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9 BUREAU OF SHIPS GROUP

TECHNICAL INSPECTION REPORT

CONFIDENTIAL

Classification (Cancelled) (Changed to
By Authority of Joint Chiefs of Staff (Action 15 Apr 49)
Date 1/11/51

367468

6 OPERATIONS CROSSROADS,
U.S.S. WILSON (DD408).

TEST BAKER [5]

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Director
Defense Atomic Support Agency
Washington, D. C. 20301

ARMED FORCES
SPECIAL WEAPONS PROJECT

11 1947,

12 40 p.

~~OPERATION CROSSROADS~~

DIRECTOR OF SHIP MATERIAL

JOINT TASK FORCE ONE

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TECHNICAL INSPECTION REPORT

Classification (Cancelled) (Changed to **CONFIDENTIAL**)
By Authority of Joint Chiefs of Staff (Action 15 Apr 49)
By *John Deeg Lt* Date *24 Sept 51*

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APPROVED:
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F.X. Forest,
Captain, U.S.N.

USS WILSON (DD408)

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JAN 1965

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USS WILSON (DD408)

U.S.S. WILSON (DD408)

SHIP CHARACTERISTICS

Building Yard: Puget Sound Naval Shipyard.

Commissioned: 5 July 1939.

HULL

Lenght Overall: 340 feet 9 inches.
Length on Waterline: 334 feet 0 inches.
Beam (extreme): 35 feet 6 inches.
Depth (molded at side, to main deck, amidships):
19 feet 7 7/8 inches.
Drafts at time of test: Fwd 13 feet 0 inches.
Aft. 11 feet 10 inches.
Standard displacement: 1,500 tons.
Displacement at time of test: 2,140 tons.

MAIN PROPULSION PLANT

Main Engines: Two sets of Westinghouse turbines are installed, one set per shaft.
Reduction Gears: Two sets of Westinghouse manufacture (De-Laval design) double reduction are installed, one per shaft.
Main Condensers: Two are installed in ship.
Boilers: Three Babcock and Wilcox boilers are installed in ship. 565 psi gauge. 715° F.
Propellers: Two are installed in ship.
Main Shafts: Two are installed in ship.
Ships Service Generators: Four are installed in ship.
Two - 200 KW. - A.C., two 40 KW. - D.C. sets.

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USS WILSON (DD408)

TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition After Test.

(a) Drafts after test; list; areas of flooding, sources.

There was essentially no change in draft or trim. A 3/4 degree port list existed before and after the test.

Bilges of the forward fireroom and after engine room contained 18 inches of water. Twelve inches of a mixture of oil and water accumulated in the after fireroom, and twelve inches of water in the bilges of the forward engine room. All of this is attributable to normal leakage of valves, fittings and glands. Small amounts of water accumulated in compartments opening to the weather deck. This water was forced into the compartments when the ship was washed down with fire hoses. There was no other flooding.

(b) Structural damage.

HULL

None. Moderate dishing of the shell plating which exists throughout the ship is believed to have occurred before the test.

MACHINERY

No comment.

ELECTRICAL

There was no apparent structural damage due to test.

(c) Other damage.

HULL

Not observed.

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USS WILSON (DD408)

MACHINERY

None, as far as can be determined by visual inspection.

ELECTRICAL

No damage occurred to electrical equipment due to test.

II. Forces Evidenced and Effects Noted.

(a) Heat.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

No evidence of heat.

(b) Fires and explosions.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

No evidence of fires or explosions.

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USS WILSON (DD408)

(c) Shock.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

No evidence of shock.

(d) Pressure.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

No evidence of pressure.

(e) Effects apparently peculiar to the atom bomb.

HULL

None, other than radiological contamination.

MACHINERY

None, except radioactivity.

ELECTRICAL

Other than radioactivity, no effects peculiar to the atom bomb were noted.

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USS WILSON (DD408)

III. Results of Test on Target.

(a) Effect on machinery electrical, and ship control.

HULL

Not observed.

MACHINERY

None, as far as can be determined by visual inspection, except for possible effects of radioactivity. No machinery except the emergency diesel generator and the steering equipment was operated after test B because of radiological hazard. Radioactivity was high when the ship was inspected, 18 days after test B.

ELECTRICAL

No damage apparent.

(b) Effect on gunnery and fire control.

HULL

Not observed.

MACHINERY

No comment.

ELECTRICAL

No damage apparent.

(c) Effect on watertight integrity and stability.

HULL

None.

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MACHINERY

No comment.

ELECTRICAL

No electrical damage affected watertight integrity or stability.

(d) Effect on personnel and habitability.

HULL

Personnel and habitability would have been affected only by radiological conditions.

MACHINERY

None, except radioactivity.

ELECTRICAL

No electrical damage affected personnel or habitability.

