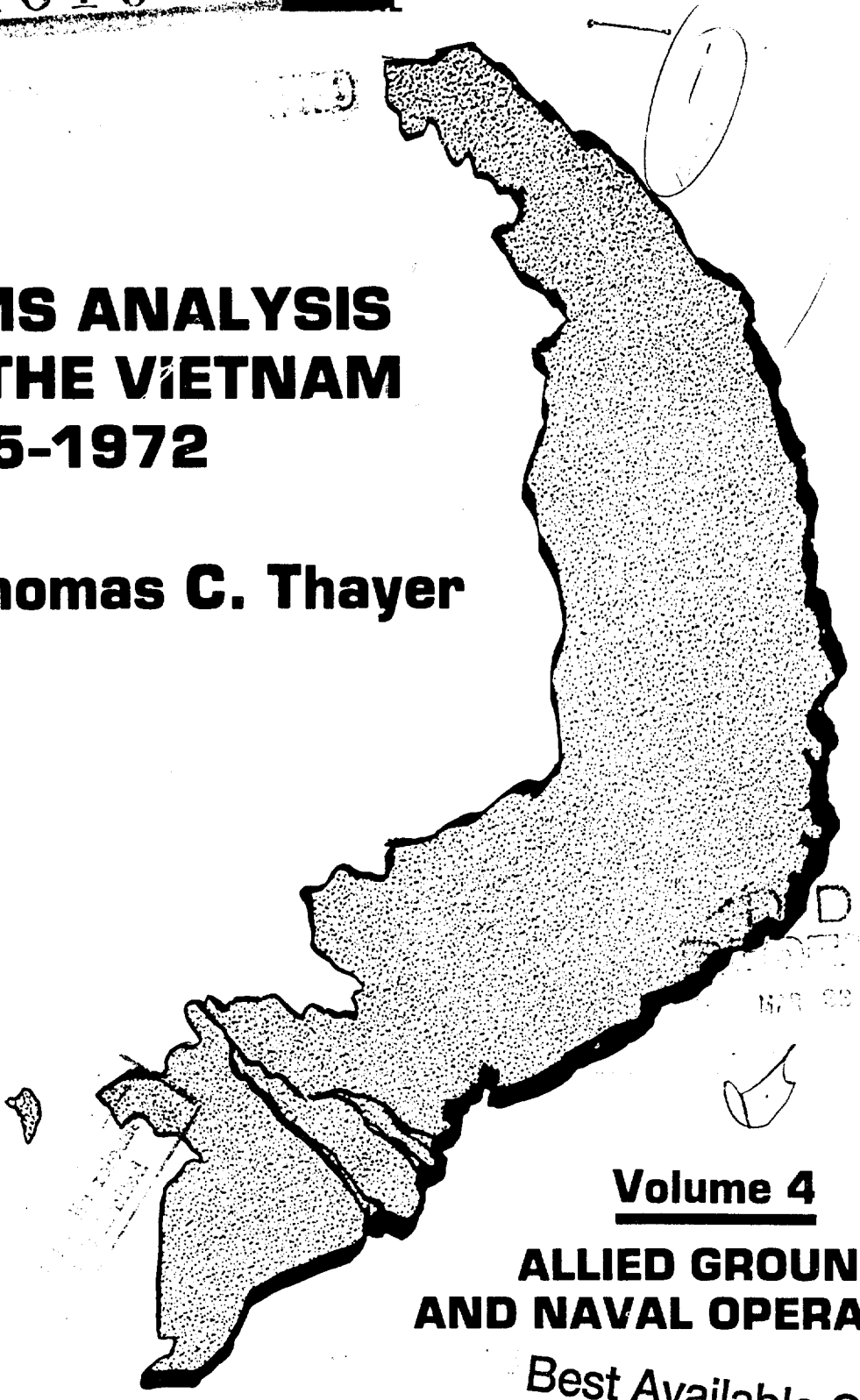
A SYSTEMS ANALYSIS VIEW OF THE VIETNAM WAR 1965-1972

Editor: Thomas C. Thayer



Volume 4

ALLIED GROUND AND NAVAL OPERATIONS

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER None	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) A SYSTEMS ANALYSIS VIEW OF THE VIETNAM WAR 1965-1972 VOLUMES 1-12		5. TYPE OF REPORT & PERIOD COVERED Final Report 1965-1972
		6. PERFORMING ORG. REPORT NUMBER None
7. AUTHOR(s) Thomas C. Thayer		8. CONTRACT OR GRANT NUMBER(s) None
9. PERFORMING ORGANIZATION NAME AND ADDRESS OASD(SA)RP Southeast Asia Intelligence Division Pentagon Washington, D.C. 20301		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N/A
11. CONTROLLING OFFICE NAME AND ADDRESS OASD(PA&E)RP Asia Division Room 2C310, The Pentagon Washington, D.C. 20301		12. REPORT DATE February 18, 1975
		13. NUMBER OF PAGES 2793
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Same as Above		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE N/A

16. DISTRIBUTION STATEMENT (of this Report)

Distribution Unlimited. Suggest nomination to NTIS because material is of interest to scholars of the Vietnam War.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Southeast Asia Analysis Report	RVNAF
OASD(Systems Analysis)	Hamlet Evaluation System
SEA Analysis Report	SE Asia Air Operations
VC/NVA	SE Asia Deployments
Pacification	SE Asia Logistics/Construction

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This twelve volume set includes every article printed in the fifty issue series of the Southeast Asia Analysis Report. The SEA Analysis Report represented a month-by-month analysis of Vietnam War activity including forces and manpower, VC/NV operations, Allied ground, naval and air operations, RVNAF, casualties and losses, population security, war costs and inflation and construction and port operations in South Vietnam.

(6) A SYSTEMS ANALYSIS VIEW OF THE VIETNAM WAR: 1965-1972,

Volume 4. ALLIED GROUND AND NAVAL OPERATIONS,

VOLUME 4

(11) 18 Feb 75 (12) 266 p.

(9) Final rept.,

(10) Editor: Thomas C. Thayer

A SYSTEMS ANALYSIS VIEW OF THE VIETNAM WAR: 1965-1972

Contents of the 12 Volumes

A23

A Systems Analysis View Of The Vietnam War: 1965-1972

Volume 4

ALLIED GROUND AND NAVAL OPERATIONS

A Systems Analysis View Of The Vietnam War: 1965-1972

INTRODUCTION

This volume, plus the other eleven volumes in the series, contains every article ever printed in the Southeast Asia Analysis Report (a few additional papers not printed in the report are occasionally included, too.).

Fifty issues of the Southeast Asia Analysis Report were published from January 1967 through January 1972 by the Southeast Asia office under the Assistant Secretary of Defense (Systems Analysis). The Report had two purposes. First, it served as a vehicle to distribute the analyses produced by Systems Analysis on Southeast Asia. It thus provided other agencies an opportunity to tell us if we were wrong and to help prevent research duplications. We solicited and received frequent rebuttals or comments on our analyses which sharpened our studies and stimulated better analysis by other agencies. Second, it was a useful management tool for getting more good work from our staff -- they knew they must regularly produce studies which would be read critically throughout the Executive Branch.

The first page of the Report stated that it "is not an official publication of the Department of Defense, and does not necessarily reflect the views of the Secretary of Defense, Assistant Secretary of Defense (Systems Analysis), or comparable officials." The intent was solely to improve the quality of analysis on Southeast Asia problems -- and to stimulate further thought and discussion. The report was successful in doing precisely this.

We distributed about 350 copies of the Report each month to OSD (Office of the Secretary of Defense), the Military Departments, CINCPAC, and Saigon, and to other interested agencies such as the Paris Delegation, AID, State Department, CIA and the White House Staff. Most copies circulated outside OSD were in response to specific requests from the individual person or agency. Our readership included many of the key commanders, staff officers, and analysts in Washington and in the field. Their comments were almost always generous and complimentary, even when they disagreed with our conclusions. Some excerpts appear below:

"I believe the 'SEA Analysis Report' serves a useful purpose, and I would like to see its present distribution continued." (Deputy Secretary of Defense, 31 May 1968)

"We used a highly interesting item in your May Analysis Report as the basis for a note to the Secretary, which I've attached." (State Department, 28 June 1967)

"We were all most impressed with your first monthly Southeast Asia Analysis Report. Not only do we wish to continue to receive it, but we would appreciate it if we could receive 4 (four) copies from now on." (White House, 9 February 1967)

"Ambassador _____ has asked me to tell you that he has much appreciated and benefited from the studies and analyses of this publication." (State Department/White House, 24 January 1969)

"Congratulations on your January issue. The 'Situation in South Vietnam' article was especially interesting and provoking." (State Department, 24 January 1969)

"I let Ambassador _____ take a swing at the paper. He made several comments which may be of interest to you. Many thanks for putting us back on distribution for your report. Also, despite the return volley, I hope you will continue sending your products." (MACV-CORDS, 17 June 1968)

"As an avid reader (and user) of the SEA Analysis Report, I see a need for more rounded analyses in the pacification field and fewer simplistic constructs." (MACV-DEPCORDS, 17 April 1968)

"The SEA Programs Division is to be commended for its perceptive analysis of topics that hold the continuing concern of this headquarters... The approach was thoughtfully objective throughout and it was particularly pleasing to note a more incisive recognition of factors that defy quantified expression." (Commander, US Army Vietnam-USARV, 29 November 1967)

"In general, I think it is becoming the best analytical periodical I've seen yet on Vietnam (though there's not much competition)." (MACV-DEPCORDS, 21 April 1967)

"Statistical extrapolations of this type serve an extremely useful purpose in many facets of our daily work." (CIA, 6 February 1967)

"One of the most useful Systems Analysis products we have seen is the monthly Southeast Asia Progress Report.... Indeed it strikes many of us as perhaps the most searching and stimulating periodic analysis put out on Vietnam." (President of The Rand Corporation, 22 October 1969)

In November 1968, 55 addressees answered a questionnaire about the Report: 52 said the report was useful, 2 said it was not, and 1 said, "The report does not meet an essential need of this headquarters;" nonetheless, it desired "to remain on distribution" for 7 copies. From 48 questionnaires with complete responses, we found that an average 4.8 people read each copy -- a projected readership of 500-950, depending on whether we assumed 1 or 2.4 readers of copies for which no questionnaire was returned.

Readers responding to the questionnaire reported using the Report for the following purposes:

Information	42%
Analysis	31%
Policy Making	11%
Briefings	7%
Other	9%
	100%

In addition, readers reported about equal interest in each of the seven subject areas normally covered in the Report.

VC/NVA	18%
Air Operations	20%
RVNAF	17%
Pacification	13%
Friendly Forces	12%
Deployments	12%
Logistics/Construction	8%
	100%

There was some negative reaction to the Report. Concern was expressed about "the distorted impressions" the Report left with the reader and its wide dissemination which "implies its acceptance by the Secretary of Defense, giving the document increased credibility."

Given the way in which the Southeast Asia Analysis Report was used, the important responsibilities of many of its readers, and the controversial aspects of the report, I decided to include in these twelve volumes every article ever published in a Southeast Asia Analysis Report. This will allow the users of these volumes to arrive at their own conclusions.

Thomas C. Thayer
February 18, 1975

May 1967

THE STRATEGY OF ATTRITION

MACV's briefings and public statements emphasize the goal of attriting enemy forces faster than the enemy can recruit and infiltrate replacements. Is this emphasis practical or wise? Many senior officers have noted that the enemy fades into the jungle and refuses to fight when faced with superior forces. Some make the stronger statement that the enemy only fights at a time and place of his own choosing. If these statements are largely true, and if the enemy's objective in fighting is to harrass and outlast us, he is unlikely to fight so hard as to allow us to deplete his forces.

Because the enemy's degree of control over the pace of the action determines how well he can control his attrition, we have analyzed the degree of the enemy's tactical initiative. We classified 56 platoon-sized and larger fire-fights in 1966 according to how they developed. The data is based on detailed accounts in I, II, and III CTZ, as compiled by S.L.A. Marshall and F.J. West, under Service sponsorship.

TABLE I

TYPE OF ENGAGEMENTS DESCRIBED IN COMBAT NARRATIVES

Category Description	Nr. of Engagements	Percent of Total	Percent Subtotals
1. Hot Landing Zone. Enemy attacks U.S. troops as they deploy onto the battlefield.	7	12.5	
2. Organized enemy attack against a U.S. static defense perimeter.	17	30.4	
3. VC/NVA ambush or encircle and surprise a moving U.S. unit, using what is evidently a preconceived battle plan.	13	23.3	66.2
4. A moving U.S. unit engages the enemy in a dug-in or fortified position:			
a. The main engagement comes as a virtual surprise to the American tactical commander because the enemy is well concealed and has been alerted either by observations of our unit or by our engaging apparent stragglers near-by.	7	12.5	78.7
b. The U.S. tactical commander has reasonably accurate knowledge of enemy positions and strength before committing his forces.	3	5.4	84.1
5. U.S. unit ambushes a moving enemy unit.	5	8.9	
6. Chance engagement, both sides surprised.	4	7.1	
TOTAL	56	100.1	

The enemy willingly and knowingly stood and fought a pitched battle in 47 (84%) of the 56 battles (Categories 1-4 in Table I). The enemy ambushed and assaulted our forces in 37 (66%) of the cases; the enemy had the advantage of surprise in 7 other cases (12%) in which U.S. forces were moving against him.

The 10 cases in which a moving US unit engaged a dug-in enemy (Category 4) warrants further discussion. Typically, during the 7 engagements of Category 4a, American units pressed forward into combat after events made them aware of enemy presence. Our company and platoon commanders in these narratives often strived to take immediate advantage of what seemed to be an inviting situation without fully reconnoitering enemy forces and positions. The enemy appeared to be caught in an unaware or straggling condition that viewed in hindsight may have been a lure. Clearly, the enemy chose these occasions to fight. Usually he was badly beaten. In the future he may not be so willing, and we may not be able to kill so many.

The 3 cases in Category 4b were instances when the American commander engaged enemy positions while possessing accurate knowledge of both the enemy force and its position.

Common to 44 of the 56 cases (78.7%) in the first three categories and 4a is the element of enemy surprise with regard to time, position, or strength; the American tactical commander was put at an initial disadvantage by enemy initiative. The entire picture is not consistent with the successful prosecution of a strategy to force attrition upon the enemy against his will.

After Action Reports. COMUSMACV requires that an After-Action Report be written by the responsible commander after every significant operation. These reports constitute the most comprehensive official source of information available on ground operations. Reports covering 77 U.S. operations terminating from January through October 1966 were reviewed (of 186 total) to determine what percentage of VC/NVA losses (KIA-body count plus captured) occurred in combat resulting from enemy initiative or active willingness to engage at the tactical level. Enemy mortar attacks, sniping, and attempts to over-run our perimeters are examples of the overt action which indicated that he sought combat.

The pertinent portions of the reports are the narrative accounts, which vary in quality and detail. There was sufficient information to permit classification of only 38% (3600 of 9458) of the enemy casualties; in the other cases the enemy casualties in the "body count" are unexplained by the narratives, or are covered by narratives too vague to be interpreted in the present context. Table 2 shows that of the classifiable enemy casualties, 62% occurred in actions where the enemy sought the initial contact.

TABLE 2

DEPENDENCE OF ENEMY LOSSES ON ENEMY INITIATIVE AT THE TACTICAL LEVEL
JANUARY THROUGH OCTOBER 1966

Enemy KIA & Cpt informatively described as to occurrence			
Category I	-	Those enemy Casualties occurring when enemy sought initial contact.	1,982 (62%)
Category II	-	Those enemy Casualties occurring when enemy did not seek initial contact.	1,233 (38%)
Subtotal	-	Category I plus Category II	3,215 (100%)
Other	-	Those enemy Casualties resulting from air, arty, mines, etc., and not classifiable above.	385
			3,600

ARCOV Study Results

Independently, the Army Combat Operations - Vietnam study, which analyzed a different set of battles in late 1965 and early 1966, found that 46% of the fights begin as enemy ambushes and that the enemy starts the fight in 88% of the cases; moreover, it found that 63% of the infantry targets encountered were personnel in trenches or bunkers.

Conclusion:

During 1966 most of the enemy attrition depended upon his willingness to engage. His aggressive and offensive tactics were obvious in ambushes both at landing zones and as our units moved forward on sweeps. He anticipated our tactics, produced substantial U.S. casualties, and decided the losses he was willing to take. While more effective U.S. techniques probably can increase enemy attrition, we must recognize that U.S. ground units do not have the tactical initiative in most encounters at present.

Enemy attrition in 1966 was largely the result of his seeking combat, not the result of combat forced upon him. Continued large-scale enemy attrition remains subject to his willingness to fight. Should the enemy find that his attrition has reached a rate unacceptable to him, he can avoid combat, use more mortar and rocket attacks, resort to smaller, guerrilla-like actions, or rely increasingly upon isolated acts of terrorism. Given such an enemy decision, and without a change in the tactics employed by U.S. forces, a strategy of attrition cannot be prosecuted successfully.

Sep 68

MILITARY INITIATIVE IN SOUTH VIETNAM

Summary. Data on combat deaths, operations and incidents indicate that the VC/NVA have a much stronger influence over both their combat death rates and those of US forces than do the allied forces. This, in turn indicates that the enemy holds the military initiative in South Vietnam.

In this analysis we assume that the ability to control casualty rates is a good measure of military initiative in South Vietnam; whoever holds the initiative in SVN should be able to influence both his casualty rate and the other side's casualty rate by changing the tempo of his offensive actions. Thus if the US/Allied forces hold the initiative, they can increase VC/NVA losses (allied losses will increase too) by increasing their operations; conversely, a significant reduction in allied operations should reduce casualties for both sides. If the enemy holds the initiative, both VC/NVA and allied combat deaths should fluctuate more with VC/NVA activity rates than with allied ground operation rates.

We found:

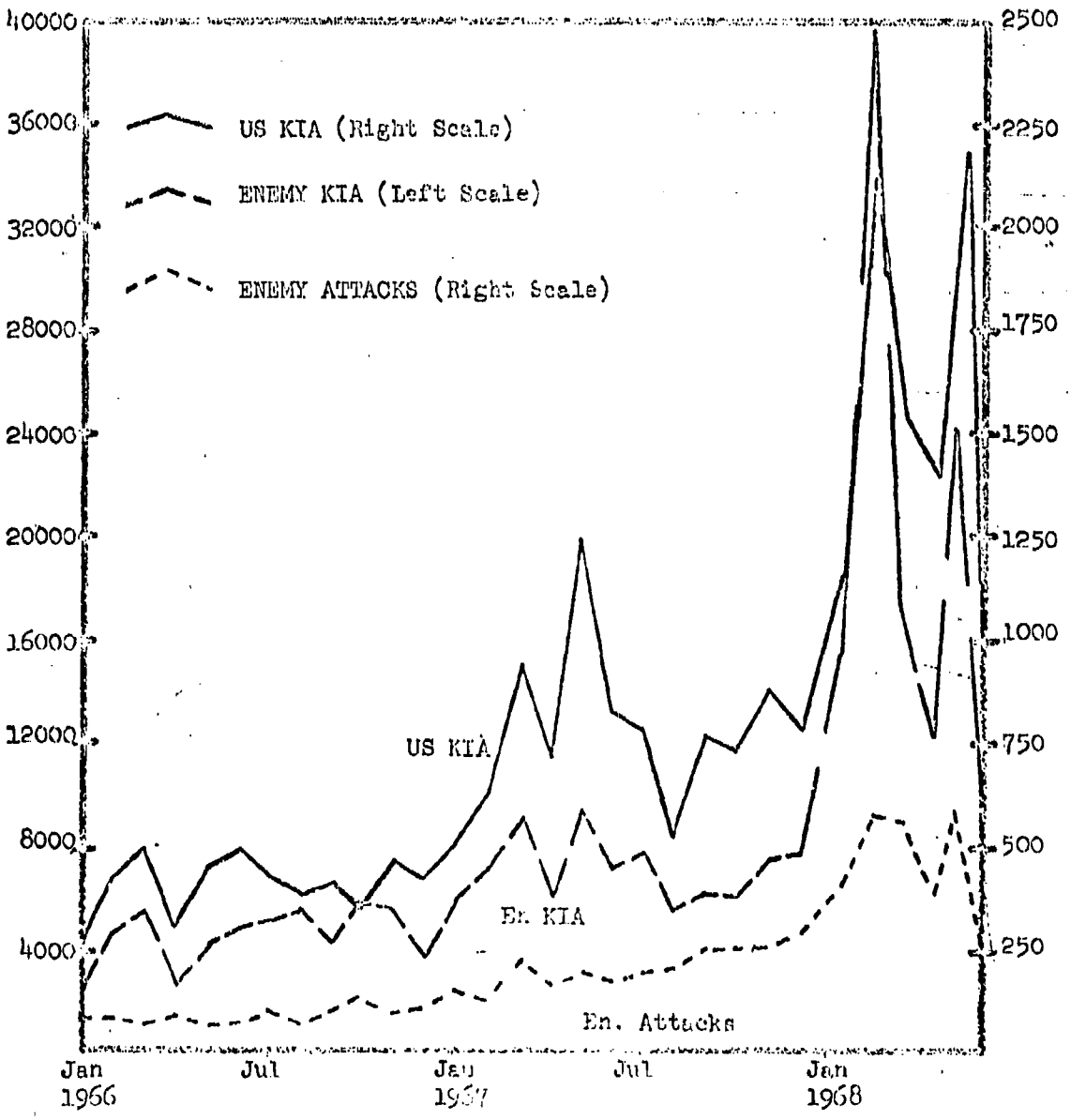
1. Little or no relationship between the tempo of allied operations and fluctuations in either VC/NVA or US combat deaths. A significant increase in friendly operations is not accompanied by a significant increase in allied or enemy combat deaths, nor does a reduction in allied operations reduce deaths.

2. A very strong relationship between VC/NVA attacks and VC/NVA casualties and an even stronger relationship between VC/NVA attacks and US combat deaths. The chances are 999 out of a 1000 that the VC/NVA attack rate can be used to account for about 85% of the total variation in both US and VC/NVA combat death rates. (The graph shows the movements)

The statistical findings fit our hypothesis that the enemy hold the military initiative in South Vietnam, as measured by his ability to influence casualty rates. Taken alone, the statistical findings must be considered tentative, but they accord well with past experience, which indicates the enemy can control his casualty rate, to a great extent, by choosing where, when, and how often he will fight. (A previous study indicates that VC/NVA units initiate up to 85% of all the fire fights in SVN[1].) He tries to avoid contact with allied troops under unfavorable conditions by blending into the population or vanishing into jungle base areas during large allied operations. Senior officers have often commented that: "We just can't find him (VC/NVA) when he doesn't want to fight." In July of this year, for example, VC/NVA KIA decreased sharply despite a very high level of allied operations.

