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U.S.S. LCM - 1

TEST ABLE [U]. 8

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TECHNICAL INSPECTION REPORT

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

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USS LCM-1

Page 1 of 32 Pages

CONFIDENTIAL

GROUP-3 1 JAN 1965
Downgraded at 12 year intervals;
Not automatically declassified.

TABLE OF CONTENTS

TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition After Test.

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

No draft marks are fitted. Some flooding has occurred through the stern tubes which were leaking before the test. Although the craft was afloat the day after the test when inspected, three days later she was floating with four feet of the bow ramp out of water.

(b) Structural Damage.

The bow ramp was blown open. The ramp cables and special chain lashings which were installed for the test parted. The deck over the engine compartment is dished about two inches. The bulwarks around the conning station and those outboard of the tank well are slightly deflected.

(c) Other damage.

There was no damage to machinery during Test A except for flooding. All electrical equipment on the vessel was rendered inoperable by flooding. Storage batteries were partly dislodged from their racks.

II. Forces evidenced and effects noted.

(a) Heat.

Paint on deck was slightly scorched and blistered.

(b) Fires and Explosions.

None.

(c) Shock.

Shock effect was noted by storage batteries partly dislodged from their racks.

(d) Pressure.

Air blast blew open the bow ramp and caused deflection of topside bulwarks and the deck above the engine compartment.

(e) Effects peculiar to the Atomic Bomb.

None.

III. Effects of Damage.

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

The deflection of the deck above the engine compartment caused misalignment of the steering mechanism which now operates with considerable difficulty.

(b) Effect on gunnery and fire control.

Not applicable.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

Personnel aboard would probably have been injured or killed by blast and heat.

(e) Effect on fighting efficiency.

Fightin efficiency is decreased by failure of the bow ramp securing mechanism.

IV. General Summary of Observers' Impressions and Conclusions.

This craft stood up very well considering the proximity to the burst.

V. Preliminary General or Specific Recommendations of Inspection Group.

Provision should be made for a more adequate securing device for the bow ramp.

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

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

No draft marks are fitted. Some flooding has occurred through the stern tubes which were leaking before the test.

(b) Structural damage.

The bow ramp was blown open. The ramp cables and special chain lashings which were installed for the test parted. The deck over the engine compartment is dished about two inches. The bulwarks around the conning station and those outboard of the tank well are slightly deflected.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

There was some slight blistering of the deck paint.

(b) Fires and explosions.

None.

(c) Shock.

None.

(d) Pressure.

Air blast blew open the bow ramp and caused deflection of topside bulwarks and the deck above the engine compartment.

(e) Effects peculiar to the atom bomb.

None.

III. Results of Test on Target.

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

The deflection of the deck above the engine compartment caused misalignment of the steering mechanism which now operates with considerable difficulty.

(b) Effect on gunnery and fire control.

Not applicable.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

Personnel aboard would probably have been injured by blast and heat.

(e) Effect on fighting efficiency.

Fighting efficiency is decreased by failure of the bow ramp securing mechanism.

IV. Summary of Observers' Impressions and Conclusions.

This craft stood up very well considering the proximity to the burst.

V. Preliminary Recommendations.

Provision should be made for a more adequate securing device for the bow ramp.

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

This craft sustained moderate deflection of topside plating and had the bow ramp blown open as the result of air blast.

B. Superstructure.

The overhead of the engine compartment is dished about one foot (Photo 1899-11, page 28). The bulwarks around the conning station are pushed forward and the after bulwark is dished about 3 inches. An access plate in the forward bulwark which was secured by only four bolts has come completely off (Photos 1899-11, 12, 2816-7; pages 28 to 30). The bow ramp was blown open. This was secured by the regular ramp operating cables and by special chain lashings. The bulwarks on either side of the tank were bent slightly to starboard (Photos 96-9, 1746-5; pages 31 and 32).

C. Turrets, Guns and Directors.

Not applicable.

D. Torpedo Mounts, Depth Charge Gear.

Not applicable.

E. Weather Deck.

The weather deck aft is deflected downward slightly, just forward of the after bulkhead of the engine compartment.

