

RESTRICTED

INDEX NO. S-84(N)

# SHIP AND RELATED TARGETS

JAPANESE DAMAGE CONTROL

U.S. NAVAL TECHNICAL MISSION TO JAPAN

NS/tk

U. S. NAVAL TECHNICAL MISSION TO JAPAN  
CARE OF FLEET POST OFFICE  
SAN FRANCISCO, CALIFORNIA

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.



C. G. GRIMES  
Captain, USN

**RESTRICTED**

**S-84(N)**

## **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.

# TABLE OF CONTENTS

Summary .....	Page 1
References .....	Page 3
List of Enclosures .....	Page 4
Introduction .....	Page 5
The Report	
Part I. Organization of Damage Control in the Navy Ministry and in the Fleet .....	Page 7
Part II. Defense of Individual Warships .....	Page 9
Enclosure (A) .....	Page 15

# TABLE OF CONTENTS

Summary .....	Page 1
References .....	Page 3
List of Enclosures .....	Page 4
Introduction .....	Page 5
The Report	
Part I. Organization of Damage Control in the Navy Ministry and in the Fleet .....	Page 7
Part II. Defense of Individual Warships .....	Page 9
Enclosure (A) .....	Page 15

# 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.

# TABLE OF CONTENTS

Summary .....	Page 1
References .....	Page 3
List of Enclosures .....	Page 4
Introduction .....	Page 5
The Report	
Part I. Organization of Damage Control in the Navy Ministry and in the Fleet .....	Page 7
Part II. Defense of Individual Warships .....	Page 9
Enclosure (A) .....	Page 15



## 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 Gunnery School in 1943, spent most of his naval career as an operating gunnery 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 - YAMATO (BB), MUSASHI (BB), TAIHO (CV), SHINANO (CV)," Index No. S-06-2.  
"Reports of Damage to Japanese Warships, Article 3 - Japanese Records of Major Warship Losses," Index No. S-06-3.  
"Characteristics of Japanese Naval Vessels, Article 2 - Surface Warship Machinery Design," Index No. S-01-2.  
"Characteristics of Japanese Naval Vessels, Article 3 - Surface Warship Hull Design," Index No. S-01-3.  
"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.

## 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 Gunnery School in 1943, spent most of his naval career as an operating gunnery 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 - YAMATO (BB), MUSASHI (BB), TAIHO (CV), SHINANO (CV)," Index No. S-06-2.  
"Reports of Damage to Japanese Warships, Article 3 - Japanese Records of Major Warship Losses," Index No. S-06-3.  
"Characteristics of Japanese Naval Vessels, Article 2 - Surface Warship Machinery Design," Index No. S-01-2.  
"Characteristics of Japanese Naval Vessels, Article 3 - Surface Warship Hull Design," Index No. S-01-3.  
"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.

# THE REPORT

## 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

	Officers	Enlisted Men	
		Higher Course	Ordinary Course
Navigation School	1 year (6 months)	9 months (5 months)	6 months (4 months)
Workshop and Repair School	1 year (6 months)	9 months (6 months)	9 months (6 months)
Engineering School	1 year (6 months)	9 months (5 months)	6 months (4 months)

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.

