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DEFENSE ATOMIC
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AEC RESEARCH AND DEVELOPMENT REPORT

XRD-97

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A Facsimile Report

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BUREAU OF SHIPS GROUP TECHNICAL INSPECTION REPORT

changed from RD to DI by HFSWP 28. 16. 1-33-51

GROUP 3
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Operation (inspected), U.S.S. CONYNHAM (DD371)

TEST BAKER

CONTAINS WEAPON DATA
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Classification (Controlled) (Changed to Secret)
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**BUREAU OF SHIPS GROUP
TECHNICAL INSPECTION REPORT**

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Investigation (Continued) (Changed to Section I)
By *[Signature]* Date 11-16-1952
By *[Signature]* Date 11-16-1952

APPROVED:
[Signature]
F. X. Forest,
Captain, U.S.N.

USS CONYNGHAM (DD371)

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Investigation (Continued) (Changed to Section I)
By *[Signature]* Date 11-16-1952
By *[Signature]* Date 11-16-1952

USS CONYNGHAM (DD371)

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TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources, drafts or list.
There was no flooding, hence no change in

(b) Structural damage.

HULL

No structural damage occurred in this ship as a result of Test B, Some damage was sustained from contact with tugs.

MACHINERY

No comment.

ELECTRICAL

None observed.

(c) Other damage.

HULL

discovered.
No damage to propulsion or auxiliary machinery was

MACHINERY

No machinery on this vessel was damaged by Test B.

ELECTRICAL

None.

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II Forces Evidenced and Effects Noted.

(a) Heat.

HULL

No evidence of any heat effects was found.

MACHINERY

No evidence.

ELECTRICAL

None.

(b) Fires and explosions.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

None.

(c) Shock.

HULL

There is a small crack in the brick work of No. 3 boiler, but this did not prevent steaming of the boiler. No other shock effects were noted.

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MACHINERY

No evidence.

ELECTRICAL

None.

(d) Pressure.

HULL

No effects noted.

MACHINERY

No evidence.

ELECTRICAL

None.

(e) Effects apparently peculiar to the atom bomb.

HULL

None, except radioactivity.

MACHINERY

None.

ELECTRICAL

The high, persistent radioactivity remaining on the vessel after the explosion was the only effect noted.

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II. Effects of Damage.

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

HULL

None.

MACHINERY

None.

ELECTRICAL

None.

(b) Effect on gunnery and fire control.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

None.

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

HULL

None.

MACHINERY

No comment.

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ELECTRICAL

No effect due to electrical failure.

(d) Effect on personnel and habitability.

HULL

Habitability is unaffected. There probably would be no effect on personnel other than that of radioactivity.

MACHINERY

None.

ELECTRICAL

Electrical failures or derangements had no effect on the habitability of the vessel.

(e) Effect on fighting efficiency.

HULL

Fighting efficiency is not affected, if effects of radioactivity are neglected.

MACHINERY

None.

ELECTRICAL

None.

IV. General Summary of Observers' Impressions and Conclusions.

HULL

This vessel was outside of the danger range except for probable radiological hazards.

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MACHINERY

The CONYNGHAM was outside the effective range of the explosion in Test B.

ELECTRICAL

The vessel position in the target array was too far from the point of the explosion to receive sufficient shock for a good test of the ruggedness of the ship and its equipment.

V. Preliminary General or Specific Recommendations of Inspection Group.

HULL

None.

MACHINERY

None.

ELECTRICAL

No recommendations are made in view of the fact that no damage was sustained.

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USS CONYNGHAM (DD371)

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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.

No structural damage occurred in this ship as a result of test "B". Some damage was sustained from contact with tugs.

(c) Other damage.

No damage to propulsion or auxiliary machinery was discovered.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence of any heat effects was found.

(b) Fires and explosions.

None.

(c) Shock.

There is a small crack in the brick work of No. 3 boiler, but this did not prevent steaming of the boiler. No other shock effects were noted.

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(d) Pressure.

No effects noted.

(e) Effects peculiar to the Atomic Bomb.

None, except radioactivity.

III. Results of Test on Target.

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

None.

(b) Effect on gunnery and fire control.

None.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

Habitability is unaffected. There probably would be no effect on personnel other than that of radioactivity.

(e) Effect on fighting efficiency.

Fighting efficiency is not affected, if effects of radioactivity are neglected.

