4 February 1946

RESTRICTED

From: Chief, Naval Technical Mission to Japan.
To: Chief of Naval Operations.
Subject: Target Report - Japanese Damage Control.
Reference: (a) "Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report, dealing with Target S-84(N) of Fascicle S-1 of reference (a), is submitted herewith.

2. The investigation of the target and the target report were accomplished by Comdr. R.H. Hedgecock, USN.

[Signature]
C. G. GRIMES
Captain, USN
JAPANESE DAMAGE CONTROL

"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945
FASCICLE S-1, TARGET S-84(N)

FEBRUARY 1946

U.S. NAVAL TECHNICAL MISSION TO JAPAN
SUMMARY

SHIP AND RELATED TARGETS

JAPANESE DAMAGE CONTROL

Compared to American and British standards, Japanese damage control organization, training, and equipment were inferior. Although definite improvement was made during the war in all three phases of damage control, good results never were obtained.
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REFERENCES

Location of Target:

Hull, Engineering, and Gunnery Sections of Navy Technical Department, TOKYO.

Japanese Personnel Interviewed and who Assisted in Gathering Documents:

Constructor Admiral A. KATAYAMA, IJN, Ship Construction Section of Navy Technical Department.
Constructor Captain K. YADA, IJN, spent most of his 10 years of naval service in production.
Commander K. MUTO, IJN, student in the Navigation School in 1942 and then instructor in the same school, later attached to the Bureau of Education in 1944, spent most of his 16 years since graduating from the Naval Academy in operating seamanship.
Commander M. BABA, IJN, student at the Engineering School in 1939, spent most of his naval career as an operating engineer after becoming an engineering cadet in 1922.
Captain H. MAYUZUMI, IJN, Executive Officer of the Gunny School in 1943, spent most of his naval career as an operating gunny officer after graduating from the Naval Academy in 1919.
Captain J. NOMURA, IJN, last executive officer of YAMATO, graduated from the Naval Academy in 1922.

Related NavTechJap Reports:

"Reports of Damage to Japanese Warships, Article 1 - NAGATO (BB), KATSURAGI (CV), HARUNA (BB), AOBA (CA), ISE (BB), AMAGI (CV), RYUHO (CVL), OYODO (CL), TONE (CA), HYUGA (BB), ASO (CV), SUZUTSUKI (DD)," Index No. S-06-1.
"Reports of Damage to Japanese Warships, Article 2 - YALATO (BB), MUSASHI (BB), TAIHO (CV), SHINANO (CV)," Index No. S-06-2.
"Characteristics of Japanese Naval Vessels, Article 4 - Surface Warship Machinery Design (Plans and Documents)," Index No. S-01-4.
LIST OF ENCLOSURES

(A) List of Documents Forwarded to the Bureau of Ships.
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"Reports of Damage to Japanese Warships, Article 2 - YAMATO (BB), MUSASHI (BB), TAIHO (CV), SHINANO (CV)." Index No. S-06-2.
"Characteristics of Japanese Naval Vessels, Article 4 - Surface Warship Machinery Design (Plans and Documents)," Index No. S-01-4.
LIST OF ENCLOSURES

(A) List of Documents Forwarded to the Bureau of Ships.
INTRODUCTION

The subject of Japanese damage control was approached from the angle of damage control organization that existed in the Navy Ministry and within the Fleet, and from the damage control policy, training, and equipment on the individual ship. It is a negative report in that nothing was uncovered that could be used in the improvement of U.S. Navy damage control procedure or training.

No effort was made to deal with operating damage control, or to make accurate descriptions of shipboard equipment, since these subjects are covered in NavTechJap reports listed in references.
PART I - ORGANIZATION OF DAMAGE CONTROL
IN THE NAVY MINISTRY AND IN THE FLEET

A. ORGANIZATION OF DAMAGE CONTROL IN THE NAVY MINISTRY

1. Technical Council

This board consisted of members from the Navy Ministry and the Navy Technical Department and instructors from the various damage control schools. The council was set up for purposes of research, investigation, and improvement of damage control practices and equipment.

2. Battle Report Investigating Committee

This committee was established for the purpose of quick application of lessons learned from battle reports. It had sub-committees headed by the superintendents of the various damage control schools.

