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THIS PAGE IS UNCLASSIFIED
OPERATION CROSSROADS
U.S.S. LST 52
TEST BAKER, U.S. Navy

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Director
Defense Atomic Support Agency
Washington, D.C. 20501

(1) 1947,
(2) 31p.
(3) XRD-137

OPERATION CROSSROADS
DIRECTOR OF SHIP MATERIALS
JOINT TASK FORCE ONE

CONFIDENTIAL

REG. NO.

GROUP 1
Declassified 12 years after date.
Not substantially declassified.
CONFIDENTIAL

BUREAU OF SHIPS GROUP
TECHNICAL INSPECTION REPORT

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

SECRET

USS LST 52

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USS LST 52

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U.S.S. LST 52

SHIP CHARACTERISTICS

Building Yard: Dravo Corp.; Neville Island, Penna.

Commissioned: 27 November 1943.

HULL

Length Overall: 328 feet 0 inches.
Length on Waterline: 316 feet 0 inches.
Beam (extreme): 50 feet 0 inches.
Drafts at time of test: Fwd. 4 feet 4 inches,
Aft. 10 feet 10 inches.
Limiting displacement: 4,080 tons.
Displacement at time of test: 2,648 tons.

MAIN PROPULSION PLANT

Main Engines: Two General Motors Diesels, type: 12 - 567 A. One per main shaft.
Reduction Gears: "Falk" - Single reduction. One per engine.
Propellers: Two are installed in ship.
Main Shafts: Two are installed in ship.
Ships Service Generators: Three - 100 KW. - 230 volt, D.C. units are installed.
OVERALL SUMMARY

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. When the ship was inspected 19 days after the test, the main auxiliary machinery spaces contained about 12 inches of water. This is considered normal leakage.

(b) Structural damage.

HULL

The main deck has apparently suffered additional damage in the area surrounding the elevator. There is some deflection of the main deck and slight distortion of the girder brackets.

MACHINERY

No comment.

ELECTRICAL

No structural damage occurred to effect the electrical plant.

(c) Other damage.

HULL

Not observed.

MACHINERY

There was no damage to the machinery of LST 52 during Test B, insofar as can be determined by visual inspection. It was not practicable to operate machinery on this vessel after Test B be-

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cause of radioactivity, which was high when the ship was inspected 19 days after Test B.

ELECTRICAL
No damage occurred.

II. Forces evidenced and effects noted.

(a) Heat.

HULL
None.

MACHINERY
No evidence.

ELECTRICAL
No heat was evident.

(b) Fires and explosions.

HULL
None.

MACHINERY
No evidence.

ELECTRICAL
No fires or explosions occurred.

(c) Shock.

HULL
SECRET

USS LST 52

Page 6 of 31 Pages
The only evidence of shock is that a few light bulbs are broken.

MACHINERY
No evidence.

ELECTRICAL
No damage occurred.

(d) Pressure

HULL
About two-thirds of the hatch boards over the cargo hatch were displaced and fell to the main deck.

MACHINERY
No evidence.

ELECTRICAL
No damage occurred.

(e) Effects peculiar to the Atomic Bomb.

HULL
The only effects peculiar to the atom bomb are radioactivity and wave phenomena.

MACHINERY
None.

ELECTRICAL
No effects noted other than radioactivity.
III. Results of Test on Target.

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

HULL
Not observed.

MACHINERY
None, insofar as can be determined by visual inspection.

ELECTRICAL
No effect was noted.

(b) Effect on gunnery and fire control.

HULL
Not observed.

MACHINERY
No comment.

ELECTRICAL
No effect occurred.

(c) Effect on watertight integrity and stability.

HULL
None.

MACHINERY
No comment.
ELECTRICAL
No effect occurred.

(d) Effect on personnel and habitability.

HULL
None.

MACHINERY
None, except for possible effects of radioactivity.

ELECTRICAL
No effect occurred.

(e) Effect on fighting efficiency.

HULL

The only effect on fighting efficiency would have been resulting from radiological conditions.

MACHINERY
None, except for possible effects of radioactivity.

ELECTRICAL
No effect occurred.

IV. Summary of Observer’s Impressions and Conclusions.

HULL

No comment.

MACHINERY

SECRET
LST 52 was outside the range of mechanical damage to machinery from the explosion of Test B.

**ELECTRICAL**

This ship was located too great a distance from the subsurface blast to suffer any damage to the electrical equipment.

**V. Preliminary Recommendations.**

**HULL**

None.

**MACHINERY**

None.

**ELECTRICAL**

None.
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. When the ship was inspected 19 days after the test, the main and auxiliary machinery spaces contained about 12 inches of water. This is considered normal leakage.

(b) Structural damage.

The main deck has apparently suffered additional damage in the area surrounding the elevator. There is some deflection of the main deck and slight distortion of the gridir brackets.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

None.

(b) Fires and explosions.

None.

(c) Shock.

The only evidence of shock is that a few light bulbs are broken.
(d) Pressure.

About two-thirds of the hatch boards over the cargo hatch were displaced and fell to the main deck.

(e) Effects peculiar to the Atomic Bomb.

The only effects peculiar to the Atom Bomb are radioactivity and wave phenomena.

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.

None.

(e) Effect on fighting efficiency.

The only effect on fighting efficiency would have been resulting from radiological conditions.

IV. Summary of Observer’s Impressions and Conclusions.

No comment.

