Designation: F 1130 – 99

An American National Standard

Standard Practice for Inspecting the Coating System of a Ship[1]

This standard is issued under the fixed designation F 1130; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice describes a standard procedure for inspecting the coating system of a ship's topside and superstructure, tanks and voids, decks and deck machinery, and underwater hull and boottop during drydocking. Included are a standard inspection form to be used for reporting the inspection data, a diagram that divides topside and superstructure individual inspection areas, and a series of diagrams that are used to report the extent of damage to the coating system.

1.2 This practice is intended for use only by an experienced marine coating inspector.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 660 Test Method for Evaluating Degree of Checking of Exterior Paints[2]

D 714 Method for Evaluating Degree of Blistering of Paints[2]

D 772 Test Method for Evaluating Degree of Flaking (Scaling) of Exterior Paints[2]

2.2 *Steel Structures Painting Council:*

SSPC-PA-2 Measurement of Dry Paint Thickness With Magnetic Gages[3]

3. Significance and Use

3.1 This practice establishes the procedure for the inspection of coating systems on board ships. It contains a series of diagrams to be used to report the extent of damage to coatings.

4. Reference Standards

4.1 *Extent of Failure*—The overall extent of failure diagrams (see Fig. 1) and the extent within affected area diagrams (see Fig. 2 and Fig. 3) are used to report the area covered by various fouling organisms, different types of corrosion, and paint failures. The overall extent of failure diagrams are used first to group all areas where a particular type of damage has occurred into one contiguous block. The extent within affected area diagrams are then used to identify the pattern of damage within that contiguous block. (For example, inspection for Section I.A.—General Corrosion (see Figs. 4-7)) and general corrosion appears distributed over the entire inspection area as shown by the black areas in Fig. 8.)

4.1.1 The first step is to draw an imaginary line that would enclose all of the general corrosion. This enclosure should be as small as possible. Select the diagram from the overall extent of failure diagrams that most closely approximates the enclosed area with respect to the entire inspection area. Using the general corrosion example, the enclosed area (shaded area) would closely match Fig. 9.

4.1.2 Enter a "6" (for Diagram 6 in Fig. 1) in the box next to I.A.1. overall extent of failures in Fig. 4.

4.1.3 The second step is to look at only the enclosed area and select the diagram from the extent within affected-area diagrams that most closely identifies the pattern of general corrosion in the enclosed area. In this example, Fig. 10 (Diagram N) would be a good choice.

4.1.4 Enter an "N" (for Diagram N in Fig. 3) in the box next to I.A.1.A. extent within the affected area.

NOTE 1—Selection of diagrams is based on visual comparisons, and therefore, different inspectors may select different diagrams. The diagrams are designed to minimize these differences and enhance reproducibility.

4.2 *Forms of Mechanical Damage*—This reference standard (Fig. 11) is a series of photographs used to identify the various forms of mechanical damage to a coating that can lead to corrosion.

4.3 *Types of Corrosion*—This reference standard (Fig. 12) is a series of photographs used to show examples of general coating damage. Included could be general corrosion, pitting corrosion, pin-point corrosion, galvanic corrosion/coating undercutting, cavitation corrosion, corrosion along welds, and rust staining.

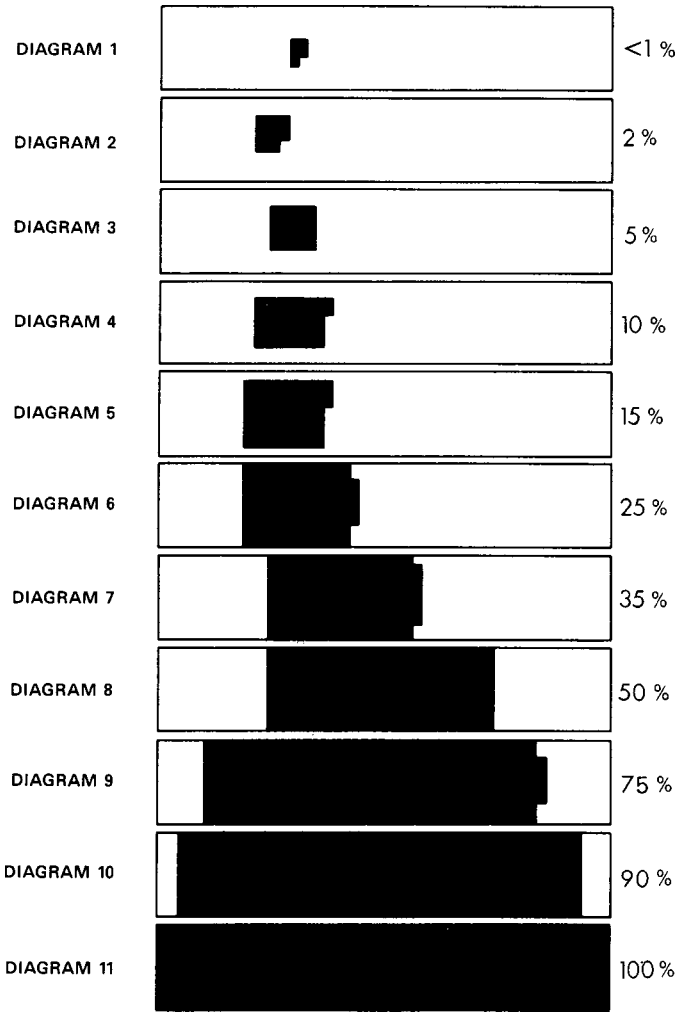
---

[1] This practice is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.01 on Structures.

Current edition approved Nov. 10, 1999. Published March 2000. Originally published as F 1130 – 88. Last previous edition F 1130 – 93.

[2] *Annual Book of ASTM Standards*, Vol 06.01.

[3] Available from Steel Structures Painting Council, 40 24th St., Pittsburgh, PA 15222-4656.



NOTE 1—The specific type of failure is to be defined. The failure may be fouling, corrosion, etc. Do not combine all failures into one overall extent diagram.

FIG. 1 Overall Extent of Failure Diagrams

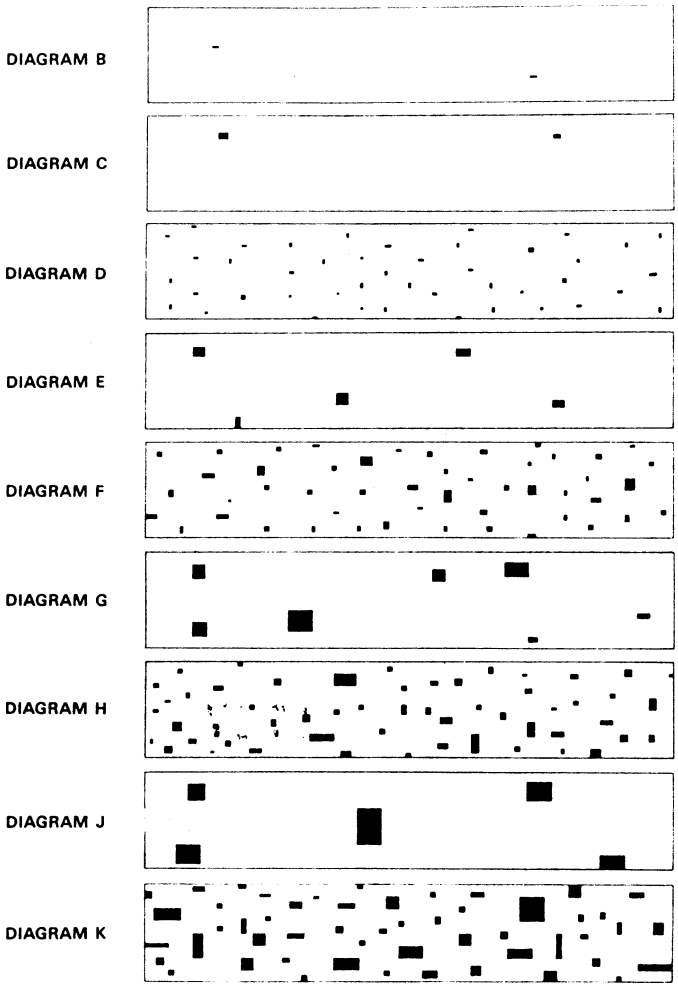


FIG. 2 Extent Within Affected Area Diagrams (B Through K)

4.4 *Levels of Delamination*—This reference standard (Fig. 13) is a series of diagrams that identifies the levels in a coating system where delamination can occur.