(e) Effect on fighting efficiency.

HULL

There is no immediate effect on fighting efficiency.

MACHINERY

None, except radioactivity.

ELECTRICAL

No electrical damage affected the fighting efficiency of the vessel.

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USS WILSON (DD408)

IV. General Summary.

HULL

None.

MACHINERY

The WILSON was outside the range of physical damage during test B.

ELECTRICAL

No damage was evident on any electrical equipment on this vessel. It appears that presently available electrical equipment has sufficient shock resistance to withstand any stresses imposed on it under the conditions existing during test Baker.

V. Preliminary Recommendations.

HULL

None.

MACHINERY

None.

ELECTRICAL

None.

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USS WILSON (DD408)

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; areas of flooding, sources.

There was essentially no change in draft or trim. A 3/4 degree port list existed before and after the test.

Bilges of the forward fireroom and after engine room contained 18 inches of water. Twelve inches of a mixture of oil and water accumulated in the after fireroom, and twelve inches of water in the bilges of the forward engine room. All of this is attributable to normal leakage. Small amounts of water accumulated in compartments opening to the weather deck. This water was forced into the compartments when the ship was washed down with fire hoses. There was no other flooding.

(b) Structural damage.

None. Moderate dishing of the shell plating which exists throughout the ship is believed to have occurred before the test.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

None.

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USS WILSON (DD408)

(b) Fires and Explosions.

None.

(c) Shock.

None.

(d) Pressure.

None.

(e) Effects Apparently Peculiar to the Atom Bomb.

None, other than radiological contamination.

III. Results of Test on Target.

(a) Effect on machinery, electrical, and ship control.

Not observed.

(b) Effect on gunnery and fire control.

Not observed.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

Personnel and habitability would have been affected only by radiological conditions.

(e) Effect on fighting efficiency.

There is no immediate effect on fighting efficiency.

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USS WILSON (DD408)

IV. General Summary.

None.

V. Preliminary Recommendations.

None.

VI. Instructions for loading the vessel specified the following:

| ITEM | LOADING |
|--------------------------------|---------|
| Fuel oil | 50% |
| Diesel oil | 50% |
| Ammunition | 50% |
| Potable and reserve feed water | 95% |
| Salt water ballast | 160 |

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ship's Force" issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

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USS WILSON (DD408)

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

No structural damage occurred as a result of Test B. Failure of welds connecting the base of a scratch gage holder to the main deck was noted. This failure does not appear to be attributable to Test B but rather to a direct blow received before the ship was secured for the test condition. (Photo 2990-1, page 29). A moderate degree of "washboarding" and indentation of shell plating is general. These irregularities are believed to be the result of normal operating conditions. (Photos 4004-5, 6, pages 30 , and 31). Photos, pages 32 to 38 are general views showing the exterior of the ship.

B. Superstructure.

No damage.

C. Turrets, Guns and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

No damage.

E. Weather Deck.

No damage.

F. Exterior Hull.

No damage.

G. Interior Compartments (above w.l.).

No damage.

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USS WILSON (DD408)

H. Armor Decks and Miscellaneous Armor.

Not applicable.

I. Interior Compartments (below w.l.).

No damage.

J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

Bilges of the forward fire room and after engine room contained 18 inches of water. Twelve inches of a mixture of oil and water had accumulated in the after fire room, and 12 inches of water in the bilges of the forward engine room. This collection of water is attributable to normal leakage. No other flooding was in evidence except small quantities of water from washing down which were found in compartments open to the weather deck.

M. Ventilation.

No damage.

N. Ship Control.

No damage.

O. Fire Control.

No damage.

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USS WILSON (DD408)

P. Ammunition Behavior.

No damage.

Q. Ammunition Handling.

No damage.

R. Strength.

No damage.

S. Miscellaneous.

No comment.

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USS WILSON (DD408)

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TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY

GENERAL SUMMARY OF MACHINERY DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

No comment.

(b) Structural damage.

No comment.

(c) Other damage.

None, as far as can be determined by visual inspection.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and explosions.

No evidence.

(c) Shock.

No evidence.

(d) Pressure.

No evidence.

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USS WILSON (DD408)

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(e) Any effects apparently peculiar to the atom bomb.

None, except radioactivity.

III. Effects of Damage.

(a) Effect on machinery and ship control.

None, as far as can be determined by visual inspection, except for possible effects of radioactivity. No machinery except the emergency diesel generator and the steering equipment was operated after Test B because of radiological hazard. Radioactivity was high when the ship was inspected, 18 days after Test B.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on watertight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

None, except radioactivity.

(e) Total effect on fighting efficiency.

None, except radioactivity.

IV. General Summary of Observers' Impressions and Conclusions.

The WILSON was outside the range of physical damage during Test B.