V. Preliminary Recommendations.

None.
VI. Instructions for Loading the Vessel Specified the Following:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>LOADING</th>
</tr>
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<tbody>
<tr>
<td>Fuel oil</td>
<td>Minimum</td>
</tr>
<tr>
<td>Diesel oil</td>
<td>Minimum</td>
</tr>
<tr>
<td>Ammunition</td>
<td>10%</td>
</tr>
<tr>
<td>Potable and reserve feed water</td>
<td>No restriction</td>
</tr>
<tr>
<td>Salt water ballast.</td>
<td>1210</td>
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</table>

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.
DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

The only damage is that to the main deck in way of the forward hatch opening. General views of the ship are on pages 38 and 39.

B. Superstructure.

No damage.

C. Turrets, Guns and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

Not applicable.

E. Weather Deck.

The main deck suffered slight deflection in way of the forward hatch. Deflection scratch gages indicate about two inch deflection at the centerline. This is accompanied by distortion of the girder bracket connections. There is no other damage.

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.
   None.

M. Ventilations.
   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.
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 the machinery of LST-52 during Test B, insofar as can be determined by visual inspection. It was not practicable to operate machinery on this vessel after Test B because of radioactivity, which was high when the ship was inspected 19 days after 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, insofar as can be determined by visual inspection.

(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, except for possible effects of radioactivity.

(e) **Total effect on fighting efficiency.**

None, except for possible effects of radioactivity.

### IV. General Summary.

LST-52 was outside the range of mechanical damage to machinery from the explosion of Test B.

### V. Preliminary Recommendation.

None.
A. General Description of Machinery Damage.

(a) Overall condition.

The overall condition of the machinery of this vessel was not changed by Test B, insofar as can be determined by visual inspection.

(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 test had no effect upon the overall operation of the machinery plant.

NOTE: No machinery on this vessel was operated after Test B.

B. Boilers.

No apparent damage.

C. Blowers.

No apparent damage.

D. Fuel Oil Equipment.

No apparent damage.
E. Boiler Feedwater Equipment.
   No apparent damage.

F. Main Propulsion Machinery.
   No apparent damage.

G. Reduction Gears.
   No apparent damage.

H. Shafting and Bearings.
   No apparent damage.

I. Lubrication System.
   No apparent damage.

J. Condensers and Air Ejectors.
   Not Applicable.

K. Pumps.
   No apparent damage.

L. Auxiliary Generators (Turbines and Gears).
   Not Applicable.

M. Propellers.
   Not inspected. There is no reason to believe that the propellers were damaged.

N. Distilling Plant.
   No apparent damage.

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USS LST 52

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O. Refrigeration Plant.
   No apparent damage.

P. Winches, Windlasses and Capstans.
   No apparent damage.

Q. Steering Engine.
   No apparent damage.

R. Elevators, Ammunition Hoists, Etc.
   The tank deck elevator was inoperable before Test B. Its condition was not changed by the test.

S. Ventilation (Machinery).
   No apparent damage.

T. Compressed Air Plant.
   No apparent damage.

U. Diesels (Generators and Boats).
   No apparent damage to diesel generators. No boats were aboard.

V. Piping Systems.
   No apparent damage.

W. Miscellaneous.
   No apparent damage.
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.

Draft forward 4'9", aft 11'0". No flooding occurred.

(b) Structural damage.

No structural damage occurred to effect the electrical plant.

(c) Other damage.

No damage occurred.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No heat was evident.

(b) Fires and explosions.

No fires or explosions occurred.

(c) Shock.

No damage occurred.

(d) Pressure.

No damage occurred.
(e) Any effects apparently peculiar to the atom bomb.

No effects noted other than radioactivity.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

No effect was noted.

(b) Effect on gunnery and fire control.

No effect occurred.

(c) Effect on watertight integrity and stability.

No effect occurred.

(d) Effect on personnel and habitability.

No effect occurred.

(e) Total effect on fighting efficiency.

No effect occurred.

IV. General Summary of Observers' Impressions and Conclusions.

This ship was located too great a distance from the subsurface blast to suffer any damage to the electrical equipment.

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

None.
DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.
   (a) Overall condition.
       The electrical plant is the same as before Test B.
   (b) Areas of major damage.
       No electrical damage occurred.
   (c) Primary causes of damage in each area of major damage.
       No electrical damage occurred.
   (d) Effect of target test on overall operation of electric plant.
       No effect occurred.
   (e) Types of equipment most affected.
       No equipment was affected.

B. Electric Propulsion Rotating Equipment.
   Not applicable.

C. Electric Propulsion Control Equipment.
   Not applicable.

D. Generators - Ship’s Service.
   No damage.

E. Generators - Emergency.
   Not applicable.
F. Switchboards, Distribution and Transfer Panels.
   No damage.

G. Wiring, Wiring Equipment and Wireways.
   No damage.

H. Transformers.
   Not Applicable.

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.

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.
   No damage.
R. Announcing Systems.
   No damage.
S. Telegraphs.
   No damage.
T. Indicating Systems.
   No damage.
   Not Applicable.
V. F.C. Switchboard.
   Not Applicable.
SECTION IV

PHOTOGRAPHS

TEST BAKER
AB-CR-227-289-151. View from off port bow after Test A.
AB-CR-227-289-147. View from off starboard quarter after Test A.
Due to the very short period I was allowed to be aboard my ship to inspect, there appeared to be no added damage to the hull of ship's structure than has been previously reported after Test A.

All machinery seemed to be intact as far as could be determined, no machinery was tested due to batteries being runned down.
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-$143$
✓ 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
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✓
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.

ARDITH JARRETT
Chief, Technical Resource Center