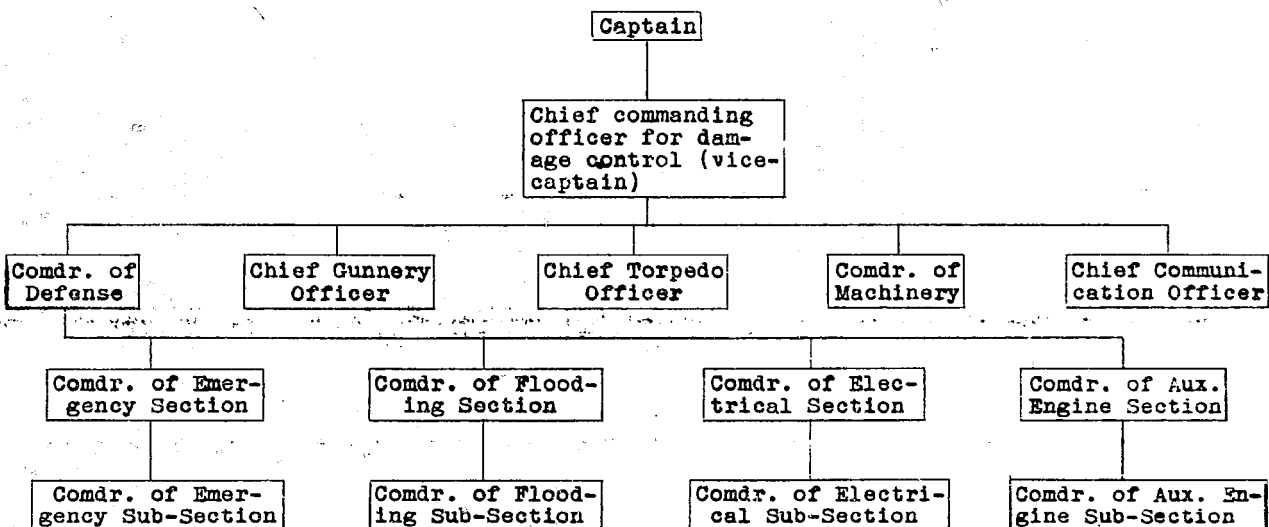
(2) One technical captain or technical commander had duties to inspect and consult on permanently installed damage control equipment.

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.

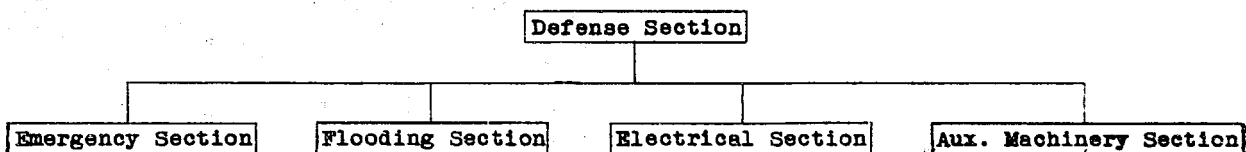
d. Every year the commander-in-chief of a fleet, upon order of the Navy Ministry, would exercise his fleet in damage control and endeavor to improve the art of damage control.

PART II - DEFENSE OF INDIVIDUAL WARSHIPS

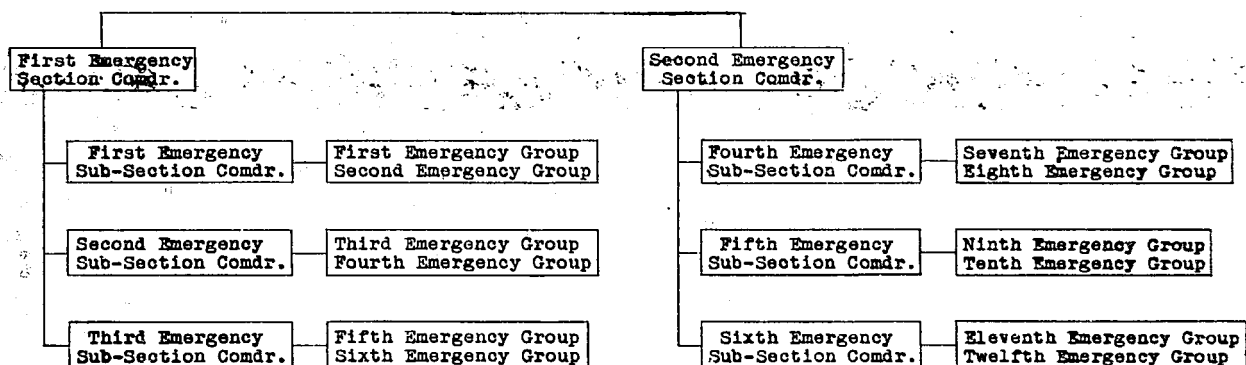
## A. ORGANIZATION OUTLINE (AS FURNISHED BY THE JAPANESE)

