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# Guidelines for Presenting Proposed Revisions for Ballot and Submittal of Approved Revisions to C&S Publishing

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## General

These Guidelines outline requirements and recommendations for staff and volunteers to aid them in the development of proposed revisions to standards for committee ballot and the preparation of a new or revised standard manuscript for submittal to C&S Publishing. The purpose of these Guidelines is to ensure that the proposed and approved revisions to standards are presented in a clear and consistent manner. This will help ensure that the committees understand the proposed revisions and that the editors are able to accurately interpret and incorporate the approved revisions into the standard.

## Preparation of Proposed Revisions for Ballot

Proposed revisions for committee ballot should be prepared as follows:

- Use the most recent version of the standard.
- For new and revised sections of the standard, follow the “ASME Codes and Standards Writing Guide 2010,” which is posted on the ASME Web site.
- Present revisions using one of the following preferred methods:
  - Mark up a Word document using the “Track Changes” tool in MS Word.
  - Mark up a PDF of the standard using the “Comment” features in Adobe Acrobat.

For additional guidance, see [Guidelines for the Use of MS Word and PDFs When Submitting Revisions](#) below. Alternatively, it is acceptable to manually mark up the pages of the standard and then scan them. Note that certain committees prefer that proposed revisions be presented in a standard format that would be specified in committee operating procedures or guides.

- *Use of Color in Ballots* — Do not rely solely on the use of color text or highlights to indicate proposed revisions. Use another noncolor formatting method as well, such as underlining/strike-through, boxing, clouding, or notations such as “add” or “delete.” (While color coding can enhance the readability of documents, it can cause confusion for those who do not have access to color printers and for those with color blindness.) The following should also be taken into consideration:
  - When using multiple colors, avoid colors close in the color spectrum, such as blue/light blue, blue/purple, and light grey/medium grey. Instead, opt for colors far apart in the color spectrum (e.g., yellow and dark blue). However, do not use red and green — red/green color blindness is the most common form of the condition.
  - Do not use different fonts or font sizes alone to indicate proposed revisions.
  - Do not use italics and boldface unless the affected material is intended to be italicized or boldfaced in the published version, such as for glossary terms and table subheadings.

[Examples of acceptable and unacceptable revisions](#) may be found at the end of these Guidelines.

## Preparation of Manuscripts for Submittal to C&S Publishing

- For new standards, a Word manuscript should be submitted.
- For revised standards
  - C&S Publishing prefers that a marked-up PDF of the previous edition with Word attachments (for extensive revisions) be submitted.
  - if a Word manuscript is submitted, revisions must be clearly indicated in the Word file (see Guidelines for the Use of MS Word and PDFs When Submitting Revisions).
  - manually marked-up pages of the standard are also acceptable. Make sure the markups are clear and legible in all scanned documents.
- The image files for new graphics must be provided (see Creation of New Graphic Files).
- When providing material electronically, include hard-copy printouts for verification of revisions. The hard copy should be single sided and all pages from the latest edition included. The electronic version of a proposed revision is considered to be correct if there are differences between the electronic and paper versions.
- ASME Staff is responsible for the preparation of revisions to the Cover Material, Front Matter, including a complete listing of all areas to be changed/revised (summary of revisions) for confirmation, and Back Matter as shown below in the checklist.

The following is a checklist of the various parts of a code or standard that should be included when submitting a manuscript to C&S Publishing:

### **COVER MATERIAL** (provided by Staff Engineer)

- ☐ Complete designator
- ☐ Complete title
- ☐ Revision line
- ☐ Other publication information, if applicable
- ☐ Department of Defense (DoD) notice, if needed
- ☐ All revisions indicated

### **FRONT MATTER** (provided by Staff Engineer)

- ☐ Copyright page
- ☐ Foreword
- ☐ Preface, if applicable
- ☐ Introduction, if applicable
- ☐ Summary of changes
- ☐ Committee roster
- ☐ Committee correspondence page, if applicable
- ☐ All revisions indicated

### **TEXT**

- ☐ Complete
- ☐ Legible

- ☐ Single-sided, double-spaced manuscript
- ☐ Equations legible
- ☐ All revisions indicated

