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RECORD OF REVISIONS

Revision	Description
A	Initial Issue for Implementation of PROC/D Replaces Standard Clause 76-146-4
B	Modified to reference MIL-STD-271 Rev. F Notice 1 in lieu of MIL-STD-271 Rev. F. Pg 32 deleted para. 4.4 and replaced with new 4.4 non-relevant indications. Pg 38 deleted para. 5.7.1 in its entirety And replaced with revised text. Material to EB-3900 Rev. B is interchangeable With material to EB-3900 Rev. A
C	Initiated to include modifications to T9074-AS-GIB-010/271 and to provide clarification to existing requirements Pg 3 deleted para. 1.6.5.2 in its entirety Pg 3 added new para. 1.6.5 Alternate certification Pg 4 deleted para. 1.8 in its entirety Pg 25 revised para. 4.3.3.2 title Pg 25 added new para. 4.3.3.2.2. Automated equipment Pg 26 para. 5.3.1 clarification Pg 27 para. 5.4 added new third sentence Pg 35 para. 6.6.1.2.1 revised fourth sentence Material to EB-3900 Rev. C may be utilized for material to EB-3900 Rev. B. Material to EB-3900 Rev. B (MIL- STD-271 Only) may be utilized for material to EB-3900 Rev. C (MIL-STD-271 Only).

PURCHASING STANDARD CLAUSE

Section: Testing, General

For use by: Originators and /or Quality Control

Applicability: All Prime Contracts

Clause Number 76-146-4

Effective Date: / /99

MODIFICATIONS TO MIL-STD-271

Where reference is made to MIL-STD-271, it shall be Revision F, dated 27 June 1986, with Notice 1, dated 21 June 1993, modified as follows:

- Page 7, paragraph 3.1.5, Delete the first sentence and replace with the following:

"The thickness of material upon which the penetrometer is based for structural, pipe, machinery and pressure vessel welds."

- Page 8, paragraph 3.1.17, Delete ", and structural welds" from the last sentence.

- Page 11, paragraph 3.3.5, Delete "Cobalt 60 sources shall not be used on nominal material thicknesses less than 1 inch." And add the following at the end of paragraph: "Cobalt 60 sources shall not be used on welds with a specimen thickness (Ts) less than 2.5 inches or on any material with a nominal thickness less than 1 inch. Cobalt 60 may be used on casting repair welds where the specimen thickness is greater than or equal to 1 inch."

- Page 17, paragraph 3.4.4.1, Delete and replace with the following:

"3.4.4.1 Welds. Penetrometer selection for structural, piping, machinery, and pressure vessel welds shall be based on material thickness T_m as defined in 3.1.5."

- Page 17, paragraph 3.4.4.2 (a) and (b), Change the first sentence in each to read as follows:

"(a) Structural castings. The penetrometer shall be based on the actual or nominal thickness of the material being radiographed T_s as defined in 3.1.17."

"(b) Other castings. The penetrometer shall be based on the actual or nominal thickness of the material being radiographed T_s as defined in 3.1.17."

- Page 17, Delete paragraph 3.4.5 in its entirety and renumber.

- Page 19, Add paragraph 3.4.6.3.5 as follows:

"3.4.6.3.5 When part geometry or access will not permit placement of the penetrometer at one or both extremities, the penetrometer must be placed within 1 inch of the obstruction. A lead source side marker shall be placed on the adjacent base material at the extremity of the radiograph in the area to be viewed for acceptance. If access to adjacent base material is restricted the marker may be placed on the weld."

- Page 27, Paragraph 4.3.1.6, Add the following at the end of the paragraph: "AC and DC yokes are not subject to the six-month check."

- Page 27, Delete paragraph 4.3.1.6.2 and replace with the following:

"4.3.1.6.2 Yoke equipment. Yokes shall be checked for adequacy of the magnetization strength. With the pole spacing set to the maximum that the yoke will be used for, the lifting power, as applied to carbon or alloy steel, shall be 10 pounds minimum for ac electromagnetic yokes and 40 pounds for dc or permanent magnet yokes."

- Page 27, Paragraph 5.4 - Add as a third sentence: "Method A shall not be used for welds, except where appropriate for casting inspections and weld repairs to castings, unless specifically approved by NAVSEA."

- Page 31, Delete paragraph 4.3.3.3 and replace with the following:

"4.3.3.3.3 Yoke magnetization. Yokes may be used for magnetization, provided the sensitivity to detect surface defects is demonstrated as specified in 4.3.1.2. The use of yoke spacing greater than 8 inches shall require NAVSEA approval. Yoke spacing of less than 2 inches may be used, provided concurrence of the Government inspector is obtained."