F. Exterior Hull.

No damage.

G. Interior Compartments (above waterline).

No damage.

H. Armor Decks and Miscellaneous Armor.

Not applicable.

I. Interior Compartments (below waterline).

No damage.

J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

This craft had considerable stern tube leakage before the test. The craft was afloat when boarded on the day after Test A (Photo 1859-2, page 26). It subsequently sank because of accumulated leakage from this source.

M. Ventilation.

Not applicable.

N. Ship Control.

The deflection of the deck above the engine compartment caused misalignment of the steering mechanism. Considerable difficulty would be experienced in steering the craft.

O. Fire Control.

Not applicable.

P. Ammunition Behavior.

Not applicable.

Q. Ammunition Handling.

Not applicable.

R. Strength.

No damage.

S. Miscellaneous.

No comment.

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 at the time of inspection, the day after the test. Three days later the craft was floating with about four feet of the bow ramp out of the water.

(b) Structural damage.

No comment.

(c) Other damage.

There was no damage to machinery during test A except for flooding which could have been controlled had the crew been aboard.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Paint on deck was scorched and blistered but a visual inspection showed no damage to the machinery.

(b) Fires and explosions.

No evidence.

(c) Shock.

No evidence.

(d) Pressure.

No comment.

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

None.

III. Effects of Damage.

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

Test A had no apparent effect on the machinery of this vessel although secondary damage (flooding of the machinery space) rendered the entire machinery room inoperable.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on watertight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

All personnel would probably have been killed by blast pressure.

(e) Total effect on fighting efficiency.

After flooding of the machinery space the fighting efficiency of this vessel was reduced to zero.

IV. General Summary of Observers' Impressions and Conclusions.

The vessel would have been lost at sea. It is believed all personnel would have been killed by the blast and progressive flooding would have sunk the ship.

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

None.

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall condition.

A visual inspection revealed no direct damage to the machinery of this vessel although secondary damage caused by flooding of the machinery space, rendered all machinery in this space inoperable.

(b) Areas of major damage.

The machinery space.

(c) Primary cause of damage.

Flooding.

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

Ship's service generators and propulsion machinery inoperable due to flooding.

B. Boilers.

Not applicable.

C. Blowers.

Not applicable.

D. Fuel Oil Equipment.

Not applicable.

E. Boiler Feedwater Equipment.

Not applicable.

F. Main Engines.

There were no indications of direct damage from test A although flooding rendered them inoperable.

G. Reduction Gears.

The reduction gears are a component part of the main engines.

H. Shafting and Bearings.

There was no evidence that the target test had affected the shafts and bearings.

I. Lubrication System.

The lubrication system is an integral part of the main engines and is so treated by this report.

J. Condensers and Air Ejectors.

Not applicable.

K. Pumps.

There was no evidence of change in condition to the pumps which could be traced to the target test.

L. Auxiliary Generators.

Not applicable.

M. Propellers.

There was no indications of damage caused by test A.

N. Distilling Plant.

Not applicable.

O. Refrigerating Plant.

Not applicable.

P. Winches, Windlasses and Capstans.

The ramp winches were not affected by the target test.

Q. Steering Engine.

Not applicable.

R. Elevators, Ammunition Hoists, Etc.

Not applicable.

S. Ventilation (Machinery).

Not applicable.

T. Air Compressors.

Not applicable.

U. Diesels (Generators and Boats).

Not applicable.

V. Piping.

The piping of bilge drain and fuel systems were in poor condition previous to test A. There are no present indications that their condition was affected by the target test.

W. Miscellaneous.

Not applicable.

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY ELECTRICAL DAMAGE

I. Target Condition After Test.

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

1. The LCM 1 was floating with about four feet of the bow out of water three days after the test.

2. Sources of flooding were probably through stern tubes and open bow ramps.

(b) Structural damage.

Structural failures caused flooding of all electrical equipment on the vessel.

(c) Other damage.

All electrical equipment on the vessel was rendered inoperable by flooding. Storage batteries were partly dislodged from their racks.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Heat was evidenced by scorched insulation on exposed electric cables.

(b) Fires and explosions.