V. Preliminary Recommendations.

None.

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U SS WILSON (DD408)

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall condition.

The overall condition of the machinery installation was not changed by Test B as far as can be determined by visual inspection.

(b) Areas of major damage.

None.

(c) Primary cause of damage.

Not applicable.

(d) Effect of target test on overall operation of machinery plant.

The test had no effect on the overall operation of the machinery plant, as far as can be determined by visual inspection.

Note: Because of radiological hazard, no machinery on this vessel was operated after Test B except the emergency diesel generator and the steering equipment. Radiological activity was high at the time of the inspection, 18 days after Test B.

B. Boilers.

No apparent damage.

C. Blowers, Forced Draft.

No apparent damage.

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D. Fuel Oil Equipment.

No apparent damage.

E. Boiler Feedwater Equipment.

No apparent damage.

F. Main Engines.

No apparent damage. Tramming of the engines before and after Test B demonstrated that they had no displacement or misalignment.

G. Reduction Gears.

No apparent damage.

H. Shafting and Bearings.

No apparent damage.

I. Lubrication System.

No apparent damage.

J. Condensers and Air Ejectors.

No apparent damage.

K. Pumps.

No apparent damage.

L. Auxiliary Generators (Turbine and Gears).

No apparent damage.

M. Propellers.

The propellers were not inspected as they were not visible from the surface of the water. However, in view of the general condition of the vessel, they are believed to be undamaged.

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N. Distilling Plant.

No apparent damage.

O. Refrigerating Plant.

No apparent damage.

P. Winches, Windlasses, and Capstans.

No apparent damage.

Q. Steering Engine.

Undamaged. The steering engine was operated after Test B, using power from the emergency diesel generator.

R. Elevators, Ammunition Hoists, Etc.

No apparent damage.

S. Ventilation (Machinery).

No apparent damage.

T. Air Compressors.

No apparent damage.

U. Diesels (Generators and Boats).

Undamaged. The emergency diesel generator was operated under load after Test B; and functioned normally.

V. Piping.

No apparent damage.

W. Miscellaneous.

No apparent damage.

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USS WILSON (DD408)

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition After Test.

- (a) Drafts after test; list; general areas of flooding, sources.

Light flooding occurred in the bilges of the fire and engine room.

Sources of flooding probably were leaks in valves and fittings and packing glands.

- (b) Structural damage.

There was no apparent structural damage due to Test B.

- (c) Other damage.

No damage occurred to electrical equipment due to Test B.

II. Forces Evidenced and Effects Noted.

- (a) Heat.

No evidence of heat.

- (b) Fires and explosions.

No evidence of fires or explosions.

- (c) Shock.

No evidence of shock.

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USS WILSON (DD408)

(d) Pressure.

No evidence of pressure.

(e) Any effects apparently peculiar to the atom bomb.

Other than radioactivity, no effects peculiar to the atom bomb were noted.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

No damage apparent.

(b) Effect on gunnery and fire control.

No damage apparent.

(c) Effect on water-tight integrity and stability.

No electrical damage affected water-tight integrity or stability.

(d) Effect on personnel and habitability.

No electrical damage affected personnel or habitability.

(e) Total effect on fighting efficiency.

No electrical damage affected the fighting efficiency of the vessel.

IV. General Summary of Observers' Impressions and Conclusions.

No damage was evident on any electrical equipment on this vessel. It appears that presently available electrical

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USS WILSON (DD408)

equipment has sufficient shock resistance to withstand any stresses imposed on it under the conditions existing during Test B.

V. Any Preliminary General or Specific Recommendations of the Inspecting Group.

None.

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DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

The overall condition of the electric plant is the same as before the test.

(b) Areas of major damage.

None.

(c) Primary causes of damage in each area of major damage.

None.

(d) Effect of target test on overall operation of electric plant.

1. Ship's service generator plant - no effect.
2. Engine and boiler auxiliaries - no effect.
3. Electric propulsion - not applicable.
4. Communications - no effect.
5. Fire control circuits - no effect.
6. Ventilation - no effect.
7. Lighting - no effect.

(e) Types of equipment most affected.

None.

B. Electric Propulsion Rotating Equipment.

Not Applicable.

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C. Electric Propulsion Control Equipment.

Not Applicable.

D. Generators - Ships Service.

No damage.

E. Generators - Emergency.

No damage.

F. Switchboards, Distribution and Transfer Panels.

No damage.

G. Wiring, Wiring Equipment and Wireways.

No damage.

H. Transformers.

No damage.

I. Submarine Propelling Batteries.

Not Applicable.

J. Portable Batteries.

No damage.

K. Motors, Motor Generator Sets and Motor Controllers.

No damage.

L. Lighting Equipment.

No damage.