- Page 32, Delete paragraph 4.4 in its entirety and replace with the following:

"4.4 Non-relevant indications. All indications revealed by magnetic particle inspection do not necessarily represent defects since non-relevant indications are sometimes encountered. If any indications are believed to be non-relevant, the below listed methods may be used to prove non-relevancy. Scribe lines and vibro-etching are considered to be non-relevant, unless the inspector has reason to believe that the marking is masking a relevant indication.

(a) At least 10 percent of each type of indication shall be explored by removing the surface roughness believed to have caused the type of indication to determine if defects are present. The absence of indications under reinspection by magnetic particle inspection after removal of the surface roughness shall be considered to prove that the indications were non-relevant with respect to actual defects. If reinspection reveals any indications, these and all of the original indications shall be considered relevant.

(b) A liquid penetrant inspection after grinding to remove the surface roughness believed to have caused the indication.

(c) Other methods approved by the authorized NAVSEA representative.

- Page 32, Delete paragraph 4.6 in its entirety and replace with the following:

"4.6 Arc strikes. For applications governed by a fabrication document arc strikes shall be removed and reinspected as required therein. For other applications the following shall apply: Arc strikes shall be ground out, faired into surrounding material, and reinspected using the prod or yoke method or visually inspected at 5X minimum magnification. Remaining depth in way of resultant excavations shall be inspected for and shall meet the requirements of the governing specification."

- Page 32, Add paragraph 4.6.1:

"4.6.1 For all arc strikes that occurred after final heat treatment in S-1 materials with carbon content greater than 0.30 percent, S-3, S-3A, S-4, S-5, S-6, S-6A and S-11B materials, complete removal of the heat affected zone shall be verified with an etchant that has been demonstrated to disclose heat affected zone structure in the material involved unless repair welding is required. Etchants shall be prepared and used in accordance with good metallurgical practice."

- Page 38, paragraph 5.7.1, Delete in its entirety and replace with the following:

All indications in weld crater shall be considered relevant and shall be evaluated in accordance with the applicable acceptance standards. For other indications which are believed to be nonrelevant, such as those which may occur on castings surfaces, 10 percent of each type of indication shall be explored by removing the surface condition believed to have caused the indications and retested. The absence of indications upon reinspection by liquid penetrant inspection after removal of the surface roughness shall be considered to prove that the indications were nonrelevant with respect to actual defects. If reinspection reveals any indications, these indications and all of the original indications shall be considered relevant and shall be evaluated in accordance with applicable acceptance standards. Scribe lines and vibro-etching are considered to be nonrelevant, unless the inspector has reason to believe that the marking is masking a relevant indication.

Confirmation of nonrelevancy also may be made by other methods when approved by the Government Inspector. The location of nonrelevant indications and method of confirmation shall be recorded in the inspection report.

- Page 50, paragraph 6.5.4.2.1, Change the title to read "6.5.4.2.4.1 Butt welds, corner welds, tee welds for discontinuities into the through member, and tee weld volumetric inspection."

- Page 54, Add paragraph 6.5.4.4.3:

6.5.4.4.3 Volumetric inspection of full penetration tee welds. Inspection shall be performed in accordance with 6.5.4.3., unless otherwise specified below. The weld reinforcement shall be otherwise specified below. The weld reinforcement shall be considered part of the inspection zone. Scanning shall be as required to ensure completed coverage of the inspection zone (see Figure 17A). When accessible, scanning shall be performed from the through member in accordance with 6.5.4.4.1 for the detection of lack of penetration. Cases of inaccessibility shall be approved by the examiner on a case basis.

- Insert the attached Figure as Figure 17A.

