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Confidential

Excluded from Automatic Reconstruction; Dec. DIT 5200.10
Does Not Apply

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**Classification (controlled) (Channeled to Security Information by General) Dated: 1952 Dec. 15 Page 1 of 64**

**APPROVED:**

V.I. Forrest, Captain, U.S.N.

**CONFIDENTIAL**

**Security Information**

**USS PRINZ EUGEN (IX300)**

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**Classification (controlled) (Channeled to Security Information by General) Dated: 1952 Dec. 15 Page 2 of 64**

**USS PRINZ EUGEN (IX300)**

Page 2 of 64 Pages
BULL

Length Overall: 733 feet 0 inches.
Beam (abreast): 71 feet 0 inches.
Depth (to main deck): 25 feet 0 inches.
Draught at time of test: Fwd. 17 feet 10 inches.
Aft. 24 feet 3 inches.
Standard displacement: 10,000 tons.
Displacement at time of test: 16,250 tons.

MAIN PROPULSION PLANT

Main Engines: Three complete sets of main turbines are installed, one complete set per shaft. Each set consists of a high, intermediate and low pressure turbine. Aster turbines are installed in the casings of the main I.P. and L.P. turbines. Mfg. by Krupp in Germany.

Main Reduction Gears: Single reduction, three complete sets.

Boilers: Twelve main units, and one auxiliary unit are installed in the ship. Type: Laminar forced circulation. Mfg. by F. Krupp, Germaniawerft, Germany.

Main condensers: Three installed in ship. Mfg by F. Krupp, Germaniawerft, Germany.

Shafting: Three main shafts are installed in ship. Line shaft O.D. = 18.2", I.D. = 12.2".

Propellers: Three installed in ship. 3 blades mfg. by F. Krupp, Germaniawerft, Germany.

Turbo Generators: Six turbo generators, and four diesel generators are installed in the ship. There are generator rooms.
OVERALL CONDITION

<table>
<thead>
<tr>
<th>Draft Forward</th>
<th>Draft Aft</th>
<th>List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Test</td>
<td>11' 6&quot;</td>
<td>9'</td>
</tr>
<tr>
<td>After Test</td>
<td>17' 0&quot;</td>
<td>34' 8&quot;</td>
</tr>
</tbody>
</table>

Test number 8, just forward of the boiler room, was flooded through a sea valve that has apparently been jarred open. There is some water in the steering Engine Room, and Generator Rooms 1 and 2. This water is due to normal seepage around the rudder post through sea valves.

Generator room #1 and the after engine room were flooded to a depth of about 3 1/2 feet, generator room #3 was flooded to a depth of about 2 1/2 feet. Ten or twelve tools were knocked out by this flooding, which is not considered to have been caused by Test B. The ship had a list of about 1 1/2" to starboard after Test B.

(b) Structural damage.

HULL

No known or detectable damage to structure has resulted from this test.

MACHINERY

No comment.

ELECTRICAL

None observed.

PRINZ EUGEN (DD910)

Page 5 of 54 Pages
Twenty-seven electric motors were grounded as a result of the flooding. There was no other electrical damage reported.

MACHINERY

There was no damage to machinery of this vessel during Test B. A number of malfunctions were reported after the test.

ELECTRICAL

There was no evidence of fires or explosions.

(a) Heat

HULL
None.

MACHINERY
No evidence.

ELECTRICAL
There was no evidence of fires or explosions.

(b) Fires and Explosions

HULL
None.

PRINZ EUGEN (2300)

Page 7 of 54 Pages
(a) Effects peculiar to the Atomic Bomb.

HULL

The only effects peculiar to the atomic bomb is the presence of radioactivity.

MACHINERY

None.

ELECTRICAL

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

III Effects of damage.

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

HULL

No comment.

MACHINERY

None.

ELECTRICAL

There was no effect on electrical equipment or ship control except as a result of the flooding due to normal leakage.

(b) Effect on gunnery and fire control.

HULL

No comment.

MACHINERY

None.

(b) Effect on engine control.

HULL

No comment.

MACHINERY

None.

ELECTRICAL

There was no effect on electrical equipment or ship control except as a result of the flooding due to normal leakage.

(c) Effect on watertight integrity and stability

HULL

The ship has assumed a list of 1 1/2 degrees to starboard, primarily due to flooding of tank number 9.

The watertight integrity is unimpaired.

MACHINERY

No comment.

ELECTRICAL

None.

(d) Effect on personnel and habitability.

HULL

The immediate effect on personnel would have been slight except for the psychological factors pertaining to an atomic bomb attack. Some casualties might have appeared later.

Habitability of spaces is not impaired at present, but transmission of radioactive material from the weather deck to other spaces is a hazard.