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USS WILSON (DD408)

M. Searchlights.

No damage.

N. Degaussing Equipment.

No damage.

O. Gyro Compass Equipment.

No damage.

P. Sound Powered Telephones.

No damage.

Q. Ship's Service Telephones.

Not Applicable.

R. Announcing Systems.

No damage.

S. Telegraphs.

No damage.

T. Indicating Systems.

No damage.

U. I.C. and A.C.O. Switchboards.

No damage.

V. F.C. Switchboard.

No damage.

W. Miscellaneous.

No comment.

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USS WILSON (DD408)

SECTION IV

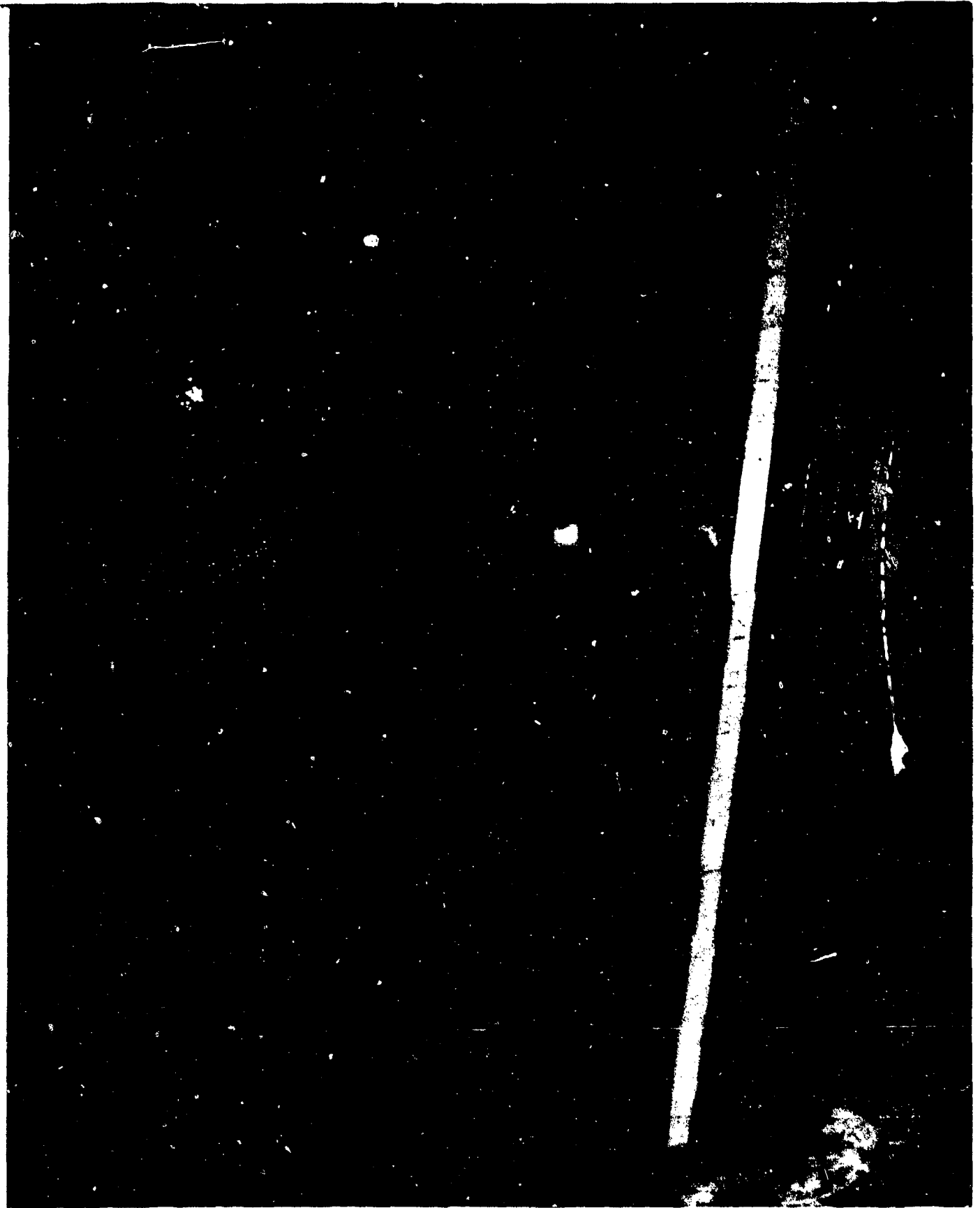
PHOTOGRAPHS

TEST BAKER

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USS WILSON (DD408)

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AB-CR-100-2990-1. Weld failure at deck connection of scratch gauge cage.