1/ See "The Strategy of Attrition" SEA Analysis Report Special Supplement Feb-May 1967, p. 6. Also the Army Combat Operations-Vietnam study (ARCOV) cited on page 8 of that article.

US AND ENEMY KIA
VS.
ENEMY ATTACKS



The VC/NVA also attempt to fight on favorable terms as much as possible. In a briefing in late July, MACV stated that the enemy in recent months has been intentionally reducing his casualties by trying to stagger attacks on key targets, expanding attacks by fire, and withdrawing troops from unprofitable battle areas. Moreover, VC/NVA forces often fight from prepared positions whenever possible in an attempt to further increase their combat advantage.

Control of casualties also bears upon the strategy chosen by allied commanders. If the VC/NVA forces retain the initiative in controlling their own losses, then any strategy based upon the attrition of VC/NVA forces is untenable. Recent studies have shown that the VC/NVA manpower pool is sufficient to sustain the current rate of casualties for an extended period of time.2/ Unless allied forces can drastically increase the rate of VC/NVA losses, they can continue operations for at least three more years (at first half 1968 loss rates).

Details of the Analysis

As associated with battlefield situations the term "initiative" indicates the degree of control over the combat situation that each participant possesses. A combatant is usually credited with having the initiative if he can freely choose the time and place of the encounter. Over the course of the conflict, tactical initiative reflects the larger strategic military initiative, for the battlefield data indicate the degree of control and the success with which each participant has implemented his strategy. In the writings of Mao Tse Tung and other protagonists of guerrilla warfare on protracted conflicts, the strategic initiative plays a central part in the success of the insurgency.

To study strategic initiative, we need manageable and meaningful indicators of the degree of control that each combatant has over important areas of the conflict. Casualties are a central factor in combat success and control over combat deaths is an important indicator of initiative. The vehicle for control of casualties is, of course, combat operations. Holding the initiative, a successful combatant can, within limits, tailor his own operations to control enemy casualties and likewise to control his own.

Hypothesis for Friendly Forces on the Initiative

In Vietnam, friendly military forces operate largely on the theory that large operations designed to search out and destroy the enemy will yield a high level of control over the field of combat. The following correlations between operations and KIA should hold if friendly forces have the initiative:

2/ See "Manpower Availability in North Vietnam," SEA Analysis Report, May 1968, p. 1 and "North and South Vietnamese Manpower," SEA Analysis Report, August 1968 p. 4.

1. VC/NVA KIA will correlate highly with friendly operations data such as the number of battalion days, large unit operations, or large unit operations with contact, because these represent measures of the friendly effort to kill VC/NVA. Thus as the tempo of friendly operations increases, VC/NVA KIA can be expected to increase, and vice-versa.

2. VC/NVA KIA will not correlate with VC/NVA operations, such as enemy large and small scale attacks, since friendly forces holding the initiative would be killing most of the VC/NVA in friendly initiated operations.

3. Friendly KIA will correlate highly with friendly operations, because friendly forces will seldom be caught off guard by the enemy and will incur most of their KIA during their own operations. They will have the ability to control the tempo of those operations and therefore their level of KIA.

4. Friendly KIA will not correlate with VC/NVA operations, because few friendly KIA will result from VC/NVA initiated actions.

The hypothesis for friendly forces holding the initiative is displayed below as a matrix.

MATRIX FOR FRIENDLY FORCE INITIATIVE

KIA

Operations	Friendly	VC/NVA
Friendly	High Correl. Expected	High Correl. Expected
VC/NVA	Low Correl. Expected	Low Correl. Expected

Hypothesis for VC/NVA Forces on the Initiative

Guerrilla warfare doctrine asserts that insurgent forces try to maximize enemy casualties and to minimize their own losses, all the while maintaining an aura of invincibility and trying to gain control of the population. We shall assume that the enemy is trying to follow such a strategy in Vietnam. This strategy implies a set of correlations which are exactly the opposite of those for friendly initiative. The matrix for this situation appears below.

MATRIX FOR VC/NVA FORCE INITIATIVE

KIA

	Friendly	VC/NVA
Friendly Operations	Low Correl. Expected	Low Correl. Expected
VC/NVA	High Correl. Expected	High Correl. Expected

What the Data Shows[3]

We have performed correlation and regression analysis of the KIA and activities cited in the two hypothesis.[4] Table 1 shows a high correlation

3/ In the following tables:
R, the correlation coefficient, indicates whether a relationship exists between the variables. 0 indicates no relation and 1 indicates a perfect relation.
The F significance test indicates the certainty of the relation. .999 means the chances are at least 999 out of 1000 that a relationship exists whereas 'less than .95' means the chances are less than 19 out of 20.

4/ The correlation coefficients were obtained by using the Multiple Regression Routine developed by the Economics Department of the Rand Corp. for the JOSS computer system. The raw data appears in Table 5.

between VC/NVA KIA and VC/NVA attacks, except in II CTZ. All correlations are significant as measured by the F Test. Thus, the table seems to indicate that the chances are greater than 999 out of 1000 that VC/NVA attack rates account for over 80% of the variations in VC/NVA KIA. That is, VC/NVA KIA fluctuate in the same patterns in which VC/NVA attacks fluctuate.

TABLE 1

CORRELATION ~~REGRESSION~~ ANALYSIS
VC/NVA KIA AGAINST VC/NVA ATTACKS
BY MONTH, JAN 66 THROUGH JUN 68

	R Correlation Coefficient	R^2	Significance Test (F)
I CTZ a/	.84	.702	.999
II CTZ	.54	.291	.990
III CTZ	.84	.701	.999
IV CTZ	.72	.521	.999
Countrywide b/	.91	.839	.999

a/ CTZ studies run with total VC/NVA attacks by CTZ as one independent variable.
b/ Countrywide study run with VC/NVA battalion size and larger attacks and VC/NVA small scale attacks as two independent variables.

Table 2 shows that VC/NVA KIA have virtually no relationship to the number of friendly operations or to friendly operations with contact. There is a moderate relationship between VC/NVA KIA and the number of friendly battalion days of operations, except in II CTZ. All of the correlations are well below those observed in Table 1. The tempo of friendly operations appears to have little effect on the tempo of VC/NVA casualties.

TABLE 2
CORRELATION ~~REGRESSION~~ ANALYSIS
VC/NVA KIA AGAINST FRIENDLY OPERATIONS
By month: Jan 66 through Jun 68

	R Correl. Coeff.	R^2	Significance Test (F)
VC/NVA KIA Versus			
Friendly Large Opns	.22	.047	less than .95
Friendly Large Opns with Contact	.25	.067	less than .95
Friendly Bn. Days of Opn			
Countrywide	.62	.390	.999
I CTZ	.69	.478	.999
II CTZ	.09	.010	less than .95
III CTZ	.47	.213	.95
IV CTZ	.51	.267	.99

Note: All studies run with one independent variable.

Table 3 shows the strong relationship between friendly KIA and VC/NVA attacks. The relationship between US KIA and enemy attacks is the strongest one encountered in the study. Again, the relationship does not appear in II CTZ. The teble seems to indicate that the chances are better than .999 in a thousand that the VC/NVA attack rate accounts for over 85% of the variations in US KIA. In other words, the tempo of VC/NVA attacks seems to have much more influence on the level of US KIA than the tempo of friendly operations.

TABLE 3

REGRESSION ANALYSIS
FRIENDLY KIA AGAINST VC/NVA ATTACKS
(time period as specified)

	R Correl Coeff.	R^2	Significance Test (F)
Total Friendly Forces KIA Versus VC/NVA Attacks a/	.82	.689	.999
RVNAF Forces KIA Versus VC/NVA Attacks a/	.82	.683	.999
US Forces KIA Versus VC/NVA Attacks			
Countrywide a/	.93	.873	.999
I CTZ b/	.85	.735	.999
II CTZ b/	.16	.024	less than .95
III CTZ b/	.84	.717	.999

a/ Time period by month: Jan, 66 through June, 68. VC/NVA Bn size and larger attacks and VC/NVA small scale attacks as two independent variables.

b/ Time period by month: Jan, 67 through June, 68 because US KIA by-CTZ is only available for that period. Total VC/NVA attacks (large plus small) treated as one independent variable. IV CTZ not studied because of low US involvement.

Table 4 completes the statistical analysis and shows the correlation between friendly KIA and friendly operations. There is no correlation between friendly KIA and the number of large operations or large operations with contact. Battalion days of operation exhibits a moderate degree of correlation except in III CTZ.

REGRESSION ANALYSIS
FRIENDLY KIA AGAINST FRIENDLY OPERATIONS
(time period as specified)

	F Correl Coeff.	R^2	Significance Test (F)
Friendly KIA Versus			
Friendly Large Operations - Countrywide a/	.28	.075	less than .95
Friendly Large Operations with VC/NVA contact - Countrywide a/	.31	.098	less than .95
Friendly Bn Days of Operation			
Countrywide a/	.68	.470	.999
I CTZ b/	.61	.371	.990
II CTZ b/	.65	.424	.990
III CTZ b/	.27	.077	less than .95
IV CTZ b/	.74	.550	.999

a/ Time period by month: Jan, 66 through June, 68.
b/ Time period by month: Jan, 67 through June, 68. Friendly KIA by CTZ not available prior to Jan, 67.
All studies run with one independent variable.

Using these results from the four tables, we can construct another two by two matrix showing the situation on a countrywide basis.

RESULTS MATRIX

	KIA Friendly	KIA VC/NVA
Friendly Operations	Low Correl. Observed	Low Correl. Observed
VC/NVA	High Correl. Observed	High Correl. Observed

Referring back to the two hypotheses developed earlier, we see that the data best fits the model of VC/NVA initiative.

The situation in II CTZ differed significantly from the countrywide patterns in several respects. A matrix for II CTZ is shown below.

II CTZ
APPROXIMATE RESULTS MATRIX

Operations \ KIA	Friendly	VC/NVA
Friendly	Moderate Correl. Observed	Low Correl. Observed
VC/NVA	Low Correl. Observed	Moderate Correl. Observed

The II CTZ situation fits neither of the hypothesis matrices developed earlier. The pattern shown may indicate that neither side has the initiative aginst the other and that both have assumed a primarily defensive posture. Such a situation could be associated with a stalemate or an area in which neither combatant has a strong interest.

Evaluation

The correlation factors obtained from these studies must be treated with some care and the conclusions considered tentative. But it is possible to say with some confidence that the tempo of friendly operations does not determine VC/NVA KIA or friendly KIA. Thus, friendly forces do not possess the initiative in South Vietnam, as measured by their ability to control casualties.

On the other hand, the foregoing analysis needs elaboration to fully support an assertion that the VC/NVA forces control casualties and have the initiative. The regression equation obtained from the analysis of VC/NVA

KIA against VC/NVA attacks accounts for all enemy losses whereas a previous analysis has shown that 64% of all VC/NVA combat deaths reportedly occur in large operations initiated by allied forces and not in VC/NVA attacks.5/

The missing link is that enemy (and friendly) KIA on large scale operations is primarily determined by the VC/NVA's willingness to stand and fight. In turn, this occurs at the same time that he also increases his own attack rate. Further, enemy initiative at the tactical level may be masked to a high degree, because the present reporting system reports all actions occurring in the area of a friendly large operation as friendly initiated, no matter who started the fight.

The findings of the analysis are in accordance with past experience, which indicates the enemy can control his casualty rate, to a great extent, by choosing where, when, and how often he will fight. A previous study indicates that VC/NVA units initiate up to 85% of all the fire fights in SVN.6/ He tries to avoid contact with allied troops under unfavorable conditions by blending into the population or vanishing into jungle base areas during large allied operations. Senior officers have often commented that: "We just can't find him (VC/NVA) when he doesn't want to fight." In July of this year, for example, VC/NVA KIA decreased sharply despite a very high level of allied operations.

The VC/NVA also attempt to fight on favorable terms as much as possible. As we have seen, they pick the time and place in most of the fights. In a briefing in late July, MACV stated that the enemy in recent months has been intentionally reducing his casualties by trying to stagger attacks on key targets, expanding attacks by fire, and withdrawing troops from unprofitable battle areas. Moreover, the VC/NVA often fights from prepared positions whenever possible in an attempt to further increase his combat advantage.

Control of casualties also bears upon the strategy chosen by allied commanders. If the VC/NVA retain the initiative in controlling his losses, then any strategy based upon the attrition of VC/NVA forces is untenable. Recent

5/ "Results of Friendly Large Unit Operations," SEA Analysis Report, May 1968 p. 21. Our regression equation gives the following estimate:

Monthly VC/NVA KIA = 1144 + 206 x (large attacks)
+30 x (small attacks)

This means that every large VC/NVA attack must result in an average of 206 VC/NVA KIA and every small attack must result in 30 VC/NVA KIA, if those attacks are to account for the bulk of the VC/NVA KIA.

6/ See "The Strategy of Attrition" SEA Analysis Report Special Supplement Feb-May 1967, p. 6. Also the Army Combat Operations-Vietnam study (ARCOV) cited on page 8 of that article.

studies have shown that the VC/NVA manpower pool is sufficient to sustain the current rate of casualties for an extended period of time.7/ Unless allied forces can drastically increase the rate of VC/NVA losses, they can continue operations for at least three more years (at first half 1968 loss rates).

7/ See "Manpower Availability in North Vietnam", SEA Analysis Report, May 1968, p. 1 and "North and South Vietnamese Manpower," SEA Analysis Report, August 1968, p. 4.

Table 5

[illegible] ANALYTIC DATA

	1966 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1967 Jan	Feb
Controllable														
Friendly KIA a/	1259	1350	1710	1086	1442	1729	1473	1353	1332	1245	1467	1442	1511	1[illegible]
US KIA a/	282	433	506	311	462	503	435	376	419	333	473	432	512	[illegible]
RVNAF KIA a/	903	1359	1145	845	961	1185	1006	914	803	804	907	981	924	[illegible]
VC/NVA KIA a/	2648	4727	5585	2818	4239	4815	5297	5860	4459	5665	5847	3864	6024	73[illegible]
VC/NVA Attacks a/														
Bn & Larger	5	6	10	4	4	6	0	5	0	2	2	0	1	2
Small Scale	65	63	42	73	49	62	91	59	86	119	84	101	141	115
Total	70	69	52	77	53	68	91	64	86	121	86	101	142	117
Tot Friendly Bn. Size & Large Opns. b/	344	366	471	428	445	421	445	386	393	374	320	336	354	276
Tot Fr Bn Size & Larger Opns w/Contact c/	167	198	215	210	232	230	233	183	200	184	149	170	191	138
Tot Friendly Bn Days of Opns d/	1959	2669	2814	2946	2973	2913	3255	3003	2927	3488	3483	4070	4956	4593
By CTZ VC/NVA KIA e/														
I CTZ	349	1104	1951	1067	876	1346	2229	2239	1652	1359	1297	1097	1813	3[illegible]
II CTZ	1320	2178	1719	971	1349	2031	936	1021	1024	2147	1545	849	1405	1[illegible]
III CTZ	449	612	963	417	620	1069	1212	1012	601	621	1735	1107	1735	1[illegible]
IV CTZ	550	835	1052	363	1394	369	920	988	1181	1545	848	811	1110	[illegible]
Total Friendly KIA f/														
I CTZ													465	4[illegible]
II CTZ													230	[illegible]
III CTZ													490	4[illegible]
IV CTZ													299	257
US KIA f/														
I CTZ													152	137
II CTZ													91	152
III CTZ													240	243
IV CTZ													10	15
VC/NVA Attacks g/														
I CTZ	12	16	12	17	9	17	27	12	26	17	15	30	58	45
II CTZ	6	12	10	11	12	14	9	6	13	16	7	8	11	15
III CTZ	24	12	14	29	13	20	23	26	29	29	32	31	30	34
IV CTZ	28	28	16	20	19	17	29	20	18	57	31	32	43	34
Friendly Bn Days of Opn d/														
I CTZ	401	606	571	509	424	464	736	624	653	895	677	647	695	840
II CTZ	660	1122	980	966	965	956	977	1104	1086	1276	1301	1520	1759	1520
III CTZ	625	627	779	912	976	923	1053	790	646	887	1167	1571	2049	1737
IV CTZ	283	314	484	559	608	570	489	485	362	370	338	332	453	336

a/ OSD Statistical Summary, Table 2.
b/ SEA Statistical Tables, Table 3A.
c/ SEA Statistical Tables, Table 3B.
d/ SEA Statistical Tables, Table 3C.
e/ Jan 66 - Dec 67: CIAVA. Jan 67 - Jun 68: OSD SEA Statistical Summary, Table 53.
f/ OSD Statistical Summary, Table 53.
g/ SEA Statistical Tables, Table 2D.

Sep	Oct	Nov	Dec	1967 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1968 Jan	Feb	Mar	Apr	May	Jun
[illegible]	[illegible]	1467 473 907 3447	1440? 432 981? 3854?	1511 518 914 6054	[illegible] 659 [illegible] 7341	[illegible] 943 1837? 9351	1893? 710 1057 6227?	2528? 1233? 1164 9808	1843 826 961 7354	[illegible]	[illegible]	[illegible]	[illegible]	2375 573? [illegible] [illegible]	2075 774 1190 7338	2762? [illegible] [illegible] 15217?	4605? 2195? [illegible] 30[illegible]	3176? 1540 1544? 17372?	2506? 1409 1312? 12215?	4213 2169 1550? 24036?	2505? 1146 1357? 10319
0 [illegible] 66	2 119 121	2 84 86	0 101 101	1 141 142	2 115 117	7 212 219	7 155 162	4 189 193	2 166 168	7 [illegible] 197?	1? [illegible] [illegible]	5? [illegible] [illegible]	2 [illegible] [illegible]	7 257? 264?	9 277 286?	28 381? 409?	18 552 570	18? 540 [illegible]	5 386 391?	19 569 588?	9 272? [illegible]
393	374	320	336	354	276	322	289	260	264	311	[illegible]	[illegible]	335	325	327	340	286	480	537	612	599
200	184	149	170	191	138	147	160	158	152	[illegible]	[illegible]	[illegible]	205	205	182	198	164	240	271	297	244?
2727?	3428	3493	4070	4956	4593	5357?	5296	5537	5214	5547	5507?	[illegible]	5696?	5467	5447	5623	5474	7501	7609	7374	7376
1652 1024 601 1181	1352 2147 621 1545	1297 1546 1756 848	1097 849 1107 811	1813 1405 1736 1110	3368 1911 1213 849	3026 2130 3289 906	2084 1533 1632 973	6241 1420 1399 748	3179 1283 1901 991	4059? 1604? 1545 685	2645? 1342 957? 664?	3581? 1233? 704? 839?	2841 909? 1601 921	2409 2442 1640 1171	2879 1754 1612 1693	7745 3275 2904 1293	15046 6350 12854 5617	7679 2657? 4782 2223	6118 993 3143 1961	11339 1678 8558 2111	4959 657 3446 1347
				465 230 490 299	485 389 476 267	825 457 642 340	775 306 442 289	1311 364 487 357	756 405 376 332	713 332? 313 183	535? 315? 399? [illegible]	532? 339 [illegible] 335?	625 323 539? 464?	589 685 570 417	485 481 579 519	1013 553 698 488	1975 621 1237 850	1229 603 741 598	1241 378 621 558	1817 661 1123 609	938 411 681 513
				152 91 240 10	187 192 243 15	345 247 290 31	345 121 224 9	846 147 205 25	413 159 218 24	455 133 154? 21	339? 55? 130? 22	554? 77? 122? 25	398? 55 249? 15	309 327 187 41	299 176 252 36	603 140 393 56	1140 196 582 175	903 176 365 95	864 139 306 92	1336 205 536 78	692 102 260 80
25 13 29 18	17* 18 29 57	15 7 32 31	30 8 31 32	58 11 30 43	45 15 24 34	82 21 72 43	61 21 38 43	70 17 69 52	58 37 29 44	69 31 62 34	31? 40? 43? 41?	101 45 55 59	67 33 80 84	40 38 92 94	38 45 98 105	76 81 134 118	131 94 174 181	119 95 115? 225	104 52 99 143	169 92 228 100	57 54 99 76
653 [illegible] [illegible] [illegible]	895 [illegible] [illegible] [illegible]	677 1301 1167 338	647 1520 1571 332	695 1759 2049 453	840 1620 1797 336	1008 1609 2223 549	997 1351 2395 553	1237 1634 2115 551	1135 1475 2099 504	1159 1600 2153? 570	1055 1671 2366? 595?	1058 1555? 2127 625	1213 1334 2514 635	1142 1286 2322 717	1203 1300 2251 693	1292 1393 2223 715	1380 1033 2224 837	1909 1335 2977 1280	2137 1229 3511 932	2519 1199 2604 1052	2590 1296 2582 910

ARMY COMMENTS ON SEPTEMBER 1968 ARTICLES

We received the following comments on 3 September Analysis Report articles from the Army Staff:

"The September issue of your Southeast Asia Analysis Report contains a number of interesting and useful articles. The value of these articles lies in the presentation of potentially useful data and the fresh look given to many old problems. I find, however, that three of the articles appear to warrant comment in order to prevent misunderstanding on the part of interested readers.

"Military Initiative in South Vietnam (page 6)

This article purports to show that it is the VC/NVA who have the military initiative in South Vietnam and bases this conclusion on a study of the opposing forces ability to control casualties. There is a serious doubt that control of casualties is a 'good measure of military initiative'; for example, efforts to conserve casualties may do little to extend control over the combat situation. Said another way, a side which uses its 'military initiative' principally to avoid combat is not trying to dominate the battlefield but only to maintain a presence there; this is not military initiative. I do not believe that the VC/NVA dominate the battlefield in Vietnam nor do I agree that their willingness to stand and fight, or even their decisions to attack, are entirely voluntary. Perhaps a better measure of military initiative could be obtained by examining the relative ability to successfully engage an opponent in decisive combat. This might be done by comparing the rate of casualty fluctuations to fluctuations in opposing initiatives.