### **FIGURES**

- ☐ Complete
- ☐ All callouts legible
- ☐ All revisions indicated or original graphics files provided

### **TABLES**

- ☐ Complete
- ☐ Legible
- ☐ All revisions indicated

### **BACK MATTER** (provided by Staff Engineer)

- ☐ Appendices - mandatory or nonmandatory
- ☐ Code Cases contain Foreword, Contents, Text, if applicable
- ☐ Index
- ☐ All revisions indicated

# Guidelines for the Use of MS Word and PDFs When Submitting Revisions

The purpose of these Guidelines is to establish consistent methods for submitting revisions using the electronic version of an existing code or standard. There are two acceptable methods, one using MS Word, and one using Adobe Acrobat.

## Method 1: MS Word

### 1. Base PDF

The base PDF to be used when making revisions should be a copy of the PDF produced by/obtained from ASME (the version uploaded under C&S Connect, when available).

### 2. Text Extraction and Markup

Text should be copied from the PDF and pasted into an MS Word document. Once the material has been pasted into the Word document, the MS Word's "Track Changes" tool should be turned on. This tool will capture all revisions being introduced. These tracked changes enable C&S Publishing editors to determine the most efficient way of transferring the revised material into the master document that will subsequently be used to generate the final, print-ready files.

In addition to the "Track Changes" tool, the "Comment" tool can be used to highlight specific areas requiring additional revision or special instructions.

Note that any revisions made to the Word document that have NOT been tracked by the "Track Changes" tool or highlighted by the "Comment" tool will not be included in the C&S master document.

### 3. Figures, Tables, and Equations

The preferred method for conveying minor revisions to existing figures, tables, and/or equations is to print out the affected page(s) and mark the revisions by hand. If major revisions are made or new figures, tables, and equations are developed, follow the Guidelines for the Creation of Tables, Graphics, and Equations.

## Method 2: PDF Annotation

### 1. Base PDF

The base PDF to be used when making revisions should be a copy of the PDF produced by/obtained from ASME (the version uploaded under C&S Connect, when available).

### 2. Editing Text, Figures, Tables, and Equations

Revisions should be marked on the base PDF using the Adobe Acrobat "Comment" features, such as the "Annotation" or "Drawing Markups" tools available in Adobe Acrobat Pro. If color coding is used, the color formatting guidelines in Preparation of Proposed Revisions for Ballot on page 2 shall be followed.

Different versions of Adobe Acrobat offer slightly different tool sets. As a guideline, markup should be shown using text boxes, colored highlights with pop-up comments, and/or boxed or circled text with pop-up comments. Avoid thin-lined strike-through, arrows, and "sticky notes," which may shift.

## Guidelines for the Creation of Tables, Graphics, and Equations

### Creation of Tables

Use the Microsoft Word table function to create tables and include them in the text near their first mention. Tables should *not* be created by using spaces or tabs. For more complex tables, Excel may be more appropriate (although such Excel files must be supplied separate from the Word manuscript). It is best to work in an environment in which you are comfortable. Each data entry should be placed within its own table cell; tabs and line returns should not be used.

If you have very complex tables, multilevel column headings, or merged-cell structures, it is best to discuss it with your Staff Secretary, provide a sample, and work with your Staff Secretary and C & S Publishing staff to create something usable and that best represents your intent.

### Creation of New Graphic Files

Graphic files for production and publishing must be provided directly from the application in which they were created, not solely embedded in a Word file. Word-embedded graphics are not acceptable for production, though they are useful for document review and balloting.

- Each illustration must also be supplied as a separate file.
- The file name should represent the figure as it is referred to in the text, e.g., Fig\_01.
- Images should be supplied at roughly the final, desired size.
- San Serif fonts, such as Arial, Helvetica, or Calibri, should be used for any text within a figure.
- Any text/labeling within a figure should be 8-point type.
- Any line work must be 0.5 pt. or greater.

The following are acceptable figure types and file formats:

- Vector (e.g., Illustrator files/line art): EPS (or native AI with all fonts embedded)
- Raster/Bitmap (e.g., Photoshop/photographs/halftone): TIF/TIFF
- CAD: DXF

### Equations

Equations must be provided in a clear, unambiguous fashion. It is best to work in an environment in which you are comfortable, e.g., MathType.