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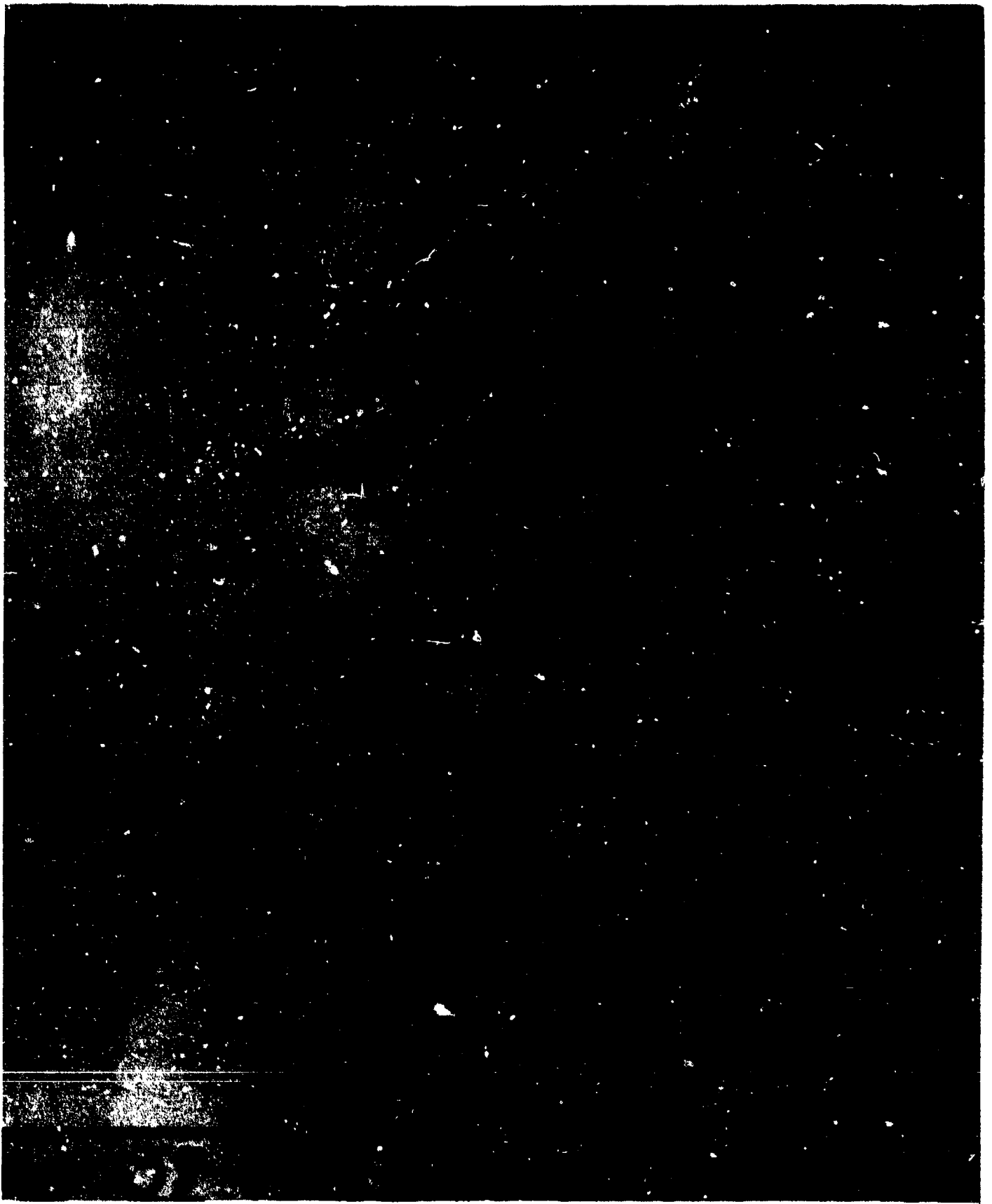
AB-CR-59-4004-5. View from off starboard beam, frames 125 to 180.

