division 1, Class 1 and CS Construction
N-243	08-30-79 07-16-82 05-19-85 05-19-88 03-14-91	Boundaries Within Castings Used for Core Support Structures, Section III, Division 1, Class CS
N-247	07-09-79 01-21-82 01-21-85 01-21-88 03-14-91	Certified Design Report Summary for Component Standard Supports, Section III, Division 1, Class 1, 2, 3 and MC
N-309-1	12-05-85 07-27-88 03-14-91	Identification of Materials for Component Supports, Section III, Division 1
N-411-1	02-20-86 02-20-89 04-30-92	Alternative Damping Values for Response Spectra Analysis of Classes 1, 2, and 3 Piping, Section III, Division 1

Code Case N-411-1 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: (1) The Code Case damping should be used completely and consistently, if used at all. (For equipment other than piping, the damping values specified in Regulatory Guide 1.61, "Damping Values for Seismic Design of Nuclear Power Plants," should be used.) (2) The damping values specified may be used only in those analyses in which current seismic spectra

and procedures have been employed. Such use should be limited only to response spectral analyses (similar to that used in the study supporting its acceptance—Reference NUREG/CR-3526). The acceptance of the use with other types of dynamic analyses (e.g., time-history analysis or independent support motion method) is pending further justification. (3) When used for reconciliation work or for support optimization of existing designs, the effects of increased motion on existing clearances and on line mounted equipment should be checked. (4) This Code Case is not appropriate for analyzing the dynamic response of piping systems using supports designed to dissipate energy by yielding (i.e., the design of which is covered by Code Case N-420). (5) This Code Case is not applicable to piping in which stress corrosion cracking has occurred unless a case-specific evaluation is made and is reviewed by the NRC staff.

N-420	02-14-85 02-14-88 03-14-91	Linear Energy Absorbing Supports for Subsection NF, Classes 1, 2, and 3 Construction, Section III, Division 1
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Code Case N-420 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case. Each applicant desiring to use the Code Case should provide the following information prior to implementing the Case: (1) indication of systems in which energy-absorbing supports are to be used, (2) fatigue design, (3) piping system analysis results considering inelastic behavior of supports, and (4) plans for inservice examination of energy absorbers.

N-433	12-16-86 12-16-89	Non-Threaded Fasteners for Section III, Division 1, Class 1, 2, and 3 Component and Piping Supports, Section III, Division 1
N-476	05-06-89	Class 1, 2, 3, and MC Linear Component Supports—Design Criteria for Single Angle Members, Section III, Division 1, Subsection NF

b. Fabrication-oriented Code Cases:

(1) Code Cases related to welding and brazing:

N-154-1	12-05-85 12-05-88 02-05-92	Projection Resistance Welding of Valve Seats, Section III, Division 1, Class 1, 2 and 3 Valves
N-262	01-07-80 09-07-82 09-05-85 07-27-88 03-14-91	Electric Resistance Spot Welding for Structural Use in Component Supports, Section III, Division 1

N-304-4 02-23-87 Use of 20Cr-25Ni-6Mo (Alloy
12-11-89 UNS N08366) Plate, Sheet,
Strip and Welded Pipe, Class
2 and 3 Section III, Division 1

N-315 02-14-83 Repair of Bellows, Section III,
02-19-86 Division 1
02-19-89
02-05-92

Code Case N-315 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: Prior to implementation of the Code Case, the applicant should present a description of the repair and a justification why the bellows should be repaired rather than replaced. Following receipt of approval for the repair, but prior to making the repair, the applicant should present the results of the qualification on the full-scale facsimile bellows, including the design requirements, to ensure that the repair meets the requirements of the design specification.

N-316 12-11-81 Alternate Rules for Fillet
09-17-84 Weld Dimensions for Socket
09-17-87 Welded Fittings, Section III,
08-14-90 Division 1, Class 1, 2, and 3

N-345-1 12-13-82 Attachment of AMS 5382
06-30-88 Alloy 31 Seat Rings by Friction
03-14-91 Welding, Section III,
Division 1, Classes 1, 2, and 3

N-391-1 07-24-89 Procedure for Evaluation of
07-27-92 the Design of Hollow Circular
Cross Section Welded Attachments on Class 1 Piping, Section III, Division 1

Code Case N-391-1 is acceptable subject to the following conditions in addition to those specified in the Code Case: The following typographical errors need to be corrected:

1. In equation (3) the + sign should be changed to an = sign.
2. In equation (4) the first + sign should be changed to an = sign.

N-392-1 12-11-89 Procedure for Evaluation of
the Design of Hollow Circular
Cross Section Welded Attachments on Classes 2 and 3 Piping, Section III, Division 1

Code Case N-392-1 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: Applicants should identify in their Safety Analysis Report: (1) the method of lug attachment, (2) the piping system involved, and (3) the location in the system where the Case is to be applied.

N-393 11-28-83 Repair Welding Structural
07-30-86 Steel Rolled Shapes and
07-30-89 Plates for Component Supports, Section III, Division 1
07-27-92

N-395 12-11-89 Laser Welding, Section III,
Division 1

N-452 03-08-89 Specialized Subcontracted
04-30-92 Welding Process (Electron Beam Welding), Section III, Division 1

N-464 03-08-89 Laser Welding of Lap-Joints,
04-30-92 Section III, Division 1, Class 2 and 3 Construction

(2) Other Code Cases related to fabrication:

N-240 03-19-79 Hydrostatic Testing of Open
01-21-82 Ended Piping, Section III,
09-17-84 Division 1
09-17-87
08-14-90

N-241 07-09-79 Hydrostatic Testing of Piping,
01-21-82 Section III, Division 1
09-17-84
09-17-87
12-11-89

N-368 07-06-83 Pressure Testing of Pump
06-30-87 Discharge, Section III, Division 1, Classes 2 and 3
08-14-90

Code Case N-368 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants using this Code Case should provide information to demonstrate that the length of discharge piping is reasonably short.

N-369 02-14-83 Resistance Welding of Bel-
02-19-86 lows, Section III, Division 1
02-19-89
02-05-92

N-430 02-28-86 Alternative Requirements for
02-28-89 Welding Workmanship and
02-05-92 Visual Acceptance Criteria for
Class 1, 2, 3 and MC Linear-Type and Standard Supports, Section III, Division 1

Code Case N-430 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: (1) The applicant should demonstrate that the applicable supports are not subject to cyclic loading in excess of 20,000 cycles and (2) the first sentence of 3.0(f)(1) should be replaced with the following: "For material 3/8 in. and less nominal thickness, undercut depth of 1/32 in. on one side of the member for the full length of the weld, or 1/32 in. on one side for one-half the length of the weld, and 1/16 in. for one-fourth the length of the weld

on the face of a rectangular tube or one-fourth the length of the weld on the same side of the member is acceptable."

c. Code Cases with contingent approval:

N-31-1 07-18-85 Elastomer Diaphragm Valves,
07-18-88 Section III, Class 2 and 3
03-14-91

Code Case N-31-1 is 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 that the service life of the elastomer diaphragm should not exceed the manufacturer's recommended service life. This recommended service life should not exceed 1/3 of the minimum cycle life as established by the requirements of paragraph 3 of the Code Case. In addition, the service life of the elastomer diaphragm should not exceed 5 years, and the combined service and storage life of the elastomer diaphragm should not exceed 10 years.