IV. General Summary of Observers Impressions and Conclusions.

This vessel was outside of the danger range except for probable radiological hazards.

V. Preliminary Recommendations.

No comment.

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VI. Instructions for loading the vessel specified the following:

ITEM	LOADING
Fuel oil	50%
Diesel oil	50%
Ammunition	50%
Potable and reserve feed water	Full load
Salt water ballast	150 tons

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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DETAILED DESCRIPTION OF HULL DAMAGE

- A. General Description of Hull Damage.
No structural damage occurred in this ship as a result of test 'B'. Tugs dished in the side plating in several locations. General views of the exterior are shown on pages 30 to 33, inclusive.
- B. Superstructure.
No damage was sustained by superstructure as a result of test. The 20mm gun bulwark at frame 100, starboard, was damaged from contact with a tug.
- C. Guns and Directors.
No damage.
- D. Torpedo Mounts, Depth Charge Gear.
No damage.
- E. Weather Deck.
No damage. Deck deflection gages recorded no movement.
- F. Exterior Hull.
No damage occurred except from contact with tugs.
- G. Interior Compartments (Above Waterline).
No damage.
- H. Armor Decks and Miscellaneous Armor.
Not applicable.
- SECRET U. S. S. CONYNGHAM (DD 371)

I. Interior Compartments (Below Waterline).

- Essentially, no damage occurred. There is a small crack in the brick work of No. 3 boiler, but this did not prevent steaming of the boiler. Whether or not this crack existed before the test could not be determined.
- 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.
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TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY
GENERAL SUMMARY OF MACHINERY DAMAGE

B. Strength. No damage.
S. Miscellaneous. No comment.

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.

No machinery on this vessel was damaged by

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.

(e) Effects apparently peculiar to the atom bomb.

None.

III. Effects of Damage.

(a) Effect on machinery and ship control.

None.

(b) Effect on gunnery and fire control.

No comment.

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

No comment.

(d) Effect on personnel and habitability.

None.

(e) Total effect on fighting efficiency.

None.

IV. General Summary.

The CONYNGHAM was outside the effective range of the explosion in Test B.

V. Preliminary Recommendations.

None.

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DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall Condition.

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

(b) Areas of major damage.

None.

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

Not Applicable.

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

The operation of the machinery plant was not affected by Test B.

B. Boilers.

Undamaged. All boilers were steamed after Test B, and functioned normally. Hydrostatic tests on boilers 1 and 2 before and after Test B indicate no change in the tightness of the boilers.

HYDROSTATIC TEST DATA

	Before Test B	After Test B
#1 BOILER		
Initial Pressure	500 lb/sq. in.	520 lb/sq. in.
Pressure remaining after 24 hours	80 lb/sq. in.	430 lb/sq. in.

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#2 BOILER

Initial Pressure 500 lb/sq. in. 500 lb/sq. in.
Pressure remaining after 350 lb/sq. in.
51 hours 220 lb/sq. in.
215 hours

C. Blowers.

Undamaged. All of the forced draft blowers have been operated at their normal speeds and pressures since Test B.

BLOWER R. P. M. TEST

	Before Test B	After Test B
Pressure #1 fire room	11.9"	11.9"
Blower R. P. M. #2 F.D. Blower	4500	4550

D. Fuel Oil Equipment.

Undamaged. All of the fuel oil equipment has been operated under normal working conditions since Test B.

E. Boiler Feedwater Equipment.

Undamaged. All of the boiler feedwater equipment has been operated under normal working conditions since Test B.

F. Main Propulsion Machinery.

Undamaged. Both of the main engines were operated ahead up to 145 R.P.M. and astern to 90 R.P.M. while changing anchorage after Test B.

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G. Reduction Gears.

Undamaged. Both reduction gears were inspected while jacking the units. Lubrication is normal. Both gears operated satisfactorily while the ship was underway.

H. Shafting and Bearings.

Undamaged. Both shafts and all bearings were checked while the ship was underway, and functioned normally.

I. Lubrication System.

Undamaged. The lubrication system has been operated under normal working conditions since Test B.

J. Condensers and Air Ejectors.

Undamaged. All main and auxiliary condensers and air ejectors have been operated under normal working conditions since Test B.

