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ASME/BPVC SEC III-1 NE Errata

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| Record# | Codes Affected | Subject | Posted Date |
|---------|----------------|---------------------------------------------------------------|-------------|
| 15-1964 | BPVC-III NE | ERRATA BPVC, Section III, Division 1, NE - Summary of Changes | 10/15/15 |

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ERRATA
TO
ASME BPVC.III.1.NE-2015

In the Summary of Changes for Section III, Division 1, Subsection NE, description of *Change* for NE-3221.1 is corrected by errata. For all other entries listed below, the changes are not part of Record 11-487 and are corrected by errata as editorial.

| <i>Page</i> | <i>Location</i> | <i>Change</i> |
|-------------|----------------------|---------------------------------------------------------------------------------------------------------|
| 1 | NE-1120 | In subparas. (a) and (b), “which” editorially revised to “that” |
| 8 | NE-2110 | Subparagraph (b) editorially revised |
| 8 | NE-2120 | Title and subparas. NE-2121(a) through NE-2121(c) editorially revised |
| 12 | NE-2130 | Editorially revised |
| 12 | NE-2150 | Editorially revised |
| 12 | NE-2190 | Subparagraph (a) editorially revised |
| 15 | NE-2311 | Subparagraph (a) editorially revised |
| 16 | NE-2331 | Title and subparas. (a) and (b) editorially revised |
| 16 | NE-2332 | (1) Title editorially revised (2) Titles of NE-2332.1 and NE-2332.2 editorially revised |
| 18 | Table NE-2332.1-2 | Title editorially revised |
| 17 | NE-2333 | (1) Title editorially revised (2) Title of NE-2333.1 editorially revised |
| 19 | Table NE-2333.1-1 | Title editorially revised |
| 23 | NE-2500 | (1) Title editorially revised (2) Title of NE-2510 editorially revised |
| 30 | NE-2575.1 | First sentence editorially revised |
| 41 | NE-3135 | Subparagraph (c) editorially revised |
| 47 | NE-3221.1 | (1) Subparagraph (c)(1)(-a) revised (11-487) (2) Subparagraphs (b)(2) and (c)(2) editorially revised |
| 84 | NE-3366.1 | Subparagraph (g) editorially revised |
| 88 | NE-4212 | First sentence editorially revised |
| 96 | NE-4311 | First sentence editorially revised |
| 109 | NE-4429 | Endnote editorially revised |
| 109 | NE-4432 | Editorially revised |
| 112 | NE-4622.3 | First sentence editorially revised |
| 112 | NE-4622.6 | Editorially revised |
| 114 | Table NE-4622.7(b)-1 | Note (2) editorially revised |
| | | |

SUMMARY OF CHANGES

After publication of the 2015 Edition, Errata to the BPV Code may be posted on the ASME Web site to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in the BPV Code. Such Errata shall be used on the date posted.

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

Changes given below are identified on the pages by a margin note, **(15)**, placed next to the affected area.

The Record Numbers listed below are explained in more detail in "List of Changes in Record Number Order" following this Summary of Changes.

| <i>Page</i> | <i>Location</i> | <i>Change (Record Number)</i> |
|-------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| viii | List of Sections | Revised |
| x | Foreword | (1) Revised (2) New footnote added by errata (13-860) |
| xiii | Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees | In last line of 6(a), URL revised |
| xv | Personnel | Updated |
| xxxii | Organization of Section III | (1) New footnote added (2) 9(d)(3) added (13-1032) |
| 1 | NE-1120 | "Which" revised to "that" in subparas. (a) and (b) (11-487) |
| 8 | NE-2110 | Subparagraph (b) revised (11-487) |
| 8 | NE-2120 | Title and subparas. NE-2121(a) through NE-2121(c) revised (11-487) |
| 12 | NE-2130 | Revised (11-487) |
| 12 | NE-2150 | Revised (11-487) |
| 12 | NE-2190 | Subparagraph (a) revised (11-487) |
| 15 | NE-2311 | Subparagraph (a) revised (11-487) |
| 16 | NE-2331 | Title and subparas. (a) and (b) revised (11-487) |
| 16 | NE-2332 | (1) Title revised (11-487) (2) Titles of NE-2332.1 and NE-2332.2 revised (11-487) |
| 18 | Table NE-2332.1-2 | Title revised (11-487) |
| 17 | NE-2333 | (1) Title revised (11-487) (2) Title of NE-2333.1 revised (11-487) |
| 19 | Table NE-2333.1-1 | Title revised (11-487) |
| 20 | NE-2420 | First sentence corrected by errata (14-2229) |
| 22 | NE-2432.1 | Subparagraph (d) corrected by errata (14-2229) |
| 23 | NE-2500 | (1) Title revised (11-487) (2) Title of NE-2510 revised (11-487) |