N-62-6 12-11-89 Internal and External Valve
Items, Section III, Division 1,
Class 1, 2 and 3

Code Case N-62-6 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: The Code requires that Class 1 and Class 2 valve manufacturers meet the provisions of NCA 4000, "Quality Assurance," and, in addition, Class 3 valve manufacturers should also meet the provisions of NCA 4000.

1720-2 11-20-78 Weld End Preparation for
(N-106-2) 08-28-81 Section III, Division 1 Con-
09-17-84 struction
09-17-87
08-14-90

Code Case 1720-2 (N-106-2) is acceptable subject to the following condition in addition to those conditions specified in the Code Case: The acceptance of weld end preparations other than those shown in Figures 1, 2, and 3 of the Code Case should be evaluated on a case-by-case basis.

1792-2 01-08-79 Fiberglass Reinforced Ther-
(N-155-2) 01-21-82 mosetting Resin Pipe, Section
01-21-85 III, Division 1
01-21-88
03-14-91

Code Case 1792-2 (N-155-2) is acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant should comply with the additional requirements that are specified in Regulatory Guide 1.72,

"Spray Pond Piping Made from Fiberglass-Reinforced Thermosetting Resin."

N-192-2 09-16-81 Use of Braided Flexible Con-
09-17-84 nectors, Section III, Division
09-17-87 1, Class 2 and 3
08-14-90

Code Case N-192-2 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The applicant should indicate system application, design and operating pressure, and pressure-temperature rating of the flexible hose. Data to demonstrate compliance of the flexible hose with NC/ND-3649, particularly NC/ND-3649.4(e), are required to be furnished with the application.

N-284 08-25-80 Metal Containment Shell
05-25-83 Buckling Design Methods,
07-30-86 Section III, Division 1, Class
07-30-89 MC

Code Case N-284 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: Prior to implementation of the Code Case, the applicant must demonstrate to the satisfaction of the NRC staff (via Safety Analysis Report) that any axisymmetric techniques that are proposed will be applicable to a vessel having large asymmetric openings and that the overall margin used to prevent shell buckling is acceptable.

N-292 01-05-81 Depositing Weld Metal Prior
11-28-83 to Preparing Ends for Weld-
07-30-86 ing, Section III, Division 1,
07-30-89 Class 1, 2, and 3 Construction

Code Case N-292 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case: Class 3 piping that is longitudinally welded and that has a weld efficiency factor of 1.0 as selected from Table ND-3613.4-1 should receive a 100 percent volumetric examination (RT or UT) of the deposited weld metal in accordance with the requirements of ND-5000.

N-318-4 12-11-89 Procedure for Evaluation of
the Design of Rectangular
Cross Section Attachments on
Class 2 or 3 Piping, Section
III, Division 1

Code Case N-318-4 is acceptable subject to the following conditions in addition to those conditions specified in the Code Case. Applicants should identify in their Safety Analysis Report: (1) the method of lug attachment, (2) the piping system involved, and (3) the location in the system where the Case is to be applied.

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, which were annulled on or after July 1, 1974, are listed below by number, effective dates,⁴ and title.⁵

1361-2 03-09-72 Socket Welds, Section III
03-01-79

Code Case 1361-2 was acceptable when used in connection with Section III, paragraph NB-3356, Fillet Welds.

1461-1⁶ 03-09-72 Electron Beam Welding, Sec-
02-16-77 tion 1, III, and VIII, Division
1 and 2

1470-2⁷ 12-18-72 External Pressure Charts for
11-04-74 High-Strength Carbon Steels
and for Low-Alloy Steels,
Section VIII, Division 1 and
2, and Section III

1471-1 03-09-72 Vacuum Electron Beam
01-01-78 Welding of Tube Sheet Joints,
Section III

1477-1 03-09-72 Use of 1970 Addenda of
01-01-78 ANSI B31.7, Section III

1494-1 03-03-73 Weld Procedure Qualification
01-01-78 Test, Section III

1506 12-13-71 Stress Intensification Factors,
01-01-78 Section III, Class 2 and 3
Piping

1516-2 08-11-75 Welding of Seats or Minor In-
(N-24) 07-01-78 ternal Permanent Attach-
ments in Valves for Section
III Applications

⁴Earlier 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.

⁵Code Cases 1355-3, 1534, and 1554, which were listed in the original issue of this guide, were annulled by ASME action prior to July 1, 1974.

⁶Code Case 1461-1 is no longer listed as a Section III Code Case and is therefore deleted from the acceptable listing.

⁷The annulment of Code Case 1470-2 was effective upon ASME approval of Code Case 1630. However, because of an oversight, the annulment was not noted until publication of Supplement No. 13 to the 1974 Code Cases.

1516-2 11-20-78⁸ Welding of Seats or Minor In-
(N-24) 01-01-80 ternal Permanent Attach-
ments in Valves for Section
III Applications

1533⁹ 06-14-72 Pressure Temperature Ratings
07-01-75 of SA-351 Grades CF8A,
CF3, and CF3M, Section III

1535-2 04-30-73 Hydrostatic Testing of Section
03-21-77 III, Class 1 Valves

1536 08-14-72 Closing Seam for Electrical
07-01-77 Penetrations for Section III,
Class 2, 3, and MC

1539-1 11-21-77 Metal Bellows and Metal
(N-30-1) 01-01-81 Diaphragm Stem Sealed
Valves, Section III, Division
1, Classes 1, 2, and 3

1541-3 05-15-78 Hydrostatic Testing of Em-
(N-32-3) 07-01-79 bedded Class 2 and Class 3
Piping for Section III, Divi-
sion 1 Construction

N-32-4 03-16-81 Hydrostatic Testing of Em-
03-16-84 bedded Class 2 and 3 Piping
for Section III, Division 1
Construction

Code Case N-32-4 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case:

The acceptance was based on the following clarification and interpretation. Code Case N-32-4 does not replace paragraph NC/ND 6129, "Provisions for Embedded or Inaccessible Welded Joints in Piping," of the Code. The intent of the Code Case is to (1) provide additional testing above Code requirement and (2) permit liquid penetrant or magnetic particle testing in place of radiographic testing for Class 3 piping with 3/8" nominal wall thickness or less.

Paragraph (1) contains an additional requirement to the Code. It was, therefore, acceptable but unnecessary to include in the Code Case. Paragraph (2) is a variation in the volumetric examination technique and was acceptable as written. Paragraph (3) contains an additional requirement and is not a relaxation of the Code. It was, therefore, acceptable but unnecessary to include in the Code Case.

1552-1 08-29-77 Design by Analysis of Section
(N-35-1) 07-01-79 III, Class 1 Valves

⁸This revision of the Code Case was originally approved by the ASME on 8-11-75 and was annulled on 7-1-78 because of the publication of revisions to Section III in the Winter 1977 Addenda. However, the users did not believe that the Code Case was covered in the Code revision; therefore, ASME reaffirmed the Case on 11-20-78. Because of these circumstances and because there were no changes in the Code Case, the NRC considers that this Case was in effect during the period 7-1-78 through 11-20-78.

⁹Code Case was annulled on date as indicated, but the annulment was first indicated in Revision 12 to this guide.

- 1553-1⁹ 03-03-75 Upset Heading and Roll
01-01-76 Threading of SA-453 for Bolt-
ing in Section III
- 1555-1 01-14-77 Certification of Safety Relief
01-01-78 Valves, Section III, Division 1
- 1569 03-03-75¹⁰ Design of Piping for
07-01-79 Pressure Relief Valve Sta-
tion, Section III

Code Case 1569 was acceptable subject to compli-
ance with the recommendations contained in
Regulatory Guide 1.67, "Installation of Over-pres-
sure Protection Devices."