## Examples of Acceptable and Unacceptable Revisions

*Example 1* is unacceptable because the revisions have not been marked clearly. The author has revised Table 4 by pasting the revised values over the already existing values, leaving it unclear as to what revisions need to be made.

*Example 2* shows an acceptable version of Example 1. The proposed revisions are clearly indicated in Table 4.

*Example 3* is unacceptable because it illustrates a proposal where revisions are not denoted clearly.

*Example 4* shows an acceptable version of Example 3, where the revisions are indicated with both color and noncolor (underlining/strike-through) formatting methods.

*Example 5* also shows an acceptable markup: the page from the most recent version of the code was marked and an insert page was attached.

*Example 6* is unacceptable and was rejected because of illegible type. Also, note that the copy runs off the top of the page.

*Example 7* illustrates an acceptable method because both color and noncolor (underlining/strike-through) formatting methods are used to indicate the revisions.

*Example 8* illustrates an unacceptable method because a noncolor formatting method was not used to indicate the revisions.

## Example 1

(continued)

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### CASES OF ASME BOILER AND PRESSURE VESSEL CODE

**TABLE 2  
MECHANICAL PROPERTY  
REQUIREMENTS**

|                                           |    |
|-------------------------------------------|----|
| Tensile strength, min., ksi               | 74 |
| Yield strength, min., ksi                 | 58 |
| Elongation in 2 in., min., % <sup>1</sup> | 20 |

**NOTE:**

- (1) For longitudinal strip tests, a deduction from the basic values of 1.00% for each  $\frac{1}{32}$  in. decrease in wall thickness below  $\frac{1}{16}$  in. shall be made. The following table gives the computed values.

| Wall Thickness, in.      | Elongation in 2 in.,<br>Min., % |
|--------------------------|---------------------------------|
| $\frac{1}{16}$ (0.312)   | 20.0                            |
| $\frac{1}{32}$ (0.281)   | 19.0                            |
| $\frac{1}{64}$ (0.250)   | 18.0                            |
| $\frac{1}{128}$ (0.219)  | 17.0                            |
| $\frac{1}{256}$ (0.188)  | 16.0                            |
| $\frac{1}{512}$ (0.156)  | 15.0                            |
| $\frac{1}{1024}$ (0.125) | 14.0                            |
| $\frac{1}{2048}$ (0.094) | 13.0                            |
| $\frac{1}{4096}$ (0.062) | 12.0                            |
| 0.062 to 0.035, excl.    | 11.6                            |
| 0.035 to 0.022, excl.    | 10.9                            |
| 0.022 to 0.015, incl.    | 10.6                            |

**GENERAL NOTE:** The above table gives the computed minimum elongation values for each  $\frac{1}{32}$  in. decrease in wall thickness. Where the wall thickness lies between two values shown above, the minimum elongation value shall be determined by the following equation:

$$E = 32t - 10.0$$

where

$E$  = elongation in 2 in., %

$t$  = actual thickness of specimen, in.

**TABLE 3  
SPECIFICATION**

|      |        |
|------|--------|
| Tube | SA-213 |
|------|--------|

**TABLE 4  
MAXIMUM ALLOWABLE STRESS VALUES**

| For Metal Temperature<br>Not Exceeding, °F | Maximum Allowable<br>Stress Values, ksi |
|--------------------------------------------|-----------------------------------------|
| -20/100                                    | 21.1                                    |
| 200                                        | 21.1                                    |
| 300                                        | 21.1                                    |
| 400                                        | 21.1                                    |
| 500                                        | 21.1                                    |
| 600                                        | 20.9                                    |
| 650                                        | 20.7                                    |
| 700                                        | 20.6                                    |
| 750                                        | 20.3                                    |
| 800                                        | 19.9                                    |
| 850                                        | 19.6                                    |
| 900                                        | 18.9                                    |
| 950                                        | 17.8                                    |
| 1000                                       | 14.3                                    |
| 1050                                       | 11.2                                    |
| 1100                                       | 8.4                                     |
| 1150                                       | 6.6                                     |
| 1200                                       | 1.4                                     |

The allowable stress values are based on the revised criteria of tensile strength at temperature divided by 3.5, where applicable.

