

Best Available Copy



AD737208

Reproduced by  
NATIONAL TECHNICAL  
INFORMATION SERVICE  
Springfield, Va. 22151

ARMY CONCEPTS  
APO SAN FRANCISCO

RECEIVED  
DEC 12 1972  
INFORMATION CENTER

Best Available Copy

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)		2a. REPORT SECURITY CLASSIFICATION	
Army Concept Team in Vietnam APO San Francisco 96384		UNCLASSIFIED	
2. REPORT TITLE		2b. GROUP	
Military Police River/Harbor Security Company			
3. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
Final Report			
4. AUTHOR(S) (First name, middle initial, last name)			
David H. Weddington, LTC, IN			
5. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS	
	112	2	
8. CONTRACT OR GRANT NO.		9a. ORIGINATOR'S REPORT NUMBER(S)	
A. PROJECT NO. ACG-73F		ACTIV Project No. ACG-73F	
C.		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
D.		NONE	
10. DISTRIBUTION STATEMENT			
Distribution of this document is unlimited			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY	
NONE		US Army, Vietnam APO San Francisco 96375	
13. ABSTRACT			
<p>The Army Concept Team in Vietnam evaluated the 458th Transportation Company from 1 March 1970 through 30 April 1971. The purpose of the evaluation was to determine adequacy of current company organization, support concepts, and adequacy of presently utilized equipment. Composed of 162 men and officers, the company originally had 39 Patrol Boats, River (PBR's), 13 Boston Whalers (BW's), and was physically located at six outpost detachments, a company headquarters at Di An, and a maintenance detachment at Nha Be. This evaluation revealed that the missions assigned are realistic and techniques utilized at the various detachments are effective. The watercraft are adequate for mission performance; however, some modifications and some changes in ancillary equipment are recommended in order to increase effectiveness. It was established that the MTOE, maintenance and logistics support, and overall crew-training programs for the 458th Transportation Company are inadequate. It is recommended that a TDA replace the MTOE and that procedures be established to improve maintenance and logistics support and crew-training programs.</p>			

DD FORM 1473 1 NOV 65

REPLACES DD FORM 1473, 1 JAN 66, WHICH IS OBSOLETE FOR ARMY USE.

UNCLASSIFIED

Security Classification

DEPARTMENT OF THE ARMY  
ARMY CONCEPT TEAM IN VIETNAM  
APO San Francisco 96384

FINAL REPORT

MILITARY POLICE RIVER/HARBOR SECURITY COMPANY

ACTIV PROJECT No. ACG-73F

RESTRICTION STATEMENT  
Approved for Public Release  
Distribution Unlimited

DDO  
RECEIVED  
FEB 28 1972  
D.

Approved: 30 SEP 1971

*David H. Thomas*

DAVID H. THOMAS  
Colonel, ADA  
Commanding

KEY WORDS	LINK A		LINK B		LINK C
	ROLE	WT	ROLE	WT	ROLE
River Security Harbor Security River Patrol Boats Boston Whalers					

AVENDO-TO ( 9 DEC 1971 ) 1st Ind  
SUBJECT: Final Report - Military Police River/Harbor Security Company  
(ACTIV Project No. ACO-73P)

DA, Headquarters, U.S. Army Vietnam, APO San Francisco 96375 5 JAN 1972

THRU: Commander-in-Chief, US Army Pacific, APO San Francisco 96558

TO: Assistant Chief of Staff for Force Development, Department of  
the Army, Washington, D.C. 20310

1. Subject final report is submitted for review and approval.
2. This headquarters concurs in the conclusions and recommendations as written.
3. The 458th Transportation Company has been inactivated and Patrol Boats, River and Boston Whalers are no longer in the Army inventory. Therefore it is recommended that the results of this evaluation be considered if similar type transportation companies are activated in the future.
4. Request one copy of all forwarding and approval indorsements be furnished this headquarters.

FOR THE COMMANDER:

1 Incl  
as (Quin)

  
J. L. GILBERT  
CPT AGC  
ASSISTANT ASSISTANT GENERAL

Copies Furnished:  
(See Distribution,  
Annex C)



DEPARTMENT OF THE ARMY  
ARMY CONCEPT TEAM IN VIETNAM  
APO SAN FRANCISCO 96384

IN REPLY REFER TO:

AVIB-CO

2 DEC 1971

SUBJECT: Final Report - Military Police River/Harbor Security Company  
(ACTIV Project No. ACC-73F)

THRU: Commanding General  
United States Army, Vietnam  
ATTN: AVHDO-D  
APO 96375

TO: Assistant Chief of Staff for Force Development  
Department of the Army  
Washington, D.C. 20310

1. References:

a. Letter, AGAM-P(14) (2 May 69) FOR ACTIV, Hq PA, 8 May 69, subject:  
Army Combat Developments and Materiel Evaluation (CD&ME) Program, Vietnam.

b. Letter, AVHSC-D1, Hq U.S. Army, Vietnam, 23 February 1967, sub-  
ject: Letter of Instructions.

2. In accordance with above references, subject final report is forwarded  
for review and approval.

3. Request one copy of all forwarding and approval indorsements be furn-  
ished this headquarters.

FOR THE COMMANDER:

1 Incl  
as (Quin)

  
F. D. LEMUS  
1LT, ACC  
Adjutant

Copies Furnished:  
(See Distribution,  
Annex C)

AUTHORITY

Letter, FOR ACTIV, Department of the Army  
10 March 1969, subject: Army Combat  
Developments and Material Evaluation  
Program, FY 1970-1971

ACKNOWLEDGEMENTS

The Army Concept Team in Vietnam is indebted  
to the following for their cooperation and  
assistance in the conduct of this study:

US Army, Vietnam  
18th Military Police Brigade  
89th Military Police Group  
1st Logistical Command  
Marine Maintenance Activity Vietnam

PROJECT OFFICER

LTC David H. Weddington, IN

### ABSTRACT

The Army Concept Team in Vietnam evaluated the 458th Transportation Company from 1 March 1970 through 30 April 1971. The purpose of the evaluation was to determine adequacy of current company organization, support concepts, and adequacy of presently utilized equipment. Composed of 162 men and officers, the company originally had 39 Patrol Boats, River (PBR's), 18 Boston Whalers (BW's), and was physically located at six outpost detachments, a company headquarters at Di An, and a maintenance detachment at Nha Be. This evaluation revealed that the missions assigned were realistic and techniques utilized at the various detachments were effective. The watercraft were adequate for mission performance; however, some modifications and some changes in ancillary equipment are recommended in order to increase effectiveness. It was established that the MTOE, maintenance and logistics support, and overall crew-training programs for the 458th Transportation Company were inadequate. It is recommended that a TOE replace the MTOE and that procedures be established to improve maintenance and logistics support and crew training programs.

## TABLE OF CONTENTS

	<u>PAGE</u>
ACKNOWLEDGMENTS	i
ABSTRACT	ii
INDEX OF FIGURES	IV
SECTION I - INTRODUCTION	I-1
1. References	I-1
2. Background	I-1
3. Description	I-1
4. Purpose	I-4
5. Objectives	I-4
6. Scope	I-5
7. Method of Evaluation	I-5
8. Data Collection	I-5
9. Environment	I-6
SECTION II - DISCUSSION AND FINDINGS	II-1
1. Objective 1 - Missions Assigned	II-1
2. Objective 2 - Techniques Employed	II-21
3. Objective 3 - Capabilities and Limitations of PER and Boston Whaler	II-33
4. Objective 4 - Adequacy of TOE	II-52
5. Objective 5 - Maintenance and Logistics	II-62
6. Objective 6 - Crew Training	II-87
SECTION III - CONCLUSIONS AND RECOMMENDATIONS	
1. Conclusions	III-1
2. Recommendations	III-2
ANNEX A - GLOSSARY	
ANNEX B - MODIFIED TABLE OF ORGANIZATION AND EQUIPMENT 55-138E	B-1
ANNEX C - DISTRIBUTION	C-1

## INDEX OF FIGURES

<u>Figure</u>	<u>Page</u>
I-1 458th Transportation Company, Area of Responsibility	I-2
I-2 Patrol Boat, River (PBR)	I-3
I-3 Boston Whaler (BW)	I-4
II-1 Missions Performed	II-3
II-2 Detachment Personnel - Authorized/Assigned	II-4
II-3 Cat Lai Area of Operations	II-5
II-4 Qui Khon Area of Operations	II-7
II-5 Vung Ro Bay Area of Operations	II-10
II-6 Cat Lai Area of Patrol Operations	II-13
II-7 Cat Lai Area of Escort Operations	II-14
II-8 Newport Area of Operations	II-16
II-9 Codigo Area of Operations	II-18
II-10 Approach Procedures	II-23
II-11 Boarding Procedures	II-23
II-12 Control Panel (Coxswain's Station)	II-35
II-13 Pump-Out Attachment Kit	II-37
II-14 Forward .50-Caliber Gun Tub	II-38
II-15 Aft .50 Caliber Gun Replacement with Ballistic Shields	II-38
II-16 MK 18 40mm Honeywell Grenade Launcher Mounted on Starboard Aft Ballistic Plate	II-39
II-17 60mm Naval Mortar Mounted on Gun Pedestal	II-40
II-18 Outports Communications Nets	II-43
II-19 Mast-Mounted Radar Transmitter/Receiver Head	II-44
II-20 Radar Indicator Control Unit Mounted in Coxswain's Station	II-45
II-21 Summary of Outboard Motors Authorized and On Hand	II-46
II-22 Boston Whaler Consoles	II-47
II-23 Company Organization	II-53
II-24 458th Command Structure	II-54
II-25 Company Administration/Operations Section	II-55
II-26 Maintenance Personnel Authorization	II-57
II-27 Rate of Fills for Parts Requisitions	II-64
II-28 PBR Maintenance Allocation Functions	II-67
II-29 MEAV Average Turnaround Times	II-70
II-30 PBR Equipment Failures	II-71
II-31 Percentage of PBR's Not Operationally Ready (NOR)	II-72
II-32 Percentage of Boston Whaler's Not Operationally Ready (NOR)	II-73
II-33 Percentage of Outboard Motors Not Operationally Ready (NOR)	II-74
II-34 Frequency of PBR's Not Operationally Ready (NOR) Over a 6-Month Period Nov 69 - Apr 70	II-76
II-35 PBR Daily Engine Hours	II-76
II-36 PBR Monthly Engine Hours (From Tachometer Readings)	II-77
II-37 MK2 Jacuzzi Pump Wear Plates With Impeller	II-79
II-38 MK2 Jacuzzi Pump Wear Plates	II-80
II-39 Faulty Wiring - Power Supply Unit	II-82
II-40 Faulty Electrical Wiring - Alternator Regulator Panel	II-83

## SECTION I

### INTRODUCTION

#### 1. REFERENCES

a. Letter, FOR ACTIV, Department of the Army, 10 March 1969, subject: Army Combat Developments and Materiel Evaluation (CD&ME) Program, Vietnam, FY 70-71.

b. Committee Report, US Naval Forces, Vietnam, Operations Analysis Branch, January 1970, subject: Countering the Swimmer/Sapper (U),  
CONFIDENTIAL.

#### 2. BACKGROUND

Per reference a, above, ACTIV was tasked to evaluate the 458th Transportation Company, headquartered at Di An and assigned to the 18th Military Police Brigade. Its mission was to provide harbor security for designated ports in the Qui Nhon, Vung Ro Bay, Vung Tau, and Saigon/Long Binh areas in the Republic of Vietnam (RVN) (see Figure I-1). The protection of US flag and contract shipping, water terminal facilities, and barge sites formed part of its overall mission. Port security was normally a combined police effort, with both American and Vietnamese military police working on the patrol craft. Vietnamese national police also assisted in law enforcement and physical security functions. Doctrine regulating these operations was subject to continual review by higher headquarters.

#### 3. DESCRIPTION

##### a. Organization

The 458th Transportation Company was organized under MTOE 55-138E, dated May 1969, with a company headquarters, two platoons, and a marine maintenance section. The unit was authorized four officers, one warrant officer, and 162 enlisted men. Authorized watercraft included 39 Patrol Boats, River (PBR's), 18 Boston Whalers (BW's), and 36 outboard motors.

##### b. Patrol Boat, River (PBR)

The PBR (see Figure I-2) was obtained under ENSURE program 157. It is a high-speed craft designed to be operated by a four-man crew to include a coxswain, an engineer, and two military policemen. Its length is approximately 32 feet. The fiberglass hull requires a minimum of care, is not easily damaged by waterborne hazards, and is relatively simple to repair. Because of its shallow draft and V-bottom hull, the fully loaded boat draws only 2 feet of water. The PBR has a twin-unit propulsion system consisting of two Detroit Diesel 6V-53N marine engines, each driving a Jacuzzi 14YJ waterjet pump; this system gives the PBR a maximum speed of 32 knots.





FIGURE I-2. Patrol Boat, River (PBR)

Waterjet pumps are employed, rather than propellers, because they provide greater maneuverability and shallow-water capabilities. They also eliminate propeller maintenance, a major problem in the shallow and debris-laden waterways encountered in RVN. The boat has forward and aft machinegun emplacements. The forward emplacement consists of a gun tub and a US Navy Mark 56, Mod-0 universal gun mount. This position is normally equipped with two M2 .50-caliber machineguns, but can be mounted with twin M60 7.62mm machineguns, 20mm guns, or 40mm grenade launchers. The main aft emplacement is a US Navy Mark 46 Mod-1 gun mount, on which is normally mounted a single M2 .50-caliber machinegun (60mm mortar could be mounted instead). There is a manually operated 40mm grenade launcher mounted aft. The PBR's complement of small arms consisted of two M79 40mm grenade launchers, three M16 service rifles, one 12-gauge shotgun, and individual sidearms. Body armor and steel helmets provided protection for the crew. The boat is equipped with a limited-range, high-resolution, low-error, plan position indicator (PPI) radar system. For communication, it has a limited-range, highly flexible FM radio (AN/VRC-49) that operates within the VHF band and has a retransmit capability.

c. Boston Whaler

The Boston Whaler (BW) (see Figure I-3) was obtained under ENSURE 33.1. It is a commercially produced and marketed, 16'7", fiberglass open boat. It

normally carries a crew of three and is powered by either an 80/85-hp, or a 40-hp Johnson outboard motor. It has a maximum payload of 2400 pounds, which can be equated to either ten passengers with light equipment or seven combat-equipped passengers. It will cruise at speeds of 30 to 35 knots, depending upon the motor used, and draws 22 inches of water with the motor lowered. It has no organic armament or communication equipment, relying solely upon crew-carried weapons and radios. Its small size and shallow draft enable it to perform close-in inspection of ship hulls and under docks, as well as to patrol ports and harbors.

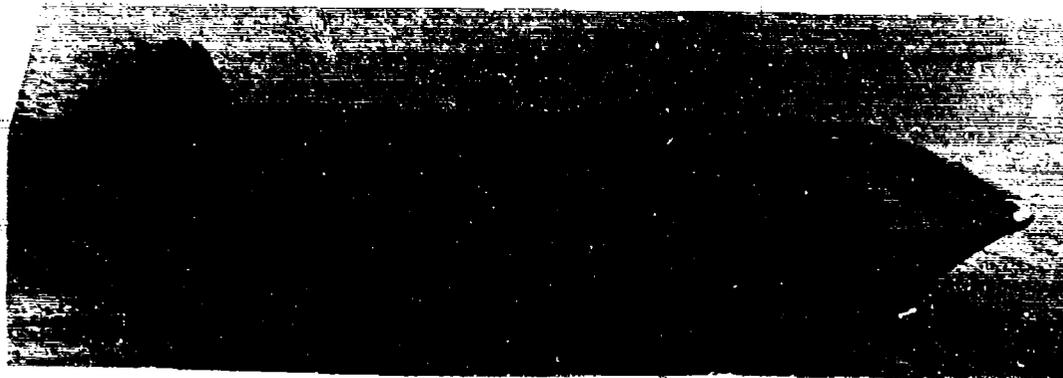


FIGURE I-3. Boston Whaler (BW).

#### 4. PURPOSE

The purpose of this study was to evaluate the 458th Transportation Company, which was organized and equipped to perform waterborne physical security missions on inland waterways and selected harbors of RVN.

#### 5. OBJECTIVES

- a. Objective 1. To describe and analyze the missions assigned to the 458th Transportation Company.
- b. Objective 2. To evaluate the techniques employed by operational elements of this company.
- c. Objective 3. To analyze the capabilities and limitations of the Patrol Boat, River (PBR) and Boston Whaler (BW), including weapons and communications systems, for performing the mission of the river/harbor security company.
- d. Objective 4. To determine the adequacy of the TOE, in terms of organization, equipment, and crew composition, to accomplish assigned missions.

e. Objective 5. To determine requirements for marine maintenance and to evaluate the adequacy of organizational and backup maintenance and logistical support.

f. Objective 6. To determine the adequacy of crew training.

## 6. SCOPE

The study consisted of an evaluation of the 458th Transportation Company. A limiting factor was the fact that the 458th Transportation Company was the only unit of its type in the US Army force structure. Because of this, there were no other organizations to serve as established standards to provide a basis for comparison.

## 7. METHOD OF EVALUATION

### a. General

(1) A 60-day evaluation of the 458th Transportation Company was conducted from 1 March 1970 to 30 April 1970. The company was headquartered in Di An, with maintenance personnel located at Nha Be, and operations in six ports called "outports". Military policemen for the crews were provided by the 93rd, 95th, and the 720th Military Police Battalions.

(2) The project officer conducted orientation briefings with the USARV Provost Marshal, the commanders and interested staff members of the 18th Military Police Brigade, the 89th Military Police Group, and the 458th Transportation company.

## 8. DATA COLLECTION

a. Structured interviews were conducted by the ACTIV evaluators with 144 personnel from the 458th Transportation company. This group included 120 crewmen, 20 unit maintenance personnel, and four supervisory personnel, all of whom were assigned to the 458th Transportation Company. In addition, US Navy maintenance personnel were interviewed at the Navy maintenance facility at Nha Be.

b. Staff officers of HQ USARV, the 1st Logistical Command, the 18th Military Police Brigade, and the 89th and 16th Military Police Groups were interviewed by the ACTIV project officer and/or the evaluators.

c. Maintenance and logistical support records were screened for information concerning logistical support. After-action reports and incident spot reports were studied to provide data concerning suitability of the boat to perform assigned missions and techniques employed in satisfying mission requirements. ACTIV evaluators accompanied crews on 128 operational missions and recorded data pertaining to boat suitability and employment techniques. An analysis of pertinent directives, letters

of instruction, unit SOP's, records, historical documents, and TOE authorization documents provided additional information.

d. A daily log was maintained by the crew of each PBR and BW in the 458th Transportation Company during the 60-day evaluation period. These logs were used to obtain information concerning mission requirements, priorities, and duration.

#### 9. ENVIRONMENT

a. The 458th Transportation Company operated in Military Regions (MR's) 2 and 3. Three detachments conducted operations at seaports (Qui Nhon, Vung Ro Bay, and Cat Lo), and three detachments operated on inland waterways - the rivers Dong Nai and Song Cai near Bien Hoa; the Dong Nai again near Cat Lai; and the Saigon River, from Newport to its junction with the Dong Nai. River waters in RVN contain a great deal of foreign material, including significant quantities of silt in suspension. River banks are gently sloping and covered with heavy foliage. Tides and rainfall have a noticeable effect on river depths and currents, which, in turn, affect watercraft maneuverability. The weather during the evaluation period was hot and humid - the driest time of the year, just before onset of the southwest monsoon. There were approximately seven days of rainfall in March and thirteen rainy days in April.

b. The hostile environment as it affected the 458th Transportation Company consisted of several types of enemy threats to outport detachments with the principal ones being:

- (1) On-shore ambushes of shipping
- (2) Free-floating mines in harbors and rivers.
- (3) Enemy sampans using waterways as lines of communications.
- (4) Swimmer/sappers. The nature of the swimmer/sapper threat and the countermeasures employed are explained in detail in reference b (paragraph I-1b).

## SECTION II

### 1. OBJECTIVE 1: MISSIONS OF THE 458TH TRANSPORTATION COMPANY

#### a. MISSIONS

##### (1) General

(a) For some time, MP units have had responsibility for protecting port storage areas in RVN from pilferage and sabotage, but until the 458th Transportation Company acquired PBR's and BW's, MP units had little control over enemy and criminal activities in or on the water. The mission statement of the 458th Transportation Company was: "To provide, operate, and maintain patrol craft for the security of ports within the Republic of Vietnam by interdicting NVA/VC supply lines, by conducting close-in port surveillance, and by detecting and destroying enemy waterborne offensive capability."

(b) The company performed primarily defensive missions. However, it also performed VIP escort/security, waterborne direct fire support for shore installations, and waterborne emergency assistance missions such as aiding in search and rescue operations. Offensive rivercraft operations were normally undertaken by the US Navy or Vietnamese Navy (VNN).

(c) Policies and procedures governing employment of the PBR's/BW's of the 458th Transportation Company were outlined in the following documents:

1. 10th MP Brigade Regulation 525-14, 18 March 1970.
2. 16th MP Group letter of Instruction 8-69, 25 June 1969.
3. 458th Transportation Company Outport SOP, 27 Dec 1969.

##### (2) Legal Considerations

(a) Port and waterway security within the territorial limits of RVN was primarily the responsibility of the government of the Republic of Vietnam (GVN). However, U.S. authorities did have certain responsibilities with respect to US-flag and other specifically designated shipping of primary interest to U.S. forces, as established by USARV Regulation 380-16.

(b) Since US forces personnel did not exercise primary jurisdiction over local and third-country nationals, this problem was handled in two ways. In most detachments, VN military or national police were provided to ride the patrol boats, by local agreement with the providing

agency. Their presence represented the authority necessary for stopping and searching suspect craft in territorial waters. The second means of control was GVN's declaration of U.S. port facilities, with their contiguous areas, as restricted zones closed to civilian traffic. In enforcing this restriction, it was common practice for PBR crews either to detain VN intruders until the arrival of the VN police official, or to escort the offending craft to the nearest outport and there to effect the turnover to local officials. In either case, all detachment SOP's required the craft to notify its base station immediately, by radio, of any detention. The base station then made an immediate request for assistance to the appropriate GVN agency.

### (3) Rules of Engagement

(a) General rules of engagement were set forth in 18th MP Brigade Regulation 525-45, 11 October 1969, as follows:

1. In the event of continuous visual contact of swimmer/sapper, the PBR crew was to proceed to his location and attempt to capture him. If the swimmer/sapper resisted attempts to capture him, he could be shot with small arms fire, with intent to wound rather than kill. Capture was to be considered preferable, since the prisoner could possibly aid in location of explosives already emplaced. In the event that visual contact was lost before capture, the PBR crew was to employ concussion grenades, in order to force the swimmer to the surface and so prevent his escape.

2. When a suspicious craft was sighted, one person was to call, "Halt," one time in English and three times in Vietnamese. The boat's bull horn and siren was also to be used to draw attention to the command. If a craft were to ignore the order to halt, it was to be overtaken and forced to stop. If the craft took evasive action, it could then be taken under fire, when: (1) it was clear that escape was imminent, or (2) in the event of a hostile act. In preventing escape, three warning shots were to be fired, 10 meters off the bow of the suspect craft, followed by an additional three warning shots across its bow, before the craft could be brought under direct fire. Such warning shots were not to hazard other craft or persons.

(b) These rules of engagement were supplemented by instructions contained in the company SOP, 16th MP Group Regulation 525-45, and MP Battalion SOP's. In the case of the 95th MP Battalion, all MP personnel and the Transportation Corps (TC) personnel assigned to PBR/BW were required to read and sign a "Use of Force" statement prior to their first patrol. A copy of this statement is shown in Annex B.

b. OUTPORT CHARACTERISTICS

(1) General

(a) The 18th MP Brigade Regulation 525-45 assigned the number of boats that would operate in each outport and the patrol areas in which each would operate. PBR crews normally consisted of two TC and two MP personnel. A member of the Vietnamese national police, if available, would also accompany the PBR. Crew for a Boston Whaler would consist of one TC and one MP.

(b) Individual outports varied in area, geography, mission, number of boats and personnel assigned, command-and-control configuration, and coordination requirements. The mission of, and personnel authorized and assigned to each outport are shown in Figures II-1 and II-2, respectively. In the following paragraphs, general information, command and control, planning and coordination, and mission are discussed for each outport.

MISSIONS PERFORMED	OUTPORT						
	CAT LO	QUI NHON	VUNG RO BAY	CAT LAI	NEWPORT	COGIDO	NHA BE
Inspection of water surface, pier facilities, barges, and ships for suspected explosive devices.	X	X	X	X	X	X	
Detection, capture, or elimination of enemy sapper/swimmer personnel	X	X	X	X	X	X	
Escort of critical shipping/cargo	X			X			
VIP security	X						
Fire support or blocking force in support of friendly troops		X	X		X		
Base defense	X	X	X				
Major maintenance							X

FIGURE II-1. Missions Performed.

OUTPOST	OFFICERS		TC FM		MP FM	
	AUTH	ASSIGNED	AUTH	ASSIGNED	AUTH	ASSIGNED
Cat Lo	1	0	17	11	11	9
Qui Nhon	1	1	20	16	18	21
Vung Ro Bay	0	0	10	7	8	7
Cat Lai	1	1	27	22	25	23
Newport	0	0	21	14	9	8
Cogido	1	1	20	17	8	17
Nha Be	0	0	20	7	0	0

FIGURE II-2. Detachment Personnel - Authorized/Assigned

(2) Cat Lo

(a) General

1. The Cat Lo (Vung Tau) detachment was responsible for the security of a portion of the Vung Tau port, in support of the Saigon Support Command. Vung Tau is a large protected harbor capable of handling oceangoing ships of any size; it is also the entrance to the Saigon River estuary (See Figure II-3).

2. The area of operation (AO) of the detachment was large and easily accessible to local nationals, in that many small villages bordered the bay, and small feeder streams and islands throughout the area provided excellent opportunities for infiltration. Large quantities of artillery and aircraft munitions, frequently stored on barges awaiting either movement or unloading, presented a lucrative target for the swimmer/sapper.

(b) Planning and Coordination

1. The Cat Lo detachment was located at Cat Lo Naval Base. Thus a certain amount of administrative coordination was required with Naval authorities, and the detachment also had a standby requirement in the Navy's base defense plan.

2. The security coordinator in the Vung Tau area was the CO, 511th Transportation Battalion. Local coordination was effected between the local provost marshal and the 511th Transportation Battalion Commander concerning boat employment only (e.g., specific facilities requiring special attention). Requests for major alterations of patrol

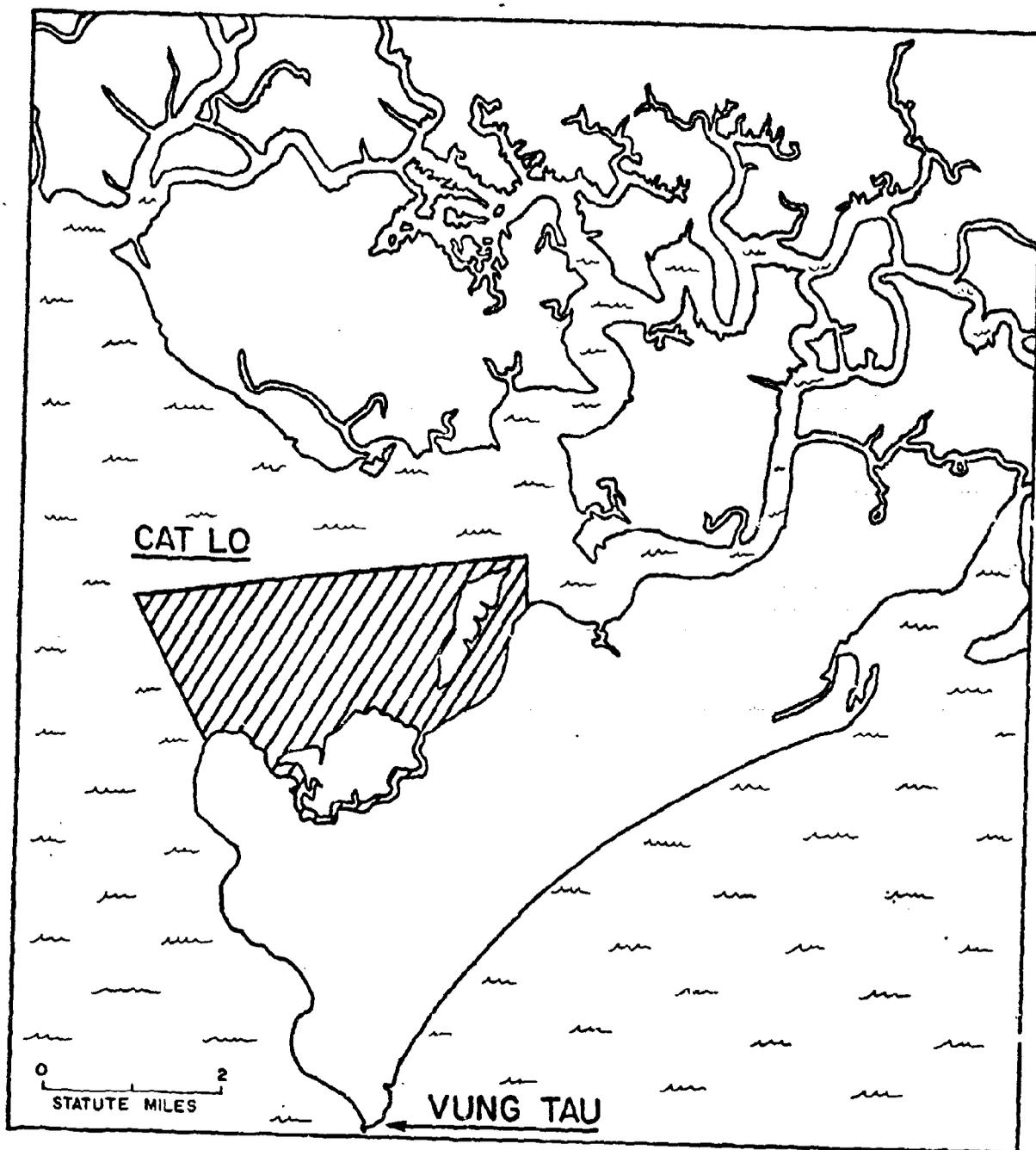


FIGURE II-3. Cat Lo Area of Operations.

areas or boat employment were submitted through channels to 1st Logistical Command. Local coordination was made by the provost marshal with various area commanders for fire support and backup forces.