"Even assuming that ability to control casualties is a good measure of military initiative, the finding of the article is erroneous in that the analysis is fallacious. The analysis attempts to determine military initiative by comparing fluctuations of opposing military actions with fluctuations in casualties. However, the measure of military activity used is friendly large unit operations (number, number with contact, and battalion days on operations) for friendly forces, and attacks for enemy forces. These representations of military activity are not comparable; this system of measurement, for instance, could give the same weight to an enemy squad-size attack as it does to a three-division friendly operation. Even friendly 'operations with contact' is not a comparable measure of friendly military

activity because an operation qualifies under this category if it has one or more contacts in a day (it could have had a dozen and be enumerated as one operation with contact). Even comparing battalion days on operations with enemy attacks is not valid, although, as recognized in the article, its correlation with casualties is better. To be comparable an enemy attack, which is an enemy initiated contact, must be compared to a friendly initiated contact.

"In summary, the premise that ability to control casualties is a good measure of military initiative is questionable, and the tests applied to measure relative degrees of 'military initiative' are invalid due to lack of comparability in measurement of the tempo of military operations of opposing forces.

"Artillery Support for RVNAF (page 19)

This article is premature. It implies that the distribution of artillery support is improper, but admittedly contains no examination of the basis of distribution. As pointed out in the article, a great deal more information is needed in order to arrive at any meaningful conclusion. It might, therefore, have been better to simply state the facts available, drawing no conclusions, or withhold the article until sufficient information to evaluate the situation was available. In addition to examination of raw ammunition expenditures data, a look at missions, organization for combat, firing restrictions, targets, and other fire support means available would add much to a study of the adequacy of artillery support.

"RVNAF Effectiveness: An Update (page 36)

While it is encouraging to note the improved effectiveness of RVNAF, caution must be exercised to insure that it is not over-rated. This is particularly true when considering the current high level emphasis on developing the RVNAF to take over more of the war from US Forces.

"The evaluation of RVNAF contained in this article bases its primary conclusions on the number of enemy killed; it overlooks friendly losses. The article also points out that the missions assigned to various forces have not been considered, yet this fact has been omitted from the summary and conclusions. Additionally, other indicators such as leadership, morale, training, and aggressiveness which must be included in a full evaluation have not been considered. Based on the facts presented, this

article can only conclude that RVNAF has killed more enemy recently; this suggests an improved capability to perform the missions assigned during this period. An examination of its demonstrated effectiveness in performing various missions might prove useful as we look to the assumption by RVNAF of greater military responsibility in Vietnam.

"Expressing increased RVNAF strength and effectiveness (based on enemy killed), in terms of US force equivalents, is invalid, and tends to be misleading. As emphasized earlier, to omit consideration of assigned missions and other influencing factors, and without evaluating the capability to perform missions currently assigned to US units, it is inappropriate to rate RVNAF in terms of US equivalency. Equating this improved RVNAF effectiveness to US units suggests that the RVNAF is now able to assume tasks assigned to the stated number of US units -- this is not proven in this article, and is undoubtedly not true at this time.

"In the final analysis, the greater number of enemy killed by the RVNAF, while encouraging, is not a true measure of its overall effectiveness. Other tests must be applied to determine its current and projected capability to perform the complete spectrum of missions which it must assume if US and Free World forces are to be phased down."

SEAPRO COMMENT:

Military Initiative

The treatment of military initiative suggested in the comments fits a conventional limited war such as the one in Korea. There the "relative ability to successfully engage an opponent in decisive combat" did constitute military initiative for either side. But we wonder if the same holds true in the Vietnam war where many of the principles of guerrilla warfare and protracted conflict seem to explain enemy strategy best.

We suspect that the ability to control casualties is an integral part of the overall enemy strategy in Vietnam. His attacks and other activities are designed to have the maximum psychological impact by inflicting heavy allied casualties, projecting an aura of countrywide strength and continual presence, and gradually reducing the US will to continue. This in turn implies that the enemy must expend his resources at a rate low enough for him to hold out longer than the allies. It must be clear to him after his spring offensive that he cannot win by engaging us in short, decisive combat and that he must frame his strategy within the rules of protracted conflict. In such a conflict, control of the casualty rates is critical.

The comments also suggest that the only comparable measure of operations is enemy initiated contacts and friendly initiated contacts. This reasoning assumes that the "contacts per operation rate" for VC/NVA and friendly forces are identical, but they clearly are not. Most of the time on friendly operations (large or small) is spent looking for the enemy and the resulting contacts per operation rate is low. On the other hand, few VC/NVA operations do not produce contact. The comparison suggested in the comments would overlook the vast amount of friendly operational effort that produces no contact and thus would wash out the value of the comparison.

The fact that the VC/NVA can nearly always find us and we usually can't find him unless he wants us to or our intelligence is exceptionally good, is at the heart of military initiative in Vietnam. The implicit assumption in the comments is that both sides are operating under identical objectives, strategy, and tactics as in a conventional war. Under these conditions, contact per operation rates might be approximately equivalent and the ability to engage in decisive combat would be critical to both sides.

Artillery Support for RVNAF

Our article contained data which show that the volume and weight of artillery support for RVNAF is much less than that for US forces. We acknowledge that we lack the information necessary for a thorough evaluation of the adequacy of RVNAF artillery support, and of the distribution of fire support between US and RVNAF. Nevertheless, available data strongly suggest that artillery support for RVNAF may not be adequate. Further examination of the problem is required. More data on the artillery support for RVNAF would be most useful.

RVNAF Effectiveness

The article does not overlook losses; Table 3 (page 41) indicates that the ARVN enemy kill ratio in large operations improved. We have addressed the RVNAF leadership problems in the June and August reports. We agree that an examination of RVNAF's demonstrated effectiveness in performing various missions would prove useful in evaluating RVNAF's ability to assume greater military responsibility in Vietnam. Data for this is sparce at the moment, but should become available as we get information from MACV's new reporting system for RVNAF forces.

We compared the performance of RVNAF ground forces in killing VC/NVA with the US performance in two ways. First, we compared the effectiveness of Vietnamese ground force battalions to US battalions. We found that in 1968 the Vietnamese performance in killing VC/NVA increased more than the US performance, and that it would have taken 16 additional US maneuver battalions to kill the additional VC/NVA, if the RVNAF kill rate had not improved. Second, a comparison of total enemy killed by all RVNAF forces to those killed by all US forces indicated that the improved Vietnamese performance was equivalent to an addition of 194,000 US troops.

In addition, the article pointed out that RVNAF battalions on average have been consistently killing VC/NVA at a significantly higher rate than the MACV ARVN capability model would lead us to expect. Aside from being unable to undertake long field operations, many Vietnamese battalions presently perform much the same missions that US forces do. The low level of support and fire power provided Vietnamese forces may help account for the greater time their battalions spend on static security and training missions and for their reported lack of aggressiveness. If true, providing better support and fire power to RVNAF forces may enable them to perform missions now entrusted to US forces sooner than we might otherwise expect. We think that attempting to state RVNAF improvement in terms of US force equivalents is a useful way to gain perspective on the rate of improvement as the RVNAF modernization and improvement programs proceed.

TACTICAL INITIATIVE IN VIETNAM

The principle findings of this study are: First, the enemy has the tactical initiative in over 68% of the ground engagements in Vietnam. These enemy-initiated engagements cause 84% of US combat losses and 77% of the enemy losses. Second, US loss rates (KIA per company per engagement) are almost three times higher and kill ratios (enemy to US KIA) are 40% lower in enemy-initiated engagements. And finally, while the enemy initiates contacts when his relative strength is highest, he rarely has a strength advantage over the US unit of over 1.5 to 1.

The principal US military strategy in Vietnam has either explicitly or implicitly been based on a "strategy of attrition," in which the US military forces attempt to attrite the enemy beyond his capability or will to replace his losses. This approach is frequently described as maintaining sufficient pressure on the enemy to force him to negotiate or to abandon his political goals. To successfully apply a strategy of attrition, the US must control the rate of enemy losses or at the least retain the option to engage the enemy or not. We believe this is the essence of tactical military initiative in Vietnam.

The enemy can withdraw to his Cambodian and Laotian sanctuaries, thereby avoiding all attrition. But he cannot continue this alternative indefinitely because his strategic goals in SVN include protection of his infrastructure, harassment and disruption of the GVN, and maintaining a high level of US and RVNAF casualties. To be successful in these strategic objectives, the enemy must control the pace of combat and the rate of casualties in South Vietnam. Thus, for both antagonists, tactical control over combat intensity and levels of casualties is essential to their strategic objectives.

Control of casualties and combat intensity are undoubtedly not the only measures of initiative, particularly in a conflict similar to the war in Vietnam. For example, it is important to deny the enemy undisputed access to base camps and logistical sanctuaries. Military pressure and harassment should also force the enemy to operate in small units and keep him away from pacified areas. We do not consider these other measures to be unimportant. However, both area denial and harassment of large VC/NVA units require some degree of ability to engage the enemy at our will not his. If we can force the enemy to fight when and where we choose, we would also become far more effective increasing enemy battle deaths, harassing the VC/NVA main force units, and eliminating sanctuary base camps. The converse is also true; failure will follow in each of these measures of initiative if the US units cannot control engagements with the enemy. Pacification will be disrupted by an occasional Tet-type offensive as large VC/NVA units move undetected into populated areas; enemy base areas will be immediately reoccupied and repaired after the US unit leaves after making no contact.

Background Considerations

As background to this analysis, two earlier studies are relevant. In May 1967[1] an analysis of 56 platoon-size or larger fire fights indicated the enemy had the tactical initiative in 79% of the fire fights. Based on limited data available at that time, it appeared that in 79% of the cases the enemy retained the option to engage or not engage US troops. A similar study[2] of 165 engagements conducted in December 1967 showed the enemy initiated 73% of the fire fights. We could not obtain sufficient detailed information in either of these studies to relate combat deaths to initiative or to the type engagement. In September 1968,[3] a regression analysis relating KIA to activity levels again suggested that the US did not control the tactical initiative. We found that variations in the level of enemy-initiated attacks explained most of the variations in US and VC/NVA casualties, but that variations in US-initiated activities explained very little of the casualty variations.

In this study we analyzed a sample of 68 platoon-size or larger engagements extracted from detailed reports prepared by US Army Military Historians. Although the sample was small, we felt it was representative because the engagements covered a long time period (Oct 66-May 68), all major US Army divisions, and all parts of SVN. In addition, we tested some of the parameters in the sample. We found that:(1) kill ratios in the sample were reasonably close to those experienced by all US units during the same period of time (8.5 to 1 in the sample vs. 6.2 to 1 for all US units); (2) the ratio of small unit contacts (less than battalion size) to total contacts in the sample was very similar to the US Army experience in III Corps during the sample period (75% of sample were small unit engagements vs. 83% in III Corps); and (3) the average KIA per contact was considerably larger in the sample than the total experience for III Corps (7.1 in sample vs. 2.2 in III Corps). We concluded the sample was relatively representative of the fire fights in Vietnam, except possibly that the battles in the sample tended to be larger(in terms of US KIA per engagement) than the overall average, as a result of the larger proportion of battalion size engagements in the sample.

The Analysis

We classified the sample engagements into seven categories to show the degree of tactical initiative held by US units. Categories 1 and 2, enemy attacks and ambushes, were obviously enemy-initiated. The enemy held the initiative in Category 3, a "hot" landing zone, because he knew the strength and exact location of US forces, and was thereby free to engage or withdraw. Category 4, the US engagement of the enemy in fixed positions, typically occurred on US search and destroy-type missions deep in enemy territory. The element of surprise in Category 4a indicated the enemy had

1/ SEA Analysis Report, January 1968, p66, "The Strategy of Attrition."
2/ Not published.
3/ SEA Analysis Report, September 1968, p6, "Military Initiative in SVN."

the initiative because he chose to engage rather than to withdraw. When the US commander knew the enemy strength and location, Category 4b, he decided to engage or avoid contact and thus held the initiative. The distinction between Categories 4a and 4b is not perfect, but we believe knowledge of the enemy strength and location is the crucial determinant of initiative and of surprise. In Category 5, the US unit obviously had the initiative when it laid a successful ambush. The last category included surprise encounters in which neither side had the initiative.

Summary Findings

Table 1 shows the 68 engagements by category of initiative. The following primary conclusions emerge:

1. The enemy initiated 68% of the military engagements.

2. The enemy controlled his combat losses in the sense that he selected the time and place for engagements that accounted for 77% of his KIA. He fought and lost men only when he wanted to.

3. The enemy initiated combat situations that accounted for 84% of the US combat deaths.

4. US loss rates (KIA per company per engagement) were almost three times higher (5.9 vs. 2.2) when the enemy initiated the engagement than when the US unit initiated. Enemy loss rates were not nearly so sensitive to tactical initiative.

5. US kill ratios (enemy/US KIA) were the least favorable when the US unit was ambushed on the move or landing during an air assault.

6. Rarely did the enemy achieve more than a 1.5 to 1 strength advantage over the US unit, but the relative engaging strength ratio of VC/NVA to US was twice as high when the enemy initiated the fire fight (1.2:1 vs. 0.6:1).

7. Artillery support was used by US units in more than 80% of their engagements. The exceptions were enemy initiated ambushes, less than 40% of which received artillery fire.

TABLE 1

US COMBAT ENGAGEMENTS

	Number of Engagements	Percent of Total
Enemy-Initiated Engagements		
1. Assault: Organized enemy attack against a US static defense perimeter.	22	32
2. Ambush: VC/NVA ambush or encircle and surprise a moving US unit, using what is evidently a preconceived battle plan.	8	12
3. Hot Landing Zone: Enemy attack US troops as they deploy onto the battlefield from helicopters.	2	3
4. A moving US unit engages the enemy in a dug-in or fortified position:		
a. Sweep Reaction: The main engagement comes as a virtual surprise to the American tactical commander because the enemy is well concealed and has been alerted either by observations of our unit or by our engaging apparent stragglers near by.	14	21
Total Enemy-Initiated	46	68
US-Initiated Engagements		
b. Sweep: The US tactical commander has reasonably accurate knowledge of enemy positions and strength before committing his forces.	15	22
5. Ambush: US unit ambushes a moving enemy unit.	5	7
Total US-Initiated	20	29
Neither Side Has the Initiative	2	3
Total Engagements	68	100

Who Has the Tactical Initiative?

Table 1 indicates that the enemy initiates 68% of the fire fights in SVN and exercises some degree of control in 22% of the other engagements. Enemy attacks against static US perimeters occurred frequently, 33% of total engagements. These attacks were usually against fire support bases or temporary night defense perimeters usually far away from population centers. Category 4, a moving US unit engaging the enemy in prepared positions, usually occurred on search and destroy-type missions. These sweeps led to over 43% of the engagements but only about half of the resulting fire fights were initiated by the US. The distribution between types of engagements did not differ substantially from our two earlier studies of tactical initiative.

Table 2 below distributes the KIA by type engagement. VC/NVA forces in SVN had the tactical initiative in engagements accounting for 77% of their combat losses. The enemy apparently chose to engage US units in each of these situations and knowingly accepted the casualties as the price for achieving his objectives. The enemy could have reduced his losses 63% by not attacking US perimeters and landing zones or ambushing moving US units. By avoiding contact with US units on sweeps in situations where he had adequate advance warning, the VC/NVA might have been able to reduce losses another 14% although this is highly dependent on his ability to withdraw undetected. Enemy-initiated attacks on US fixed perimeters, moving US units, and helicopter landing zones accounted for 84% of the total KIA. Sixty-five percent of US KIA occurred when the US unit was moving, away from prepared positions, and 35% when in prepared positions. The enemy usually initiated fire fights against the moving US unit.

TABLE 2

US AND ENEMY BATTLE DEATHS BY TYPE ENGAGEMENT

	US KIA		Enemy KIA	
	Number	% of Total	Number	% of Total
Enemy-Initiated Engagements				
1. Assault	168	35	1922	47
2. Ambush	162	34	532	13
3. Hot Landing Zone	21	4	137	3
4a. Sweep Reaction	53	11	572	14
Total	404	84	3163	77
US-Initiated Engagements				
4b. Sweep	72	15	891	22
5. Ambush	-	-	40	1
Total	72	15	931	23
Neither Side Has The Initiative	4	1	11	-
Total Engagements	480	100	4105	100

Casualty Rates and Kill Ratios

US casualty rates (KIA per company per engagement) varied widely with the type of engagement. Table 3 shows that US loss rates averaged 2.2 KIA per company per engagement in US-initiated fire fights versus 5.9 when the enemy had the initiative. Enemy ambushes and "hot" landing zones were especially costly; losses were 10-20% of the friendly force (US companies in the field in our sample averaged 90-120 men). Ambushes usually occurred when US units were moving along a road in convoy or immediately after leaving a night defense perimeter. The enemy was well located, causing friendly fire support to be ineffective in the first few moments of combat, when most US casualties occurred. The enemy frequently was able to inflict high casualties in hot helicopter landings because the shortage of good landing zones in the jungled areas of SVN allowed the enemy to prepare positions around the few suitable air assault locations. Artillery and air preparation did not neutralize the enemy in his well prepared positions, thus he was able to ambush exposed US troops.

TABLE 3

CASUALTIES - KIA

	Per Company Per Engagement*		Per Engagement	
	US	Enemy	US	Enemy
Enemy-Initiated Engagements				
1. Assault	4.0	19.4	7.6	87.4
2. Ambush	21.9	28.6	20.2	66.5
3. Hot Landing Zone	10.5	27.4	10.5	68.5
4a. Sweep Reaction	3.3	26.0	3.7	40.9
Total	5.9	21.8	8.8	68.8
US-Initiated Engagements				
4b Sweep	2.4	27.2	4.8	59.4
5. Ambush	-	25.0	-	8.0
Total	2.2	27.1	3.6	46.6
Neither Side Has the Initiative	2.0	8.5	2.0	5.5
Total Engagements	4.8	22.7	7.1	60.4

* This is a measure of the casualty rate, i.e., was 20% of the engaging unit KIA or 2%. (There were approximately 105 men per US Co. and and 60 men per VC/NVA Co.)

Table 3 shows the enemy's casualty rates were very high even when he had the initiative. The enemy lost one-third to one-half of his unit each time he engaged or was engaged by a US force. (The average VC/NVA company in the field included 50-75 men.) Most of the enemy's losses did not occur in the first moments of the fire fight, but artillery and air strikes were devastating if the US unit was able to break contact so that fire support could be used effectively.

Total friendly and enemy casualties per engagement were highly dependent on the type engagement. Attacks on US units in fixed perimeters were typically large battles for which the enemy massed in battalion size or larger, and both enemy and US deaths were much higher than in any other types of engagement. These battles accounted for 47% of total enemy deaths an average of 87 KIA per engagement. US ambushes of a moving enemy force typically involved less than company size units, which meant that total KIA per engagement were much lower.

Table 4 indicates that even though kill ratios were higher with US initiative (12.4:1 vs. 7.8 to 1), tactical initiative did not play an overly important part in determining kill ratios. Two enemy-initiated combat situations, assaults and sweep reactions produced kill ratios very favorable to the US. The kill ratios were high (11.5 to 1) for enemy assaults because even though the US unit was surprised, it was not unprepared because of good cover and pre-planned artillery support. Sweep reactions had high kill ratios when the US unit broke contact quickly allowing air and artillery support to become effective. Kill ratios were most favorable to the enemy when he ambushed moving US units (3.3 VC/NVA killed for each US) because these usually occurred when US artillery and air support were less effective and when the US forces were in positions exposed to enemy fire.

TABLE 4

KILL RATIO

	Total Enemy KIA/Total US KIA
Enemy-Initiated Engagements	
1. Assaults	11.5
2. Ambushes	3.3
3. Landing Zone	6.5
4a. Sweep Reaction	11.1
Total Enemy-Initiated	7.8
US-Initiated Engagements	
4b. Sweep	12.4
5. Ambush	*
Total US-Initiated	12.4
Neither Side Has Initiative	2.7
Total Engagements	8.5

* Infinitely high because no US KIA in these actions.

Enemy and Friendly Combat Strength

Table 5 shows that the ratio of enemy strength to US strength was higher when the enemy initiated combat than when the US initiated (1.2 to 1 compared to 0.6 to 1), but that the enemy rarely had a large numerical strength advantage. The average VC/NVA force size was related to the extent of his initiative; VC/NVA forces massed to an average battalion size or larger only when assaulting a US unit in a fixed perimeter, the combat category in which the enemy exercised his highest degree of tactical initiative. Conversely, the smallest average VC/NVA forces were encountered when the US unit ambushed them, the category with the maximum degree of US initiative.

TABLE 5

RELATIVE ENGAGING FORCES

	Average Engaging Force*		
	Enemy	US	Enemy/US
Enemy-Initiated Engagements			
1. Assaults	270	199	1.4
2. Ambush	138	94	1.5
3. Hot Landing Zone	150	105	1.4
4a. Sweep Reaction	96	115	0.8
Total	189	155	1.2
US-Initiated Engagements			
4b. Sweep	132	210	0.6
5. Ambush	18	52	0.3
Total	103	169	0.6
Neither Side Has the Initiative	42	105	0.4
Total Engagements	156	157	1.0

* Since only the troop units (not actual strengths) were typically reported, we converted those to personnel strengths by assuming 105 men/US company and 60 men/VC/NVA company.

Combat Initiative and Fire Support

The US unit was rarely without fire support from artillery, helicopter gunships, AC-47 gunships or tactical aircraft. Most enemy KIA were caused by this fire support rather than by small arms fire. The enemy realized the effectiveness of US fire support and attempted to engage the US unit closely so that tactical air and artillery could not be used. Ambushes of moving units allowed him to engage at very close range and therefore remain largely immune to US artillery. Attacks at night and in other periods of low visibility also reduced the effectiveness of tactical air.

Jungle areas far from friendly fire support bases were favored areas for engagement. The US units that permitted the enemy to succeed in these tactics typically suffered high loss rates.

Table 6 indicates that US units received artillery support in 81% of their engagements. However, ambushed US units received artillery less than 37% of the time, instead, helicopter gunships had to be used. In an ambush the enemy got in close to the US unit preventing effective fire support. US-laid ambushes did not receive artillery because they involved small enemy forces which typically were handled by the US unit's organic firepower.

