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MARINE POLICE RESOURCES CONTROL ON THE MEKONG-BASSAC RIVERS COMPLEX

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1. INTRODUCTION. This report, prepared in support of the Waterways Control Committee, deals with one aspect of the current conflict in the delta. The Marine Police (MP) have diverse tasks to perform. Many of these tasks cannot be performed in the present political situation of the delta. Surveillance of the major waterways in the delta to prevent their use by the Viet Cong and North Vietnamese Army elements is a task within the scope of the activities that the MP might perform. This report briefly outlines the structure of the MP and estimates the capability of the MP for resources control on the major secure rivers of the Mekong-Bassac complex. These estimates are based on some explicitly stated assumptions about operational concepts and performance parameters. To bound the force requirements for this task, a "worst case" environment is assumed and the required MP assets to meet rationalized criteria for acceptable performance are estimated. The questions of communications and armament limitations are also considered.

2. SUMMARY AND CONCLUSIONS. The MP have, or have planned for early acquisition, bases and assets that can perform resources control surveillance on the secure major rivers. The criteria that are used in this report are that VC traffic will risk at least a 10% chance of interception when attempting to move al any 100 kms of the rivers. The current and future ability of

the MP to acheive that level of interception depends on the amount of traffic that must be inspected. Several patrols may be required from some bases. Information about the amount of traffic on the rivers is not available so it is treated as a variable parameter with an upper limit. To enforce night curfews on the rivers, at least one patrol per night from each base is required. Some of the bases have such extensive operating areas that more than one patrol at night is desirable. With good tactics this small number of night patrols should suffice to meet the 10% criteria.

The results of the analysis indicate that the planned force of 46 Police Patrol Boats (PPB) and 62 Police Interceptor Boats (PIB) at eleven bases can perform a moderate resources control surveillance. For peak traffic of 100 boats per hour throughout the area a 0.10 probability of intercepting violators can be achieved with a few exceptions where the night time patrol capability is not sufficient. The planned allocations of boats can be modified to achieve more uniform coverage while allowing for regularly planned maintenance on the PPB.

For peak traffic of 300 boats per hour and an average traffic of 150 boats per hour, it is estimated that the required force would be 83 PPBs including four rotational spares and 99 PIBs. This force level is capable of handling a "worst case" surveillance problem. The required force level for the performance criteria used probably lies between the present level and the "worst case" force level. If higher performance criteria are set,

proportionately larger forces are required. The force size required is proportional to the detection probability desired.

The inadequate radio equipment of the MP patrol boats constrains their operating radius to 20 km from their base. This constraint significantly reduces the surveillance coverage of the river complex. Thirty percent of the main stream channels are outside the operating radius of patrols. New bases located at Cho Moi and Cai Be would give better coverage of critical areas that are presently difficult for the MP to reach.

3. BACKGROUND.

a. Marine Police Organization. The MP of the Republic of Vietnam are composed of two types of operating units. The River Group (RG),(sometimes River Patrol Groups), will mainly be based in the delta area of Vietnam. Eventually they will be equipped with various types of craft whose characteristics are suitable to the environment which ranges from deep and wide river estuaries to flooded plains. The second type of unit in the MP organization is the Sea Group (SG)(Sometimes Coastal Groups). These units will be based and operated in the harbors and ports of RVN and perhaps will patrol in the coastal waters beyond the harbors. In some instances both types of units may be colocated. At present the neophyte Sea Groups are equipped with the same types of craft that the RG use. This report is concerned only with those RGs based on the Mekong-Bassac River complex, including the Song Co Chien and Song Ham Luong.

b. MP Boats. The boats that make up the majority of MP operating units' assets are two types. The first is the Police Patrol Boat (PPB), a 40 foot, wooden hull craft powered by a 225 hp Grey Marine diesel engine (64 HN 9 or equivalent). These boats, having a displacement on the order of 20,000 lb and an advertised speed of 14 knots, were constructed in Taiwan. Delivery of 76 boats was made over a period of about one year. The boats are armed with a .30 caliber machine gun, pintle mounted on the forward deck, and a .30 or .50 caliber machine gun similarly mounted in the stern cockpit. Individual weapons are also carried. The boats are equipped with a Sperry MR-8 radar, primarily intended as a navigational aid, and a 5 watt FM voice radio.

The PPB is a satisfactory boat for most of the riverine operations that the MP may have to conduct but are inadequate for operations in open water where sustained sea states of 3 or more would be encountered.