## Example 2

CASE (continued)

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EXAMPLE 2

### CASES OF ASME BOILER AND PRESSURE VESSEL CODE

TABLE 2  
MECHANICAL PROPERTY REQUIREMENTS

|                                         |    |
|-----------------------------------------|----|
| Tensile strength, min., ksi             | 74 |
| Yield strength, min., ksi               | 58 |
| Elongation in 2 in., min., % [Note (1)] | 20 |

NOTE:

(1) For longitudinal strip tests, a deduction from the basic values of 1.00% for each  $\frac{1}{32}$  in. decrease in wall thickness below  $\frac{3}{16}$  in. shall be made. The following table gives the computed values.

| Wall Thickness, in.    | Elongation in 2 in., min., % |
|------------------------|------------------------------|
| $\frac{3}{16}$ (0.312) | 20.0                         |
| $\frac{5}{32}$ (0.281) | 19.0                         |
| $\frac{1}{4}$ (0.250)  | 18.0                         |
| $\frac{7}{32}$ (0.219) | 17.0                         |
| $\frac{3}{16}$ (0.188) | 16.0                         |
| $\frac{5}{32}$ (0.156) | 15.0                         |
| $\frac{1}{8}$ (0.125)  | 14.0                         |
| $\frac{3}{32}$ (0.094) | 13.0                         |
| $\frac{1}{16}$ (0.062) | 12.0                         |
| 0.062 to 0.035, excl.  | 11.6                         |
| 0.035 to 0.022, excl.  | 10.9                         |
| 0.022 to 0.015, incl.  | 10.6                         |

GENERAL NOTE: The above table gives the computed minimum elongation values for each  $\frac{1}{32}$  in. decrease in wall thickness. Where the wall thickness lies between two values shown above, the minimum elongation value shall be determined by the following equation:

$$E = 32t + 10.0$$

where

$E$  = elongation in 2 in., %

$t$  = actual thickness of specimen, in.

TABLE 3  
SPECIFICATION

|      |        |
|------|--------|
| Tube | SA-213 |
|------|--------|

All other tables remain unchanged.

TABLE 4  
MAXIMUM ALLOWABLE STRESS VALUES

| For Metal Temperature Not Exceeding, °F | Maximum Allowable Stress Values, ksi |
|-----------------------------------------|--------------------------------------|
| -20 to 100                              | 21.1                                 |
| 200                                     | 18.5                                 |
| 300                                     | 21.1                                 |
| 400                                     | 21.1                                 |
| 500                                     | 21.1                                 |
| 600                                     | 20.9                                 |
| 650                                     | 20.7                                 |
| 700                                     | 20.6                                 |
| 750                                     | 20.3                                 |
| 800                                     | 19.9                                 |
| 850                                     | 19.5                                 |
| 900                                     | 18.9                                 |
| 950                                     | 17.8                                 |
| 1000                                    | 14.3                                 |
| 1050                                    | 11.2                                 |
| 1100                                    | 8.4                                  |
| 1150                                    | 5.5                                  |
| 1200                                    | 1.4                                  |

Insert new General Note

Insert new Values

GENERAL NOTE:  
The allowable stress values are based on the revised criterion of tensile strength at temperature divided by 3.5, where applicable.



### Example 3

#### RECORD 13-185

#### Proposal to incorporate Code Case 2615 in Section IV, Part HLW

#### CURRENT TEXT

##### HLW-302 MINIMUM THICKNESSES

The minimum thickness of sheet or plate material used for heads or shells in any lined or unlined water heater vessel shall not be less than  $\frac{1}{8}$  in. (3mm).

#### PROPOSED TEXT

##### HLW-302 MINIMUM THICKNESSES

The minimum thickness of sheet or plate material used for heads or shells in any lined or unlined water heater vessel shall be not less than  $\frac{1}{8}$  in. (3mm), except cylindrical shells shall not be less than  $\frac{3}{32}$  in. (2.5 mm) when no portion of the shell is used for heating surface.

