provided the hole is closed by filler metal only. If the hole is closed by welding in a metal insert, the welding shall be performed by a holder of a Certificate of Authorization in accordance with the requirements of the Code.

NE-2573.3 Qualification of Welding Procedures and Welders. Each manufacturer is responsible for the welding done by his organization and shall establish the procedures and conduct the tests required by Article NE-4000 and by Section IX of the Code in order to qualify both the welding procedures and the performance of welders and welding operators who apply these procedures. He is also responsible for the welding performed by his subcontractors and shall assure himself that the subcontractors conduct the tests required by Article NE-4000 and by Section IX of the Code in order to qualify their welding procedures and the performance of their welders and welding operators.

NE-2573.4 Blending of Repaired Areas. After repair, the surface shall be blended uniformly into the surrounding surface.

NE-2573.5 Examination of Repair Welds. Each repair weld shall be examined by the magnetic particle method in accordance with the requirements of NE-2577 or by the liquid penetrant method in accordance with the requirements of NE-2576. In addition, when radiography is specified in the order for the original casting, repair cavities, the depth of which exceeds the lesser of 1/4 in. (10 mm) or 10% of the section thickness, shall be radiographed after repair, except that weld slag, including elongated slag, shall be considered as inclusions under Category B of the applicable reference radiographs. The total area of all inclusions, including slag inclusions, shall not exceed the limits of the applicable severity level of Category B of the reference radiographs. The penetrant and acceptance standards for radiographic examination of repair welds shall be based on the actual section thickness at the repair area.

NE-2573.6 Heat Treatment After Repairs. The material shall be heat treated after repair in accordance with the heat treatment requirements of NE-4620, except that the heating and cooling rate limitations of NE-4623 do not apply.

NE-2573.7 Elimination of Surface Defects. Surface defects shall be removed by grinding or machining provided the requirements of (a) through (c) below are met:

(a) the depression, after defect elimination, is blended uniformly into the surrounding surface;

(b) after defect elimination, the area is reexamined by the magnetic particle method in accordance with NE-2577 or the liquid penetrant method in accordance with NE-2576 to assure that the defect has been removed or reduced to an imperfection of acceptable size;

(c) if the elimination of the defect reduces the section thickness below the minimum required by the specification or drawing, the casting shall be repaired in accordance with NE-2539.

NE-2573.8 Material Report Describing Defects and Repairs. Each defect repair exceeding in depth the lesser of 3/8 in. (19 mm) or 10% of the section thickness shall be described in the Certified Material Test Report. The Certified Material Test Report for each piece shall include a chart that shows the location and size of the prepared cavity, the welding material identification, the welding procedure, the heat treatment, and the examination results, including radiographic film, where radiography is specified in the order for the original casting.

NE-2574 Ultrasonic Examination of Ferritic Steel Castings

Ultrasonic examination shall be performed in accordance with Section V, Article 5, T-571.4. Each manufacturer shall certify that the procedure is in accordance with the requirements of NE-2574 and shall make the procedure available for approval upon request.

NE-2574.1 Acceptance Standards.

(a) The Quality Levels of SA-609 as shown in Section V shall apply for the casting thicknesses indicated:
(1) Quality Level 1 for thicknesses up to 2 in. (50 mm);
(2) Quality Level 3 for thicknesses 2 in. to 4 in. (50 mm to 100 mm);
(3) Quality Level 4 for thicknesses greater than 4 in. (100 mm).

(b) In addition to the Quality Level requirements stated in (a) above, the requirements in (1) through (5) below shall apply for both straight beam and angle beam examination.

(1) Areas giving indications exceeding the Amplitude Reference Line with any dimension longer than those specified in the following tabulation are unacceptable:

<table>
<thead>
<tr>
<th>UT Quality Level</th>
<th>Longest Dimension of Area, in. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.5 (38)</td>
</tr>
<tr>
<td>2</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>3</td>
<td>2.5 (64)</td>
</tr>
<tr>
<td>4</td>
<td>3.0 (75)</td>
</tr>
</tbody>
</table>

NOTES:
(1) The areas for the Ultrasonic Quality Levels in SA-609 refer to the surface area on the casting over which a continuous indication exceeding the transfer corrected distance amplitude curve is maintained.
(2) Areas are to be measured from dimensions of the movement of the search unit, using the center of the search unit as the reference point.
SUBJECT: Case N-414 Tack Welds for Section III, Division 1, Class 1, 2, 3 and MC Components and Piping Supports

MOTION: Adopt as shown in the Annex.