(c) Command and Control

1. Command and control of TC personnel in the 458th was exercised through company channels by the detachment NCOIC. MP personnel were assigned to A Company, 720th MP Battalion in Vung Tau, and further attached to the 458th Transportation Company for quarters and rations. No serious problems were attributed to this division of command within the detachment.

2. Operational control of TC and MP personnel was exercised by the local provost marshal, within parameters established by Brigade and Group Regulations and the Battalion SOP. The MP radio net was used to control the PBR's and BW's in the Vung Tau area.

(d) Analysis of the Cat Lo Mission

It was generally agreed by all personnel interviewed that unless Cat Lo port facilities were completely closed to US Army use, there would be a requirement for waterborne physical security in the area. At the time of the evaluation, two boats were required during the day and four at night to provide adequate security of the port facilities and vessels.

(3) Qui Nhon

(a) General

1. The Qui Nhon detachment of the 458th was responsible for the security of that portion of the Qui Nhon harbor indicated in Figure II-4. The Qui Nhon harbor security mission was shared with the US Navy; the harbor and bay were divided between Army and Navy waterborne security craft, with each being responsible for its own service facilities and adjacent waters.

2. Qui Nhon is an operating seaport handling war supplies destined for MR's 1 and 2. It is a large, protected port capable of handling any deep-draft oceangoing cargo vessel. Its cargo-handling facilities include conventional cargo discharge, containerized cargo handling, and over-the-beach operations. Enemy activity in the general area was significant, but there had been only two successful swimmer/sapper attacks on the port facilities or vessels in the year previous to this evaluation. Both of these attacks employed explosive devices against vessels within the port area and caused considerable damage. The northern portion of the bay was a known VC line of communications (LOC) between

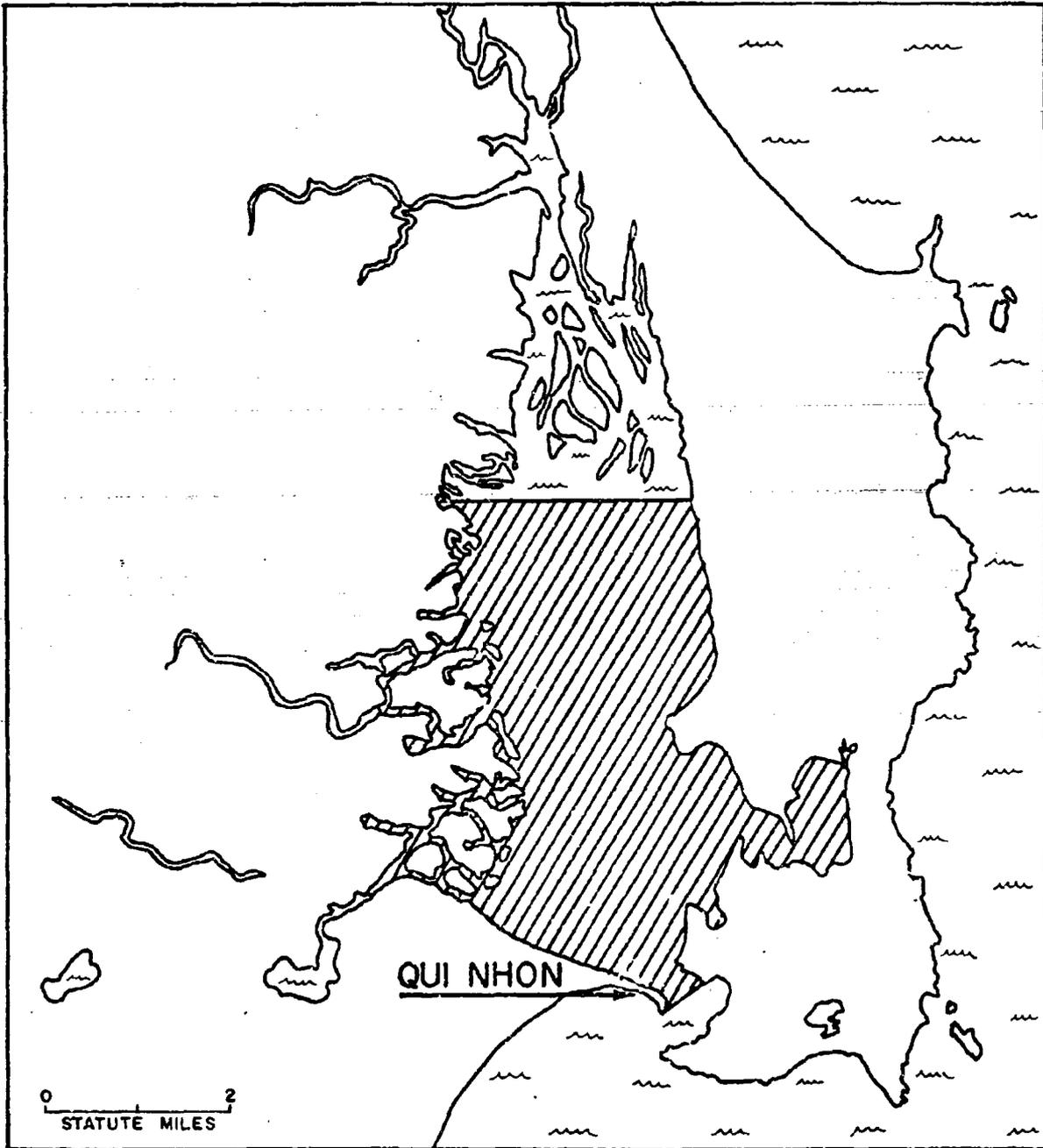


FIGURE II-4. Qui Nhon Area of Operations.

the peninsula and the mainland. Sampans were used at night to transport VC personnel and war supplies between the two areas. VN civilian craft were not allowed to use harbor or bay waters from 1800 hours to 0600 hours.

(b) Planning and Coordination

1. The Qui Nhon detachment was located within the Qui Nhon port installation. The port commander was CO, 5th Transportation Terminal Command (TTC), and it was with this officer that coordination was maintained for administrative and tactical matters. The detachment had a major role in the base defense plan, in which all the boats were committed.

2. Coordination on major points in port security operations (e.g., patrol AO revisions) was accomplished between the 5th TTC Commander (through 1st Logistical Command channels) and the 93rd MP Battalion Commander (through 18th MP Brigade channels). Tactical coordination (e.g., fire support) was accomplished through the 5th TTC Tactical Operations Center (TOC). This arrangement was in effect by agreement between the 5th TTC and the 93rd MP Battalion.

3. Coordination of routine matters pertaining to port security was accomplished between the S3, 5th TTC, and the detachment OIC. However, the 93rd MP Battalion exercised significant influence over routine matters as a matter of policy.

(c) Command and Control

1. Command of the Qui Nhon detachment was maintained by the 458th Transportation Company. The MP's manning the boats were assigned to the 327th MP Company and further attached to the 458th Transportation Company for rations and quarters.

2. Operational control of the TC and MP personnel was exercised by the 93rd MP Battalion. An MP boat radio net operated by the 458th Transportation Company was used to dispatch and control the boats. The detachment NCOIC, through the radio-telephone operator (RTO), exercised command and control over the boats when they were on patrol. If required, the 5th TTC TOC contacted the detachment by radio or telephone and requested that a boat perform a particular task. These requests, usually routine in nature, were normally acted upon by the RTO. In order for a boat to leave its designated patrol area, prior approval from the 93rd MP Battalion was required but was not always obtained. The 5th TTC TOC continually monitored the PBR detachment net. The detachment NCOIC felt that both the confusion arising from split command and nonuniform administration of military justice caused a deterioration of morale within the detachment.

(d) Analysis of the Qui Nhon Mission

1. The Qui Nhon inner harbor is a US Army port facility and requires tactical and physical security to be furnished by Army resources. Original requirements for conducting waterborne security operations of the inner harbor and bay called for two PBR's and one BW from 0630 to 1830 hours daily, and two PBR's and two BW's from 1830 hours to 0630 hours. The BW's and one PBR patrolled in the immediate anchorage area and port facilities, while the other PBR usually patrolled farther out. Deviations from these required patrol operations resulted from a lack of operational equipment or shortage of personnel. At the time of the evaluation, an average of two PBR's were employed during the day and two PBR's and one BW at night. Three boats during the day and three boats at night were required in order to provide sufficient security for the port facilities and the vessels located therein, but lack of operational equipment and the roughness of the waters especially at night, frequently precluded the use of BW's.

2. The offensive fire support role performed by this detachment was required because of the tactical situation, including the known VC/NVA supply route in the area. Experience has shown that the preponderance of swimmer/sapper attacks against US facilities and shipping occurred during hours of darkness. Therefore, it was the opinion of outport supervisory personnel that a third PBR should be added to the night patrol commitment. They based this opinion on the fact that the patrol areas were too large for two PBR's, and that foul weather frequently prevented the BW's from patrolling. In addition, the BW's were frequently deadlined for outboard motor repairs [see paragraphs II-3h(2) and II-5d(1)].

(4) Vung Ro Bay

(a) General

Vung Ro Bay is a moderately sheltered, coastal, deep-water port located 45 miles north of Nha Trang (see Figure II-5), and is the principal port of entry for supplies, POL, and ammunition for U.S. installations at Phu Hiep and Tuy Hoa. At the time of the evaluation, the dock facilities consisted of a DeLong pier capable of handling two deep-draft vessels simultaneously and a beach discharge operation utilizing barges (LCM's and LARC's). The bay is surrounded by steep hills and sparsely populated farmland, with a profusion of vegetation concealing the most likely avenues of enemy approach to the bay. The harbor facility cantonment area was subject to occasional ground probes and rocket or mortar attacks; however, it had experienced only one known swimmer/sapper attack in the year previous to this evaluation.

(b) Planning and Coordination

1. The Vung Ro Bay detachment was located on a small outport facility operated by the Qui Nhon Support Command.

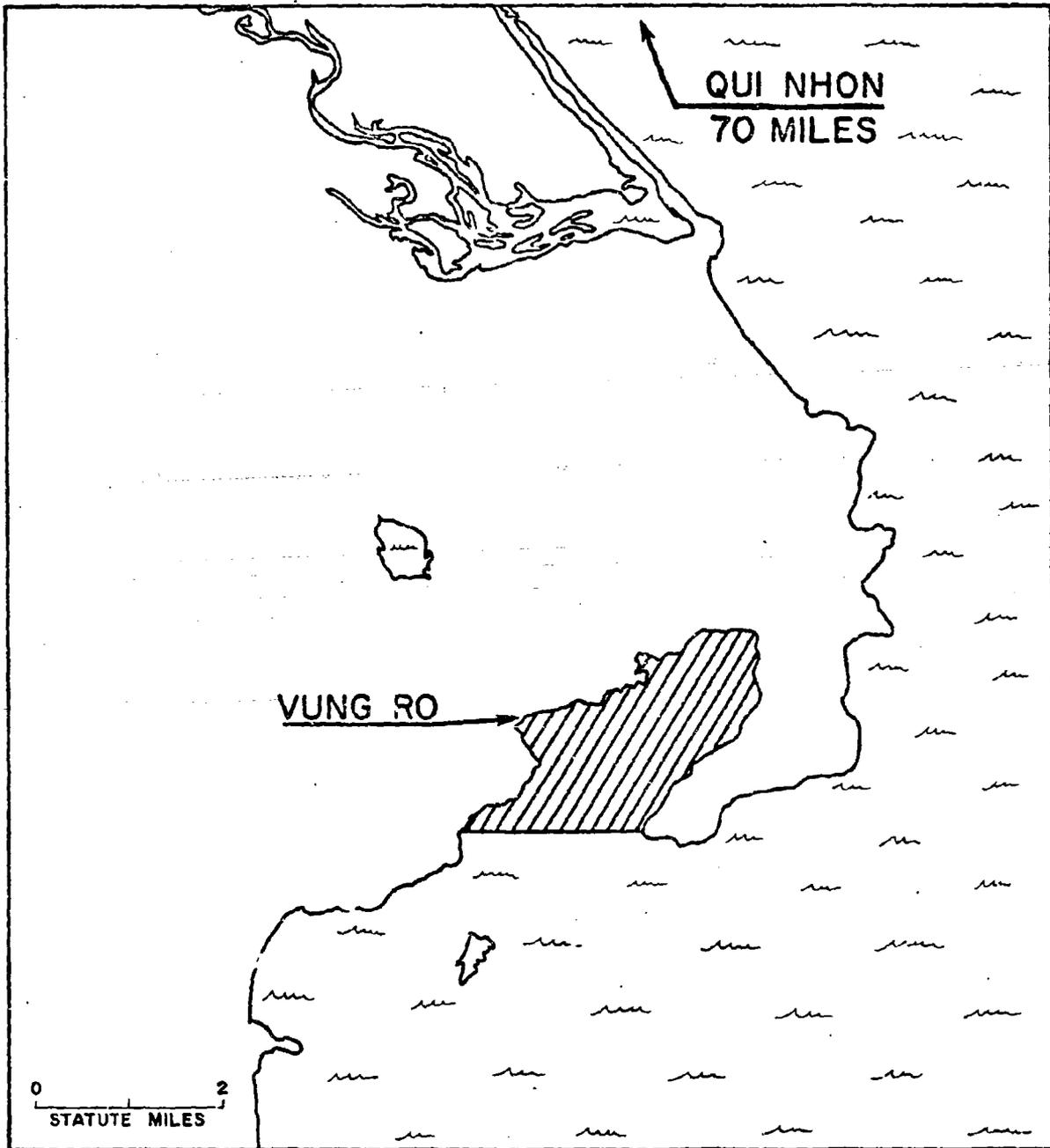


FIGURE II-5. Vung Ro Bay Area of Operations.

2. The 1st Logistical Command representative in the area was the 854th Transportation Company, and practically all coordination was accomplished between the outpost NCOIC and the CO of the 854th. The 854th Transportation Company Commander coordinated through the OIC of the MP detachment at Phu Hiep to the 93rd MP Battalion.

(c) Command and Control

1. Command of the Vung Ro detachment was exercised by the 458th Transportation Company through the outpost NCOIC. The MP's in the detachment were furnished by the 127th MP Company, with command exercised through company channels.

2. Operational control of MP and TC personnel was exercised by the 93rd MP Battalion, which delegated this responsibility to the provost marshal located at Phu Hiep (Tuy Hoa), 25 miles north of the bay. Because of the distance, actual day-to-day operational control was exercised by the detachment NCOIC, and was maintained through radio contact between the detachment RTO and the boats on patrol.

(d) Analysis of the Vung Ro Bay Mission

The location of the Army port facility in Vung Ro Bay necessitated the use of Army personnel to provide waterborne tactical and physical security to the port area and the vessels within. One PBR was utilized to provide security during the day. This fulfilled mission requirements; however, the stated requirement for one PBR and one BW at night was not considered adequate by detachment personnel. Occasionally, rough water at night in this area caused BW crews to be more concerned with survival than with the assigned mission. In order to provide adequate security at night, the NCOIC felt that two PBR's should be used. Vung Ro also had a unique security mission, in that the 458th Transportation Company provided all waterborne security to the harbor, augmented on occasion by a visiting U.S. warship. Vung Ro Bay is isolated and small; it was neither desirable nor practical to position a floating security element nearby. However, enemy activity in the area, primarily harassment and terror tactics, was consistently heavy. The port, with its POL and explosive-ordnance transfer activities and its relative isolation presented a lucrative target to the enemy. The fire support mission performed by the detachment, although not a documented requirement, contributed to the outpost tactical security plan, complementing the waterborne security mission, and aiding in the accomplishment of the overall mission.

(5) Cat Lai

(a) General

1. The Cat Lai detachment, the largest, was located on the site of a former French naval and seaplane base, 10 miles east of Saigon

on the Dong Nai River. Its primary function was the clearance of all waterborne ammunition for Free World Forces in the Saigon area. It was also a miscellaneous supply discharge point for MR's 3 and 4. In addition to ammunition discharge anchorages, the port had four barge discharge sites. Despite its proximity to metropolitan Saigon, the area surrounding Cat Lai is not heavily populated. The countryside is characterized by flat, marshy terrain, with moderate foliage and scattered rice paddies. Despite the frequency of both aerial and ground patrols by friendly forces, the enemy was able to traverse the area clandestinely.

2. The unit responsible for the harbor facility at Cat Lai was the 4th TTC. Its operating unit on the shore was the 159th Transportation Battalion (Terminal). The 159th was responsible for unloading ammunition from ships onto barges, which were later moved to either Saigon or Long Binh/Bien Hoa. There were also VNN organizations located at the base, including a headquarters unit.

3. The Cat Lai detachment of the 458th was responsible for the security of portions of the Saigon and Dong Nai Rivers (see Figure II-6) and for ammunition ship escort duty from Cat Lai to the Bien Hoa dredge site (see Figure II-7). These missions were performed exclusively by PBR's.

4. Ground forces in the area consisted of Army, Republic of Vietnam (ARVN) and Regional Forces/Popular Forces (RF/PF). Enemy activity in the area surrounding Cat Lai remained at a constant, moderate level, with contacts characterized by small-unit engagements and ambushes. The most significant threat confronting the Cat Lai operation was from swimmer/sapper attack and shoreline ambush, the latter being the tactic most frequently employed. The slow-moving tugs and ammunition-laden barges presented easily engaged, lucrative targets.

#### (b) Planning and Coordination

1. The Cat Lai detachment was located in the 159th Transportation Battalion (Terminal) compound. Because of its location the outport OIC coordinated administrative matters with the 159th (e.g., providing perimeter guard personnel details). The PBR's mission in the base defense plan was negligible; however, when enemy activity occurred in the harbor area, as many boats as possible were scrambled for harbor patrol. In this role, the PBR's remained under the control of the detachment OIC.

2. Coordination was made with the 159th Transportation Battalion for availability of fire support both in the harbor area and on barge escorts. For fire support missions, the boats were in communication with the detachment RTO, who maintained land-line contact with the 159th Transportation Battalion TOC. On barge escorts, the PBR's and tugs operated on the 159th Transportation Battalion's frequency and could call directly for fire support or coordination.

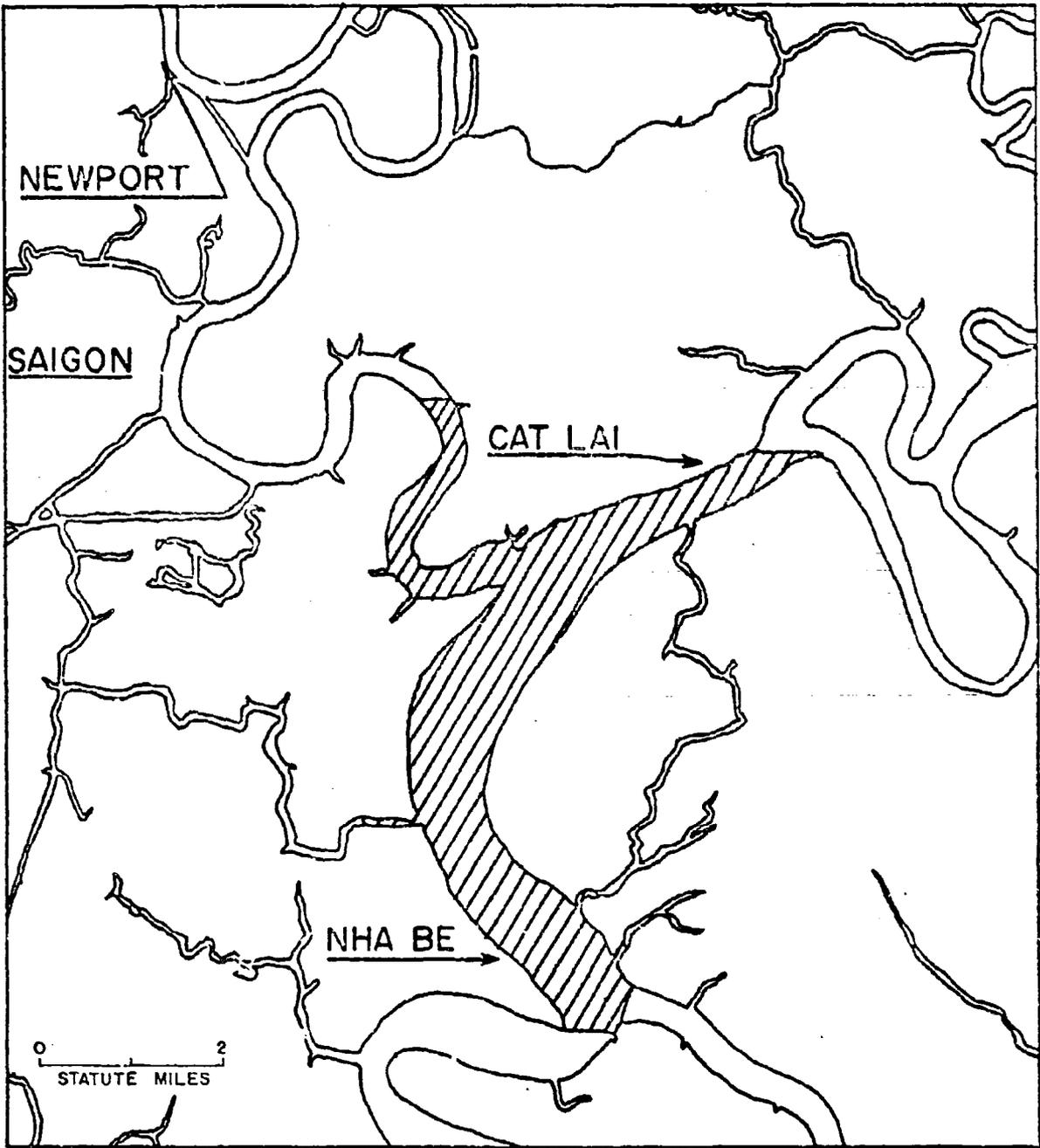


FIGURE II-6. Cat Lai Area of Patrol Operations.

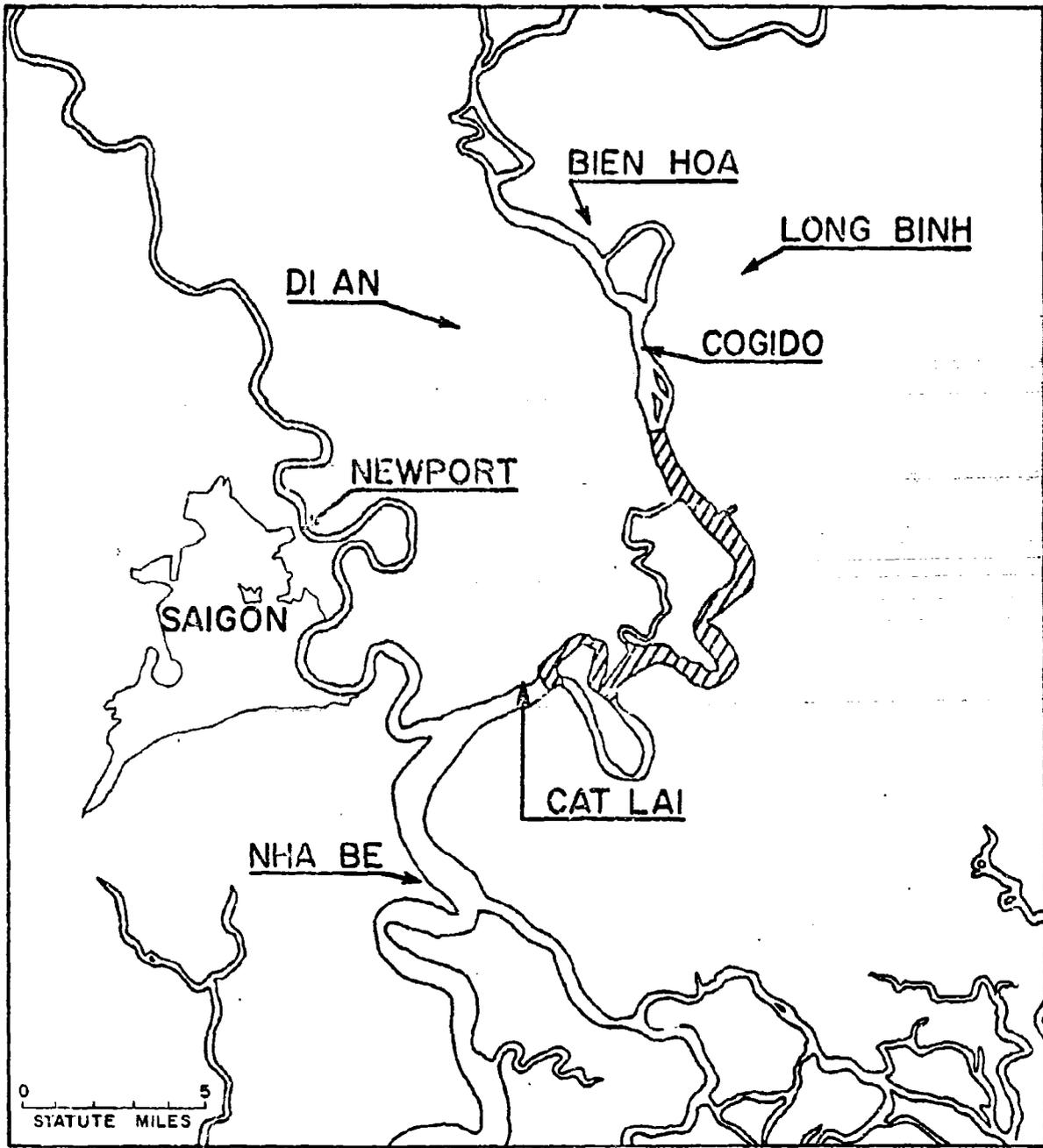


FIGURE II-7. Cat Lai Area of Escort Operations.

3. Any coordination for minor changes, additions, or modifications of a mission or part of a mission was made between the 95th MP Battalion and the 159th Transportation Battalion. Major revisions were coordinated between the 89th MP Group, 18th MP Brigade, and 1st Logistical Command.

4. Mission requirements were well established for extensive coordination between the detachment OIC and the 159th Transportation Battalion on tactical matters.

(c) Command and Control

1. Command of the Cat Lai detachment was maintained by the 458th Transportation Company and was exercised through the detachment OIC. The MP and TC personnel were quartered at Cat Lai. The MP's were assigned to the 300th MP Company (95th MP Battalion) and attached to the 458th Transportation Company. No problems were noted because of this command structure.

2. Operational control of the Cat Lai personnel was exercised by the 95th MP Battalion, through the 458th Transportation Company and the detachment OIC. Radio contact was maintained between the detachment and the company, and between the company and the 95th MP Battalion.

(d) Cat Lai Mission Performance

Four PBR's were required for day operations - two securing Cat Lai harbor and two on ammunition/POL barge escort and security. Six PBR's were required at night, with two in Cat Lai harbor, two securing Nha Be harbor, and two patrolling the lower portion of the Saigon River. A high deadline rate existed at Cat Lai and often precluded availability of the required number of boats.

(6) Newport/Saigon

(a) General

The Newport detachment was responsible for the portion of the Saigon River shown in Figure II-8. The Newport dock complex, constructed since the 1965 military buildup, is located 3 miles upriver from Saigon. It is a motor ship/cargo handling facility, capable of processing several deep-draft ships (class C2 or smaller) simultaneously. It is also capable of handling Sea/Land self-sustaining container ships. At the time of the evaluation, most war supplies (excluding ammunition) destined for the Long Binh/Rien Hoa logistics base and, ultimately, for all of MR's 3 and 4 were processed through Newport. The Saigon harbor and dock complex to the south was, prior to 1965, the only commercial deep-water port in RVN.

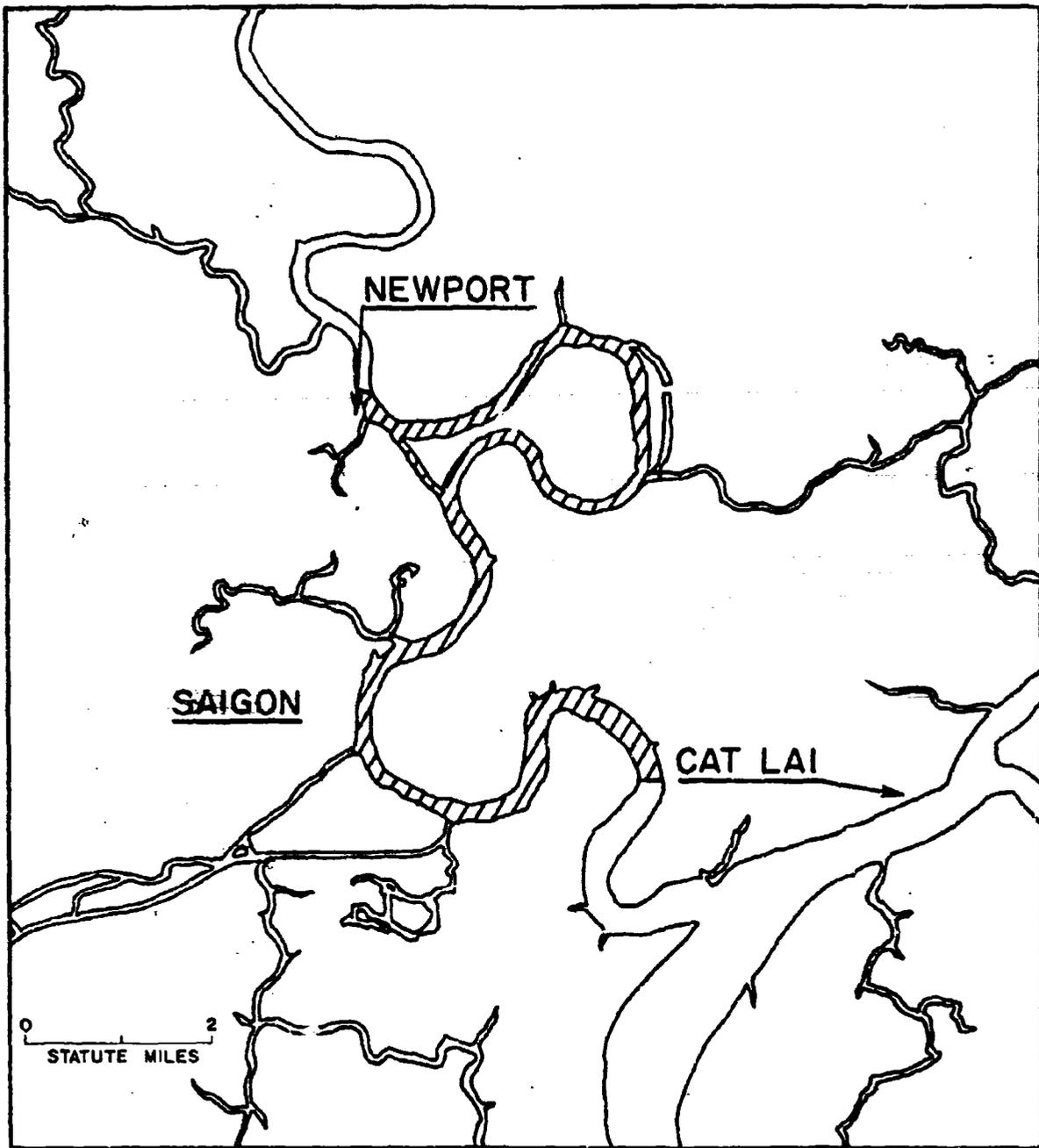


FIGURE II-8. Newport Area of Operation.