There was no evidence of electrical damage due to fires or explosions on the vessel.

(c) Shock.

Shock effect was noted by storage batteries partly dislodged from their racks.

(d) Pressure.

Pressure was noted by deck failure and distorted structure in way of steering mechanism. Blast pressure was noted by the carrying away of the steering compass.

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

Scorched insulation on exposed electric cable was the only effect noted peculiar to the atom bomb.

III. Effect of Damage.

(a) Effect on electrical machinery and ship control.

All electrical equipment was rendered inoperative by flooding. Propulsion engines could not have been started without new starting batteries and motors. Ship control was affected by loss of the steering compass.

(b) Effect on gunnery and fire control.

Not applicable.

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

Water-tight integrity and stability were not affected by electrical damage.

(d) Effect on personnel and habitability.

Electrical damage had no effect on personnel or habitability. Personnel would have been killed by blast pressure and radiation.

(e) Total effect on fighting efficiency.

Fighting efficiency was reduced to zero by flooding of all electrical equipment and machinery.

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

The vessel was rendered completely inoperative by flooding of the entire machinery space. Electrical equipment other than the steering compass would apparently have been operable except for flooding. The shock apparently did no damage to electrical equipment other than to partially dislodge some of the engine starting batteries.

V. Recommendations.

None. It appears that the present electrical equipment will withstand any condition imposed by the test which will not render the vessel inoperable from other causes.

DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

The electric plant is completely inoperable due to total flooding.

(b) Areas of major damage.

The vessel was almost entirely submerged.

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

Flooding due to structural damage from blast was the primary cause of the damage.

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

(1) Ship's service generator plant - not applicable.

(2) Engine and boiler auxiliaries - Totally inoperable due to flooding.

(3) Electric propulsion - not applicable.

(4) Communications - not applicable.

(5) Fire control circuits - not applicable.

(6) Ventilation - not applicable.

(7) Lighting - Totally inoperable.

(e) Types of equipment most affected.

All types installed.

B. Electric Propulsion Rotating Equipment.

Not applicable.

C. Electric Propulsion Control Equipment.

Not applicable.

D. Ship's Service Generators.

Not applicable.

E. Emergency Generators.

Not applicable.

F. Switchboards and Distribution Panels.

Not applicable.

G. Wiring, Wiring Equipment and Wireways.

Totally inoperable due to flooding.

H. Transformers.

Not applicable.

I. Submarine Propelling Batteries.

Not applicable.

J. Portable Batteries.

Batteries partly dislodged from rack and inoperable due to flooding.

K. Motors, Motor Generator Sets and Motor Controllers.

Totally inoperable due to flooding. Mechanically apparently operable.

L. Lighting Equipment.

Totally inoperable due to flooding. Mechanically apparently operable.

M. Searchlights.

Not applicable.

N. Degaussing Equipment.

Not applicable.

O. Gyro Compass Equipment.

No gyro equipment on board. Magnesyn compass blown overboard by blast.

P. Sound Powered Telephones.

Not applicable.

Q. Ship's Service Telephones.

Not applicable.

R. Announcing Systems.

Not applicable.

S. Telegraphs.

Not applicable.

T. Indicating Systems.

Not applicable.

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

Not applicable.

V. F. C. Switchboards.

Not applicable.