## Example 4

RECORD 13-185

**Proposal to incorporate Code Case 2615 in Section IV, Part HLW**

### CURRENT TEXT

#### HLW-302 MINIMUM THICKNESSES

The minimum thickness of sheet or plate material used for heads or shells in any lined or unlined water heater vessel shall not be less than  $\frac{1}{8}$  in. (3mm).

### PROPOSED TEXT

#### HLW-302 MINIMUM THICKNESSES

The minimum thickness of sheet or plate material used for heads or shells in any lined or unlined water heater vessel shall be not ~~be~~ less than  $\frac{1}{8}$  in. (3mm). ~~except cylindrical shells shall be not less than  $\frac{3}{32}$  in. (2.5 mm) when no portion of the shell is used for heating surface.~~

## Example 5

### 2013 SECTION III, DIVISION 1 - NB

| <b>Table NB-3217-1</b><br><b>Classification of Stress Intensity in Vessels for Some Typical Cases (Cont'd)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                                                                                                                                               |                                                                                                                 |                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------|
| Vessel Part                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Location                                               | Origin of Stress                                                                                                                              | Type of Stress                                                                                                  | Classification      |
| Nozzle (NB-3227.5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Within the limits of reinforcement defined by NB-3334  | Pressure and external loads and moments, including those attributable to restrained free end displacements of attached piping                 | General membrane Bending (other than gross structural discontinuity stresses) averaged through nozzle thickness | $P_m$<br>$P_m$      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                        | Pressure and external axial, shear, and torsional loads other than those attributable to restrained free end displacements of attached piping | General membrane stresses                                                                                       | $P_m$               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Outside the limits of reinforcement defined by NB-3334 | Pressure and external loads and moments other than those attributable to restrained free end displacements of attached piping                 | Membrane Bending                                                                                                | $P_L$<br>$P_b$      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                        | Pressure and all external loads and moments                                                                                                   | Membrane Bending Peak                                                                                           | $P_L$<br>$Q$<br>$F$ |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nozzle wall                                            | Gross structural discontinuities                                                                                                              | Local membrane Bending Peak                                                                                     | $P_L$<br>$Q$<br>$F$ |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                        | Differential expansion                                                                                                                        | Membrane Bending Peak                                                                                           | $Q$<br>$Q$<br>$F$   |
| Cladding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Any                                                    | Differential expansion                                                                                                                        | Membrane Bending                                                                                                | $F$<br>$F$          |
| Any                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Any                                                    | Radial temperature distribution [Note (3)]                                                                                                    | Equivalent linear stress [Note (4)]                                                                             | $Q$                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                        |                                                                                                                                               | Nonlinear portion of stress distribution                                                                        | $F$                 |
| Any                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Any                                                    | Any                                                                                                                                           | Stress concentration (notch effect)                                                                             | $F$                 |
| GENERAL NOTE: $Q$ and $F$ classification of stresses refers to other than design condition (Figure NB-3222-1).<br>NOTES:<br>(1) If the bending moment at the edge is required to maintain the bending stress in the middle to acceptable limits, the edge bending is classified as $P_b$ . Otherwise, it is classified as $Q$ .<br>(2) Consideration shall also be given to the possibility of wrinkling and excessive deformation in vessels with a large diameter-thickness ratio.<br>(3) Consider possibility of thermal stress ratchet.<br>(4) Equivalent linear stress is defined as the linear stress distribution, which has the same net bending moment as the actual stress distribution. |                                                        |                                                                                                                                               |                                                                                                                 |                     |

replace with modified text on the following page

### Example 5 (Con't)

#### Proposed Changes:

|                       |     |                              |                     |        |
|-----------------------|-----|------------------------------|---------------------|--------|
| Cladding<br>(NB-3122) | Any | Pressure<br>Thermal gradient | Membrane<br>Bending | Q<br>Q |
|                       |     | Differential<br>Expansion    | Membrane<br>Bending | F<br>F |

## Example 6

### Size and Smaller Connected to Vessel Nozzles

Fillet welds are allowed for construction of appurtenances 2 in. standard pipe size and smaller and by which the appurtenances connect to vessel nozzles as permitted in NB-3337.4 and provided the requirements of (a) through (e) are met.

