Figure IWB-2500-7(a)  
Nozzle in Shell or Head  
(Examination Zones in Barrel Type Nozzles Joined by Full Penetration Corner Welds)

$t_{n1}$, $t_{n2}$ = nozzle well thickness  
$t_{s}$ = shell (or head) thickness  
$r_{f}$ = nozzle inside corner radius

PROPOSED CODE

EXAMINATION REGION [Note (1)]  
- Shell (or head) adjoining region  
- Attachment weld region  
- Nozzle cylinder region  
- Nozzle inside corner region

GENERAL NOTE:  $\frac{1}{2}$ in. = 13 mm

NOTES:  
(1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.  
(2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.
Figure IWB-2500-7(a)
Nozzle in Shell or Head
(Examination Zones in Barrel Type Nozzles Joined by Full Penetration Corner Welds)

EXISTING CODE - FOR INFORMATION ONLY

- \( t_{w} \) = nozzle wall thickness
- \( t_{s} \) = shell (or head) thickness
- \( r_{i} \) = nozzle inside corner radius

EXAMINATION REGION [Note (1)]
- Shell (or head) adjoining region
- Attachment weld region
- Nozzle cylinder region
- Nozzle inside corner region

GENERAL NOTE: 0.5 in. = 13 mm

NOTES:
(1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.
(2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.
IWB-2500-7(c)
Nozzle in Shell or Head
(Examination Zones in Set-On Type Nozzles Joined by Full Penetration Corner Welds)

\[ t_m \] = nozzle wall thickness
\[ t_s \] = shell (or head) thickness
\[ r_i \] = nozzle inside corner radius

**General Note:** \( \frac{1}{2} \) in. = 13 mm

**Notes:**
1. Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.
2. Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.
EXAMINATION REGION

| SHELL (OR HEAD) ADJOINING REGION |
| ATTACHMENT WELD REGION |
| NOZZLE CYLINDER REGION |
| NOZZLE INSIDE CORNER REGION |

EXAMINATION VOLUME

| C-D-E-F-G |
| B-C-G |
| A-B-G-H |
| M-N-O-P |

(1) EXAMINATION REGIONS ARE IDENTIFIED FOR THE PURPOSE OF DIFFERENTIATING THE ACCEPTANCE STANDARDS IN IWB-3512.

(2) EXAMINATION VOLUMES MAY BE DETERMINED EITHER BY DIRECT MEASUREMENTS ON THE COMPONENT OR BY MEASUREMENTS BASED ON DESIGN DRAWINGS.

FIG. IWB-2500-7(c) NOZZLE IN SHELL OR HEAD
(Examination Zones in Set-On-Type Nozzles Joined By Full Penetration Corner Welds)
IWA-5250 Corrective Action

(a) The sources of leakage detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective action as follows:

(2) If leakage occurs at a bolted connection in a system borated for the purpose of controlling reactivity, one of the bolts or studs shall be removed, VT-3 visually examined, and evaluated in accordance with IWA-3100. The bolt or stud selected shall be the one closest to the source of leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 visually examined, and evaluated in accordance with IWA-3100. If all bolting bolts or studs in the connection is are replaced in accordance with IWA-4000, no VT-3 visual examination of the removed bolting bolts or studs is required.

IWA-5251 Alternative Corrective Action for Leakage Identified at Bolted Connections

As an alternative to the requirements of IWA-5250(a)(2), the requirements of (a), (b), and (c) shall be met.

(c) The evaluation required by (a) and (b) shall determine the susceptibility of the bolted connection to corrosion and failure. The evaluation shall include analysis of the following:

(1) the number and service age of the bolts or studs

(2) bolt or stud, and component, material

Appendix IV, Supplement 3 Qualification Requirements for Surface Examination of Bolting - Center Bore Holes

1.0 Specimen Requirements

(b) The effect of the presence of corrosion products must be evaluated if the bore hole of the bolt or stud is not thoroughly cleaned prior to examination [IV-3120(b)].

G-2222 Consideration of Membrane and Bending Stresses

(b) For purposes of this evaluation, stresses which result from bolt or stud preload shall be considered as-primary.

(c) It is recommended that when the flange and adjacent shell region are stressed by the full intended bolt or stud preload and by pressure not exceeding 20% of the preoperational system hydrostatic test pressure, minimum metal temperature in the stressed region should be at least the initial \( RT_{NDT}\) temperature for the material in the stressed regions plus any effects of irradiation at the stressed regions.
IWA-5250 CORRECTIVE ACTION

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