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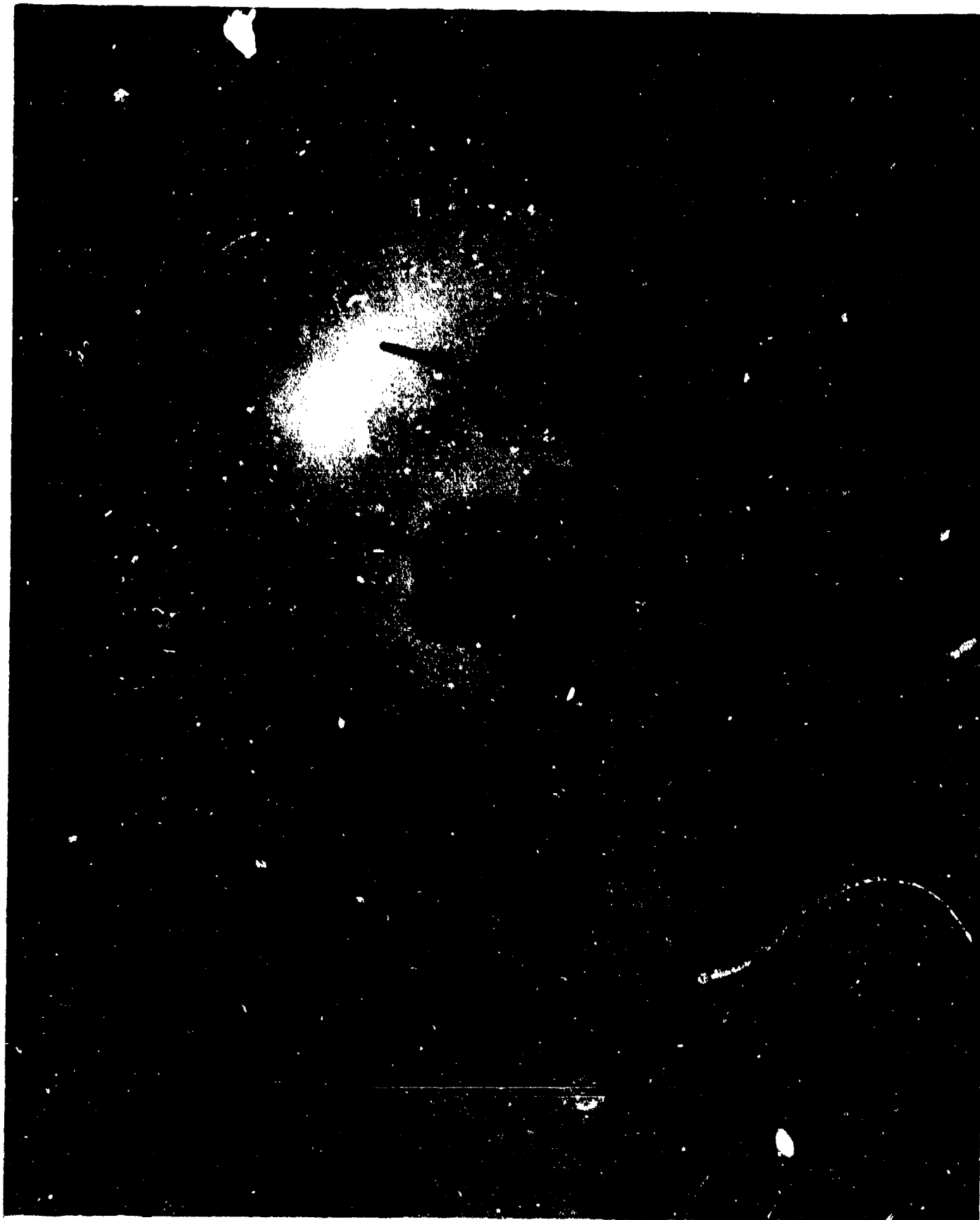
AB-CR-59-4004-6. View from off starboard beam, frames 88 to 132.

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AB-CR-59-4004-7. View from off starboard bow, showing forecastle deck and superstructure.

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AB-CR-79-2970-9. View from off starboard bow.

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AB-CR-59-4004-2. View from astern.