3. Educational Organization

a. The Bureau of Naval Education was organized for the education of naval personnel, and to foster the use of approved practices on board ship.

b. Damage Control Schools

(1) The Naval Navigation School included damage control instruction in the regular curriculum. Damage control instruction included such subjects as fire fighting, prevention of flooding, counter-ballasting, prevention of poisonous gases, and handling of the wounded.

(2) The Naval Workshop and Repair School presented a course of instruction designed primarily for teaching repair of damage, and water pumping techniques.

(3) The Naval Engineering School presented a course of instruction designed primarily to teach repair of machinery, electrical wiring, and electrical equipment.

c. Duration of Instruction

<table>
<thead>
<tr>
<th></th>
<th>Officers</th>
<th>Enlisted Men</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Higher Course</td>
</tr>
<tr>
<td>Navigation School</td>
<td>1 year (6 months)</td>
<td>9 months (5 months)</td>
</tr>
<tr>
<td>Workshop and Repair School</td>
<td>1 year (6 months)</td>
<td>9 months (6 months)</td>
</tr>
<tr>
<td>Engineering School</td>
<td>1 year (6 months)</td>
<td>9 months (5 months)</td>
</tr>
</tbody>
</table>
Note:  
(1) Parentheses indicate shortened courses in wartime.
(2) Higher course follows ordinary course.

d. Selection of Officer Students - Officer students selected for the Navigation School were deck officers. Officer students selected for both the Workshop and Repair School and the Engineering School were engineering officers. All officers were educated to become "Commanding Officers of Damage Control". For that reason students of any one school were required to attend each of the other two schools for a period of about one month (two weeks in wartime) respectively, to become familiar with the courses taught in those schools.

e. Selection of Enlisted Students - Students sent to the Navigation School were selected from the seamen branch. Students sent to the Workshop and Repair School were selected from men working in ship repair. Students sent to the Engineering School were selected from men of the engineering branch. It was intended to send students of one school to each of the other two schools for a period of about two weeks (one week in wartime) respectively.

f. Observation of Damage Control in the Fleet - Once each year the Navy Ministry observed the practice of damage control in the fleet. Observers were appointed from the Bureau of Education and from the instructors in the various damage control schools.

B. ORGANIZATION OF DAMAGE CONTROL IN THE FLEET

1. Headquarters in the Fleet

a. In every fleet and squadron there were damage control staffs. Duty on these staffs was in addition to regular navigation or engineering duty.

b. In every combined fleet or localized fleet the damage control organization was as follows:

(1) A staff for the purpose of leading damage control exercises consisted of one captain or commander, three to four lieutenants, and ten to fifteen petty officers.

(2) One technical captain or technical commander had duties to inspect and consult on permanently installed damage control equipment.

c. A captain of a ship in a squadron was appointed "Leader of Damage Control" to be responsible for the improvement of damage control practices.

d. Every year the commander-in-chief of a fleet, upon order of the Navy Ministry, would exercise his fleet in damage control and endeavor to improve the art of damage control.
PART II - DEFENSE OF INDIVIDUAL WARSHIPS

A. ORGANIZATION OUTLINE (AS FURNISHED BY THE JAPANESE)

1. Chain of Command

   Captain
   |
   Chief commanding officer for damage control (vice-captain)
   |
   Comdr. of Defense
   |
   Chief Gunnery Officer
   |
   Chief Torpedo Officer
   |
   Comdr. of Machinery
   |
   Chief Communication Officer

   Comdr. of Emergency Section
   |
   Comdr. of Flooding Section
   |
   Comdr. of Electrical Section
   |
   Comdr. of Aux. Engine Section

   Comdr. of Emergency Sub-Section
   |
   Comdr. of Flooding Sub-Section
   |
   Comdr. of Electrical Sub-Section
   |
   Comdr. of Aux. Engine Sub-Section

2. Organization (example of BB or large CV)

   a. Defense Section

   Defense Section
   |
   Emergency Section
   |
   Flooding Section
   |
   Electrical Section
   |
   Aux. Machinery Section

   b. Emergency Section

   First Emergency Section Comdr.
   |
   First Emergency Sub-Section Comdr.
   |
   Second Emergency Group
   |
   Fourth Emergency Group
   |
   Seventh Emergency Group