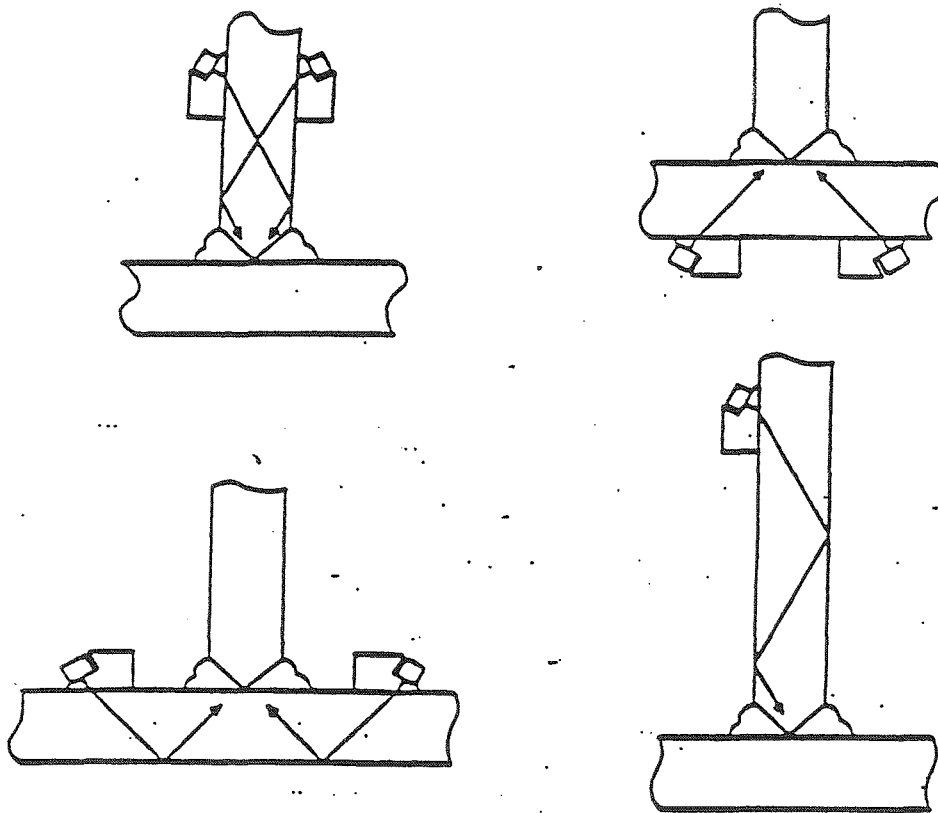


Figure 17A - Accepted scanning techniques for tee welds.

- Page 62, Figure 1, Change the title to read "2.0" instead of "20" and modify the range for cobalt from "3 to 6 inches" and the range of Iridium to "0.225 to 3 inches."
- Page 63, Figure 2, Change the title to read "2.0" instead of "20" and modify the range for Cobalt from "3 to 6 inches" and the range of Iridium to "0.20 to 3 inches."
- Page 64, Figure 3, Change the title to read "2.0" instead of "20" and modify the range for Cobalt from "3 to 8 inches" and the range of Iridium to "0.75 to 3 inches."

MODIFICATIONS TO T9074-AS-GIB-010/271

Where reference is made to T9074-AS-GIB-010/271, it shall be Revision 0, dated 30 April 1997, modified as follows:

- Page 3, Delete paragraph 1.6.5.2 in its entirety.
- Page 3, Add new paragraph 1.6.5 following paragraph 1.6.4 and renumber remaining paragraphs in proper sequence.

"1.6.5 Alternate certification. Personnel qualified to specific inspection methods/techniques in accordance with MIL-STD-2132 or NAVSEA 250-1500-1 (Limited Distribution) certification programs are considered qualified for performance of inspection in accordance with the requirements of this document for the same inspection methods/techniques. The use of personnel qualified to specific inspection methods/techniques of other certification programs shall require NAVSEA approval."

- Page 4, Delete paragraph 1.8 in its entirety.
- Page 25, Paragraph 4.3.3.2 - Revise the title to read "Application and removal of particles"
- Page 25, Add new paragraph 4.3.3.2.2 to read as follows:

"4.3.3.2.2 Automated Equipment. Automatic powder blowers or any other form of forced air other than from a hand-held bulb shall not be used for the application or removal dry magnetic particles unless specifically approved by NAVSEA."

- Page 26, Paragraph 5.3.1 Clarification: Liquid penetrant material shall meet the requirements of MIL-I-25135 or AMS 2644. Materials as listed and approved under qualified products list (QPL) QPL-25135-16, QPL-25135-17, QPL-AMS-2644-1 or later shall be used.
- Page 27, Paragraph 5.4. – Add a third sentence to read as follows:

"Method A shall not be used for welds, except where appropriate for casting inspections and weld repairs to castings, unless specifically approved by NAVSEA."

- Page 35, Paragraph 6.6.1.2.1 - Revise the fourth sentence as follows:

"The dimensions of the notch shall comply with Table VII, except that available V-shaped calibration notches that were fabricated to meet the requirements of MIL-STD-2132 are acceptable for use."