Air support was available to US units in 70% of their engagements. Even night assaults on US perimeters received air support 64% of the time, but poor visibility often made accurate tactical air support difficult. Therefore, helicopter gunships and AC-47s were normally used for most night engagements close to US positions; less than 20% of night air support involved tactical aircraft.

TABLE 6

FIRE SUPPORT

	% Engagements With Artillery Support	% Engagements With Air Support
Enemy-Initiated Engagements		
1. Assaults	95	64
2. Ambush	37	87
3. Hot Landing Zone	100	100
4a. Sweep Reaction	100	100
Total	86	76
US-Initiated Engagements		
4b. Sweep	93	87
5. Ambush	40	-
Total	79	64
Neither Side Has the Initiative	-	-
Total Engagements	81	70

Some Tentative Implications of the Study

The findings of this study have significant implications for US military strategy and tactics in Vietnam. First, a "War of Attrition," or any other US strategy which requires the US to control the pace or intensity of combat, will probably fail because the enemy can select the time and place for 68% of all engagements. (77% of total enemy losses occurred in these engagements.)

Second, reducing US casualties will be difficult without major changes in US methods of operation as long as the enemy (who has the tactical initiative) desires to inflict US casualties.

MILITARY INITIATIVE IN SOUTH VIETNAM: A FOLLOW-UP

Summary. Up to and through his 1968 offensives the enemy maintained a fair degree of control over fluctuations in his combat deaths and those of the allies. By increasing his attacks he could increase allied casualties or by decreasing his attacks he could limit his own combat deaths. The allies, on the other hand, appeared to have little control over changes in their own KIA or those of the enemy. This is interpreted to mean that the enemy held the military initiative, at least in terms of casualties, in South Vietnam. However, since the enemy's Winter-Spring campaign in 1968 (Tet and May offensives) the initiative has shifted. The US now has moderate control over both their own combat deaths and those of the communists; the enemy's ability to control fluctuations in his own deaths remains high; but his ability to increase US deaths appears to have nearly vanished.

Background

An analysis in the September 1968 SEA Analysis Report entitled "Military Initiative in South Vietnam" indicated that the VC/NVA had a much stronger influence over fluctuations in both their combat deaths and US combat deaths than did the allied forces. The article concluded that the enemy held the military initiative in South Vietnam since he could alter the levels of enemy and US combat deaths by changing the frequency and nature of his attacks[1], whereas changing the tempo of allied operations had little effect. The extremely high correlation between VC/NVA attacks and US KIA was interpreted to mean that if the enemy desires to increase US casualties, at the cost of an increase in his own, then he can step up his offensive operations. The lack of a correspondingly high correlation between any of the indicators of allied activity was interpreted as a lack of casualty control on the part of the US as long as it persisted in an aggressive policy of maximum pressure on enemy main force units at all times.

Current Results

The present study used the same statistical regression technique as before to see whether the earlier relationship still holds after the enemy's Winter-Spring 1968 offensive (Tet and May 1968). When we compare the "post-Tet" offensive period (July 1968 through November 1969) with the previous period, the relationships between VC/NVA attacks and friendly KIA decline substantially and the correlations between allied battalion and larger operations with contact and VC/NVA and US KIA increase as dramatically. This may indicate the military initiative in terms of control over our combat deaths has been shifting to the US since June 1968, as the US shifted away from an aggressive, maximum pressure strategy.

Table 1 shows the relationships between combat deaths in South Vietnam and enemy attacks. The correlations between VC/NVA attacks and communist combat deaths have not changed much and are essentailly the same as they were before. This means that there has been little change in the enemy's ability to change his level of combat deaths by changing his level of attacks. Before, he could presumably control about 84% of the fluctuations; now he presumably can control about 77% of the change.

1/ Attacks include all enemy attacks (large, small, and by fire) and are used here as an indicator of the level of the enemy's willingness to fight and to take casualties.

Table 1 also shows the correlation between enemy attacks and allied combat deaths. In this case however, the relationship between VC/NVA attacks and allied combat deaths has changed significantly in the allies' favor. Through the 1968 offensives the enemy presumably could control 87% of the fluctuations in US combat deaths by changing his level of attacks; since June 1968 he can control only 22% of the variation in US combat deaths. Moreover, the pre-Tet figure of 63% indicates that the relationship has not simply dropped back to pre-Tet days; a real change appears to have taken place. The enemy also can no longer inflict significantly more casualties on the US by simply increasing his attacks. Similarly, the RVNAF figure has dropped after June 1968, but it is still higher than before Tet 1968 (.28 vs .10). This figure bears watching as an indication of the enemy's ability to control future RVNAF losses as Vietnamization proceeds.

In short, the enemy no longer exerts the control over US combat deaths that he did before, though he still maintains some control over his own combat deaths. Stated another way, the enemy still loses men when he is willing to, but no longer is able to increase US and allied combat deaths easily when he wants to.

TABLE 1

REGRESSION ANALYSIS
VC/NVA ATTACKS AGAINST COMBAT DEATHS IN SVN
(All Figures are the R^2)

VC/NVA Attacks	VC/NVA KIA	US KIA	RVNAF KIA
Pre-1968 Offensives a/	.55	.63	.10
Through 1968 Offensives b/	.84	.87	.68
Post-1968 Offensives c/	.77	.22	.28

a/ July 1965 through December 1967
b/ January 1966 through June 1968
c/ July 1968 through November 1969

Table 2 shows there was no relationship between our best indicator of friendly attacks (friendly battalion and larger operations with contact) and combat deaths in South Vietnam, prior to and during the 1968 offensives. That is, before mid-1968 the allies appeared to have little control over either their own combat deaths or those of the enemy. Stated another way, increases in allied opeations with contact would not yield corresponding increases in enemy or allied deaths.

There have been significant improvements in these relationship since the 1968 offensives. The correlations indicate a greatly increased ability of allied forces to inflict casualties when they want to (.66 between friendly attacks and enemy KIA) and to limit US deaths if they desire (.63 between friendly attacks and US KIA). Increases from the 1965-67 figures of .05 and

.02 to the new figures of .66 and .63, both indicate a real increase in allied control over combat deaths.

TABLE 2
REGRESSION ANALYSIS
FRIENDLY BATTALION OPERATIONS WITH CONTACT
AGAINST COMBAT DEATHS IN SVN
(Figures are R^2)

	VC/NVA KIA	US KIA	RVNAF KIA
Pre-1968 Offensives[a]	.05	.02	NA
Through-1968 Offensives[b]	.07	.10	NA
Post-1968 Offesnives[c]	.66	.63	.19

a/ July 1965 through December 1967
b/ January 1966 through June 1968
c/ July 1968 through November 1969

In summary, the data show that the communists retain a large amount of control over their own combat deaths but are less able to increase allied losses by stepping up their attacks. On the other hand, the US now (since Tet 1968) has a moderate amount of control over both their own and VC/NVA combat deaths. This could indicate a shift in the military initiative in South Vietnam from the communists to the Allies, and may help explain why the US has been able to reduce its combat deaths so much in recent months.

Additional information supports the idea of a shift in initiative since the 1968 offensives. The US has changed its tactics and it is likely these new tactics reflect knowledge acquired from 1965 through the 1968 offensives and the decline in enemy capabilities. Data shows the kill ratio of enemy to friendly forces has increased since the third quarter of 1968. The ratio of total enemy kills to US combat deaths likewise shows marked and steady increases since late Summer of 1968. This data, crude though it is, together with reports from the field, indicate that US troops may be operating more efficiently now than during and before the 1968 offensives.

A second reason why the initiative may be shifting to the Allies is that attrition of trained VC/NVA over the past five years, particularly during the 1968 offensives, may have lowered the fighting effectiveness and aggressiveness of the communist forces in South Vietnam. The accelerated pacification campaign in the second half of 1968 and the gains made without stiff opposition since then testify to the serious beating the VC infrastructure and communist main force units took during Tet.

LONG RANGE PATROLS VERSUS SEARCH-AND-DESTROY

U. S. Army units in Vietnam continue to emphasize large sweeps and search-and destroy types of operations, although some Army units and most other units increasingly emphasize small, clandestine Long Range Patrols in enemy-infested areas. The use of such patrols in the last half of CY 1966 varied from about 8% of the total force available to Army units, which is 10% of their force not tied up in TAOR and base defense, to about 50% of the Australian force, which is some 83% of their force not tied up in TAOR and base defense. Available data suggests that at least a 40% increase in enemy KIA per month could be achieved with no increase in friendly losses if we increased our use of small unit operations.

Combat Force Allocations
by Type of Activity in Vietnam
(In %)

	Search & Destroy			
	Long Range Patrols	Large Units	TAOR Patrols, Base Defense, etc.	Total
III MAF, USMC	15	35	50	100
US Army Vietnam	8	81	11	100
Australian	50	10	40	100

On large sweeps and search-and-destroy missions, where company-sized and larger units are the typical maneuver units operating semi-independently in the field, stealth is impossible. Consequently, in over 84% of the fire fights that develop, the enemy knowingly and willingly seeks or accepts the fight; and in over 78% there is a clear indication of a planned, premeditated surprise of our forces by the enemy. Moreover, large sweeps are relatively unproductive, viewed either in terms of enemy killed and captured per friendly lost or in terms of enemy killed and captured per friendly battalion per month. And permitting the VC/NVA to initiate most battles must be far better for their morale than is hitting them out of the blue with observed, well-aimed artillery and air strikes, with ambushes, and with well-timed reaction forces. The data on tactical initiative was discussed in the May SEA Analysis Report.

Experimentation with clandestine patrols in the past several months has gone far enough to provide a good idea of what they can accomplish. The most comprehensive data now available relates to STINGRAY and other operations by the Reconnaissance units of the III MAF, and to the operations of the Australians.

The STINGRAY procedure is to infiltrate and extract the patrols by helicopter, usually at dawn or dusk, in as covert a maneuver as possible. They move frequently, often changing position every day both at dawn and at dusk, avoiding trails, stream beds, and ridge lines wherever possible. Patrols consist of 4 to 20 men, typically 14 men, from one of the Reconnaissance units with the III MAF. These men receive some additional training, principally to make them forward observers, able to call for supporting fire. Patrol durations are 3 to 5 days.

The information available indicates that half or more of the patrols that sight enemy troops remain undetected. In those cases where they call in artillery and air strikes, however, they cannot usually remain undetected for long. When they have gotten into firefights it has almost always been possible to extract or reinforce them successfully; generally they are extracted. There can be no doubt that the balance of initiative is completely different with these patrols from what it is on large sweeps.

Small-Unit Actions

	No. of Patrols	Avg. Patrol Size	En KIA & Capt.	Fr KIA & MIA	En Loss/ Patrol	En Loss/ Fr Loss
USMC[a] (Feb 1966-Jan 1967)	836	14	900	25	1.1	36
Aussies[b] (Jul 1966-Jan 1967)	500*	5	285	20	.6*	14

a/ Includes Stingray opns, & recon. battalion patrols on named operations.
b/ Includes reaction force results.
* Estimate

The Marine Reconnaissance operations have achieved excellent results by going with extreme stealth, and calling in artillery and air strikes on interesting targets. The enemy/friendly loss ratio is 36, and enemy losses run 1.1 per patrol. Continuation of such results on a large scale might have devastating effects on the enemy.

The Australians are of particular interest because they operate largely in Phuoc Tuy Province as an independent force, providing their own artillery support, communications, and reaction forces. About half their force operates in small patrols, often ranging far out of reach of artillery support, while the other half stays around their base to protect it and to provide reaction forces. Their overall results look good in terms of the two criteria: about 14 enemy killed and captured per friendly lost, and about .6 enemy killed and captured per patrol (including reaction force results).

Also of interest are the operations of the 1st Brigade of the 101st Abn. Division, which has emphasized covert patrols in the early stages of its operations. As with other units, a certain proportion of its force is tied up in TAOR patrols and base defense. Of the remainder, it typically puts out half its force on covert patrols and retains the rest as a reaction force. When a patrol turns up a large enemy force, the other patrols become part of the reaction force and the entire force of one or two battalions is concentrated around the enemy. At this point it fights conventionally, making no use of the out-of-the-blue bombardment used by the STINGRAY patrols. The Brigade has gotten more than its share of big fights this way, and achieved a ratio of enemy killed and captured to friendly losses of more than 10 during 1966.

All these results utilizing covert patrols are significantly superior to those achieved in conventional operations with battalion-sized and larger forces. These latter have had a ratio of enemy killed and captured to friendly losses of 6.7 and have killed and captured the enemy at the rate of only 36 per battalion per month. It is reasonable to project, with some degradation, the results of a heavy emphasis on covert patrols by using the results of these past experiments. In the projected posture,

Comparison of Conventional Search and Destroy And Covert Small-Unit Operations (Calendar 1966)

	Typical Combat Group Size	Per Battalion Per Month: Enemy Losses	US/FW Losses	Ratio of Enemy Losses to US/FW Losses
STINGRAY	14	100	2.8	36.0
1st Bde. 101st	30/600	78	7.7	10.1
Conventional Opns.	140	36	5.4	6.7
Possible	8	100	5	20

out-of-the-blue bombardment would be used often, as it is on STINGRAY operations, but reaction forces would also be used from time to time to exploit an opportunity to mop up a large enemy force.

Up to about half the troops in each maneuver battalion can be committed to patrols of about eight men* each lasting four days, with about one-fourth of each battalion out on patrol at any one time (twelve to fifteen patrols out at a time). This would imply 100 such patrols per battalion per month (12 X 30 days ÷ 4), requiring about the same number of helicopter sorties for

* Although the Marines use patrols as small as four men, they prefer a minimum size of about 15 because of its ability to hold out against a large force. However, Marine data show that larger patrols get poorer overall results, probably because they are more easily detected. Moreover, the larger unit has that many more men to become casualties when they are discovered. The Special Forces Delta teams are almost always eight men, the minimum group size that can continue to function when one of them is wounded or injured. Cutting the patrol size from 16 to 8 at least doubles the number of lucrative sightings because it permits having twice as many patrols. We do not yet have comprehensive data on the Delta teams, but the small sample of data now available indicates that the concept works; the secret for the small group is quick extraction when things get hot.

both patrols and reaction forces as they use now. Because of their shift to RD, their scarcity of airlift, and so on, ARVN battalions are assumed to put out only 26 patrols per month and to get half the results per patrol. The assumed results are one enemy loss per patrol for the US/FW units and .5 enemy losses per patrol for the ARVN units. This would imply 100 enemy losses per U.S. battalion per month, (including reaction force results), or about triple the present results for large-unit operations. This expectation is supported by the USMC results which have been 1.1 enemy per patrol without the reaction force results.

Possible Results from Expansion of Small-Unit Actions

	Mvr. Bns.	Patrols Per Month Per Bn.	Total Patrols	En Losses Per Patrol	Total Enemy Losses Per Month
US/FW	90	100	9,000	1.0	9,000
ARVN	154	26	4,000	.5	2,000
Total	244	53	13,000	.8	11,000

The patrols alone imply a 40% increase over the current total monthly rate (Jan-May 1967) of about 7800 enemy losses. In addition PF/RF forces, aircraft, and other sources should raise enemy losses further.

Inasmuch as US/FW small-unit operations have produced enemy losses ranging from ten to almost forty times the friendly losses, compared to a ratio of less than seven for battalion-sized operations, it can be expected that a shift to major emphasis on small-unit operations would bring about a decline, or at worst no increase, in friendly losses.

LONG RANGE PATROLS VERSUS SEARCH-AND-DESTROY

Comments have been received from the Army Staff (ODCSOPS) in rebuttal to the June 1967 Southeast Asia Analysis report item (page 14), which stated that increased small unit operations could increase the ratio of enemy KIA/friendly KIA.

Comments received are as follows.

"The referenced report contains an analysis (pages 14-17) of large unit operations versus long range (clandestine) patrols. The analysis concludes, "Available data suggests that at least a 40% increase in enemy KIA per month could be achieved with no increase in friendly losses if we increased our use of small unit operations." Small unit operations in this case refer to small, clandestine, long range patrols in enemy infested areas. While this analysis may be valid within the parameters established, I believe that a review of large unit operations, to include their purposes and relation to our objectives in RVN, would provide background for a more complete appreciation of the subject.

"Large unit operations in RVN are designed to support the accomplishment of the objective, to defeat the VC and NVA forces in SVN and force the withdrawal of NVA forces. By conducting large-scale, sustained, offensive operations (one or more battalions) against enemy main forces and base areas, US forces seize the initiative from the enemy, inflict heavy casualties on enemy units, and disrupt his organization and plans for strategic and local activities. In this role, US forces indirectly support another objective, to extend GVN dominion, direction and control over SVN, be relieving pressure exerted by enemy main force units. Invasion of the enemy base areas causes the enemy to face serious logistical problems. These operations yield surprisingly large amounts of food stuff and equipage, lower his morale, and develop intelligence of great importance to the allied effort. Generally, the longer or more often US troops operate, in force, in a particular area, the greater the enemy's difficulty in reorganizing his forces and regaining control of that area. Captured enemy documents reveal plans for tying down US forces in local security roles to prevent large-scale offensive operations which are evidently greatly feared. The present enemy activity and threat demands that friendly forces devote a large effort to the defeat or, at least containment, of the enemy's main forces and the neutralization of his base areas. The enemy main forces are capable of massing to disrupt RD efforts just as they are beginning to show some progress. The enemy has base areas in which he can train his forces, rest and refurbish his units, tend his wounded, develop and rehearse his plans, and build up his store

of supplies. As long as these conditions exist, it is most important that sustained, large scale, offensive operations, aimed at the destruction of the enemy main forces and their base areas, be conducted.

"As an integral part of these large unit operations, long range patrols are in fact used extensively both prior to and during the large unit operations. The importance and necessity of these patrols is recognized, not as a replacement for, but in conjunction with the large unit operations. Current activities in RVN pertaining to the long range patrol projects include the following:

1. The RECONDO School operated by US Army Special Forces personnel at Nha Trang trains approximately 120 US personnel each month. These personnel return to their units and are organized to conduct long range patrols. The patrols consist of five to twelve men and are normally out from three to five days, patrolling to the limits of the parent unit's designated area of operation.

2. The Mobile Guerrilla Companies are composed of 150 Vietnamese and each one is directed by a USASF "A" detachment. There are two of these units assigned to each Corps Tactical Zone. They conduct missions of 30 to 60 days duration in VC/NVA controlled areas and are resupplied by air drop from fixed wing aircraft. The companies rely on friendly air for support.

3. Project Delta has authorized assets which include sixteen reconnaissance teams, eight "Road Runner" teams and one Vietnamese airborne ranger battalion. There are 93 USASF personnel authorized for Project Delta. These assets provide a long range reconnaissance and interdiction capability to I and IV CTZs.

4. Project Omega and Project Sigma provide the same support in II and III CTZs, respectively, as Project Delta does in I and IV CTZs. Each project has eight reconnaissance teams, four "Road Runner" teams, three Mike Force (reaction force) companies, and one camp security company. 78 USASF personnel are authorized for each project.

5. Action has been initiated to add 834 spaces to the US Army ceiling to accommodate the recognized divisional and separate brigade long range patrol requirements.

6. Tactics and techniques very similar to those outlined on page 16 of the referenced report are being used in II and III CTZs when and where the situation and terrain call for such tactics. Examples of this are the operations habitually conducted by the 4th Infantry Division in the Kontum-Pleiku western border area and the 25th Infantry Division in Hau Nghia Province.

"In order to make future analyses on this subject more comprehensive and complete, I suggest you consider the foregoing remarks and the following additional factors.

1. Since it is often impossible for a long range patrol to determine the exact size of a located enemy force, it is not only difficult to accurately assess casualties incurred by "out-of-the-blue bombardment", but no determination can be made as to the "real" effects of the bombardment on the enemy in terms of lasting damage to his base and supply areas and, of prime importance, the effect of these efforts towards providing security for the GVN RD program.

2. In attempting to execute a concept of small-unit patrols, such as suggested, there is a point beyond which sufficient artillery and air is not available for support. This becomes critical since the concept depends upon timely artillery and air support in order for them to accomplish their mission or for survival.

3. A primary difference between the "out-of-the-blue bombardment" used by the STINGRAY patrols and normal preparatory fires used by US Army forces is that the preparatory fires are immediately followed by the introduction of sizeable forces into the area. Although these forces are exposed to enemy fires and the kill ratio may change, the significant advantages accrued from the large unit operations must be considered.

4. While attrition is one means of measuring forces activity, it is not conclusive in determining status of progress. The enemy considers the human life as the cheapest commodity in Southeast Asia. The total impact of our operations on the enemy, security of the population, and control of surface lines of communications are more valid yardsticks."

DRAFT

In the July issue of SEA Analysis Report we published comments by USA ODCSOPS on a June article, "Long Range Patrols versus Search-and-Destroy." In this issue we present a reply to these comments, and DCSOPS presents its rebuttal to the reply.

ODCSOPS made 3 points in its rebuttal: first, that "it is most important that sustained, large scale, offensive operations, aimed at the destruction of the enemy main forces and their base areas be conducted;" second, that "long range patrols are in fact used extensively both prior to and during large unit operations;" and third, that other factors than enemy killed must be considered, such as security for the GVN RD program, and the availability of artillery and air.

Several of the ODCSOPS assertions are well-documented and unquestionably correct. For example, it is true that our forces already use long range patrols. However, neither the Marines of the III MAF nor the U.S. Army in Vietnam use more than an average of 10% of their maneuver battalion strength in the field for such patrols. The issue is not whether to conduct such patrols, but how many. The thrust of the PATROLS article was that the proportion should be increased to something like 50% of the maneuver battalion strength.

We agree further with ODCSOPS that security in the populated areas, protection of LOC's, and so on are the important objectives, not merely killing VC/NVA troops. Analysis of the mode of operations that contributes most to these objectives has not come to our attention. However, the analysis of tactical initiative suggests that patrols would do at least as well as sweeps in serving these other objectives.

Would the patrols run short of air or artillery support? We think not. The helicopter support required for the present pace of large-scale operations would also support a strategy of increased patrolling combined with use of large reserves against identified enemy units. Last month's paper, "Air and Artillery Strikes Other Than Close Support" showed that less than 15% of our tactical air and artillery are required at present to support troops in contact. One of the main advantages of expanded use of covert long range patrols would be an increased effectiveness for artillery and air strikes now used in unobserved strikes. Some changes in the deployment and operating patterns of artillery might be needed to provide more coverage, but no increase in artillery should be needed.