| <i>Page</i> | <i>Location</i> | <i>Change (Record Number)</i> |
|-------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 30 | NE-2575.1 | First sentence revised (11-487) |
| 37 | NE-3133.2 | Nomenclature term " S'' " revised (11-487) |
| 38 | NE-3133.3 | Equation in Step 3 revised (11-487) |
| 40 | NE-3133.6 | Subparagraph (a) revised (11-487) |
| 41 | NE-3134.6 | Revised (11-487) |
| 41 | NE-3135 | Subparagraph (c) revised (11-487) |
| 47 | Table NE-3221-1 | Fourth entries in third and fourth columns and Note (2) revised (11-487) |
| 49 | Figure NE-3221-2 | (1) " $3S_{m1}$ " revised to " $3S_m$ " (11-487) (2) Notes (2) and (3) revised (11-487) |
| 50 | Figure NE-3221-3 | Extraneous rules surrounding "Primary" head deleted by errata (14-933) |
| 51 | Figure NE-3221-4 | (1) Extraneous rules surrounding "Primary" head deleted by errata (14-933) (2) Note (2) corrected by errata (14-933) |
| 47 | NE-3221.1 | Subparagraphs (b)(2), (c)(1)(-a), and (c)(2) revised (11-487) |
| 52 | NE-3221.4 | Revised (11-487) |
| 52 | NE-3221.5 | (1) Subparagraphs (d)(1) and (d)(2) revised, including the equation (11-487) (2) Subparagraph (d)(3) corrected by errata (14-933) |
| 54 | NE-3221.6 | Endnote in subpara. (a) revised (11-487) |
| 55 | NE-3226 | Subparagraph (f) revised (11-487) |
| 56 | NE-3227.5 | Revised (11-487) |
| 56 | NE-3227.6 | First paragraph revised (11-487) |
| 57 | NE-3228.3 | First paragraph and subparas. (a) and (b) revised (11-487) |
| 58 | NE-3230 | NE-3231(a), NE-3232.1, NE-3232.2, NE-3232.3(b)(1), and NE-3236 revised (11-487) |
| 65 | NE-3324.12 | (1) Subparagraph (a)(2) revised (14-2185) (2) Endnote in subpara. (a)(2) corrected by errata (14-2229) |
| 67 | Figure NE-3325-1 | Captions for sketches (i) and (j) deleted by errata (14-1558) |
| 66 | NE-3325.2 | Subparagraph (b) corrected by errata (14-933, 14-1558) |
| 71 | NE-3331 | Subparagraph (b) revised (11-487) |
| 76 | NE-3338.2 | Second equation in subpara. (d)(1) corrected by errata (14-933) |
| 80 | NE-3352.4(d)(2)(-b) | Definition of nomenclature term "d" corrected by errata (14-932) |
| 80 | NE-3352.4(e)(1) | ASME reference revised (14-2185) |
| 84 | NE-3366.1 | Subparagraph (g) revised (11-487) |
| 87 | NE-4122.1 | Revised (14-45) |
| 88 | NE-4212 | First sentence revised (11-487) |
| 96 | Figure NE-4244(a)-1 | Illustration (d) editorially revised |



| <i>Page</i> | <i>Location</i> | <i>Change (Record Number)</i> |
|-------------|----------------------|--------------------------------------------------------|
| 99 | Figure NE-4244(d)-1 | Illustration (e) corrected by errata (14-932) |
| 96 | NE-4311 | First sentence revised (11-487) |
| 104 | NE-4324 | Corrected by errata (14-2229) |
| 109 | NE-4429 | Endnote revised (11-487) |
| 109 | NE-4432 | Revised (11-487) |
| 112 | NE-4622.3 | First sentence revised (11-487) |
| 112 | NE-4622.6 | Revised (11-487) |
| 114 | Table NE-4622.7(b)-1 | Note (2) revised (11-487) |
| 121 | NE-5521 | Subparagraphs (a), (a)(3), and (a)(4) revised (12-454) |
| 126 | NE-7111 | Subparagraph (b) revised (14-873) |
| 131 | NE-7727 | First sentence revised (14-873) |
| 133 | NE-7735 | First sentence revised (14-873) |

NOTE: Volume 63 of the Interpretations to Section III, Divisions 1 and 2, of the ASME Boiler and Pressure Vessel Code follows the last page of Subsection NCA.