The second type of boat is the Police Interceptor Boat (PIB), a boat similar to the Boston Whaler. The present PIB is 17 ft long, powered by a 75 hp Chrysler outboard motor giving an advertised speed of 25 knots. The hulls are of fiberglass reinforced plastic. There is no fixed armament aboard these boats. One watt transciever voice radios are normally carried aboard the PIB.

c. Planned Base MP bases planned for the future, the concern in this report, are [illegible] with their planned assignment of boats and are shown on Figure 1 for clarity. They are grouped by rivers and listed in the order in which their areas are encountered from the river mouths to the Cambodian border. Vinh Long is grouped with those bases on the Mekong although it is located on the Song Co Chien. It has important operating areas on both rivers. It is assumed in this study that all of these forces are available for resources control on the major rivers.

d. Operating Area. The operating area with which this study is concerned is the complex of main stream channels of the Mekong and Bassac Rivers. This complex includes the main distributaries and mouths that are sufficiently secure for the MP to perform resources control. The Song Ba Lai is an important distributary in this complex but is not considered secure for the purposes of this study. At many places on the rivers there are major islands where traffic can pass on either side. In determining the length of patrol areas, these diversionary channels have been counted where they are more than 5 km long. Table 2 gives the lengths of the various river segments used in this study.

The patrol areas assumed for each base listed in Table 1 are given in Table 3. These areas were established from a detailed study of large scale maps (Army Maps Series 7014; 1:50000) and a consideration of the number of boats assigned to the bases.

ANNEX I

PLANNED MARINE POLICE BASES ON MEKONG AND BASSAC[1]

RIVER	BASE	NO PTB	NO PIB
MEKONG			
	AP BINH LONG	2	3
	MY THO	5	5
	VINH LONG	5	6
	CAO LANH	4	6
	AP LONG HUNG	4	2
BAN LUNG			
	TRUC GIANG	5	6
CO CHIEN			
	AP CAM SON	5	6
BASSAC			
	BAI HOAI	2	4
	CAN THO	6	6
	LONG XUYEN	4	6
	CHAU DOC	4	6
	TOTALS	46	62

1. Postwar Concept of Operations; Marine Police Force, National Police. E. G. WALTERS, Deputy Senior Advisor, VN Marine Police, USAID.