(a) The fabrication requirements of NB-4245 and the minimum dimensions and configuration requirements of Fig. NB-4245 shall be met where

- $c_{\min}$  = diametral clearance between connecting parts  
= 0.045 in.
- $d$  = outside diameter of Part B and shall be 2 in. max. pipe size
- $d_h$  = diameter of the hole and shall be  $2\frac{3}{8}$  in. max.
- $d_o$  = inside diameter of counterbore of Part A and shall be  $2\frac{1}{2}$  in. max.
- $d_o - d_h = 0.050$  in. min.
- $d_{\min} = 1$  in. or  $t$ , whichever is less
- $r_{\min} = \frac{1}{4} t_o$  or  $\frac{3}{4}$  in., whichever is less
- $t$  = thickness of part penetrated
- $t_{\min} = 0.7 t_o$
- $t_o$  = nominal thickness of connecting part
- $t_p$  = thickness of Part B
- $t_{p\min} = 2 \times$  required calculated thickness of Part B
- $t_c$  = depth of counterbore  $\geq t_p$
- $t_w$  = weld thickness and shall be  $\geq t_p$
- $y_{\min} = \frac{1}{32}$  in.
- $z$  = depth of engagement and shall be  $\frac{3}{8}$  in. min. for pipe sizes  $\frac{1}{2}$  in. to 2 in. and shall be  $\frac{1}{4}$  in. min. for pipe sizes under  $\frac{1}{2}$  in.

(b) The design of the joint shall be such that stresses will not exceed the limits of NB-3220 and tabulated in Tables 2A and 2B, as applicable, of Section II, Part D.

(c) A fatigue strength reduction factor of not less than 4 shall be used in the fatigue analyses of the joints.

(d) The finished welds shall be examined by a magnetic particle or liquid penetrant method in accordance with NB-5250.

(e) End closure connections may be made with fillet welds or partial penetration welds provided the conditions stated in NB-3353 are met.

### DIVISION 1 — NB

## EXAMPLE 6

(6) The minimum dimensions of Fig. NB-4245 shall be met, where

- $r_1 = \frac{1}{4}$  or  $\frac{3}{8}$  in. (19 mm), whichever is less
- $t$  = nominal thickness of part penetrated, in.
- $t_o = 0.7t$ , or  $\frac{1}{4}$  in. (6 mm), whichever is less
- $t_p$  = nominal thickness of penetrating part, in.

### NB-3364 Structural Attachment Welds

Welds for structural attachments shall meet the requirements of NB-4430.

### NB-3365 Welding Grooves

The dimensions and shape of the edges to be joined shall be such as to permit complete fusion and complete joint penetration, except as otherwise permitted in NB-3352.4.

### NB-3367 Thermal Treatment

All vessels and vessel parts shall be given the appropriate postweld heat treatment prescribed in NB-4620.

### NB-3368 SPECIAL VESSEL REQUIREMENTS

#### NB-3361 Category A or B Joints Between Sections of Unequal Thickness

In general, a tapered transition section as shown in Fig. NB-3361-1 which is a type of gross structural discontinuity (NB-3213.2) shall be provided at joints of Categories A and B between sections that differ in thickness by more than one-fourth the thickness of the thinner section. The transition section may be formed by any process that will provide a uniform taper. An ellipsoidal or hemispherical head which has a greater thickness than a cylinder of the same inside diameter may be machined to the outside diameter of the cylinder provided the remaining thickness is at least as great as that required for a shell of the same diameter. A uniform taper is not required for flanged hubs. The adequacy of the transition shall be evaluated by stress analysis. Stress intensity limitations are given in NB-3220. The requirements of this paragraph do not apply to flange hubs.

### NB-3363 Bolted Flange Connections

It is recommended that the dimensional requirements of bolted flange connections to external piping conform to ANSI B16.5, Steel Pipe Flanges and Flanged Fittings.

MF 98-10/3 292

1243

## Example 7

SCIV Item: 13-197

### HG-530 STAMPING OF BOILERS

#### HG-530.1 Stamping Requirements for Boilers Other Than Those Constructed Primarily of Cast Iron or Cast Aluminum (see HG-530.2).