5. Requirements for Inspectors

5.1 The inspector must be able to perform the following tasks:

5.1.1 Calibrate and use a magnetic gage to measure dry film thickness (DFT).

5.1.2 Use pH paper or pH meter properly.

5.1.3 Use a camera properly.

5.1.4 Recognize the various types of corrosion and forms of paint failures (blistering, delamination, etc.).

5.1.5 Recognize the various ship areas as described in Figs. 14-16.

6. Procedure

6.1 The inspection form consists of two pages to be completed by the inspector and four pages of reference standards. Complete the first of the two pages as shown in Fig. 17. This form, which is self-explanatory, requests general information about the ship.

6.2 The second page of the applicable inspection form to be completed by the inspector is shown in Figs. 4-7. Complete a separate inspection form for each of the inspection areas delineated in Figs. 14-16. Instructions for completing the form (shown in Figs. 4-7) are given in Section 7.

6.2.1 For the ship's topside and superstructure, divide the inspection area into six sections. These six inspection areas are defined by the diagram in Fig. 14. For each complete inspection, complete one form, shown in Fig. 4, for each section.

6.2.2 For the ship's tanks and voids, divide the inspection area into seven sections. These seven inspection areas are defined by the diagram in Fig. 15. For each complete tank inspection, complete one form, shown in Fig. 5, for each section.

6.2.3 For the ship's underwater hull and boottop, divide the inspection area into twelve inspection areas. These twelve inspection areas are defined by the diagram in Fig. 16. For each complete underwater hull inspection, complete one form, shown in Fig. 6, for each section.

6.2.4 For the ship's deck and machinery, the inspection area is a code which is used to designate an area of the ship's deck

FIG. 3 Extent Within Affected Area Diagrams (L Through V)

or a piece of deck machinery. The purpose of the code is to identify positively the area being inspected so that a history of inspection data can be gathered. For sections of the ship other than decks and deck machinery (that is, underwater hull, boottop, topside, superstructure, tanks, and voids), it is possible to develop a general diagram of the ship section. Divide the ship section into logical inspection areas, and provide inspection area codes for these inspection areas. Decks and deck machinery vary so greatly between ship types that the development of a general diagram with logical inspection areas and inspection area codes is not feasible. It should be the responsibility of the organization that authorizes the inspections to develop the ship diagram, logical inspection areas, and inspection area codes and to make certain that this same coding system is used during all subsequent inspections.

7. Form Instructions

7.1 *Inspection Area*—The topside/superstructure is divided into six inspection areas (see Fig. 14). Enter the code for the area being inspected. (For example, enter “SA” for the superstructure aft; “SM” for the superstructure midships;“ SF” for the superstructure forward; “SO” for othersuperstructure, that is, bulwarks, vents, sideport openings, etc.;“ HS” for hull starboard; and “HP” for hull port.)

7.1.1 A tank is segmented into seven inspection areas (see Fig. 15. Enter the code for the area being inspected. (For example, enter “B” for the bottom of tank inspection, “A” for the aft bulkhead, etc.) A complete list of tank segments and their codes is shown in Fig. 15.

7.1.2 The underwater hull and boottop are segmented into twelve distinct inspection areas. Enter the code for the area being inspected. (For example, enter “P1” for the port bow inspection, “S1” for the starboard bow inspection, etc.) A complete list of hull segments and their codes is shown in Fig. 16.

7.1.3 Decks and deck machinery vary so greatly between ship types that the development of a general diagram with logical inspection areas and inspection area codes is not feasible. It should be the responsibility of the organization that authorizes the inspections to develop the ship diagram, logical inspection areas, and inspection area codes and to make certain that this same coding system is used during all subsequent inspections.

7.2 *Date*—Enter the date of the inspection. If the inspection requires more than one day, enter the date the inspection is completed.

7.3 *Ship Name*—Enter the ship’s name (for example, LPH-14, USS Trenton).

7.4 *Hull Number*—Enter the builder’s hull number of the ship (for example, Nassco No. 1182).

7.5 *Inspector’s Name*—The inspector should print his name.

7.6 *Tank Number*—Enter tank designation.

7.7 *Tank Type*—Enter type (for example, fuel oil, ballast, etc.).

7.8 *Required Photographs*—For each inspection area, a photograph of the entire area is required. If the area is too large to capture in one photograph, the area should be divided into equal-sized segments and each segment should be photographed. An individual close-up photograph of each damaged section in the inspection area is required. Each photograph should be marked with the area number, ship name, and date. Also a size scale should be captured in each photograph. This size scale is a reference standard that would be used to determine the approximate size of the photographed ship area. (For example, a 12-in. (304.8-mm) rule might be an appropriate size scale for a relatively small ship area.)

7.9 *Inspection Area Obscured*—If the inspection area is completely obscured and cannot be inspected, circle the“ Y.” This condition of being completely obscured will probably occur most frequently in the bottom inspection area (“B”) where dirt and other contaminants have settled. If the inspection area is not completely obscured, circle the “N.”

CORROSION

8. Classification of Corrosion

8.1 The inspector should distinguish between six types of corrosion and report each type separately. The six types of corrosion are as follows:

8.1.1 *General Corrosion*—General corrosion, for the purposes of this inspection form, is all corrosion that is not covered in the mechanical damage, pitting corrosion, pinpoint

Inspection Area ______________ Date ______________

Ship Name ______________

Hull Number ______________

Inspector's Name ______________

Required Photographs
1. Entire Area
2. Close-Up of All Damage

I. Corrosion
- A. General
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
- B. Mechanical Damage
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
  - 2. Type of Damage
    - A. Scraping/Impact ☐
    - B. Anchor Chains/Ropes ☐
    - C. Internal Welds/Burning ☐
- C. Pitting Corrosion
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
- D. Pin-Point Corrosion
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
- E. Galvanic Corrosion/Coating Undercutting? Y N
- F. Rust Staining? Y N

II. Paint Condition
- A. Delamination
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
  - 2. Topcoat ☐
  - 3. Within Repair System ☐
  - 4. Between Original/Repair ☐
  - 5. Within Original System ☐
  - 6. To Primer Coat ☐
  - 7. To Steel Substrate ☐
  - 8. Organic Odor From Delam. Area? Y N
  - 9. Sample Taken? Y N
- B. Blistering (Test Method D 714)
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
  - 2. Size (Test Method D 714) ☐
  - 3. Density (Test Method D 714) ☐
  - 4. % Broken Blisters ☐
  - 5. Organic Odor in Blisters? Y N
  - 6. Blisters Contain Water? Y N
    - A. pH ☐
  - 7. Corrosion Under Blisters? Y N
- C. Cracking
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
- D. Checking (Test Method D 660)
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
- E. Flaking (Test Method D 772)
  - 1. Overall Extent of Failure ☐
    - A. Extent Within Affected Area ☐
  - 2. Severity ☐
- F. Sags or Curtains? Y N
- G. Chalking? Y N
- H. Presence of Oil/Grease/Smoke? Y N
- I. Bleeding? Y N
- J. Fading? Y N
- K. Knife Test
  - 1. Acceptable? Y N
    - If "N," Mark Level(s) Below
    - A. Topcoat ☐
    - B. Within Repair System ☐
    - C. Between Original/Repair ☐
    - D. Within Original System ☐
    - E. To Primer Coat ☐
    - F. To Steel Substrate ☐

III. Measured Properties
- A. Dry Film Thickness (SSPC-PA-2)

Spot 1	Spot 2	Spot 3	Spot 4	Spot 5
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_

  - 1. More DFT Readings? Y N

IV. Recommendations ______________

____

____

____

Copy to Ship's Officer Y N

Acknowledged Receipt ______________

FIG. 4 Topside and Superstructure

corrosion, galvanic corrosion/coating undercutting, or rust staining in 8.1.2, 8.1.3, 8.1.4, 8.1.5, and 8.1.6. Patches of common, ordinary rusting are classified as general corrosion.