Advocates of large operations assert that they "seize the initiative from the enemy, inflict heavy casualties on enemy units, and disrupt his organization and plans ..... Invasion of the enemy base areas causes the enemy to face serious logistical problems." The contention of the PATROLS article is that increased patrolling can achieve these objectives better. It estimated that the use of patrols would increase enemy casualties from all causes by 40%; those due to U.S. resources now used in major operations

would triple. The larger the enemy unit attempting penetration of a patrolled area, the more devastating its casualties would be, particularly if our reaction forces mopped up the shocked remnants hit "out of the blue" by precise artillery and air. Increased patrolling should inflict heavier enemy casualties, disrupt his organization and plans, and increase the flow of reliable, timely intelligence on enemy movement. It might mean less captured materiel, but the tonnages we claim to capture are less than 25% of his estimated logistic requirement, and field estimates say that the enemy can reconstitute many base areas in a month or less.

Furthermore, our large operations may seem to seize the strategic initiative but do not seize the tactical initiative from the enemy. Our paper, "The Strategy of Attrition," in the May issue of this publication, showed that the enemy fights at times and places of his own choosing in 85% of the battles. The airlift milling around our landing zones, the ponderous and noisy movement of our infantry, and the lavish expenditure of artillery all around them make their whereabouts obvious for a thousand yards or more in every direction. Moreover, the mine and booby trap threat forces them to move slowly and prevents ground pursuit of the fleeing enemy who knows where his mines and traps are. The enemy nearly always knows the whereabouts of our units in the field, and can move in front of, behind, and through our lines while watching for the right tactical moment to attack.

Nevertheless, the strategic effects of using more small, covert patrols are not obvious. The effects would depend on how such patrols were deployed, used, and integrated with the operation of reserve/reaction forces. How to do it right can be determined only by analysis and experimentation in the field, by people close to the action and responsible for its results. But the evidence makes it clear that this is the right way to go.

ODCSOPS REBUTTAL TO ABOVE COMMENTS

There are no doubt many instances in South Vietnam where increased patrolling would be advantageous. The amount of patrolling to be accomplished is being reviewed continuously by each commander on the ground, in light of the situation confronting him. In so doing, he must consider the tasks that are to be accomplished by his unit; the enemy's activities, aims, and capabilities; the battleground on which his unit will be employed; and the forces and tools he has available. Since the situation varies from one CTZ to another, and from one province to another, it is not militarily prudent or desirable to increase patrolling arbitrarily across the board without considering these factors.

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For example, in the vicinity of the DMZ in I Corps where the enemy presently appears to be putting forth his greatest effort, he is placing more emphasis on conventional type operations by NVA forces than on guerrilla warfare. Here the long range patrols necessary to locate the relatively concentrated enemy forces in the sparsely populated jungle covered mountains are fewer than those required in other areas. The enemy attempts to avoid contact with our reaction forces in this area, just as he does elsewhere in SVN. However, the requirement for long range patrols is not as great since contact can be maintained more readily by more conventional patrolling. Further, if 50% of the ground combat force were committed to patrolling, the reaction force may not be large enough to handle all enemy forces located, which could result in an excessive number of casualties.

On the other hand, in the western border provinces in II Corps and in Tay Ninh and Hau Nghia Provinces in III Corps, enemy forces are fewer and relatively dispersed. The emphasis is on guerrilla rather than conventional type operations. Therefore, a greater percentage of our maneuver battalion strength can be employed in long range patrols to locate the enemy forces. In this case, a smaller reaction force would still be large enough to complete the destruction of all enemy forces our patrols may locate.

Another problem to be considered is that of providing close and continuous air and artillery support to approximately 3,700 ten man patrols (50% of U.S. maneuver battalion strength) operating at any given time. Either the support elements would be fragmented to the extent that they would not be able to provide the volume of fire or air support required when lucrative targets are located, or some patrols would be denied this support altogether. Fragmentation of these support units would result in the requirement for additional control personnel, equipment, and security measures.

In summary, long range patrols are presently being used extensively in conjunction with large unit operations, particularly in the II and III Corps. Emphasis is being placed on the increased use of such patrols when and where the tactical situation calls for such tactics. However, there is no requirement that the number of patrols consist of a specific percentage of a unit's strength. In the final analysis, only the commander on the ground, considering the varying environmental factors mentioned above, can make the final decision regarding the amount and degree of patrolling to be accomplished in a given situation.

1968 MILITARY STRATEGY in SVN: GEN GIAP VS ALLIED CAMPAIGN PLAN

To gain insight into the military strategies of enemy and friendly forces in South Vietnam, we have briefly compared the VC/NVA strategy, expressed in General Giap's September 1967 article "Big Victory, Big Task," with allied strategy, presented in the US/RVNAF combined campaign plans. We realize the perils of inferring enemy strategy from a single document which incorporates plan, exhortation and propaganda. However, the insight gained from such a comparison may help us understand the meaning of major military engagements in SVN during the next few months.

VC/NVA Strategy

General Giap presents three North Vietnamese objectives: "to protect the North, liberate the South, and proceed toward reuniting the country." He bases his strategy on an analysis of the U.S. global position and North Vietnam's international position. Within this context, he considers the ways to achieve his objectives. We ignore all but the "liberation" of the South.

To liberate the South, Giap proposes to defeat allied military forces. Americans are seen as his most important enemy. He states that the VC/NVA have already defeated the American counterinsurgency strategy (since US forces had to be committed on a limited war scale), and have repeatedly defeated US troops in South Vietnam. He concludes that the tactical and strategic initiative belong with the Viet Cong.

To maintain VC/NVA momentum, Giap seeks to lure US forces to the periphery of Vietnam in order to disperse them and draw them away from populated areas. He believes that the vacuum left by US forces moving outward to fight VC/NVA main force units (in battles such as those at Loc Ninh, Dak To, and the DMZ) presents significant tactical opportunities to local and regional forces operating in the populated areas of SVN. Giap would reinforce these local forces with small elite strike units who would operate against military bases and disrupt GVN attempts to establish security.

Giap does not develop a strategy aimed specifically against RVNAF forces. He simply dismisses them and the GVN as ineffective. He notes that the RVNAF's principal role is to provide security for pacification, and asserts that the GVN only serves as a political buttress for the Americans. All the same, his strategy of concentrating the main thrust of his effort in the populated areas implicitly calls for the destruction or neutralization of RVNAF forces.

Giap considers his strategy sound because he thinks that global commitments prevent the US from deploying significant numbers of additional US troops to South Vietnam. He states that a "people's war" which mobilizes all possible forces will triumph over the US limited war strategy. Giap further considers the strategy doomed because the Americans have been denied the blitzkrieg victory essential to that strategy and now find themselves engaged in a protracted war.

Allied Strategy

The MACV staff and the ARVN Joint General Staff develop an annual Combined Campaign Plan which lays out the common strategy against the VC/NVA in South Vietnam. The 1968 plan, AB 143, states that the general objectives of military operations are to defeat the VC/NVA forces and extend GVN control throughout South Vietnam. The plan defines military tasks, establishes goals to be achieved, assigns responsibility for the tasks to specific forces, and establishes priority for operations in specific locations.

Military tasks fall into three categories. First, containment or anti-invasion forces prevent major incursions into SVN; US forces have this responsibility in I, II and III Corps. Second, offensive forces pressure VC/NVA main forces and base areas; US/RVNAF forces, assisted by ARVN units, carry out this mission in I, II and III Corps. Third, security forces protect the people, selected territory, and critical installations behind the shield formed by US operations; this is the principal mission of the RVNAF in I, II and III Corps. In IV Corps, RVNAF forces carry out all three missions.

The primary assignment of US forces to defend Vietnam against the external threat and to fight VC/NVA main force units within South Vietnam continues the roles and missions assigned in the 1967 plan (AB 142). The 1967 assignments gave rise to US operations generally on the periphery of the area given priority for military operations (Map 1). The 1968 plan enlarges the priority military operations areas to include sparsely populated areas adjacent to the SVN border in I, II and III Corps (Map 2). This implicitly commits US forces to operate, as a rule, further from populated areas then they did in 1967.

Opposing Strategies

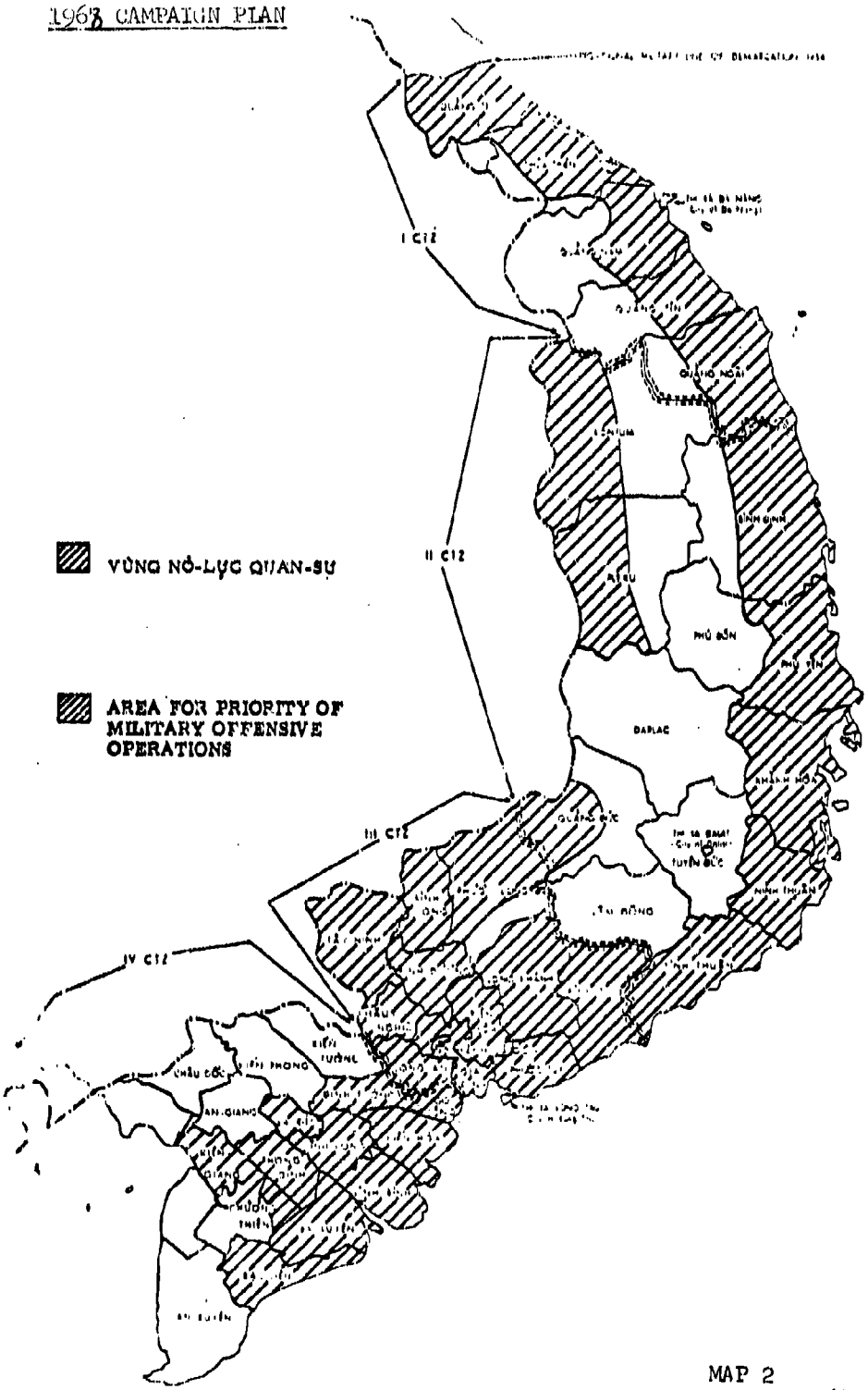
Giap identifies areas along the border of South Vietnam as the places where the VC/NVN can expect to fight on favorable terms; these areas correspond well with the border areas emphasized in the MACV/JCS plan. Both US/RVNAF and VC/NVA have bases near the borders which they probably would defend. Both sides are likely to attack each other's bases. These factors all indicate that the biggest battles in 1968 will take place in the border provinces of South Vietnam. The unanswered question is: What are the costs of engagement there, for each side, in terms of casualties, materiel, and foregone opportunities?

Choosing this particular battleground for the contest between battalion size units offers advantages to both sides. On the one hand, US/RVNAF keeps VC/NVA main forces at a safe distance from population centers, affording them additional security. On the other hand, Giap expects such battles to further disperse US forces, thereby reducing forces available to protect populated areas and preventing concerted large campaigns. The question is who can turn the "dispersal" of US combat troops to advantage. It seems to us that the answer will have to be found in the populated areas where Giap plans to challenge RVNAF forces with intensive guerrilla warfare.

1967 CAMPAIGN PLAN

MAP 1
SOURCE: AB 142

1968 CAMPAIGN PLAN



MAP 2
SOURCE: AB 143

CONFIDENTIAL

January 68

1968 MILITARY STRATEGY IN SVN: ARMY STAFF COMMENTS

Summary

Our December article on "1968 Military Strategy in SVN" indicated that both US/GVN and VC/NVA strategies call for most big battles of 1968 to be in the border provinces; and that Giap expects the resulting "dispersal" of US forces to give the VC new guerrilla warfare opportunities in the populated areas of SVN.

In the following comments ODCSOPS stresses some advantages accruing to friendly forces in combating the VC/NVA near the SVN frontiers. However, a new Marine Corps study on I Corps finds that the enemy also reaps some benefits by fighting at the borders. We compare Marine experience with the ODCSOPS expectation of US gains and conclude that a harder look is needed fast. Some means must be found to prevent the VC/NVA from disrupting pacification while friendly forces fight on the frontiers.

The ODCSOPS comments are as follows:

"The referenced report contains a study which briefly compared 'the VC/NVA strategy, expressed in General Giap's September 1967 article, 'Big Victory, Big Task', with allied strategy, presented in the US/RVNAF combined campaign plans.' This is an interesting study, yet I suspect that its frame of reference tends to lure the analyst and the reader to over-simplify the strategic equation. A common pitfall in using a document, such as General Giap's article, is that is is purposely misleading. It is extremely difficult to separate meaningful concepts and strategy from propaganda. Obviously, the Giap article was released for worldwide distribution in an effort to influence the thinking and actions of a variety of people.

Your study concludes that 'the biggest battles in 1968 will take place in the border provinces of South Vietnam. The unanswered question is: what are the costs of engagement there, for each side, in terms of casualties, materiel, and foregone opportunities?' Thus, one is led to the view that the Giap 'border strategy' disperses the US combat troops and if we are to turn this 'dispersal' to advantage we will have to find the answer 'in the populated areas where Giap plans to challenge RVNAF forces with intensive guerrilla warefare.'

I suggest that there is another side of the coin and I commend it to your analyst. There are a number of advantages in combating the enemy forces near the borders which deserve consideration with respect to the above question.

a. It is preferable to engage the enemy in unpopulated terrain where friendly forces can apply more freely their superior firepower.

b. By fighting the enemy near the border, our forces prevent him from getting at potential sources of food 'in country' and also limit his maneuver room.

c. It takes much longer and costs more casualties (particularly civilian casualties) to defeat the enemy forces once they have become entrenched in the populated areas. As an example, the 25th US Infantry Division, in searching out and destroying enemy forces in Hau Nghia and nearby provinces during the period 11 May to 7 December 1967, suffered 324 KIA while killing 1,686 enemy. These figures are very close to the comparative casualties in the recent Dak To fighting. However, the fighting around Hau Nghia kept an entire division tied down for seven months while Dak To took three weeks.

d. There are no local VC forces and guerrillas near the borders on which the NVA forces can rely for sorely needed assistance.

e. When our forces engage the enemy near the border, they often frustrate his plans and force him to fight before he is fully organized and can inflict damage.

f. There is no need to maintain large friendly forces constantly in the border area and dispersal is not primarily the result as has been suggested. When a large battle takes shape, friendly forces may be diverted quickly to the area and rapidly returned to missions supporting pacification more directly following the battle. This is the plus of air mobility.

g. By engaging the enemy at the borders, our forces expose the fact that he is making tactical use of sanctuaries in Laos and Cambodia in flagrant violation of these countries' neutrality."

SEAPRO Comment

The Giap article is, indeed, a propaganda document. But it provides a reasonable point of departure since the communists tend to integrate strategy and propaganda. Moreover, a recent U. S. Marine Corps study[1] tends to confirm Giap's position. It states that the enemy considers the survival of his guerrilla infrastructure in SVN to be his most critical concern, overshadowing

1/ U. S. Marine Forces in Vietnam - March 1965-September 1967, Historical Summary, FMF-PAC, undated, pp 3-20 and --31.

the volume of his casualties. He therefore wishes to draw US forces away from populated areas into the rough terrain near his border sanctuaries (as he did in the DMZ fighting). Some of the Marine comments are:

> "The enemy exhibited that he recognized that engagements in the mountains, such as those near the DMZ, provided him a double bonus. They drew free world forces away from operations supporting the pacification effort, while they offered the enemy combat under conditions more favorable than those in the lowlands. Combat in the highlands gave the enemy shorter supply lines from his caches in the rugged mountain regions of North and South Vietnam and Laos, and thus helped ease the strain generated by our air interdiction campaign. And combat near the DMZ and Laos offered the enemy nearby havens, safe from ground attack, to which he could retire when pressed. In those sanctuaries he could also set up long range artillery and rocket positions to harass and attrit forces inside RVN.
>
> The thick jungle cover and rugged terrain of the mountains tended to degrade the effectiveness of Free World forces' supporting weapons and, at the same time, favored the enemy's ability to ambush, defend briefly and withdraw. Finally, his defeats, suffered in the unpopulated hinterland, resulted in no direct losses in control of the population many miles away.
>
> The enemy's major military operations aimed at the more populous areas brought his troops out of the remote highlands and into relatively open terrain. The enemy's supply lines were stretched, he was forced to expose his movements to the growing number of peasants who were willing to report them to the free world side, and his large attacks near the coast moved him far away from his hiding places in the highlands. At the same time, Free World forces were able to bring their supporting arms to bear most effectively. The most significant aspect of operations in the coastal plain, however, was the absence of a privileged sanctuary, such as North Vietnam, to which he could retire when he felt the need. The result was that enemy attacks in the lowlands were invariably failures, and these failures were evident to the Vietnamese population among whom he had fabricated his mystique of invincibility."

The contrast between USMC and the Army staff comments indicates the need for a better answer as to who benefits most from border fights. Only the commander in the field can make the final decision. We hope to cast more light on the subject in the future. At present, some of the factors which seem relevant are discussed below, using the Army staff comments as a guide.

* The Army staff states that it is preferable "to engage the enemy in unpopulated terrain where friendly forces can apply more freely their superior firepower." Conversely, the Marines indicate that "the thick jungle cover and rugged terrain of the mountains tended to degrade the effectiveness of Free World forces' supporting weapons." Thus while we can use our massive firepower without fear of undue civilian casualties, low visibility and protective cover may more than offset this advantage. Further, the enemy can use his own mortars and artillery, as he did at Con Thien.

* For border operations to cut off enemy access to food sources in SVN and limit his maneuver room assumes that virtually all enemy movements across the border will be stopped by allied military operations. This appears to require more massive forward deployment of allied forces than called for in AB-143. Further, it is not clear that the VC/NVA forces in the border areas need access to SVN food supplies: they are being supplied from both Cambodia and the DMZ. Enemy food shortages appear to be particularly serious in the coastal areas rather than the border areas. As for limiting maneuver room, the Marines indicate that fighting in enemy base areas "favored the enemy's ability to ambush, defend briefly and withdraw." Moreover, extending areas of allied operations, while allied forces remain the same size, affords insurgents additional maneuver room.

* The Army statement that combat at Dak To was more productive than S&D operations in Hau Nghia assumes that productivity should be judged by the number of VC killed per battalion day of engagement. This criterion overlooks some important points, as the Army staff has tellingly remarked about some of our previous articles. First, the Dak To type of battle is infrequent; the results should be judged in terms of all the allied battalion days expended in the Dak To area over a reasonable period of time, not just those expended in the course of one brief battle. Even massive deployments of US forces in the border areas could not be expected to produce big battles every week. More likely, Giap would allow his "sanctuary" forces to be engaged just enough to keep the US forces tied down on the frontiers.

Second, the forces operating in Hau Nghia, in addition to killing VC/NVA, probably had assignments to destroy or deny selected base camps to the enemy and to increase LOC security. Such missions seem a proper use of US forces when more productive employments are unavailable. Third, US search and destroy operations in Hau Nghia were close enough to highly populated areas to provide some indirect support for the GVN revolutionary development effort.

* It is true that the VC/NVA have fewer local forces to assist them in the border areas, that we sometimes hit an unprepared enemy there, and that the VC/NVA's flagrant violation of neighboring countries' neutrality is exposed. But the enemy has less need for local forces when he has border sanctuaries, shorter lines of supply, prepared defensive positions, easy

concealment of supply caches, and heavy cover in which to move.

* ODCSOPS points our that friendly forces fighting in border areas will avoid being dispersed because they have air mobility, which allows them to get there "firstest with the mostest" for the big battles, and then rapidly return to other missions, such as pacification. Nevertheless, some large US forces have been deployed near the borders for considerable lengths of time in response to enemy threats. The deployment of the 4th Inf Div to the highlands of II CTZ, and of the Marines and ARVN to the DMZ come to mind. More important, even temporary dispersal of allied forces allows the VC/NVA, with their improved command and control capabilities, to exploit quickly and effectively the absence of US forces; they can erode in a few hours the security progress that may have taken months to achieve. For example, an ARVN unit's absence of about 48 hours enabled the VC/NVA to regain control of Duc Lap village in Hau Nghia, undoing months of pacification work.2/

In conclusion, Giap states that fighting US forces near the border disperses them and will have a high payoff in the populated areas of SVN for the VC/NVA. The thrust of the advantages cited by ODCSOPS is that Giap's strategy provides a better opportunity for allied attrition of VC/NVA main forces. But the Marine Corps' experience identifies some disadvantages to allied strategy, especially if the VC/NVA's prime objective is to keep its infrastructure intact, even at the cost of substantial main force unit losses. We conclude that the VC/NVA must be prevented from seriously disrupting pacification and that the question of who benefits most from combat at the frontier urgently requires more study.