MACHINERY

None below decks except for radioactivity.

SECRET

PRINZ EUGEN (IX300)

Page 8 of 54 Pages
ELECTRICAL

There was no effect on personal or habitability as a result of this test except for radioactivity. It is considered, however, that personnel would have been seriously affected by the radioactivity. This is evidenced by the fact that the vessel was declared unsafe for personnel more than three weeks after the bomb explosion had occurred.

(a) Total effect on fighting efficiency.

HULL

The total effect on fighting efficiency is slight except for the presence of radioactivity.

MACHINERY

None, except for possible effects of radioactivity.

ELECTRICAL

Providing there were no personnel casualties due to radiological effects, it is considered that there would have been no effect on the fighting efficiency of the vessel.

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

HULL

An atomic bomb attack of this type at this range is not capable of inflicting structural damage. The ship, however, is within the range of dangerous radioactivity.

MACHINERY

The PRINZ EUGEN was outside the effective range of the explosion during Test B, except for possible effects of radioactivity.

ELECTRICAL

SECRET
Tank number 8, astern forward of the boiler room, has flooded through a stop valve that has apparently been jacked open. There is heavy water in the After Engine Room, and Generator Rooms 1 and 2. This water is due to normal seepage around the rudder post and through sea valves.

(b) Structural damage.

No known or detectable damage to structure has resulted from this event.

(c) Other damage.

Twenty-seven electric motors have been grounded in the After Engine Room and Generator Rooms 1 and 2 as the result of seepage at what is considered to be a normal rate for this ship.

II. Forces Evidenced and Effects Noted.

(a) Heat.

None.

(b) Fires and explosions.

None.

SECRET

USS PRINZ EUGEN (IX-260)

Page 12 of 54 Pages
I. Effects of Damage

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

No comment.

(b) Effect on camouflage and fire control.

No comment.

(c) Effect on watertight integrity and stability.

The ship has assumed a list of 1-1/2 degrees to starboard, primarily due to flooding of tank number 6.

The watertight integrity is unimpaired.

(d) Effect on personnel and habitability.

The immediate effect on personnel would have been slight except for the psychological factors pertaining to an atomic bomb attack. Some casualties might have appeared later.

Habitability of spaces is not impaired at present, but transmission of radioactive material from the weather deck to other spaces is a hazard.

SECRET

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II. Effect on Fighting Efficiency

The total effect on fighting efficiency is difficult to quantify for the presence of radioactivity.

IV. General Summary of Observers' Improvements and Suggestions

An atomic bomb attack of this type at this range is not capable of inflicting structural damage. The ship, however, is within the range of dangerous radioactivity.

V. Preliminary General or Specific Recommendations of the Inspecting Group

Topside personnel should be entirely enclosed wherever possible.

VI. Instructions for loading the vessel specified the following.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>LOADING</th>
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<tbody>
<tr>
<td>Fuel Oil</td>
<td>5/5</td>
</tr>
<tr>
<td>Diesel Oil</td>
<td>5/5</td>
</tr>
<tr>
<td>Ammunition</td>
<td>10/5+</td>
</tr>
<tr>
<td>Potable and reserve feed water</td>
<td>95%</td>
</tr>
<tr>
<td>Salt water ballast</td>
<td>None</td>
</tr>
</tbody>
</table>

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspections 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.
b) General condition.

The vessel has suffered only very minor damage.

No known or detectable damage to structure has resulted from this test.

(c) Apparent causes of hull damage.

Not Applicable.

(d) Flooding.

Number 3 tank, just forward of the boiler room has flooded completely through a flooding valve which apparently was forced open.

Generator rooms No. 1 and 2 have 2-1/2 and 2-1/2 feet of water respectively as the result of seepage through sea valves and around valve stems and pipe joints.

The after engine room has similar seepage.

The steering engine room has one inch of water from seepage around the rudder post.

(e) Residual strength, buoyancy, and effect of general condition of hull on operability.

Residual strength and operability are unaffected.

There is not enough flooding to make any detectable difference in draught. If the ship had been maned, flooding would have been entirely controlled.
E. Weather Deck.

There is no visible damage and none of the six deflection gages located beneath the deck have recorded any deflection.

F. Exterior Hull (above w.l.).

No damage.

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

No damage.

H. Armor Decks and Miscellaneous Armor.

No damage.

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

(a) Damage to structure and causes.

No damage.

(b) Damage to joiner bulkheads and closures.

No damage.

(c) Details of damage to access closures and doors.

No damage.

(d) Condition of equipment within compartments.

Twenty-seven electric motors have been grounded in the after engine room and generator room 1 and 2. This is due to flooding from what is considered a normal rate of seepage for this ship.