EXPLANATION: This Case provides an alternative to NF-4231.1 for allowing tack welds to remain in place after completion of welding if not incorporated into the final weld. A revision was made to 1.0 of the reply previously considered at the 6/85 meeting in order not to condone work that was improperly done.

PRESENTED BY: M. N. Bressler

NEGATIVES: 0

ABSTENTIONS: 1

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SUBJECT: NB/NC/ND/NE-2226 Castings
ND-2223 Forgings and Forged Bars
NB/NC/ND/NE-2500 Examination and Repair of Pressure Retaining Material
SA-613, SA-614, SA-647, SA-652, SA-654, SB-509, SB-510 and SB-513

MOTION: Revise the NB/NC/ND/NE-2000 paragraphs as shown in the Annex and delete the specification from Section II.

EXPLANATION: The revision will incorporate the Supplemental Nuclear Requirements Specifications allowing the deletion of SA-613, SA-614, SA-647, SA-652, SA-654, SB-509, SB-510 and SB-513

PRESENTED BY: E. F. Gerwin

NEGATIVES: 0

ABSTENTIONS: 1
NW-2572  Time of Non destructive Examination

NW-2572.1  Acceptance examinations shall be performed at the time of manufacture as stipulated in the following and Table 1.0.

(a)  Ultrasonic Examination—Ultrasonic examination, if required, shall be performed at the same stage of manufacture as required for radiography.

(b) Radiographic Examination—Radiography may be performed prior to heat treatment and may be performed prior to or after finish machining at the following limiting thicknesses:

1. For finished thicknesses under 2 1/2 in. (63.5 mm), castings shall be radiographed within 20 % of the finished thickness when Type 2 radiographic film is used or within 1 1/2 in. (12.7 mm), of the finished thickness when Type 1 radiographic film is used. The penetrator and the acceptance reference radiographs shall be based on the finished thickness.

2. For finished thicknesses from 2 1/2 in. up to 6 in. (63.5 to 152 mm), castings shall be radiographed within 20 % of the finished thickness. The penetrator and the acceptance reference radiographs shall be based on the finished thickness.

3. For finished thicknesses over 6 in. (152 mm), castings shall be radiographed within 1 1/2 in. (30.5 mm) or 15 % of the finished thickness, whichever is greater. The penetrator and the acceptance reference radiographs shall be based on the finished thickness.

(c) Radiography of castings for pumps and valves may be performed in as cast or rough machined thicknesses exceeding the limits of NW-2572.1(b)(1), (b)(2) or (b)(3) subject to the following conditions.

1. When the thickness of the as cast or rough machined section exceeds 2 inches, acceptance shall be based on reference radiographs for the next lesser thickness; e.g., if the section being radiographed exceeds 4 1/4 inches, use reference radiographs of ASTM E 446-78.

2. When the thickness of the as cast or rough machined section is 2 inches or less, the reference radiographs of ASTM E 446-78 shall be used and the penetrator shall be based on the final section thickness.

3. Weld ends for a minimum distance of 1/2 or 1/4 inch whichever is less (where 1 is the design section thickness of the weld) from the final welding shall be radiographed at a thickness within the limits given above as applicable. As an alternative, the weld ends may be radiographed in the as cast or rough machined thickness in accordance with (a) and (b) above and the penetrator shall be based on the final section thickness.

E186-75 (reapproved 1979) The penetrator shall be based on the thickness of the section being radiographed.

NW-2572.1(b)(1) (b)(2) or (b)(3)
Elimination of Surface Defects

(a) Unacceptable surface defects shall be removed by grinding or machining provided that:

(1) The remaining thickness of the section is not reduced below that required by the specification or drawing.

(2) The depression, after defect elimination, is blended uniformly into the surrounding surface.

(3) After defect elimination, the area is reexamined by the magnetic particle method and the liquid penetrant method in accordance with to assure that the defect has been removed or the indication has been reduced to an acceptable size.

(4) If the elimination of the defect reduces the section thickness below the minimum required by the specification or drawing, the casting may be repaired in accordance with.

Material Report Describing Defects and Repairs

(a) Each defect repair exceeding in depth the lesser of \( \frac{3}{4} \) in. (9.5 mm) or 10% of the nominal wall thickness shall be described in the Certified Materials Test Report. The Certified Materials Test Report for each piece shall include a chart that shows the location and size of the prepared cavity, the welding material identification, the welding procedure, the heat treatment, and the examination results, including radiographic film, when radiographic is specified in the order for the original casting.