- 1573 04-30-73 Vacuum Relief Valves, Sec-
01-01-78 tion III
- 1574 04-30-73 Hydrostatic Test Pressure for
12-31-74 Safety Relief Valves, Section
III
- 1580-1 11-05-73 Buttwelded Alignment Toler-
01-01-78 ance and Acceptable Slopes
for Concentric Centerlines for
Section III, Class 1, 2, and 3
Construction
- 1581 06-25-73 Power-Operated Pressure Re-
03-01-79 lief Valves, Section III
- 1588 08-13-73 Electro-Etching of Section III
(N-46) 03-19-79 Code Symbols
03-19-82
- 1601 11-05-73 Limits of Reinforcement for
07-01-74 Two-Thirds Area, Section III,
Class 1
- 1606-1 12-16-74 Stress Criteria Section III,
07-01-77 Classes 2 and 3 Piping Subject
to Upset, Emergency, and
Faulted Operating Conditions

Code Case 1606-1 was acceptable subject to the
interpretation that the stress limit designations of
"Upset," "Emergency," and "Faulted" do not
necessarily imply agreement with specified plant
conditions applicable to ASME Code Class 2 and
3 components for fluid systems. These designa-
tions should be established and justified in the de-
sign specifications.

- 1607-1 11-04-74 Stress Criteria for Section III,
07-01-77 Classes 2 and 3 Vessels
Designed to NC/ND-3300 Ex-
cluding the NC-3200 Alternate

Code Case 1607-1 was acceptable subject to the
interpretation that the stress limit designations of
"Upset," "Emergency," and "Faulted" do not

¹⁰Corrected date.

necessarily imply agreement with specified plant
conditions applicable to ASME Code Class 2 and
3 components for fluid systems. These designa-
tions should be established and justified in the de-
sign specifications.

- N-55-1 04-05-84 Inertia and Continuous Drive
(1609) 04-05-87 Friction Welding, Section III,
Division 1
- 1614 12-17-73¹⁰ Hydrostatic Testing of Piping
01-01-79 Prior To or Following the In-
stallation of Spray Nozzles for
Section III, Classes 1, 2, and
3 Piping Systems
- 1620 03-02-74 Stress Category for Partial
(N-61) 01-08-79 Penetration Welded Penetra-
01-08-82 tions, Section III, Class 1
Construction
- 1623 03-02-74 Design by Analysis for Section
03-01-79 III, Class I Sleeve-Coupled
and Other Patented Piping
Joints
- 1630-1 07-10-78 External Pressure Charts for
(N-66-1) 07-10-81 High Yield Strength Carbon
Steels and Low Alloy Steels.
(Yield Strength above 38 Ksi
to 60 Ksi Inclusive.) For Sec-
tion III, Class 1, 2, 3, and MC
- 1630-1 12-11-81¹¹ External Pressure Charts for
(N-66-1) 12-05-84 High Yield Strength Carbon
12-05-87 Steels and Low Alloy Steels.
(Yield Strength above 38 Ksi
to 60 Ksi Inclusive.) Section
III, Division 1, Class 1, 2, 3,
and MC
- 1633 04-29-74 Brazing of Seats to Class 1, 2,
01-01-78 and 3 Valve Body or Bonnets,
Section III
- 1635-1¹² 08-12-74 Stress Criteria for Section III,
07-01-77 Class 2 and 3 Valves Sub-
jected to Upset, Emergency,
and Faulted Operating
Conditions

¹¹The Code Case was annulled on July 10, 1981 (ASME
mandatory annulment date). It was reinstated on December 11,
1981. 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 7-10-81 through 12-11-81.

¹²Code Cases 1635 and 1636 were approved by ASME on July
1, 1974, and revised on August 12, 1974. Because Code Cases
1635 and 1636 were not in effect on September 1, 1974, they are
not included in this guide.

Code Case 1635-1 was acceptable subject to the interpretation that the stress limit designations of "Upset," "Emergency," and "Faulted" do not necessarily imply agreement with specified plant conditions applicable to ASME Code Class 2 and 3 components for fluid systems. These designations should be established and justified in the design specifications.

1636-1¹² 08-12-74 Stress Criteria for Section III,
07-01-77 Class 2 and 3 Pumps Sub-
jected to Upset, Emergency,
and Faulted Operating
Conditions

Code Case 1636-1 was acceptable subject to the interpretation that the stress limit designations of "Upset," "Emergency," and "Faulted" do not necessarily imply agreement with specified plant conditions applicable to ASME Code Class 2 and 3 components for fluid systems. These designations should be established and justified in the design specifications.

1651 08-12-74 Interim Requirements for Cer-
03-01-79 tification of Component Sup-
ports, Section III, Subsection
NF

1657 11-04-74 Stress Criteria for Class 2
07-01-77 and 3 Atmospheric and Low
Pressure (0-15 psig) Steel
Storage Tanks

1659 11-04-74 Interconnection of Two Piping
07-01-77 Systems for Section III, Class
1, 2, and 3 Construction

1660 11-04-74 Overpressure Protection Under
(N-77) 03-01-79 Emergency Operating
Conditions for Section III,
Class 1

1661 11-04-74 Postweld Heat Treatment
01-01-78 P-No. 1 Materials for Section
III, Class 1 Vessels

1662 11-04-74 Shop Assembly of Compon-
01-01-78 ents, Appurtenances and
Piping Subassemblies for Sec-
tion III, Class 1, 2, 3 and MC
Construction

1665 11-04-74 Pressure-Temperature Ratings
(N-81) 07-01-78 for Class 1 Valves Made from
5 Cr-1/2 Mo, Section III

1672 11-04-74 Nuclear Valves for Section
03-21-77 III, Division 1, Class 1, 2, 3
Construction

1675 12-16-74 Tubesheet to Shell or Formed
07-01-76 Head Weld Joints, Section
III, Class 1 Vessels

1676⁹ 12-16-74 Clarification of Stress Intensities
07-01-76 in Curved Pipe or Welded
Elbows, Section III

1677 12-16-74 Clarification of Flange Design
(N-82) 03-01-79 Loads, Section III, Class 1, 2,
and 3

1678 12-16-74 Butterfly Valves of Circular
01-08-79 Cross Section Larger than 24
01-01-80 in. NPS for Section III, Class
2 and 3 Construction

1681-1¹³ 03-03-75 Organizations Accepting
(N-84) 03-01-79 Overall Responsibility for Sec-
tion III Construction

1683-1 03-01-76 Bolt Holes for Section III,
07-01-76 Class 1, 2, 3 and MC Compo-
nent Supports

1685 04-28-75 Furnace Brazing Section III,
01-01-78 Class 1, 2, 3 and MC Con-
struction

1686 03-03-75 Furnace Brazing, Section III,
01-01-78 Subsection NF, Component
Supports

1689-1 09-10-76 Alternate PWHT Time and
01-01-78 Temperature for SA-182
Grade F-22, SA-387 Grade
22, Class 2, and SA-335
Grade P-22 Section III, Class
1, 2, 3 and CS

Code Case 1689-1 was acceptable subject to the following condition in addition to that specified in the Code Case: The alternate postweld heat treatment should be prequalified along with the applicable welding procedure in accordance with ASME Section IX.