   First Emergency Group
   |
   Third Emergency Sub-Section Comdr.
   |
   Fourth Emergency Group
   |
   Fifth Emergency Sub-Section Comdr.
   |
   Ninth Emergency Group

   Second Emergency Group
   |
   Third Emergency Group
   |
   Fifth Emergency Group
   |
   Sixth Emergency Sub-Section Comdr.
   |
   Eleventh Emergency Group

   Third Emergency Group
   |
   Sixth Emergency Group
   |
   Eleventh Emergency Group
   |
   Sixth Emergency Group
   |
   Eleventh Emergency Group

   Fourth Emergency Group
   |
   Fifth Emergency Group
   |
   Eleventh Emergency Group
   |
   Sixth Emergency Group
   |
   Eleventh Emergency Group

   Eighth Emergency Group
   |
   Ninth Emergency Group
   |
   Tenth Emergency Group
   |
   Eleventh Emergency Group
   |
   Tenth Emergency Group

   Seventh Emergency Group
   |
   Eighth Emergency Group
   |
   Tenth Emergency Group
   |
   Eleventh Emergency Group
   |
   Tenth Emergency Group

   9
Note: An emergency group consists of 16-24 men. Members are seamen, industry-men, engineer-men, and paymaster-men.

c. Flooding and Pumping Section

Flooding and Pumping Section Comdr.

- Forward Section
  - Forward Control Members
- Midpart Section
  - Midpart Control Members
- After Section
  - After Control Members

Note: "Control Members" number about 20.

d. Electrical Section

Electrical Section Comdr.

- Forward Section Comdr.
  - Forward Members
- After Section Comdr.
  - After Members

Note: "Forward and after members" number about 15 to 20.

e. Auxiliary Machinery Section

Aux. Machinery Section Comdr.

- Forward Section Comdr.
  - Forward Members
- After Section Comdr.
  - After Members
PART II - DEFENSE OF INDIVIDUAL WARSHIPS

A. ORGANIZATION OUTLINE (AS FURNISHED BY THE JAPANESE)

1. Chain of Command

   Captain
   └── Chief commanding officer for damage control (vice-captain)
       └── Comdr. of Defense
           ├── Chief Gunnery Officer
           └── Chief Torpedo Officer
               └── Comdr. of Machinery
                   └── Chief Communication Officer
                       ├── Comdr. of Emergency Section
                       └── Comdr. of Flood- ing Section
                           └── Comdr. of Electrical Section
                               └── Comdr. of Aux. Engine Section
                                   └── Comdr. of Emergency Sub-Section
                                       └── Comdr. of Flooding Sub-Section
                                           └── Comdr. of Electrical Sub-Section
                                               └── Comdr. of Aux. Engine Sub-Section

2. Organization (example of BB or large CV)

   a. Defense Section

       Defense Section
       └── Emergency Section
           └── Flooding Section
               └── Electrical Section
                   └── Aux. Machinery Section

   b. Emergency Section

       Second Emergency Section Comdr.
       └── First Emergency Section Comdr.
           └── First Emergency Sub-Section Comdr.
               └── Second Emergency Sub-Section Comdr.
                   └── Third Emergency Sub-Section Comdr.
                       └── Fourth Emergency Group
                           └── Fifth Emergency Group
                               └── Sixth Emergency Group

       Fourth Emergency Section Comdr.
       └── Seventh Emergency Group

       Eighth Emergency Group
       └── Ninth Emergency Group

       Tenth Emergency Group
       └── Eleventh Emergency Group

       Twelfth Emergency Group
Note: An emergency group consists of 16-24 men. Members are seamen, industry-men, engineer-men, and paymaster-men.

c. Flooding and Pumping Section

Flooding and Pumping Section Comdr.

Forward Section

Midpart Section

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Midpart Control Members

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Note: "Control Members" number about 20.

d. Electrical Section

Electrical Section Comdr.

Forward Section Comdr.

After Section Comdr.

Forward Members

After Members

Note: "Forward and after members" number about 15 to 20.

e. Auxiliary Machinery Section

Aux. Machinery Section Comdr.

Forward Section Comdr.

After Section Comdr.

Forward Members

After Members
Note: "Forward and after members" number about 15.

3. Section of Emergency Control Action

When an emergency occurred in the vicinity of personnel at their respective battle stations, they would generally handle the emergency. The wreckage party was set up primarily to handle emergencies in compartments where no personnel had battle stations. However, certain damage might have required the wreckage party to go to the assistance of personnel at their battle stations.