SECTION IV

PHOTOGRAPHS

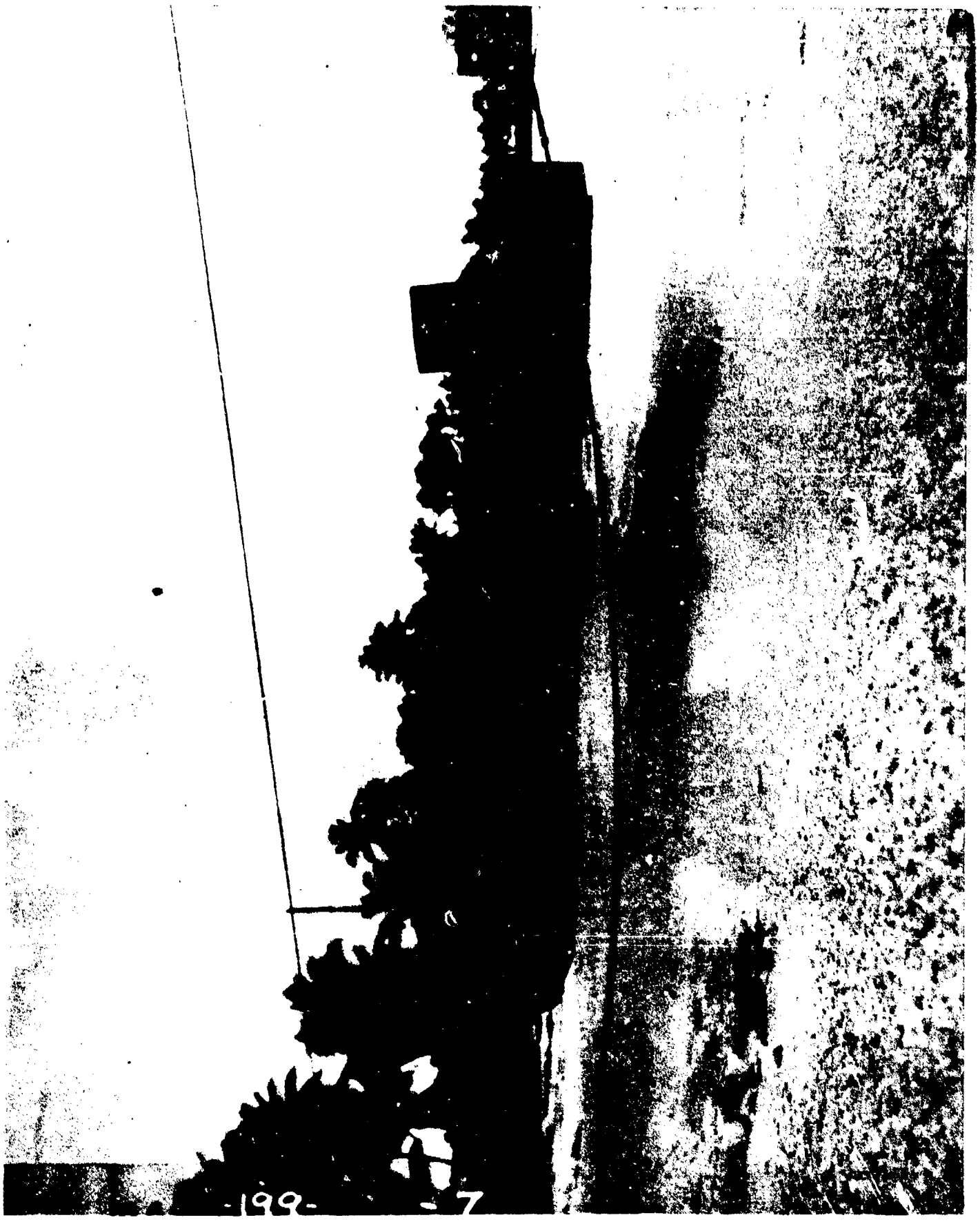
TEST ABLE

AA-CR-62-1859-2. General view taken one day after test showing craft afloat with bow ramp open and down by the stern as the result of stern tube leakage.