8.1.2 *Mechanical Damage*—Mechanical damage corrosion is corrosion that occurred because the paint was removed from the hull by some type of scraping or impact against the hull. With the paint removed and the steel hull exposed to sea water, corrosion occurred. Photographic examples of corrosion caused by various forms of mechanical damage (that is, scraping/impact, anchor chains/ropes, and internal welds/burning) are shown in Fig. 8.

8.1.3 *Pitting Corrosion*—Pitting corrosion is a more advanced form of localized corrosion. Pitting corrosion is characterized by visible indentations or pits that have penetrated

Inspection Area ________ Date ________

Ship Name ________

Hull Number ________

Inspector's Name ________

Tank Number ________ Type ________

Required Photographs
1. Entire Area
2. Close-Up of All Damage

Inspection Area Obscured? .... Y N

I. Corrosion
- A. General
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
- B. Mechanical Damage
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
  - 2. Type of Damage
    - A. Scraping/Impact .... ☐
    - B. Internal Welds/Burn Marks .... ☐
- C. Pitting Corrosion
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
- D. Pin-Point Corrosion
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
- E. Corrosion Along Welds? .... Y N
- F. Rust Staining? .... Y N
- G. Galvanic Corrosion/Coating Undercutting? .... Y N

II. Paint Condition
- A. Delamination
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
  - 2. Topcoat .... ☐
  - 3. Within Repair System .... ☐
  - 4. Between Original/Repair .... ☐
  - 5. Within Original System .... ☐
  - 6. To Primer Coat .... ☐
  - 7. To Steel Substrate .... ☐
  - 8. Organic Odor From Delam. Area? .... Y N
  - 9. Sample Taken? .... Y N
- B. Blistering (Test Method D 714)
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
  - 2. Size (Test Method D 714) .... ☐
  - 3. Density (Test Method D 714) .... ☐
  - 4. % Broken Blisters .... ☐
  - 5. Organic Odor in Blisters? .... Y N
  - 6. Blisters Contain Water? .... Y N
    - A. pH .... ☐
  - 7. Corrosion Under Blisters? .... Y N
- C. Cracking
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
- D. Checking (Test Method D 660)
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
- E. Flaking (Test Method D 772)
  - 1. Overall Extent of Failure .... ☐
    - A. Extent Within Affected Area .... ☐
  - 2. Severity .... ☐
- F. Sags or Curtains? .... Y N
- G. Chalking? .... Y N
- H. Discoloration? .... Y N
- I. Softening? .... Y N
- J. Valves, Piping, Heating Coils Present? .... Y N
  - 1. Coating Damage in Adjacent Areas? .... Y N
- K. Stiffeners Present? Y N
  - 1. Coating Damage Behind Stiffeners? .... Y N
- L. Anodes Present? .... Y N
  - 1. Coating Damage in Adjacent Areas? .... Y N
  - 2. Anodes Functioning? .... Y N
- M. Knife Test
  - 1. Acceptable? .... Y N
    - If "N," Mark Level(s) Below
    - A. Topcoat .... ☐
    - B. Within Repair System .... ☐
    - C. Between Original/Repair .... ☐
    - D. Within Original System .... ☐
    - E. To Primer Coat .... ☐
    - F. To Steel Substrate .... ☐

III. Measured Properties
- A. Dry Film Thickness (SSPC-PA-2)

Spot 1	Spot 2	Spot 3	Spot 4	Spot 5
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_

1. More DFT Readings? .... Y N

IV. Recommendations ________

Copy to Ship's Officer .... Y N

Acknowledged Receipt ________

FIG. 5 Tanks and Voids

into the steel hull surface. These pits distinguish between pitting corrosion and general corrosion, the latter being characterized by a layer of rust that does not penetrate locally into

Inspection Area ____________ Date ____________

Ship Name ____________

Hull Number ____________

Inspector's Name ____________

Required Photographs
1. Entire Area
2. Close-Up of All Damage

I. Fouling
A. Slime
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
B. Grass
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
C. Barnacles
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
D. Tubeworms
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
E. Other
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
F. Corrosion/Paint Failures Obscured by Fouling? Y N
G. Pitting Under Fouling? Y N

II. Corrosion
A. General
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
B. Mechanical Damage
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
2. Type of Damage
A. Grounding ☐
B. Scraping/Impact ☐
C. Anchor Chains/Ropes ☐
D. Internal Welds/Burning ☐
E. Damage From Scrubbing ☐
C. Pitting Corrosion
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
D. Pin-Point Corrosion
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
E. Cavitation (P5, S5, A Only)? Y N
F. Galvanic Corrosion/Coating Undercutting? Y N

III. Paint Condition
A. Delamination
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
2. Topcoat ☐
3. Within Repair System ☐
4. Between Original/Repair ☐
5. Within Original System ☐
6. To Primer Coat ☐
7. To Steel Substrate ☐
B. Blistering (Test Method D 714)
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
2. Size (Test Method D 714) ☐
3. Density (Test Method D 714) ☐
4. % Broken Blisters ☐
5. Organic Odor in Blisters? Y N
6. Blisters Contain Water? Y N
A. pH ☐
7. Corrosion Under Blisters? Y N
C. Cracking
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
D. Checking (Test Method D 660)
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
E. Flaking (Test Method D 772)
1. Overall Extent of Failure ☐
A. Extent Within Affected Area ☐
2. Severity ☐
F. Sags or Curtains? Y N
G. Erosion? Y N
H. Knife Test
1. Acceptable? Y N
If "N," Mark Level(s) Below
A. Topcoat ☐
B. Within Repair System ☐
C. Between Original/Repair ☐
D. Within Original System ☐
E. To Primer Coat ☐
F. To Steel Substrate ☐

IV. Measured Properties
A. Dry Film Thickness (mils) (SSPC-PA-2)

Spot 1	Spot 2	Spot 3	Spot 4	Spot 5
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_
_:_:_	_:_:_	_:_:_	_:_:_	_:_:_

1. More DFT Readings? Y N

V. Dielectric Shields	Prim.	Sec.
A. Blistering?	Y N	Y N
B. Delamination?	Y N	Y N
C. Fouling?	Y N	Y N
D. Corrosion		
1. General?	Y N	Y N
2. Pitting?	Y N	Y N
E. Film Thickness (mils)	☐	☐
F. Calcareous Deposit?	Y N	Y N
G. Erosion?	Y N	Y N