2/ R. Michael Pearce, Evolution of a Vietnamese Village - Part III: Duc Lap Since November 1964 and Some Comments on Village Pacification (U), Draft RM 5086, December 1966, p. V.

ODCSOPS Comment on this Article

We offered ODCSOPS the opportunity to make the final comment this month. They responded as follows:

"Let me just summarize the main points of my earlier view. It seems just as plausible as the argument advanced in your original thesis that the enemy is resorting to a "border strategy" because continuing US/FW/RVNAF successes have forced this strategy on him. By publicizing this "new" strategy, the enemy is making a remarkably clever attempt to conceal his true predicament. His main force units are being isolated from the populated and food producing areas; he no longer has the freedom to move his large forces into these significant areas; his objective, as well as ours, is to secure control of the people and the land; he is clearly failing to achieve this objective.

The important question is not so much who benefits most from combat at the frontier. Rather, it is whether the threefold strategy of containment at the borders, offensive pressures on enemy main forces, and support of the GVN pacification program, which is being pursued by the RVNAF/US/Free World forces in RVN, is the best one to achieve our military objectives in Vietnam. We have added opportunities and no doubt added difficulties. The opportunities seem to outweigh the difficulties."

APPLICATION OF THE AREA SECURITY CONCEPT

Summary. For the first time, MACV and the GVN Joint General Staff (JGS) have officially promulgated an Area Security Concept (ASC) as the primary military strategy for allied efforts in South Vietnam; the ASC is the basis for their Combined Campaign Plan for 1970 (AB 145). Operations in the 11th DTA (Quang Tri and Thua Thien provinces) during the year September 1968- September 1969 seem to closely parallel those later codified in the ASC. This article reviews the history of allied operations and pacification results in that area using the framework of the ASC criteria. We found that allied forces were successful in bringing relative security (C-or-better Hamlet Evaluation System, HES, ratings) to almost all (96%) of the 1 million population in the 11th DTA, and in doubling (35% to 73%) the percentage of population rated A-B. In this article we also describe the RVNAF forces present during the period, and show what kinds of US forces supported them.

Background - The Area Security Concept. MACV and the GVN Joint General Staff (JGS) recently issued their 1970 Combined Campaign Plan. The strategy and conceptual framework for allied operations in the plan is the Area Security Concept (ASC). The strategy makes upgrading population security the primary goal; allied operations will be designed to separate the main force war from the populated areas, and to consolidate existing security through the use of intensive police-type operations in zones surrounding the secure areas (A-B hamlets). This strategy develops no radically new methods of operations, but focuses already tested concepts on the new goal of population security. Because all but 7% of SVN's population is now rated A-B-C, the ASC concentrates on consolidating (upgrading) already existing levels of security (to A-B levels), rather than expanding security to all remaining D, E, and VC population.

Table 1 shows how the ASC will be implemented in four types of areas, each of which is described by its Hamlet Evaluation System (HES) security rating and geographic location: Secure Areas (A-B hamlets), Consolidation Zones (C and some D, E, and VC hamlets) surrounding the Secure Areas, Clearing Zones (VC controlled and unpopulated areas), and Border Surveillance Zones (along the DMZ, Laos, and Cambodian borders). Friendly forces must operate entirely differently from zone to zone; therefore, each zone has a unified command structure, and a unique mix of forces.

TABLE 1

AREA SECURITY CONCEPT

Type of Area	Secure Area	Consolidation Zone	Clearing Zone	Border Surveillance Zone
HES Rating	A,B (some C)	C (some D,E,VC)	VC (some D,E) and unpopulated areas	Unpopulated
Command	Province Chief	Province Chief	ARVN DTZ/SZ Commander	ARVN DTA/SZ Commander
GVN Forces Responsible	National Police (NP) Popular Forces (PF) People's Self Defense Forces (PSDF)	NP Field Forces (NPFF) PF RF Provincial Reconnaissance Units (PRU) PSDF (ARVN, US, FW as required)	ARVN US FW	CIDG/RF
Mission	Maintain & improve existing security without attempting expansion of area	Provide outer belt of protection for secure area, and raise level of security within zone	Keep VC/NVA away from consolidation zones	Detect, engage, and deter enemy attempting to infiltrate into RVN
Methods of Operation	NP-maintain law & order, neutralize VCI; PF, PSDF-reside and operate in secure areas only.	Continuous patrols & ambushes with mobile reaction forces. Police type operations to raise level of security.	Regular forces engage or drive enemy out, and isolate/neutralize enemy base areas.	CIDG operations

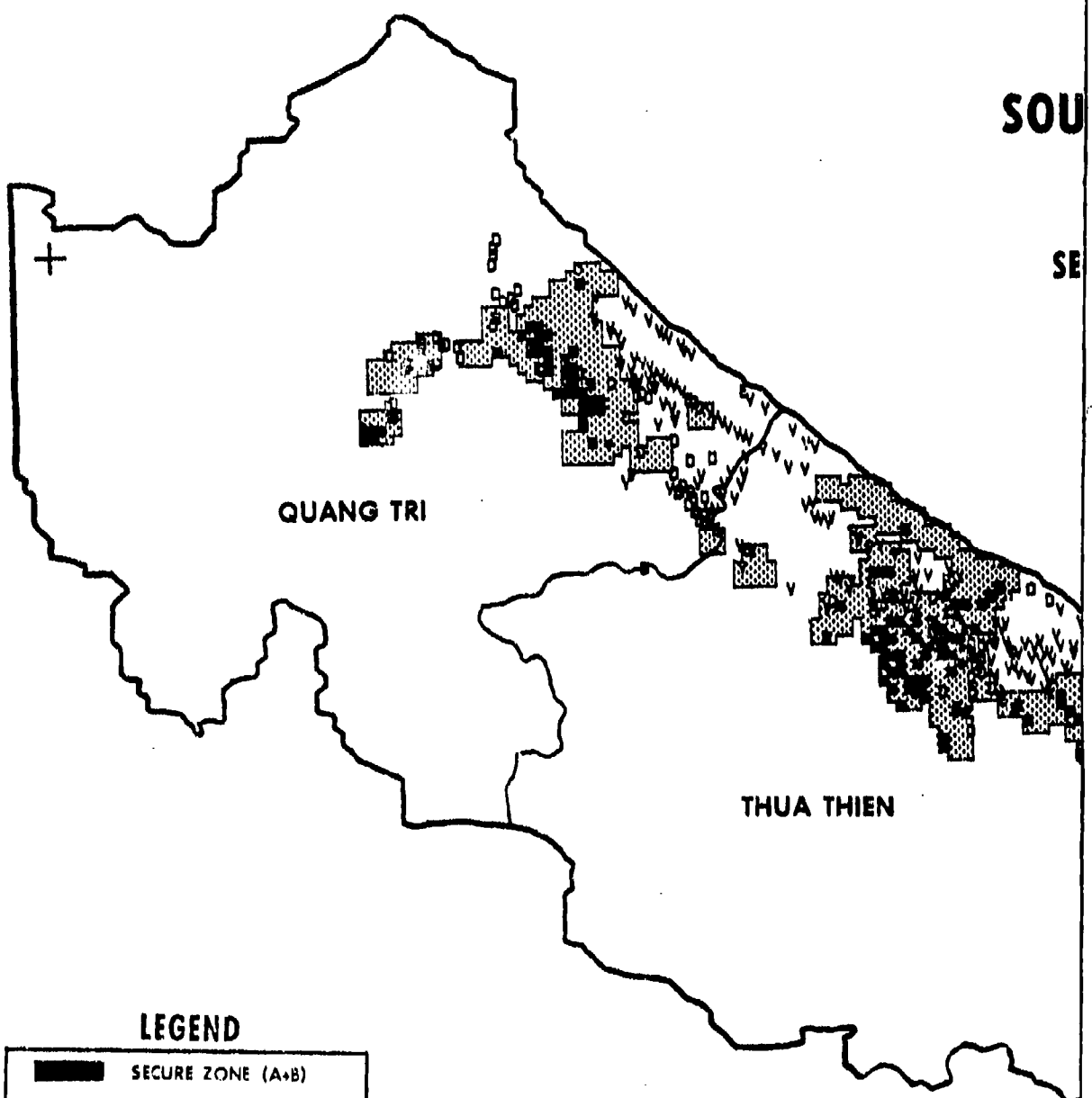
Source: MACV/JGS Combined Campaign Plan 1970 (AB 145).

The ASC has already been in use in principle in selected areas, even before its official endorsement. To see how it has worked, we attempted to select a "model" area where the principles of the ASC have been used. Although many areas in SVN improved significantly in security in the last year, we chose the 11th DTA in I Corps for the following reasons: (1) the ARVN 1st Division there has historically been committed to combat operations as opposed to pacification duties, thus conforming to the ASC, (2) the 1st Division has received consistently high performance ratings in accomplishing its assigned tasks, and (3) a great deal of information about operations there was readily available.

Measuring Area Security. To see how the ASC works, we devised a method of using HES scores and hamlet locations to approximate the geographic areas for each ASC Zone on a 1:500,000 scale map of the 11th DTA. The results are shown in Map 1 (September 1968) and Map 2 (October 1969). To show the Secure Areas, we colored black every 1-kilometer square which contained one or more A-B hamlets. To show the Consolidation Zones, we shaded all the 1-kilometer squares containing C hamlets, plus those squares immediately adjacent to squares containing A, B and C hamlets. Finally, we printed a "D," "E," or "V" at the location of the remaining hamlets. Note that many of the D-E-VC hamlets fell within the boundaries of the Consolidation Zone, and were treated together with the C hamlets in the upgrading process.

During the one-year period, we found that the Secure Areas nearly tripled in size and the overall Secure plus Consolidation Zone area increased 78% (Table 2). At the same time, A-B population doubled from 35% in September 1968 to 73% in September 1969. By September 1969, 96% of the 11th DTA's one million people were rated A-B-C. More importantly, pacification scores continued to improve even during the second quarter of 1969 when enemy attacks jumped to 44 per month, compared to 10-20 per month during the preceding three quarters. VC assassinations of Vietnamese civilians and officials continued at 20 per month, however, suggesting that while the GVN has extended military protection, the GVN has not eliminated the last hard-core vestiges of the VC political apparatus.

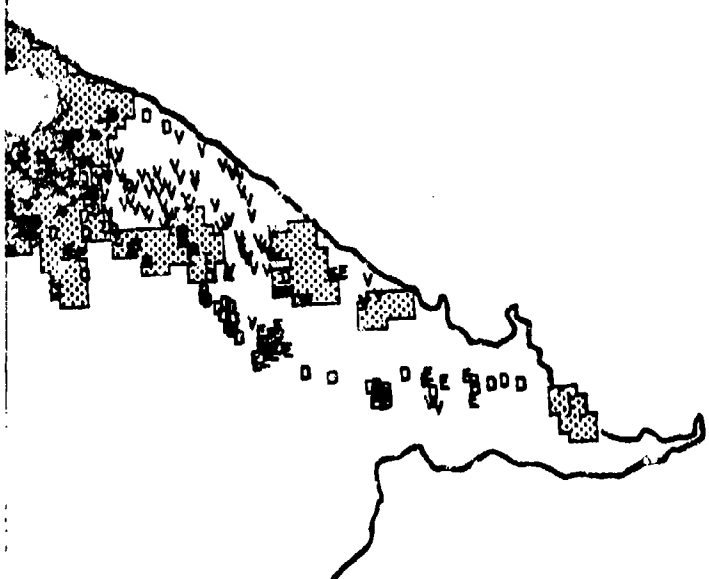
MAP 1


SOU
SE
QUANG TRI
THUA THIEN
LEGEND
SECURE ZONE (A+B)
CONSOLIDATION ZONE (C+ADJACENT 1 KM)
CLEARING ZONE

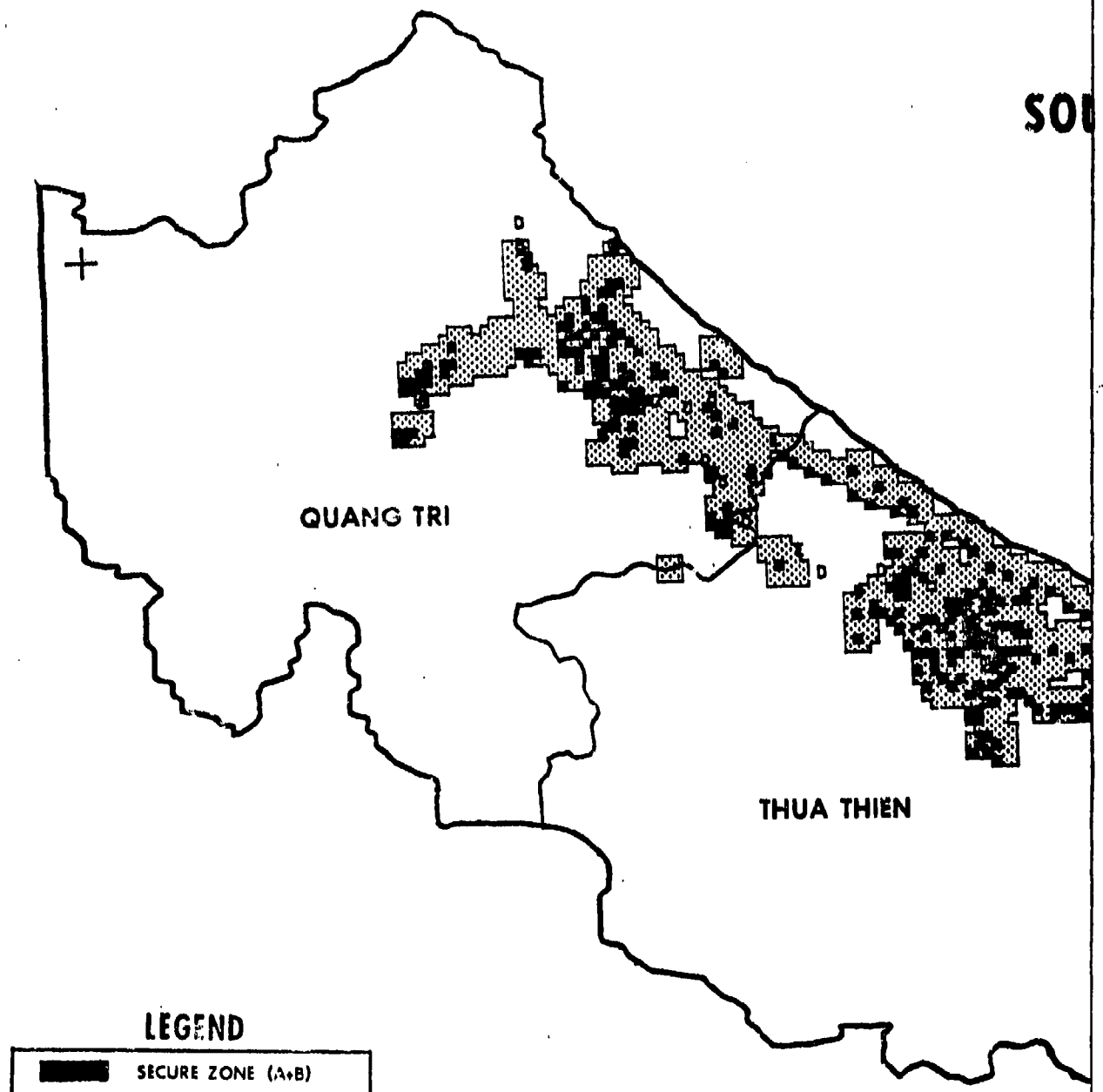
SOUTH VIETNAM

11th DTA

SEPTEMBER 1968



MAP 2


QUANG TRI
THUA THIEN
LEGEND
SECURE ZONE (A+B)
CONSOLIDATION ZONE (C+ADJACENT 1 KM)
CLEARING ZONE

SOUTH VIETNAM

11th DTA

OCTOBER 1969

TABLE 2

SECURITY IN THE 11TH DTA

	1968 3rd Qtr	4th Qtr	1969 1st Qtr	2nd Qtr	3rd Qtr	% Change 3rd Qtr 68 to 3rd Qtr 69
Area (km^2) (End of Quarter)						
Secure Area	116				302	+156%
Consolidation Zone	755	--------Not Available------			1259	+ 67%
Sub-Total	871				1556	+ 79%
Total Area in 11th DTA	9987				9987	
Population (% of Total) (End of Quarter)						
A-B	34.9	64.0	64.4	70.3	72.6	+108%
A-B-C	62.4	86.4	88.7	93.7	96.3	+ 54%
Enemy Activity (Monthly Average)						
Attacks by Fire	11	10	11	33	10	- 9%
Engaged/Assaulted	2	0	9	11	5	+150%
Total Attacks	13	10	20	44	15	+ 15%
Harassment/Sabotage Incidents	48	35	92	175	76	+ 58%
Assassinations	23	25	10	17	20	- 13%

We conclude that friendly operations had a significant impact in the 11th DTA on population security, particularly in creating a shield for the population against enemy attacks, but not necessarily against terrorism within the boundaries of the Consolidation Zone.

Friendly Forces in the 11th DTA. We examined the forces which operated in the three zones of the 11th DTA during the one-year period when progress was achieved. Table 3 shows that about 30,000 men in 19-23 US and 19 ARVN battalions operated in the Clearing Zone, 6,000-8,000 RF operated in the Consolidation Zone; 8,600-9,700 PF operated in both the Secure and Consolidation Zones; and 3,000 National Police and 30,000 armed People's Self Defense Forces operated in the Secure Zone.

TABLE 3

FRIENDLY FORCES IN THE 11th DTA

	1968 Sept	4Qtr	1969 1Qtr	2Qtr	3Qtr
CLEARING ZONE: (Monthly Averages)					
US Battalions	23	23	20	20	19
ARVN Battalions	19	19	19	19	19
Total	42	42	39	39	38
US bn est. strength	18,400	18,400	16,000	16,000	15,200
ARVN bn est. strength	12,300	12,300	12,300	11,600	11,400
Total	30,700	30,700	28,300	27,600	26,600
CONSOLIDATION ZONE: (End of Quarter)					
RF co. asgnd strength	5,917	5,887	6,410	7,213	8,543
PF plt. asgnd strength (½) a/	4,319	4,321	4,491	4,561	4,830
NPFF	496	532	561	NA	754
Total	10,732	10,740	11,462	NA	14,127
SECURE AREA: (End of Quarter)					
PF plt. asgnd strength (½) a/	4,319	4,321	4,491	4,561	4,830
NP (excl. NPFF)	3,006	2,945	2,872	NA	3,010
PSDF (armed)	---------- Not Available ----------				29,730
Total					37,570

Source: Battalion data - SEAFA Computer File. Bn. strengths: US average of 800 per bn. assumed; ARVN data from SEER Computer File. RF/PF - TFES Computer File. NP/NPFF/PSDF - from Province Senior Advisor Reports.

a/ PF assumed to operate in both Consolidation Zone and Secure Area. Since exact breakout not available, we assumed ½ of time spent in each area.

Methods of Operation - ARVN Main Force Units. We studied operations of main force units in the 11th DTA, particularly those of the ARVN 1st Division, to determine what methods related to the ASC seem to be successful. Sources used in this analysis were: (1) SEER/AMFES computer files, (2) monthly "Operations of US Marine Forces - Vietnam" reports from FMFPAC, (3) "Operational Report - Lessons Learned" (ORLL) from pertinent US units, and (4) the NSC-sponsored Vietnam Special Studies Group (VSSG) paper, "The Situation in the Countryside," Thua Thien Province Study.

During the September 1968-September 1969 period we studied, US and ARVN regular forces were primarily engaged in reconnaissance in force operations of varying duration and size. The typical large unit clearing zone operations involving ARVN units focused on enemy lines of communication (LOC), and staging and assembly areas. It should be noted that according to a detailed study of relevant SEER reports, local ARVN commanders reported that their operations were unilateral in the limited tactical sense, even though their units were part of a joint task organization with US units. By having a joint task organization, ARVN commanders probably enjoyed greater US combat support than they could obtain operating independently. For the most part, US forces played the dominant role in main force operations.

Short descriptions of four operations involving ARVN units during May-July 1969 are given below.

(1) 1st ARVN Regiment--Between 20-24 July, elements conducted reconnaissance in force operation near former base area 101 in Quang Tri.

(2) Operation Massachusetts Striker (1 March-8 May 1969) -- designed to locate and destroy enemy force caches and lines of communications. The joint task organization included the 3rd ARVN Regiment and part of the 54th.

(3) Operation Apache Snow (10 May-7 June)--The mission given the 3rd Brigade 101st and 1st ARVN Regiment was to conduct airmobile assaults into the Northern A Shau valley in conjunction with the 9th (US) Marines and 3rd ARVN Regiment to destroy NVA/VC forces, obstruct enemy routes of egress into Laos, interdict enemy LOC's, and to locate and destroy enemy caches.

(4) Operations Montgomery Rendezvous (8 June-August 1969) and Campbell Streamer (13 July-August 1969) - Joint task organizations included the 3rd and 54th ARVN Regiments. Same general missions but in different operational areas of Thua Thien.

Methods of Operation - Territorial Security Forces. We studied operations of RF, PF, and other territorial security forces in the 11th DTA to see their effect in the ASC. The primary source used in this analysis, and for the Results sections following, was the Thua Thien Province Study mentioned above.

In contrast to previous emphasis on "search and destroy" sweeps by US and ARVN maneuver elements, increasing emphasis was placed in late 1968 on "cordon, search, and hold" operations, using combined US, ARVN, and territorial security forces. These tactics continued through late 1968 and 1969, and, according to Province Senior Advisors (PSA) reports, they had a major effect on pacification. In October 1968, for example, the month of the most rapid pacification progress, in four major combined cordon/search/hold operations in Thua Thien alone, the enemy lost 328 KIA, 664 POW, and 98 Chieu Hoi, at a cost of 6 friendly KIA and 39 WIA. A native population of 16,000 was resettled in the newly secured areas. The Thua Thien PSA report for October noted that RF/PF forces had been operating more and more energetically; beginning in January 1969,

RF/PF were equipped with M-16 rifles, giving them firepower parity with enemy regulars for the first time in several years.