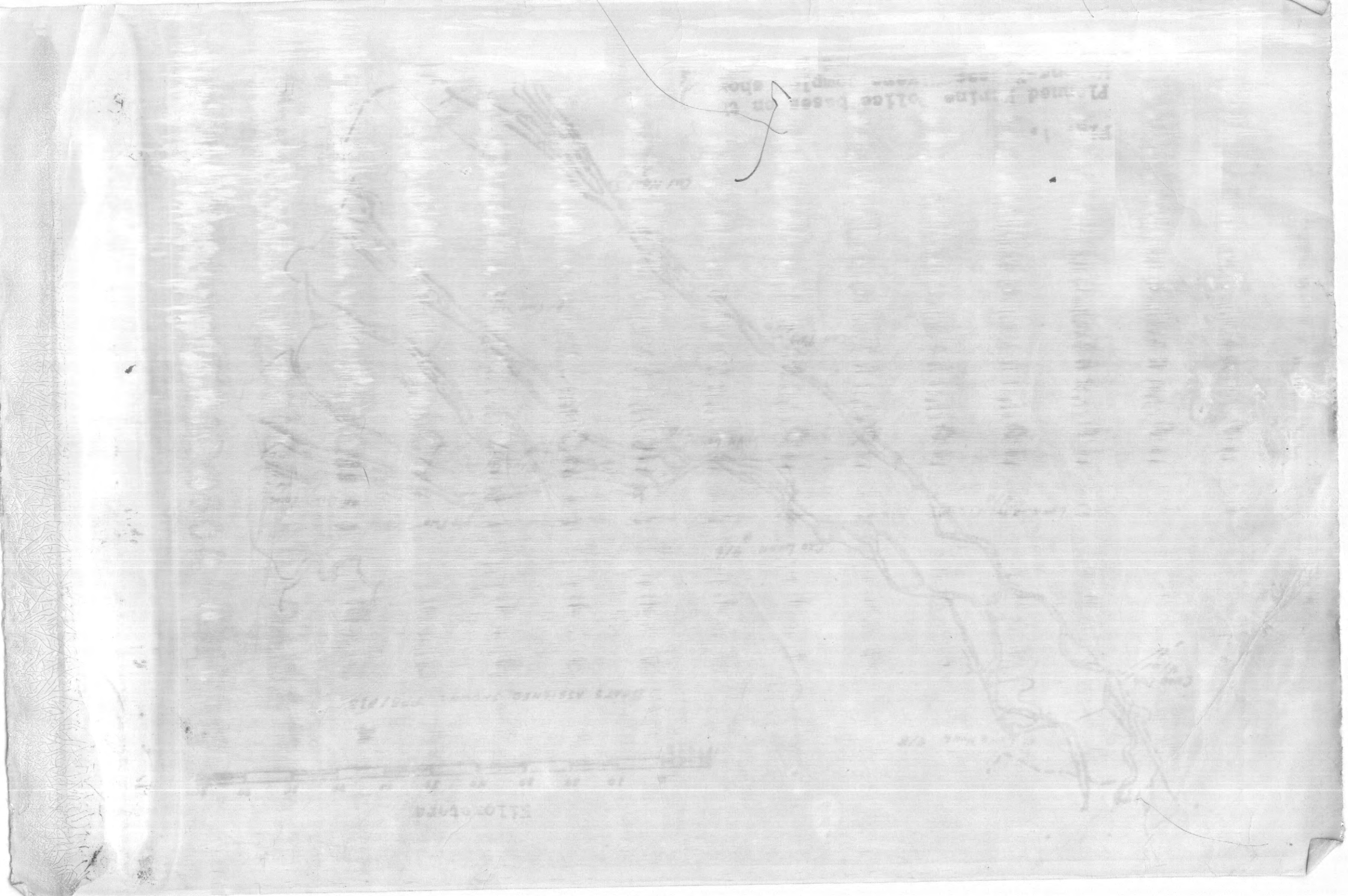

TABLE 2

LENGTHS OF RIVER SEGMENTS AND MAJOR CHANNEL DIVERSIONS OF MEKONG BASSAC RIVER COMPLEX

Segment	Length,
Mekong main channel, Cua Tieu to Cambodia	225.0
Song Ham Luong to Mekong	70.5
Song Co Chien to Mekong	98.0
Bassac, Cua Dinh An to Cambodia	220.5
Cua Dai to Song My Tho	35.0
Islands at My Tho	10.0
Northern channel at divergence of Song My Tho-Song Ham Luong	20.0
Rach Sa Dec	16.0
Channels around Con Troi	15.0
Channel around Cu Lao Gieng	15.0
Channel around Cu Lao Tay	20.0
Song Cai Vung	15.0
Upper channel at Hong Ngu	10.0
Channel around islands in Song Ham Luong	15.0
Channel to north at mouth of Song Co Chien	30.0
Song Pang Tra	15.0
Cua Tran De	33.0
Channel around Cu Lao May	20.0
Rach Thot Not	15.0
Channel around Cu Lao Ong Ho	5.0
Channel around Cu Lao Ba	10.0
Song Chau Doc	20.0
Vam Nao	10.0
TOTAL	943

TABLE 3

NOMINAL ASSIGNMENT OF RESPONSIBILITIES TO PLANNED MARINE POLICE BASES ON MEKONG AND BASSAC

BASE	RIVER AND SEGMENT, KM (1)	LENGTH OF CHANNELS IN SEGMENT, KM(2)	TOTAL LENGTH OF CHANNELS IN PATROL AREA, KM
Ap Binh Long	Cua Tieu 0-35	35.0	35.0
My Tho	Cua Dai 0-35	35.0	
	My Tho 35-85	80.0	115.0
Vinh Long	Co Chien 66.5-98	31.5	
	Mekong 85-126.5	72.5	104.0
Cao Lanh	Mekong 126.5-188	96.5	96.5
Ap Long Hung	Mekong 188-225	62.0	62.0
Truc Giang	Dam Luong 0-70.5	85.5	85.5
Ap Cam Son	Co Chien 0-66.5	111.5	111.5
Dai Ngai	Cua Ding An 0-33.5	33.5	
	Cua Tran De 0-33.5	33.5	
	Bassac 33.5-40	6.5	73.5
Can Tho	Bassac 40.0-113.0	93.0	93.0
Long Xuyen	Bassac 113-158.5	65.5	
	Vam Nao 0-10	10.0	75.5
Chau Doc	Bassac 158.5-220.5	72.0	
	Song Chau Doc 0-20	20.0	92.0

(1) Measured from approximate mouth of river.

(2) Lengths include secondary channels around major islands of lengths greater than 5km and so may be more than differences between end points.