The Port of Saigon had 12 deep-draft quays for oceangoing ships. Military and commercial shipping each utilized six berths, and also shared 30 buoy-discharge sites in the river. The Saigon area constituted the largest population center in RVN. Saigon, as the capital, had expanded in all directions, resulting in severe overcrowding and congestion, and taxing all municipal services and facilities beyond design limits. This congestion included the harbor and port facilities and their land communication links.

(b) Planning and Coordination

The Newport detachment headquarters, composed of a PRR dock, control building, and small maintenance area, was located within the Newport cantonment. In administrative areas, some coordination with the port commander was necessary.

(c) Command and Control

1. Command of the Newport detachment was maintained by the 458th Transportation Company. The MP's working at this detachment were assigned to the 300th MP Company and further attached to the 458th Transportation Company for all purposes. Command was exercised through company channels by the detachment MCOIC.

2. Operational control of the Newport detachment was exercised by the 458th Company commander. The Newport detachment's RTO dispatched and controlled the boats on a 24-hour-a-day basis. The RTO operated on the 458th Transportation Company net.

(d) Newport Mission Performance

The location of the Army port facility at Newport required Army resources to provide waterborne tactical and physical security of the port facilities and vessels. The use of one PBR and two FW's during the day and two PBR's and one BW at night was required to provide adequate security for the area. A high deadline rate often precluded availability of a sufficient number of boats to meet commitments.

(7) Cogido

(a) General

The Cogido detachment was responsible for river security on the Song Cai and a portion of the Dong Nai in support of the Saigon Support Command (see Figure II-9). This area was of tactical importance because of Long Binh and Bien Hoa, where ammunition transported by barge from Cat Lai was off-loaded onto trucks.

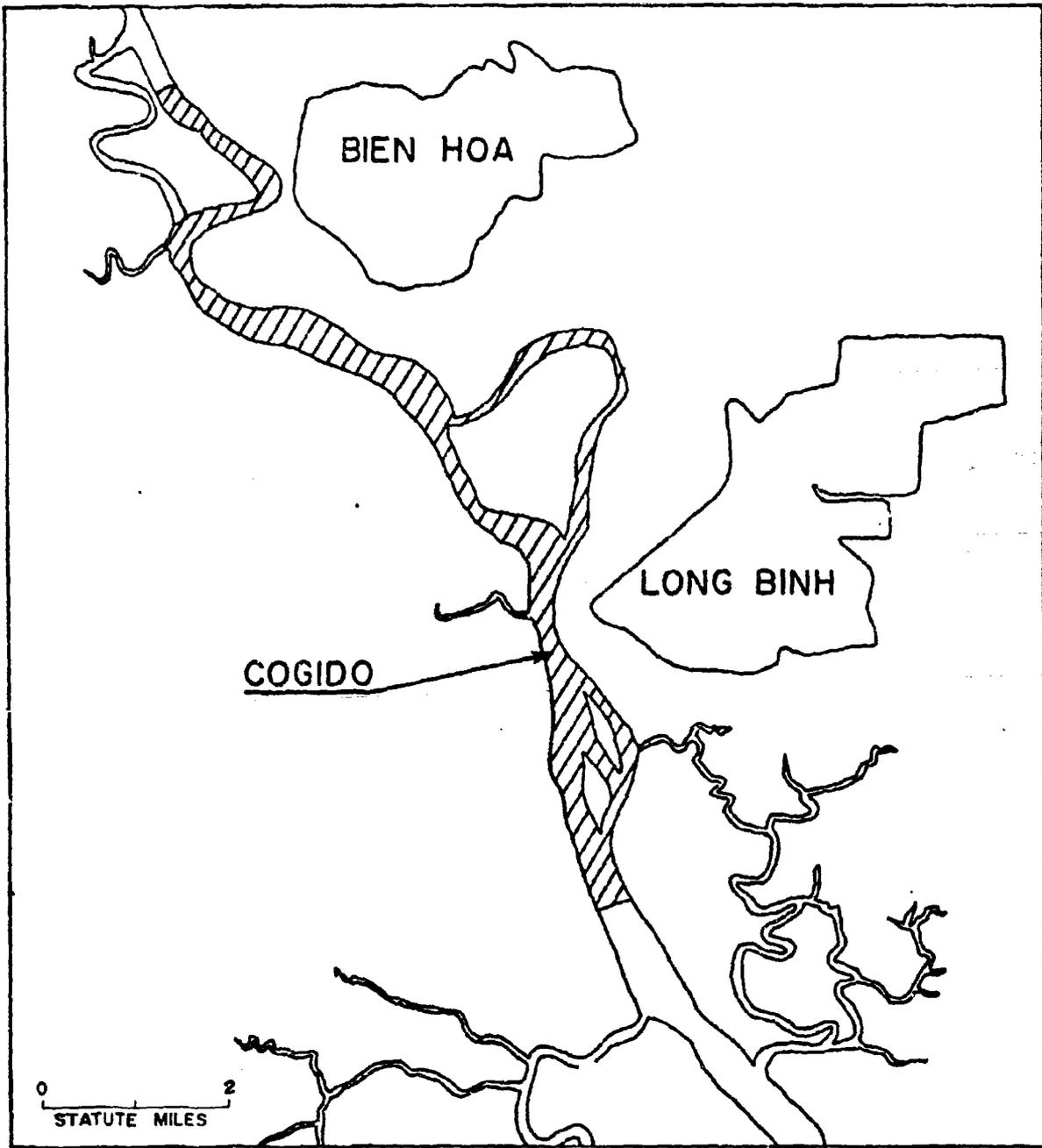


FIGURE II-9. Cogido Area of Operation.

(b) Planning and Coordination

Cogido detachment headquarters was located on a barge (obtained from the Navy) anchored on the Dong Nai, approximately one mile downriver from the Long Binh Bridge. The 720th MP Battalion also operated ambush patrols for its tactical area of responsibility from the barge. Fire support and ground support were coordinated with the 720th MP Battalion. Fire support was obtained by radio through the 720th MP Battalion TOC. Coordination was made with the 720th MP Battalion for providing boats to support or to assist ground forces, since Cogido was located within their area of responsibility.

(c) Command and Control

1. Command of transportation personnel in the Cogido detachment was exercised by the CO, 458th Transportation Company, through the outport OIC. Transportation personnel were attached to the 720th MP Battalion for quarters and rations. The MP's in the Cogido detachment were under the command of CO, B Company, 720th MP Battalion.

2. All personnel in the detachment were under the operational control of the 720th MP Battalion. The boats, operating on the 720th MP Battalion's frequency, were directed by the 720th TOC through the RTO at the detachment headquarters.

(d) Cogido Mission Performance

The Cogido detachment was the most isolated of all company detachments so far as patrol areas and the detachment headquarters were concerned. Its patrol areas were divided into three sectors - northern, middle, and southern. The northern and southern patrols could not leave their area of operations (AO) to respond to an emergency, since they both had responsibility for ammunition facilities. This left the middle patrol as the only available reaction force. There was no backup force on the headquarters barge, and the nearest detachment was Cat Lai, 40 minutes away.

(8) Nha Be

(a) General

1. The Nha Be Naval Base was the site of the 458th's major maintenance facility. It was collocated with the US naval maintenance facility and had no operational security mission. Its functions were to prepare engines and pumps for major overhauls, to perform organic maintenance within its capability, and to repair hulls. The geography of the area is identical to that of Cat Lai detachment to the north. The detachments are approximately of equal distance from Siagon (see Figure II-7).

2. Harbor defense and port security of the Nha Be area was the responsibility of the US Navy; however, the 18th MP Brigade had agreed to assume temporary responsibility for one unit's patrol area on the Nha Be River. Since the Nha Be detachment had only a maintenance mission, this patrol mission was assigned to the Cit Lai detachment. In addition to encompassing the waters adjacent to the naval base, the patrol sector also included the US Army POL tank farm in the area. The base was home port for a large number of US and RVN patrol and working boats. It was not unusual to have fifty or more boats docked at any one time.

(b) Planning and Coordination

Due to its peculiar mission, coordination at Nha Be consisted entirely of matters concerning the availability and use of maintenance facilities, tools, equipment, and technical assistance. Although conditions on the base were crowded, limited work and storage space was provided by the Navy. Major Navy items of equipment, such as boat lifts, cradles, and power tools, were also readily available, and, if necessary, operators were also provided. Naval personnel were extremely cooperative in providing instruction and guidance to newly assigned 458th personnel on an individual basis. Members of the 458th were also provided billeting and messing facilities by the Navy.

(c) Command and Control

All personnel in the Nha Be detachment were TC maintenance personnel from the 458th Transportation Company. Command and control were exercised by the company through the maintenance officer and the out-port NCOIC.

(d) Nha Be Mission Performance

Maintenance performed by the Nha Be detachment was critical to the unit's ability to accomplish its assigned mission. Lack of repair parts and personnel seriously inhibited the ability of the maintenance section to perform effectively. It was noted that the maintenance structure of the unit was divided between company headquarters and the maintenance detachment. The maintenance officer, the vessel supply officer (VSO) with attendant supply personnel, and the outboard repair facility were located at the headquarters at Di An, approximately 2-1/2 hours travel time by vehicle from Nha Be (Fig II-7). The maintenance detachment which performed all major repairs on all PBR's (except those from the Qui Nhon and Vung Ro Bay detachments) was under the control of a staff sergeant (E6) who was, by MOS, a LARC general mechanic.

c. FINDINGS\*

(1) The boats were employed in a defensive, rather than offensive, role [II-1a(1)(b); p. II-1].

\* Numbers in parentheses refer to the paragraphs of the report which support each finding.

(2) Missions such as VIP escort and security, waterborne direct fire support for shore installations, and waterborne emergency rescue operations were performed [II-1a(1)(b); p. II-1].

(3) Since US forces personnel did not exercise primary jurisdiction over local nationals, integrated patrols (VN police on PBR's) were employed. If no VN police were available for patrol, offending craft were escorted to the nearest outpost and turned over to any VN police agency [II-1a(2)(b); p. II-1].

(4) General rules of engagement were set forth in the 18th MP Brigade Regulation 525-45 and in the unit SOP [II-1a(3); p. II-2].

(5) 18th MP Brigade Regulation 525-45, dated 11 October 1969, was very comprehensive and detailed regarding boat assignment and patrol area operations [II-1b(1)(a); p. II-3].

(6) The Cat Lo detachment located at Cat Lo Naval Base had a standby requirement in the Navy's base defense plan [II-1b(2)(b); p. II-4].

(7) Cat Lo port facilities required waterborne physical security as long as they were open to US Army use [II-1b(2)(d); p. II-6].

(8) The Qui Nhon harbor security mission was shared with the US Navy [II-1b(3)(a)1; p. II-6].

## 2. OBJECTIVE 2 - OPERATIONAL TECHNIQUES

### a. Use of Intelligence

(1) Intelligence furnished to the 458th TC detachments had no effect on the actual employment of boats, because boat commitments were established at group level. At detachment level, the effect of information indicating increased enemy activity amounted only to increased vigilance and an increased usage of concussion grenades and flares.

(2) Intelligence was directed to the detachments through channels from the 18th MP Brigade, the 89th and 16th MP Groups, and the various battalions. Information was generally not timely because of delays in passing through channels. Several outposts reported receiving intelligence information only occasionally.

(3) After-action reports were used, in the case of enemy activity, as an intelligence dissemination device for local commanders and were also sent through channels to the 18th MP Brigade.

(4) Naval intelligence was received by various means, ranging from word-of-mouth dissemination to formal intelligence reports. Detachments located on US Navy installations generally received a daily Navy intelligence report.

b. Boarding and Searching

(1) Even though VN police officers were scheduled to ride PBR's, most patrols were conducted without VN police representatives aboard. If a VN policeman was aboard, it was he who boarded the sampan, conducted the search for contraband, and verified identities of the civilians aboard. When no VN police were available, the American crew conducted a spot check of the VN civilians' identification papers and searched for explosives and weapons. They were careful not to board VN sampans unless absolutely necessary, adhering as closely as possible to the rules of jurisdiction.

(2) Patrol operations and function were the responsibility of the senior MP aboard. Before stopping a sampan, crew members armed themselves with individual weapons and took assigned positions. Usually two of the crew stood on the foredeck near the forward machine guns, with one man positioned aft (standing on the engine covers) on the side toward the sampan. The PBR was maneuvered to overtake the sampan, approaching it at an oblique angle. These procedures were routine, and most sampan operators seemed to have become familiar with them. If the occupants were acting suspiciously, more caution was taken, and the crew prepared to receive possible hostile action. The PBR usually approached the sampan with the port side of the PBR's bow slightly forward of the sampan's port midship line (see Figures II-10 and II-11). This placed the PBR coxswain in a position to observe operations and to take immediate action (to back off or to ram the sampan) should occupants of the sampan act aggressively. One PBR crewman held the sampan's mooring line, rather than tying it to the PBR, so that it could be tossed free in event of an emergency. Once the two boats were in position, two of the crew provided cover for the third crew member while he talked to the sampan's occupants and directed them to lift floorboards, open cargo, etc. This procedure, having one of the boat's occupants perform the actual search at the MP's direction, lessened the chance of triggering boobytraps which might have been present; this practice was also employed by VN National Police. A cleaning rod was usually carried for probing into cargo such as grain or sand. The main armament of the PBR was rarely used in covering a sampan once it had been overtaken and was alongside. Manning the machineguns would have severely restricted the flexibility of one crew member; most important, the machineguns were virtually useless at that point, since they could be neither depressed nor traversed sufficiently to be effective at close quarters. Eighty-five percent of crew members interviewed indicated their preference for a shotgun for cover and a pistol for use in boarding and searching.

c. Techniques for Countering Swimmer/Sappers

All detachments considered swimmer/sappers the primary threat against which the 458th TC operated. The nature of this threat in RVN waters is described fully in reference b (paragraph I-1b). All detachments used visual surveillance by boat crews and concussion grenade runs as the primary techniques for countering the swimmer/sapper threat.



FIGURE II-10. Approach Procedures.



FIGURE II-11. Boarding Procedures.

d. Detachment Operational Procedures and Techniques

(1) General

Outposts differed somewhat in topography, local nature of enemy threat, type and amount of shipping in the area, the particular command and control situation, specific missions assigned, and resources available. All of these factors influenced the development of specific techniques for employment of boats by each detachment, as described in the following paragraphs. There were, however, several aspects common to all six operational detachments. (This excludes Nha Be, which had no operational security mission.) PBR's were used for all deep-water or rough-water patrols and in all situations when speed and/or firepower were likely to be factors, while BW's were used to augment PBR's (generally on daytime patrols) in close-in areas (i.e., around docks, piers, anchorages, and for general inner-harbor inspection). All operational detachments provided 24-hour security in their assigned mission areas, divided into two patrol shifts of 12 hours each; day patrol began at either 0600 hours or 0630 hours, depending on the particular detachment.

(2) Cat Lo

(a) Employment of Boats

At the Cat Lo (Vung Tau) detachment one BW and one PBR patrolled the harbor area from 0630 to 1830 hours, and one BW and three PBR's patrolled from 1830 to 0630 hours. The BW provided close-in protection to the inner harbor, while the PBR's patrolled the entire harbor to the limits defined by the 18th MP Brigade. On night operations, the BW and one PBR remained in the inner harbor, while two PBR's patrolled the entire harbor. Deviations from the above practices were made whenever maintenance requirements necessitated the replacement of a PBR by a BW.

(b) Routine Patrol Operations

1. Day patrol was initiated with an inspection of the water surface, pier facilities, and vessels within the patrol area. Fifteen buoys in Vung Tau Harbor served as anchorage for shipping. There were usually several ships and/or barges tied to these buoys at any given time. The PBR inspected the vessels tied to the buoys, logging each in a harbor log book by vessel number, type of cargo, and buoy number. Loose, broken, or damaged cargo was noted, and arrivals and departures of all vessels were recorded, as well as any changes in particular vessels or barges since previous notation. Discrepancies were immediately investigated. The entire Vung Tau harbor was off-limits to all VN craft, and PBR crews investigated all violations in their effort to interdict enemy supply lines.

2. For communications with the base station an AN/PRC-25 radio was used on BW's, and an AN/VRC-49, on PBR's. Concussion grenades were

thrown from both types of boats during the daytime, on an unscheduled basis, along possible swimmer/sapper routes of approach. When there was a reported build-up in the area, or intelligence reports indicated impending sapper attacks, additional concussion grenades were thrown. During normal daytime operations only one or two concussion grenades were thrown per hour from each boat, but during periods of increased enemy activity this number was increased to as many as six per hour.

2. Night operations were conducted in the same manner as daytime operations except for the additional requirement of illumination. The boat spotlight and hand-fired illumination flares were used to provide light for inspection of port facilities and vessels. At night, concussion grenades were thrown at an average rate of six per hour. If suspicious bubbles or debris were noticed, a grenade run was made through the area, throwing about 15 grenades. Occasionally at night, boat engines were shut down and the boat was allowed to drift for a period of time. This allowed the crew to listen for sampans that might be operating illegally in the area.

### (c) Special Missions

The Cat Lo detachment had the additional mission of providing VIP security for visiting dignitaries. Two PBR's stayed within 100 meters of VIP craft at all times. The mission of the PBR's was to keep VN boats away from the VIP craft and to provide close-in security. Occasionally the Cat Lo detachment aided in the search for a suspected drowning victim, or transported personnel from the pier to ships anchored in the outer harbor.

### (3) Qui Nhon

#### (a) Employment of Boats

The detachment at Qui Nhon used two PBR's and one BW from 0630 hours to 1830 hours, and two PBR's and two BW's from 1830 hours to 0630 hours, to patrol in designated sectors of Qui Nhon harbor.

#### (b) Routine Patrol Operations

The BW and one PBR patrolled dock and pier facilities and the close-in anchorage, while the other PBR patrolled the deep water. The boats kept VN craft out of restricted areas and, in the overall patrol areas, spot-checked these craft, their cargoes, and crews. The Qui Nhon detachment included interdiction of enemy supply lines as part of routine patrol operations. Supervisory personnel from the PBR detachment attended daily intelligence briefings conducted by the 5th TTC covering such operational items as identification of sensitive cargo, unusual port activities, and current enemy situation. This information was disseminated to boat crews during informal briefings or at roll-call formations.

prior to patrols. Boats in operation were mutually supporting, with off-duty boats and crews designated as a reaction force. Communications were maintained on the 458th detachment radio frequency, monitored by both the 5th TTC and the 93d MP Battalion. During alerts the boats often switched to the 5th TTC TOC frequency for the duration of the operation. Prior to making grenade runs or firing crew-served weapons, clearance was obtained from the 5th TTC TOC through the detachment MTO; however, this procedure was unnecessary if the situation was covered by the Rules of Engagement. Grenade runs were more frequent and intense at night and were conducted at unscheduled intervals, in a random fashion. Even the daytime grenade runs were made almost exclusively by PBR's because of their greater speed and stability. A concerted effort was made to avoid any discernible pattern in grenade employment. A procedure frequently employed at night was to shut down the engines and drift through the patrol area in a listening attitude. If available, either radar or a starlight scope was employed to discern movement. Spotlights and flares were also used to illuminate the AO either randomly or for cause. Another procedure occasionally used involved setting up the boat as a decoy in hopes of drawing enemy fire. This was accomplished by idling the engines, talking loudly, smoking, and turning lights on and off; crew stations were manned and ready to employ full firepower immediately if the enemy exposed himself. No ambushes were directed against the boats; however, they occasionally received small arms fire from the shoreline and jungle-covered hills. In the few contacts made, enemy effectiveness was neutralized by the high volume of suppressive firepower delivered by the PBR's. Since portions of the area surrounding the waters in which the PBR's operated were densely populated, crews found it very difficult to obtain clearance to fire the .50-caliber machineguns. There were fewer difficulties, however, in obtaining permission to fire the M60 machineguns or the automatic grenade launcher.

(c) Special Missions

1. The Qui Nhon detachment was occasionally called upon to perform escort missions for vessels carrying sensitive cargo from the outer harbor into the inner-harbor anchorage. This involved one PBR in escort of each ship involved. The PBR crew ran their boat ahead of the escorted ship, throwing concussion grenades to reveal any enemy swimmers/sappers or mines within the ship's path.

2. In the early phases of PBR employment, before the 18th MP Brigade regulation prohibited such action, PBR's were occasionally used in limited offensive actions. These actions were usually called for by forward air controllers (FAC's) upon spotting suspicious movement in the swamp. When entering the swamp, the PBR's occasionally became involved in fire-fights; in a few instances, the crews beached the boats and went ashore with small arms to rout the enemy, using their boat as a base of fire.

(4) Vung Ro Bay

(a) Employment of Boats

At Vung Ro Bay one PBR or BW was used during the day, and one PBR, at night. The BW generally remained within the immediate anchorage area; the PBR's covered this area and also patrolled outward to the entrance of the bay and to the northern (inner) reaches of the bay. When the BW was used alone for patrol, one PBR and crew remained on standby, in case a faster boat was needed or coverage of the farther reaches of the bay was indicated.

(b) Routine Patrol Operations

1. Day patrol began at 0600 hours and provided visual inspections of the water surface, port facilities, and vessels. The three areas of responsibility were the pier, the POL discharge point, and the anchorage. (There seldom were more than one or two ships in Vung Ro harbor.) At night concussion grenade runs were made around all three areas. The boats carefully patrolled the farthest shoreline and the entrance to the bay for enemy sampans infiltrating the northern end of the bay. On an average of twice a week, the boats were called upon to provide direct fire support to shore installations. Before the boats could fire weapons or make grenade runs, they had to obtain clearance from the harbor TOC through their RTO.

2. The boats were mutually supporting and the immediate backup reaction force consisted of the off-duty personnel and boats. Air or artillery fire support had never been used, but had it been needed, the request would have gone through the harbor TOC. In the event of an enemy attack, the boat's first responsibility was to help clear the harbor of ships. Once this was accomplished, they would patrol around the POL discharge point and pier. When the enemy probed the perimeter or attacked with ground forces, the boats were used to provide close-in fire support. The harbor TOC directed them to fire into certain areas and advised them which weapons to employ. They used .50-caliber machineguns, M60 machineguns, and 40mm automatic grenade launchers.

3. A technique frequently practiced at night was to shut down the engines and drift silently, listening for sounds and looking toward lighted areas for movement. If starlight scopes were available, the crews used them when patrolling the mouth of the bay or shoreline. Spotlights were not used, but hand-fired illumination flares were. Radar was used whenever available. As at Qui Nhon, the crews occasionally set themselves up as a decoy to draw enemy fire.

4. The detachment NCOIC received harbor operations information, intelligence, and free-fire zone information from the harbor

TOC. If the harbor TOC had a mission for the PBR's, it was relayed to the boats through the detachment RTO. If there was enemy contact, the boats and the detachment RTO switched to the harbor TOC frequency for the duration of the action and were controlled by the TOC. Before the boats could make grenade runs or fire, the detachment RTO had to obtain clearance through the harbor TOC. In reality, the harbor TOC controlled PBR operations, without having actual authority.

5. Vietnamese civilian boats and sampans were restricted from entering the bay. If a VN sampan came into restricted waters, it was stopped, identification papers were checked, and the boat was searched. The northern portion of the bay was an area of suspected VC activity. Vung Ro had no VN police capability, and the American crews had to do all police work. When a VN civilian was detained as a VC suspect or just for being in the harbor, he was eventually turned over to the PMO at Phu Hiep, 25 miles from Vung Ro Bay. The detachment had no organic transportation, and, in most cases, the VN police would not pick up detainees; this was especially true during the hours of darkness, because the roads were closed after 1800 hours. Detainees were kept at the PBR detachment until a vehicle could be obtained to transport them to the VN police station.

#### (c) Special Missions

Because of the isolation of Vung Ro Bay and the virtual lack of shipping in the area, this detachment had no escort mission. It was called upon, only on rare occasions, to provide waterborne fire support for land sweeps by friendly troops. It had no special supply interdiction mission other than that performed by routine patrols in their control of sampan traffic.

#### (5) Cat Lai

##### (a) Employment of Boats

The Cat Lai detachment used four PBR's during the day, and six at night. The harbor was covered 24 hours a day by two-boat patrols; one PBR patrolling the outer harbor, while the other provided inner-harbor security. During the day, in addition to the two boats on harbor patrol, an average of two PBR's provided escort and security for barges carrying ammunition or POL to Cogido. Night patrols used two PBR's on the lower Saigon River and two more on the Nha Be, in addition to the two assigned to Cat Lai harbor security.

##### (b) Patrol Operations

1. The day patrol, initiated at 0600 hours, provided visual and physical inspections of harbor facilities, barges, ships, and sampans. The inner-harbor PBR patrol crew consisted of two MP's, two TC's, and a VN policeman. They were responsible for Cat Lai Harbor, with emphasis

placed on ammunition ships anchored in the harbor and off-loading into barges. Primary responsibility was the security of ammunition ships; therefore, all VN boats were kept away from the general area. VN watercraft were stopped and searched by the VII police on the PBR's. The outer-harbor patrol, in its coverage of the open water between Cat Lai and Nha Be, bore most of the responsibility for the detachment's mission of interdicting VC/NVA supply routes. No VII police were carried by this patrol; however, joint checkpoints were set up with the VN police several times a week, when VN boats were stopped and searched. Concussion grenades were not used during the day because of the frequent presence of friendly divers in this area performing hull inspections and other maintenance.

2. Night operations in both inner and outer harbor were conducted in the same manner and with the same number of crewmen as daytime operations. Flares and the boat spotlight were used to provide illumination for visual inspections; concussion grenades were occasionally employed, but only after clearance from the 159th Transportation Battalion TOC. At night, additional PBR patrols were used. Two PBR's with normal crews provided security at the Nha Be harbor facility and its POL tank farms. Operations consisted of visual inspection by use of illumination devices and search of all VN boats entering the area. Two additional PBR's patrolled the open water between Nha Be and Cat Lai at night, with their primary mission the interdiction of NVA/VC supply lines. They did not carry VII police.

3. All PBR's communicated through the detachment RTO on the 458th TC frequency. The detachment RTO had either landline communication with the company or radio contact via relay. If a higher level decision was needed, the company used landline communication with the 95th MP Battalion.

#### (c) Special Missions

Cat Lai had the additional mission of daytime escort of ammunition barges from Cat Lai and POL barges from Nha Be to be offloaded at Cogido (Long Binh/Bien Hoa). Escort missions, each consisting of one PBR with a normal four-man crew, averaged two a day. The PBR preceded the escorted tug and barge, provided close-in security, and maintained radio contact on the 159th Transportation Battalion frequency. This allowed them to communicate with the tug as well as the Transportation TOC for requesting fire support and reaction forces. PBR's often received fire from small arms, automatic weapons, and RPG's while performing this mission. If a heavy volume of fire was encountered, the PBR would immediately return suppressive fire until the tug and barge cleared the area. When a small volume of fire (i.e., sniper action) was encountered, the crew obtained clearance to fire from the 159th Transportation Battalion TOC before returning fire.

(6) Newport

(a) Employment of Boats

The Newport detachment used two BW's and one PBR from 0630 hours to 1830 hours to conduct waterborne security operations within the Saigon-Newport area of the Saigon River. From 1830 hours to 0630 hours, two PBR's and one BW were on patrol with the BW patrolling the area in the immediate vicinity of the Newport docks. Emphasis was placed on observation of the water surface for enemy swimmer/sapper personnel and for explosive devices near or attached to ships or piers.

(b) Patrol Operations

1. Day patrols provided visual inspection of water surface, port facilities, and vessels in the area. (Large cargo vessels were usually tied to the Newport docks, and their cargo off-loaded directly onto trucks.) During the day, the PBR patrolled the entire port area, making visual inspections as well as physical searches of VN boats on the river. The two BW's patrolled close to the port facilities and vessels to perform inspections.

2. Night operations employed two PBR's and one BW. The BW performed close-in scrutiny of the vessels and port facilities, while the PBR's supported each other in patrolling the entire harbor area. Illumination devices were used to aid visual inspections. Composition of night crews was the same as that of daytime crews.

3. Radio contact was maintained with the boats by the detachment RTO. The AN/VRC-49 was used on the PBR and an AN/PRC-25 on the BW. The detachment operated on the 458th TC frequency and could request fire support through the company TOC. If a higher level decision were required, the company contacted the 95th MP Battalion by landline.

(7) Cogido

(a) Employment of Boats

The Cogido detachment used two PBR's to provide close-in security for ammunition discharge points at Long Binh and Bien Hoa on the Dong Nai River. The PBR serving the Bien Hoa site also conducted periodic security checks of the Dong Nai sand-dredge site. A third PBR conducted open-river patrols within the entire Cogido area of responsibility and was on call if needed by the PBR's securing the two ammunition discharge sites. All three PBR patrols were operational 24 hours a day.

(b) Routine Patrol Operations

1. Day patrol was initiated at 0600 hours and consisted of visual inspection of the water surface, ammunition discharge sites, and those barges and vessels within the particular patrol area. The two patrols securing the ammunition discharge sites had three-man crews, each composed of two TC's and one MP, who generally performed visual inspection while drifting. All VN boats were kept away from the discharge sites. The patrol covering the entire Cogido area of responsibility had a crew of two MP's, two TC's, and, normally, an ARVN interpreter. This patrol checked the entire waterway and VN craft in the area. The ARVN interpreter had no actual police authority, but did search VN boats. The Cogido detachment was under the operational control of the 720th MP Battalion, because Cogido was located in its TAOR. (If B Company needed a boat for support, the center patrol PBR was used, rather than either of those patrolling ammunition discharge sites. Second to B Company's requirements in priority was coverage of ammunition discharge sites.)