1692 04-28-75 Rules for Design of Welded
(N-90) 07-01-78 Class 1 Pumps

1695-1 11-03-75 Brazing, Section III, Division
01-01-78 1, Class 3

1700 11-03-75 Determination of Capacities
(N-94) 03-19-79 of Liquid Relief Valves, Sec-
03-19-82 tion III, Division 1, Class 1, 2,
and 3

1701-2 07-09-79 Determination of Capacities
(N-95-2) 07-09-82 of Vacuum Relief Valves,
Section III, Division 1,
Classes 2, 3, and MC and
Division 2 Concrete Contain-
ments

1702-1 07-11-77 Flanged Valves Larger than
(N-96-1) 01-01-80 24 inches for Section III,
Division 1, Class 1, 2 and 3
Construction

1703 06-30-75 Brazing of Copper Alloys Sec-
01-01-78 tion III, Class 2

¹³Code Case 1681 was approved by ASME on 12-16-74 and revised on 3-3-75. Because Code Case 1681 was not in effect on March 31, 1975, the Code Case was not included in this guide.

1706	06-30-75 12-31-75	Data Report Forms for Component Supports, Section III, Class 1, 2 and 3
1711 (N-100)	11-03-75 01-08-79 01-21-82 01-01-83	Pressure Relief Valve Design Rules, Section III, Division 1, Class 1, 2 and 3

Code Case 1711 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case. The following information should be provided in the Safety Analysis Report:

- (1) If stress limits are used in excess of those specified for the upset operating condition, it should be demonstrated how the pressure relief function is ensured. Refer to paragraph 3.1, Section I, of the Case for Class 1 and paragraph 3.2, Section II, of the Case for Class 2 and 3 pressure relief valves.
- (2) If Case 1660 is to be used in conjunction with this Case, it should be stated that the stress limits of Case 1660 supersede those of paragraph 3.2(b), Section I, of Case 1711. Functional assurance of (1) above is required in all situations.

1712 (N-101)	08-11-75 03-01-79	Nameplates and Stamping for Section III, Division 1, Class 1, 2, 3 and MC Construction as Referenced in NA-8300
1718 ⁹	08-11-75 07-01-76	Design of Structural Connections for Linear Type Component Supports, Section III, Division 1, Class 1, 2 and 3 and MC
1719 ⁹	08-11-75 07-01-76	Single-Welded, Full-Penetration Sidewall Butt Joints in Atmospheric Storage Tanks, Section III, Division 1, Class 2
1726 (N-109)	11-03-75 03-01-79	Refinement of Low Alloy Steel Heat Affected Zone Under Overlay Cladding, Section III, Division 1, Class 1 Components
1727 (N-110)	12-22-75 01-01-79	Alternate Test Fluids, Section III, Division 1

Code Case 1727 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant should provide justification in the referencing Safety Analysis Report for the fluid selected for use in the pressure test. The information provided should demonstrate that the fluid selected will not have deleterious effects on the material of the pressure boundary and that the fluid may be safely used at the specified temperature and pressure of the test.

When the fluid selected for use is the operating fluid, additional information is not required.

1729 (N-111)	11-03-75 03-01-79	Minimum Edge Distance-Bolting for Section III, Division 1, Class 1, 2, and 3 and MC Construction of Component Supports
1732 (N-114)	11-03-75 01-01-79	Hardsurfaced Valves with Inlet Connections less than 2-in. Nominal Pipe Size for Section III, Division 1 Class 1 and 2 Construction
1733 (N-115)	11-03-75 01-01-78	Evaluation of Safe Shut Down Earthquake Loadings for Section III, Division 1, Class MC Containment Vessels
1734 (N-116)	11-03-75 01-01-78	Weld Design for Use for Section III, Division 1, Class 1, 2, 3 and MC Construction of Component Supports

Code Case 1734 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: If the configuration of Figure 1 of the Code Case is used for Class 1 and MC component supports, full penetration welds should be used. The application of the configuration shown in Figures 2 and 3 should be restricted to the welding of cans for spring encapsulation in spring hangers. In Figure 3, the length of the leg of the fillet weld adjacent to the plate should be equal to the thickness of the exposed end of the plate; also, the leg of the fillet weld adjacent to the shell should be equal to the thickness of the exposed end of the shell.

1739-4 (N-119-4)	11-17-80 12-01-83	Pump Internal Items, Section III, Division 1, Class 1, 2, and 3
1744 (N-121)	03-01-76 03-01-79	Carbon Steel Pipe Flanges Larger than 24 in., Section III, Division 1, Class 2 and 3 Construction
1765	04-26-76 07-01-77	Machining After Hydrostatic Testing Class 2 and 3 Construction, Section III, Division 1
1768	06-29-76 01-01-78	Permanent Attachments to Containment Vessels—Class MC, Section III, Division 1
1769-1	02-16-77 10-01-77	Qualification of NDE Level III Personnel, Section III, Division 1
1774-1 (N-142-1)	07-11-77 01-01-80	Minimum Wall Thickness for Class 2 and 3 Valves, Section III, Division 1
1775	08-13-76 08-13-79	Data Report Forms for Core Support Structures, Class CS, Section III, Division 1

1780-1 07-10-78¹⁰ Hydrostatic Testing and
(N-146-1) 12-11-81 Stamping of Components,
01-01-82 Section III, Division 1
Construction

Code Case 1780-1 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: On a generic basis, the application of the Code Case is limited to pumps and valves. Application to other components should be treated on a case-by-case basis. Each licensing application in which the Code Case is to be used should contain information showing that, as a minimum, the closure fixture will impose loads that result in stresses equal to or greater than those induced during the hydrostatic test of a complete pump assembly. A closure fixture for the part being tested that is similar in size and shape to the actual mating part is considered adequate to impose these loads. It is not intended that piping reaction loadings be simulated in the hydrostatic testing.

1783-1 01-14-77 Qualification of Nondestructive
01-01-79 Examination Personnel,
Section III, Division 1

Code Case 1783-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The first sentence of paragraph (1) should be replaced with the following: "The certification of the Level III nondestructive examination personnel for the purpose of this Section of the Code shall be the responsibility of the employer of the Level III individual. If the employer is not a Certificate Holder, then the verification of such certificate is the responsibility of the Certificate Holder."

1791 01-14-77 Projection Resistance Welding
(N-154) 01-14-80 of Valve Seats, Section III,
Division 1, Class 1, 2 and 3
Valves

1796 01-14-77 Body Neck Thickness Determination for Valves with Inlet
(N-159) 07-01-78 Connections 4-Inch Nominal
Pipe Size and Smaller, Section III, Division 1, Class 1, 2,
and 3

1808 02-16-77 F-Number Classification of
01-01-78 Low Alloy and Carbon Steel
Bare Rod Electrodes Sections I, II, III, IV, V, VIII,
and IX

1812 03-23-77 Size of Fillet Welds for Socket
(N-174) 01-07-80 Welding of Piping, Section
01-01-81 III, Division 1

1818 03-23-77 Welded Joints in Component
(N-175) 07-01-79 Standard Supports, Section
III, Division 1

Code Case 1818 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: That portion of the unwelded housing that is limited to 90° maximum should include a minimum of two sectors that are uniform in length.