For purposes more general than resources control, different operating areas might be defined.

e. Operational Concept. Resources control is the term applied to the surveillance effort on the waterways of South Vietnam. The objective is to intercept the movement of the enemy's personnel and material. Its main features are inspection of boats that travel on the waterways and enforcement of restricted areas and curfews. At the present time and for some time in the future, a curfew will prohibit movement of craft during hours of darkness and night time resources control will fundamentally be curfew enforcement. In the day ti civilian traffic on the waterways provides a good cover for illicit movement of all sorts and resources control is focused on stopping and inspecting traffic in the search for improper registrations, identifications and manifests and for illegal cargo.

This study is concerned with the performance of resources control by the MP on the major channels of the Mekong-Bassac Rivers. Under this concept, the naval forces of the United States and South Vietnam are relieved from these tasks in order to concentrate their attention on the less secure secondary waterways. It is based on the assumption that the major channels are sufficiently secure that the tasks can be performed by the relatively lightly armed and wholly unarmored MP boats. Patrols are structured under this assumption.

(1) Day Operations. Daytime patrols of MP boats will be engaged in stopping and inspecting boats. The activity will last from dawn to dusk while traffic is legal. Because the rivers are reasonably secure and the boats will not concentrate on surveillance of river banks, single PPB's can conduct a patrol. The major danger in this kind of operation is a possible ambush by boat which is inherently contrary to the assumption. Evading craft may be detected during stop and inspect operations and in some cases the PPB may not be able to pursue or may not be fast enough to intercept the evader. Each PPB on day patrol will have with it a PIB that can be quickly cast off in pursuit. Additional PIB's might be desirable but one is a necessity. The PPB's are not sufficiently large to easily tow two PIB's without a special towing bridle which may make a quick response difficult. Furthermore a PIB in pursuit should have three men aboard, two gunners and one coxswain. These men should not draw down the force on the PPB for alongside inspection which requires at least five and preferably six men. Thus a PPB with two PIB's in company would require up to 12 men on the PPB during much of its patrol. This is considered to be excessive. It will therefore be assumed that the normal daytime patrol of a PPB will be made up of one PPB, one PIB and nine men. Patrols will last for 14 hours or the hours of daylight. This type of patrol can operate to the limits of the operating area of the respective base, assuming secure waterways.

Implicit in the last factor is the assumption that the patrol has means for communicating with its base at all times. Resources control is a surveillance operation and as with all surveillance systems prompt response to detections is required. For many incidents the patrol itself may be able to adequately react to detections, but some incidents will require a reaction force, implying the ability to call for one.

A second type of day patrol that the MP can place on the rivers will be comprised of two or more PIB's operating together. These patrols would be tasked with a fixed check point for the inspection of boats. It would be located within five kilometers of the base because of inherent limitations on communications and habitability of the craft. It would be an eight hour patrol performed in two watches of 4 hours with a long rest interval, returning to base at that time. The use of this type of patrol is to augment the resources control activity during periods of high traffic density on the rivers. In some situations only a single watch in one day might be maintained.

(2) Night Operations. Night patrols of the MP in resources control on the Mekong-Bassac Rivers will be engaged in curfew enforcement. The activity will be conducted during hours of darkness or during curfew hours, if they differ. Night patro must be conducted by at least two boats in company for mutual support during the investigation of curfew violators, or in the event of a firefight. The reaction doctrine of the MP to curfew violators is not likely to be the same as that of naval craft

operating in less secure areas. However, that doctrine may vary significantly over the entire Mekong-Bassac complex. Description and discussion of the reaction doctrine is beyond the scope of this paper. Night patrols will be capable of operating to the limit of the secure areas. The patrol unit will be two PPB each with one PIB and a full crew. The duration of the patrol will be eight hours. Again it is assumed that the patrol can communicate with the main base at all times.

4. ASSUMPTIONS. A number of assumptions are necessary to quantitatively evaluate the ability of the MP to conduct resources control surveillance on the Mekong-Bassac comples. The assumptions used are identified in this section and brief justifications are essayed where it seems required.

a. Use of Boats. Boats will be operated on only one patrol per day. This assumption is derived from the concept that the boats should be assigned single crews for several reasons. For example, in some locations the men use the PPBs as living quarters. There are at present insufficient officer personnel to assign multiple crews. Finally, it is believed that better maintenance on the boats results with single crews.

b. Relative Importance of Bases. It is assumed that no base area is inherently more important than any other base area If priorities can be established, a means for adjusting the assets accordingly can be devised. The assumption of equal importance for all areas results in a most conservative plan.

c. Relative Importance of Patrols. In planning patrols, there should, if possible, be night and day patrols from each base. Assignment of PPBs to night patrol will be given precedence over day patrols which can be partly performed by PIBs. It is assumed that the status of boats can be determined sufficiently far ahead of time that night time assignments can be made with high assurance. Daytime patrols are then assigned from the remaining boats.