Results - Clearing Zone

In 1967 and early 1968, the bulk of the enemy main forces were operating in or near the populated coastal lowlands (see large number of D, E, VC hamlets serving as base areas in the populated areas as of September 1968--Map 1). In late 1968 and 1969 on the other hand, they operated for the most part only in the unpopulated western mountains. This shift is well documented by captured documents, PSA reports, and the location reports of friendly KIA. Apparently the enemy's heavy casualties in early 1968 and his likely desire to avoid repeating them, together with repeated allied disruption of the vital A Shau Valley supply system, and the successes of pacification, increasingly denied the enemy supplies, manpower, intelligence, and any safe resting areas in the lowlands. By isolating the enemy's main forces and by rapid, mobile reactions in response to hard intelligence information, friendly Clearing Zone operations appear to have been very successful in the 11th DTA in providing an effective shield for operations in the Consolidation Zone.

Results - Consolidation Zone

As enemy main force influence was largely eliminated from populated areas, the great relative increase in the strength and effectiveness of RF/PF and other local security forces over weakened local enemy forces produced the spectacular improvements in population security noted in Map 2 and Table 2: tripling of the Secure Area, and doubling of the A-B population.

It should be noted, however, that from mid-1968 to about March 1969, the enemy was attempting to consolidate and rebuild his main forces and guerrillas, and from March 1969 to the present, he has apparently returned to a protracted war strategy. These strategies in themselves grant the GVN more freedom of action in the Consolidation Zone, at least temporarily, and account for part of the improved GVN security.

On the enemy side, there appears to have been serious regression in local force effectiveness. After early 1968, captured documents, prisoners, and ralliers indicated that guerrilla forces and the infrastructure began to experience many serious problems, including low morale, inability to recruit and replace losses, popular unwillingness or fear to give support, and loss of rest and supply areas previously secure from US/GVN incursions.

In summary, the enemy could probably reverse the recent trends fairly quickly if he became willing to adopt a general offensive strategy (as in 1967 - early 1968), i.e., to commit his main forces to intense activity in the lowlands, and to accept the heavy casualties this would entail. However, he now lacks support for his main forces in the populated areas, making such a strategy much more difficult to use successfully.

ARVN Force Structure. Because the ARVN 1st Division was apparently successful in its "Clearing Zone" operations on enemy main forces and base areas, we have compiled a detailed description of the Division and its supporting elements as an example of a "model" Clearing Zone force. Table 4 shows that the Division plus its support totaled 27,056 men, of which 6,495 were provided by ARVN Corps-level forces and 3,613 "ARVN equivalents" of US support personnel.

TABLE 4

ARVN 1ST DIVISION "SLICE"

ARVN Division Force (1st Division - 17 infantry battalions plus division forces)	16,948
ARVN Corps Support	
Combat	4,051
Service	2,444
	6,495
U.S. Support a/	
Combat	3,104
Service	509
	3,613
Division Slice (through Corps, including US Support)	27,056

a/ Expressed as the number of personnel in ARVN units required to replace US support units. See text.

Table 4 was derived using the following methodology:

(1) We applied the assigned strengths from the post-midway Unit Authorization List (UAL) to the 1st Division's organization chart.

(2) We then did the same for I Corps forces and allocated ½ of them to the 1st Division, since it had half (17 of 33) of the Corp's infantry battalions. In one exception, we allocated both of the Corps' two Armored Cavalry Squadrons to the 1st Division, since both operated primarily in the 11th DTA. The results of (1) and (2) are shown in Table 5.

TABLE 5

ARVN 1ST DIVISION

	No.	Strength	Total
Division Units			
Infantry Bn	17	665	11,305
Recon Co	1	161	161
Hq Inf Div	1	208	208
Hq Co	1	124	124
Regt Recon Co	4	111	444
Regt HHC	4	200	800
Div Arty	1	1,577	1,577
Scout Dog Plt	1	25	25
1st Div Augment a/		154	154
DS Bn b/	1	666	666
Sig Bn c/	1	378	378
Eng Bn	1	437	437
Med Bn	1	488	488
Lt Truck Co	1	152	152
Mil Band	1	29	29
Total Division Forces			16,948

	No.	Strength	1st Division Allocation
Corps Units			
Corps Hq	1	573	287
Armored Cav. Sqdn	2	729	1,458
155 Bn	3	540	760
105 Bn	2	501	501
Ranger Hq	1	124	62
Ranger Bn	3	655	983
Corps Combat Support Allocation Subtotal			4,051
ALC	1	279	140
Engr Spt Grp (Combat)	1	1,127	564
Engr Spt Grp (Const)	1	3,030	1,515
Sig Spt Bn	1	360	180
Med. Grp	1	90	45
Corps Service Support Allocation Subtotal			2,444
Total Corps Support Allocation			6,495

a/ Includes Radar Section (16), DS Bn (98) and Sig Bn (40).
b/ 1st Div Org Chart shows DS Co. vice Bn, assumed to be an error.
c/ 1st Div Org Chart shows Sig Co. vice Bn; since all Sig Co. phased out in FY 69 Sig Bn used here.

(3) We then studied SEER and other data to isolate the support provided the ARVN 1st by U.S. units. While our data was probably quite accurate for artillery support to I CTZ and we even knew how many helicopter sorties were flown exclusively for the ARVN 1st in various mission categories, we could only estimate other support provided, based on such things as after action reports, communications improvements program targets, total logistics tonnages handled for ARVN, etc. We also tried to take into account the support, such as helicopter lift and resupply, provided ARVN in the normal course of combined mobile operations.

(4) We attempted to translate this support into individual U.S. units capable of providing that level of support, and converted those U.S. units into equivalent ARVN units. Based primarily on the I CTZ battalion split, we allocated a portion of such units to the model clearing zone force. Table 6 shows the allocation of U.S. support.

TABLE 6

U.S. SUPPORT TO ARVN IN I CORPS

Type Unit	No.	Equivalent ARVN Strength	1st Division Allocation
U.S. Support Forces			
Air Cav Sqdn	1	850	425
Asslt Spt Co	2	536	268
Asslt. Helo Co	4	1,152	576
Surveill. Co	2	661	331
Recon Co	2	246	123
175/8" Bn	2	1,080 a/	540
8" Bn	1	540 d/	270
105 Bn	1	501	226
Air Def Bn	1	690	345
Combat Support Total			3,104
Sig Spt Co	1	122 b/	61
Sig Co	1	226 b/	113
Truck Co	1	168 c/	84
Brt Term/Med Bt Co	1	200 c/	100
DS (Main) Co	1	302	151
Service Support Total			509
U.S. Spt Equivalent Total			3,613

a/ ARVN will have no 8" weapons therefore 155 Bn substituted here.
b/ U.S. now providing equivalent of about two Co. of sig support primarily during helo assault; 1st Div self sufficient otherwise.
c/ U.S. now providing some surface transport, primarily port service and truck; exact amount unknown at present.

(5) We excluded other ARVN support assets not assigned specifically to the ARVN 1st Division nor to I CTZ but which would be used by a division force. These forces include military police, military security, intelligence, political warfares, area signal, hospital, depot repair, base depots, transport, etc. We also excluded ARVN overhead figures, including headquarters, administration, and pipeline.

APPLICATION OF THE AREA SECURITY CONCEPT - INTERIM ANALYSIS #2

Summary. An interim report from our study of RVNAF force structure based on the Area Security Concept (ASC) indicates that, in the absence of US combat troops, there will be a requirement for more SVN regular forces. The present countryside number of RF rifle companies and PF platoons will be more than adequate if employed in accordance with the ASC. In IV Corps, however, the number of PF platoons is only marginally adequate and there is an insufficient number of RF rifle companies assigned to security missions. The recent GVN plan for employing PSDF during 1970 appears to be a major modification of the Area Security Concept in terms of its effect on the RVNAF force structure, force mix and strategy.

Background. The Area Security Concept, (ASC) now an integral part of the 1970 Combined Campaign Plan and the 1970 GVN Plan for Pacification and Development, provides a framework within which to examine RVNAF missions and force structure. The ASC divides the countryside of South Vietnam into four zones according to the relative security offered to the population.[1/] The SECURE AREA and the CONSOLIDATION ZONE encompass the population in all hamlets whose security ratings are A, B, or C, according to the MACV Hamlet Evaluation System. Regional Forces, Popular Forces, Peoples' Self Defense Force, and National Police all operate in these two areas under the control of the Province Chief. When requested by the Province Chief, regular ARVN units might also operate in these areas under his control. Emphasis is placed on pacification and on population and resources control operations. The CLEARING ZONE and BORDER SURVEILLANCE ZONE encompass all the countryside outside of the CONSOLIDATION ZONE. These zones are sparsely populated, contain VC-controlled areas and are broken into areas of operation under the control of the ARVN division commanders. Operations therein are conducted by highly mobile ARVN or US battalions to destroy or break up enemy forces and isolate them from the population in the CONSOLIDATION ZONE.

In last month's issue we discussed the application of the Area Security Concept (ASC) to the 1st ARVN Division's area of operations (11th DTA). We used this application to develop an RVNAF force in I and III Corps based on 1st Division and US forces in the DTA model area. While our study is not yet completed, this article discusses the ASC application to model areas in II Corps and IV Corps, together with some tentative findings on the resulting RVNAF force structure in each Corps Area. This interim analysis deals only with maneuver battalions, Regional Force rifle companies and Popular Force platoons. The completed study will include combat and combat service support units and should be published about mid-March.

1/ See January 1970 issue of the SEA Analysis Report, "Application of the Area Security Concept," for a detailed explanation.

Preliminary Findings

1. There is a requirement for additional RVNAF forces in each Corps Clearing Zone. The precise number of maneuver battalion required, however, should incorporate qualitative adjustments based on differences in effectiveness and mobility between US/FWMAF, ARVN, and VC/NVA battalions.

2. If Territorial Forces (RF/PF) operate as the ASC requires, there are sufficient RF rifle companies countrywide to bring all D, E, and VC hamlets to a C rating (expanded security) when the main force security situation permits access to these hamlets. At least 62 more PF platoons, however, will be needed in IV Corps under conditions of expanded security.

3. There has been no attempt to evaluate the Peoples Self Defense Force (PSDF) as an effective force in the secure area primarily because we have very sketchy information about them. However, it is expected that the effect of at least the armed PSDF would release some PF platoons now on security or other type missions. This in turn generates additional PF units for expansion/consolidation of security which were not included in our calculations. The apparent GVN change in strategy with regard to PSDF in 1970 will also impact on the regular forces, since more RF units will be made available for employment in the clearing zone.

4. Recalculation of threat and requirement indices should be made at least every 4-6 months, particularly where PSDF employment changes the ASC strategy.

The Approach. The existing RVNAF force structure has evolved over the years and does not necessarily optimize the mix of forces. We therefore examined three model areas to develop force requirements in each Corps Tactical Zone during both low and high levels of enemy activity. The model areas chosen were the 11th and 41st Division Tactical Areas and the 24th Special Tactical Zone. These areas were examined thoroughly between the period September 1968 to October 1969 in the same manner as the 11th DTA model area discussion in last month's article. We found that the forces (including US) in these areas during this period not only operated successfully but also operated in general agreement with the principles of the area security concept.

Concurrently we plotted the MACV Hamlet Evaluation System (HES) scores on a map of South Vietnam to determine the size and shape of the Secure, Consolidation, and Clearing Zones in the model areas. (The Border Surveillance Zone was included with the Clearing Zone.)1/ Maps 1-6 and Tables 3-5 (appended) show the resulting "snapshots" and statistics for September 1968 and October 1969 in each model area.

1/ The HES ratings may only be accurate to within one other grade. However, the trend of HES ratings over time is generally considered reliable.

Regular Army Forces. The model forces in the 11th DTA, 24th STZ, and 41st DTA were the 1st ARVN Division, 42nd ARVN Regiment, and 9th ARVN Division, respectively, with U.S. combat and service support.

The size of the model force required in each Division Tactical Area and Special Tactical Zone depends upon many factors, some of which are purely qualitative. However, three quantitative factors seem most important: (1) the number and strength of VC/NVA units, (2) the intensity of enemy ground assaults and engagements, and (3) the size of the CLEARING ZONE in which the force must operate.

As a base period for our models we chose the 2nd Qtr, 1969 since during that period the combined forces successfully countered relatively intense enemy activity without degradation of population security. We collected data for the three factors above in all three model areas during that period and used that data as the denominator (model) for computing a relative threat index in each Corps area. The relative threat index equation has the form:

$$RTI = 1/3 \left[\frac{EMBE_{Corps}}{EMBE_{Model}} + \frac{\#EASLT_{Corps}}{\#EASLT_{Model}} + \frac{ACZ_{Corps}}{ACZ_{Model}} \right]$$

Where: RTI = relative threat index.
EMBE = enemy maneuver battalion strength equivalents (relative to a US battalion).
EASLT = enemy ground assaults/engagements.
ACZ = area of clearing zone.

We then collected data on each of the three factors for both a high and a low threat in each Corps zone and computed the indices. The indices were multiplied by the force in the model area to yield a range of required maneuver battalions needed in each Corps Zone. No qualitative refinements were made for differences in mobility, firepower or leadership and each term in the threat index equation was weighted uniformly. Table 1 summarizes the number of ARVN maneuver battalions required for each Corps Zone and countrywide.

On a countrywide basis, an additional 54 ARVN battalions appear necessary to counter the low (Oct 69 level) threat, while 110 battalions might be needed needed for a simultaneous increase of the threat in each Corps to sustained levels at or above the 2nd quarter 1969 enemy activity. In terms of US/FWMAF battalion strengths, this would equate to a range of 42-86 maneuver battalions. 1/ Realistically, a simultaneous threat increase is not likely and the ability to shift battalions to the threatened Corps would decrease the countrywide total required. Moreover, variations in combat effectiveness among US, FWMAF, ARVN, and VC/NVA battalions compared to each other (and over time) might also change the range of battalions required.

1/ An ARVN battalion is .78 x US battalion in strength.

TABLE 1

MANEUVER BATTALION
ARVN FORCE REQUIREMENTS

	Battalions			ARVN Bns
	US	ARVN	Total	Required
I Corps				
Present Strength [a]	43	40	83	-
Period of Low Threat [b]	-	-	-	58
Period of High Threat [c]	-	-	-	69
II Corps				
Present Strength	35	34	69	-
Period of Low Threat [b]	-	-	-	68
Period of High Threat [d]	-	-	-	80
III Corps				
Present Strength	51	63	114	-
Period of Low Threat [b]	-	-	-	68
Period of High Threat [c]	-	-	-	85
IV Corps				
Present Strength	0	49	49	-
Period of Low Threat [b]	-	-	-	46
Period of High Threat [e]	-	-	-	62
RVN				
Present Strength	129	186	315	-
Period of Low Threat	-	-	-	240
Period of High Threat	-	-	-	296

[a] January 15, 1970.
[b] October 1969 activity levels.
[c] 2nd Qtr 69 type activity levels in 11th DTA.
[d] 2nd Qtr 69 type activity levels in 24th STZ
[e] 2nd Qtr 69 type activity levels in 41st DTA.

Regional and Popular Forces. We also chose 2nd Qtr 69 as the base time period for RF and PF forces since by that time at least 90% of the rural population in the 11th DTA model area was considered relatively secure. The 11th DTA model was used for all four Corps areas in determining RF/PF requirements. The RF and PF in that area operated successfully in general agreement with the principles of the area security concept, and while population distribution differs between the Corps, the index we used accounts for differences in population and area. A relative requirement index for RF units was determined in a manner similar to that for the relative threat index, using the factors

of (1) guerrilla and separate VC Co and platoon strength, (2) size of the rural "C" population, and (3) size of the computed CONSOLIDATION ZONE less SECURE AREAS. This index was then multiplied by the number of RF units which maintained security in the model area (units assigned to security missions in the TFES Report).

$$RRI_{RF} = 1/3 \left[\frac{\text{ESTR Corps}}{\text{ESTR Model}} + \frac{\text{RUR "C" Pop Corps}}{\text{RUR "C" Pop Model}} + \frac{\text{ACNZ Corps}}{\text{ACNZ Model}} \right]$$

Where RRI = Relative Requirement Index
ESTR = Enemy guerrilla and separate unit strength
RUR "C" Pop = Rural population with "C" HES rating
ACNZ = Area of consolidation zone less secure zone

The number of RF units was calculated for each Corps to determine those needed to maintain present security conditions (Oct 69) or expanded security (if all D, E, and VC hamlets were brought up to "C" rating). Similar PF requirement indices were determined which generated the number of PF platoons needed in each Corps Zone during periods of present security or expanded security. The PF relative requirement index is based on two factors: (1) rural population with C or better HES rating and (2) size of the entire consolidation zone, including the secure zone.

$$RRI_{PF} = 1/2 \left[\frac{\text{RUR ABC Pop Corps}}{\text{RUR ABC Pop Model}} + \frac{\text{TACNZ Corps}}{\text{TACNZ Model}} \right]$$

Where TACNZ = total area of consol. zone including secure zone

Table 2 shows the number of RF companies and PF platoons needed by Corps Zone and countrywide. Even with some 400 RF companies not directly assigned to security missions, there are a sufficient number of companies countrywide to meet expanded security requirements. Since Territorial Forces cannot be shifted from one corps area to another, special attention should be given to the RF now assigned to security missions in I Corps and IV Corps. In these two corps present levels appear to be too low (IV Corps) or marginally adequate (I Corps) to maintain present security. Similarly, present levels of PF in IV Corps are just above the minimum required to maintain present security, and for expanded security, 62 more platoons would be needed. We note that IV Corps traditionally keeps a larger percentage of RF companies on offensive operations than the other three Corps, and is now facing a major enemy threat.

While the number of RF companies available countrywide is some 400 more than required for expanded security, some of these companies would be engaged in training and rehabilitation, while other units act as a "swing force" to assist regular forces during periods of high enemy threat (such as the IV Corps situation); still others are required for border surveillance missions on a more or less permanent basis.

Recent GVN directives and comments by President Thieu indicate an apparent modification to the Area Security Concept as presently written, specifically in the formation of an elite PSDF force to replace PF platoons in A, B and C hamlets during 1970. This program envisions 35 man inter-teams (platoons) from the 500,000 arms-bearing PSDF and training four men per team (60,000 in all) in one week courses. If this program is successful the end result would provide substantial augmentation for the regular forces from RF units. released by the "upgraded" PF platoons. We have not included the effect of this plan in our calculations.

TABLE 2

REGIONAL FORCE/POPULAR FORCE REQUIREMENTS

	RF Cos	PF Plat
I Corps		
Present No. of Units[a]	212	920
Number on Security Missions	171	863
Present Security Levels[b]	169	743
Expanded Security Levels[c]	183	863
II Corps		
Present No. of Units	359	1,311
Number on Security Missions	291	1,266
Present Security Levels	237	1,121
Expanded Security Levels	261	1,268
III Corps		
Present No. of Units	372	1,028
Number on Security Missions	310	965
Present Security Levels	148	803
Expanded Security Levels	153	835
IV Corps		
Present No. of Units	530	2,413
Number on Security Missions	307	2,154
Present Security Levels	380	2,004
Expanded Security Levels	465	2,475
RVN		
Present No. of Units	1,473	5,672
Number on Security Missions	1,079	5,248
Present Security Levels	934	4,671
Expanded Security Levels	1,062	5,441

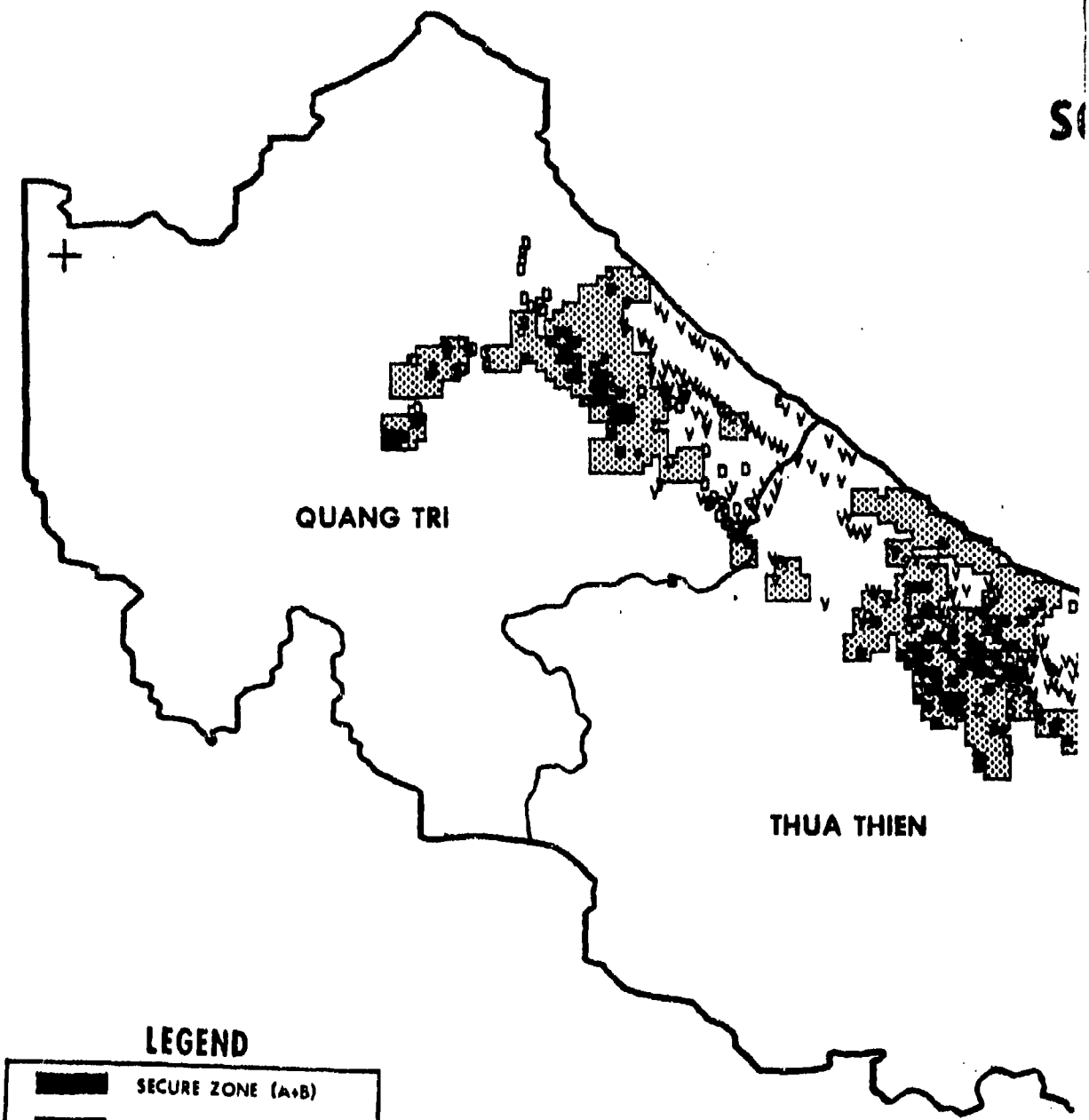
a/ December 1969 for PF platoons, November 1969 for RF rifle companies.
b/ October 1969 HES ratings.
c/ All D, E, VC hamlets are brought to a "C" rating.

