API 6A 21st Edition, Errata #1 Items
SC-6 Review

David Zollo – SC-6 TG2
Section 4.3.3.2 Material Classes for Sour Service

Add comma: “…sulfide (H2S), when a value is specified by NACE MR0175/ISO 15156, in units consistent with the rated working pressure markings and prefixes.”

Material classes DD, EE, FF, and HH shall include as part of the designation and marking the maximum allowable partial pressure of hydrogen sulfide (H2S), when a value is specified by NACE MR0175/ISO 15156, in units consistent with the rated working pressure markings and prefixes. Where no H2S limit is defined by NACE MR0175/ISO 15156 for the partial pressure, no partial pressure shall be marked. The maximum allowable partial pressure shall be in accordance with NACE MR0175/ISO 15156 at the designated temperature rating (see Table 2) for the limiting part(s) in the equipment assembly. When the rated working pressure is marked in pounds per square inch, the H2S partial pressure limit shall be marked in pounds per square inch.
Section 6.4.1

Change: The QTC shall qualify only material and parts produced from the same heat and heat-treat lot.

To: For material heat treated in a batch furnace, the QTC shall qualify only material and parts produced from the same heat. For material heat treated in a continuous furnace, the QTC shall qualify only material and parts produced from the same heat and heat-treat lot.

Current wording forces a QTC for every batch heat-treat lot, irrespective of PSL.
Section 6.4.4.1: Inconsistent conversion (or rounding) of 120F to Celsius. Some places the temperature is specified to be 49C (which is more accurate) and in the rest of the places it is specified as 50C. Need to standardize the conversion.

49 °C: 6.3.4.3.1 (Quenching), 13.6 (Storage of non-metallic seals)
50 °C: 6.3.2.2.1, 6.4.4.1, 13.2, 14.3.2.3.3, 14.13.3.2.5.2, F.1.6.2.1, F.1.6.2.2, …

Change all 50 deg C conversions to 49 deg C as this is more exact.
Section 13.2 is an exception. Fahrenheit temperature is 125F thus centigrade should be 52C.
7.5.2 Weld Overlay for Other Than Corrosion Resistance

Was:
— Hard facing or other types of weld overlay for use in hydrogen-sulfide service shall conform to the requirements of NACE MR0175/ISO 15156. The base material shall retain the minimum mechanical property requirements after post-weld heat-treatment.

Change to:
— Hard facing or other types of weld overlay for use in hydrogen-sulfide service shall conform to the requirements of NACE MR0175/ISO 15156.

— The base material shall retain the minimum mechanical property requirements after post-weld heat-treatment.
Table 16—Acceptable Closure Bolting for 6B and 6BX Flanged and Studded Connections

<table>
<thead>
<tr>
<th>Pressure Rating MPa (psi)</th>
<th>Nominal Size (in.)</th>
<th>ASTM Bolting Standard(s) and 0.2 % Offset Yield Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nonexposed Bolting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A193 GR. B7 (≤ 2.5&quot;)</td>
</tr>
<tr>
<td>13.8 (2000)</td>
<td>All sizes</td>
<td>✓</td>
</tr>
<tr>
<td>20.7 (3000)</td>
<td>All sizes</td>
<td>✓</td>
</tr>
<tr>
<td>34.5 (5000)</td>
<td>All sizes</td>
<td>✓</td>
</tr>
<tr>
<td>69.0 (10,000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.5 (15,000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studs, Bolts, and Cap Screws</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 16

**Change:** Table row for 18¾” nominal size to the following:

- ✓ Gr. L43 only
- ✓ Unacceptable

**Change:** Header row for A453 Gr. 660 D bolting to account for 95ksi yield strength for greater than 2.5” diameter

<table>
<thead>
<tr>
<th>A453 GR. 660D (≤ 4.0”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRA</td>
</tr>
<tr>
<td>725 MPa (105 Ksi) ≤ 2.5”</td>
</tr>
<tr>
<td>655 MPa (95 Ksi) &gt; 2.5”</td>
</tr>
</tbody>
</table>
### Table 16 – Add 16-3/4-10,000 psi size