N-179 07-11-77 Openings in Valves for Section
07-11-80 III, Division 1, Class 1, 2
and 3 Construction

N-182 07-11-77 Alternate Rules for Procedure
07-01-81 Qualification Base Material
Orientation, Section III, Division 1, Class 2 and 3 Construction

N-184 07-11-77 Roll Threading of SA-453
07-01-79 Bolting for Section III, Division 1, Class 1, 2, 3 or CS Construction

N-189 08-29-77 Primary Membrane Plus Primary
07-01-79 Bending Stress Intensity
Limits for Other Than Solid
Rectangular Sections for Section III, Division 1, Class MC Construction

N-193 11-21-77 Use of SB-61 and SB-62
11-21-80 Bronze for Section III, Division 1, Class 3 Flange and Socket Weld End Valves

N-199 03-20-78 Intervening Elements, Section
01-01-81 III, Division 1, Classes 1, 2, 3
and MC Component Construction

Code Case N-199 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant should provide information in the referencing Safety Analysis Report that demonstrates that all intervening elements have been designed in compliance with the requirements of the respective design specification.

1693 03-20-78 Welding Procedure Qualification
(N-212) 01-01-81 of Dissimilar Metal Welds
When "Buttering" with Alloy
Weld Metal and Heat Treatment May Be Involved, Section III, Division 1, and Section IX

N-214-2 05-25-83 Use of SA-351 Grade CN7M,
12-31-83 for Valves, Section III, Division 1

N-215¹⁴ 05-15-78 Integrally Finned Titanium
05-15-81 Tubes, Section III, Division 1,
Class 3 Construction

¹⁴Code Case N-215 was annulled effective May 15, 1981. It was removed from the active Code Case listing with Revision 29 of Regulatory Guide 1.84.

N-217-1 01-07-80 Postweld Heat Treatment of
09-07-82 Weld Deposit Cladding on
12-05-84 Classes 1, 2, 3, MC, and CS
09-05-85 Items, Section III, Division 1
02-23-87

N-220 08-28-78 Code Effective Date for Com-
07-13-81 ponent Supports, Section III,
07-13-84 Division 1

N-226 11-20-78 Temporary Attachment of
01-01-80 Thermocouples, Section III,
Division 1, Class 1, 2 and 3
Component Construction

N-228 03-19-79 Alternate Rules for Sequence
03-19-82 of Completion of Code Data
Report Forms and Stamping
for Section III, Class 1, 2, 3
and MC Construction

N-229 01-08-79 Alternate Rules for Fabrica-
01-21-82 tion Welding SB-148 Alloy
01-21-85 CDA 954 for Section III, Di-
01-21-88 vision 1, Class 3 Construction

N-233 01-08-79 Alternate Rules for PWHT of
01-21-82 P-No. 6, Group 4 Material for
09-17-84 Section III, Division 1, Class
09-17-87 1, 2, or 3 Construction

N-237-2 05-25-83 Hydrostatic Testing of Inter-
07-30-86 nal Piping, Section III, Di-
12-07-87 vision 1, Classes 2 and 3
07-01-88

N-238 05-14-79 High Temperature Furnace
01-01-82 Brazing of Seat Rings in Valve
Bodies or Bonnets for Section
III, Division 1, Class 1, 2, and
3 Valves

Code Case N-238 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The furnace brazing process procedure qualification should include a verification for nonsensitization as given in ASTM A 262-70, Practices A or E, or ASTM A 708-74 whenever materials subject to sensitization are to be brazed. Documentation is required that a nonsensitizing brazing procedure was employed for valves produced to this Case.

N-252 11-19-79 Low Energy Capacitive Dis-
07-01-82 charge Welding Method for
Temporary or Permanent At-
tachments to Components and
Supports, Section III, Division
1, and XI

Code Case N-252 was acceptable subject to the following conditions in addition to those condi-

tions specified in the Code Case: The applicant should indicate in the Safety Analysis Report the application, the material, and the material thickness to which the strain gage or thermocouple will be attached by CD welding.

N-260-2 12-05-85 Weld Repair of SA-182 Type
12-05-88 316 Forgings, Section III, Di-
vision 1, Classes 1, 2, 3, and
MC

Code Case N-260-2 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Type 308 L welding materials should not be used to repair grade F 316 N forgings because of the difference in strength levels.

N-261 05-15-80 Weld Procedure Qualification
12-13-82 for Materials with Impact Re-
quirements for Section III,
Division 1, Class 3 Construc-
tion

N-263 03-17-80 Alternate Thread Forms, Se-
03-17-83 ries and Fits for Component
Supports, Section III, Divi-
sion 1

Code Case N-263 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case. The following information should be provided in the Safety Analysis Report: (1) a description of the application, (2) a need for the use of the Code Case, and (3) a demonstration that support design will withstand maximum conditions of loading with the worst combination of thread tolerance.

N-271 03-17-80 Simplified Method for Ana-
02-14-86 lyzing Flat Face Flanges with
Metal to Metal Contact Out-
side the Bolt Circle for Sec-
tion III, Class 2, 3, and MC
Construction

N-272 05-15-80 Compiling Data Report
01-01-82 Forms, Section III, Division 1

N-275 05-15-80 Repair of Welds, Section III,
12-07-82 Division 1
12-31-83

Code Case N-275 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Use of the Code Case is applicable only when the removal of an indication requires that the full weld thickness be removed and, in addition, the backside of the weld assembly joint is not accessible for the removal of examination material. If an indication is removed and weld-metal layers still remain, it is not acceptable to gouge through the wall in order to qualify for use of the Code Case. Instead, examination of

the cavity is required when such an indication has been removed.

- N-276 03-17-80 Welding of SA-358 Pipe, Section III, Division 1
02-14-83
02-14-86
- N-279 05-15-80 Use of Torquing as a Locking Device for Section III, Division 1, Class 1, 2, 3, and MC
07-13-81 Component Supports

Code Case N-279 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: When torquing or other preloading is used as a locking device and the joint is later unloaded or disassembled, the bolting should be replaced unless it can be demonstrated or proved to the authorized nuclear inspector that the original bolting has not been permanently strained.

- N-280 05-15-80 Alternate Rules for Examination of Welds in Section III, Class 3 Storage Tanks
07-01-81
- N-281 05-15-80 Welding Operator Performance Qualification, Section III, Division 1
07-01-81
- N-282 05-15-80 Nameplates for Valves, Section III, Division 1, Class 1, 2, and 3 Construction
05-25-83
07-30-86
07-30-89
- N-300 11-17-80 Pressure-Temperature Ratings, Hydrostatic Tests, and Minimum Wall Thickness of Valves, Section III, Division 1, Class 1
12-01-83
- N-302 03-16-81 Tack Welding, Section III, Division 1, Construction
11-28-83
- N-309 05-11-81 Identification of Materials for Component Supports, Section III, Division 1
05-11-84
- N-314 05-11-81 Alternate Rules for Thread Engagement, Section III, Division 1
05-11-84

Code Case N-314 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: Applicants should identify in their Safety Analysis Report (1) the minimum length of thread engagement and (2) the procedure used to establish thread engagement.

- N-320 07-13-81 Alternate PWHT for SA-487, Grade CA6NM, Section III, Division 1
12-31-83
- N-328 12-11-81 Thermit Brazing or Welding of Nonstructural Attachments, Section III, Division 1
09-17-84
09-17-87

- N-336 06-17-82 Examination of Welds Inaccessible During Pressure Test, Section III, Division 1, Class MC
06-30-83
- N-339 06-17-82 Examination of Ends of Fillet Welds, Section III, Division 1, Classes 1, 2, and MC
09-17-84
- N-341 06-17-82 Certification of Level III NDE Examiner, Section III, Division 1 and 2
05-19-85
02-23-87
07-01-88
- N-346 06-17-82 Explosive Welding, Section III, Division 1
05-19-85
06-30-86
- N-347 12-07-82 Continuous Electric Resistance Seam Welding of P-No. 8 Materials for Component Supports, Section III, Division 1
12-13-85
- N-349 07-16-82 Pressure Testing Piping Systems, Section III, Division 1, Classes 2 and 3
12-31-85
- N-350 12-07-82 Postweld Heat Treatment—Thickness of Material, Section III, Division 1
09-05-85

Code Case N-350 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants wishing to use this Case for other than P-1 materials should demonstrate that the use of this Case will not adversely affect the required material properties.