2. Night operations were conducted in much the same manner as daytime patrols and with the same crew composition. Flares and boat spotlights were used to provide illumination for visual inspection. Patrol areas, mission priorities, and methods of operation remained the same as for daytime patrols. Fire support was available through the 720th MP Battalion TOC.

(c) Special Missions

The Cogido detachment had the mission of providing waterborne fire support to ground troops of B Company, 720th MP Battalion operating in the Cogido area. They also had the mission of transporting backup troops to various areas in the TAOR, if required by the ground commander.

(8) Nha Be

Nha Be detachment had a company maintenance function but no tactical mission. Although authorized 20 maintenance personnel under supervision of a warrant officer, strength at the time of evaluation was only nine; both the unit maintenance officer and the detachment NCOIC considered this number most inadequate in view of the workload. The primary maintenance functions served by Nha Be were replacement of engines and other major components and repair of hulls. Lower echelon maintenance was performed at individual detachment level, and more extensive maintenance requirements were referred to Marine Maintenance Activity, Vietnam. The detachment used Navy facilities and tools.

b. FINDINGS

(1) Intelligence furnished the 458th TC detachment affected only vigilance and usage of concussion grenades or flares; boat commitments were made at group level [II-2a(1); p. II-21].

(2) Intelligence furnished the detachments was not timely, due to delays in its transmission through channels from the 18th MP Brigade, 89th and 16th MP Groups, and the various battalions [II-2a(2); p. II-21].

(3) After-action reports were sent to local commanders and to 18th MP Brigade [II-2a(3); p. II-21].

(4) Whenever possible, a VN policeman was carried on board to conduct boarding and search of VN watercraft [II-2b(1); p. II-22].

(5) As a means of protecting against boobytraps, both US personnel and VN police used the technique of having occupants of halted VN watercraft perform the actual search of their own boats [II-2b(2); p. II-22].

(6) The main armament of PBR's was seldom used for covering halted sampans once they were alongside [II-2b(2); p. II-22].

(7) Eighty-five percent of PBR crew members interviewed indicated a preference for a shotgun for close-in coverage of halted watercraft and a pistol for use when boarding and searching [II-2b(2); p. II-22].

(8) All detachments considered swimmer/sappers the primary threat against which they operated; techniques for countering this threat consisted of visual surveillance and concussion grenade runs [II-2c; p. II-22].

(9) The six operational detachments used PBR's for all deep-water or rough-water patrols and whenever speed and/or firepower were factors; BW's were used only to augment PBR's (generally on daytime patrols) in close-in areas (i.e., around docks, piers, anchorages, and general inner-harbor inspections) [II-2d(1); p. II-24].

(10) All six operational detachments operated 24-hour coverage, divided into two patrol shifts of 12 hours each; day patrol started at either 0600 hours or 0630 hours, depending on the particular detachment [II-2d(1); p. II-24].

(11) The Cat Lo detachment kept a complete harbor log of all vessels - arrivals, departures, name and apparent condition of cargo, and other information of possible use [II-2d(2)(b); p. II-24].

(12) Some detachments reported using the technique, at night, of drifting silently with engines shut down and listening for signs of enemy activity [II-2d(2)(b)3; p. II-25; and II-2a(4)(d)2c; p. II-27].

3. OBJECTIVE 3: CAPABILITIES AND LIMITATIONS OF THE PBR AND THE BOSTON WHALER INCLUDING WEAPONS AND COMMUNICATIONS SYSTEMS.

a. PBR Capabilities and Limitations

(1) PBR Design

(a) General

All personnel interviewed indicated that the PBR was a suitable craft for the missions performed in RVN. The boat is capable of providing high-speed mobility on inland waterways and port areas, and has some deep-water capability. The organic PBR armament provided the capability of delivering a high volume of suppressive fire.

(b) Size

The tidal effects on the depth of the inland waterways in RVN limited the areas in which the PBR could travel. Many of the inland waterways have sandbars. At low tide, the PBR had to remain in the river channel or risk damage. Although the PBR draws only 2 feet when dead in the water, it cannot traverse many of the side streams that feed the rivers. This has not been a serious problem, as PBR's were seldom required to travel on small streams. The PBR displayed a relatively high degree of stability, an attribute which is particularly useful in port areas where the waters become rough during evening hours.

(c) Safety Equipment

1. The water-safety equipment on board was generally considered adequate by the crew members. However, the standard kapok life jacket supplied was bulky, uncomfortable, and severely restricted movement. As a result, many crew members did not wear it, and suggested that it be replaced with a compact, inflatable type.

2. The firefighting equipment for the PBR consisted of two dry-chemical fire extinguishers; crew members did not consider these adequate. The loss of a boat at Cat Lo in May 1969 demonstrated that the two on-board extinguishers are not sufficient to extinguish a electrical fire. It was suggested that two CO<sub>2</sub> fire extinguishers be added to eliminate this problem.

3. Deck shoes are authorized for wear aboard the boats, but generally have not been available through supply channels. This shortage presented a safety hazard, because heavy boots and bloused trousers make it difficult for a crew member to swim or even stay afloat, if thrown into the water.

(d) Crew Stations

All crew stations were considered adequate except for the forward gun emplacement tub, which was found to restrict the operator's movement, especially when the kapok life jacket was worn. This made the operation of the weapons difficult; at times gunners were unable to cock the twin .50-caliber machineguns without assistance from another crew member. Enlargement of the gun tub, or movement of the guns forward, along with the adoption of a CO<sub>2</sub> inflatable life belt were suggested to alleviate this problem.

(2) PBR Propulsion System

(a) General

The propulsion system was considered adequate by all personnel interviewed. Problems encountered were attributed to lack of training, improper or inadequate maintenance, and environmental effects.

(b) Engine

Maintenance personnel stated that the major problem encountered with the engine was cracking of cylinder sleeves and heads. They felt that improper operating procedures was the probable cause. The PBR engine has a required warm-up and cool-off period when initiating or concluding operations, and these procedures were not always followed. For a detailed discussion of engine problems, see paragraph II-5d(2).

(c) Waterjet Pumps

The Jacuzzi waterjet pumps were considered adequate by all personnel interviewed. However, excessive wear was experienced, causing a decrease in the efficiency of the pumps. It was considered by PBR personnel that this problem is directly related to the debris and silt content in the RVN waterways and has been compounded by the lack of replacement parts in the supply system. Adequate routine maintenance could reduce or prevent the actual clogging of the pumps with debris, which occurred occasionally.

(d) Controls

The controls for the boat (see Figure II-12) were considered adequate by all personnel interviewed. Brighter control-panel lights for night illumination was the only change recommended. It was recommended that a higher wattage bulb with rheostat control be installed.

(e) Fuel Systems

The only problem area noted in the fuel system was the large number of inoperative fuel gauges. This did not cause major operational problems, however, because each boat was equipped with a fuel measuring dipstick.

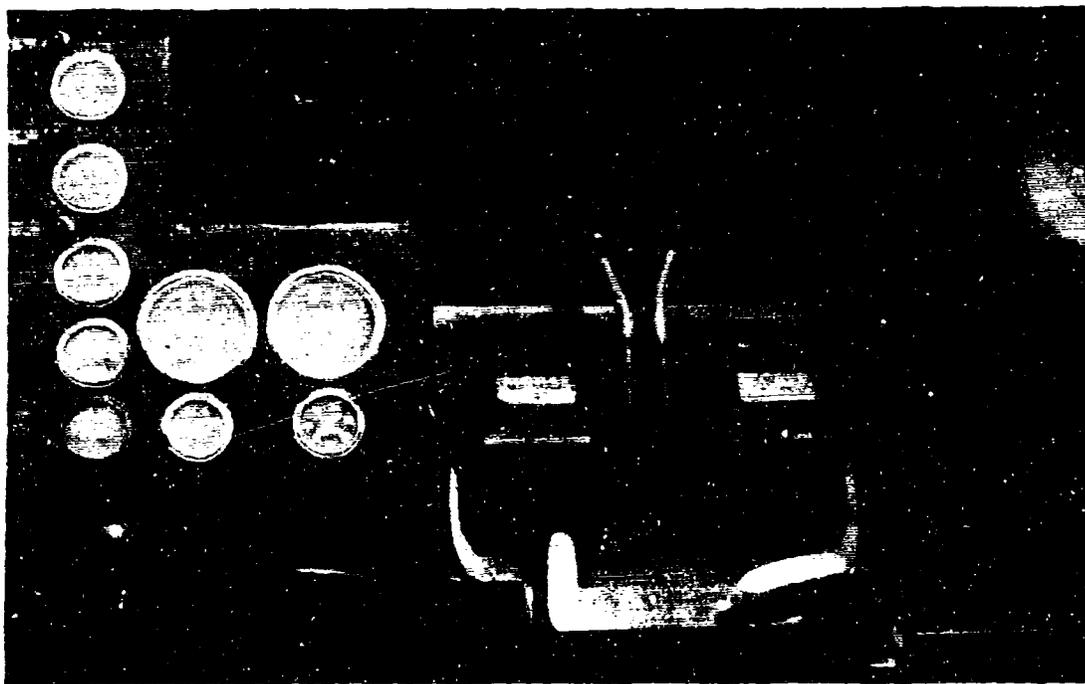


FIGURE II-12. Control Panel (Coxswain's Station).

(3) PBR Electrical System

The PBR power supply is a 24-volt, two-wire, negative-ground electrical system, consisting of power sources and regulation equipment, power distribution equipment, and power loads. Major problems in the electrical system had been encountered (an electrical fire resulted in the total loss of one PBR); however, the 458th was authorized no maintenance personnel trained to repair the electrical system, resulting in attempts by crew members or other maintenance personnel to repair the system. This generally compounded the electrical problem, since the "quick-fix" was usually wired around the problem area rather than correcting it.

(4) PBR Pumping Systems

The PBR has three pumping systems; seawater, fuel stripping, and bilge.

(a) Seawater Pumping System

The primary purpose of the seawater pumping system is to cool the fresh water in the engine cooling system. Secondary purposes are to cool engine exhaust and to prime the bilge pump. The seawater pumping system was judged adequate by personnel interviewed; problems encountered in this area resulted from crew inefficiency or lack of knowledge, rather than from inherent equipment shortcomings.

(b) Fuel-Stripping System

The hand-operated fuel-stripping pump, with a capacity of 3 quarts per minute, permits the fuel tanks to be purged of water and other impurities that collect in the tank sump. This system can also be used to empty the fuel tanks. All personnel interviewed considered the system adequate.

(c) Bilge Pumping System

The bilge-pumping system is a two-way system with both power and manual pumping capabilities. The power bilge pump is operated by the port engine and has a capacity of 110 gpm. It was considered adequate by all those interviewed. The bilge system also includes an emergency suction hose (see Figure II-13, pump-out attachment kit) which can be attached to either Jacuzzi propulsion pump and has the capability to displace a large volume of water quickly. Many of the outports experienced problems with the bilge-pumping system, caused by a large amount of silt and debris in the water. There were several instances noted in which an electrical bilge pump from an APC had been installed to replace the original bilge pump. This was due to a lack of readily available replacement pumps in the supply system. Crew members considered the power bilge pump to be satisfactory when in proper working condition. Failure of the bilge system could not be considered a limitation during routine operation of the boat; however should the hull become damaged and the PBR start to take on water, the boat might have to be beached in order to prevent sinking.

(5) PBR Weapons Systems

(a) On-Board Armament

PBR armament includes forward-mounted twin M2 .50-caliber machineguns, a single M2 .50-caliber machinegun aft, and a 40mm automatic grenade launcher mounted to the rear of the cockpit.

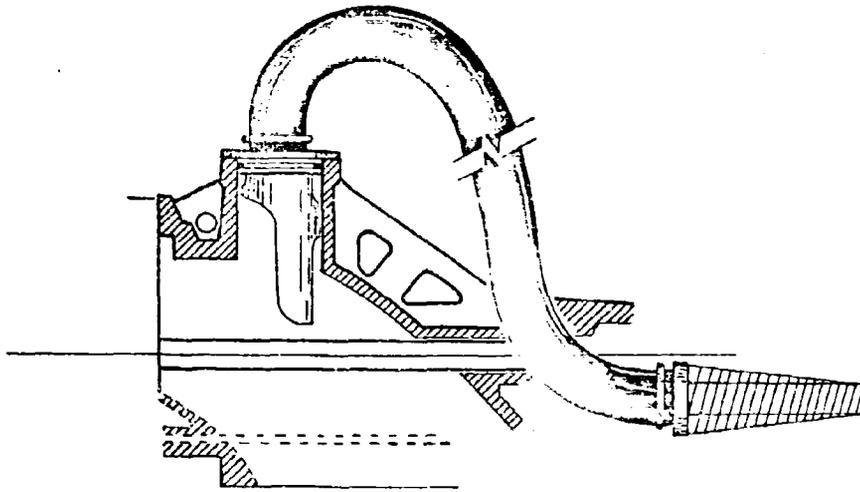


FIGURE II-13. Pump-Out Attachment Kit.

1. The forward emplacement consists of gunner's tub and a MK 56 Mod-0 universal gun mount (see Figure II-14). Although this position can accommodate twin .50-caliber machineguns, M60 machineguns, 20mm cannon, or 40mm grenade launchers, the only weapons used in this mount by the unit were twin .50-caliber machineguns. A 450-watt searchlight was coaxially mounted on the forward guns. The forward twin .50-caliber machineguns were considered adequate by all personnel interviewed. However, some outports would have mounted twin M60 machineguns had they been available.

2. The aft emplacement (see Figure II-15) consisted of a MK 46 Mod-1 gun mount, which can accommodate the same weapons as the MK 56 Mod-0 mount, or a US Navy 60mm mortar. The aft gun emplacement was considered adequate by all personnel.

3. An additional gun mount for the organic Honeywell 40mm automatic grenade launcher (see Figure II-16) had been added to the starboard aft ballistic plate. All crew members interviewed felt that a 40mm automatic grenade launcher was not only desirable but actually mission-essential, due to the requirement for area-suppressive fires. However, there was unanimous dissatisfaction with the Honeywell MK 18, due to its high failure rate.



FIGURE II-14. Forward .50-caliber Gun Tub.

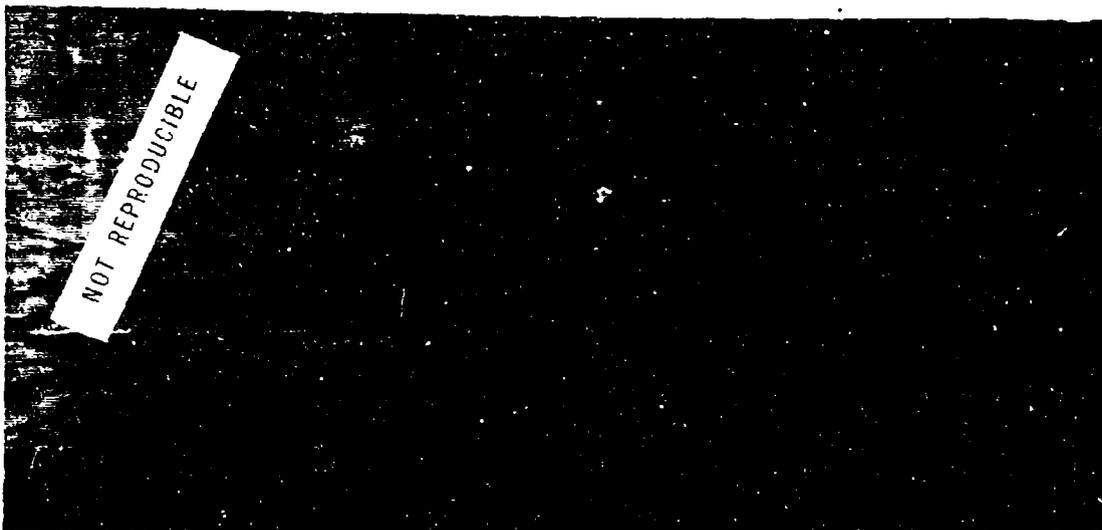


FIGURE II-15. Aft .50-caliber Gun Emplacement with Ballistic Shields.



FIGURE II-16. MK 18 40mm Honeywell Grenade Launcher Mounted on Starboard Aft Ballistic Plate.

#### 4. Machineguns

Many of the PBR's mounted an M60 machinegun in addition to the automatic grenade launcher, or in place of the launcher when it was not operational. Crew members stated that the M60 had proven to be an excellent intermediate weapon between the .50-caliber machinegun and the M16 rifle. With the exception of the Vung Ro Bay detachment, all detachments had problems associated with firing in populated areas. Severe .50-caliber machinegun restrictions did not apply to the M60 machine guns; therefore, it had a high degree of acceptance by crew members. None of the crews interviewed criticized the .50-caliber machinegun on the basis of performance. It appeared that, in some detachments (notably those operating in congested areas) a mix of .50-caliber and twin M60 machineguns was necessary for mission accomplishment. The concept of twin machineguns is a concession to the difficulties encountered in delivering accurate fire from a constantly moving gun platform such as the PBR.

5. One outpost obtained a US Navy 60mm mortar (see Figure II-17) and mounted it on the aft emplacement of the PBR. This weapon can be drop-fired or trigger-fired, and used for both direct and indirect fire.

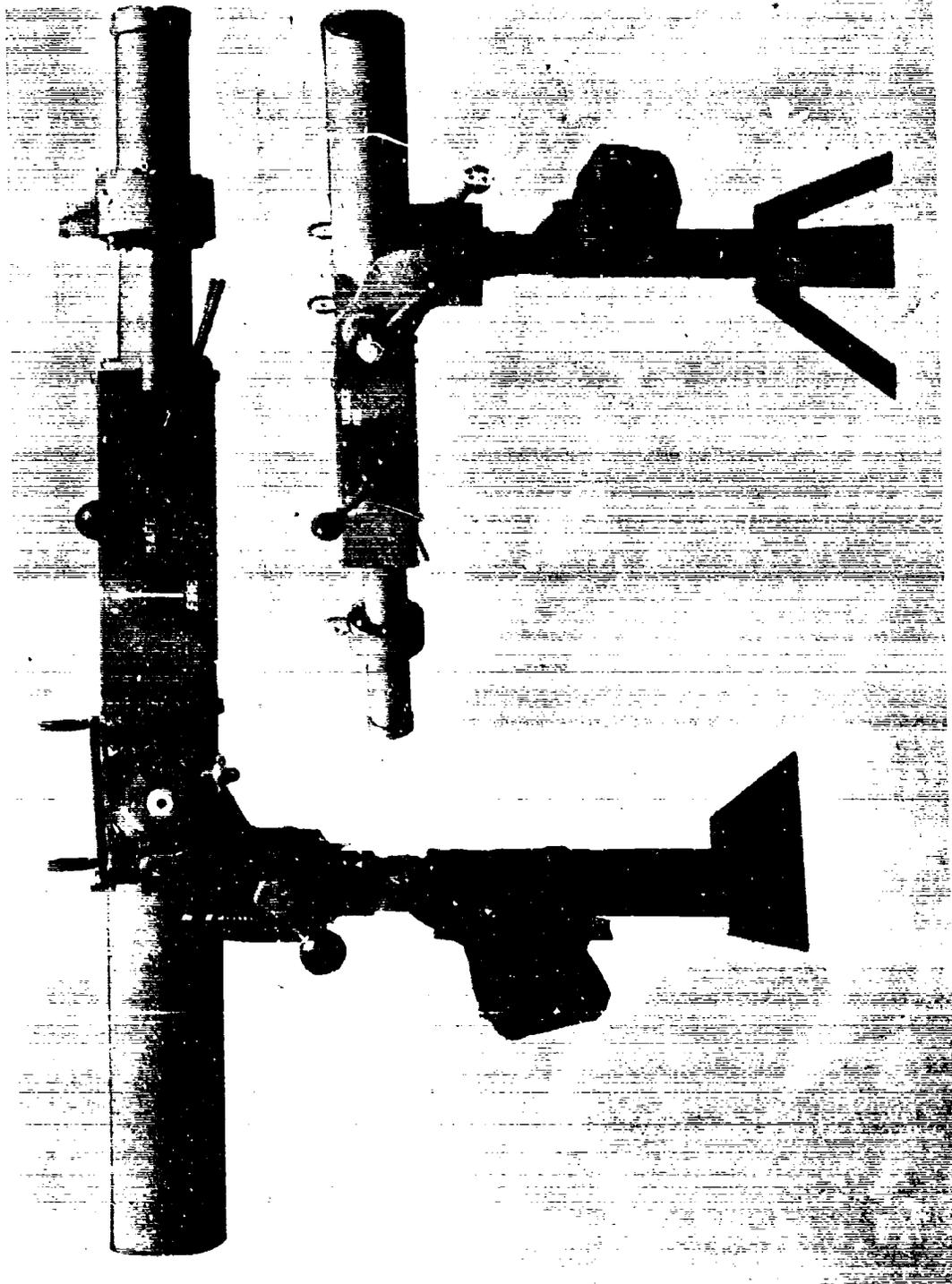


FIGURE II-17. 60mm Naval Mortar on Gun Pedestal.

(b) Individual Crew Weapons

The complement of small arms for each PBR consists of two M79 40mm grenade launchers, three M16 service rifles, one 12-gauge shotgun, and one .38-caliber revolver. This authorization of small arms was generally considered adequate. However, there was a critical shortage of shotguns, due to maintenance and supply problems. Some crews stated a preference for a second shotgun to be issued in lieu of a service rifle. Crew members considered the shotgun an ideal weapon for covering boat crews while conducting searches, because of its ease of handling, broad coverage, and psychological impact.

(c) Ballistic Protection

Ballistic protection is provided on each gun mount. The forward cockpit has three ballistic plates to protect the coxswain. These plates were designed to withstand .30-caliber ball ammunition at zero obliquity. Crew members were satisfied with the location and characteristics of the ballistic plates.

(d) Concussion Grenades

Concussion grenades have been employed as defensive weapons at all outposts to force enemy swimmers/sappers to the surface. The unit SOP gave specific instructions for their employment; however, the number of grenades used per hour or per shift was governed by local policy, available supply, direction and speed of tide or river currents, and by the level of enemy activity. Some outposts prohibited use of fragmentation grenades; others used them if concussion grenades were not available. The use of concussion grenades was considered a suitable psychological deterrent against enemy attacks, particularly when massively employed in a concentrated area. Preplanned grenade runs were made from PBR's instead of BW's because outpost personnel considered the PBR to be safer for that mission.

(e) Weapons and Ammunition Storage

1. Weapons and ammunition storage was generally considered satisfactory. Some crew members recommended that a waterproof weapon storage locker be mounted in the upright position to protect the weapons while making access easier.

2. The ammunition storage capacity for the PBR was considered satisfactory. Ammunition in excess of the basic load was often carried with no storage problems encountered.

(6) PBR Communications System

(a) Equipment      ➤

Each PBR is equipped with the AN/VRC-49 radio system consisting of two transceivers (AN/VRC-46's) operating independently with

separate antennas, a remote control box, and auxillary loudspeakers. Both transceivers are inclosed in watertight cases and mounted on a shock-insulated platform. All personnel interviewed considered the radio satisfactory and adequate for the mission requirements. However, a high deadline rate occasionally limited each PBR to only one AN/VRC-46 radio; this severely restricted the communications capability.

(b) Procedures

1. All outports had an RFO on duty 24 hours a day. With the exception of Cat Lo, all outports used the RFO located at the outport headquarters to dispatch and to control the boats. The Cat Lo boats operated on the Vung Tau Provost Marshal net and were controlled by the MP desk sergeant in Vung Tau. The Cat Lo outport had no radio capability, communicating by landline telephone with the MP desk sergeant. Communications procedures were generally the same as for the command and control element. The RFO at the outports (with the exception of Cat Lo) monitored all patrol radio traffic within the Tactical Area of Responsibility (TAOR), and relayed messages, incidents, reports, and other significant traffic to the appropriate MP Battalion FOC. When the MP Battalion FOC received requests, they were relayed to MP Group Headquarters for approval/disapproval. Retention of decision-making authority by higher headquarters frequently caused considerably delay. Figure II-20 illustrates the outports' communications nets.

2. All outports maintained the respective MP battalion Communications Emergency Operating Instructions (CEOI), and MP-10 series brevity code (a means of shortening radio-telephone transmissions by using numerals to replace phrases or sentences). Each outport had also developed code words unique to their location and generally transmitted in the clear, using a mixture of 10-series codes and unique code words (one example was the call "10-12 for distribution", meaning that the boat was out of service to pick up food). To everyone's knowledge, none of the outports had ever changed code words.

(7) PBR Radar System

(a) Description

Standard radar on the PBR is a limited-range, high-resolution, low-error, PPI system. It consists of an indicator control unit, mounted inside the coxswain's cabin, and a mast-mounted radar transmitter/receiver head (see Figures II-19 and 20). Interconnecting cabling connects the two major components, and power for the system is drawn from the boat's 24-volt DC system.

(b) Operational Requirements

Boat captains and crew members considered radar capability a requirement for night patrols. Port facilities and inland waterways

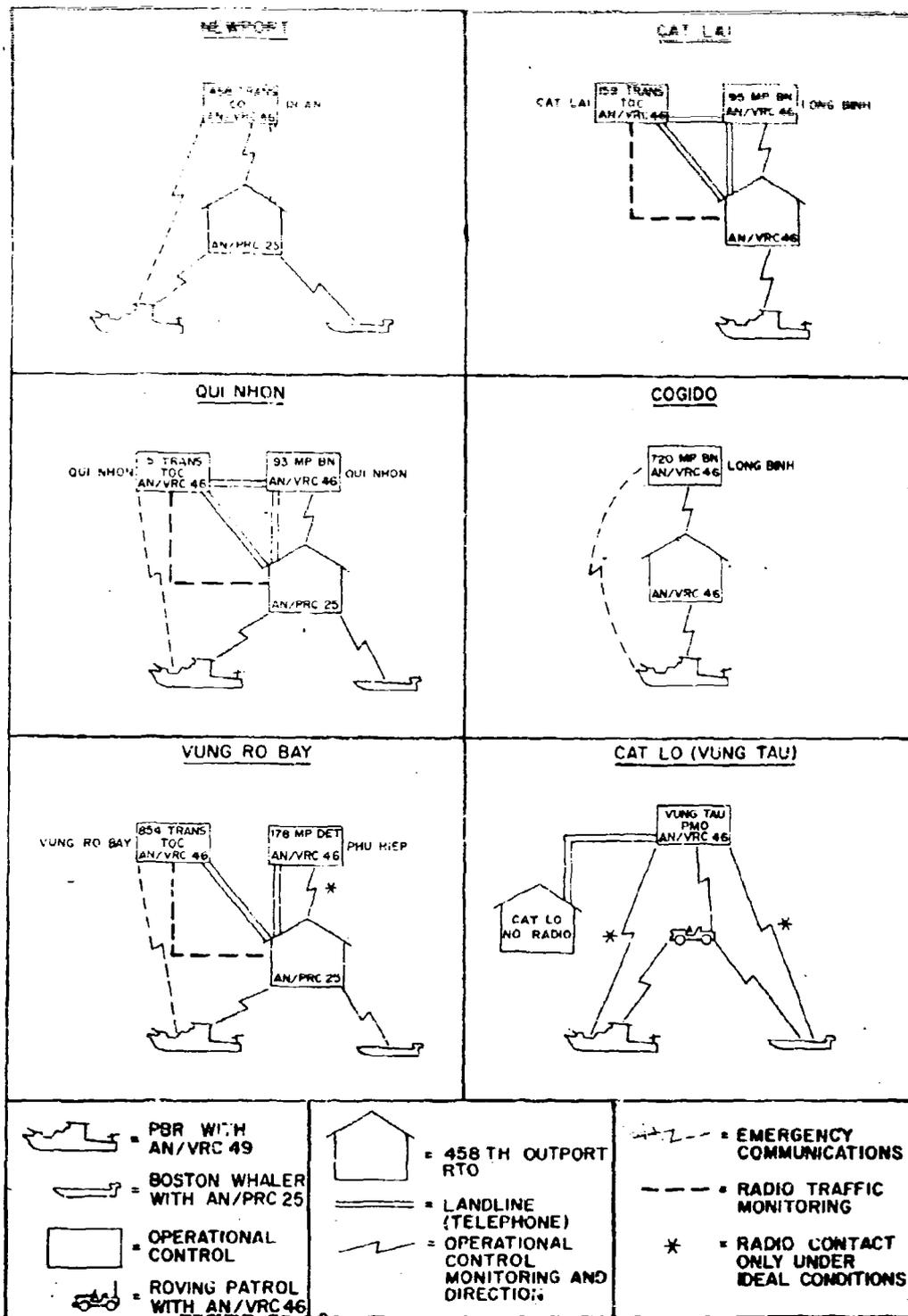


FIGURE II-18. Outports Communications Nets.



FIGURE II-19. Mast-Mounted Radar Transmitter/Receiver Head.