(a) All boilers to which the Certification Mark is to be applied shall be built according to the rules of this Section by a manufacturer who is in possession of a Certification Mark and a valid Certificate of Authorization. Each boiler shall be stamped with the Certification Mark shown in Fig. HG-530.1 with the H designator and with the following data except as permitted in (f) (d) below:

- (1) the boiler manufacturer's name, preceded by the words "Certified by"
- (2) maximum allowable working pressure
- (3) safety or safety relief valve capacity (minimum), as determined according to HG-400.1(d) and HG-400.2(e)
- (4) heating surface, as determined according to HG-403 (or power input for electric boilers)
- (5) manufacturer's serial number
- (6) year built
- (7) maximum water temperature

NOTE: The year built may be incorporated into the serial number as a prefix consisting of the last two digits of the year.

(b) the information listed in (a) above, including the Certification Mark, shall be applied by stamping or etching that leaves a permanent, legible mark.

(1) The process controls for etching shall be described in the Quality Control System and shall be acceptable to the Authorized Inspector.

(2) The process controls shall be established so that the etched characters shall be at least 0.004 in. (0.10 mm) deep.

(c) (b) Items (1) through (7) listed in (a) above, with the markings arranged substantially as shown in Fig. HG-530.2 or Fig. HG-530.3, shall be stamped marked with letters at least 5/16 in. (8 mm) high [except as permitted in (f) (d)] and in some conspicuous place on the boiler proper or on a nameplate at least 3/64 in. (1.2 mm) thick permanently fastened to the boiler proper. The location of the stamping shall be as follows:

(d) The location of the marking shall be as follows:

- (1) *Horizontal Tubular Flue Type Boilers:* on the front head above the central rows of tubes or flues.

(2) *Locomotive Firebox, Compact, or Vertical Firetube Type Boilers:* over or near the fire door or handhole or washout plug opening on the front end or side.

(3) *Watertube Type Boilers:* on a head of the top outlet drum. Waterwalls and headers shall carry identifying markings.

Figure HG-530.1

Official Certification Mark to Denote the American Society of Mechanical Engineers' Standard



(4) *Split-Section and Section Firebox Type Wrought Boilers:* over or near the fire door or handhole or washout plug opening on the front end or side. Each section shall carry identifying markings.

(5) *Scotch Type Boilers:* on either side of the shell near the normal water level line adjacent to the front tubesheet.

(e) (e) On any of the above type boilers where there is not sufficient space in the places designated and on other types and new designs of boilers, the marking nameplate shall be located in a conspicuous place.

(f) (d) When there is insufficient space for the marking nameplate required above, smaller letter dimensions may be used, provided:

- (1) marking stamping shall be as required in (a) and (b) through (c) above, and
- (2) character size shall be no smaller than 5/32 in. (4 mm)
- (3) the information, including the Certification Mark, shall be applied by stamping or etching that leaves a permanent, legible mark. Characters shall either be indented or raised at least 0.004 in. (0.10 mm)

(g) (e) The marking stamping or nameplate on the boiler proper shall not be covered with insulating or other material unless:

- (1) the required markings are duplicated and stamped directly on the boiler casing in some

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conspicuous place using letters and numerals at least 5/16 in. (8 mm) high

(2) an opening with a removable cover is provided in the jacket or other form of casing so that, when removed, the **marking** stamping or nameplate on the boiler proper can be viewed

(3) the required data are duplicated by stamping, **etching** or **permanent** marking with letters at least 1/8 in. (3 mm) high on a nonferrous nameplate at least 3 in. x 4 in. (75 mm x 100 mm) size and permanently attaching the nameplate to the casing in some conspicuous place by mechanical means or by an adhesive system meeting the requirements of Appendix 3.