- N-357 12-13-82 Certification of Material for Component Supports, Section III, Division 1, Subsection NF
05-19-85
07-01-88
- N-359 12-13-82 Weld Connection for Coaxial Cylinders, Section III, Division 1, Class 1
12-31-84
- N-362-2 07-12-84 Pressure Testing of Containment Items, Section III, Division 1, Classes 1, 2, and MC
04-05-87
07-27-87
07-01-88
- N-376 05-25-83 Pressure Testing of Embedded Class 2 and 3 Piping, Section III, Division 1
07-30-86
- N-377 04-04-83 Effective Throat Thickness of Partial Penetration Groove Welds, Section III, Division 1, Classes 1, 2, and 3
12-31-83
- N-383-1 07-18-85 Weld Repair of SA-182 Austenitic Forgings, Section III, Division 1, Classes 1, 2, and 3
09-05-85

Code Case N-383 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants who apply the provisions of this Case to permit material manufacturers to weld repair austenitic forgings without re-solution heat treatment should provide

justification to the NRC staff (via the Safety Analysis Report) why this is acceptable for their applications, including their evaluation of the susceptibility for stress corrosion cracking.

- N-397 02-20-84 Alternative Rules to the Spectral Broadening Procedures of N-1226.3 for Classes 1, 2, and 3 Piping, Section III, Division 1
02-20-87

Code Case N-397 was acceptable subject to the following condition in addition to those conditions specified in the Code Case. The Code Case is acceptable for specific plant applications on a case-by-case basis pending revision of Regulatory Guide 1.122, "Development of Floor Design Response Spectra for Seismic Design of Floor-Supported Equipment or Components."

- N-412 04-15-85 Alternative Rules for Witnessing the Piping System Pressure Tests of Classes 1, 2, and 3 Piping Systems, Section III, Division 1
04-15-88
04-15-91
- N-413 02-14-85 Minimum Size of Fillet Welds for Subsection NF Linear Type Supports, Section III, Division 1
02-14-88
- N-414 02-20-86 Tack Welds for Class 1, 2, 3 and MC Components and Piping Supports, Section III, Division 1
02-20-89
02-20-92
- N-421 02-14-85 Brazing Using a Radiant Energy Source, Section III, Division 1
05-19-85
06-30-86
- N-442 02-23-87 1977 Addendum to ANSI/ASME PTC 25.3-1976, Safety and Safety Relief Valves, Class 1, 2, 3, and MC, Section III, Division 1
04-30-90
03-08-92

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,¹⁵ and title.

¹⁵Earlier date—date Code Case was approved by ASME; later date—date revision of Code Case was approved by ASME.

- 1508¹⁸ 12-13-71 Allowable Stresses, Design Intensity and/or Yield Strength Values, Section I, III, and VIII, Divisions 1 and 2
06-30-75
- 1516-1 06-25-73 Welding of Seats in Valves for Section III Applications
08-11-75
- 1539 11-06-72 Metal Bellows and Metal Diaphragm Stem Sealed Valves, Section III, Classes 1, 2, and 3
(N-30-1) 11-21-77
- 1540-1 03-03-73 Elastomer Diaphragm Valves, Section III, Classes 2 and 3
01-14-77
- 1540-2 01-14-77 Elastomer Diaphragm Valves, Section III, Class 2 and 3
(N-31) 01-07-80
02-14-83
07-18-85

Code Case 1540-2 (N-31) 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 that the service life of the elastomer diaphragm should not exceed the manufacturer's recommended service life. This recommended service life should not exceed 1/3 of the minimum cycle life as established by the requirements of paragraph 3 of the Code Case. In addition, the service life of the elastomer diaphragm should not exceed 5 years, and the combined service and storage life of the elastomer diaphragm should not exceed 10 years.

- 1541-1 08-13-73 Hydrostatic Testing of Embedded Class 2 and Class 3 Piping for Section III Construction
09-30-76
- 1541-2 09-30-76 Hydrostatic Testing of Embedded Class 2 and Class 3 Piping for Section III, Division 1 Construction
05-15-78
- 1552 12-18-72 Design by Analysis of Section III, Class 1 Valves
08-29-77
- 1553 12-18-72 Upset Heading and Roll Threading of SA-453 for Bolt-ing, Section III
03-03-75
- 1555 12-18-72 Certification of Safety Relief Valves on Liquids
01-14-77
- 1606 11-05-73 Stress Criteria for Section III, Class 2 and 3 Piping Subjected to Upset, Emergency, and Faulted Operating Conditions
12-16-74

Code Case 1606 was acceptable subject to the interpretation that the stress limit designations of "Upset," "Emergency," and "Faulted" do not necessarily imply agreement with specified plant

¹⁸Code Case 1508 is no longer listed by ASME as a Section III Code Case and is therefore deleted from the acceptable listing.

conditions applicable to ASME Code Class 2 and 3 components for fluid systems. These designations should be established and justified in the design specifications.

- 1607 11-05-73 Stress Criteria for Section III,
11-04-74 Classes 2 and 3 Vessels Sub-
jected to Upset, Emergency,
and Faulted Operating Condi-
tions

Code Case 1607 was acceptable subject to the interpretation that the stress limit designations of "Upset," "Emergency," and "Faulted" do not necessarily imply agreement with specified plant conditions applicable to ASME Code Class 2 and 3 components for fluid systems. These designations should be established and justified in the design specifications.

- 1609-1 03-01-76 Inertia and Continuous Drive
(N-55) 08-28-78 Friction Welding, Section I,
07-13-81 III, IV, VIII, Division 1 and
04-05-84 2, and IX
1621-2 05-25-77 Internal and External Valve
(N-62-2) 05-15-80 Items, Section III, Division 1,
05-25-83 Class 1, 2 and 3 Line Valves
07-18-85

Code Case 1621-2 (N-62-2) was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The Code requires that Class 1 and Class 2 valve manufacturers meet the provisions of NCA 4000, "Quality Assurance," and, in addition, Class 3 valve manufacturers should also meet the provisions of NCA 4000.

- N-62-3 07-18-85 Internal and External Valve
09-05-85 Items, Section III, Division 1,
Class 1, 2 and 3 Line Valves

Code Case N-62-3 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The Code requires that Class 1 and Class 2 valve manufacturers meet the provisions of NCA 4000, "Quality Assurance," and, in addition, Class 3 valve manufacturers should also meet the provisions of NCA 4000.

- N-62-4 09-05-85 Internal and External Valve
07-27-88 Items, Section III, Division 1,
07-24-89 Class 1, 2 and 3

Code Case N-62-4 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The Code requires that Class 1 and Class 2 valve manufacturers meet the provisions of NCA 4000, "Quality Assurance," and, in addition, Class 3 valve manufacturers should also meet the provisions of NCA 4000.