(e) Flooding.

Tank No. 9 has flooded completely through a flooding valve that has apparently been jacked open.

No. 1 generator room has flooded to a depth of 2-1/2 feet by seepage through sea valves.

Number 3 generator room and the after engine room have similar flooding to depths of 2-1/2 and 3 feet, respectively.

The steering engine room has three feet of water in the sump and one inch of water on the deck. This is from seepage around the rudder post.

All seepage is considered to be at a normal rate for this ship, so flooding of tank No. 9 is the only flooding that can be considered due to the test.

(f) Damage in way of piping, cables, ventilation ducts, shafts.

No damage.

(g) Estimate of reduction in watertight subdivision, habitability, and utility of spaces.

The only reduction in habitability and utility of spaces is caused by the flooding from the normal seepage.
J. Underwater Hull.

No apparent damage.

K. Tanks.

(a) Condition of tanks in way of damage.

Tanks are undamaged but tank number 9 has flooded through a sea valve that has apparently been forced open. This tank has been pumped dry prior to the test.

(b) Contamination of liquids.

None.

(c) Damage (known or suspected), to torpedo defense system.

None.

L. Flooding.

(a) Description of major flooding areas.

Areas with flooding are the steering engine room, after engine room, generator rooms 1 and 3, and tank No. 9.

(b) Sources of flooding.

Water in the steering engine room is the result of seepage around the rudder post.

Water in the after engine room and generator rooms 1 and 3 is the result of seepage through sea valves.

Tank No. 3 has flooded through a sea valve that has apparently been jarred open by the test.

(c) List of compartments believed to have flooded badly as to be unsuitable to damage control.

All seepage is considered to be not critical and has not affected flooding in the steering engine room, after engine room, and generator rooms 1 and 2 in definitely subject to damage control.

M. Ventilation (exclusive of blowers).

No damage.

N. Ship Control.

(a) Damage to ship control stations and cabling.

None.

O. Fire Control.

(a) Damage to fire control stations and cabling.

1. Directors and elevated control positions.

No damage.

2. Plot rooms and protected spaces.

No damage.

(b) List of stations having insufficient protection and estimated effect on fighting efficiency of the loss of each.

None.

(c) Constructive criticism of location and arrangement of stations.

No comment.
3. Analysis

(a) Evidence of heat damage with/without evidence of camouflag painting.

Not Applicable.

(b) Bin, other miscellaneous effects or conditions requiring inspection.

None.

4. Comments

(a) Evidence of heat damage with/without evidence of camouflag painting.

Not Applicable.

(b) Bin, other miscellaneous effects or conditions requiring inspection.

None.

Q. Ammunition Handling.

(a) Condition and operability of ammunition handling devices.

No damage.

(b) Evidence that any ammunition handling devices contributed to passing of heat, fire, blast or flooding water.

None.

(c) Constructive criticism of design and construction of ammunition handling devices.

No comment.

(d) Constructive criticism of ship control systems.

Ship control is impaired only by radioactive hazards to personnel. Complete cover for ship control personnel is mandated.
(b) Structural damage.

No damage.

(c) Other damage.

There was no damage to machinery of this vessel during Test B. A number of auxiliaries were operated after the test.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and explosions.

No evidence.
III. Effect 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 below decks except for radioactivity.
(e) Total effect on fighting efficiency.
   None, except for possible effects of radioactivity.

IV. General Summary.

The PRINZ BUCHEN was outside the effective range of the explosion during Test B, except for possible effects of radioactivity.
(a) Overall condition.

Generator room 61 was flooded about 3-1/2 feet, generator room 60 was flooded about 2-1/2 feet, and engine room 91 (adi) was flooded about 3-1/2 feet. Two tanks were flooded in section E2 (closed amidship) and the ship had a list of about 1-1/2° to starboard. The flooding caused the grounding of 23 electric motors. Flooding in machinery spaces came from the numerous already existing leaks during the lengthy absence of the crew. Test B is considered to have had no effect on the overall condition of the plant.

(b) Areas of major damage.

There was no area of major damage.

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

There was no primary damage.

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

Test B had no apparent effect on overall operation of the machinery. A number of units were operated after Test B.

B. Boilers.

No apparent damage.

C. Blowers.

No apparent damage.

D. Fuel Oil Equipment.

No apparent damage.

K. Pumps.

No apparent damage. Most of the electric driven pumps were operated and tested at designed pressure.

L. Auxiliary Generators (Turbines and Gears).

No apparent damage.

M. Propellers.

Apparently undamaged. The propellers were inspected from the water surface and appear to be undamaged.
V. Pipeline Systems

No apparent damage.