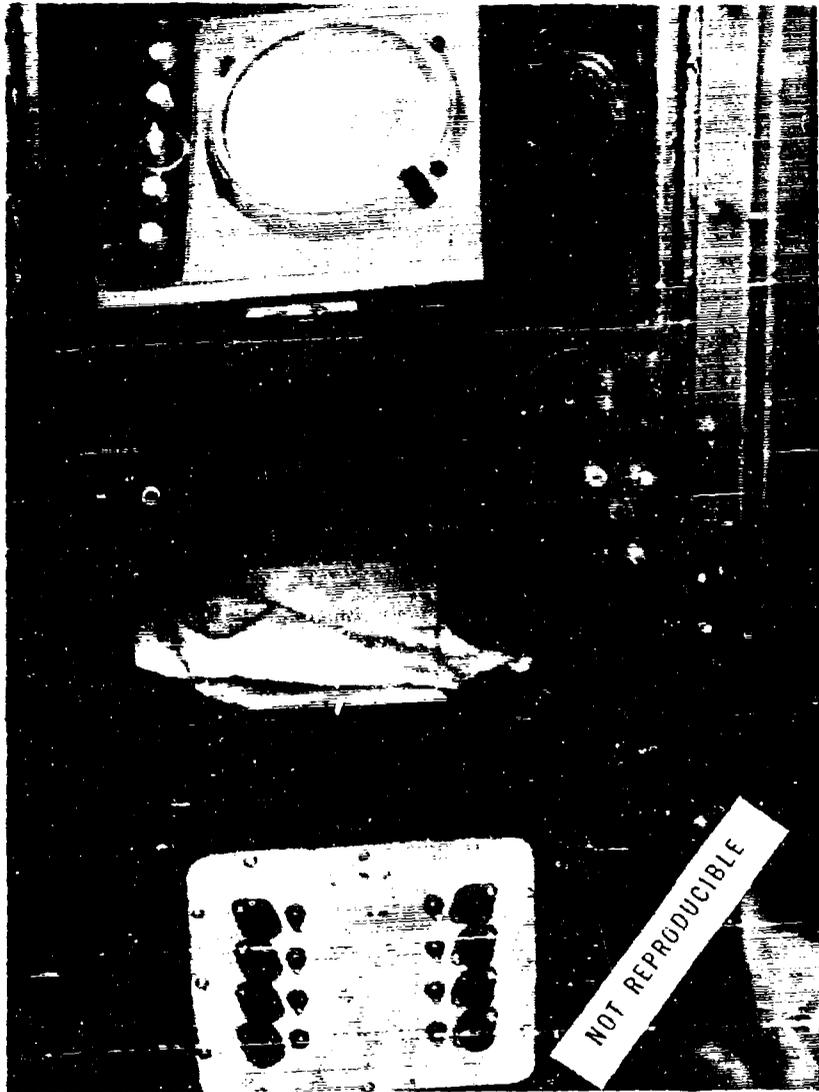


FIGURE II-20. Radar Indicator Control Unit Mounted in Coxswain's Station.

patrolled by the various detachments were minimally lit if at all, and supplementary lighting consisting of boat spotlights and hand-fired illumination flares had proven only partially effective. (The spotlight has limited candlepower, and flares have a brief burn time.) Visual inspection was the primary mission of the patrols, and the radar system greatly facilitated mission accomplishment during periods of darkness or other periods of low visibility. The system allows the crews to shut down engines, drift through the patrol area, and maintain area surveillance without compromising their own position.

(c) Problem Areas

The PBR radar set was a component of the boat; therefore, the company initially had 39 radar sets. One set was lost when a PBR was destroyed by fire, and of the remaining 38 radar sets, only four were operational at the time of the evaluation. Interviews with crew members revealed that radar usage was minimal, due to crew unfamiliarity and/or equipment downtime. [A discussion of radar maintenance problems is presented in paragraph II-5d(5)].

b. Boston Whaler Capabilities and Limitations

(1) BW Design

All personnel interviewed stated that the BW was generally satisfactory for the assigned missions. Its only limitation was imposed by rough water. The only modification to the boat design was the installation of an improvised control console (see Figure II-22). Some crew members also recommended a design change to reinforce the rim around the top of the boat.

(2) Outboard Motors

(a) The authorized outboard motors and the motors on hand during the evaluation period are summarized in Figure II-21.

SIZE MOTOR (HP)	MOTORS AUTHORIZED	MOTORS ON HAND	
		DEC 1969	MAY 1970
85.0	0	2	0
80.0	0	2	0
40.0	36	22	17
9.5	0	2	2
TOTAL	36	28	19

FIGURE II-21. Summary of Outboard Motors Authorized and On Hand.



NOT REPRODUCIBLE

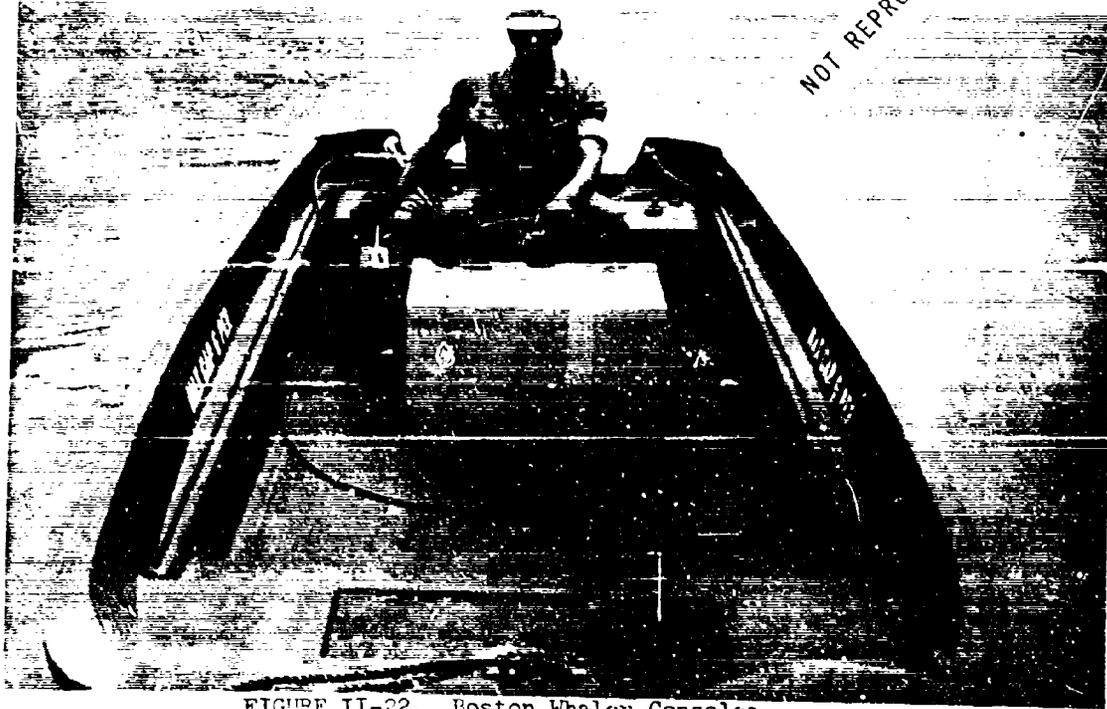


FIGURE II-22. Boston Whaler Consoles.

(b) When the BW's arrived in country, both 40-hp and 80-hp outboard motors were provided. However, the manufacturer of the 80-hp motor stopped production of that model and began manufacturing an 85-hp motor. The US Navy used the 85-hp motor as the standard outboard motor for the BW, and encountered problems relating to the interchangeability of parts and components because of the manufacturer's changing models. Experience with the 80/85-hp motors revealed that operation at slow speeds resulted in a high rate of carboning and battery drainage.

(c) Patrolling congested waterways required slower speeds; therefore, 9.5-hp motors were issued for use in a dual role with the 80/85-hp motors. The concept was to use the 9.5-hp motor as the primary patrol motor and to use the larger motor for higher speeds; i.e., to overtake other watercraft and to respond to calls.

(d) An evaluation of outboard motor problems in RVN was made by USAMC, Mobility Equipment Command. Their recommendation was to standardize the 40-hp outboard motor as the general-purpose motor for use in RVN. This recommendation was based on mission requirements, logistical support, and safety. It was felt that using two 40-hp motors instead of an 80/85-hp motor would provide greater flexibility if one of the motors failed. However, during the evaluation period, no BW's were observed using twin 40-hp motors. The outposts operated with only one 40-hp motor per boat, due to high failure rates and shortages of authorized assets. It was felt by all BW crew members that one 40-hp motor did not provide sufficient power and flexibility to satisfy mission requirements.

### (3) Weapons Systems

The BW has no organic armament. However, an M60 machinegun pedestal mount, similar to the one used on gun-jeeps, was installed on some of the boats. The armament for the BW included the M60 machinegun and the crew's individual weapons. The two-man crew normally had one M16 rifle, one M79 grenade launcher, service pistols, and/or one M60 machinegun. A shotgun was also frequently carried when available.

### (4) Communications

The BW does not have organic communications capabilities. A battery-powered, portable radio (AN/PRC-25) was used when available. When radios were available, the crews used the same procedures as PBR patrols. It was observed that crews frequently went on patrol without a communications capability.

## c. Findings

### (1) PBR Boat Design

(a) The PBR was a suitable craft for accomplishing the major portion of the missions performed [II-3a(1)(a); p. II-33].

(b) Water-safety equipment for the PBR was adequate, except that the standard kapok life jacket was too bulky and uncomfortable, deck shoes were generally unavailable, and there was a need for two additional CO<sub>2</sub> fire extinguishers [II-3a(1)(c); p. II-33].

(c) All crew stations were considered adequate except for the forward gun tub, which restricted movement to such an extent that some gunners lacked the access necessary to cock the twin .50-caliber machineguns. This problem was accentuated when the kapok life jacket was worn [II-3a(1)(d); p. II-34].

#### (2) PBR Propulsion System

(a) The propulsion system was considered adequate by all personnel interviewed. Problems encountered with the propulsion system were attributed to lack of training, improper or inadequate maintenance, and environmental effects [II-3a(2)(a); p. II-34].

(b) The Jacuzzi waterjet pumps were considered adequate by all personnel interviewed, even though they experienced excessive wear [II-3a(2)(c); p. II-34].

(c) The controls for the boat were considered adequate except for dim panel lights [II-3a(2)(d); p. II-34].

(d) The fuel system was considered satisfactory except for inoperative fuel gauges [II-3a(2)(e); p. II-35].

#### (3) PBR Electrical System

(a) Major problems were encountered in the electrical system [II-3a(3); p. II-35].

(b) The company was not authorized trained maintenance personnel to repair the electrical system [II-3a(3); p. II-35].

(c) Crew members or other company maintenance personnel usually attempted to repair the electrical system by wiring around the problem area [II-3a(3); p. II-35].

#### (4) PBR Pumping-Systems

(a) The seawater-pumping system, fuel-stripping system, and hand-operated bilge pump were judged adequate by all those interviewed [II-3a(4)(a)(b)(c); p. II-36].

(b) The power-operated bilge pump was considered satisfactory providing it was in working condition [II-3a(4)(c); p. II-36].

(5) PBR Weapons Systems

(a) All crew members interviewed felt that a 40mm automatic grenade launcher was not only desirable, but actually mission-essential [II-3a(5)(a)3; p. II-37].

(b) The Honeywell MK 18 experienced a high failure rate [II-3a(5)(a)3; p. II-37].

(c) Because of the severe restrictions placed on employment of the .50-caliber machineguns, many PBR's mounted the M60 machinegun as an intermediate weapon between the .50-caliber and the M16 rifle [II-3a(5)(a)4; p. II-39].

(d) One outpost obtained a US Navy 60mm mortar and mounted it on the aft emplacement of the PBR [II-3a(5)(a)5; p. II-39].

(e) The complement of small arms for each PBR was generally considered adequate by crew members [II-3a(5)(b); p. II-41].

(f) Concussion grenades were employed as defensive weapons at all outposts and were considered a suitable psychological deterrent against enemy attacks by swimmer/sappers [II-3a(5)(d); p. II-41].

(g) Preplanned grenade runs were made from PBR's instead of BW's because PBR's were considered safer [II-3a(5)(d); p. II-41].

(h) Weapons and ammunition storage was generally considered satisfactory [II-3a(5)(e); p. II-41].

(6) PBR Communications System

(a) A high deadline rate occasionally resulted in the availability of only one AN/VRC-46 radio for use on patrol, severely limiting the communications capability [II-3a(6)(a); p. II-41,42].

(b) RTO's monitored all radio traffic and relayed messages, reports and incidents and requests to the respective MP Group Headquarters [II-3a(6)(b)1; p. II-42].

(c) Although all outposts had the MP Battalion CEOI and MP-10 series brevity code, each outpost developed code words unique to their location and generally transmitted in the clear, using a mixture of the 10-series codes and their unique code words [II-3a(6)(b)2; p. II-42].

(7) PBR Radar System

(a) Even though requirements existed for a radar capability on night patrols, crew members generally did not use it because they were unfamiliar with the equipment, or it was not operational [II-3a(7)(b)(c); p. II-42,46].

(b) Of 38 radar sets, only four were operational at the time of evaluation [II-3a(7)(c); p. II-46].

(8) Easton Whaler Capabilities and Limitations

(a) The BW was considered satisfactory; the only recommended modifications were to install a control console and to reinforce the rim around the top edge of the boat [II-3b(1); p. II-46].

(b) The unit was authorized 36 40-hp outboard motors, but in May 1970 had only 17 on hand [II-3b(2)(a); p. II-46].

(c) The unit used four different types of outboard motors [II-3b(2)(a)(b)(c); p. II-46, 48].

(d) The 40-hp outboard motor had been selected by USAMC, Mobility Equipment Command as the standard outboard motor for BW use in RV [II-3b(2)(d); p. II-48].

(e) During the evaluation period, no BW's were observed using two 40-hp outboards [II-3b(2)(d); p. II-46].

(f) All BW crew members felt that one 40-hp outboard motor did not provide sufficient power and flexibility to satisfy mission requirements [II-3b(2)(d); p. II-48].

(g) An M60 machinegun and the crew's individual weapons composed the armament of the BW [II-3b(3); p. II-48].

(h) An M60 machinegun pedestal was mounted on some of the BW's [II-3b(3); p. II-48].

(i) The BW did not have an organic communications capability; a battery-powered, portable radio (AN/PRC-25) was used when available [II-3b(4); p. II-48].

(j) BW's frequently went on patrols with no communications capability [II-3b(4); p. II-48].

4. OBJECTIVE 4 - ADEQUACY OF THE MTOE - ORGANIZATION, EQUIPMENT, AND  
CPW COMPOSITION - TO ACCOMPLISH ASSIGNED MISSIONS

a. General

The 458th Transportation Company was organized under MTOE 55-1388, 8 May 1969 (See Annex B). Figure II-23 depicts the organization of the company as prescribed by the MTOE; Figure II-24 depicts the actual organization of the company during this evaluation. The following paragraphs, based upon interviews with personnel of the company, supporting units, and senior commanders as well as the personal observations of the project officers, will address the adequacy of the MTOE in terms of command structure, personnel, and equipment.

b. Command Structure

Command structure within the company basically followed normal Army command procedures. The 458th Transportation Company was assigned to the 50th MP Group. From the company commander the command channels branched to the various detachment OIC's or NCOIC's as shown in Figure II-24. The unique command structure of the company was caused by two factors: the wide geographical dispersion of the detachments, and the fact that MP's working at two of the detachments were attached to the 300th MP Company (Oat Lai and Newport). At the other four detachments, the MP and transportation personnel lived and worked together, but were under separate commanders. The various detachments were located near their respective port or pier facilities and supervised by an OIC or NCOIC of the Transportation Corps unit, which technically had no command over the MP's. The distance between the detachments and the supporting MP company was such that it prohibited the MP company commander from supervising his personnel directly.

c. Personnel

The MTOE authorized four officers, one warrant officer, and 162 enlisted personnel; as of 1 April 1970, the company had only 119 enlisted personnel, an operating strength of 74 percent.

(1) Company Administration/Operations

(a) The company administration and operations sections were combined into one section (see Figure II-25).

(b) The combined section was responsible for routine administrative functions such as morning reports, duty rosters, and correspondence. Additionally, the section maintained training records and established and supervised required company training. Company training was generally conducted at detachment level in accordance with a master training schedule

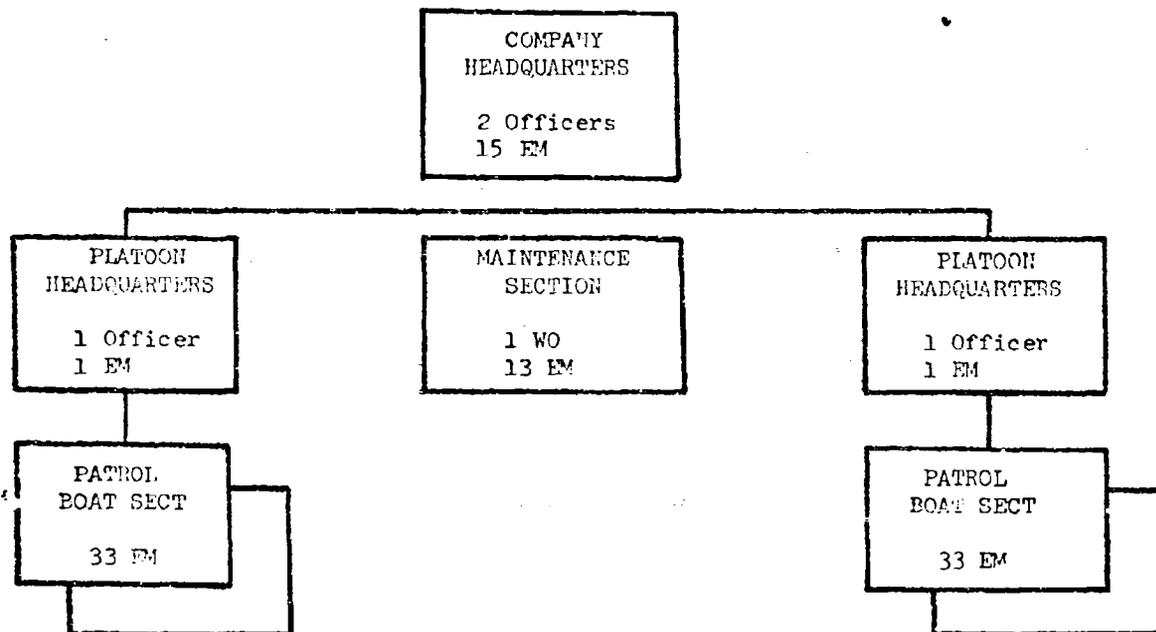
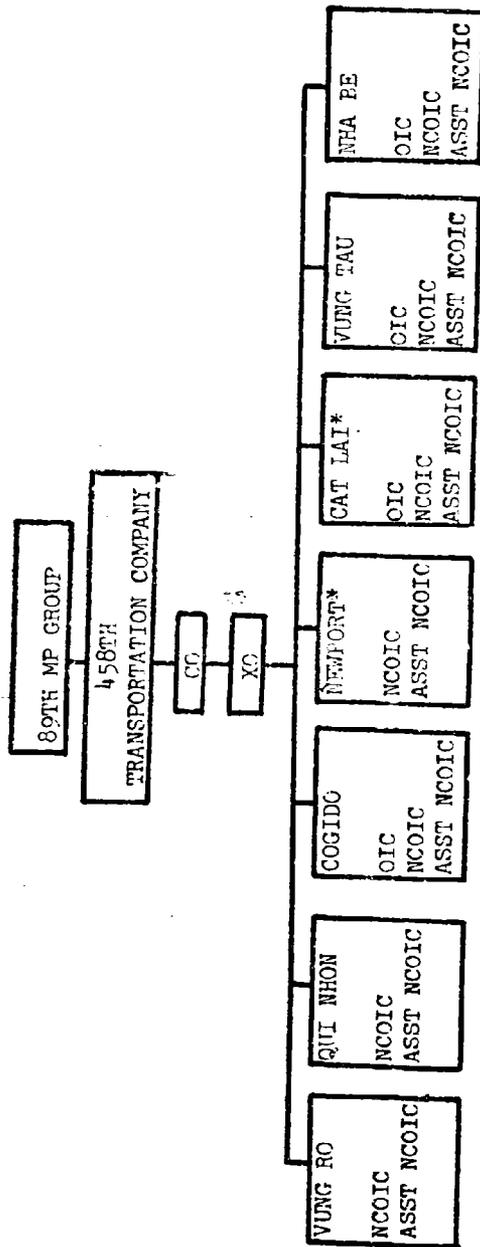


FIGURE II-23. Company Organization.



\* Indicates MP, attached to detachment for all purposes.

FIGURE II-24. 458th Command Structure.

TITLE	GRADE	No.
Commanding Officer	O3	1
Executive Officer	O2	1
First Sergeant	E8	1
Operations Sergeant	E7	1
Assistant Operations Sergeant	E6	1
Company Clerk	E5	1
Operations Clerk	E4	3

FIGURE II-25. Company Administration/Operations Section.

published by the company administration/operations section. The number of personnel attending the training was forwarded to the company for posting to the individual training records.

(c) While the authorization for Commanding Officer, Executive Officer, and 1st Sergeant appeared adequate, it was the opinion of the project officers that the workload required one additional clerk over the one authorized. In addition, they were of the opinion that three drivers were needed, one each for the Commanding Officer and Executive Officer, and one for administrative runs. An operations officer, preferably an MP lieutenant, should also be authorized because of the complex and diverse missions performed. One of the three operations clerks could be released to perform the functions of the additional administration clerks mentioned above, and another clerk released to perform as a driver for the section. In the combined section, then, the project officers considered that the total requirement was for three officers and nine enlisted men, an increase of one officer and two enlisted men over the existing MTOE authorization.

(2) Detachment Administration/Operations

The MTOE does not authorize personnel for detachment administration/operations requirements; the OIC or NCOIC normally handled these functions [see also paragraph II-4c(4)]. In addition, each detachment maintained a 24-hour base station radio which required two RTO's per day. These RTO's also functioned as clerks for the detachment.

(3) Crew Composition

The crew composition prescribed by the MTOE (four for the PBR and two for the BW) was considered adequate; personnel shortages frequently forced many detachments to operate PBR's with three-man crews and rotate personnel from crew to crew; however, all personnel considered this to be unsatisfactory.

(4) Supply

(a) The company supply section was authorized one E6 supply sergeant, one E4 supply clerk, and one E4 armorer. This section furnished MTOE supplies to the company headquarters element and the various detachments and it furnished all other supplies to the detachment in its local area; i.e., Newport, Cogido, and Nha Be. The company supply section occasionally furnished the Vung Tau detachment, but distance usually precluded this. The supply section at detachment level consisted of the detachment OIC and/or NCOIC. Supplies for other detachments (Cat Lo, Cat Lai, Vung Ro Bay, Qui Nhon) were obtained from supporting MP units or through supply channels in the various areas. The company armorer maintained the weapons of personnel working in company headquarters and the Newport detachment, as well as the weapons PLL for the entire company. Weapons located at the various detachments were maintained by each individual but were sent to the company armorer for organizational repairs.

(b) As a result of the complexities of the supply system, which were compounded by the diverse locations of the detachments, it was generally agreed by company personnel that the supply section should comprise one supply sergeant (E7), one supply specialist (E5), one supply clerk (E4), one armorer (E4), one PLL clerk (E4), and one driver (E3). No supply personnel were considered necessary at the detachments.

(5) Maintenance

(a) Figure II-26 depicts the authorized maintenance personnel.

(b) The company had unique maintenance requirements for wheeled vehicles, PBR's and PW's.

1. Vehicles

a. Maintenance Organization

The company wheeled-vehicle maintenance section and the wheeled-vehicle maintenance section from two other companies were consolidated into a combined motor pool. One wheeled-vehicle PLL for the 458th, including all of its detachments, was maintained there. The detachments had no MTOE wheeled-vehicle maintenance capability, but depended on scrounging parts, using assigned personnel maintenance skills, or utilizing the supporting MP unit maintenance section for required maintenance. Detachments located in the vicinity of company headquarters could evacuate a vehicle to the company motor pool, but this only occurred when the vehicle could not be repaired at the local detachment. Distance to the outlying detachments precluded evacuating vehicles to the company motor pool.

b. Maintenance Personnel

The present authorization of two wheeled-vehicle mechanics did not appear adequate to the evaluators to maintain the seven

POSITION	RANK	NUMBER AUTHORIZED
Maintenance Supervisor	E-5	1
Senior Radio Mechanic	E-5	2
Senior Marine Mechanic	E-5	1
Marine Engine Mechanic	E-4	2
Wheeled Vehicle Mechanic	E-4	1
General Vehicle Mechanic	E-4	1
PLL Clerk	E-4	1
Marine Engine Mechanic Apprentice	E-3	11

FIGURE II-26. Maintenance Personnel Authorization.

authorized wheeled vehicles, with geographical dispersion of the unit being the major factor contributing to this problem area. Secondly there exists no authorization for a wheeled-vehicle maintenance supervisor and there are no provisions for a PLL or maintenance records clerk.

## 2. Boats

### a. Maintenance Organization

The company maintained a vessel supply office (VSO), collocated with company headquarters, which maintained a PLL for all assigned boats. PLL items, such as generators and spark plugs, were stocked for PX at detachment level, but these parts were obtained through, and managed by, the VSO. The company's major marine-maintenance facility was located at Nha Be. Maintenance personnel there utilized both TOE equipment and Navy equipment and facilities in order to perform their mission. Maintenance functions performed at Nha Be were only replacement and major hull repair.

### b. Maintenance Personnel

A serious problem encountered was in the marine maintenance field. The lack of experienced marine-maintenance supervisory personnel contributed to this problem. The present authorization of an E5 maintenance supervisor provides neither the rank nor experience necessary to supervise the maintenance of 39 PBRs. An E7 marine-maintenance supervisor should satisfy this requirement. The dispersion of the detachments and the requirements for supervision of detachment-level maintenance functions imposes a requirement for an E6 assistant marine-maintenance supervisor. (No marine-maintenance personnel are authorized at detachment level, although much of

the company maintenance was performed at this level. Each detachment used one or more of their assigned personnel to perform the detachment marine maintenance). The present authorization of two E4 marine engine mechanics and eleven E3 marine engine mechanics apprentices was inadequate for the workload. This authorization does not provide the experienced personnel necessary to perform the maintenance functions imposed on the company by a lack of support from BSAV. Interviews, review of the company maintenance history, and an analysis of the maintenance functions actually performed revealed a requirement for six E5 senior marine engine mechanics and twelve E4 marine engine mechanics. The volume of clerical work associated with the maintenance responsibilities of this section created a definite problem area; however, the addition of an E4 clerk typist should alleviate this problem. The dispersion of the detachments and the imposed travel requirements for maintenance and supervision necessitate the addition of an E3 driver to the maintenance section.

(c) The company was authorized two 1.5-kw, one 3-kw, and one 5-kw generator to provide electrical power on a 24-hour basis; however, existing MTOE did not authorize trained generator operators/repairmen for these items.

(d) In the opinion of the project officers the quantity and types of authorized communications-electronics equipment justified a requirement for an E6 communications chief. The addition of this position would provide a more experienced individual to coordinate, supervise, and repair the communication-electronics equipment of the company headquarters and detachments.

d. Equipment

(1) Patrol Boat River

Thirty-eight PBR's were issued in lieu of the 39 picket boats authorized by MTOE. At the time of the study, mission accomplishment required 29 PBR's be operational 12 hours per day each [See paragraph II-2a(4)]. Of the 38 boats issued, an average of 13 PBR's per day were deadlined for maintenance or parts, leaving only 25 to meet mission requirements. To compensate for this deficit, some PBR's were run 24 hours a day, and in other cases, BW's were substituted for PBR's. One PBR was operated 79 consecutive days without going in for maintenance.

(2) Boston Whalers

The company acquired 18 BW's and 36 outboard motors through the ENSURE program (Expedited Non-Standard Urgent Requirement for Equipment). At the time of this evaluation, 14 of these motors had been redistributed by the 18th MP Brigade leaving 18 BW's and 22 motors on hand. On the average, eight of the BW's were deadlined per day, exclusively due to motor failure rather than to problems with the boat itself; routine motor maintenance

usually claimed another two BW's per day. This left only eight BW's instead of the nine needed to satisfy daily requirements. The above calculations are based on one motor per boat, a configuration which was judged to decrease effectiveness by limiting both maneuverability and speed.

(3) Weapons [See also paragraph II-3a(5)].

(a) Organic

Each PBR had assigned three .50-caliber machineguns, one Honeywell 40mm grenade launcher, three M16 rifles, two M79 grenade launchers, one shotgun, and one .38-caliber revolver. The organic PBR weapons were used as individual weapons for personnel while serving on the boats, and they remained with the boat. Company personnel felt that the addition of an M60 machinegun to the organic PBR weapons would bridge the gap that existed between the .50-caliber machinegun and the M16 rifle. Additionally, the company was authorized four 7.62mm machineguns with tripod mount, 140 caliber .45 automatic pistols, and 22 M16 rifles. Crewmen reported the .45-caliber pistol to be of little value while serving on the boats; they generally had no need for a short-range weapon, and when they did, they used the shotgun. The company's officers suggested that E7's and above be authorized .45-caliber pistols, and that E6's and below be authorized M16 rifles.

(b) Mortar

Crew members and the unit commander desired to have the 60mm naval mortar included in the unit's MTOE for employment on an optional basis. This weapon is capable of firing a variety of ammunition, including fragmentation, smoke, and illumination rounds. There were instances in which this weapon would have been more effective than available weapons in returning fire - specifically, at Vung Ro Bay, parts of Qui Nhon harbor, and sections of the waterborne convey security escort routes in the vicinity of Cat Lo, Saigon, and Cat Lai/Cogido. It was believed that a more effective area coverage could have been provided in penetrating thick foliage, boulder-covered hills, and bunkered enemy ambush positions than was provided by the on-board organic weapons. The design and construction of the PBR precludes the use of direct-fire weapons such as the recoilless rifle. However, the characteristics of the US Navy 60mm mortar appear to be ideal in providing the PBR's with a heavier firepower capability.

(4) Communications Equipment [See also paragraph II-3a(6)].

The company had all of its authorized communications equipment: 78 AN/VRC-46 radios mounted in PBR's, four AN/VRC-46 radios mounted in 1/4-ton trucks, two AN/VRC-47 radios, two antennas, two inverters, and two radio-set control groups. In addition, each outpost operated a radio control group for each PBR and a base-station radio.

(5) Other Equipment

The company was authorized one 5-ton tractor truck, one 5-ton wrecker, one 2 1/2-ton tank truck, four 1/4-ton trucks, one water trailer, and nine cargo trailers, all of which were on hand during the study. The company headquarters required three vehicles and the supply section and VSO two vehicles each. The three local detachments were supported by the company headquarters, but the remaining detachments had to rely on the supporting MP units for their vehicle requirements due to the distances between them and company support functions. All of the company's officers felt that more vehicles should be authorized as follows: one vehicle each at Newport and Vung Ro Bay, and two vehicles each at the two remaining detachments. All other items of equipment authorized by the MTOE, e.g., equipment for administration, supply, and maintenance, were not investigated in this study.

e. Findings

(1) The 458th Transportation Company operated under MTOE 55-138E, 8 May 1969. One captain, and three lieutenants, one WO, and 162 PM were authorized [II-4a, 4c; p. II-52].

(2) The MTOE structure differed from the company's actual, operational organization [II-4a; p. II-52].

(3) The 458th Transportation Company was assigned to the 89th MP Group. The company had a unique command structure caused by wide geographical dispersion [II-4b; p. II-52].