B. TRAINING

1. Instruction for Emergencies

Almost all instruction for an emergency began by stating that the fundamental doctrine was to fight the ship; then the instruction dealt with the particular emergency.

   a. Emergencies - Fire fighting was taught at Yokosuka Naval Station on four old ships. It consisted of a demonstration of extinguishing a gasoline fire by use of foam followed by extinguishing a similar fire by shutting up the compartment and letting the fire burn itself out. In the second demonstration the outside of the compartment was cooled by water. Oral instruction was given on how to attack each particular kind of fire.

   Instruction on poisonous gases consisted of gas mask instruction, detecting of gases, and neutralizing methods for various kinds of gases.

   Instruction was given on detection of flooding, prevention of flooding, pumping out water, and strengthening of decks and bulkheads by shoring.

   Instruction was given in disposal of the wounded.

   Instruction was given in communications and messages.

   b. Counter-ballasting and pumping - The following subjects were covered under this particular heading:

      Training in use and testing of each valve.
      Use of flooding diagrams.
      Methods of detection of flooding.
      Methods of flooding and pumping.
      Methods of shifting oil.

   c. Electrical distribution - The following subjects were covered under this particular heading:

      Electrical distribution and how to accomplish it.
      Emergency electrical distribution.
      Repair of electrical cables.

2. Simulated Emergency Training

   a. Each section of the wreckage party was instructed individually; then the entire wreckage party acted on a simulated emergency. After
the wreckage party responded suitably to simulated emergencies, the
entire ship's company was exercised in simulated emergencies once or
twice a week. The simulated emergency was planned ahead of time and
the selected committee led the training throughout the ship.

b. Trained committees for simulated emergencies from a particular
ship were sent to other ships in the squadron to conduct and observe
simulated emergencies.

c. The Japanese expressed their views on the merits of simulated
training by saying that war exercises improved fighting efficiency.

C. EQUIPMENT AND INSTALLATION

1. Fire Defense

a. Fire mains capable of being sectionalized into 3-5 groups
during battle.
b. Portable hand pumps - 4-6 sets, each, 12 tons/hr capacity.
c. Sprinkling apparatus installed in magazines and aircraft car-
rier hangars.
d. CO₂ gas discharging apparatus to be carried to the scene of the
fire.
e. Portable foam equipment to be used from portable pumps or fire-
main outlets.
f. Portable gas-driven pumps of 12, 50, 150, and 250 tons/hour
capacity.
g. Smoke defense masks. (Note: A sample KG Model 130 and a Mod.
1 mask were sent to the Bureau of Medicine and Surgery, Navy Dept., Washington, D. C., marked NavTechJap Equip-
ment Nos. JE10-7501 and 7502).
h. Fire-proof robes for the use of wreckage parties.

2. Flooding Prevention

a. Sounding tubes for oil tanks.
b. Air vent lines and valves located in the flooding and pumping
compartment used to detect flooding. (Note: The only
means of telling whether water was entering a particular
counter-balast void was to listen for air escaping
through this valve, or to remove the tank top.)
c. Flooding and pumping compartment.
d. Flooding valves operated either by hydraulic oil or by a hand
wheel.
e. Flooding prevention boxes of various kinds and sizes. Con-
structed of wood and designed to be put over damage holes.
f. Drain pumps either those used for firemain with suction open
to respective compartment, or portable pumps.
g. Shores provided for shoring bulkheads, or to shore flooding
prevention boxes.

3. Poisonous Gas Defense

a. Making each compartment gas-tight.
b. Air purifying apparatus for circulating air provided for im-
portant compartments.
c. Type 93 or 97 mask provided for each person aboard ship.
d. Gas-proof robes provided for topside personnel.
e. "Smell" training substances provided to teach personnel true
smell of real gas.
Note: "Forward and after members" number about 15.

3. **Section of Emergency Control Action**

When an emergency occurred in the vicinity of personnel at their respective battle stations, they would generally handle the emergency. The wreckage party was set up primarily to handle emergencies in compartments where no personnel had battle stations. However, certain damage might have required the wreckage party to go to the assistance of personnel at their battle stations.