- N-62-5 07-24-89 Internal and External Valve
12-11-89 Items, Section III, Division 1,
Class 1, 2 and 3

Code Case N-62-5 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The Code requires that Class 1 and Class 2 valve manufacturers meet the provisions of NCA 4000, "Quality Assurance," and, in addition, Class 3 valve manufacturers should also meet the provisions of NCA 4000.

- 1630 11-04-74 External Pressure Charts for
(N-77) 07-10-78 High Yield Strength Carbon
Steels and Low Alloy Steels.
(Yield strength above 38 Ksi
to 60 Ksi Inclusive.) For Sec-
tion III, Class 1, 2, 3, and
MC; and Section VIII, Divi-
sion 1 and 2
1683 03-03-75 Bolt Holes for Section III, Di-
03-01-76 vision 1, Class 1, 2, 3 and MC
Component Supports
1689 06-30-75 Alternate PWHT Time and
09-10-76 Temperature for SA-182
Grade F22 Section III, Class
1, 2, 3 and CS

Code Case 1689 was acceptable subject to the following condition in addition to that specified in the Code Case: The alternate postweld heat treatment should be prequalified along with the applicable welding procedure in accordance with ASME Section IX.

- 1695 04-28-75 Brazing, Section III, Class 3
11-03-75
1701 06-30-75 Determination of Capacities
03-20-78 of Vacuum Relief Valves Sec-
tion III, Class MC
1701-1 03-20-78 Determination of Capacities
(N-95-1) 03-19-79 of Vacuum Relief Valves,
07-09-79 Section III, Division 1 and
2, Class MC
1702 06-30-75 Flanged Valves Larger than
07-11-77 24 inches for Section III,
Class 1, 2 and 3 Construc-
tion
1720 08-11-75 Weld End Preparation for
03-01-76 Section III, Division 1 Con-
struction

Code Case 1720 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Weld end preparations other than those shown in Figures 1, 2, and 3 of the Code Case are not acceptable on a generic basis. Such alternative end preparations should be treated on a case-by-case basis.

1720-1 03-01-76 Weld End Preparation for
11-20-78 Section III, Division 1 Con-
struction

Code Case 1720-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The acceptance of weld end preparations other than those shown in Figures 1, 2, and 3 of the Code Case should be evaluated on a case-by-case basis.

1739-2 08-28-78 Pump Internal Items, Section
(N-119-2) 08-25-80 III, Division 1, Class 1, 2,
and 3

1739-3 08-25-80 Pump Internal Items, Section
(N-119-3) 11-17-80 III, Division 1, Class 1, 2,
and 3

1739-4 02-20-84¹⁷ Pump Internal Items, Section
(N-119-4) 07-18-85 III, Division 1, Class 1, 2,
and 3

N-119-5 07-18-85 Pump Internal Items, Section
09-05-85 III, Division 1, Class 1, 2,
and 3

1745 03-01-76 Stress Indices for Structural
(N-122) 01-08-79 Attachments, Class 1, Sec-
01-21-82 tion III, Division 1
01-21-85
01-21-88
07-24-89

1761 04-26-76 Use of SB-148 Alloy CA954
01-14-77 for Section III, Division 1,
Class 2 or 3 Flanged End
Valves

1761-1 01-14-77 Use of SB-148 Alloy CA954,
(N-133) 01-07-80 Section III, Division 1, Class 3
04-02-82

N-133-1 04-02-82 Use of SB-148 Alloys 952 and
05-19-85 954, Section III, Division 1,
Class 3

N-133-2 05-19-85 Use of SB-148 Alloys 952 and
07-18-85 954 Section III, Division 1,
Class 3

1769 08-13-76 Qualification of NDE Level
02-16-77 III Personnel, Section III, Di-
vision 1

1774 08-13-76 Minimum Wall Thickness for
07-11-77 Class 2 and 3 Valves, Section
III, Division 1

1780 09-10-76 Hydrostatic Testing and
03-10-78 Stamping of Pumps for Class 1
Construction, Section III, Di-
vision 1

Code Case 1780 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: Each licensing application in which the Code Case is to be used should present information that satisfactorily demonstrates that the subassembly tests adequately simulate the pressure loadings. Also, the closure fixture for the test subassembly should adequately simulate the rigidity of adjacent subassemblies and also simulate the interface loadings from adjacent subassemblies that would result from a hydrostatic pressure test of a complete pump assembly. As a minimum, the closure fixture should impose loads that result in stresses equal to or greater than those induced during the hydrostatic test of a complete pump assembly. It is not intended that piping reaction loadings be simulated in the hydrostatic testing.

1783 09-10-76 Qualification of Nondestructive
01-14-77 Personnel, Section III,
Division 1

Code Case 1783 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The first sentence of paragraph (1) should be replaced with the following: "The certification of the Level III nondestructive examination personnel for the purposes of this Section of the Code shall be the responsibility of the employer of the Level III individual. If the employer is not a Certificate Holder, then the verification of such certificate is the responsibility of the Certificate Holder."

1791 03-17-80¹⁸ Projection Resistance Welding
(N-154) 09-09-82 of Valve Seats, Section III,
09-05-85 Division 1, Class 1, 2 and 3.
12-05-85 Valves

1797 03-23-77 Finned Tubing for Construction,
(N-160) 03-17-80 Section III, Division 1
09-07-82
07-18-85

N-192 01-09-78 Use of Flexible Hose for Section
08-30-79 III, Division 1, Class 1, 2,
and 3 Construction

Code Case N-192 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case. The applicant should indicate system application, design and op-

¹⁷The Code Case was annulled on December 1, 1983 (ASME mandatory annulment date). It was reinstated on February 20, 1984. 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 12-1-83 through 2-20-84.

¹⁸The Code Case was annulled on January 14, 1980 (ASME mandatory annulment date). It was reinstated on March 17, 1980. 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 1-14-80 through 3-17-80.

erating pressure, and pressure-temperature rating of the flexible hose. Data to demonstrate compliance of the flexible hose with NC/ND-3649, particularly NC/ND-3649.4(e), are required to be furnished with the application.

N-192-1 08-30-79 Use of Flexible Hose for Section III, Division 1, Class 1, 2, and 3 Construction
09-16-81

Code Case N-192-1 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: The applicant should indicate system application, design and operating pressure, and pressure-temperature rating of the flexible hose. Data to demonstrate compliance of the flexible hose with NC/ND-3649, particularly NC/ND-3649.4(e), are required to be furnished with the application.

N-196 01-09-78 Exemption from the Shake-down Requirements When Plastic Analysis is Performed for Section III, Division 1, Class 1 Construction
01-08-79

N-214 05-15-78 Use of SA-351, Grade
07-13-81 CN7M, for Valves for Section III, Division 1, Construction
09-07-82

N-214-1 09-07-82 Use of SA-351 Grade CN7M, for Valves, Section III, Division 1
05-25-83

N-237 07-09-79 Hydrostatic Testing of Internal Piping, Section III, Division 1
01-21-82
09-07-82

N-237-1 09-07-82 Hydrostatic Testing of Internal Piping, Section III, Division 1, Classes 2 and 3
05-25-83

N-260 01-07-80 Weld Repair of SA-182 Type
05-25-83 316 Forgings, Section III, Division 1, Classes 1, 2, 3, and MC
07-18-85

N-260-1 07-18-85 Weld Repair of SA-182 Type
12-05-85 316 Forgings, Section III, Division 1, Classes 1, 2, 3, and MC

Code Case N-260-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Type 308 L welding materials should not be used to repair grade F 316 N forgings because of the difference in strength levels.