(4) On 1 April 1970 the company was at 74 percent of its authorized strength [II-4c; p. II-52].

(5) Due to the complexity and diversity of the missions performed by the company, an operations officer was believed to be required [II-4c(1); p. II-55].

(6) Administration and operations at detachment level were handled by the OIC and/or NCOIC [II-4c(2); p. II-55].

(7) Project officers considered that the administration/operation section should be increased by one officer and two enlisted men [II-4c p. II-55].

(8) Because of personnel shortages, many detachments were utilizing a three-man crew on the PBR's in lieu of the normal complement of four [II-4c(3); p. II-55].

(9) A two-man crew for the Boston Whaler was considered to be adequate [II-4c(3); p. II-55].

(10) The company supply section furnished MTOE supplies to the company headquarters element and the various detachments. Other supplies were obtained from supporting units. Organizational repairs on weapons were accomplished by the company armorer [II-4c(4); p. II-56].

(11) Company personnel agreed that the company supply section should comprise one E1 supply sergeant, one E5 supply specialist, one E4 supply clerk, one E4 armorer, one E4 FLL clerk and one E3 vehicle driver [II-4c(4)(b); p. II-56].

(12) The company had unique maintenance requirements due to its equipment - wheeled vehicles, PBR's and Boston Whalers [II-4c(5); p. II-56].

(13) The company was issued 38 PBR's in lieu of the 39 picket boats authorized by MTOE 55-137E [II-4d(1); p. II-58].

(14) On a daily average, 13 PBR's were docked for maintenance or parts, leaving 25 operationally ready. Twenty-nine PBR's were required for mission accomplishment [II-4d(1); p. II-58].

(15) The company was authorized 18 Boston Whalers and 36 outboard motors; 18 Boston Whalers and 22 outboard motors were on hand; nine Boston Whalers were required for 12 hours daily. The average daily availability of BW's was one less than required [II-4d(2); p. II-58].

(16) Suggestions were made to improve the mix of weapons authorized the company [II-4d(3)(a); p. II-59].

(17) Crew members and the unit commander desired to have the 60mm naval mortar included in the unit's MTOE for employment on an optional basis [II-4d(3)(b); p. II-59].

(18) A base-station radio set is operated at each outpost [II-4d(4); p. II-59].

(19) All of the company's officers felt that the authorization for only seven vehicles was inadequate [II-4d(5); p. II-60].

## 5. OBJECTIVE 5 - MAINTENANCE AND LOGISTICAL SUPPORT

### a. Background

#### (1) Evolutionary Development of Company Support

As stated earlier the PBR was a moderate-density, limited-purchase item under the ENSURE program. AR 71-6 stated, "Developers/procurers will provide logistical support for limited-purchase items in operational use similar to that normally provided in support of Standard A items." When the PBR's were delivered to the 458th between April and July 1968, they were treated as routine end items. By the end of the evaluation, however, USAFV had recommended that the US Army classify the PBR as Standard A.

#### (2) Marine Maintenance Allocation Concept

The concept of marine maintenance support is similar to that of land-vehicle support. Throughout the evaluation, however, it was observed that crew-performed maintenance is more extensive in marine maintenance. The levels of maintenance are divided as follows: organization maintenance (can be performed by members of the company using tools and facilities available in the company); direct support marine maintenance (repair or replacement of major assemblies and components); general support marine maintenance (repair of vessels, their components, assemblies, and subassemblies); depot marine maintenance (overhaul and rebuild of the entire craft or major components on a scheduled, production-type basis).

#### (3) Environmental and Locational Effects on Support

(a) The environment in Vietnam greatly affects maintenance requirements at all levels. Some conditions which increase maintenance problems are: high temperatures, humidity, rapid evaporation of sea water (increasing salinity in the air, which aids oxidation), warm water temperatures (conducive to rapid accumulation of barnacles and other sea growth), large amounts of suspended matter in the water (tending to foul the cooling systems and create "sandblast" effect on the hydro-jet pumps), and large amounts of dust in the air over inland waters.

(b) The company's organizational maintenance section was located at Nha Be, approximately 6 miles from Cat Lai. This location was convenient for the PBR detachments in the southern areas, but was virtually inaccessible to Vung Ro Bay and Qui Nhon (see Figure II-7, p. II-14). These latter two detachments relied on the Marine Maintenance Activity Vietnam (MMAV) Detachment #1 located at Qui Nhon, obviously convenient for the Qui Nhon PBR detachment, but not so for the Vung Ro Bay detachment, 30 miles down the coast. MMAV Detachment #2 was located at Cat Lai. MMAV headquarters, MMAV maintenance facilities, and MMAV technical supply, however, were located at Cam Ranh Bay, not convenient to any of the PBR or MMAV detachments. These

locational characteristics combined with often unreliable communications to compound the problems of maintenance support.

b. Supply

(1) Organizational Supply

(a) Prescribed Load List (PLL)

1. The 458th was authorized to maintain a PLL of PBR parts at organizational level by TM 55-1940-220-20P, dated 10 November 1969. The PLL for outboard motors was listed in TM 5-2805-260-24P, September 1969, and in the 1st Logistical Command publication, "Maintenance of Outboard Boats and Motors Procured Under Project ENSURE," 1 May 1968. However, from the boats' arrival until October 1969, these two TM's were not available; the only manuals that were available were Navy publications that came in the push-packs for the PBR [see paragraph (b) below].

2. No prescribed load allowance (PLA), which is mandatory and the basis for the PLL, had ever been established. At the time of the evaluation, the unit was receiving help from the 1st Logistical Command Supply Management Section in correcting their records and in establishing a PLA and PLL. It was intended that the repair parts for the PLL should eventually provide all those parts needed to perform the organizational maintenance work listed in the maintenance allocation chart plus Jacuzzi pump parts and fiberglass materials. This is because the unit had the ability to repair Jacuzzi pumps and fiberglass damage, and it was more efficient for them to do so rather than turning these jobs over to support maintenance.

(b) Sources of Parts

1. The initial stockage of repair parts for each PBR came in "push pack", a supply of parts estimated by the manufacturer to maintain the boat for one year.

2. Repair parts were not stocked in any depot, but were handled through a separate technical supply account operated by MMAV at Cam Ranh Bay. While this Army supply system was being established, Inter-Service Support Agreement #5D-N 3208-002-8 authorized the Nha Be unit to purchase parts from the US Navy at rates up to \$15,000 per month. In fact, this Navy source continued to provide emergency repair parts if they were on hand and if the Navy had no immediate need for them. The unit maintenance officer judged that the unit obtained approximately 10 percent of its parts from the Navy.

3. Another source of PBR parts was cannibalization of equipment turned in for repair. Four PBR's were cannibalized to the extent that they had to be turned in for depot-level refitting in October 1969.

4. In contrast to PBR's, the primary source for BW out-board motor parts was normal supply channels, the only exception being occasional requisitions from other units with the same type motors.

(c) Supply Records

1. All requests for parts were consolidated at company level in the VSO. VSO records (See Figure II-27) shows a very low fill rate. In addition, it is clear from the data in this figure that MMAV and VSO records were not consistent, MMAV showing 191 unfilled requisitions between July 1969 and April 1970 whereas VSO records claim almost four times that many.

	REQUISITIONS	FILLS	FILLS (PERCENT)
VSO Records Jan 69 - Sep 69			33
VSO Records Oct 69 - Dec 69	360	47	13
VSO Records Jan 70 - Apr 70	515	11	2
MMAV Reconciliation list Jul 69 - Apr 70	n + 191**	n**	$\frac{n}{n + 191}$ **

\*The fills percentage was the only data recorded for this period.

\*\*Only unfilled requisitions were listed so that no information on the number of filled requisitions, n, is available.

FIGURE II-27. Rate of Fills for Parts Requisitions.

(2) Nonorganizational Supply

(a) General

The 1st Logistical Command held a PBR policy meeting on 13 September 1967, at which time it established that; MMAV would support all maintenance on Army PBR's; repair parts for Army PBR's would be obtained through Army channels; MMAV would maintain a depot-level stock and supply; and the Inter-Service Support Agreement between the Navy and Army (initially for \$2,000 and later expanded to \$15,000 worth of repair parts per month) would be used for emergencies only.

(b) Authorized Stockage Level (ASL)

MMAV Technical Supply was authorized by TM 55-1940-220-35P to maintain an authorized stockage level (ASL) for the PBR's. MMAV technical supply had not formally established an initial PBR ASL; however, certain parts were picked up on their general ASL through demand data (three demands for an item within 180 days). No separate PBR ASL's or service stocks were maintained at the MMAV detachments.

(c) Direct Exchange Stock

No direct-exchange (DX) stocks were maintained by any outposts or at company level, due to nonavailability of parts. An adequate level of DX parts was desired by each detachment and by the company. Company supply personnel recommended the following items as DX stocks:

1. Bilge pumps
2. Alternators
3. Batteries
4. Gate assemblies
5. Raw-water pumps
6. Starters
7. Drive shafts
8. Fresh-water pumps
9. Blowers
10. Governors

(d) Supply channels

The geographical dispersion of the outposts necessitated rapid communications for supply management. For example, if the detachment at Vung Ro Bay needed a part, they notified Qui Nhon who, in turn, phoned the company headquarters in Saigon. The VSO originated the requisition, which then went to MMAV technical supply at Cam Ranh Bay by mail or courier. Unit supply personnel stated that, on at least two separate occasions, they attempted to track requisitions through technical supply, only to discover that supply had no record of the requests having been submitted. A further inquiry revealed that some of the requisitions were not arriving at MMAV, and that some which were received by MMAV were misplaced [see Figure II-27].

c. Maintenance

(1) General Maintenance Responsibilities

(a) The organizational maintenance section of the 458th Transportation Company was collocated with the US Navy shop facilities at Nha Be. The direct-support organization was composed of about 20 men whose primary mission was to overhaul engines. By utilizing the Navy's technical expertise, facilities, and special equipment, the unit was able to overhaul PBR engines. However, this arrangement was eventually strained because of parts and personnel shortages and because the Navy could not continue its unofficial support for the 458th. In October 1969, the 18th MP Brigade directed the company to seek assistance from 1st Logistical Command. MNAV then reassumed the responsibility for engine overhaul and for other direct-support/general-support functions.

(b) The DS function was divided between the unit's organizational maintenance section and MNAV's general support maintenance section. MNAV's general support facilities were tasked to provide direct support; however, many direct-support functions were being accomplished by the unit. Support for MNAV was obtained through commercial contractors in Vietnam and through the 2nd US Logistical Command, Okinawa.

(c) The 458th was not authorized to perform extensive repair on outboard motors. However, the unit had become self-supporting and performed all maintenance and repairs, including complete overhauls, when parts were available.

(d) Marine Maintenance Allocation Table

A maintenance allocation table (see Figure II-28) for the PBR had been published, but origin and date could not be determined because the document itself did not reflect originating agency or publication data. Prior to October 1969, the unit had generally followed the guide, "If we cannot repair an item, then it goes to MNAV." At the time of this evaluation, this process was changing to conform to the maintenance allocation table. The unit was doing some support work, with the exception of engine overhaul, electrical rewiring, and refitting of the craft.

(2) Organizational and Direct Support Maintenance

(a) Maintenance Records

Only one outpost maintained log books on PBR's; all units kept a daily or monthly equipment log (DA Form 2408-1); unit headquarters maintained a complete daily deadline report record.

MAINTENANCE ALLOCATION FUNCTIONS	
UNIT-ALLOCATED REPAIRS	MAJOR ASSEMBLY REPLACEMENTS NOT ALLOCATED TO UNITS
Boat Assembly (Hull)	Internal Engine Assemblies
Engine Ventilating System	Hull Wiring Harness
Blower Silencer and Screen	Radio Antenna Assembly
Blower Drive Support	Power Control Panel
Governor Assembly	Alternator Regulator Panel
Engine Controls	Master Power Control Panel
Water Manifold Thermostat Assembly	Radar Power Converter
Water Manifold Sea-Water Strainer	* Pump Impeller Shaft
Emergency Engine Stop	* Pump Seals & Bearings
Emergency Fuel Shut-off	Compass Assembly
Steering Gear Assembly	Radar Antenna
Turret Seat	Radar Transmitter
Marine Fenders	

\* The unit was overhauling Jacuzzi pumps and was replacing these items.

FIGURE II-28. PBR Maintenance Allocation Functions.

(b) Maintenance Personnel

1. A unit survey revealed that the average Army General Classification Test (AGCT) score for MOS 61-series personnel assigned to the 458th TC was considerably lower than other MOS-series personnel assigned to the parent unit (89th MP Group). Allied trades and skills personnel were in short supply, and the enlisted men, especially those below average on AGCT scores, often reflected little or no capability to adapt to task requirements.

2. Crew members, although assigned to one boat, often shifted from one vessel to another to meet commitments. Crews assigned to a particular craft appeared to develop pride in that boat and seemed to resent other crews operating their boat. Thus, crew morale and the efficiency of crew maintenance suffered when other crews operated their boat.

3. Outboard motor mechanics generally had mechanical ability and an interest in engines. They had obtained skills through either civilian experience or on-the-job training.

(c) Maintenance Tools

Most personnel and crew members stated that there was a shortage of authorized tools. The organizational maintenance section at Nha Be, collocated with the US Navy facility, had ready access to Navy tools and facilities. They used the following Navy tools and facilities extensively:

1. Boat lift
2. Boat drydock frames
3. Boat trailers
4. PBR fiberglass hull mold
5. Benches and general shop equipment
6. Pump repair shop facilities and special equipment

(d) Maintenance Procedures

1. Some outport crews employed a checklist during supervised maintenance periods ("marine motor stables"); at other outports, the crews performed maintenance without supervision, and frequently without a checklist.

2. The organizational maintenance section repaired hull damage, rebuilt pumps, and overhauled outboard motor engines, even though not authorized to do so. They attempted, as often as possible, to repair radios, radars, and the electrical wiring systems. No scheduled systematic maintenance inspection program, a GS or depot function, was observed at any level.

(3) General Support and Higher Level Maintenance

(a) History of Engine Maintenance

When MMAV resumed support in October 1969, no accurate unit records of engine maintenance were available. Between October 1969 and May 1970, MMAV Saigon rebuilt 70 PBR engines through commercial contract, and MMAV Qui Nhon rebuilt three PBR engines in their shop. In addition to managing the commercial contracts, MMAV detachments serviced and tuned engines insofar as they were capable.

(b) History of Contract Support for MMAV

1. Lacking repair parts, necessary equipment, and trained personnel to meet the demand, MMAV sought commercial contractors for PBR engine overhaul. Applied Technical Service (ATS) was awarded the contract. ATS then had to gain sufficient experience to perform acceptable work; their first four engines were rejected. Under the arrangement at the time of this evaluation the contractor agreed to overhaul engines at the rate of two per day. The contractor also had to provide all materials required to rebuild engines to factory standards, and had to supply MMAV with a list of parts used. Under this contract, the Army had the option of supplying the parts needed for an overhaul, if they were available when required. The contractor was required to provide a diagnosis of what caused engines to fail, and to provide a 60-day guarantee against bad workmanship.

2. MMAV's records indicated that only one radar set had been repaired by them for the 458th, and this was accomplished through a commercial contractor.

(c) Analysis of General Support Maintenance

The MMAV detachment at Saigon had a TDA authorization for 113 personnel, but only had an average of 82 present during April and May 1970; they provided support for 243 craft, operated a GSU and technical supply, and contracted all emergency maintenance and annual overhauls. The 458th considered the quality of work done by MMAV to be adequate; however, the unit considered the turnaround time for repairs to be totally unsatisfactory. Figure II-29 lists the average turnaround times for several items as calculated from MMAV records. In addition, after five PBR's were turned into MMAV in October 1969 for depot-level refitting, they were evacuated to Cam Ranh Bay, and they were still there eight months later, at the end of this evaluation.

ITEM	NUMBER REPAIRED	AVERAGE TURNAROUND
Radar Set	1	113 Days
Outboard Motors	15	83 Days
Alternators	2	60 Days
Starters	8	31 Days
Heat Exchangers	2	28 Days
Engines	44	8 Days

FIGURE II-29. BSMV Average Turnaround Times.

d. Equipment Failures

(1) Operational Failures

(a) A summary of PBR equipment failures from a sample of 11 vessels over a 7-month period is presented in Figure II-30. These data reflect the experiences at the Cat Lai outport, the only unit maintaining detailed DA Forms 2408-14, Uncorrected Fault Record.

(b) It was generally felt by those questioned that crews and maintenance personnel were not adequately trained, especially in technical skills. In addition, personnel shortages resulted in low-ranking, inexperienced enlisted personnel being placed in positions of responsibility beyond their capability. Heavy workloads - e.g., 14-plus hours a day, 7 days a week, for prolonged periods of time - may have reduced crew motivation for the maintenance program.

(c) During this study, a monthly average of 24 percent of the 33 PBR's were not operationally ready (NOR) because of incompleting maintenance or a lack of repair parts (Figure II-31). Similarly, 44 percent of the 18 BW's were NOR for hull repair and equipment installation (Figure II-32), and an average of 38 percent of the 21 outboard motors were NOP (Figure II-33). Figure II-34 shows the percentage distribution of the number of PBR's not operationally ready at each outport. Figure II-35 presents the percentage distribution of daily PBR engine hours, and monthly PBR engine hours are shown in Figure II-36. Boats were occasionally not reported as deadlined if necessary parts could be obtained and the boat returned to service in a relatively short time.

(2) Engines

Maintenance history revealed that overheating, oil and fuel contamination, and poor lubrication were major causes of engine problems.

COMPONENT	NO OF FAILURES
Engines	61
Propulsion Pumps	38
Radio Systems	35
Drive Belts (Alt & Pump)	33
Bilge Pumps	29
Alternators	29
Voltage Regulators	20
Batteries/Switch Parallel	19
Gate Assembly	19
Sea/Raw-water Pumps	18
Hull Damage	17
Electrical Systems	16
Mufflers	16
Exhaust System (Less Mufflers)	14
Fuel Pressure Switch	14
Heat Exchangers	13
Drive Shafts	12
Starters	11
Tachometers	11
Water Temperature Gauges	11
Strainers and Grates	11

The above data were extracted from DA Forms 2408-14, Uncorrected Fault Record, maintained at the Cat Lai Outport.

FIGURE II-30. PBR Equipment Failures.

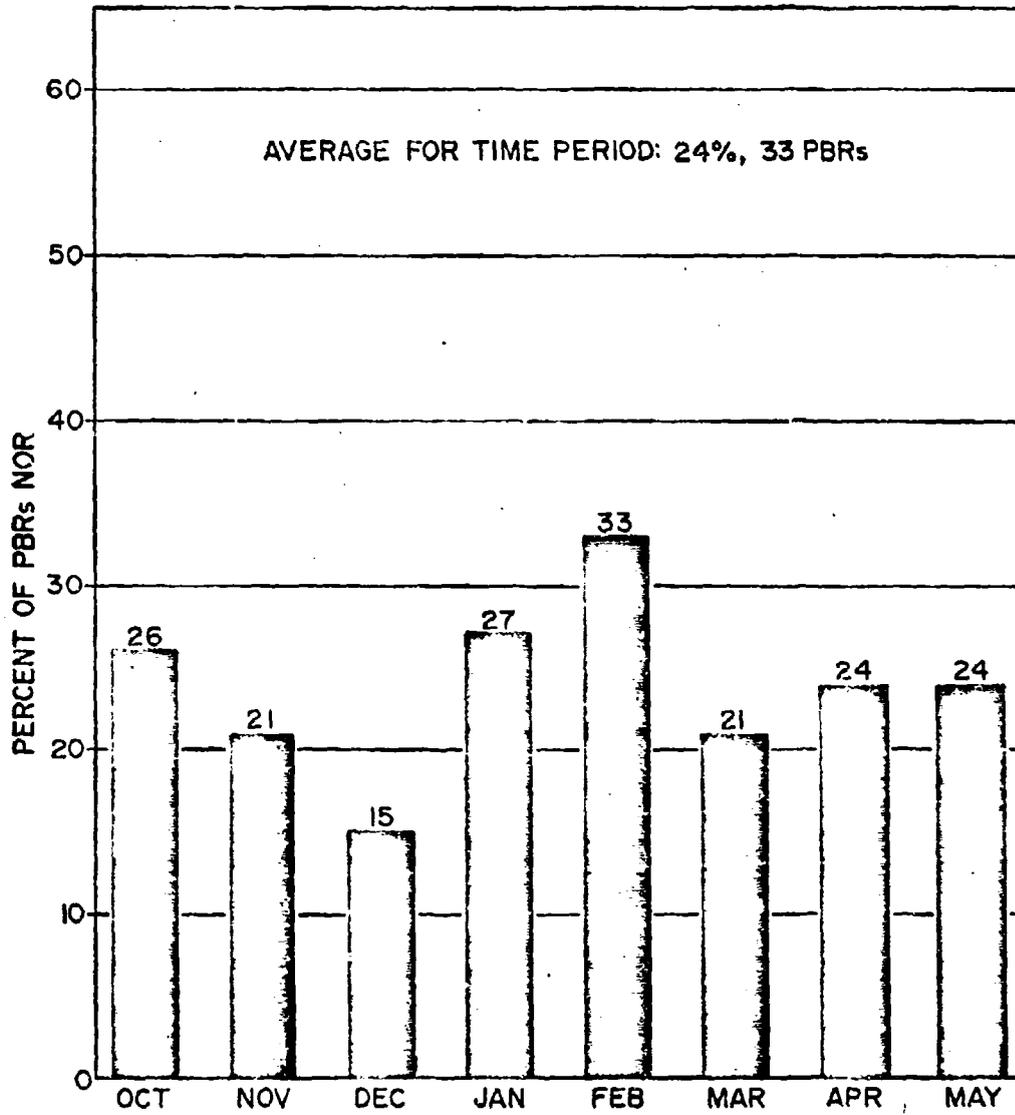


FIGURE II-31. Percentage of PBR's Not Operationally Ready (NOR).

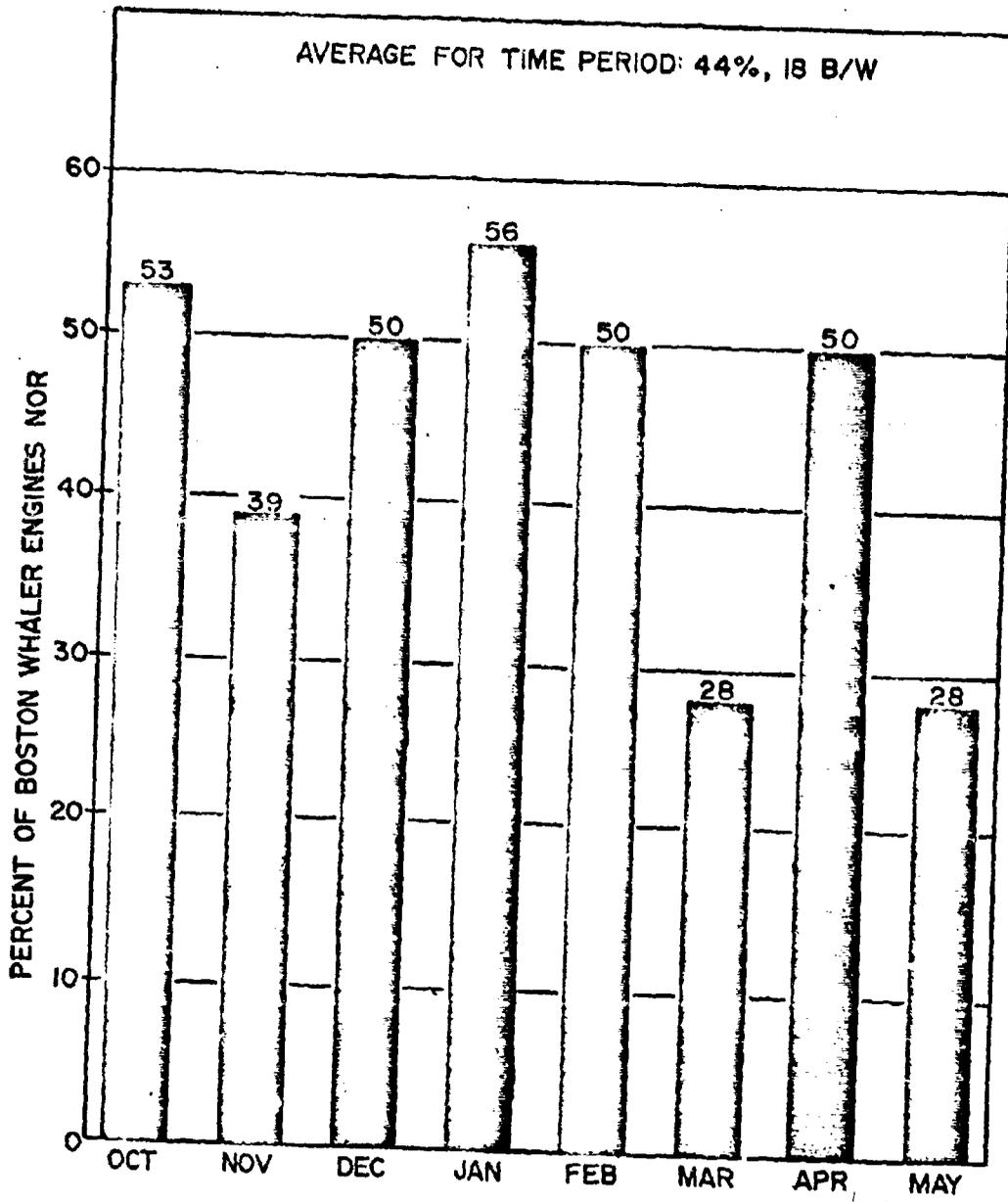


FIGURE II-32. Percentage of Boston Whalers Not Operationally Ready (NOR).

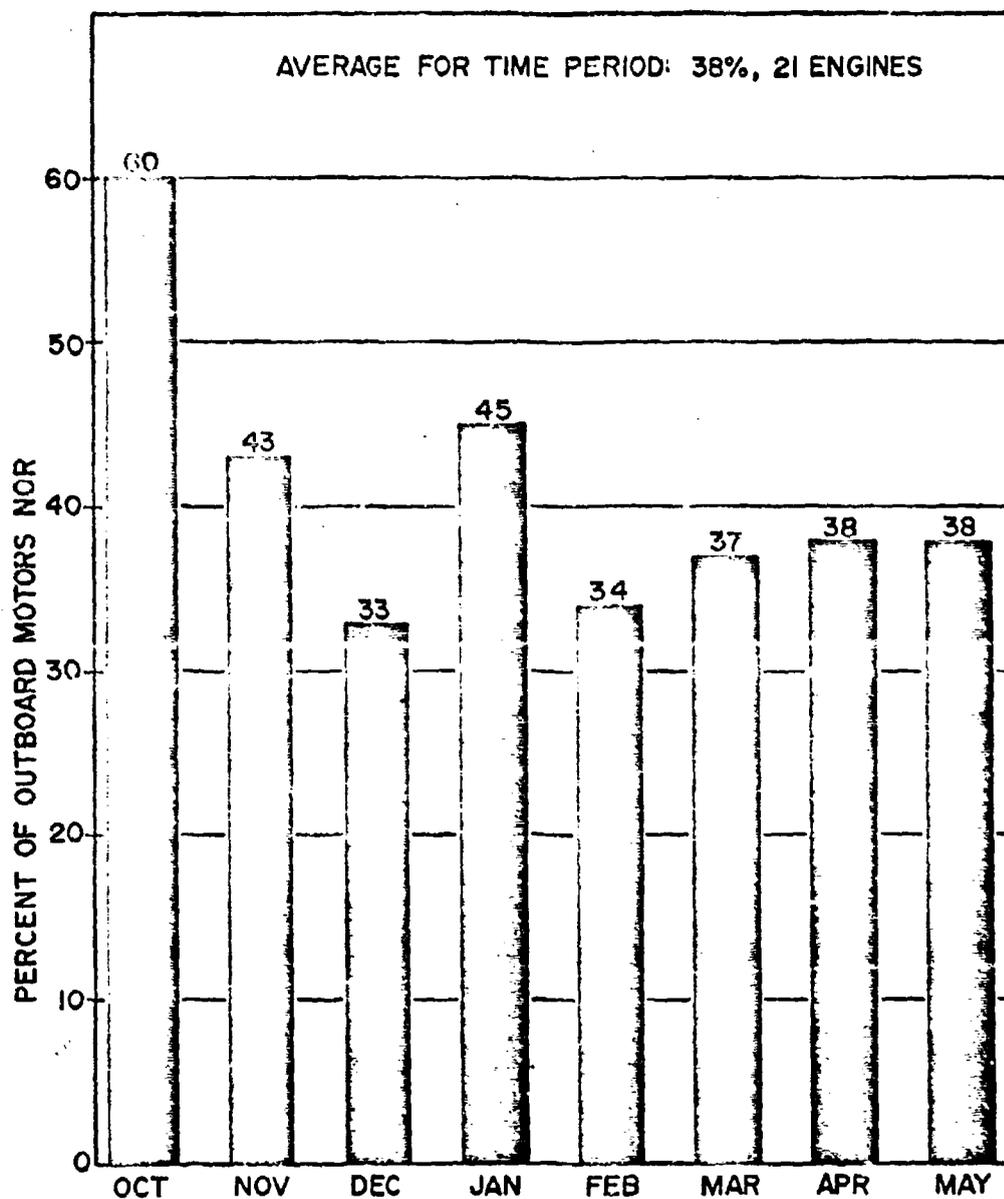


FIGURE II-33. Percentage of Outboard Motors Not Operationally Ready (NOR).