<table>
<thead>
<tr>
<th>From</th>
<th>69.0 (10,000)</th>
<th>and Cap Screws</th>
<th>1\textsuperscript{13}/16, 2\textsuperscript{1}/16, 2\textsuperscript{9}/16, 3\textsuperscript{1}/16</th>
<th>✓</th>
<th>NA</th>
<th>✓</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4\textsuperscript{1}/16</td>
<td>✓</td>
<td>NA</td>
<td>✓</td>
<td>Unacceptable</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5\textsuperscript{1}/8</td>
<td>✓</td>
<td>NA</td>
<td>✓</td>
<td>Unacceptable</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7\textsuperscript{1}/16</td>
<td>✓</td>
<td>NA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9, 11, 13\textsuperscript{5}/8, 18\textsuperscript{3}/4, 21\textsuperscript{1}/4</td>
<td>✓</td>
<td>NA</td>
<td>Unacceptable</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>To</th>
<th>69.0 (10,000)</th>
<th>and Cap Screws</th>
<th>1\textsuperscript{13}/16, 2\textsuperscript{1}/16, 2\textsuperscript{9}/16, 3\textsuperscript{1}/16</th>
<th>✓</th>
<th>NA</th>
<th>✓</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4\textsuperscript{1}/16</td>
<td>✓</td>
<td>NA</td>
<td>Unacceptable</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5\textsuperscript{1}/8</td>
<td>✓</td>
<td>NA</td>
<td>Unacceptable</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7\textsuperscript{1}/16</td>
<td>✓</td>
<td>NA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9, 11, 13\textsuperscript{5}/8, 16\textsuperscript{3}/4, 18\textsuperscript{3}/4, 21\textsuperscript{1}/4</td>
<td>✓</td>
<td>NA</td>
<td>Unacceptable</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 10.4.3.2.2:

Change “Acceptance criteria shall be in accordance with 10.4.2.12.3, 10.4.2.12.5, or 10.4.2.12.6.” to “Acceptance criteria shall be in accordance with 10.4.2.12.3 or 10.4.2.12.5”.

10.4.2.12.6 is not applicable to stems.
11.2.2 Hydrostatic Test Acceptance Criteria

a) The equipment shall show no visible leakage while subjected to test pressure, except as specified otherwise in this subsection.

... 

d) For metal seating check valves, the maximum allowable through-bore leakage in hydrostatic seat testing shall be in accordance with ISO 5208 Rate E.
Section 14.1.1.2 (NOTE):

**Change:** NOTE Studded outlet connections are of the ring-joint type and are designed with a flat face. Studded outlet connections with rated working pressure of 13.8 MPa, 20.7 MPa, and 34.5 MPa (2000 psi, 3000 psi, and 5000 psi) are intended for assembly to 6B through-bolted flanges. Studded outlet connections with rated working pressure of 69.0 MPa, 103.5 MPa, and 138.0 MPa (10,000 psi, 15,000 psi, and 20,000 psi) are intended for assembly to 6BX through-bolted flanges.

**To:** NOTE Studded outlet connections are of the ring-joint type and are designed with a flat face. Studded outlet connections with rated working pressure of 13.8 MPa, 20.7 MPa, and 34.5 MPa (2000 psi, 3000 psi, and 5000 psi) are intended for assembly to 6B through-bolted flanges and to Type 6BX flange sizes shown in Table D.7/Table E.7. Studded outlet connections with rated working pressure of 69.0 MPa, 103.5 MPa, and 138.0 MPa (10,000 psi, 15,000 psi, and 20,000 psi) are intended for assembly to 6BX through-bolted flanges.
Delete 1st Sentence: Annex C provides dimensions and data expressed in USC units, which may be used as alternative units to those SI units used in the body of this specification, while maintaining complete interchangeability.
Table D.4, Footnote b
Replace with:  \( Q'' \) max = \( E \); \( Q'' \) min = 3 mm.  See Table D.11 for value of \( E \) if not listed. Raised face (\( \varnothing K \)) may be omitted on studded connectors, but thickness \( T \) shall still apply.