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| Record# | Codes Affected | Subject | Posted Date |
|---------|----------------|------------------------|-------------|
| 15-1828 | BPVC-III NE | Table NE-3221-1 Errata | 09/25/15 |

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Special Stress Limits of NE-3227. The provisions of NE-3228 may provide relief from certain of these stress limits if plastic analysis techniques are applied. The stress intensity limits are summarized in Table NE-3221-1 and Figures NE-3221-1, NE-3221-2, NE-3221-3, and NE-3221-4.

- (15) **NE-3221.1 General Primary Membrane Stress Intensity.** (Derived from P_m in Figures NE-3221-1, NE-3221-2, NE-3221-3, and NE-3221-4.) This stress intensity is derived from the average value across the thickness of a section of the general primary stresses (NE-3213.8), produced by pressure and other specified mechanical loads but excluding all secondary and peak stresses. Averaging is to be applied to the stress components prior to determination of the stress intensity. The allowable Design Limit and the Service Limits is as given below.

(a) *Design Limit and Level A and B Service Limits.* P_m shall not exceed $1.0S_{mc}$.

(b) *Level C Service Limits*

(1) P_m shall not exceed the greater of $1.2S_{mc}$ or $1.0S_y$ for regions of the vessel which are integral and continuous.

(2) P_m shall not exceed $1.0S_{mc}$ for regions of the vessel that are not integral and continuous, such as bolted flanges and mechanical joints.

(c) *Level D Service Limits*

(1) P_m shall not exceed the greater of the following two values for regions of the containment which are integral and continuous.

(-a) 85% of the value permitted in Section III Appendices, Nonmandatory Appendix F. In the application of the rules of Section III Appendices, Nonmandatory Appendix F, S_m , if applicable, shall be as specified in Section II, Part D, Subpart 1, Tables 2A and 2B.

(-b) The value established in (b)(1) for Service Level C limits.

(2) P_m shall not exceed the greater of $1.2S_{mc}$ or $1.0S_y$ for regions of the vessel that are not integral and continuous and at partial penetration welds.

NE-3221.2 Local Membrane Stress Intensity. (Derived from P_L in Figures NE-3221-1, NE-3221-2, NE-3221-3, and NE-3221-4.) This stress intensity is derived from the average value across the thickness of a section of the local primary stresses (NE-3213.10) produced by pressure and specified mechanical loads, but excluding all secondary and peak stresses. Averaging is to be applied to the stress components prior to determination of the stress intensity values. The allowable value of this stress intensity is 1.5 times the values given in NE-3221.1, except that the 1.5 factor is not permitted for Level D Service Limits when inelastic component analysis is used as permitted in Section III Appendices, Nonmandatory Appendix F.

change to '1.8S_{mc}'

**Table NE-3221-1
Summary of Stress Intensity Limits**

| Symbol | Design Stress Intensity Limit | Loading Condition | | | | |
|---------------------|-------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| | | Level A Service Stress Intensity Limit | Level B Service Stress Intensity Limit and Level C Service Stress Limit Where the Structure Is Not Integral and Continuous | Level C Service Stress Intensity Limit Where the Structure Is Integral and Continuous, and Level D Service Stress Limit Where the Structure Is Not Integral and Continuous, and at Partial Penetration Welds [Note (1)] | Level D Service Stress Intensity Limit Where the Structure Is Integral and Continuous (Elastic Analysis) [Note (2)] | Level D Service Stress Intensity Limit Where the Structure Is Integral and Continuous (Inelastic Analysis) [Note (2)] |
| P_m | $1.0S_{mc}$ | $1.0S_{mc}$ | $1.0S_{mc}$ | $1.2S_{mc}$ or $* 1.0S_y$ | S_f | S_f |
| P_L | $1.5S_{mc}$ | $1.5S_{mc}$ | $1.5S_{mc}$ | $1.8S_{mc}$ or $* 1.5S_y$ | $1.5S_f$ | S_f |
| $P_L + P_b$ | $1.5S_{mc}$ | $1.5S_{mc}$ | $1.5S_{mc}$ | $1.8S_{mc}$ or $* 1.5S_y$ | $1.5S_f$ | S_f |
| [Note (3)] | | | | | | |
| $P_L + P_b + Q$ | N/A [Note (4)] | $3.0S_m$ | $3.0S_m$ [Note (5)] | N/A [Note (4)] | N/A [Note (4)] | N/A [Note (4)] |
| $P_L + P_b + Q + F$ | N/A [Note (4)] | S_a | S_a [Note (5)] | N/A [Note (4)] | N/A [Note (4)] | N/A [Note (4)] |