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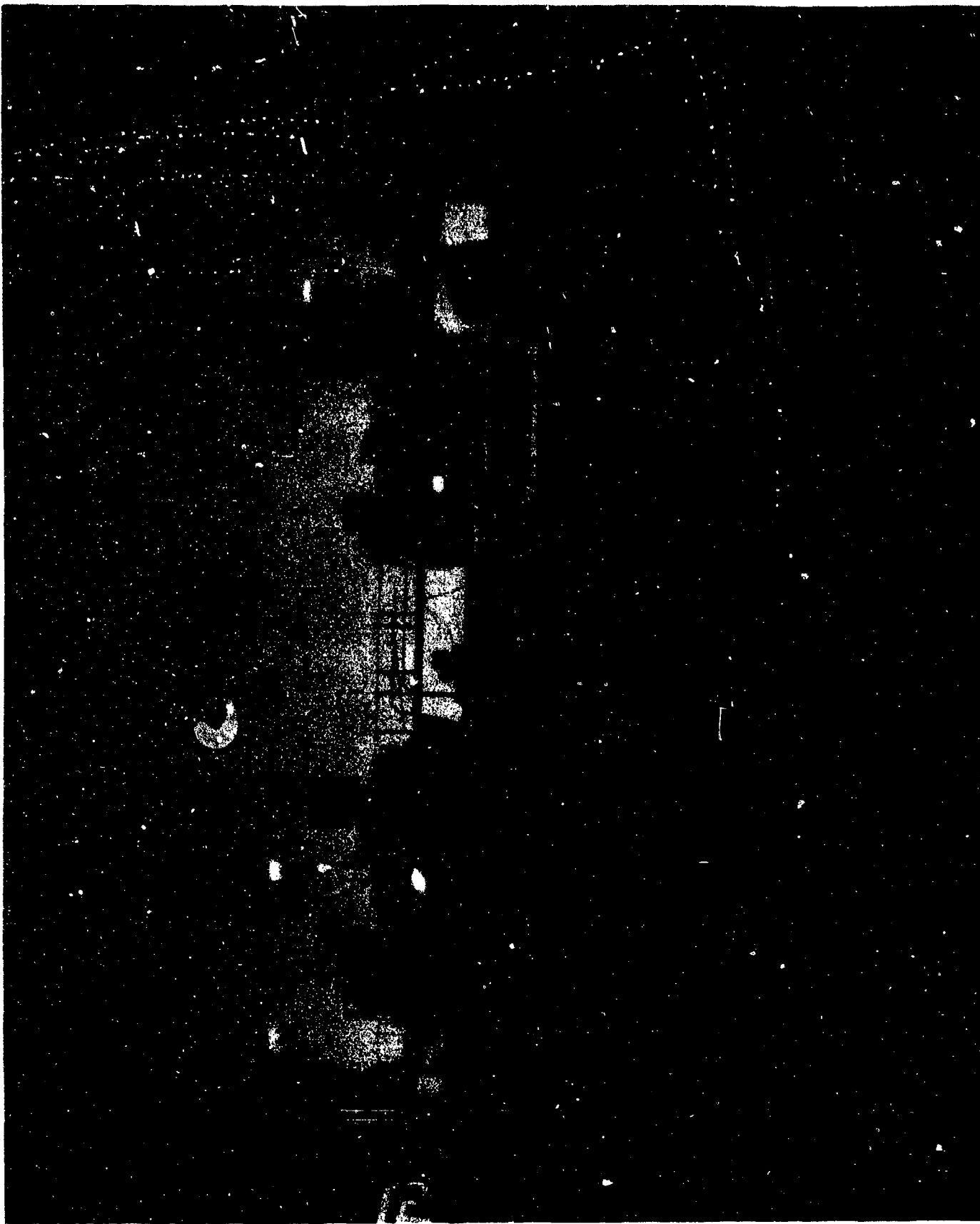
AB-CR-59-4004-1. View from off port quarter, stack to stern.

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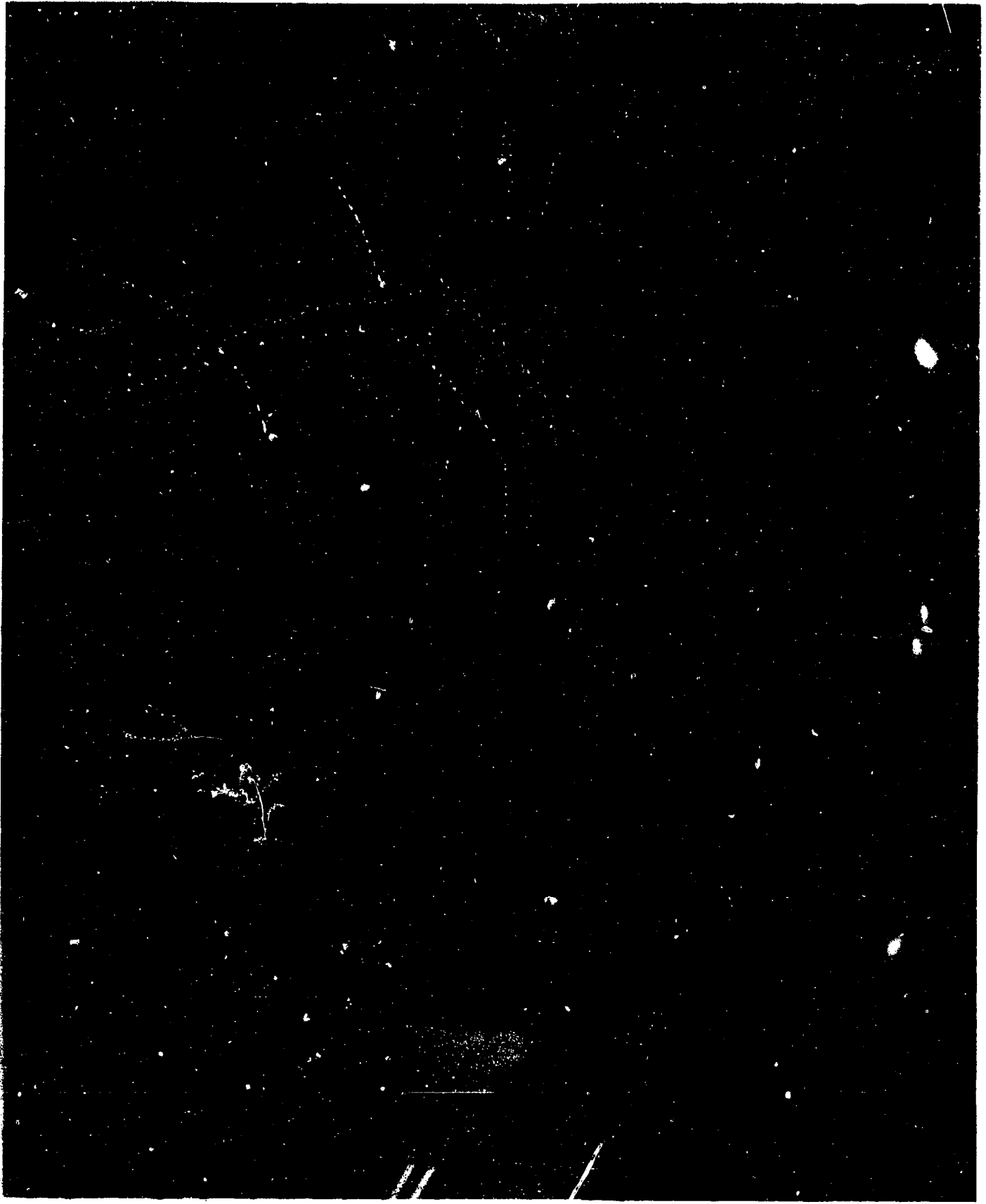
AB-CR-59-4003-12. Port side, stack to frame 135.