VI. Recommendations ____________

____

____

____

Copy to Ship's Officer Y N

Acknowledged Receipt ____________

FIG. 6 Underwater Hull and Boottop

Inspection Area ____________ Date ____________

Ship Name ____________

Hull Number ____________

Inspector's Name ____________

Location ____________ Description ____________

Required Photographs
1. Entire Area
2. Close-Up of All Damage

I. Corrosion
- A. General
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
- B. Mechanical Damage
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
  - 2. Type of Damage
    - A. Scraping/Impact . . . . . ☐
    - B. Anchor Chains/Ropes/Cables . . . . . ☐
    - C. Internal Welds/Burning . . . . . ☐
- C. Pitting Corrosion
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
- D. Pin-Point Corrosion
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
- E. Rust Staining? . . . . . Y N

II. Paint Condition
- A. Delamination
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
  - 2. Topcoat . . . . . ☐
  - 3. Within Repair System . . . . . ☐
  - 4. Between Original/Repair . . . . . ☐
  - 5. Within Original System . . . . . ☐
  - 6. To Primer Coat . . . . . ☐
  - 7. To Steel Substrate . . . . . ☐
  - 8. Organic Odor From Delam. Area? . . . . . Y N
  - 9. Sample Taken? . . . . . Y N
- B. Blistering (Test Method D 714)
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
  - 2. Size (Test Method D 714) . . . . . ☐
  - 3. Density (Test Method D 714) . . . . . ☐
  - 4. % Broken Blisters . . . . . ☐
  - 5. Organic Odor in Blisters . . . . . Y N
  - 6. Blisters Contain Water? . . . . . Y N
    - A. pH . . . . . ☐
  - 7. Corrosion Under Blisters? . . . . . Y N
- C. Cracking
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
- D. Checking (Test Method D 660)
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
- E. Flaking (Test Method D 772)
  - 1. Overall Extent of Failure . . . . . ☐
    - A. Extent Within Affected Area . . . . . ☐
  - 2. Severity . . . . . ☐
- F. Sags or Curtains? . . . . . Y N
- G. Chalking? . . . . . Y N
- H. Presence of Oil/Grease/Smoke? . . . . . Y N
- I. Bleeding? . . . . . Y N
- J. Fading? . . . . . Y N
- K. Excessive Wear/Mechanical Damage
  - 1. Non-Skid Areas . . . . . Y N
  - 2. Other Areas . . . . . Y N
- L. Knife Test
  - 1. Acceptable? . . . . . Y N
    - If "N," Mark Level(s) Below
    - A. Topcoat . . . . . ☐
    - B. Within Repair System . . . . . ☐
    - C. Between Original/Repair . . . . . ☐
    - D. Within Original System . . . . . ☐
    - E. To Primer Coat . . . . . ☐
    - F. To Steel Substrate . . . . . ☐

III. Measured Properties
- A. Dry Film Thickness (SSPC-PA-2)

Spot 1	Spot 2	Spot 3	Spot 4	Spot 5
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-
-:-:-	-:-:-	-:-:-	-:-:-	-:-:-

1. More DFT Readings? . . . . . Y N

IV. Recommendations ____________

Copy to Ship's Officer . . . . . Y N

Acknowledged Receipt ____________

FIG. 7 Decks and Deck Machinery)

the surface but is more uniform in extent. A photographic example of pitting corrosion is shown in Fig. 12.

8.1.4 *Pin-Point Corrosion*—Pin-point corrosion is characterized by a pattern of small spots (pin-points) of rust. A photographic example of pin-point corrosion is shown in Fig. 12.

8.1.5 *Galvanic Corrosion/Coating Undercutting*—Galvanic corrosion is characterized by the rapid deterioration of one metal at or near a bimetallic joint. Galvanic corrosion some