**(h) (4)** The Certification Mark may be preapplied to a nameplate. The nameplate may be attached to the boiler after the final fabrication and examination sequence but before the hydrostatic test, provided the procedure for sequence of **marking** stamping is described in the manufacturer's accepted quality control system. ~~The Certification Mark and manufacturer's serial number shall be stamped on nameplates but the other data may be stamped, etched, cast, or impressed thereon.~~

**(i) (g)** The Certification Mark shall not be used by an organization to which it was not issued.

**Figure HG-530.2**  
Steam and Water Boilers Form of **Marking** Stamping on Completed Boilers or their Nameplates (Not Applicable for Boilers Constructed Primarily of Cast Iron)

|                                                                                     |                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Certified by                                                                                                                                                                                                                                                                                                                                 |
|                                                                                     | (Name of Manufacturer) _____                                                                                                                                                                                                                                                                                                                 |
|  | <sup>1</sup> MAWP, Steam _____<br><sup>1</sup> MAWP, Water _____                                                                                                                                                                                                                                                                             |
|                                                                                     | <sup>1</sup> Maximum Water Temp. _____<br><sup>2</sup> Heating surface _____ boiler<br><sup>3</sup> Heating surface _____ water wall<br><sup>3</sup> Heating surface _____ extended<br><sup>3,4</sup> Ext HS generating cap _____<br>Minimum relief valve capacity _____<br>Manufacturer's serial no. _____<br><sup>5</sup> Year built _____ |

GENERAL NOTE: Acceptable abbreviations to any of the stamp wording may be used.

### NOTES:

- (1) For steam only boilers, MAWP Water and Maximum Water Temperature markings are optional.
- (2) Kilowatt power input for electric boilers.
- (3) List each type of surface separately. May be omitted if type heating surface is not present.
- (4) Generating capacity for extended heating surface [see HG-403(d)].
- (5) May be omitted when year built is prefix to serial number (see HG-530.1).

**Figure HG-530.3**  
Boilers Suitable for Water Only  
Form of **Marking** Stamping on Completed Boilers or their Nameplates (Not Applicable for Boilers Constructed Primarily of Cast Iron)

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Certified by                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                     | (Name of Manufacturer) _____                                                                                                                                                                                                                                                                                                                                      |
|  | MAWP, Water _____<br><sup>1</sup> Maximum Water Temp. _____<br><sup>1</sup> Heating surface _____ boiler<br><sup>2</sup> Heating surface _____ water wall<br><sup>2</sup> Heating surface _____ extended<br><sup>2,3</sup> Ext HS generating cap _____<br>Minimum relief valve capacity _____<br>Manufacturer's serial no. _____<br><sup>4</sup> Year built _____ |

GENERAL NOTE: Acceptable abbreviations to any of the stamp wording may be used.

### NOTES:

- (1) Kilowatt power input for electric boilers.
- (2) List each type of surface separately. May be omitted if type heating surface is not present.
- (3) Generating capacity for extended heating surface [see HG-403(d)].
- (4) May be omitted when year built is prefix to serial number (see HG-530.1).

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## Example 8

### Intent Interpretation

*Proposed Question:* A piping assembly consisting of P-5 material containing several welds was given a PWHT and examined. One weld was repaired and the assembly was given an additional PWHT. Is it the intent of para 341.3.1(a) that the welds that were not repaired be reexamined?

*Proposed Reply:* No.

### Proposed Code Change

Background... Based on Interpretation 21-48, clarification of para 341.3.1(a) is proposed.

| Current wording in B31.3-2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Proposed Change                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>341.3 Examination Requirements</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>341.3 Examination Requirements</b>                                                                                                                                                                                                                                                      |
| <b>341.3.1 General.</b> Prior to initial operation each piping installation, including components and workmanship, shall be examined in accordance with the applicable requirements of para. 341. The type and extent of any additional examination required by the engineering design, and the acceptance criteria to be applied, shall be specified. Joints not included in examinations required by para. 341.4 or by the engineering design are accepted if they pass the leak test required by para. 345. | <b>341.3.1 General.</b><br><br>....no change                                                                                                                                                                                                                                               |
| (a) For P-Nos. 3, 4, and 5 materials, examination shall be performed after completion of any heat treatment.                                                                                                                                                                                                                                                                                                                                                                                                   | (a) For P-Nos. 3, 4, and 5 materials, examination shall be performed after completion of any heat treatment post weld heat treatment, except that welds that have not been repaired do not require re-examination in the event that they are given an additional post weld heat treatment. |
| (b) For a welded branch connection the examination of and any necessary repairs to the pressure containing weld shall be completed before any reinforcing pad or saddle is added.                                                                                                                                                                                                                                                                                                                              | (b) ..no change                                                                                                                                                                                                                                                                            |

Additions are in red