Table D.5, Footnote b
Replace with:  \( Q'' \) max = \( E \); \( Q'' \) min = 3 mm.  See Table D.11 for value of \( E \) if not listed. Raised face (\( \varnothing K \)) may be omitted on studded connectors, but thickness \( T \) shall still apply.

Table D.6, Footnote b
Replace with:  \( Q'' \) max = \( E \); \( Q'' \) min = 3 mm.  See Table D.11 for value of \( E \) if not listed. Raised face (\( \varnothing K \)) may be omitted on studded connectors, but thickness \( T \) shall still apply.
Table E.4, E.5, E.6 Footnote b

Replace with: \( Q'' \text{ max } = E; \ Q'' \text{ min } = 0.12 \text{ in.} \) See Table E.11 for value of \( E \) if not listed. Raised face (\( \varnothing K \)) may be omitted on studded connectors, but thickness \( T \) shall still apply.

Table E.5, Footnote b

Replace with: \( Q'' \text{ max } = E; \ Q'' \text{ min } = 0.12 \text{ in.} \) See Table E.11 for value of \( E \) if not listed. Raised face (\( \varnothing K \)) may be omitted on studded connectors, but thickness \( T \) shall still apply.

Table E.6, Footnote b

Replace with: \( Q'' \text{ max } = E; \ Q'' \text{ min } = 0.12 \text{ in.} \) See Table E.11 for value of \( E \) if not listed. Raised face (\( \varnothing K \)) may be omitted on studded connectors, but thickness \( T \) shall still apply.
Replace values for test flange counterbore depth $P$ as shown below.

### Table D.6

<table>
<thead>
<tr>
<th>Nominal size of flange (in.)</th>
<th>Test flange c'bore depth $P^h$</th>
<th>Tolerance $&gt;$ max. $^h$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1^{\frac{3}{16}}$</td>
<td>0.42 63.5</td>
<td></td>
</tr>
<tr>
<td>$2^{\frac{1}{16}}$</td>
<td>0.58 63.5</td>
<td></td>
</tr>
<tr>
<td>$2^{\frac{9}{16}}$</td>
<td>0.99 63.5</td>
<td></td>
</tr>
<tr>
<td>$3^{\frac{1}{16}}$</td>
<td>1.22 63.5</td>
<td></td>
</tr>
<tr>
<td>$4^{\frac{1}{16}}$</td>
<td>1.36 63.5</td>
<td></td>
</tr>
<tr>
<td>$7^{\frac{1}{16}}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$13^{\frac{5}{8}}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table E.6

<table>
<thead>
<tr>
<th>Nominal size of flange (in.)</th>
<th>Test flange c'bore depth $P^h$</th>
<th>Tolerance $&gt;$ max. $^h$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1^{\frac{13}{16}}$</td>
<td>0.36 2.50</td>
<td></td>
</tr>
<tr>
<td>$2^{\frac{1}{16}}$</td>
<td>0.43 2.50</td>
<td></td>
</tr>
<tr>
<td>$2^{\frac{9}{16}}$</td>
<td>0.58 2.50</td>
<td></td>
</tr>
<tr>
<td>$3^{\frac{1}{16}}$</td>
<td>0.81 2.50</td>
<td></td>
</tr>
<tr>
<td>$4^{\frac{1}{16}}$</td>
<td>1.22 2.50</td>
<td></td>
</tr>
<tr>
<td>$7^{\frac{1}{16}}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$13^{\frac{5}{8}}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Add: The “T” (Total Thickness) to the Figure for Blind and Test Flanges

[Replaced Figure]
Table E.7 Figure

Add: The “T” (Total Thickness) to the Figure for Blind and Test Flanges

[Replaced Figure]
Table E.7

Change “15°” on back of blind & test flange figures to “≤15°”.
Add “C” dimension column to Table E.7.

To align with 20th edition. This appears to be an inadvertent technical change from 20th to 21st Edition.
Table E.7

Change “C x 45° TYP” chamfer on integral flange figure to “≤C x 45° TYP”.

To align with 20\textsuperscript{th} edition. This appears to be an inadvertent technical change from 20\textsuperscript{th} to 21\textsuperscript{st} Edition.