K. Pumps.

Undamaged. Three pumps (#1 emergency feed, cruising feed, #2 main condensate and booster) were inoperable before Test B. Their condition was not changed by the test. All other pumps were operated under service conditions after Test B, and functioned normally.

L. Auxiliary Generators (Turbines and Gears).

Undamaged. Both turbo-generators have been operated under load since Test B, and functioned normally.

M. Propellers.

Undamaged. The propellers have not been closely inspected. Examination from the surface of the water disclosed no damage. Both propellers operated satisfactorily while the ship was underway.

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N. Distilling Plant.

Undamaged. The distilling plant has been operated since Test B, and functioned normally.

O. Refrigeration Plant.

Undamaged. The refrigeration plant has been operated since Test B, and functioned normally.

P. Winches, Windlasses, and Capstans.

Undamaged. The anchor windlass and the deck winch have been operated since Test B, and functioned normally.

Q. Steering Engine.

Undamaged. The steering gear was operated at normal working conditions while the ship was underway after Test B. Performance was normal.

R. Elevators, Ammunition Hoists, etc.

Undamaged. The ammunition hoists have been operated since Test B, and functioned normally.

S. Ventilation Machinery).

Undamaged. Two exhaust fans were inoperable before Test A. Their condition was not changed by the test. All other ventilation machinery was operated after Test B, and functioned normally.

T. Compressed Air Plant.

1. The low pressure air compressor was inoperable before Test B. Its condition was not changed by the test.
2. The high pressure air compressor have been operated at normal speed and pressure since Test B.

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U. Diesels (Generators and Boats).

Undamaged. The diesel generator was operated satisfactorily after Test B.

V. Piping Systems.

Undamaged. All piping systems have been tested or operated at normal working conditions since Test B.

W. Miscellaneous.

1. Undamaged. All of the laundry equipment and machine shop equipment has been operated since Test B.
2. The top of the galley range was slightly dished in after Test B and has developed an oil leak at the fuel regulating valve. It is still operable.

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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.

Not observed.

(b) Structural damage.

None observed.

(c) Other damage.

None.

II. Forces Evidenced and Effects Noted.

(a) Heat.

None.

(b) Fires and explosions.

None

(c) Shock.

None.

(d) Pressure.

None.

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(e) Any effects apparently peculiar to the atom bomb.
The high, persistent radioactivity remaining on the vessel after the explosion was the only effect noted.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

None.

(b) Effect on gunnery and fire control.

None.

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

No effect due to electrical failure.

(d) Effect on personnel and habitability.

Electrical failures or derangements had no effect on the habitability of the vessel.

(e) Total effect on fighting efficiency.

None.

IV. General Summary of Observers' Impressions and Conclusions.

The vessels position in the target array was too far from the point of explosion to receive sufficient shock for a good test of the ruggedness of the ship and its equipment.

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

No recommendations are made in view of the fact that no damage was sustained.

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DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

The condition of the electrical equipment was unchanged.

(a) Areas of major damage.

There was no damage.

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

There was no damage.

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

1. Ship's service generator plant - no change.

2. Engine and boiler auxiliaries - no change.

3. Electrical propulsion - none aboard.

4. Communications - no change.

5. Fire control circuits - no change.

6. Ventilation - no change.

7. Light - no change.

(e) Types of equipment most affected.

There was no effect on any equipment.

B. Electric Propulsion Rotating Equipment.

This item does not apply.

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C. Electric Propulsion Control Equipment.

This item does not apply.

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.

This item does not apply.

J. Portable Batteries.

No damage.

K. Motors, Motor Generator Sets and Motor Controllers.

No damage.

L. Lighting Equipment.

No damage.

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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.

This item does not apply.

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. Switchboards.

No damage.

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SECTION IV

PHOTOGRAPHS

TEST BAKER

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AB-CR-2271-283-86. View from off starboard beam after Test B.

