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127

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# BUREAU OF SHIPS GROUP

## TECHNICAL INSPECTION REPORT

**CONFIDENTIAL**

Classification (~~Cancelled~~) (Changed to  
By Authority of Joint Chiefs of Staff Action of 15 April 1944  
By [Signature] Date: 4 Apr 51

6 OPERATION CROSSROADS.  
U.S.S. CORTLAND (APA 75)

TEST BAKER [U] 8

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

11 1947, 12 33p.

14 XRD-127

~~OPERATION CROSSROADS~~

DIRECTOR OF SHIP MATERIAL

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1 JAN 1965

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BUREAU OF SHIPS GROUP  
TECHNICAL INSPECTION REPORT

Classification (~~Cancelled~~) (Changed to **CONFIDENTIAL**)  
By Authority of Joint Chiefs of Staff Action of 15 April 1974  
*John R. Beardsley* Date 2-1-75  
J.R. AFSWP

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Defense Atomic Support Agency  
Washington, D. C. 20301

APPROVED:

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

Page 1 of 33 Pages

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1 JAN 1965

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SECRET

U.S.S. CORTLAND (APA75)

U.S.S. CORTLAND (APA 75)

SHIP CHARACTERISTICS

Building Yard: Consolidated Steel Corp.; Wilmington,  
California.

Commissioned: 1 January 1945.

HULL

Length Overall: 426 feet 0 inches.

Length on Waterline: 400 feet 0 inches.

Beam (extreme): 58 feet 0 inches.

Depth (molded to upper deck): 37 feet 0 inches.

Drafts at time of test: Fwd. 8 feet 9 inches.

Aft. 18 feet 8 inches.

Limiting displacement: 7,080 tons.

Displacement at time of test: 5,984 tons.

MAIN PROPULSION PLANT

Main Engines: Two sets of Westinghouse steam turbines, directly connected to Westinghouse main generators. Two main shaft motors.

Main Condensers: Two are installed in ship.

Boilers: Two Babcock and Wilcox boilers are installed in ship. 450 psi gauge, - 750° F.

Propellers: Two are installed in ship.

Main Shafts: Two are installed in ship.

Ships Service Generators: Five are installed in ship.

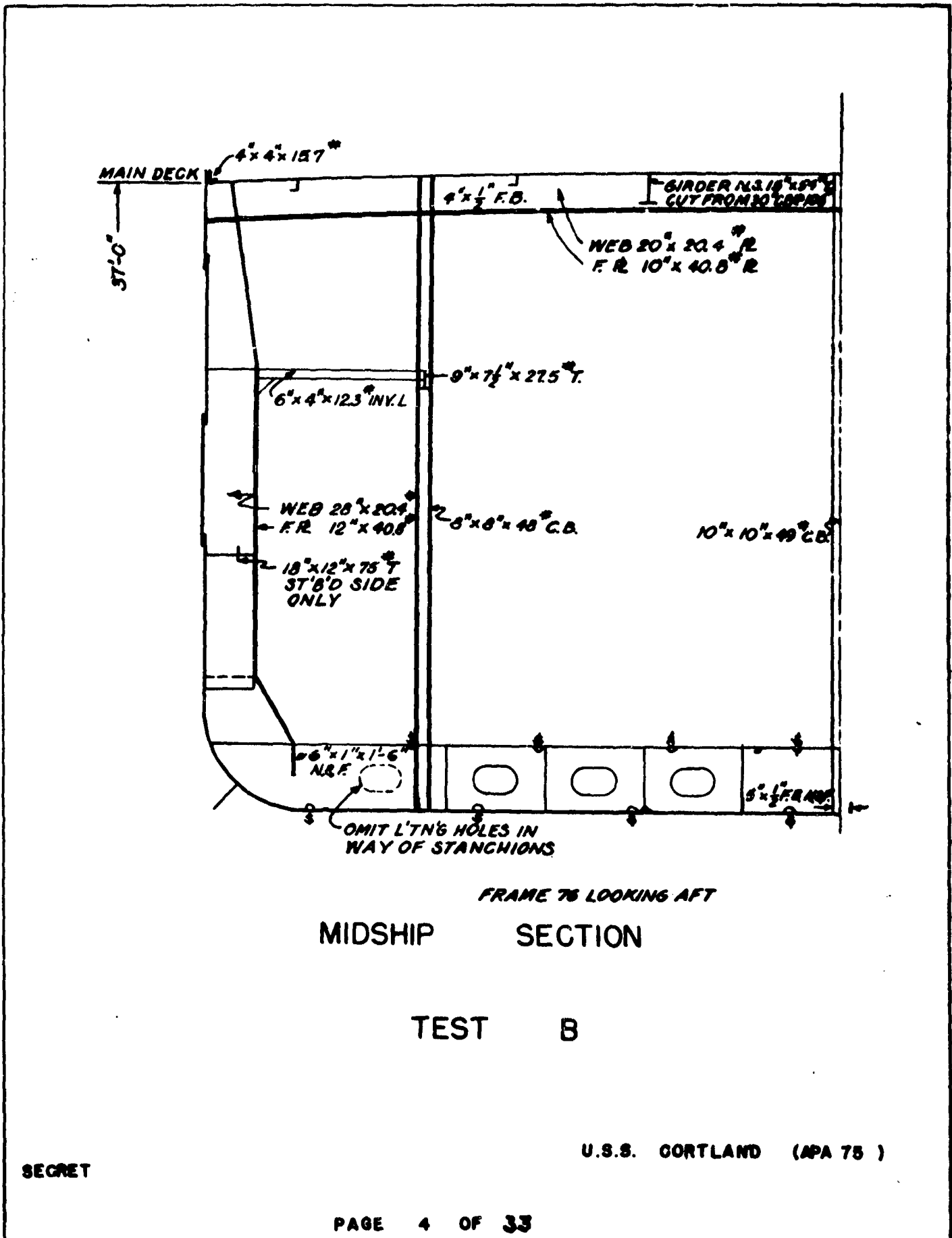
Two - 250 KW. - 450 V. - A.C.