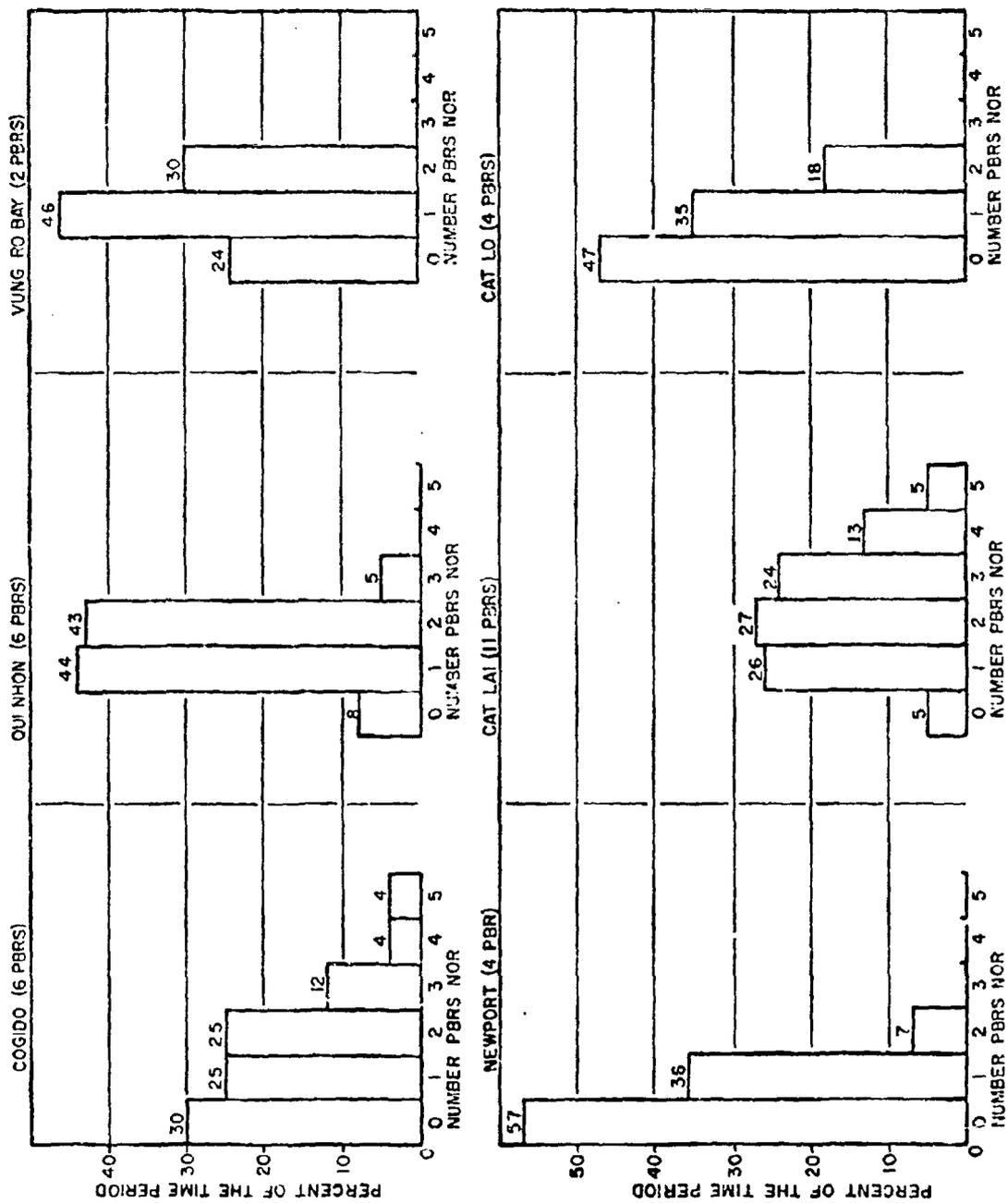


FIGURE II-34. Frequency of PBR's Not Operationally Ready (NOR) Over a 6-Month Period (Nov 69 - Apr 70).

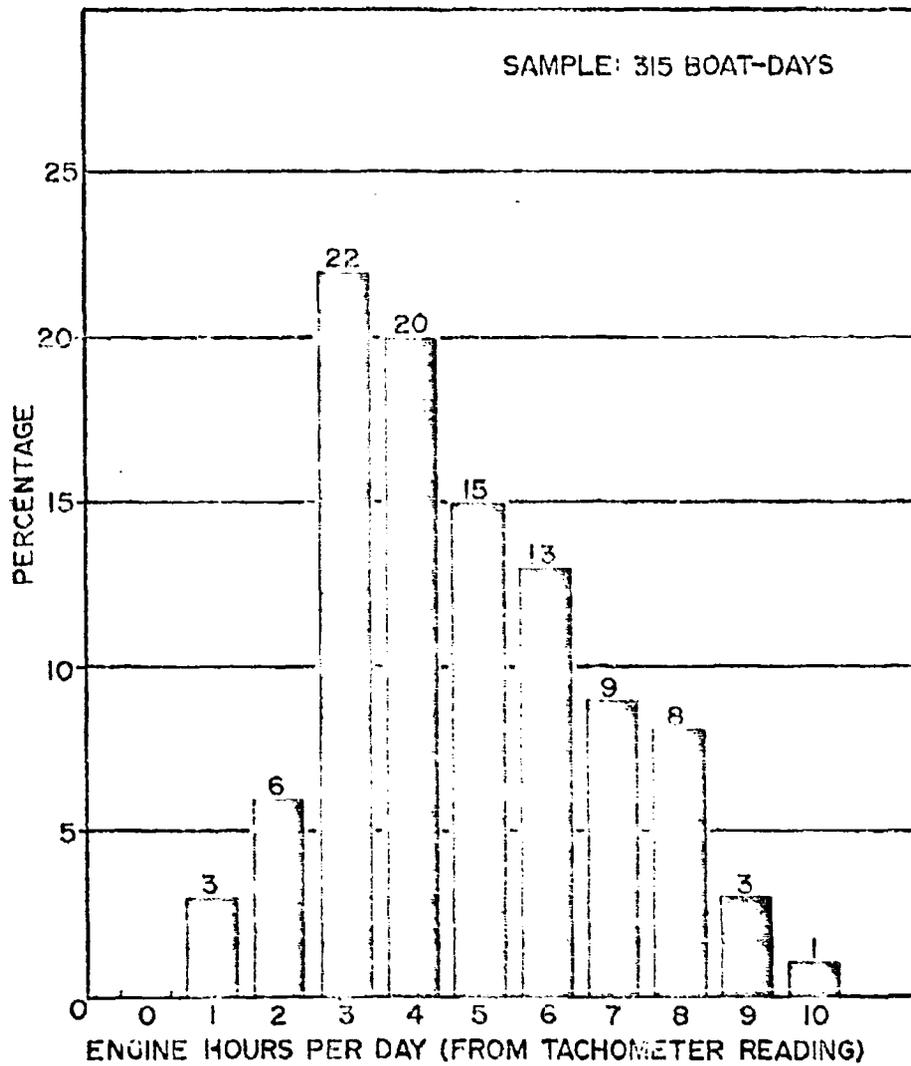


FIGURE II-35. PBR Daily Engine Hours.

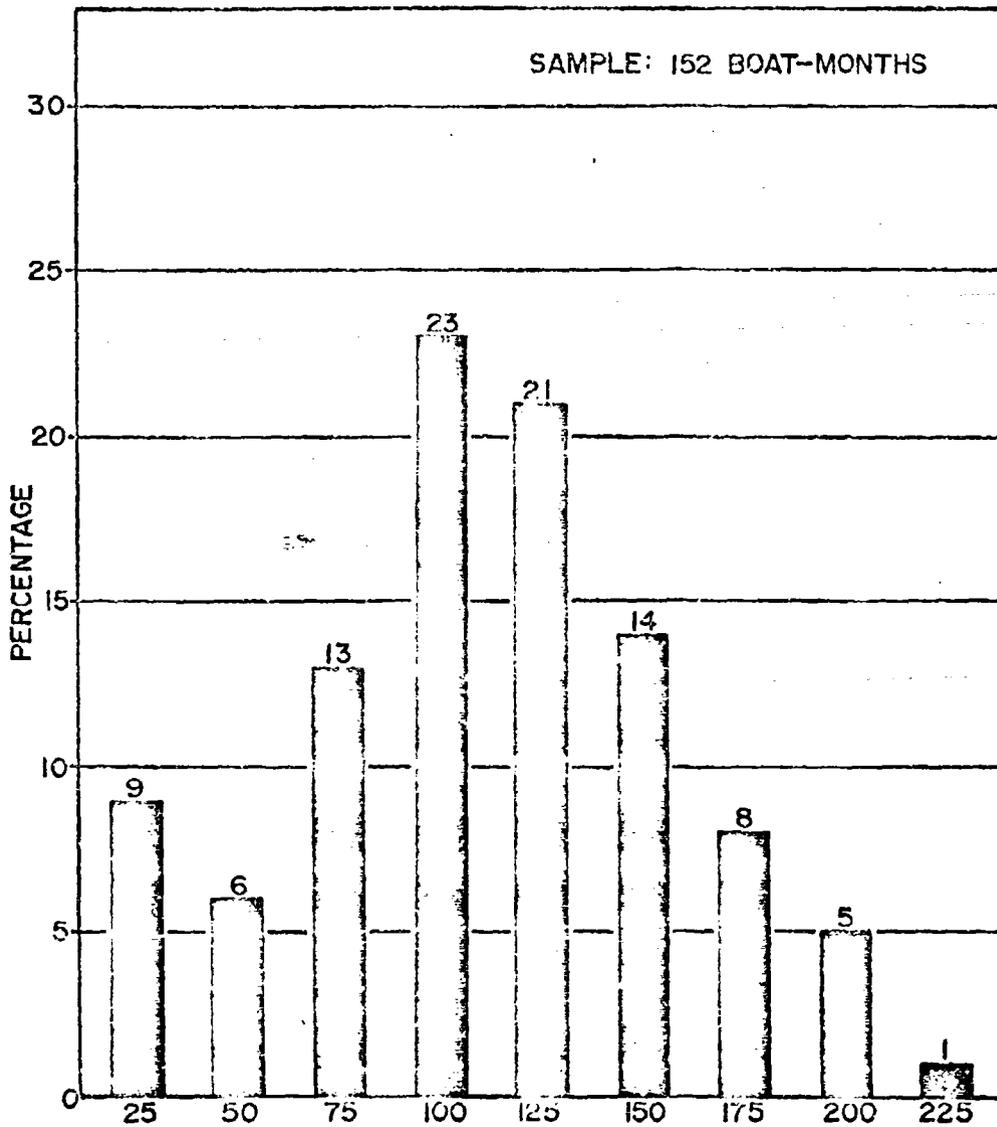


FIGURE II-36. PBR Monthly Engine Hours (From Tachometer Readings).

(a) Overheating

MMAV estimated that over 60 percent of the PBR engines received at Nha Be had cracked cylinder heads and/or cracked cylinder wall liners, apparently caused by overheating and improper operation. This problem often resulted from cooling-system malfunctions, insufficient volume and/or contamination of inducted air, or restarting hot engines after failing to allow them to cool before shutting them down.

1. An inspection of engine rebuild and operational maintenance by members of the 1st Logistical Command in December of 1969 revealed that the right-bank cooling system of many engines was obstructed by foreign substances. Some crews were observed using muddy river water in the fresh-water cooling system, thus introducing sediment into the system and eventually contributing to partial obstruction or stoppage. The sediment consisted mostly of clay, sand, sludge, and rust.

2. Engine blow-by caused pressure to develop in the oil pan, resulting in partially burnt fuel, oil, and fumes being forced out of the crankcase breather tube and into the engine compartment. Since the engines were designed without air cleaners, these contaminants within the engine compartment eventually reach combustion chambers where they may increase wear to pistons and cylinder walls. Even if only one engine develops blow-by, it should be replaced so that the other engine will not be damaged by the exchange of contaminants. It was noted during the evaluation that this was not done at the outports.

3. The normal idle temperature of the engine in the environment of RVN was estimated at 130 degrees F. If engines are shut down above this temperature, heat exchange reverses and engine temperature rises. Then, if the engines are restarted at these increased temperatures, the sudden surge of cooler water can cause uneven metal shrinkage that may cause cracks. Evaluators observed PBR engines operated at high speed, then shut down above idle temperature and restarted before they could cool to idle temperature.

(3) Propulsion Pumps

(a) Wear Plates, impellers, and bearings were the major causes of Jacuzzi pump failures. The stainless steel impellers and wear plates were susceptible to salt-water corrosion and pitting. Abrasive effects of silt and other foreign matter in the river water caused accelerated wear because special marine grease was not available.

(b) US Navy experiments revealed that wear plates made from a manganese/bronze alloy lasted much longer (an estimated four to eight times) than the standard stainless steel plates. A new stainless steel plate cost \$187.00, and a specially manufactured manganese/bronze plate cost \$250.00. Since requisition lead time on Jacuzzi pump parts was approximately 265 days, MMAV contracted for 20 locally manufactured manganese/bronze plates and found them to be more durable than the stainless steel wear plates (see Figures II-37 and II-38).

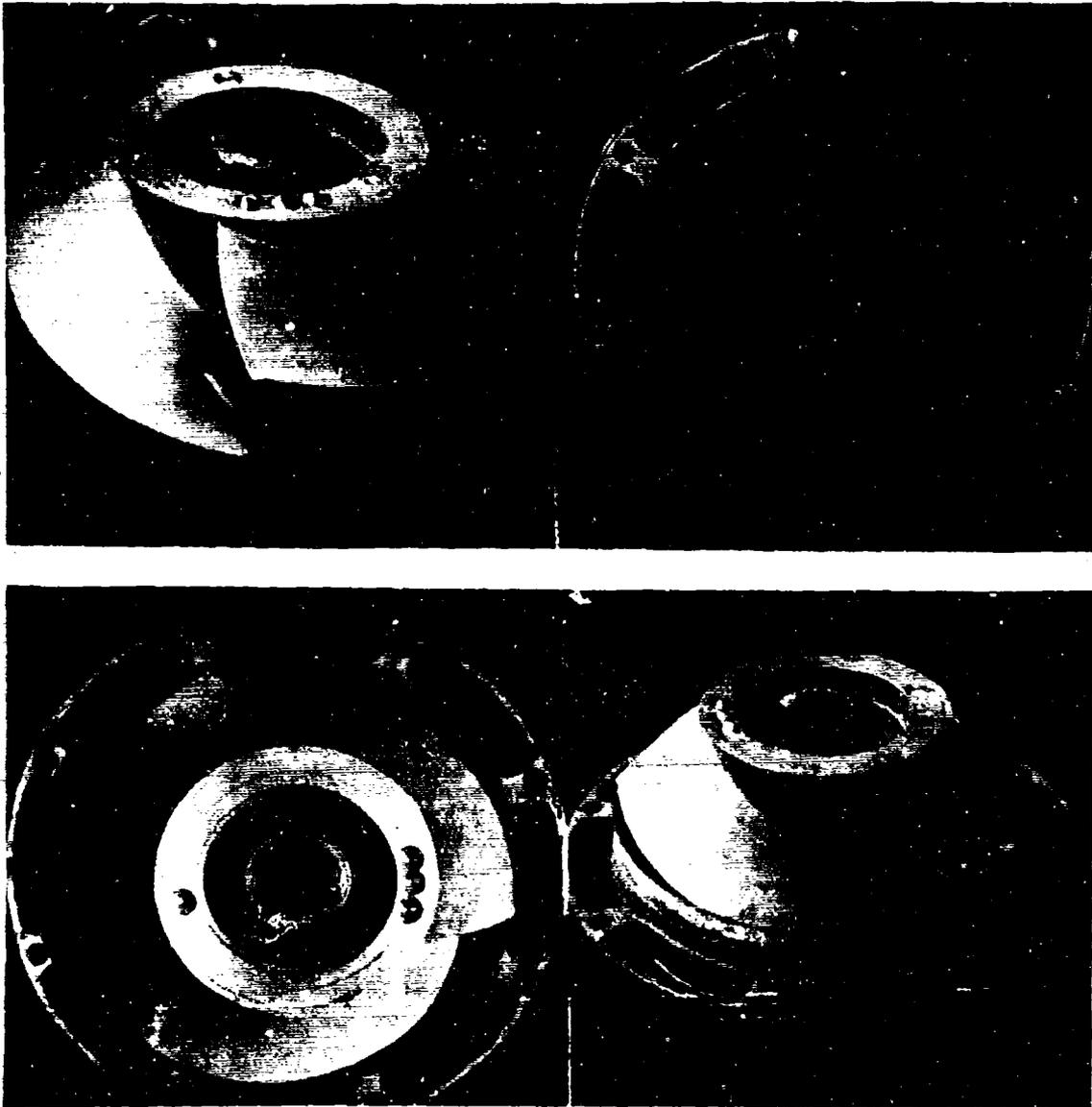


FIGURE II-37. MK2 Jacuzzi Pump Wear Plates With Impeller.

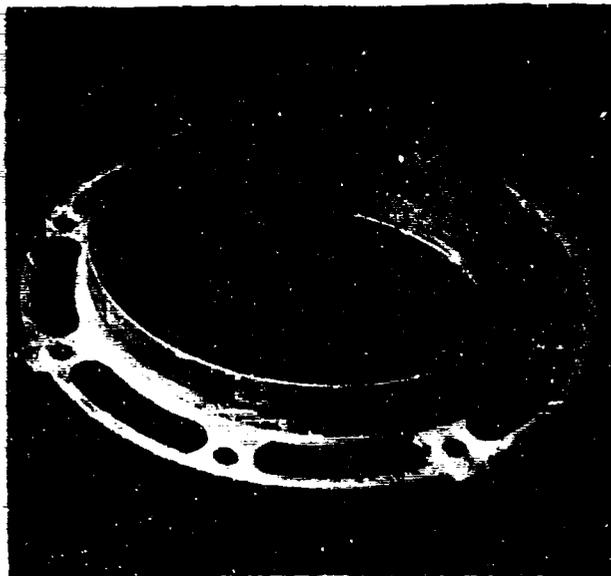
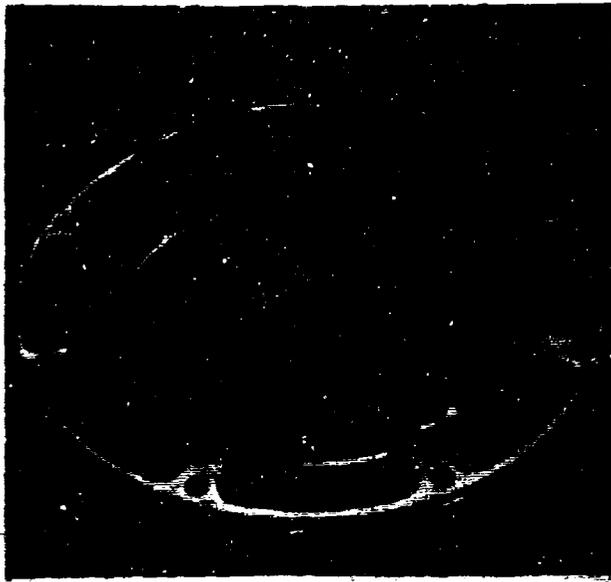


FIGURE II-38. MK2 Jacuzzi Pump Wear Plates.

II-80

(4) Electrical Systems

The PBR electrical systems had high failure rates. The 79th Maintenance Battalion electrical engineers, who repaired the electrical systems on some PBR's under an informal support agreement with 1st Logistical Command, stated that original wiring was not the problem. They concluded that use of the equipment by unqualified personnel, lack of proper maintenance, haphazard "quick-fix" repairing and "hot-wiring" contributed to the problem (see Figures II-39 and II-40). Some of the unauthorized procedures and improper operational and maintenance procedures identified were as follows:

- (a) Running the boats with only one alternator operational;
- (b) Using an M16 cartridge instead of a fuse;
- (c) Improperly adjusting voltage regulators;
- (d) Allowing broken wiring and frayed insulation to remain in that condition;
- (e) Allowing loose wires to dangle into bilge water or oil;
- (f) Improperly splicing or connecting electrical wiring;
- (g) Failing to reconnect all circuits after installation of a major assembly; e.g., not connecting instruments to power source;
- (h) Failing to use color coding when reconnecting wiring;
- (i) Failing to clear moisture and corrosion from wiring and connection.

(5) Radar

(a) PBR's were equipped with a limited-range, high-resolution, low-error, plan position indicator (PPI) radar system (Raytheon 1900). Most crew members were not familiar with the equipment, and those who had attended the Navy PBR school felt that the training they received on the radar system was insufficient.

(b) Out of 38 sets assigned, there were only four sets operational as of 30 Apr'l 1970. The failure rate could not be determined, because when the sets became inoperable they generally were not repaired. The practice was to store inoperable radar units at detachment level and forget about them. The unit commander expressed the opinion that the equipment was not essential to the security mission in that PBR's were involved in a defensive-type operation. Other reasons given for not having the sets repaired were that the men who operated the equipment were inexperienced, and the repair cost so outweighed the advantage of having the equipment operational in the hands of such personnel.

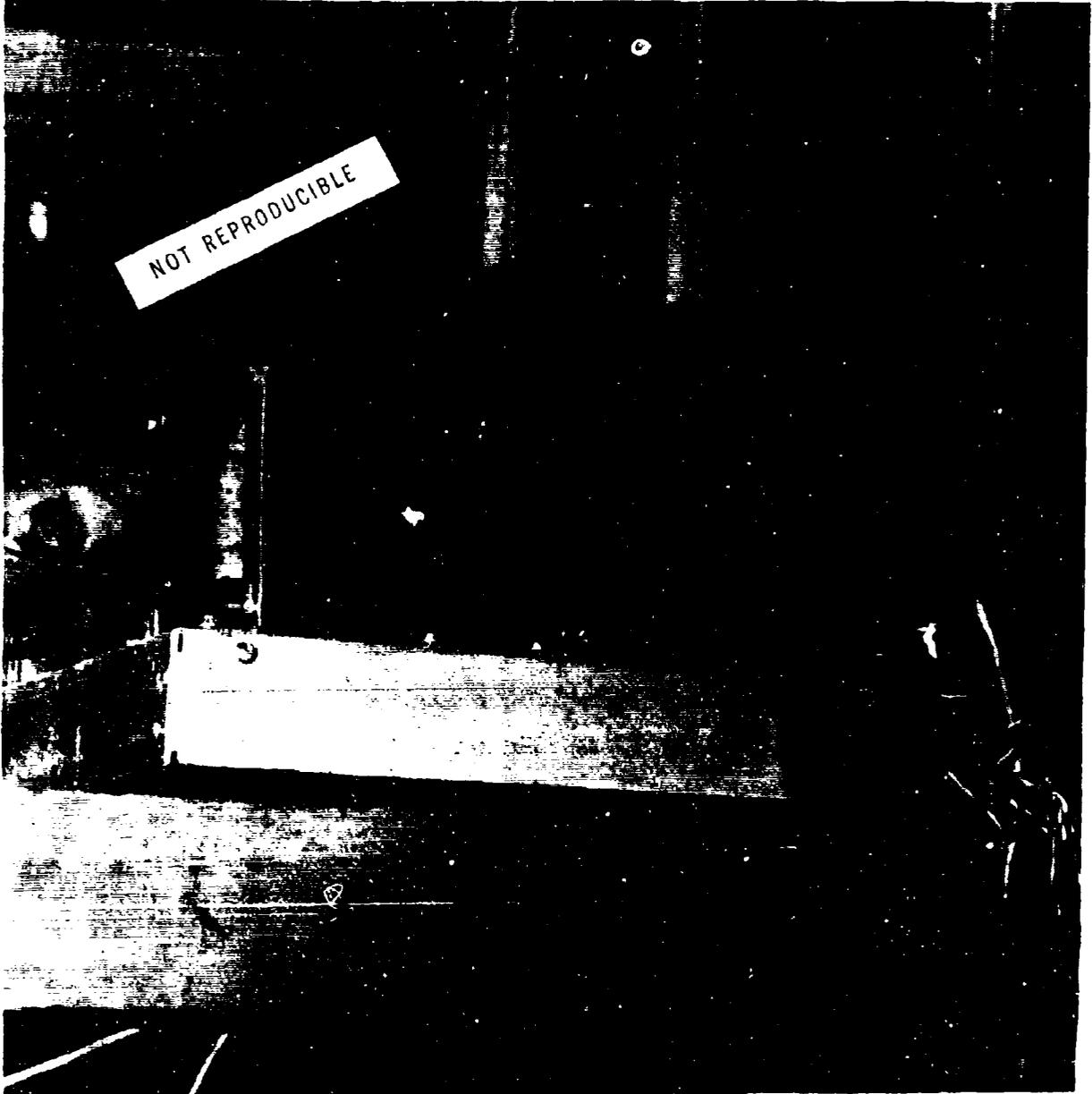


FIGURE II-39. Faulty Wiring - Power Supply Unit.

NOT REPRODUCIBLE



FIGURE II-40. Faulty Electrical Wiring - Alternator Regulator Panel.

Commanders felt that the money required for repair could be better spent on other essential equipment. Radar repair and engine overhauls came out of the same general contract fund.

(c) MMAV had the necessary electronic test equipment and were authorized the radar repair technicians, but did not have the personnel. MMAV's records show that the 458th turned in one radar set for repair in November 1969. The work was completed by a commercial contractor and the set returned to the company in March 1970.

(6) 40mm Honeywell Automatic Grenade Launcher

(a) At the time of the evaluation, the unit had 37 of its original 39 Honeywell automatic grenade launchers, but only 11 were operational. The Honeywell will be considered here as having unique maintenance problems, rather than a high failure rate, since failure rate could not be determined because of difficulty in getting the weapon repaired. The 458th armorers stated that they didn't know much about the Honeywell, and that the only manuals available were US Navy publications supplied with the boats. Their inability to repair the weapon was based on the fact that they could not obtain repair parts; however, part failure was not necessarily the cause of the malfunctions. In their speculative diagnosis, weapon failure was attributed to general wear and tear on all parts. It was noted by evaluators that crew members had received no special training on the disassembly, maintenance, and care of the weapon. Some crews were observed working on the weapon through the tinkering process. Some of the weapons were cannibalized in order to keep others operational.

(b) The 526th Light Equipment Maintenance Company of the 91st Composite Service Battalion was the direct support unit that serviced the 458th's weapons. The NCOIC of the small-arms repair shop stated that his shop was not capable of supporting the Honeywell, because it did not have the special tools required and could not obtain repair parts. The armorer NCOIC of the 526th stated that 22 Honeywell launchers had been brought to his shop for repair, and parts had been ordered, but none received. He stated that the only manuals on hand were Navy publications obtained from the 458th and that, in the past, some Honeywell parts had been scrounged from the US Navy. The 526th rationalized their inability to repair the Honeywell by asserting that the Honeywell is an obsolete piece of equipment; is being replaced by newer model automatic grenade launchers; and that parts are no longer available. The 526th's work-order request policy was as follows: "if parts ordered for a piece of inoperative equipment were not received within 90 days, the work order would be closed out as 'not repairable this station' (NRTS)". In February 1970, the 458th turned eight Honeywells into the 526th for repair. Two were repaired and returned to the unit, but the other six work orders closed out as NRTS. The six work orders did not reflect that any Honeywell parts had been ordered, and no other record could be found of parts being ordered.

(c) US Navy PBR's were equipped with the same Honeywell automatic grenade launcher. Navy maintenance personnel stated that they had no problem obtaining repair parts, other than delays of several months for some requisitions to be filled. The Honeywell was in wide use by the US Navy even though newer model (Mark 19 and 20) launchers had been introduced into the system to replace it. Navy maintenance personnel further stated that they had satisfactorily repaired the Honeywells and had found that failures were caused primarily by maladjustment, lost parts, and incorrect assembly. The Navy small-arms repair shop had given some Honeywell parts to the Army and had helped to repair some army weapons. This was done without work orders and on a one-time basis. No attempt had been made by the 458th or command to secure an interservice support agreement for Navy support of the Honeywell automatic grenade launcher.

(7) Outboard Motors

(a) The unit maintenance officer stated that the 85-hp motors required less maintenance and lasted longer than the 40-hp motors.

(b) The unit did not keep maintenance records on outboard motor engines. They experienced engine problems while using "MOGAS", allegedly because of the high lead content. This problem was solved by mixing 1 part aviation gas (115/145) with 2 parts MOGAS, which resulted in less carboning and varnish, longer engine life, and better performance.

d. Findings

(1) In marine maintenance, crews perform more extensive work than they would in support of motor vehicles [II-5a(2)(a); p. II-62].

(2) Maintenance facilities in the two MMAV support units surveyed were not conveniently located for several PBR detachments [II-5a(3)(b); p. II-62].

(3) PBR's were delivered in 1968 and treated as routine end items, but by April 1970 an initial PLL had not yet been established. At the time, however, the 1st LOG Command Supply Management Section was helping to alleviate the problem [II-5a(1) and 5b(1)(a)2; p. II-62,63].

(4) Repair parts sources were the push pack, a technical supply account operated by MMAV, direct purchase from the Navy, and cannibalization [II-5b(1)(b); p. II-63].

(5) Only one outpost maintained log books on PBR's [II-5c(2)(a); p. II-66].

(6) It was necessary to rely heavily on Navy tools and facilities [II-5c(2)(c); p. II-68].

(7) Between October 1969 and May 1970, 70 PBR engines were rebuilt through commercial contract. Under the present arrangement, the contractor had a time limit and provided a guarantee of quality [II-5c(3)(a) and (b)]; p. II-69].

(8) Repair turnaround time for the general support maintenance provided by M4AV was considered excessive by the 458th [II-5c(3)(c); p. II-69].

(9) Twenty-four percent of the PBR's, 44 percent of the Boston Whalers, and 38 percent of the outboard motors were NOR, monthly, during the period October 1969 through May 1970 [II-5d(1)(c); p. II-70].

(10) The majority of PBR engine failures were attributed to three general causes: overheating, contamination, and poor lubrication [II-5d(2); p. II-70].

(11). The Jacuzzi pumps had failures due to corrosion and erosion of stainless steel parts by salt water and silt abrasion. Some stainless steel parts were replaced by parts made from a magnesium/bronze alloy which is less susceptible to these effects, and more durable in this environment [II-5d(3); p. II-78].

(12) Some causes of the high failure rate of PBR electrical systems were operation by unqualified personnel, lack of proper maintenance, haphazard "quick-fix" repairs, and faulty rewiring when reinstalling major assemblies after overhaul [II-5d(4); p. II-81].

(13) Out of 38 radar systems assigned, only four sets were operational as of 30 April 1970. There was little attempt made to have the sets repaired [II-5d(5)(b); p. II-81, 84].

(14) On 20 May 1970 only 11 of the original 39 Honeywell automatic grenade launchers were operational. Neither crewmen nor armorers had received special training on disassembly, maintenance, and care of the weapon [II-5d(6)(a); p. II-84].

(15) The direct support unit responsible for servicing the grenade launchers was not capable of supporting the Honeywell grenade launcher because of the lack of special tools and repair parts [II-5d(6)(b); p. II-84].