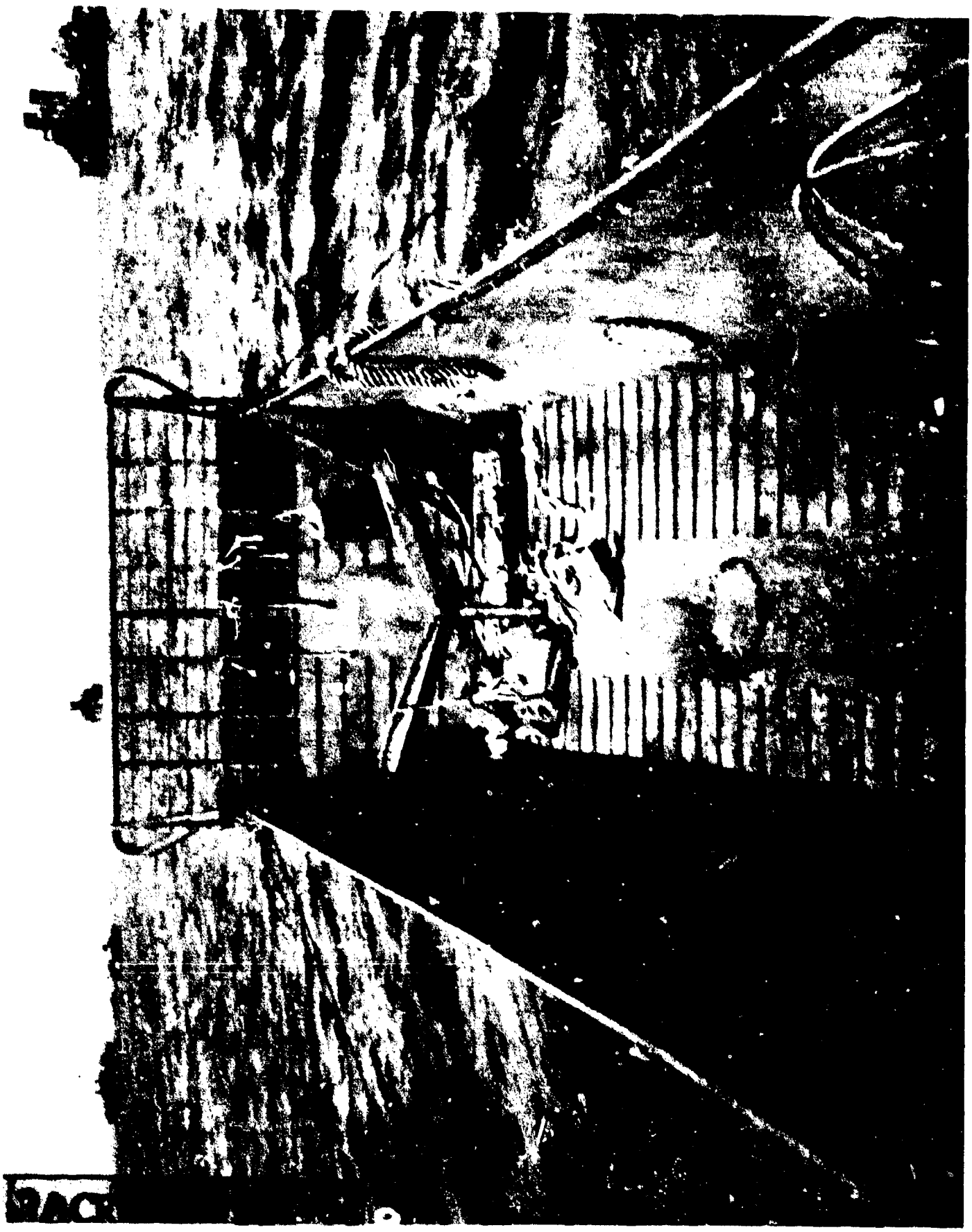
AA-CR-80-1899-9. General view of craft after recovery.

AA-CR-80-1899-11. Dished deck over engine compartment.

AA-CR-80-1899-12. Dished after bulwark of conning station.



AA-CR-199-2816-7. General view of craft after beaching in preparation for Test B. Bulwarks of conning station slant forward.



BA-CR-93-96-9. Interior of tank well before Test A.

AA-CR-68-1746-5. Interior of tank well after Test A. Note deflection of bulwark.

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:

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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-143
AD-367493	XRD-142
AD-801410L	XRD-138
AD-376831L	XRD-83
AD-366759	XRD-80
AD-376830L	XRD-79
AD-376828L	XRD-76
AD-367464	XRD-106
AD-801404L	XRD-105-Volume 1
AD-367459	XRD-100

TRC 18 April 1997

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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
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AD-367518	XRD-140
AD-367515	XRD-144
AD-367514	XRD-145
AD-367468	XRD-110-Volume 2
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AD-367497	XRD-162

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Subject: Declassification of Reports

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

Ardith Jarrett

ARDITH JARRETT
Chief, Technical Resource Center