One - 150 KW. - 450 V. - A.C.

Two - 100 KW. - 120/240 V. - D.C.

SECRET

USS CORTLAND (APA75)



FRAME 75 LOOKING AFT  
MIDSHIP SECTION

TEST B

U.S.S. CORTLAND (APA 75)

SECRET

TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition after Test.

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

There was no flooding, hence no change in drafts or list.

(b) Structural damage.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

No structural damage was observed which affected electrical equipment.

(c) Other damage.

HULL

No comment.

MACHINERY

There was no damage to machinery of this vessel during Test B.

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U.S.S. CORTLAND (APA75)

ELECTRICAL

No electrical damage occurred as a result of Test B.

II. Forces Evidenced and Effects Noted.

(a) Heat

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

There was no evidence of heat.

(b) Fires and explosions.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

There was no evidence of fires or explosions.

(c) Shock.

HULL

None.

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U.S.S. CORTLAND (APA 75)



MACHINERY

No evidence.

ELECTRICAL

There was no evidence of shock on electrical equipment.

(d) Pressure.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

There was no evidence of pressure on electrical equipment.

(e) Effects apparently peculiar to the Atom Bomb.

HULL

None.

MACHINERY

None.

ELECTRICAL

There were no effects noted that are considered peculiar to the Atomic Bomb other than radioactivity.

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U.S.S. CORTLAND (APA75)

III. Results of Test on Target.

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

HULL

Not observed.

MACHINERY

None.

ELECTRICAL

All electrical equipment was operable and ships control was unaffected.

(b) Effect on gunnery and fire control.

HULL

Not observed.

MACHINERY

No comment

ELECTRICAL

Gunnery and fire control were unaffected electrically.

(c) Effect on watertight integrity and stability.

HULL

None.

MACHINERY

No comment.

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U.S.S. CORTLAND (APA75)

ELECTRICAL

None.

(d) Effect on personnel and habitability.

HULL

None.

MACHINERY

None.

ELECTRICAL

It is considered the only effect on personnel and habitability would have been that due to radioactivity. The extent of such effects are unknown.

(e) Effect on fighting efficiency.

HULL

None.

MACHINERY

None.

ELECTRICAL

There was no effect on the fighting efficiency of this vessel as a result of Test B from electrical failures. It is considered that, except for possible personnel casualties due to radioactivity, this vessel's fighting efficiency would have been unimpaired.

SECRET

U.S.S. CORTLAND (APA75)

IV. General Summary of Observers' Impressions and Conclusions.

HULL

No comment.

MACHINERY

The CORTLAND was outside the effective range of the explosion of Test B.