1. Chain of Command2. Organization (example of BB or large CV)

## a. Defense Section



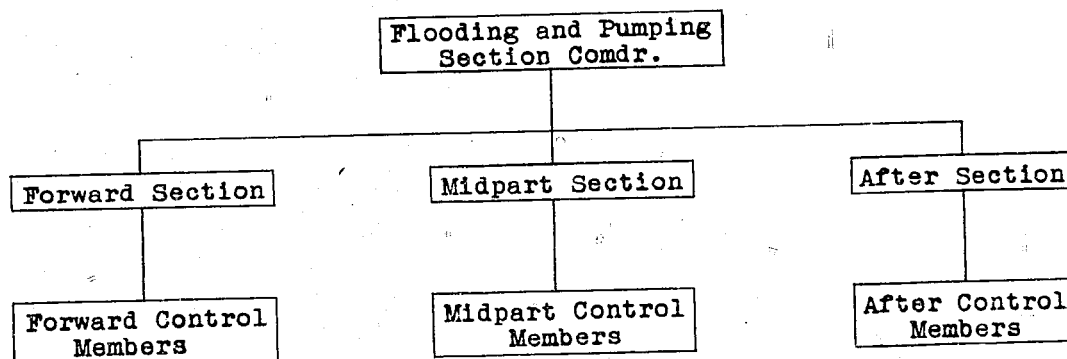
## b. Emergency Section





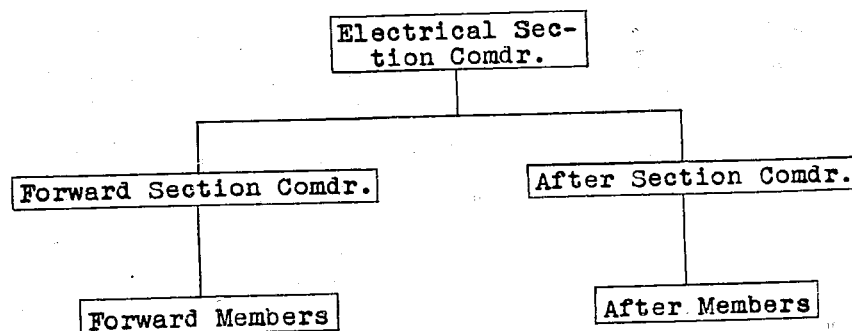
Note: An emergency group consists of 16-24 men. Members are seamen, industry-men, engineer-men, and paymaster-men.

c. Flooding and Pumping Section



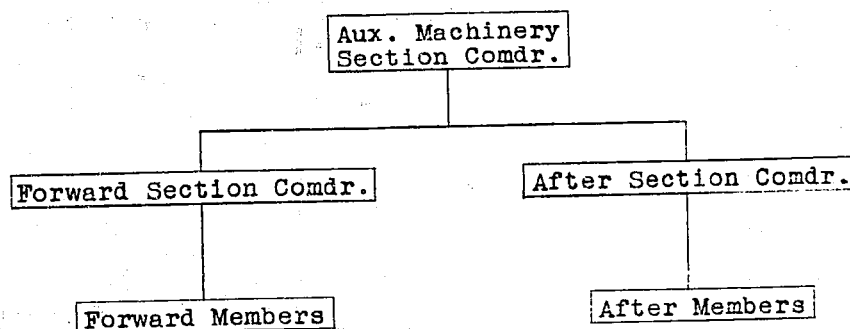
Note: "Control Members" number about 20.