d. Availability of PPBs. The availability of PPBs is assum to average 0.85 in accordance with Appendix A. Although it is impressively high it is consistent with boats operated under a single crew system, since that automatically precludes continuous intensive operations.

e. Availability of PIBs. The availability of PIBs is assum to be 1.0, that is, the PIBs are essentially always available because there are spare motors for them. This assumption is also made more acceptable by low utilization that results from assigning permanent crews to these boats.

f. Inspection Rate of Patrols. For determining the maximum traffic that can be inspected at 10% rate, PIB patrols are assumed equivalent to PPB patrols. The latter are preferred however, and would be sent out when possible. It will be assume that each type of day patrol can inspect 6 boats per hour. This number is drawn primarily from limited observation of the writer. It is believed to be consistent with reported inspection times for "Market Time" operations.

g. Patrol Time Used for Inspection. It is assumed that

a PPB day patrol operating for 14 hours will spend no more than 10 hours inspecting boats. Periods of heavy and light traffic occur on the rivers. During light traffic the crew will rest, eat or move along the river. A PIB patrol totaling 8 hours in two tours will be able to inspect traffic for 6 hours. The other two hours will be spent in moving to and from the base.

h. Worst Case Traffic. Information about traffic fl w was unavailable for this study. To determine a nominal "worst case" set of requirements, assumptions have been made about traffic flow. It is assumed first that all areas are subject to worst case traffic that reaches peak levels of 300 boats per hour past fixed points. The traffic may be flowing in each direction and has an average speed of 10km per hour. The density of boats on the river is therefore assumed to be 30 per kilometer at peak traffic. It is assumed that average traffic during the day is half the peak traffic, or 150 boats per hour and 15 boats per kilometer.

i. Boat Overhaul. It is assumed that periods of lay-up are required for the wooden hulled PPBs. One month in every 24 months was used. Thus for planning, a spare boat must be allowed for every 23 operational boats or 1/24 of the boats are spares. This allowance has not been indicated in past planning

j. Night Time Detection. The probability that a night patrol will detect curfew violating boats that are encountered or passed is assumed to be 0.10. Higher detection probability is probably not justifiable on these wide rivers.

k. Speed of Advance. The speed of advance of night patro

is required to determine their revisit time. It is assumed to be 10km per hour. This low speed allows for quiet movement and changes in course to enhance detection of curfew violators. The PPB can easily make this speed of advance if large delays are not encountered during the patrol.

5. PERFORMANCE MEASURES AND CRITERIA

a. Daytime Resources Control. Daytime resources control by the MP is carried out by inspection of boats on the rivers. The size of the force required depends on the amount of traffic, the fraction that must be inspected and the number of places where inspection must be performed. The object of search is illicit cargo purposely carried to aid the VC. Other illicit cargo and personnel are incidentially apprehended in the course of this type of surveillance but would not ordinarily be reason enough to carry out such intensive and single minded surveillance. The contraband is hidden and moved in a manner that is calculated to prevent detection and seizure. The carriers will not submit to a significant threat of detection but rather will move the contraband by less threatened routes. Thus, to prevent movement of contraband on the rivers, the threat of loss must be as great as or greater than the threat of loss by other infiltration routes. The eleven bases planned for the Mekong-Bassac complex are approximately evenly distributed. In traveling the entire length of the river a boat must pass through the operating areas of four or five of these bases, each of which has

an area of 50 to 100 km in extent. To be conservative and consistent with the criteria typically set for other surveillance barriers it will be required that boats moving up and down the rivers should be subject to an inspection rate of at least one in ten for each 100 km traveled. Thus a violator moving the entire length of the rivers will risk about 25% chance of being detected. To determine the number of patrols required to achieve the desired level of detection in an operating area Figure 2, can be used. It shows as a function of traffic density, measured as boats per hour past any point, the percent of the traffic that gets inspected at least once, when each patrol inspects six boats per hour and the patrols operate independently but on the same population of traffic. It can also be used to determine the level of traffic that can be inspected at some fraction by a given number of patrols. To determine the level of traffic that a particular base can handle at the criteria set above, the average number of patrols over any 100 km of its area is used in referring to Figure 2. A second measure of interest in the daytime patrol performance is the probable maximum number of boats that could be inspected by the planned day patrols. This measure is determined by the probable number of patrols times the number of boats each patrol can inspect. It is assumed that when a patrol is planned it will be performed by a PPB if possible, if not by a pair of PIBs to maintain the peak traffic inspection rate. No criteria has been set for this measure since it is not governing.