3.10.3 EXEMPTIONS FROM REQUIREMENT OF SAMPLE TEST COUPONS

3.10.3.1 Standard Pressure Parts. An exception to the requirements of 3.10.2.2 and 3.10.2.3 shall apply to standard nonwelded items such as described in 3.2.3.3 and 3.2.4. These may be subjected to postweld heat treatment with the vessel or vessel part without the same treatment being required of the test specimens. This exception shall not apply to castings that are specially designed or to cast wrought fittings.

3.10.3.2 For PWHT to Table 6.16. Materials listed in Section IX, Table QW/QR-422 as P-No. 1 Group 3 and P-No. 3, Groups 1 and 2 that are certified in accordance with 3.10.2.2 and 3.10.2.3 from test specimens subject to the PWHT requirements of Table 6.9 or Table 6.9 need not be recertified if subjected to the alternative PWHT conditions permitted in Table 6.16.

3.10.3.3 Re-Austenitized Materials. All thermal treatments which precede a thermal treatment that fully austenitize the material need not be accounted for by the specimen heat treatments, provided the austenitizing temperature is at least as high as any of the preceding thermal treatments.

3.10.4 PROCEDURE FOR OBTAINING TEST SPECIMENS AND COUPONS

3.10.4.1 Plates.
(a) Unless otherwise specified, test specimens shall be taken in accordance with the requirements of the applicable material specification, except for the provisions in (b), (c), and (d) below. Tension test specimens and Charpy V-notch specimens shall be oriented in the direction perpendicular to the final direction of the plate rolling.

(b) When the plate is heat treated with a cooling rate faster than still-air cooling from the austenitizing temperature, the specimens shall be taken in accordance with requirements of applicable material specifications and $t$ from any heat-treated edge, where $t$ is the nominal thickness of the material.

(c) Where a separate test coupon is used to represent the vessel material, it shall be of sufficient size to ensure that the cooling rate of the region from which the test specimens are removed represents the cooling rate of the material at least $b/2$ deep and $1t$ from any edge of the product. Unless cooling rates applicable to the bulk pieces or product are simulated in accordance with 3.10.5, the dimensions of the coupon shall be not less than $3t \times 3t \times 1t$, where $t$ is the nominal thickness of the material.

(d) When flat head, tubsheets, and flanges with integral hubs for but welding are to be machined from plate, additional specimens shall be taken in the locations as shown in Figure 5.2.

3.10.4.2 Forgings.
(a) Test specimens shall be taken in accordance with the applicable material specification, except for the provisions in (b), (c), and (d) below.

(b) When the forging is heat treated with a cooling rate faster than still-air cooling from the austenitizing temperature, the specimens shall be taken at least $b/2$ of the maximum heat-treated thickness from one surface and $1t$ from a second surface. This is normally referred to as $b/2 \times 1t$. Where $t$ is the maximum heat-treated thickness. A thermal buffer may be used to achieve these conditions unless cooling rates applicable to the bulk forgings are simulated in accordance with 3.10.5.

(c) For complex forgings, such as contour nozzles, thick tubsheets, flanges, and other complex forgings that are contour shaped or machined to essentially the finished product configuration prior to heat treatment, the registered engineer who prepares the Design Report shall designate the surfaces of the finished product subject to high tensile stresses in service. Test specimens for these products shall be removed from prolongations or other stock provided on the product. The specimens shall be removed as follows:

1. The distance from the longitudinal axis of the specimen to the nearest heat-treated surface shall be no less than the distance from the location where the maximum tensile stress is expected to the nearest heat-treated surface. This distance shall be at least $19$ mm ($3/4$ in.).
2. The distance from the mid-length of the specimen to a second heat-treated surface shall be at least twice the distance in (1). This distance shall be at least $38$ mm ($1.5$ in.).

(d) With prior approval of the vessel Manufacturer, test specimens for flat ring and simple ring forgings may be taken from a separately forged piece under the following conditions.

1. The separate test forging shall be of the same heat of material and shall be subjected to substantially the same reduction and working as the production forgings it represents.
2. The separate test forging shall be heat treated in the same furnace charge and under the same conditions as the production forgings.
3. The separate test forging shall be of the same nominal thickness as the production forgings. Test specimen material shall be removed as required in (a) and (b).