d. Electrical Section



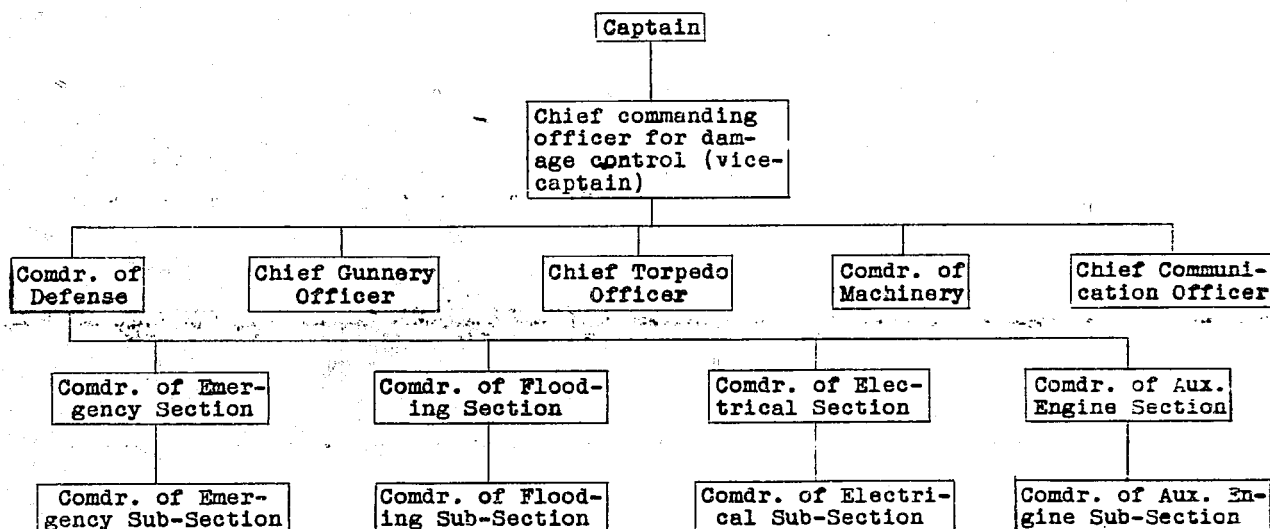
Note: "Forward and after members" number about 15 to 20.

e. Auxiliary Machinery Section

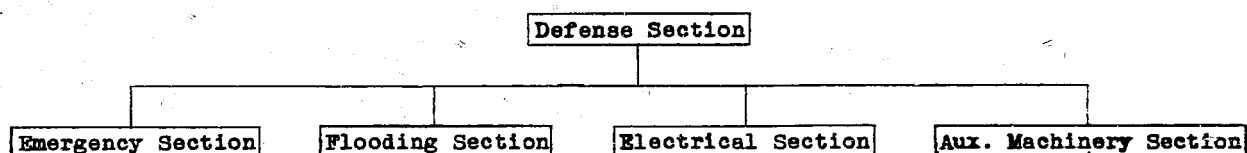


PART II - DEFENSE OF INDIVIDUAL WARSHIPS

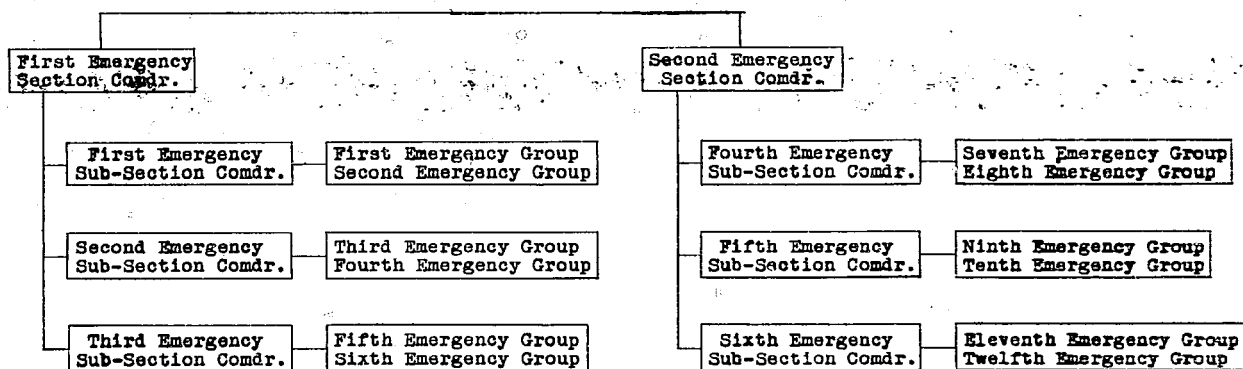
## A. ORGANIZATION OUTLINE (AS FURNISHED BY THE JAPANESE)