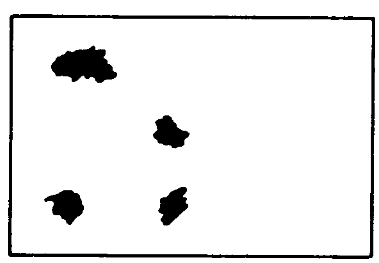


FIG. 8 General Corrosion

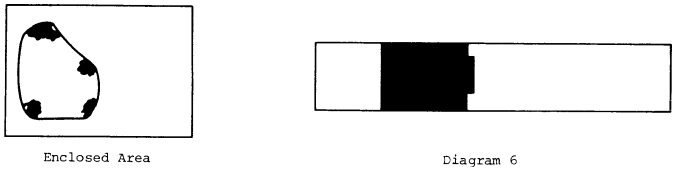


FIG. 9 Overall Extent of Failure—General Corrosion

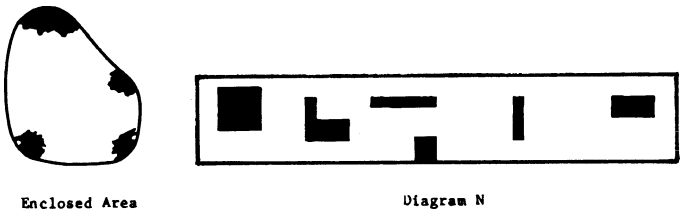


FIG. 10 Extent Within Affected Area—General Corrosion

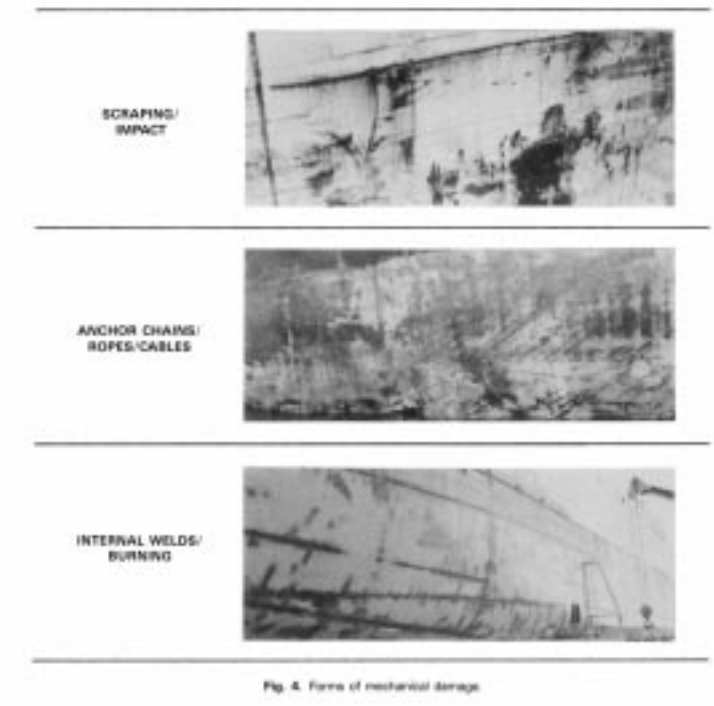


FIG. 11 Forms of Mechanical Damage

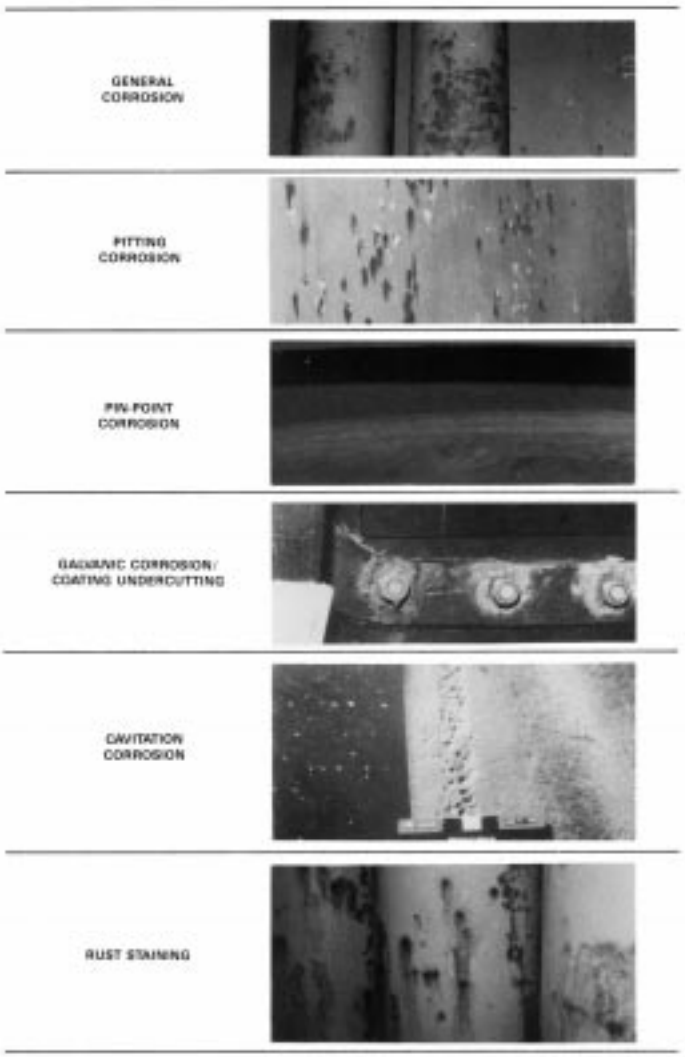


FIG. 12 Types of Corrosion

times results in coating removal or undercutting. A photographic example is shown in Fig. 12.

8.1.6 *Rust Staining*—Rust staining occurs on top of the coating with no penetration to the substrate. A photographic example is shown in Fig. 12.

FOULING

9. Examination of Fouling (Underwater Hull and Boottop)

9.1 *Slime*:

9.1.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instruction for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of slime fouling. If there is no slime fouling in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.

9.1.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of slime fouling within the affected area. If the overall extent of failure box as specified in 9.1.1 is marked with a "0" (zero), leave the extent within affected area box blank.

9.2 *Grass*:

9.2.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of grass fouling. If there is no grass fouling in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.

9.2.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of grass fouling within the affected area. If the overall extent of failure box as specified in 9.2.1 is marked with a "0" (zero), leave the extent within affected area box blank.

9.3 *Barnacles*:

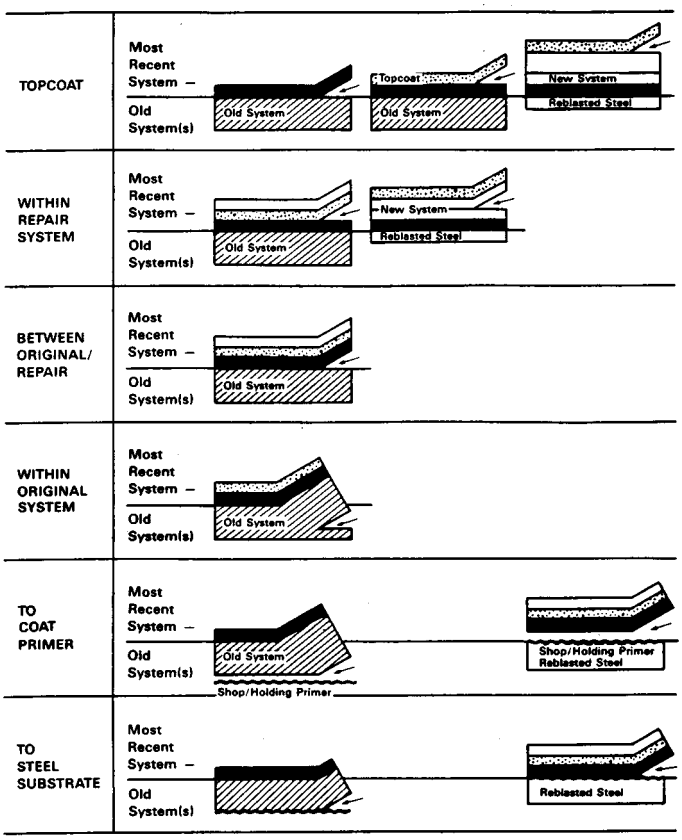
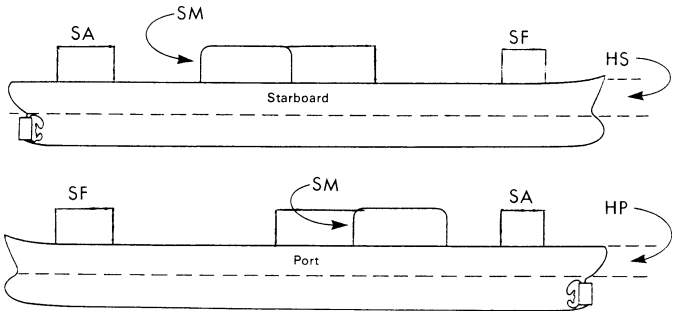


FIG. 13 Levels of Delamination

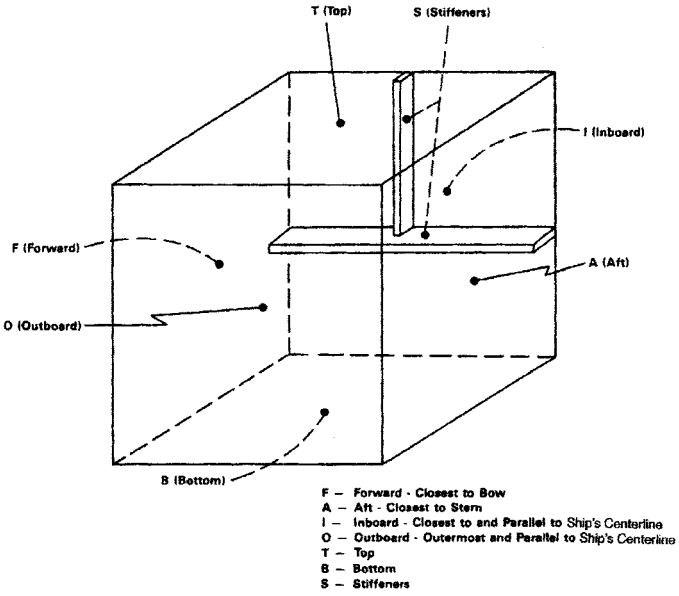


NOTE 1—The topside is defined as the areas from the maximum load line to the rail and the superstructure.

NOTE 2—*Inspection Areas:*
The topside and superstructure are divided into six distinct inspection areas as follows:
SA—Superstructure AFT.
SM—Superstructure Midsection.
SF—Superstructure Forward.
SO—Bulwarks, Vents, Sideport Openings, etc.
HS—Hull Starboard.
HP—Hull Port.
Each inspection area is to be inspected for all the properties listed on the accompanying inspection form (Figs. 4-7).

FIG. 14 Standardized Inspection—Topside and Superstructure

9.3.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of barnacle fouling. If there is no barnacle fouling in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.



NOTE 1—Each inspection area is to be inspected for all the properties listed on the accompanying inspection form (Fig. 5).

FIG. 15 Standardized Inspection—Tanks and Voids

9.3.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of barnacle fouling within the affected area. If the overall extent of failure box as specified in 9.3.1 is marked with a "0" (zero), leave the extent within affected area box blank.