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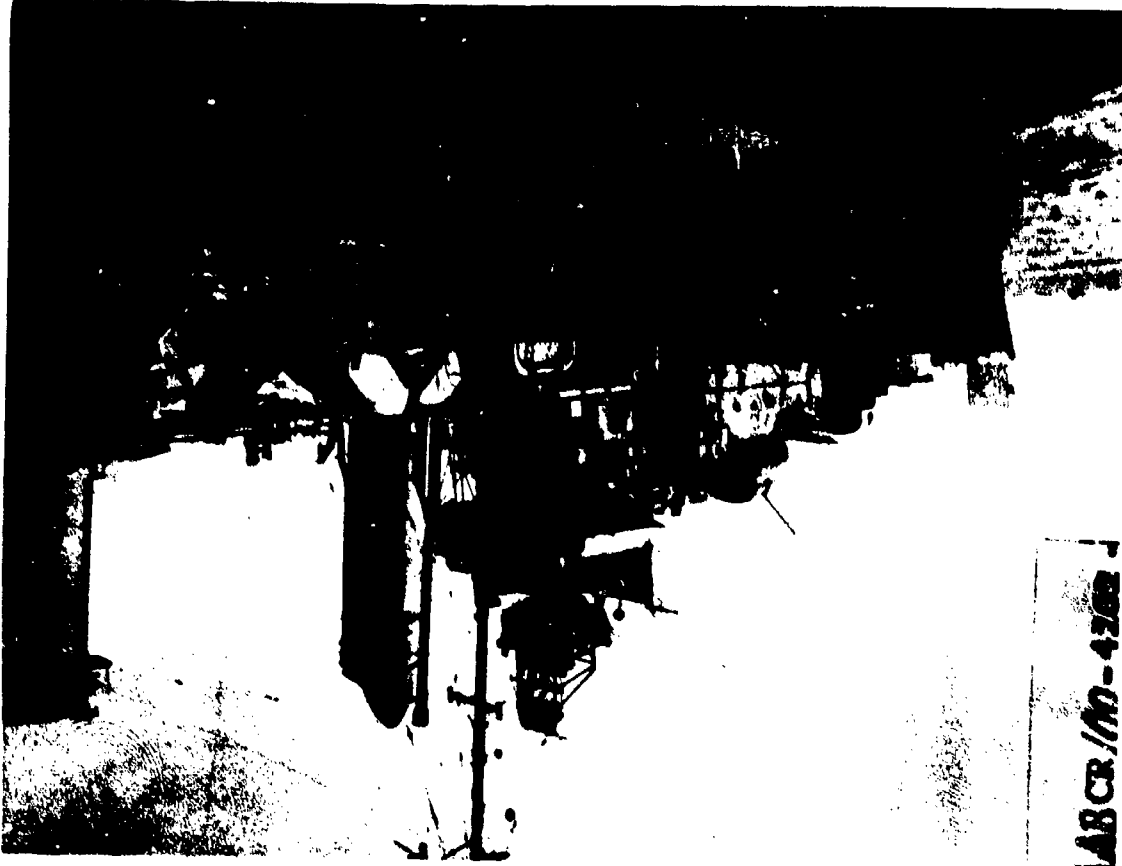
4396



AB-CR-227-283-82. View from off port beam after Test F.

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AB-CR-100-4202-12. View from off port beam of port side, bow to frame 120.