N-304 06-11-81 Use of 20Cr-25Ni-6Mo (Alloy
04-05-84 UNS N08366) Welded Tubes
07-12-84 for Section III, Division 1, Classes 2 and 3 Construction

N-304-1 07-12-84 Use of 20Cr-25Ni-6Mo (Alloy
05-19-85 UNS N08366) Welded Tubes for Section III, Division 1, Classes 2 and 3 Construction

N-304-2 05-19-85 Use of SB-676 20Cr-25Ni-
12-05-85 6Mo (Alloy UNS N08366) Welded Tubes, Section III, Division 1, Classes 2 and 3

N-304-3 12-05-85 Use of SB-676 20Cr-25Ni-
02-23-87 6Mo (Alloy UNS N08366) Plate, Sheet, Strip and Welded Pipes, Section III, Division 1, Classes 2 and 3

N-309 09-17-84¹⁹ Identification of Materials
12-05-85 for Component Supports, Section III, Division 1

N-318 07-13-81 Procedure for Evaluation of
02-20-84 the Design of Rectangular Cross Section Attachments on Class 2 or 3 Piping, Section III, Division 1

Code Case N-318 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case. Applicants should identify in their Safety Analysis Report: (1) the method of lug attachment, (2) the piping system involved, and (3) the location in the system where the Case is to be applied.

N-318-1²⁰ 02-20-84 Procedure for Evaluation of
07-12-84 the Design of Rectangular Cross Section Attachments on Class 2 or 3 Piping, Section III, Division 1

Code Case N-318-1 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case. Applicants should identify in their Safety Analysis Report: (1) the method of lug attachment, (2) the piping system involved, and (3) the location in the system where the Case is to be applied.

N-318-2 07-12-84 Procedure for Evaluation of
09-05-85 the Design of Rectangular Cross Section Attachments on Class 2 or 3 Piping, Section III, Division 1

Code Case N-318-2 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case. Applicants should identify in their Safety Analysis Report: (1) the method of lug attachment, (2) the piping sys-

¹⁹The Code Case was annulled on May 11, 1984 (ASME mandatory annulment date). It was reinstated on September 17, 1984. 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 5-11-84 through 9-17-84.

²⁰The conditional acceptance was inadvertently omitted in Revision 23 of this guide.

tem involved, and (3) the location in the system where the Case is to be applied.

- N-318-3 09-05-85 Procedure for Evaluation of
07-27-88 the Design of Rectangular
12-11-89 Cross Section Attachments on
Class 2 or 3 Piping, Section
III, Division 1

Code Case N-318-3 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case. Applicants should identify in their Safety Analysis Report: (1) the method of lug attachment, (2) the piping system involved, and (3) the location in the system where the Case is to be applied.

- N-319 07-13-81 Alternate Procedure for Eval-
07-13-84 uation of Stresses in Butt
07-13-87 Weld Elbows in Class 1 Pip-
07-24-89 ing, Section III, Division 1
- N-319-1 07-24-89 Alternate Procedure for
08-14-90 Evaluation of Stresses in Butt
Weld Elbows in Class 1 Pip-
ing, Section III, Division 1
- N-345 06-17-82 Attachment of AMS 5382 Al-
12-13-82 loy 31 Seat Rings by Friction
Welding, Section III, Division
1, Classes 1, 2, and 3
- N-362 02-14-83 Alternate Rules for Pressure
05-25-83 Testing of Containment Items,
Section III, Division 1
- N-362-1 05-25-83 Pressure Testing of Contain-
07-12-84 ment Items, Section III, Divi-
sion 1, Classes 1, 2, and MC
- N-383 10-05-83 Weld Repair of SA-182 Aus-
07-18-85 tenitic Forgings, Section III,
Division 1, Classes 1, 2, and 3

Code Case N-383 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: Applicants who apply the provisions of this Case to permit material manufacturers to weld repair austenitic forgings without re-solution heat treatment should provide justification to the NRC staff (via the Safety Analysis Report) why this is acceptable for their applications, including their evaluation of the susceptibility for stress corrosion cracking,

- N-391 11-28-83 Procedure for Evaluation of
07-30-86 the Design of Hollow Circular
07-24-89 Cross Section Welded Attach-
ments on Class 1 Piping, Sec-
tion III, Division 1

- N-392 11-28-83 Procedure for Evaluation of
07-30-86 the Design of Hollow Circular
07-30-89 Cross Section Welded Attach-
12-11-89 ments on Classes 2 and 3 Pip-
ing, Section III, Division 1

- N-411 09-17-84 Alternative Damping Values
02-20-86 for Seismic Analysis of Classes
1, 2, and 3 Piping Sections,
Section III, Division 1

Code Case N-411 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: (1) The damping values specified may be used in analyzing piping response for seismic and other dynamic loads being filtered through building structures provided response mode frequencies are limited to 33 Hz and below. Within this range, the Code Case damping should be used completely and consistently, if used at all. (For equipment other than piping, the damping values specified in Regulatory Guide 1.61, "Damping Values for Seismic Design of Nuclear Power Plants," should be used.) (2) The damping values specified may be used only in those analyses in which current seismic spectra and procedures have been employed. Such use should be limited only to response spectral analyses (similar to that used in the study supporting its acceptance—Reference NUREG/CR-3526). The acceptance of the use with other types of dynamic analyses (e.g., time-history analysis) is pending further justification. (3) When used for reconciliation work or for support optimization of existing designs, the effects of increased motion on existing clearances and on line mounted equipment should be checked. (4) This Code Case is not appropriate for analyzing the dynamic response of piping systems using supports designed to dissipate energy by yielding (i.e., the design of which is covered by Code Case N-420). (5) This Code Case is not applicable to piping in which stress corrosion cracking has occurred unless a case-specific evaluation is made and is reviewed by the NRC staff.

- N-453 12-07-87 Nickel-Chromium-Molybde-
11-30-88 num-Copper Stainless Steel
(UNS N08925) Welded Pipe
for Class 2 and 3 Construc-
tion, Section III, Divi-
sion 1

- N-453-1 11-30-88 Nickel-Chromium-Molybde-
12-16-91 num-Copper Stainless Steel
04-30-92 (UNS N08925) Seamless and
Welded Pipe for Class 2 and 3
Construction, Section III,
Division 1

N-454	12-07-87	Nickel-Chromium-Molybde-
	12-03-90	num-Copper Stainless Steel
	04-30-92	(UNS N08925) Wrought Fittings for Class 2 and 3 Construction Section III, Division 1
N-455	12-07-87	Nickel-Chromium-Molybde-
	12-03-90	num-Copper Stainless Steel
	04-30-92	(UNS N08925) Forged Flanges and Fittings for Class 2 and 3 Construction Section III, Division 1

D. IMPLEMENTATION

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

1. Except for those Code Cases that have been annulled by action of the ASME, the NRC staff has found the Code Cases listed in this regulatory guide under regulatory position C.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 to 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.

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.

**APPENDIX
NUMERICAL LISTING OF CODE CASES**

N-31-1	N-284	N-394
N-62-6	N-292	N-395
N-106-2 (1720-2)	N-304-4	N-410
N-119-6	N-309-1	N-411-1
N-133-3	N-313	N-420
N-154-1	N-315	N-430
N-155-2 (1792-2)	N-316	N-433
N-160-1	N-318-4	N-452
N-192-2	N-345-1	N-453-1
N-196-1	N-368	N-454
N-240	N-369	N-455
N-241	N-391-1	N-464
N-243	N-392-1	N-476
N-247	N-393	
N-262		



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