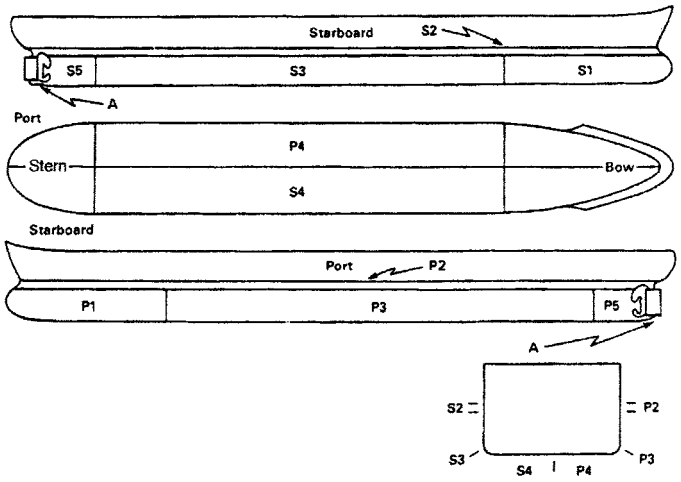
9.4 *Tubeworms*:

9.4.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of tubeworm fouling. If there is no tubeworm fouling in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.

9.4.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of tubeworm fouling within the affected area. If the overall extent of failure box as specified in 9.4.1 is marked with a "0" (zero), leave the extent within affected area box blank.

9.5 *Other*:

9.5.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instruction for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of fouling other than slime, grass, barnacles, or tubeworm fouling. If there is no fouling other than slime, grass, barnacles, or tubeworms in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.



NOTE 1—*Limitation:* This inspection reporting form is designed and limited for use in inspecting the boottop and underwater hull of the ship as soon as it is accessible upon docking.

NOTE 2—*Inspection Areas:* The hull is segmented into twelve distinct inspection areas as follows:

P1—Port Bow
S1—Starboard Bow
P2—Port Boottop
S2—Starboard Boottop
P3—Port Side
S3—Starboard Side
P4—Port Flat
S4—Starboard Flat
P5—Port Stern
S5—Starboard Stern
A—Appendages—Struts, Rudder, etc.
C—Sea Chests

Each area is to be inspected for all the properties listed in the accompanying table inspection form (Fig. 6).

FIG. 16 Standardized Inspection—Boottop and Underwater Hull

9.5.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of fouling other than slime, grass, barnacles, or tubeworms within the affected area. If the overall extent of failure box is marked with a "0" (zero), leave the extent within affected area box blank.

NOTE 2—*Combinations of Fouling on the Same Area*—To evaluate antifouling performance properly, the total fouling in any inspection area must not exceed 100 %. From a technical standpoint, barnacle, tubeworm, and grass fouling are more significant than slime fouling. Therefore, any slime fouling present on top of or underneath barnacles, tubeworms, or grass should not be reported so that the combined foulings percentage is not greater than 100 %. However, if slime fouling alone is present elsewhere in the inspection area, this slime fouling should be reported.

9.6 *Corrosion/Paint Failures Obscured by Fouling.*

9.7 *Pitting Under Fouling*—In each fouled area, the inspector should remove the fouling (by brushing or scraping) in a 4-by 4-in. patch down to the painted surface. If corrosion or paint failures (for example, blistering, cracking, etc.) are present beneath the fouling, circle the "Y" after I.F. on Fig. 6. If no corrosion or paint failures are present, circle the "N." If the metal substrate has indentations or pits, circle the "Y" after I.G. on Fig. 6. If the metal substrate is relatively smooth and free of indentations and pit corrosion, circle the "N."

10. Examination of Corrosion

10.1 *General*:

10.1.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of general corrosion. If there is no general corrosion in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.

10.1.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of general corrosion within the affected area. If the overall extent of failure box as specified in 10.1.1 is marked with a "0" (zero), leave the extent within affected area box blank.

10.2 *Mechanical Damage*:

10.2.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of corrosion caused by mechanical damage. If there is no corrosion caused by mechanical damage in this inspection area, enter the number "0" (zero) and leave the next box (extent within affected area) blank.

10.2.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of corrosion as a result of mechanical damage within the affected area. If the overall extent of failure box as specified in 10.1.1 is marked with a "0" (zero), leave the extent within affected area box blank.

10.2.3 *Type of Damage*—If corrosion caused by mechanical damage has occurred, use the photographic examples in Fig. 11 to identify the type of mechanical damage that has occurred. On the inspection form, mark an "X" in the box next to the type of damage (that is, scraping/impact, internal welds/burning, anchor chains/ropes/cables) that has occurred.

10.3 *Pitting Corrosion*:

10.3.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of pitting corrosion. If there is no pitting corrosion in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.

10.3.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of pitting corrosion within the affected area. If the overall extent of failure box as specified in 10.3.1 is marked with a "0" (zero), leave the extent within affected area box blank.

10.4 *Pin-Point Corrosion*:

10.4.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1),

A. Name of Ship and Hull Number _____

B. Location (Shipyard) _____

C. Identification of Last Coating System Applied (Manufacturer and Coating Material System)
(See Latest Paint Schedule)

_____

D. Additional Comments:

_____

_____

_____

_____

_____

_____

_____

E. Inspector's Signature _____

F. Inspector's Name (Print) _____

G. Inspection Date _____

H. Date of Last Dry Dock Report (If Available) _____

FIG. 17 Standardized Inspection Form

enter the number of the diagram that most closely approximates the overall extent of pin-point corrosion. If there is no pin-point corrosion in this inspection area, enter the number "0" (zero), and leave the next box (extent within affected area) blank.

10.4.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of pin-point corrosion within the affected area. If the overall extent of failure box above is marked with a "0" (zero), leave the extent within affected area box blank.

10.5 *Galvanic Corrosion/Coating Undercutting*—Galvanic corrosion/coating undercutting occurs most frequently in situations in which dissimilar metals are joined (that is, near posts, mounts, bolts, and especially when an aluminum superstructure is mounted on a steel hull). Galvanic corrosion/coating undercutting is characterized by corrosion that may begin beneath undamaged coating. The corrosion undercuts and lifts the coating as it progresses. If galvanic corrosion/coating undercutting is present, the inspector should circle the "Y." Otherwise the "N" should be circled.

10.6 *Rust Staining*—Rust staining is a brownish, rust-colored discoloration that occurs when loose rust particles are carried by water across a painted surface and are absorbed into the paint giving a brownish stain. It is important to distinguish between rust staining that is simply a discoloration and corrosion that is a paint failure. If rust staining has occurred in the inspection area, circle the "Y." If no rust staining has occurred, circle the "N."

10.7 *Corrosion Along Welds*—Corrosion is prevalent along the welds in tanks and voids. Check all welds and circle" Y" if any weld or any area immediately adjacent to a weld is corroded. If all welds and adjacent areas are free of corrosion, circle the" N."

10.8 *Cavitation (P5, S5, A Only)*—If you are not inspecting the P5 (port stern), S5 (starboard stern), or A (appendages—struts, rudder, etc.) inspection area, disregard this section. If you are inspecting the P5, S5, or A area, use the photographic example in Fig. 12 to determine if cavitation has occurred. If cavitation has occurred circle the "Y" next to P5, S5, A only. If cavitation has not occurred, circle the" N."

PAINT CONDITION

11. Examination of Paint Conditions

11.1 *Delamination*—Delamination is characterized by detachment of the coating from the substrate or by a layer separation between the coats of paint.

11.1.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of delamination. If there is no delamination in this inspection area, enter the number "0" and proceed to 11.2.

11.1.2 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of delamination within the affected area. If the

overall extent of failure box as specified in 11.1.1 is marked with a“ 0” (zero), leave the extent within affected area box blank.

11.1.3 *Topcoat*—Mark an “X” in the box beside topcoat if topcoat delamination has occurred. Topcoat delamination has occurred if only the outermost coating has separated from all undercoats. A diagram of topcoat delamination is shown in Fig. 13.