Should the chamfers in figures E.5 and E.6 align with this as well (i.e. change to “≤C x 45° TYP”)? (The chamfers on the blind and test flanges are not specified).

Need to change D.7 as well.
Table D.10—Type RX Ring Gaskets
Change: Height of Ring for RX49 from 25.4 to 25.40

Table D.12-Type BX Ring Gaskets
Add Footnote to Table: The variation of width $A$ or Height $H$ of any ring shall not exceed 0.10 mm throughout its entire circumference

Table E.12
Add Footnote to Table: The variation of width $A$ or Height $H$ of any ring shall not exceed 0.004 in. throughout its entire circumference
Table D.13 & D.14

Table D.13

**Change:** $H_{H_0}$ for $3^{1/8} \times 2^{1/16}$ - 13.8 MPa from 170.5 to 170.0

Under 69.0 MPa, **change** all reference to the value of 77.8 to **77.7 (7 instances)**

Under 103.5 MPa, **change** all reference to the value of 77.8 to **77.7 (7 instances)**

Under 138.0 MPa, **change** all reference to the value of 77.8 to **77.7 (6 instances)**

Table D.14

Under 69.0 MPa, **change** all reference to the value of 79.3 to **77.7 (7 instances)**

Under 103.5 MPa, **change** all reference to the value of 79.3 to **77.7 (7 instances)**

Under 138.0 MPa, **change** all reference to the value of 79.3 to **77.7 (6 instances)**
Table D.18

Replace Figure with clearer version
Table D.21
Delete footnote flag ‘a’ from bottom figure.
Table D.23

In the $3^{1/8} \times 3^{3/16}$ nominal size line, **change** 437.0 to **473.0**
Add Footnote “b” **Bore tolerance for 5^{1/8} in. size is +1.0/-0**
Add Callouts for “b” to 130.2 mm column **Bore B** (2 places)
Table D.24.c)

In the $5^{1/8}$ size line, change 717.0 to $737.0$
### Table E.15

Change “Outside Diameter” value for 1" Nominal Size from 0.320 to **1.320**

Change “Hex Height for External Hex” value for Nominal Size ¾" from 0.31 to **0.38**
Table E.16

Change the radius value in Figure from ≤R0.13 to ≤R0.12
Table E.17

Change “Full Thread Length (Ref.)” value for Nominal Outlet Size $2^{9/16}$" from 1.78 to read 1.76
Table E.21

Delete footnote flag ‘a’ from bottom figure.

Change “Thread Major Diameter” value for Nominal Size $2^{9/16}$" from 2.561 to 2.531
Table E.22

In column for Bore B, on value of 7.12, delete footnote callout “a”.
In last column (20,000 psi), replace “28.50” with “26.50.”.
Table E.23

In last column (20,000 psi), replace “28.50” with “26.50.” (2 places)
Add Footnote “b” Bore tolerance for 5\(\frac{1}{8}\) in. size is +0.04/-0
Add Callouts for “b” to 5.12 in column Bore B (2 places)
Table G.4

Change 2nd entry in table to ASTM 453/453M Gr 660D (UNS S66286)
Section G.5.2.2.2

Change the 1\textsuperscript{st} Sentence to read:

“Se at temperature shall be minimum yield strength of the material strength class of Table 8, reduced by the amount of de-rating of yield strength at the elevated temperature compared to the measured yield strength \textit{at} a temperature between 4 °C and 50 °C (between 40 °F and 120 °F).”
Section L.2.
Revise to read:
Segmented flange dimensions shall conform to Table L.1 or Table L.2. Ring groove dimensions shall conform to Table D.10/Table E.10 L.2.
Table E.11

Change Radius at the bottom of the BX ring groove from “≤R0.03in” back to “R0.03in” or to “≤R0.05in”.

This appears to be an inadvertent technical change from 20th to 21st Edition.
Table E.21/D.21

Table E.21
Change Thread minor diameter for Nom. Size 2-9/16" from “2.408” to “2.404”.

D.21 also needs to be corrected was "61.16" should be "61.06".

Although this error is inherited from the 20th edition, This dimension deviates from the STUB ACME diameter for the thread.