ELECTRICAL

The distance of this vessel from the blast was too great for electrical damage to occur.

V. Any Preliminary, General, or Specific Recommendation of the Inspection Group.

HULL

Although this ship was located on the outer fringe of the target array, hatch boards on #2 cargo hatch were dislodged. It is indicated that a more adequate method of securing these boards is required.

MACHINERY

None.

ELECTRICAL

None.

SECRET

U.S.S. CORTLAND (APA75)

TECHNICAL INSPECTION REPORT  
SECTION I - HULL  
GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

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

There was no flooding, hence no change in drafts or list.

- (b) Structural damage.

None.

- (c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

- (a) Heat.

None.

- (b) Fires and explosions.

None.

- (c) Shock.

None.

- (d) Pressure.

None.

- (e) Effects apparently peculiar to the atom bomb.

None.

SECRET

USS CORTLAND (APA75)

III. Effects of Damage.

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

Not observed.

- (b) Effect on gunnery and fire control.

Not observed.

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

None.

- (d) Effect on personnel and habitability.

None.

- (e) Effect on fighting efficiency.

None.

IV. General Summary.

No comment.

V. Preliminary Recommendations.

Although this ship was located on the outer fringe of the target array, hatch boards on #2 cargo hatch were dislodged. It is indicated that a more adequate method of securing these boards is required.

VI. Instructions of loading the vessel specified the following:

ITEM	LOADING
Fuel Oil	95%
Diesel Oil	95%
Ammunition	100%
Potable and reserve feed water	95%
Salt water ballast	None

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USS CORTLAND (APA75)

Details of the actual quantities of the various items aboard are included in Report No. 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ships Force" issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

SECRET.

USS CORTLAND (APA75)

## DETAILED DESCRIPTION OF HULL DAMAGE

### A. General Description of Hull Damage.

None. Photographs Pages 29 and 30 show general views of the exterior of the ship after Test B.

### B. Superstructure.

No damage.

### C. Turrets, Guns and Directors.

No damage.

### D. Torpedo Mounts, Depth Charge Gear.

Not Applicable.

### E. Weather Deck.

Two hatchboards on #2 cargo hatch were dislodged. No deflection was recorded on any of the scratch gages installed between the main and upper decks. A deck survey revealed no change in the deck.

### F. Exterior Hull.

No damage

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

No damage.

### H. Armor Decks and Miscellaneous Armor.

Not Applicable.

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

No damage.

SECRET

USS CORTLAND (APA75)



- J. Underwater Hull.  
No damage.
- K. Tanks.  
No damage.
- L. Flooding.  
None.
- M. Ventilation.  
No damage.
- N. Ship Control.  
No damage.
- O. Fire Control.  
No damage.
- P. Ammunition Behavior.  
No damage.
- Q. Ammunition Handling.  
No damage.
- R. Strength.  
No damage.
- S. Miscellaneous.  
No comment.
- T. Coverings.  
No damage.

SECRET

USS CORTLAND (APA75)

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 data taken by machinery group.

(b) Structural damage.

No comment.

(c) Other damage.

There was no damage to machinery of this vessel during Test B.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and explosions.

No evidence.

(c) Shock.

No evidence.

(d) Pressure.

No evidence.

SECRET

USS CORTLAND (APA-76)

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## DETAILED DESCRIPTION OF MACHINERY DAMAGE

### A. General Description of Machinery Damage.

#### (a) Overall condition.

The overall condition of the machinery was not changed by Test B.

#### (b) Areas of major damage.

None.

#### (c) Primary causes of damage.

None.

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

The overall operation of the machinery plant remained unchanged as a result of Test B. Full operation was resumed immediately after the Test.

### B. Boilers.

No damage. Both boilers were steamed after Test B. Performance was normal. Hydrostatic tests indicate no change in the tightness of the boilers.

#### HYDROSTATIC TEST ON BOILER #1

	Before Test B.	After Test B.
Initial Pressure	450 lb./sq. in.	450 lb./sq. in.
Time required for pressure to drop		

SECRET

USS CORTLAND (APA-75)

100 lbs.	4 minutes	5 minutes
200 lbs.	6 minutes	8 minutes
300 lbs.	9 minutes	11 minutes
400 lbs.	15 minutes	18 minutes

Pressure dropped to 0                      2 1/2 hours                      3 hours

C. Blowers.

No damage. All four blowers were operated under service conditions after Test B.