11.1.4 *Within Repair System*—Mark an “X” in the box beside within repair system if delamination has occurred between layers of the repair system excluding delamination between the topcoat and the outermost undercoat. (This is topcoat delamination.) The repair system is defined as any coating system that is applied on top of the original coating system. If the original coating system has not been overcoated, delamination within the repair system is not possible. A diagram of delamination within the repair system is shown in Fig. 13.

11.1.5 *Between Original/Repair*—Mark an“ X” in the box beside between original/repair if delamination has occurred between the outermost coat of the original coating system and the innermost coat of the repair system. A diagram of delamination between original/repair is shown in Fig. 13.

11.1.6 *Within Original System*—Mark an“ X” in the box beside within original system if delamination has occurred between any layers of the original coating system.

11.1.7 *To Primer Coat*—Mark an “X” in the box beside to primer coat if delamination has occurred between the innermost coat of the original coating system and the shop primer. A diagram of delamination to primer coat is shown in Fig. 13.

11.1.8 *To Steel Substrate*—Mark an “X” in the box beside to steel substrate if all coatings have separated from the surface of the hull leaving the bare steel exposed. A diagram of delamination to steel substrate is shown in Fig. 13.

11.1.9 *Organic Odor from Delamination Area*—The inspector should determine if there is an organic odor emanating from the delaminated area. If there is an odor from an organic solvent (such as MEK or hi-flash naphtha), circle the “Y.” If there is no organic odor, circle the “N.”

11.1.10 *Sample Taken*—If samples are taken, circle the “Y”; if not, circle the “N.” Samples may be taken by removing some of the delaminated paint chips and placing them into a small container. The container should be labelled with the area number, ship name and hull number, date, and inspector’s name.

11.2 *Blistering*:

11.2.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1) and Method D 714, enter the number of the diagram that most closely approximates the overall extent of blistering. If there is no blistering in this inspection area, enter the number “0” (zero), and proceed to 11.3.

11.2.1.1 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of blistering within the affected area. If the overall extent box as specified in 11.2.1 is marked with a “0” (zero), leave the extent within affected area box blank.

11.2.2 *Size*—Using the method in accordance with Method D 714, enter the number that most closely approximates the size of the largest blister in the inspection area.

11.2.3 *Density*—Using the method in accordance with Method D 714, enter the number that most closely approximates the highest blister density in the inspection area.

11.2.4 *Broken Blisters, Percent*—Visually approximate the percentage of broken blisters and enter that number in the box to the right. If none of the blisters are broken, enter the number “0.” To complete 11.2.5, 11.2.6, and 11.2.7 of the inspection, the inspector must break open a few of the blisters using a knife or other sharp object.

11.2.5 *Organic Odor in Blisters*—When the blisters are broken, the inspector should note whether the blisters contain liquid. If the blisters do contain liquid, the inspector should smell the liquid to determine if the liquid has an organic odor (that is, ketone). If the liquid does have an organic odor, circle the “Y” next to organic odor in blisters. If there is no organic odor, or if the blisters do not contain liquid, circle the “N.”

11.2.6 *Blisters Contain Water*—If the blisters contain liquid and the liquid does not have an organic odor, circle the “Y” next to blisters contain water. If none of the blisters contain liquid, circle the “N.”

11.2.6.1 *pH*—If “Y” is circled in response to blisters contain water, then determine the pH of the water using pH paper or pH meter and enter the pH value in the box to the right of pH.

11.2.7 *Corrosion Under Blisters*—Look at the substrate beneath the blisters that have just been broken open. If any part of the substrate beneath these blisters is corroded, circle the “Y” next to corrosion under broken blisters. If none of the substrate beneath these broken blisters is corroded, circle the “N.”

11.3 *Cracking*:

11.3.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of cracking. If there is no cracking in this inspection area, enter the number “0” (zero), and proceed to 11.4.

11.3.1.1 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of cracking within the affected area. If the overall extent box above is marked with a “0” (zero), leave the extent within affected area box blank.

11.4 *Checking*:

11.4.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1) and Test Method D 660, enter the number of the diagram that most closely approximates the overall extent of checking. If there is no checking in this inspection area, enter the number “0” (zero), and proceed to 11.5.

11.4.1.1 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1), enter the letter of the diagram that most closely approximates the extent of checking within the affected area. If

the overall extent of failure box as specified in 11.4.1 is marked with a“ 0” (zero), leave the extent within affected area box blank.

11.5 *Flaking*:

11.5.1 *Overall Extent of Failure*—Using the overall extent of failure diagrams (diagrams and instructions for use in 4.1), enter the number of the diagram that most closely approximates the overall extent of flaking. If there is no flaking in this inspection area, enter the number “0” (zero), and proceed to 11.6.

11.5.1.1 *Extent Within Affected Area*—Using the extent within affected area diagrams (diagrams and instructions for use in 4.1) and Test Method D 772, enter the letter of the diagram that most closely approximates the extent of flaking within the affected area. If the overall extent of failure box as specified in 11.5.1 is marked with a “0” (zero), leave the extent within affected area box blank.

11.5.2 *Severity*—Use the photographic reference standard in accordance with Test Method D 772 to determine the degree of flaking. Enter the number of the photographic reference standard (2, 4, 6, or 8) that most closely approximates the degree of flaking on the inspection surface.

11.6 *Sags or Curtains*—Sags or curtains can occur on a vertical surface when paint is applied too thickly. Gravity will cause the paint to move down the vertical surface to form either a continuous ridge across the surface (curtain) or a running stream down the surface (sag). If either sags or curtains have occurred, circle the “Y.” If there is no evidence of sags or curtains, circle the “N.”

11.7 *Chalking*—Chalking is characterized by the presence of loose removable powder, evolved from the paint film itself, at or just beneath the surface. Chalking may be detected by rubbing the fingertips across the film. If chalking is present, circle the “Y.” If there is no evidence of chalking, circle the “N.”

11.8 *Presence of Oil/Grease/Smoke*—The inspector should examine the inspection area for the presence of oil or grease marks (usually the result of spills) and for smoke stains (usually the result of smoke from exhaust stacks). If oil or grease marks or smoke stains are present in the inspection area, the inspector should circle “Y”; otherwise, the “N” should be circled.

11.9 *Bleeding*—Bleeding is said to occur when the color of an undercoat (usually a darker color) extends or bleeds through the surface of a topcoat (usually a lighter color). If bleeding has occurred in the inspection area, the inspector should circle the “Y.” If there is no evidence of bleeding, the “N” should be circled.

11.10 *Fading*—Fading is defined as the loss of brightness or vividness of color. Fading is usually more apparent with darker colors. If fading has occurred in the inspection area, the inspector should circle the “Y;” otherwise, the “N” should be circled.

11.11 *Knife Test*—Using a craftsman’s knife with a curved blade and holding the blade at a 30° angle to the substrate, cut a narrow ribbon of coating from an undamaged portion of the inspection area.

11.12 *Erosion*—Erosion is the wearing away of a paint film over a period of time to expose the substrate or undercoat. If erosion has occurred in the inspection area, circle the “Y.” If there is no evidence of erosion, circle the “N.”

11.13 *Discoloration*—Discoloration is characterized by a brown or black stain in the paint film that occurred because the tank was carrying fuel. Usually, there will be a line across the vertical surfaces of the tank below which discoloration has occurred and above which there is no discoloration. This line would be left by the level in the tank. If discoloration is present, circle the “Y.” If there is no discoloration, circle the “N.”

11.14 *Softening*—Softening can be the result of organic fuel cargo. Softening can be detected by pressing the edge of your fingernail into the paint film. If an impression is made, circle “Y.” If your fingernail does not penetrate the surface, softening has not occurred and the “N” should be circled.