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APPENDIX

COMMANDING OFFICERS REPORT

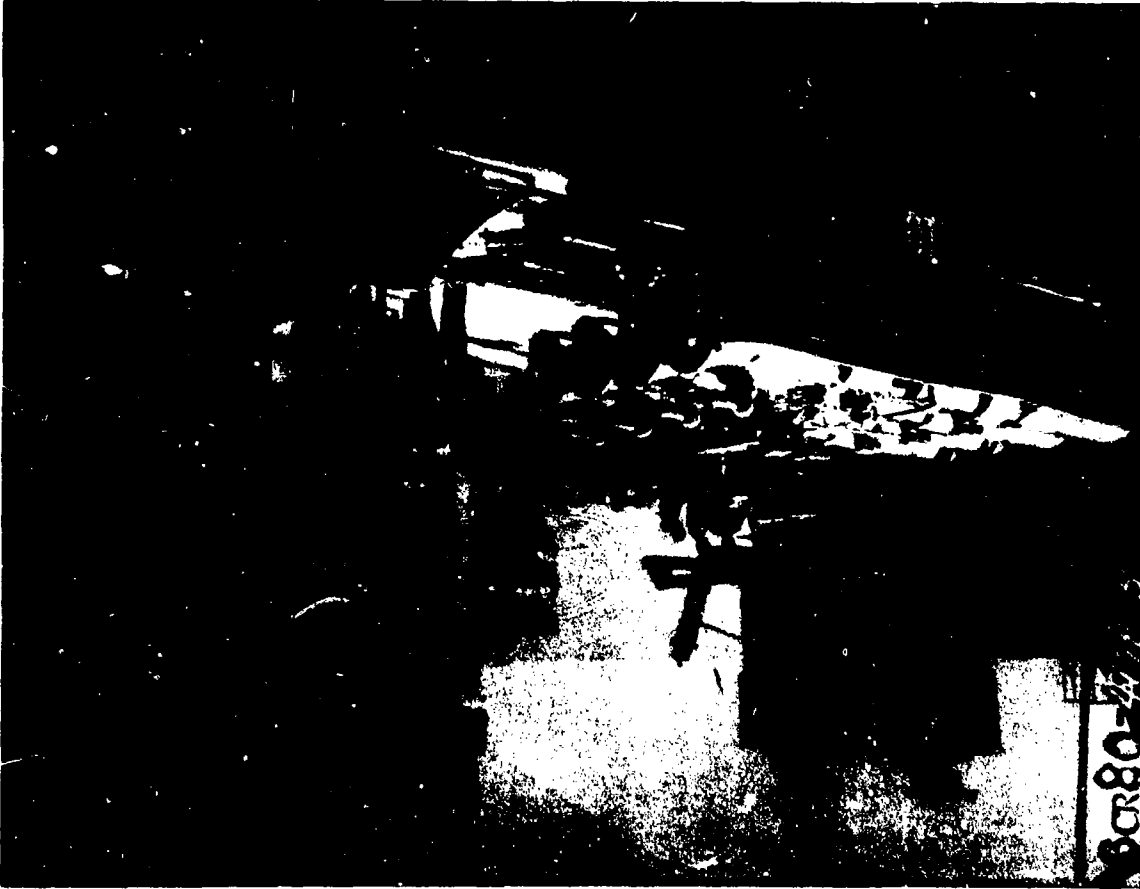
TEST EAKER

USS CONYNGHAM (DD371)

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AB-CR-80-4178-5. Starboard side close-up, showing damage to 20 MM gun bulwark sustained by contact with a tug.

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USS CONYNGHAM (DD371)

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SECTION III

PART A - GENERAL SUMMARY

I. Target Condition After Test.

No change except ship radio active. No other effect of bomb. Effect on personnel cannot be estimated by this command, but it is believed that the psychological effect would not have been as terrific as in the Able Test since there would have been little or no flash.

II. Forces Evidenced and Effects Noted.

None except radio activity.

III. Results of Test on Target.

None other than radio activity and resulting effect on personnel. It is believed that the effect on personnel would not immediately have reduced their fighting efficiency of the ship.

IV. General Summary.

It is believed that the target would have suffered severe internal effects if it had been inhabited and ventilated by the present ventilation system.

V. Preliminary Recommendations.

It is recommended that no foam solution be used for decontamination unless immediately washed off before allowing to dry on painted surfaces.

USS CONYNGHAM (DD371)

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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 L
/ ✓ AD-367516 4	XRD- 1 143 ✓
/ ✓ AD-367493 4	XRD-142 L
AD-801410 L ✓	XRD-138 ✓
AD-376831 L ✓	XRD-83 ✓
AD-366759 L	XRD-80
/ ✓ AD-376830 L 4	XRD-79 ✓
/ ✓ AD-376828 L 4	XRD-76 ✓
/ ✓ AD-367464 X	XRD-106 ✓
AD-801404 L ✓	XRD-105-Volume 1 L
/ ✓ 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 X	XRD-93 ✓
AD-367457 ✓	XRD-92-Volume 2
AD-367456 ✓	XRD-91-Volume 1
AD-367455 ✓	XRD-90
AD-367454 ✓	XRD-89
AD-367453 ✓	XRD-88
AD-367452 ✓	XRD-87
AD-366764 ✓	XRD-86
AD-376837L ✓	XRD-99
AD-366758 ✓	XRD-78
AD-366734 ✓	XRD-44
AD-366763 ✓	XRD-85
AD-376829L ✓	XRD-77 ✓
✓✓ AD-367462 X	XRD-103 ✓
✓✓ AD-367463 X	XRD-104 ✓
✓✓ AD-367461 X	XRD-102 ✓
AD-367460 ✓	XRD-101

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18 April 1997

Subject: Declassification of Reports

AD-801406L ✓ XRD-1145

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