(16) US Navy maintenance personnel had no problems repairing the Honeywell weapons system; however, no attempt had been made to secure an interservice support agreement for Navy support of the Honeywell automatic grenade launcher [II-5d(6)(c); p. II-85].

(17) "MOGAS" caused problems with Boston Whaler outboard motors; however, mixing 1 part aviation gasoline with 2 parts MOGAS produced an acceptable fuel [II-5d(7); p. II-85].

## 6. OBJECTIVE 6 - CREW TRAINING

### a. General

The training program for PBR crew members was divided into two phases - formal and in-service. The formal training program was conducted at the Naval Inshore Operations Training Center, Mare Island, California, for individuals assigned on orders to the 458th Transportation Company. The in-service program was administered at the unit level and consisted of an in-country orientation, on-the-job training (OJT), and regularly scheduled unit training.

### b. Formal Training Program

The 6-week formal training program at the Naval Inshore Operations Training Center was general in nature, and intended for personnel and crew members (coxswains and engineers). Instruction covered ten general areas: water survival, first aid, map reading, navigation, radio telephone operations, communications security, weapons, engineering (maintenance), seamanship, and boat operations.

(1) All respondents interviewed considered the PBR school to have been well organized, well instructed, and worthwhile. It was recognized by those who had attended the course that the training syllabus was organized along universal lines, covering both Naval offensive operations and Army defensive security roles. However, the preponderance of mission-type instructional material was directed toward offensive tactical operations. Ninety-four percent of the persons interviewed voiced opinions that additional training on radar operation, electrical system maintenance, and harbor security procedures would have been beneficial.

(2) During the course of the evaluation, a significant problem became evident in the assignment of PBR-school-trained crew members. A number of MP PBR-school graduates arriving in RVN were never assigned (by replacement battalions) to the 18th MP Brigade for further assignment to the 458th Transportation Company, and some of the graduates who were assigned to the 18th MI Brigade were not then assigned to the 458th; even though all such graduates were on CONUS FCS orders which clearly stated their training and the intended unit of assignment. The 458th was able to secure a copy of each class roster while the course was in progress; copies were made available to the replacement units through the 18th MP Brigade. The records of the 458th reflected that, out of a total of 43 MP's and TC personnel trained during the period March 1969 to January 1970, only three MP and 11 TC enlisted men actually reached the 458th, or about 30 percent of the attendees. Because the 458th is a small unit, and the number of crew members involved is small, it was recommended by the 18th MP Brigade that an MOS identifier awarded to PBR-school graduates be established.

### c. Orientation Training

The in-country training program established by the 18th MP Brigade

consisted of a formalized orientation given to all newly assigned enlisted personnel E6 and below. The program was conducted over a 3-day period and stressed such subjects as the Geneva Convention, rules of engagement, authority and jurisdiction, and mines and boobytraps. The program was not tailored to the specific training needs of the 458th, although it was helpful to newly arrived unit members. This program was conducted by the 95th MP Battalion, Long Binh Post, for all new members of the 458th.

d. Company Training

The company's training program followed the master training schedule prepared by the responsible MP battalion with an 18th MP Brigade directive. This directive contained a listing of required general military subjects (e.g.; military justice, code of conduct, safety, etc.), and a group of suggested Military Police MOS-related training topics, such as joint and combined police patrolling, escorting vehicles, and water safety. Again this program was not tailored to the needs of the PBR company, the concept being that the necessary technical training would be incorporated into detachment training schedules. The company accommodated the brigade requirements through the use of "roll-call" (or "capsule") training, conducted at regularly scheduled intervals at the detachment to coincide with the guard mount preceding a patrol. These sessions lasted 15-30 minutes and included intensive lectures, demonstrations, or discussions to teach novices technical skills such as boat handling, seamanship, or marine maintenance. The company prescribed an exact and detailed training schedule for the headquarters element, but could not do so for their outlying detachments because of the extraordinary command and control situation which left headquarters of the 458th with virtually no control over these widely dispersed units. An additional problem was the difficulty in imposing a rigid schedule on combat detachments whose man-hours were already overcommitted in mission performance.

e. On-the-Job Training

Crew members who were assigned to the 458th without the benefit of having attended the US Navy's PBR school were prepared for patrol duty exclusively through the means of on-the-job training (OJT). OJT was the only practical means of qualifying crew members. Each detachment was found to have its own method for conducting OJT but this was characterized at all detachments by the novice's accompanying a PBR crew on operations and receiving instructions during the mission. The variations by detachment were the length of time before the new member was considered to be qualified, and the level of supervisory personnel who conducted or monitored the instruction. There was no formal qualification examination administered at any detachment; when the detachment OIC/NCOIC determined the trainee to be qualified, he was integrated into an operating crew. Crew members were rotated from one job to another on the boats and were expected to be qualified to fill any position within the crew structure. All command and supervisory personnel acquired proficiency sufficient to accomplish the mission.

f. Formal Crew Training

None of the detachments surveyed conducted formal crew, maintenance, communications, tactics, or weapons training. The unit SOP required all crew members to fire a familiarization course with the boat weapons once a month. In actual practice this was rarely accomplished, because of the unacceptability of either withdrawing a boat and crew from their operational patrol mission or difficulties in obtaining firing clearances and range locations. Vung Ro Bay, which had ample free-fire zones in its AO, was the exception.

g. Crew Proficiency Evaluation

There were no formal procedures for command evaluation of the proficiency of PBR crews within the company. The form of evaluation employed at most detachments was personal observation by the company commander or by a representative of the 18th Military Police Brigade. This consisted of the evaluating officer's accompanying the crew on a mission and observing their performance. The unit commander and other supervisory personnel believed that a formal proficiency evaluation was impractical because the time required to perform the mission in a combat environment did not allow intervals for training or evaluation. Crew proficiency was also judged by reviewing after-action reports, a method relied upon heavily in analyzing crew proficiency under emergency situations.

h. Findings

(1) Formal training for PBR crews at the Naval Inshore Operations Training Center was general in scope [II-6b(1); p. II-87].

(2) Although all personnel having received formal training were put on PCS orders to the 458th, only about 30 percent of those so trained during March 1969 through January 1970 were actually assigned to the unit [II-6b(2); p. II-87].

(3) PBR personnel did not receive intensive, formal training in specific technical skills applicable to the 458th. Orientation and company-level training were general in content, and "roll-call" training sessions (lasting 15-30 minutes) at detachment level were used for in-depth coverage of technical subjects [II-6c,6d; p. II-87 and 88].

(4) There was no standardization among the detachments for conducting OJT. No formal qualification examinations were administered to determine crew members' qualifications [II-6e; p. II-88].

(5) No formal procedures or checklists were used for command evaluation of crew proficiency [II-6g; p. II-89].

(6) Personal observation by the company commander and review of after-action reports were the methods used for judging crew proficiency [II-6g; p. II-89].

### SECTION III

#### CONCLUSIONS AND RECOMMENDATIONS

##### 1. CONCLUSIONS

a. The missions assigned the outport detachments were valid for each location.

b. Significant problems in command and control were caused by dispersion of the detachments.

c. Techniques utilized for the primary mission were similar and effective at all detachments.

d. PBR's are suitable craft for most harbor security missions in RVN; however, some changes are necessary in order to enhance effectiveness and safety:

(1) The standard kapok life jacket should be replaced with a compact, inflatable type;

(2) Two additional CO<sub>2</sub> fire extinguishers are required;

(3) Deck shoes are a requirement;

(4) The front gun tub should be enlarged;

(5) Control panel lights should be brightened;

(6) A more reliable automatic grenade launcher should be used;

(7) A more substantial, maintenance-free radar should be used.

e. Boston Whalers proved to be satisfactory for the missions assigned; however, the units were forced to improvise a control console. The rim around the top of the craft should be reinforced.

f. The MTOE is not adequate for the 458th TC Company.

g. The maintenance and logistics support rendered the 458th TC Co. was inadequate.

h. The overall crew training program for the 458th TC Co. was inadequate in the following:

(1) The Navy PBR School training was inadequate in radar operation, electrical system maintenance, and harbor security procedures.

(2) PBR school graduates were not awarded an appropriate MOS to insure their assignment to an appropriate unit;

(3) Orientation and company-level training were too general in content, and detachment-level training was too brief to cover required subjects adequately;

(4) Lack of standardized methods, formal criteria, and evaluations caused OJT to be relatively ineffective.

## 2. RECOMMENDATIONS

It is recommended that:

a. Appropriate equipment changes and modifications be made on PBR's and Boston Whalers to make them safer and more effective;

b. A LOE be established specifically for a PBR Company in order that the unit may be organized and equipped to operate efficiently;

c. A maintenance and logistical system be established that will adequately support the 458th TC Company or similar transportation company;

d. Procedures be established for maintenance and logistical teams to assist newly formed units;

e. All units be inspected, at least annually, in areas of maintenance and logistics in order to determine where assistance is required;

f. Procedures be established to insure that graduates of the Navy PBR school are assigned to the 458th TC Company or similar transportation company;

g. Orientation of newly assigned personnel and continuous crew proficiency training be established for the 458th TC Company or similar transportation company.

ANNEX A

GLOSSARY

(U) ABBREVIATIONS

AO	Area of Operations
APC	Armored Personnel Carrier
ARVN	Army of the Republic of Vietnam
ASL	Authorized Stockage List
AN/VRC-49	Army Navy/Vehicular-mounted Radio Communications
AN/PRC-25	Army Navy/Portable Radio Communications
BIIL	Basic Issue Items List
Boat Cradle	A frame used to support boats when on dry land.
BOI	Basis of Issue
CMMI	Command Management Maintenance Inspection
CP	Command Post
Critical Shipping	Ships carrying sensitive cargoes such as explosives and gas
DeLong Pier	Trade name for a specific type of pier
Direct Fire Support	Fire support in line of sight
Draft	Depth of water displaced by a vessel
DS	Direct Support
DSU	Direct Support Unit
DX	Direct Exchange
Engine Hour	A unit for measuring the number of hours an engine runs based on its rated RPM
ENSURE	Expedited Non-Standard Urgent Requirement for Equipment

FSN	Federal Stock Number
Grenade Run	The employment of handgrenades from a moving boat, used as depth charges for detecting underwater swimmers
GSU	General Support Unit
H&I Fires	Harassment and Interdiction Fires
ICCV	Inventory Control Center Vietnam
ISSA	Inter-Service Support Agreement
KS	Kiem Soat (Vietnamese Police)
LOC	Lines of Communications
MMAV	Marine Maintenance Activity, Vietnam
MoGas	Motor Gas (Standard Army Gasoline)
MP	Military Police
MTOE	Modified Table of Organization and Equipment
M-2	Machinegun - .50 caliber
M-16	Standard Army Rifle - 5.56mm
M-18	Honeywell Automatic Grenade Launcher - 40mm
M-60	Machinegun - 7.62mm
M-79	Shoulder-fired grenade launcher - 40mm
NCOIC	Noncommissioned Officer in Charge
NORM/NORS	Not Operationally Ready, Maintenance/Not Operationally Ready Supply
NVA	North Vietnamese Army
OIC	Officer in Charge
Outport	A detachment of personnel and boats from the 458th TC Company
PBR	Patrol Boat, River

Physical Security	The actual use of physical security measures (walls, fences, lighting, etc) to safeguard materials or installations
PLA	Prescribed Load Allowance
PLL	Prescribed Load List
PM	Provost Marshal
POL	Petroleum, Oil and Lubricants
PPI	Plan Position Indicator (radar set)
QC	Quon Chan (Vietnamese Military Police)
Reconciliation List	A monthly DSU listing of all valid requisitions
RPG	Rocket-propelled Grenade
RTO	Radio Telephone Operator
RVN	Republic of Vietnam
Sampan	Small boat characteristic to the Orient
STD-A	Standard "A" a designation for equipment that is standard issue in the army
Swimmer/Sapper	An NVA or VC swimmer trained to carry and plant explosives
TAMMS	The Army Maintenance Management System
TAOR	Tactical Area of Operational Responsibility
Tank Farm	Area with large containers for storing POL
TC	Transportation Corps
TDA	Table of Distribution and Allowances
Tech Supply	Technical Supply
TOC	Tactical Operations Center
TOE	Table of Organization and Equipment
TM	Technical Manual
TTC	Transportation Terminal Command

USAMC

US Army Material Command

VC

Viet Cong

VIP

Very Important Person (Dignitary)

VSO

Vessel Supply Office

Water Jet Pump

Pumps water from an intake at the bottom of the boat and discharges it in a jet stream through a nozzle in the transom

ANNEX B

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT NUMBER 55-138E

458TH TRANSPORTATION COMPANY (LIGHT AMPHIBIOUS)

NO. 55-1328PCZ  
 CWS PCC285  
 LIC MCV28A  
 PAGE 2 - 1

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SECTION II--PERSONNEL ALLOWANCES PROCESSED 650522

INDEX	TITLE	SUBUNT	STA CODE	AT CHNG FROM	RECR	AUTH	NET CHANGE REOR AUTH	RYK NO.
450	TC CO LT AMPH EDATE 690605			MCVG P00068				
	MASTER SNC 5513BE2000P							
	REOR - LEVEL I AUTH - LEVEL I							
	ELEMENTS							
		AA	VS179		4	4	NC	NC
	SAC 5513BE2000B				1	1	NC	NC
	OFF				162	162	M3C	M3C
	NO				167	167	M3C	M3C
	EVL				167	167	M3C	M3C
	TOTAL				167	167	M3C	M3C
	TABLE TOTALS				167	167	M3C	M3C
	Inclosure 2							

NOT REPRODUCIBLE

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SECTION II-PERSONNEL ALLOWANCES  
 PROCESSED 690522

YY	TITLE	GRADE	PCS	BR	RECR	AUTH	NET CHANGE		RPMK NO.
							REGR	AUTH	
	APPROVED REQUIRED AND AUTHORIZED PERSONNEL								
	OFFICERS	O3	CC668	TC	1	1	NC	NC	
		O2	CC668	TC	3	3	NC	NC	
	TOTAL OFFICERS				4	4	NC	NC	
	WARRANT OFFICERS	WD	631AC		1	1	NC	NC	
	TOTAL WARRANT OFFICERS				1	1	NC	NC	
	ENLISTED	E8	6125C	MC	1	1	NC	NC	
		E7	6184C	MC	3	3	NC	NC	
		E6	CC83C		2	2	NC	NC	
			6184C	MC	5	5	NC	NC	
			76K4C	MC			MI	MI	
			76V4C	MC	1	1	AI	AI	
		E5	CC03C		2	2	NC	NC	
			3102C		2	2	NC	NC	
			6184C	MC	43	43	NC	NC	
			61C2C		1	1	NC	NC	
			61C4C	MC	1	1	NC	NC	
			71M2C		1	1	AI	AI	
		E4	CC03C		1	1	NC	NC	
			6182C		39	39	NC	NC	
			61C2C		2	2	NC	NC	

NOT REPRODUCIBLE

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SECTION 11-PERSONNEL ALLOWANCES PROCESSED 690522

YY	TITLE	GRADE	YOS	BR	RECR	AUTH	NET CHANGE REGR AUTH	RMK NO.
	APPROVED REQUIRED AND AUTHORIZED PERSONNEL							
	ENLISTED E4	61A20			39	39	NC	NC
		6302C			1	1	NC	NC
		63C2C			1	1	NC	NC
		7192C			3	3	NC	NC
		71M2C					MI	MI
		76H2C					MI	MI
		76K3C					MI	MI
		76P2C			1	1	AI	AI
		76Y2C			1	1	NC	NC
		76Y30			1	1	AI	AI
		63					MI	MI
		61A1C			11	11	M29	M25
	TOTAL ENLISTED				162	162	M30	M30
	TABLE TOTALS				167	167	M30	M30

NOT REPRODUCIBLE

20

NO. 55-1326F02  
 CMD PC0269  
 CJC NCVGAA  
 PAGE 2 - 1

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SECTION II--PERSONNEL ALLOWANCES  
 PROCESSED 510522

TITLE	GRADE	MCS	BR	RECR	AUTH	NET CHANGE RECR	AUTH	RWK NO.
RECAP BY MCS, GRADE, BRANCH								
ENLISTED	E5	61C4C	NC	1	1	NC	NC	NC
	E4	61R2C		39	39	NC	NC	NC
	E8	61Z50	NC	1	1	NC	NC	NC
	E4	63D2C		1	1	NC	NC	NC
		63C2C		1	1	NC	NC	NC
		71B2C		3	3	NC	NC	NC
	E5	71H2C		1	1	A1	A1	A1
	E4	71H2C				M1	M1	M1
		76H2C				P1	P1	P1
		76X3C				M1	M1	M1
	E6	76X4C	NC			P1	P1	P1
	E4	76P2C		1	1	A1	A1	A1
		76Y2C		1	1	NC	NC	NC
		76Y3C		1	1	A1	A1	A1
	E6	76Y40	NC	1	1	A1	A1	A1
TOTAL ADDITIONS				162	162	A1	A1	A1
TOTAL DELETIONS						M3C	M3C	M3C
TOTAL ENLISTED				162	162	M2C	M2C	M2C
TABLE TOTALS				167	167	M3C	M3C	M3C

NOT REPRODUCIBLE

BT

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SC IN II-PERSONNEL ALLOWANCES PROCESSED 650522

TITLE	GRADE	PCS	BR	RECR	AUTH	NET CHANGE REAR AUTH	RMK NO.
RECAP BY BRANCH, PCS, GRADE							
OFFICERS	O3	CG668	TC	1	1	NC	NC
	O2	CG668	TC	3	3	NC	NC
TOTAL ADDITIONS						NC	NC
TOTAL DELETIONS						NC	NC
TOTAL OFFICERS				4	4	NC	NC
RECAP BY BRANCH, GRADE, WARRANT							
WARRANT OFFICERS	WO	631AC		1	1	NC	NC
TOTAL ADDITIONS						NC	NC
TOTAL DELETIONS						NC	NC
TOTAL WARRANT OFFICERS				1	1	NC	NC
ENLISTED	E3	CG81C				M1	M1
	E6	CG83C		2	2	NC	NC
	E5	CG83C		2	2	NC	NC
	E4	CG83C		1	1	NC	NC
	E5	3182C		2	2	NC	NC
	E3	61A1C		11	11	M29	M29
	E4	61B2C		39	39	NC	NC
	E7	61D4C	NC	3	3	NC	NC
	E6	61D4C	NC	5	5	NC	NC
	E5	61B4C	NC	43	43	NC	NC
		61C2C		1	1	NC	NC
	E4	61C2C		2	2	NC	NC

NOT REPRODUCIBLE

CLASSIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SECTION III-EQUIPMENT ALLOWANCES PROCESSED 650582

LINE NO	DESCRIPTION	REQD	AUTH	NET CHANGE	RMK
				REQD	NO.
22	APPROVED REQUIRED AND AUTHORIZED EQUIPMENT				
1-27258 2	GEN ST GAS ENG: 5KW EDDY 1-3PH AC 120 24C 120/208V SKD-SHK MTD	1	1	NC	A1
245278 2	NO NOMENCLATURE FOR THIS LINE NUMBER			NC	
425347 2	HEATER IMMERSION LIQUID FUEL FIELD: 30 IN LG CF HEATER	12	12	NC	
425479 2	HEATER IMMERSION LIQUID FUEL FIRED: 37 1/4 IN LG CF HEATER	1	1	NC	
425480 2	HEATER SPACE: COAL OR OIL 45000 BTU 18-5/8 IN H	9	9	NC	
457762 2	X LIFE PRESERVER: MARINE USAF	234	234	NC	
457764 2*	LIGHT SET GENERAL ILLUMINATION: 25 OUTLET	5	5	NC	
490234 2	PUMP CENTRF: GAS DRV: 1/2 SE MTD 2 IN 166GFP 25FT HD HIGH END SPC	1	1	NC	
575175 2	SEMITRAILER VAN: SUPPLY 12 TON 4 WHEEL W/E	1	1	NC	
611152 2	SPRAYER INSECTICIDE HAND: 2 GAL	1	1	NC	
655460 2	TRAILER CARCO: 1/4 TON 2 WHEEL W/E	4	4	NC	
655911 2	TRAILER CARCO: 1-1/2 TON 2 WHEEL W/E	1	1	NC	
656225 2	TRAILER TANK: WATER 400 GALLON 1-1/2 TON 2 WHEEL W/E	1	1	NC	
740207 2	TRUCK CARCO: 2-1/2 TON 6X6 W/E	4	4	NC	
757271 2*	TRUCK TANK: FUEL SERVICING 2-1/2 TON 5X6 W/E	1	1	NC	
759443 2	TRUCK TRACTOR: 5 TON 6X6 W/INCH W/E	1	1	NC	
760033 2	TRUCK UTILITY: 1/4 TON 4X4 W/E	4	4	NC	
763299 2	TRUCK WRECKER: 5 TON 6X6 W/INCH W/E	1	1	NC	
657218 3*	BINOCULAR: 7X50 MILITARY RETICLE WEAPONS COMMAND	39	39	NC	

NOT REPRODUCIBLE

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT

SECTION III-EQUIPMENT ALLOWANCES PROCESSED 45C532

LIN NO	CC	NOMENCLATURE	RECR	AUTH	NET CHANGE		RMX NO.
					REOR	AUTH	
22		APPROVED REQUIRED AND AUTHORIZED EQUIPMENT					
		ELECTRONIC COMMAND					
472260	1	ANTENNAE MODIFIED GROUND PLANE TYPE 20 TC 389 PC FREQ	2	2	NC	NC	NC
LO1121	1	INVERTER VIBRATOR: PP-687U	1	1	NC	NC	NC
PRO002	1	MULTIMETER: AN/VM-105	2	2	NC	NC	NC
CS3519	1	RADIO SET: AN/VRC-46 MOUNTED IN MISCELLANEOUS BOARDS	78	78	NC	NC	NC
CS3726	1	RADIO SET: AN/VRC-46 MOUNTED IN TRUCK 1/4 TON	4	4	NC	NC	NC
CS4174	1	RADIO SET: AN/VSC-47	2	2	NC	NC	NC
CT8145	1	RADIO SET CONTROL GROUP: AN/GRA-14	2	2	NC	NC	NC
V31211	1	TELEPHONE SET: TA-212/PT	2	2	NC	NC	NC
V76103	1	TEST SET ELECTRONIC TUBE: TV-74U	1	1	NC	NC	NC
V8227	1	TEST SET RADIO: AN/VRM-1	1	1	NC	NC	NC
		MOBILITY COMMAND					
215696	2	65G WATER STERILIZING: COTTON DUCK POROUS STITCHED SEAMS 36 GAL	2	2	NC	NC	NC
34163	2	BURNER ASSEMBLY SPACE HEATER:	9	9	NC	NC	NC
EU2099	2	CHAIN ASSY SOL LEG: W/PEAR LINKS AND 1 GRAB HOOK 5/8 IN BY 16 FT	2	2	NC	NC	NC
E63317	2	COMPASS MAGNETIC: LENSATIC 1.58IN DIA DIAL	2	2	NC	NC	NC
G21061	2	DISPENSING PUMP: 12 GAL	1	1	NC	NC	NC
H73565	2	X FLASHLIGHT: PLAS RIGHT ANG 2 CELL MIN FGE LAMP W/RTGHT	60	60	NC	NC	NC
J44055	2	GEN ST GAS ENGE: 1.5KW DC 22V 5"OCK	2	2	NC	NC	NC
J45699	2	GEN ST GAS ENGE: 3KW 6CCY 1-3PM 12C/24CV 12J/20BV SKID SHOCK	1	1	NC	NC	NC

NOT REPRODUCIBLE

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SECTION III-EQUIPMENT ALLOWANCES : PROCESSED 690522

CC LIN NO DE	NOV ENCLATURE	RECR	AMT	NET CHANGE REQR ALTH	RMK NO.
22	APPROVED REQUIRED AND AUTHORIZED EQUIPMENT				
60300 8	COOK SET FIELD: 5 MAN	3	3	NC	NC
60915 8	DISK FIELD: 2 FOLDING STOOLS 22-5/8" 25-7/8" 14-1/2" IN	7	7	NC	NC
64214 8	FILE VISIBLE INDEX COOK UNIT: PRESSBOARD 12 IN W 22 IN H	2	2	NC	NC
64222 8	FILING CABINET: LETTER SIZE 1 DRAWER W/PAULOCK HASE	2	2	NC	NC
67100 8	SCOOTER SUP WIND AND DUST: SINGLE-APERTURE TAC PLASTIC LENSES	85	85	NC	NC
67105 8	OUTDOOR: BLANK NYLON BYING 1 FT 3/4 IN HOIST 2 FT 3/4 IN FLY TY II	1	1	NC	NC
68502 8	INSERT KEY SET LABELING MACHINE: USED WITH MEAT LABELING MACHINE	2	2	NC	NC
68550 8	PANEL MARKER: AERIAL LIAISON TYPE VS 17/0VY	4	4	NC	NC
68702 8	PANEL PARKER SET: AP-30-D	3	3	NC	NC
67701 8	NO NOV ENCLATURE FOR THIS LTNG NUMBER			NC	NC
67500 8	REPAIR KIT TENTAGE:	1	1	NC	NC
67510 8	SLING CARRYING UNIVERSAL LOAD CARRYING: CD 7 1/2 LCAD SPACERS	90	90	NC	NC
68924 8	STEEL STRAPPING AND SEALING KIT: 3/8" IN -0201X IN HAND CP	1	1	NC	NC
68271 8	STOVE GASOLINE BURNER: HEAVY DUTY 5000 BTU PER HOUR HEAD	3	3	NC	NC
68277 8	TABLE FOLDING LEGS: ENAMEL FINISH LVA5 CAMP UTILITY TABLE	14	14	NC	NC
68313 8	TARPULINE: CIN DK NR 6 F/PWR CD W/COPE NYC SHROUETS 40 X 20 FT	2	2	NC	42
68261 8	TENT: FRAME TYPE MAINTENANCE W/COMPONENTS	2	2	NC	NC
68199 8	TENT: GENERAL PURPOSE MEDIUM WITHOUT WINDOWS	5	5	NC	NC
68126 8	TENT: GENERAL PURPOSE SMALL WITH COVER PIN AND POLES	1	1	NC	NC
68111 8	TENT: KITCHEN FLYPROOF M-1548 F/PWR CD WITH COVER SCREEN LINES	1	1	NC	NC
68149 8	TENT: KITCHEN FLYPROOF M-1548 WITH COVER PINS AND POLE	1	1	NC	NC
68200 8	TENT LINEN: COTTON PERMEABLE GENERAL PURPOSE MEDIUM	5	5	NC	NC

NOT REPRODUCIBLE

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
SECTION III-EQUIPMENT ALLOWANCES PROCESSED 650522

CC LIN NO CE	DESCRIPTION	RECR	AUTH	NET CHANGE REST. ALTH.	RPK NO.
ZZ	APPROVED REQUIRED AND AUTHORIZED EQUIPMENT				
00355 3	BINOCULAR: 7X50 WITH OUT RETICLE	2	2	NC	NC
00356 3	MACHINE GUN 7.62 MILLIMETER: LIGHT FLEXIBLE	4	4	NC	NC
00374 3	MOUNT TRIPOD MACHINE GUN: 7.62 MILLIMETER	4	4	NC	NC
00674 3	PISTOL CALIBER .45 AUTOMATIC:	140	140	M29	M29
00677 3	RIFLE 7.62 MILLIMETER: M7E	27	27	427	427
00814 3	RIFLE 7.62 MILLIMETER:			M28	M28
03259 3	TOOL KIT AUTOMOTIVE MAINTENANCE: CRG MAINT COMMON SET NO 1	1	1	NC	NC
03286 3	TOOL KIT AUTOMOTIVE MAINTENANCE: CRG MAINT SUPPLEMENTAL NO 1	1	1	NC	NC
03342 3	MATCH BRIST: GRADE II	6	6	NC	NC
	MUNITION COMMAND				
01469 5	DECONTAMINATING APPARATUS PORTABLE: 1 1/2 QUART	48	48	NC	NC
00443 5	DETECTOR KIT CHEMICAL AGENT: VGH	3	3	NC	NC
00726 5	RESPIRATOR AIR FILTERING: PAINT SPRAY	2	2	NC	NC
	SUPPLY & MAINTENANCE COMMAND				
01689 8	ADDING AND SUBTRACTING MACHINE: LISTING MAND COLUMNAR	1	1	NC	NC
01726 8	ADDING AND SUBTRACTING MACHINE: LISTING MAND-ELEC 10 KEY	1	1	NC	NC
00964 8	SPACER KIT: X/CASE	1	1	NC	NC
00326 8	CABINET TOOL AND SPARE PARTS: 39H 46-3/4X 23 9/16D	2	2	NC	NC
00466 8	CASE FIELD OFFICE MACHINE: 18-1/2L 13-1/4X 17D IN INSIDE DIP	5	5	NC	NC

NOT REPRODUCIBLE

MODIFICATION TABLE OF ORGANIZATION AND EQUIPMENT  
 SECTION III-EQUIPMENT ALLOWANCES PROCESSED 680572

CC LIN NO. CE	NOMENCLATURE	REQ.	AUTH.	NET CHANGE REQ. AUTH.	RPK NO.
22	ISSUES REQUIRED AND AUTHORIZED EQUIPMENT				
22000 0	TENT LINER: 6X12 FT TENT FRAME TYPE MAINTENANCE	1	1	NC	NC
22000 9	TOOL KIT ARMORERS: SMALL ARMS REPAIR	1	1	NC	NC
22000 3	TOOL KIT AUTOMOTIVE MECHANICS: LIGHT MIGHT	2	2	NC	NC
22000 8	TOOL KIT CARPENTERS: ENGINEER SOLAD W/CHEST	1	1	NC	NC
22000 7	TOOL KIT GENERAL MECHANICS: RAIL AND MARINE DIESEL ENGINE	4	4	NC	NC
22000 0	TOOL KIT PIONEER ENGINEER SOLAD: LAND CLR AND BLDG EJECTION	1	1	NC	NC
22000 9	TOOL KIT RADIO REPAIRMAN: ORGANIZATIONAL REPAIR RADIO EQUIPMENT	2	2	NC	NC
22000 0	TYPEWRITER: NONPORTABLE 13 IN CARTRIDGE	4	4	NC	NC
22000 8	TYPEWRITER: PORTABLE 42 KEYS UPPER AND LOWER CASE	1	1	NC	NC
22000 2	BOAT PICKET: 32 FT MOBILITY COMMAND	39	39	NC	NC
	ENC OF TABLE				

NOT REPRODUCIBLE