1. Chain of Command2. Organization (example of BB or large CV)

## a. Defense Section

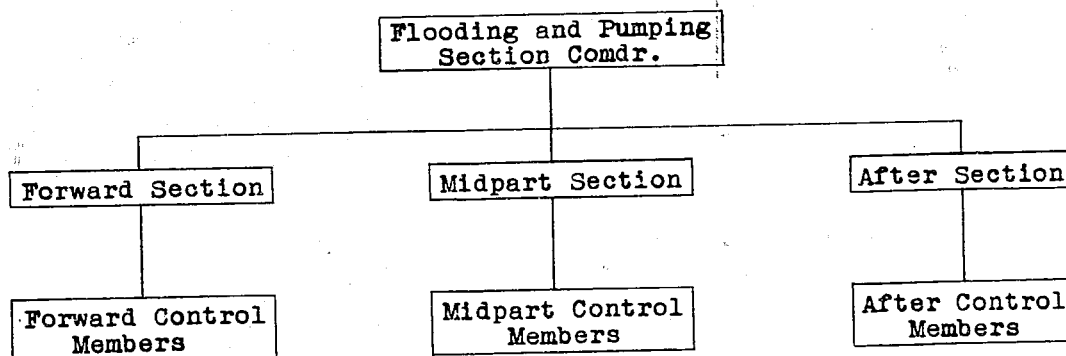


## b. Emergency Section



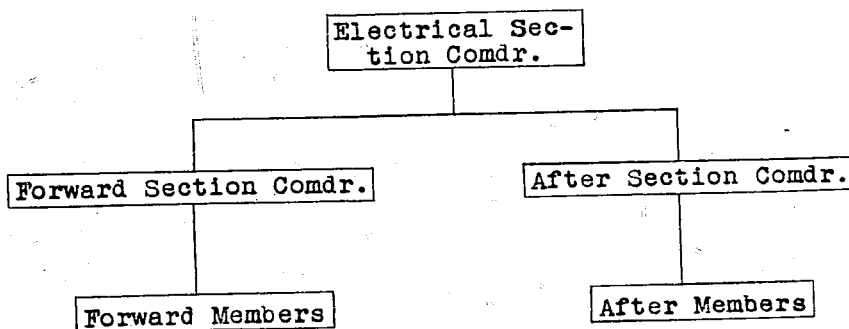
Note: An emergency group consists of 16-24 men. Members are seamen, industry-men, engineer-men, and paymaster-men.

c. Flooding and Pumping Section



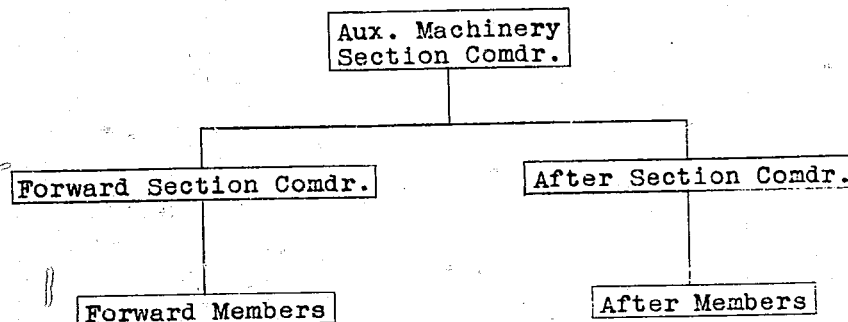
Note: "Control Members" number about 20.

d. Electrical Section



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

e. Auxiliary Machinery Section



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 carrier hangars.
- d. CO<sub>2</sub> 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 Equipment 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-ballast 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. 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.

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 carrier hangars.
- d. CO<sub>2</sub> 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 Equipment 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-ballast 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. 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.

- f. Gas detector for determining variety of gas.
- g. Gas tent used for training.
- h. Gas first aid boxes provided for those contaminated by 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 tube.
- l. GM indicator.



## ENCLOSURE (A)

## LIST OF DOCUMENTS FORWARDED TO THE BUREAU OF SHIPS

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