NOTES:

- Limits identified by (*) indicate a choice of the larger of two limits.
- S_f is 85% of the general primary membrane allowable permitted in Section III Appendices, Nonmandatory Appendix F. In the application of the rules of Section III Appendices, Nonmandatory Appendix F, S_m , if applicable, shall be as specified in Section II, Part D, Subpart 1, Tables 2A and 2B.
- Values shown are for a solid rectangular section. See NE-3221.3(d) for other than a solid rectangular section.
- N/A — No evaluation required.
- Evaluation not required for Level C Service.

Figure NE-3221-1
Stress Categories and Limits of Stress Intensity for Design Conditions

| Stress Category | Primary | | |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| | General Membrane | Local Membrane | Bending |
| Description (Table NE-3217-1) | Average primary stress across solid section. Excludes discontinuities and concentrations. | Average stress across any solid section. Considers discontinuities but not concentrations. | Component of primary stress proportional to distance from centroid of solid section. Excludes discontinuities and concentrations. |
| Symbol [Note (1)] | P_m | P_L | P_b |
| Combination Stress Components and Allowable Limits of Stress Intensities | <pre> graph TD Pm[Pm] --> Smc1((Smc)) PL[PL] --> Smc2((1.5 Smc)) Smc1 --> PLPLb[P_L + P_b] Smc2 --> PLPLb PLPLb --> Smc3((1.5 Smc)) Smc3 --- Note2[Note 2] </pre> | | |
| Legend | <p> Allowable value Calculated value Use Design Loads </p> | | |

NOTES:

- (1) The symbols P_m , P_L , and P_b do not represent single quantities, but rather sets of six quantities representing the six stress components σ_t , σ_l , σ_r , τ_{lt} , τ_{lr} , and τ_{rl} .
- (2) Value shown is for a solid rectangular section. See NE-3221.3(d) for other than a solid rectangular section.

NE-3221.3 Primary General or Local Membrane Plus Primary Bending Stress Intensity. (Derived from $P_L + P_b$ in Figures NE-3221-1, NE-3221-2, NE-3221-3, and NE-3221-4.) This stress intensity is derived from the highest value, across the thickness of a section, of the general or local primary membrane stress plus primary bending stresses produced by pressure and other loads but excluding all secondary and peak stresses. The allowable Design Limit and the allowable Service Limits are as given in (a) through (d) below.

(a) *Design Limit and Level A and B Service Limits.* For solid rectangular sections, 1.5 times the value given in NE-3221.1.

(b) *Level C Service Limits*

(1) For solid rectangular sections where the structure is integral and continuous, 1.5 times the value given in NE-3221.1.

(2) For solid rectangular sections when the structure is not integral and continuous, 1.5 times the value given in NE-3221.1.

(c) *Level D Service Limits*

(1) When elastic analysis is used for solid rectangular sections where the structure is integral and continuous, 1.5 times the value given in NE-3221.1.

(2) When elastic analysis is used for solid rectangular sections where the structure is not integral and continuous, 1.5 times the value given in NE-3221.1.

(3) When inelastic component analysis is used, this Service Limit shall be 85% of the value permitted in Section III Appendices, Nonmandatory Appendix F.

(d) For other than solid rectangular sections, a value of α times the limit established in NE-3221.1 may be used, where the factor α is defined as the ratio of the load set producing a fully plastic section divided by the load set producing initial yielding in the extreme fibers of the section. In the evaluation of the initial yield and fully plastic section capacities, the ratios of each individual load in the respective load set to each other load in that load set shall be the same as the respective ratios of the individual loads in the specified design load set. The value of α shall

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Figure NE-3221-3

Stress Categories and Limits of Stress Intensity for Level C Service Limits Where the Structure Is Integral and Continuous; and for Level D Service Limits Where the Structure Is Not Integral and Continuous, and at Partial Penetration Welds