W. Miscellaneous

Apparently undamaged. The machine shop, laundry and galley equipment appear to be intact.

P. Wireless, Wreckage, and Captains

Undamaged. The director wireless was operated by power after Test B. Performance was normal.

Q. Steering Gear

Undamaged. The steering gear was operated by power from main switch to hardover subsequent to Test B.

R. Elevators, Ammunition Hands, etc...

No apparent damage.

S. Ventilation (Machinery)

Apparently undamaged. Several ventilation blowers were operated and performed normally.

T. Compressed Air Plant

No apparent damage.

U. Diesels (Generators and Boats)

Undamaged. Three of the ship's diesel generators were operated satisfactorily after Test B.
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 in the #1 generator room, the #3 generator room, the after engine room and the steering engine room as a result of normal leakage in the ten day period before the vessel was reboarded.

(b) Structural damage.

None observed.

(c) Other damage.

Twenty seven electric motors were grounded as a result of the flooding. There was no other electrical damage reported.

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.

SECRET

USS PRINZ EUGEN (IX300)

Page 30 of 54 Pages
IV. General Summary of Observers' Impressions and Conclusions.

The distance of this vessel from the center of the blast is considered to be too great for electrical damage to result.

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

None.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

There was no effect on electrical equipment or ship control except as a result of the flooding due to normal leakage.

(b) Effect on armament and fire control.

None.

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

None.

(d) Effect on personnel and habitability.

There was no effect on personnel or habitability as a result of this test except for radioactivity. It is considered, however, that personnel would have been seriously affected by the radioactivity. This is evidenced by the fact that the vessel was declared unsafe for personnel more than three weeks after the bomb explosion had occurred.

(e) Total effect on fighting efficiency.

Providing there were no personnel casualties due to radiochemical effects, it is considered that there would have been no effect on the fighting efficiency of the vessel.

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There was no electrical damage to this vessel as a direct result of the underwater atomic bomb test. In the ten day period before the vessel was reboarded, the following flooding occurred due to normal leakage:

1. #1 generator room (Ewerk 1) flooded to a depth of approximately 43 inches.
2. #3 generator room (Ewerk 3) flooded to a depth of approximately 30 inches.
3. The after engine room flooded to a depth of approximately 36 inches.

As a result of this flooding twenty seven electric motors were grounded and had to be cleaned out before they could be operated.

(b) Areas of major damage.

The electrical equipment on this vessel received no damage as a direct result of the test. The damage received as a result of normal leakage was in the #1 and #3 generator rooms and in the after engine room.

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

Flooding was the primary cause of electrical damage to this vessel.

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

The target test had no effect on the overall operation of the electric plant except that it kept personnel off the vessel so that the plant could not be operated.

(e) Types of equipment most affected.

No electrical equipment was affected as a direct result of the test. Motors were most affected by the outboard flooding.

B. Electric Propulsion Rotating Equipment.
   Not Applicable.

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.

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Page 51 of 64 Pages PRINZ EUGEN (IX309)

AB-CR-17W-14-8-0. Looking aft along starboard side of steering engine room. 15th min. flooding.

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Page 51 of 64 Pages PRINZ EUGEN (IX309)
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APPENDIX

COMMANDING OFFICER'S REPORT

TEST BAKER

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REPORT #11
COMMANDING OFFICER'S REPORT
SECTION I

This vessel suffered no material damage as a result of Test B. The ship had a 1° list to starboard due to flooding inherent in the ship due to past operations. This flooding had no relation to Test B and is considered normal for a ten day period.
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:

- XRD-203-Section 12
- XRD-200-Section 9
- XRD-204-Section 13
- XRD-183
- XRD-201-Section 10
- XRD-131-Volume 2
- XRD-3143
- XRD-142
- XRD-138
- XRD-83
- XRD-80
- XRD-79
- XRD-76
- XRD-106
- XRD-105-Volume 1
- XRD-100
Subject: Declassification of Report

AD-376836LV XRD-98
AD-376835L XRD-97
AD-376834L XRD-96
AD-376833L XRD-95
AD-376832L XRD-94
AD-367454 XRD-93
AD-367453 XRD-92-Volume 2
AD-367452 XRD-91-Volume 1
AD-366764 XRD-90
AD-376837L XRD-89
AD-366758 XRD-88
AD-366754 XRD-87
AD-366753 XRD-86
AD-376839L XRD-85
AD-376829L XRD-84
AD-367462 XRD-83
AD-367463 XRD-82
AD-367461 XRD-81
AD-367460 XRD-80
Subject: Declassification of Reports

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

ARDITH JARRETT
Chief, Technical Resource Center