11.15 *Valves, Piping, and Heating Coils Present*—If valves, piping, or heating coils are attached to or supported from the inspection area surface, circle “Y.” If no valves, piping, or heating coils are attached to or supported from the inspection area surface, circle “N” and proceed to 11.16.

11.15.1 *Coating Damage in Adjacent Areas*—If valves, piping, or heating coils are present, the inspector should examine the adjacent painted areas. If any damage (that is, delamination, blistering, corrosion, etc.) to the paint system has occurred, circle the “Y.” If there is no damage to the paint, circle the “N.”

11.16 *Stiffeners Present*—Horizontal and vertical stiffeners are structural supports that may be present in the tank to add strength and rigidity. If stiffeners are attached to the inspection area surface, circle the “Y.” If stiffeners are not present, circle the “N” and proceed to 11.17.

11.16.1 *Coating Damage Behind Stiffeners*—If stiffeners are present, the inspector should examine the adjacent painted area. If any damage (that is, delamination, blistering, corrosion, etc.) to the paint system has occurred, circle the “Y.” If there is no damage to the paint, circle the “N.”

11.17 *Anodes Present*—If the anodes are attached to the inspection area surface, circle the “Y.” If there are no anodes attached to the inspection area surface, circle the “N” and proceed to 11.18.

11.17.1 *Coating Damage in Adjacent Areas*—If anodes are present, the inspector should examine the adjacent painted area. If any damage (that is, delamination, blistering, corrosion, etc.) to the paint system has occurred, circle the “Y.” If there is no damage to the paint, circle the “N.”

11.17.2 *Anodes Functioning*—There are two situations when the anodes can be said to be functioning: (*1*) if the anode itself is corroded and has lost mass and shape, and (*2*) if both the anode itself and all surfaces in the tank are completely free of corrosion. If either of these situations exists, circle the “Y.” The anode is not functioning if corrosion is present on the tank surfaces but the anode itself is free of corrosion. In this latter situation, circle the “N.”

NOTE 3—Do not confuse superficial dirt on the anode with corrosion.

11.18 *Excessive Wear/Mechanical Damage*—The inspector should examine the inspection area for signs of excessive wear

or mechanical damage. Excessive wear is characterized by a wear path through a coated area caused by heavy foot or vehicular traffic over the same path. Mechanical damage is characterized by scrapes or cuts through a coated area caused by dropping tools, dragging heavy equipment, etc.

11.18.1 *Nonskid Areas*—If excessive wear or mechanical damage has occurred on a nonskid surface in the inspection area, the inspector should circle the "Y;" otherwise, the "N" should be circled.

11.18.2 *Other Areas*—If excessive wear or mechanical damage has occurred on any surface that is not a nonskid surface, the inspector should circle the "Y"; otherwise, the "N" should be circled.

12. Acceptability

12.1 If the cut portion of the coating ribbons or delaminates between layers, circle the "Y." If there is no evidence of ribboning or delamination between layers, circle the "N." If "Y" is circled, identify the delamination layer by marking the appropriate delamination box (II A, 2 to 7) in Fig. 4, Fig. 5, and Fig. 7 and III A, 2 to 7 in Fig. 6.

12.1.1 *Topcoat*—Mark an "X" in the box beside topcoat if topcoat delamination has occurred. Topcoat delamination has occurred if only the outermost coating has separated from all undercoats. A diagram of topcoat delamination is shown in Fig. 13.

12.1.2 *Within Repair System*—Mark an "X" in the box beside within repair system if delamination has occurred between layers of the repair system excluding delamination between the topcoat and the outermost undercoat. (This is topcoat delamination.) The repair system is defined as any coating system that is applied on top of the original coating system. Therefore, if the original coating system has not been overcoated, delamination within the repair system is not possible. A diagram of delamination within the repair system is shown in Fig. 13.

12.1.3 *Between Original/Repair*—Mark an" X" in the box beside between original/repair if delamination has occurred between the outermost coat of the original coating system and the innermost coat of the repair system. A diagram of delamination between original/repair is shown in Fig. 13.

12.1.4 *Within Original System*—Mark an" X" in the box beside within original system if delamination has occurred between any layers of the original coating system. A diagram of delamination within original system is shown in Fig. 13.

12.1.5 *To Primer Coat*—Mark an "X" in the box beside to primer coat if delamination has occurred between the innermost coat of the original coating system and the primer coat. A diagram of delamination to primer coat is shown in Fig. 13.

12.1.6 *To Steel Substrate*—Mark an "X" in the box beside the steel substrate if all coatings have separated from the surface of the hull leaving bare steel exposed. A diagram of delamination to steel substrate is shown in Fig. 13.

13. Measured Properties

13.1 *Dry Film Thickness*—Make dry film thickness (DFT) measurements using a properly calibrated magnetic gage. Perform measurements and calibration in accordance with SSPC-PA-2. Record each measurement to include three individual measurements within each spot measurement. The separate spots where DFT measurements are taken must be clean and dry with an intact coating undamaged by fouling, corrosion, etc. If a separate spot is not suitable for DFT measurements, proceed to the nearest suitable location. If the entire inspection area is not suitable for DFT measurements leave all boxes blank.

13.1.1 Each line on the inspection form is intended to hold all of the readings to include three individual readings within a spot reading.

13.2 There are enough lines present on the inspection forms to hold readings for a: (*1*) 6000-ft^2 underwater hull inspection area, (*2*) 1800-ft^2 topside and superstructure inspection area, and (*3*)1000-ft^2 tanks and voids inspection area.

13.3 If the inspection area is larger than that specified in the applicable area in 13.2, circle the "Y" next to Number 1, take more DFT readings. On a separate sheet of paper, enter all of the additional readings. Also include the area number (of the inspection area), date, ship name, hull number, and inspector's name. If the inspection area is not larger than that specified in the applicable area in 13.2, circle the "N" next to Number 1.

13.4 *Dielectric Shields*—For underwater hull, the inspector should inspect both the primary and secondary dielectric shields and answer yes ("Y") or no ("N") to questions A to D, F, and G. Measure the dry film thickness (DFT) of both the primary and secondary dielectric shields and record the results in the boxes next to E, Film Thickness (mils). If only one dielectric shield is present, record answers under primary (PRIM). Leave the columns under secondary (SEC) blank.

13.4.1 *Blistering*—If blistering is present, circle "Y." If there are no blisters, circle "N."

13.4.2 *Delamination*—If delamination is present, circle "Y." If there is no delamination, circle "N."

13.4.3 *Fouling*—If any type of fouling is present, circle "Y." If the dielectric shield is free of fouling, circle "N."

13.4.4 *Corrosion*:

13.4.4.1 *General*—If general corrosion is present, circle "Y;" otherwise, circle "N."

13.4.4.2 *Pitting*—If pitting corrosion is present, circle "Y;" otherwise, circle "N."

13.4.5 *Dry Film Thickness*—Enter the DFT measurements in the appropriate box.

13.4.6 *Calcareous Deposit*—If any calcareous (white, calcium-like) deposits are present, circle "Y." If none are present, circle "N."

13.4.7 *Erosion*—If there is evidence of erosion, circle "Y." If no evident of erosion is present, circle "N."

14. Recommendations

14.1 Any recommendations deemed by the inspector to apply to the conditions observed or reported on the form should be entered here. If the inspector has no recommendations, state "none" in the section.

14.2 The last line on the form provides the documentation whether an officer received a copy of the inspection form. The officer's signature following "Acknowledged by" indicates the ship's representative did receive a copy of the inspection results. It is not meant to indicate his agreement or disagreement of the information on the form.

15. Keywords

15.1 coating system; inspection; ships