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AB-CR-59-4003-11. Port side, No. 1 mount to stack.

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AB-CR-59-4003-9. View from off port bow.

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APPENDIX

COMMANDING OFFICERS REPORT

TEST BAKER

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COMMANDING OFFICERS REPORT

REPORT # 5

Due to the limited time that the ship's force was allowed aboard they were not able to sound or inspect any of the tanks, voids or cofferdams.

However, I feel certain there was no change in the liquid loading of the ship.

The reasons for this belief are as follows;

- (a) The list of the ship was the same after the test as it was before, about 3/4 of a degree to port.
- (b) There was no excessive water in the bilges and no signs of leakage.
- (c) There were no signs of structural damage to the framing or bulkheads of the ship.

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USS WILSON (DD-408)

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Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398

TRC

18 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush (Security)

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency has declassified the following reports:

| | |
|--------------------------|------------------------|
| ✓AD-366588 4 | XRD-203-Section 12✓ |
| AD-366589 L | XRD-200-Section 9 |
| AD-366590 L | XRD-204-Section 13 |
| AD-366591 L | XRD-183 |
| ✓AD-366586 X | XRD-201-Section 10✓ |
| ✓AD-367487 X | XRD-131-Volume 2✓ |
| ✓AD-367516 4 | XRD- 1 143✓ |
| ✓AD-367493 4 | XRD-142✓ |
| AD-801410L✓ | XRD-138 |
| AD-376831L✓ | XRD-83 |
| AD-366759 L | XRD-80 |
| ✓AD-376830L X | XRD-79✓ |
| ✓AD-376828L 4 | XRD-76✓ |
| ✓AD-367464 X | XRD-106✓ |
| AD-801404L✓ | XRD-105-Volume 1 |
| ✓AD-367459 X | XRD-100✓ |

TRC

18 April 1997

Subject: Declassification of Report

| | |
|----------------|-------------------------|
| AD-376836L ✓ | XRD-98 |
| AD-376835L ✓ | XRD-97 |
| AD-376834L ✓ | XRD-96 |
| AD-376833L ✓ | XRD-95 |
| X AD-376832L ✓ | XRD-94 <i>re-ingest</i> |
| ✓ AD-367458 ✕ | XRD-93 ✓ |
| AD-367457 ✓ | XRD-92-Volume 2 |
| AD-367456 ✓ | XRD-91-Volume 1 |
| AD-367455 ✓ | XRD-90 |
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| AD-367453 ✓ | XRD-88 |
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| AD-376837L ✓ | XRD-99 |
| AD-366758 ✓ | XRD-78 |
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| ✓ AD-367462 ✕ | XRD-103 ✓ |
| AD-367463 ✕ | XRD-104 ✓ |
| AD-367461 ✕ | XRD-102 ✓ |
| AD-367460 ✓ | XRD-101 |

TRC

18 April 1997

Subject: Declassification of Reports

AD-801406L ✓ XRD-114.

In addition, all of the cited reports are now **approved for public release; distribution statement "A" now applies.**

Arduith Jarrett
ARDITH JARRETT
Chief, Technical Resource Center