D. Fuel Oil Equipment.

No damage. All fuel oil equipment was operated incident to operating the boilers.

E. Boiler Feedwater Equipment.

No damage. All boiler feedwater equipment was operated satisfactorily incident to operating the boilers.

F. Main Engines.

No damage. Both main engines were operated after Test B. Performance was normal.

G. Reduction Gears.

Not applicable.

H. Shafting and Bearings.

No damage. Both shafts were operated under power after Test B, and operation was normal.

I. Lubrication System.

No damage. The lubrication system was operated incident to operation of the main engines.

SECRET

USS CORTLAND (APA-75)

J. Condensers and Air Ejectors.

No damage. The after condenser, on which the suction and overboard discharge were left open, also the forward condenser were operated under power and normal vacuum obtained.

K. Pumps.

No damage. All pumps were operated under power at rated pressure and normal operation was obtained.

L. Auxiliary Generators (Turbines and Gears).

No damage. All turbo-generators were operated under service conditions. Performance was normal.

M. Propellers.

No damage. The propellers functioned normally with the main engines in use.

N. Distilling Plant.

Undamaged. The distilling plant was placed in service after the test, and functioned normally

O. Refrigerating Plant.

No damage. The refrigerating plant was placed in service after the test, and functioned normally.

P. Winches, Windlasses and Capstans.

No damage. All equipment was operated under service conditions, and functioned normally.

Q. Steering Engine.

Undamaged. The steering equipment was operated under service conditions after Test B, and functioned normally.

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USS CORTLAND (APA-75)

R. Elevators, Ammunition Hoists, Etc.

No damage. All ammunition hoists and gasoline hoist were operated by power after Test B, and functioned normally.

S. Ventilation (Machinery).

No damage. All ventilation machinery was operated after the test, and functioned normally.

T. Air Compressors.

No damage. The air compressor was operated by power and is in normal condition.

U. Diesels (Generators and Boats).

No damage. The diesel generator and diesel fire pump were operated under service conditions after Test B, and functioned normally.

V. Piping.

No damage. All piping was used at normal operating pressures, and no defects were found.

W. Miscellaneous.

No damage. All miscellaneous equipment has been operated since Test B, and functions normally.

SECRET

USS CORTLAND (APA-75)

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.

Drafts or list were not observed. There was no flooding.

(b) Structural damage.

No structural damage was observed which affected electrical equipment.

(c) Damage.

No electrical damage occurred as a result of test B.

II. Forces Evidenced and Effects Noted.

(a) Heat.

There was no evidence of heat.

(b) Fires and explosions.

There was no evidence of fires or explosions.

(c) Shock.

There was no evidence of shock on electrical equipment.

(d) Pressure.

There was no evidence of pressure on electrical equipment.

SECRET

U.S.S. CORTLAND (APA75)

- (e) Any effects peculiar to the atomic bomb.

There were no effects noted that are considered peculiar to the atomic bomb other than radioactivity.

### III. Effects of Damage.

- (a) Effect on electrical equipment and ship control.

All electrical equipment was operable and ships control was unaffected.

- (b) Effect on gunnery and fire control.

Gunnery and fire control were unaffected electrically.

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

None.

- (d) Effect on personnel and habitability.

It is considered the only effect on personnel and habitability would have been that due to radioactivity. The extent of such effects are unknown.

- (e) Total effect on fighting efficiency.

There was no effect on the fighting efficiency of this vessel as a result of test B from electrical failures. It is considered that, except for possible personnel casualties due to radioactivity, this vessel's fighting efficiency would have been unimpaired.

### IV. General Summary of Observer's Impressions and Conclusions.

The distance of this vessel from the blast was too great for electrical damage to occur.

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U.S.S. CORTLAND (APA 75)



V. Any Preliminary, General, or Specific Recommendations  
of the Inspection Group.

None.

SECRET

U.S.S. CORTLAND (APA75)

## DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

### A. General Description of Electrical Damage.

#### (a) Overall condition.

This vessel received no damage as a result of test B to electrical equipment.

#### (b) Areas of major damage.

None.

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

There was no electrical damage.

#### (d) The effects of the target test on the overall operation of the electric plant.

All electrical equipment was tested and found to be operable.

#### (e) Types of equipment most effected.

None.

### B. Electric Propulsion Rotating Equipment (S41).

No damage.