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   c. **Electrical distribution** - The following subjects were covered under this particular heading:

      Electrical distribution and how to accomplish it.
      Emergency electrical distribution.
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2. **Simulated Emergency Training**

   a. Each section of the wreckage party was instructed individually; then the entire wreckage party acted on a simulated emergency. After
the wreckage party responded suitably to simulated emergencies, the entire ship's company was exercised in simulated emergencies once or twice a week. The simulated emergency was planned ahead of time and the selected committee led the training throughout the ship.

b. Trained committees for simulated emergencies from a particular ship were sent to other ships in the squadron to conduct and observe simulated emergencies.

c. The Japanese expressed their views on the merits of simulated training by saying that war exercises improved fighting efficiency.

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a. Fire mains capable of being sectionalized into 3-5 groups during battle.
b. Portable hand pumps - 4-6 sets, each, 12 tons/hr capacity.
c. Sprinkling apparatus installed in magazines and aircraft carrier hangers.
d. \( \text{CO}_2 \) gas discharging apparatus to be carried to the scene of the fire.
e. Portable foam equipment to be used from portable pumps or firemain outlets.
f. Portable gas-driven pumps of 12, 50, 150, and 250 tons/hour capacity.
g. Smoke defense masks. (Note: A sample KG Model 130 and a Mod. 1 mask were sent to the Bureau of Medicine and Surgery, Navy Dept., Washington, D. C., marked "NavTechJap Equipment Nos. JE10-7501 and 7502").
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c. Flooding and pumping compartment.
d. Flooding valves operated either by hydraulic oil or by a hand wheel.
e. Flooding prevention boxes of various kinds and sizes. Constructed of wood and designed to be put over damage holes.
f. Drain pumps either those used for firemain with suction open to respective compartment, or portable pumps.
g. Shores provided for shoring bulkheads, or to shore flooding prevention boxes.

3. Poisonous Gas Defense

a. Making each compartment gas-tight.
b. Air purifying apparatus for circulating air provided for important compartments.
c. Type 93 or 97 mask provided for each person aboard ship.
d. Gas-proof robes provided for topside personnel.
e. "Smell" training substances provided to teach personnel true smell of real gas.
4. **Material for Disposal of Damage**

   a. Supplies of wood and steel.
   b. Stores of emergency tackles, torches, etc. to be used for removal of damaged topside equipment.

5. **Commanding Instruments**

   a. Emergency command board was flooding diagram. Was to be provided for major and for secondary damage control stations.
   b. Controlling board for flooding and pumping showed pipe lines, valves, and pumps. Pegs provided to indicate condition of any tank or void. Boards provided for the major and secondary damage control stations and for flooding and pumping stations.
   c. Draft meter receiver.
   d. Clinometer.
   e. Helm angle report receiver.
   f. Speed telegraph receiver.
   g. Flooding and pumping telegraph receiver.
   h. Air pipe transmitter.
   i. Telephones.
   j. Loud speaker.
   k. Voice tubes.
   l. GM indicator.
# ENCLOSURE (A)

**LIST OF DOCUMENTS FORWARDED TO THE BUREAU OF SHIPS**

<table>
<thead>
<tr>
<th>NavTechJap No.</th>
<th>ATIS No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND10-2101.1</td>
<td>4092</td>
<td>Flooding calculation diagram: SHINANO (CV).</td>
</tr>
<tr>
<td>ND10-2101.2</td>
<td>4092</td>
<td>Appendix to flooding calculation diagram, Sheet 1 or 2: SHINANO (CV).</td>
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<tr>
<td>ND10-2101.3</td>
<td>4092</td>
<td>Appendix to flooding calculation diagram, Sheet 2 of 2: SHINANO (CV).</td>
</tr>
<tr>
<td>ND10-2102</td>
<td>4091</td>
<td>Explanation of quick flooding and pumping apparatus.</td>
</tr>
<tr>
<td>ND10-2103</td>
<td>4090</td>
<td>Diagram: Emergency flooding counter-measurements for ISE (BB).</td>
</tr>
<tr>
<td>ND10-2104</td>
<td>4089</td>
<td>200mm emergency valve attached to oil pressure cylinder.</td>
</tr>
<tr>
<td>ND10-2105</td>
<td>4088</td>
<td>Views on flooding when ship is damaged.</td>
</tr>
</tbody>
</table>