### C. Electric Propulsion Control Equipment (S41).

No damage.

### D. Ship's Service Generators (S61).

No damage.

SECRET

U.S.S. CORTLAND (APA 75)

E. Emergency Generators (S61).

No damage was observed. The emergency generator was operating during the test and supplying power to the NMC Fathometer which continued to operate at least 2 minutes after Zero time.

F. Switchboards and Distribution Panels (S62).

No damage.

G. Wiring, Wiring Equipment, and Wireways (S62).

No damage.

H. Transformers (S62).

No damage.

I. Submarine Propelling Batteries (S62).

Not applicable.

J. Portable Batteries (S62).

No damage.

K. Motors, Motor-Generator Sets and Motor Controllers (S63).

No damage.

L. Lighting Equipment (S64).

No damage.

M. Searchlights (S66).

No damage.

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U.S.S. CORTLAND (APA75)

- N. Degaussing Equipment (S81).  
No damage.
- O. Gyro Compass Equipment (S24).  
No damage.
- P. Sound Powered Telephones. (S65).  
No damage.
- Q. Ship's Service Telephones (S65)-  
Not applicable.
- R. Announcing Systems (S65).  
No damage.
- S. Telegraphs (S65).  
No damage.
- T. Indicating Systems (S65).  
No damage.
- U. I.C. and A.C.O. Switchboards (S65).  
No damage.
- V. F.C. Switchboards (S71).  
No damage.

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U.S.S. CORTLAND (APA75)

SECTION IV

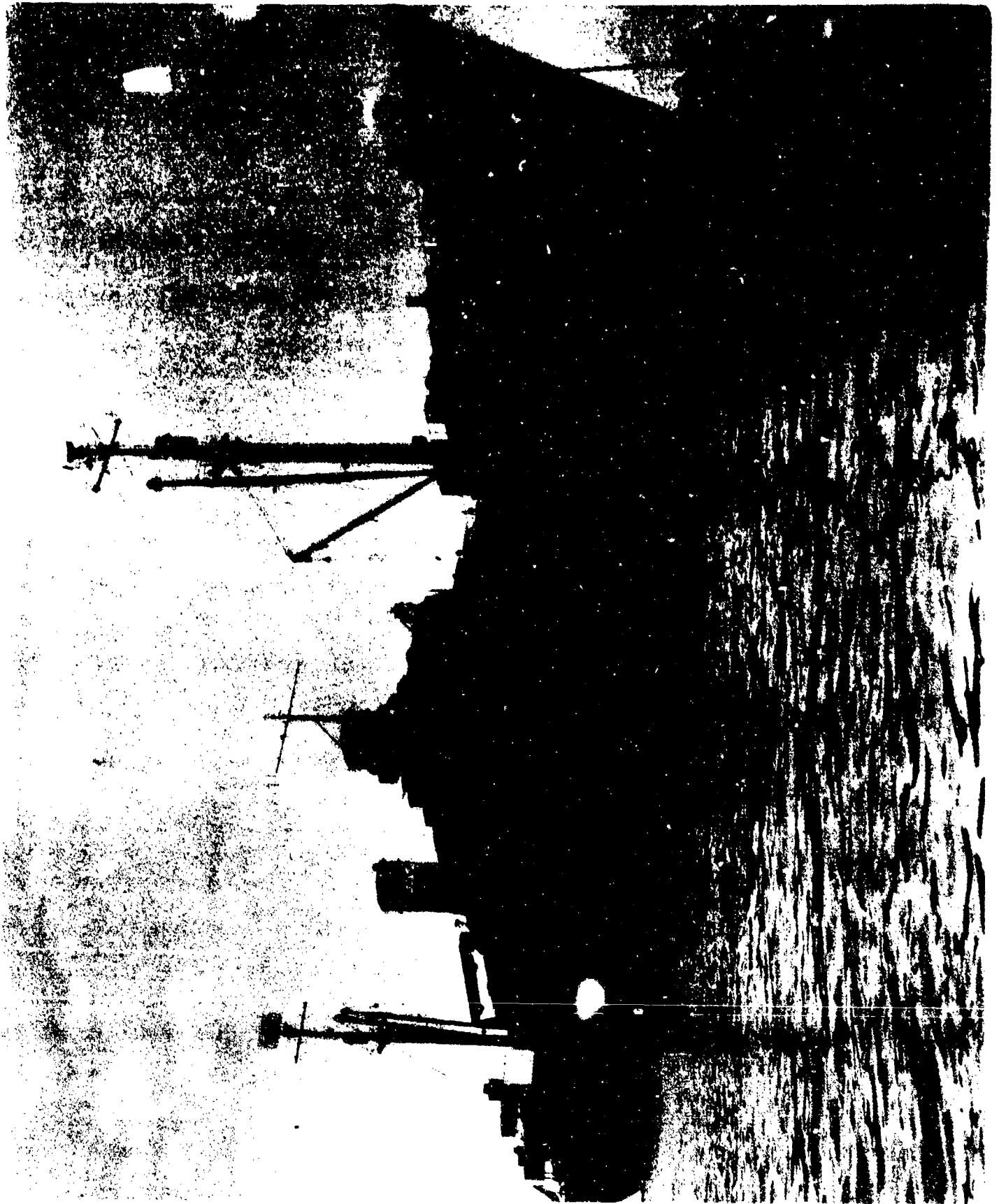
PHOTOGRAPHS

TEST BAKER

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U.S.S. CORTLAND (APA75)

Page 28 of 33 Pages



AA-CR-227-283-117. Starboard bow after Test B.

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USS CORTLAND (APA 75)

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AA-CR-227-283-113. Port quarter after Test B.

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USS CORTLAND (APA 75)

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APPENDIX

COMMANDING OFFICERS REPORT

TEST BAKER

SECRET

U.S.S. CORTLAND (APA75)

Page 31 of 33 Pages



REPORT #11

COMMANDING OFFICERS REPORT

SECTION I

The U.S.S. CORTLAND (APA 75) is of the GILLIAM type and was located in the extreme western edge of the target array, 3750 yards bearing 247° true from the center.

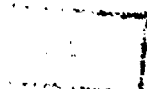
At the time of the test the ship was in fair material condition and completely sealed up, except for the emergency Diesel Generator. This generator was running and the vent used to supply it with required air was left open.

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U.S.S. CORTLAND (APA 75)

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SECTION II

PART A - GENERAL SUMMARY

- I. The drafts before and after the test were the same; there was no structural damage; there was no change in the operability of machinery. The temperature of the ship was normal and it is estimated that there would have been no personnel casualties.
- II. (a) There was no evidence of heat.
- (b) There were no fires or explosions.
- (c) The only evidence of shock was the dislodging of two metal pontoons over number two hatch.
- (d) There was no evidence of pressure.
- (e) The ship was slightly over tolerance in radioactivity in certain areas. These areas were all located near the skin of the ship next to the water line. These readings were taken Baker Day plus five (5).
- III. There were no effects on:
- (a) Propulsion and Ship control.
- (b) Gunnery and Fire Control.
- (c) Water-tight Integrity and Stability.
- (d) Personnel and habitability.
- (e) Fighting efficiency.
- IV. It is believed that the bomb had practically no effect on this ship.
- V. There are no recommendations.

U.S.S. CORTLAND (AF 175)

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By Authority of Joint Chiefs of Staff Action of 21 April 1979

By \_\_\_\_\_ Date 2 May 81

*[Handwritten signature]*  
J. H. F. S. P.

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

TRC

18 April 1997

Subject: Declassification of Reports

✓AD-367517✗	XRD-141 ✓
AD-366762✓	XRD-84
AD-366760✓	XRD-81
AD-366761✓	XRD-82
AD-367501✓	XRD-158-Volume 1
AD-367507L ✓	XRD-152-Volume 4
✓AD-367495 ✗	XRD-184 ✓
✓AD-367485 ✗	XRD-129 ✓
✓AD-367484 ✗	XRD-128 ✓
AD-367483 ✗	XRD-127 ✓
AD-367482 ✗	XRD-126 ✓
AD-367488 ✓	XRD-132
AD-367480 ✗	XRD-124 ✓
AD-801409L ✓	XRD-135
AD-367490 ✗	XRD-136 ✓
AD-367492 ✗	XRD-137 ✓
AD-801411L ✓	XRD-139
AD-367518 ✗	XRD-140 ✓
AD-367515 ✓	XRD-144
AD-367514 ✓	XRD-145
AD-367468 ✗	XRD-110-Volume 2 ✓
AD-367513 ✓	XRD-146
AD-367497 ✗	XRD-162 ✓

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