TABLE 3

SECURITY STATISTICS -- 11TH DIVISION TACTICAL AREA
I CORPS, SOUTH VIETNAM

Area	Population (000)		Precent of Total a/ Population		SQ KM	
	Sep 68	Oct 69	Sep 68	Oct 69	Sep 68	Oct 69
Secure Area (A, B)	327.0	684.2	35	70	116	297
Consolidation Zone (Secure Area, C)	585.7	929.2	62	96	871	1,556
Clearing Zone:						
Populated (D, E, VC)	352.5	42.0	38	4	868	52
Unpopulated	na	na	na	na	8,248	8,379

a/ Total Population, 11th Division Tactical Area: 971,200.

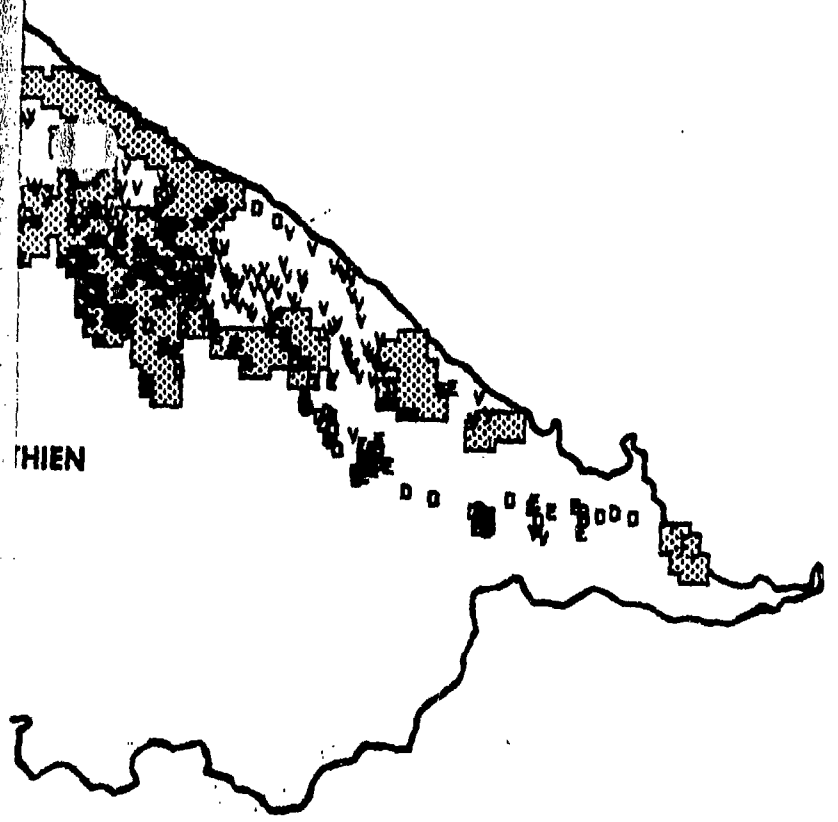

QUANG TRI
THUA THIEN
LEGEND
SECURE ZONE (A+B)
CONSOLIDATION ZONE (C+ADJACENT 1 KM)
CLEARING ZONE

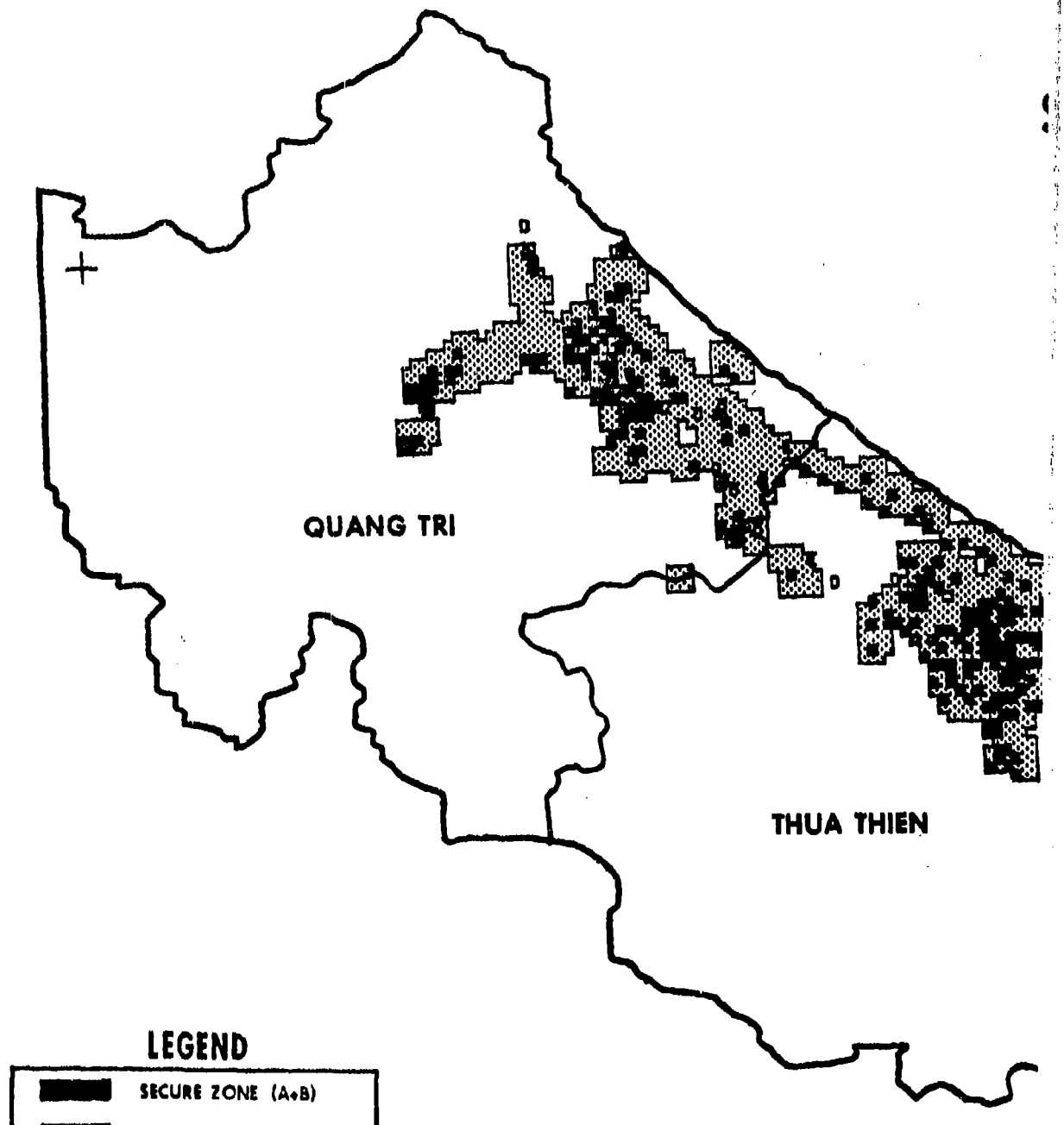
MAP 1

SOUTH VIETNAM

11th DTA

SEPTEMBER 1968




QUANG TRI
THUA THIEN
LEGEND
SECURE ZONE (A+B)
CONSOLIDATION ZONE (C+ADJACENT 1 KM)
CLEARING ZONE

MAP 2

SOUTH VIETNAM

11th DTA

OCTOBER 1969

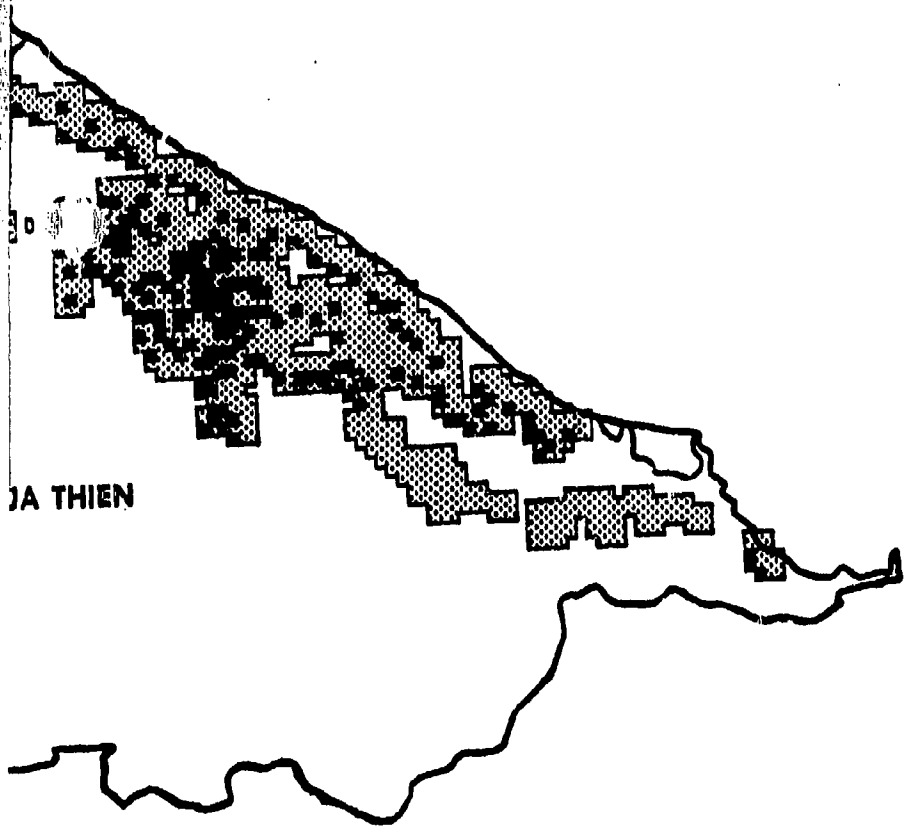


TABLE 4

SECURITY STATISTICS -- 24TH SPECIAL TACTICAL ZONE
II CORPS, SOUTH VIETNAM

Area	Population (000)		Precent of Total a/ Population		SQ KM	
	Sep 68	Oct 69	Sep 68	Oct 69	Sep 68	Oct 69
Secure Area (A, B)	48.9	185.4	19	61	49	125
Consolidation Zone (Secure Area, C)	153.9	274.8	60	90	909	1,403
Clearing Zone:						
Populated (D, E, VC)	101.0	31.0	40	10	1,453	486
Unpopulated	na	na	na	na	16,629	17,102

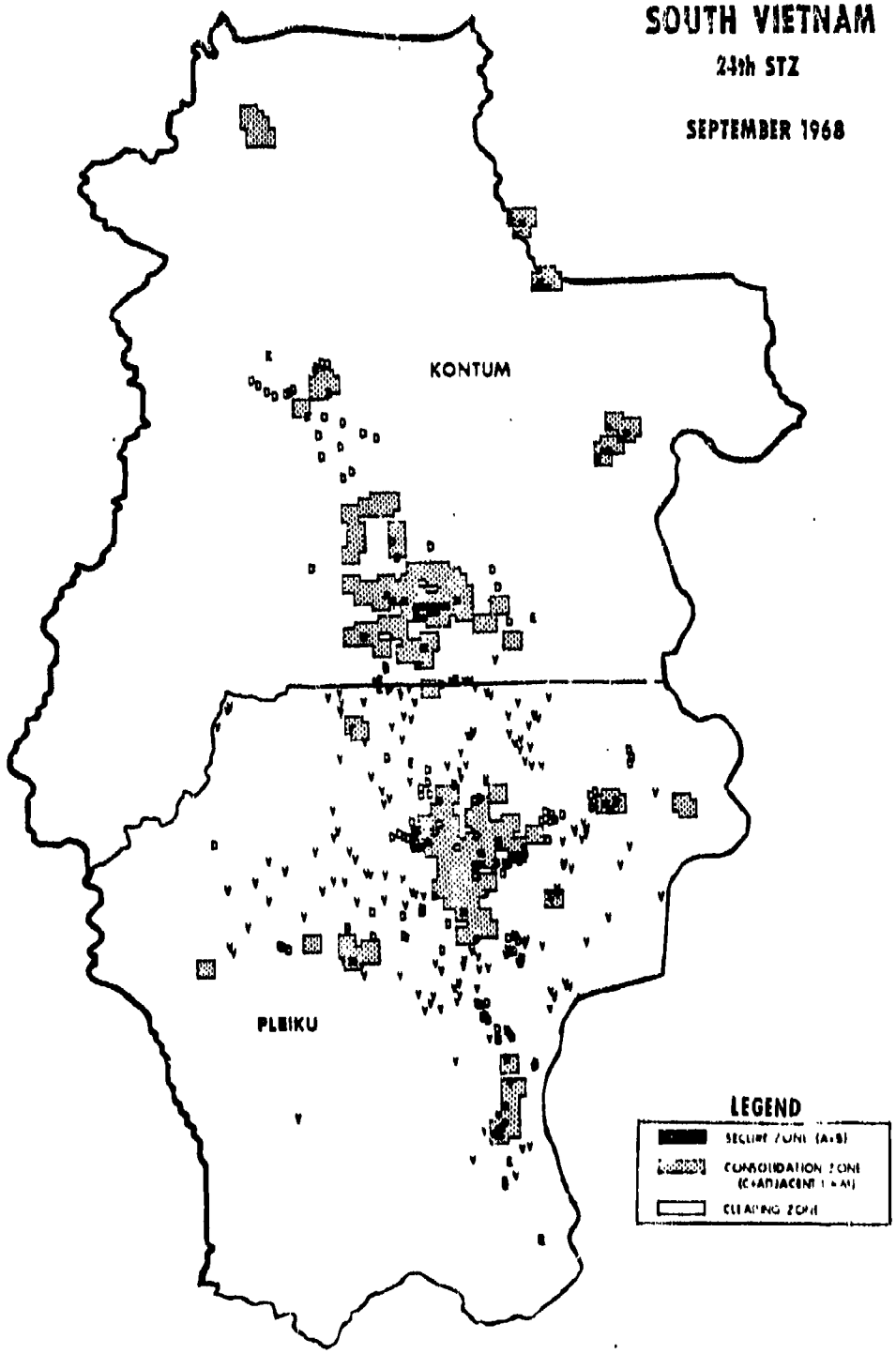
a/ Total population, 24th Special Tactical Zone: 305,800.

MAP 3

SOUTH VIETNAM

24th STZ

SEPTEMBER 1968



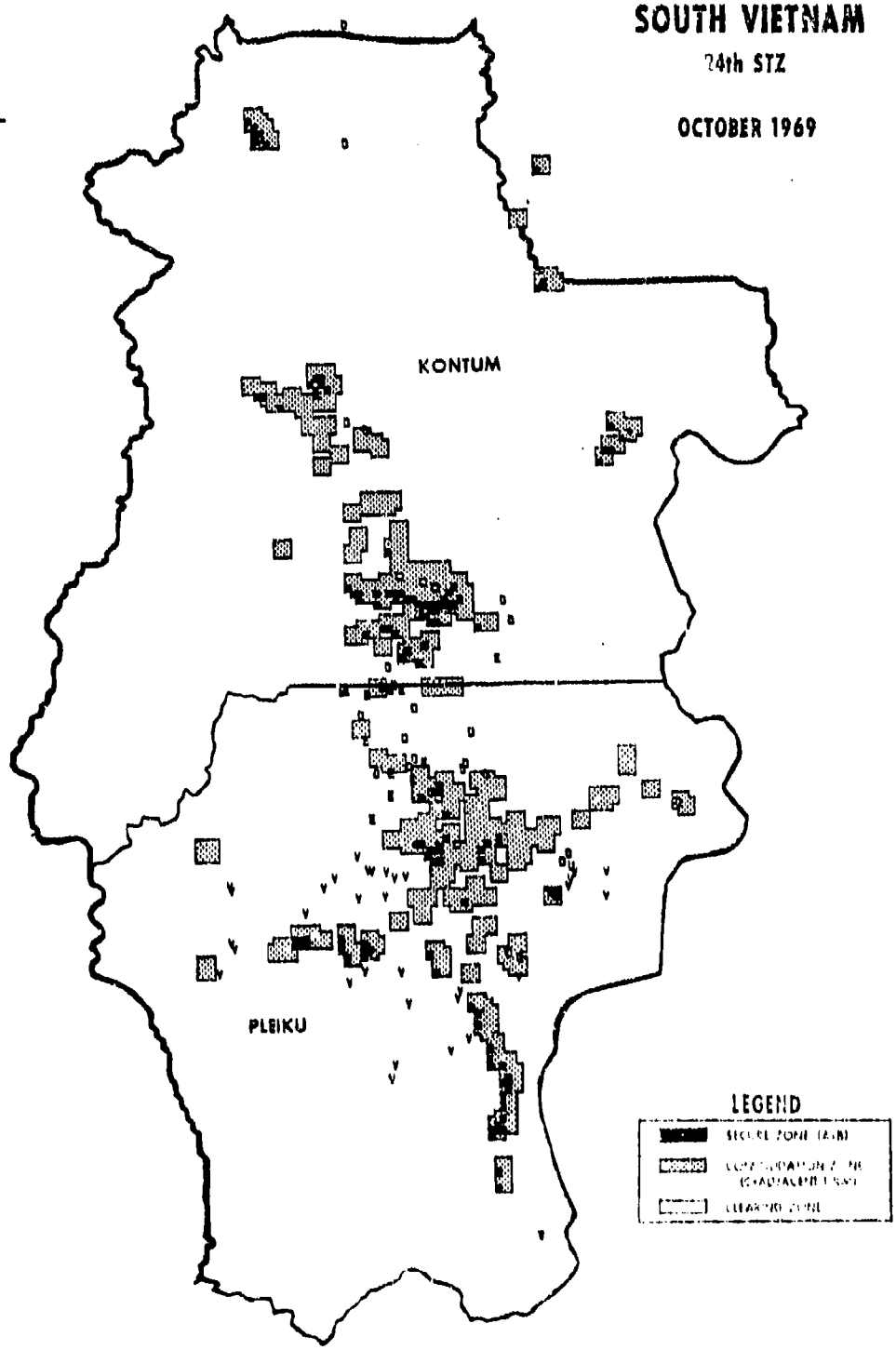
CONFIDENTIAL

MAP 4

SOUTH VIETNAM

24th STZ

OCTOBER 1969



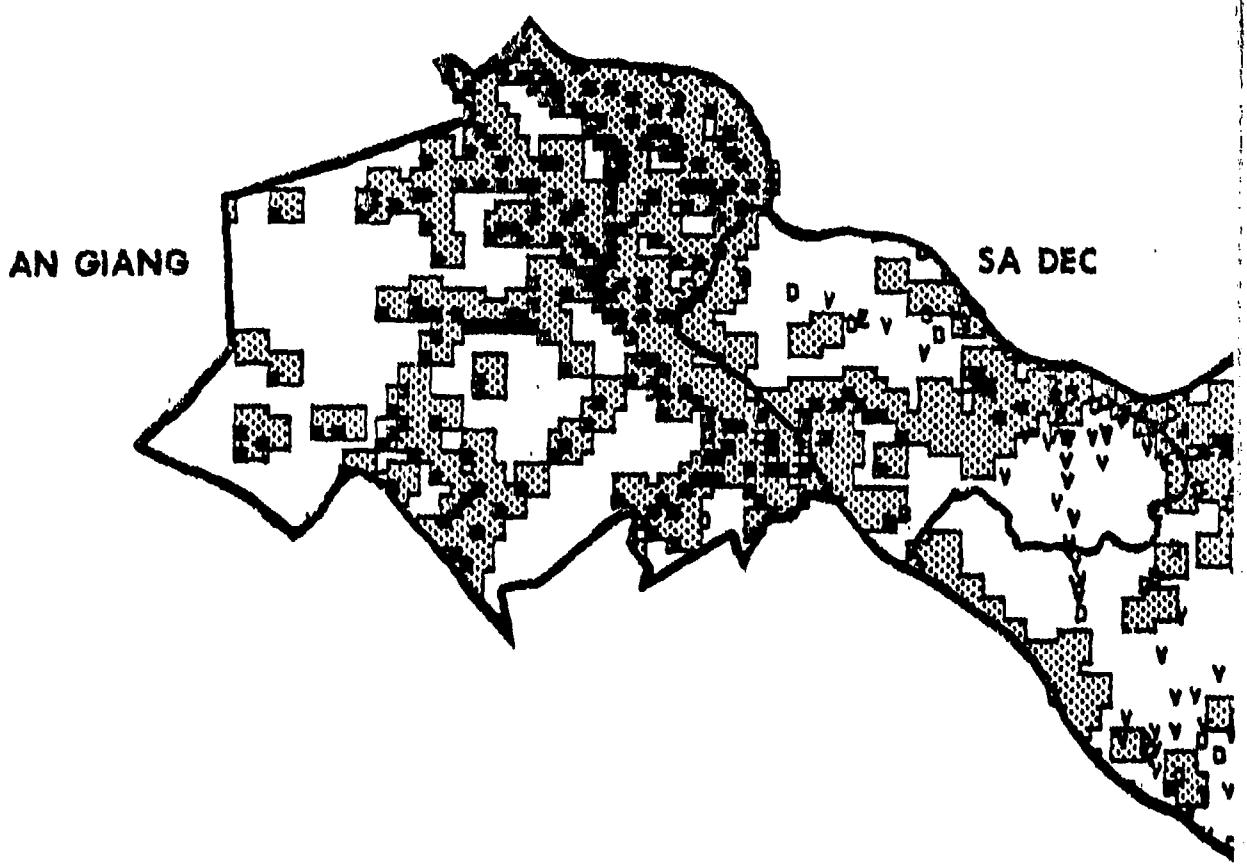
CONFIDENTIAL

TABLE 3

SECURITY STATISTICS -- 41ST DIVISION TACTICAL AREA IV CORPS, SOUTH VIETNAM

Area	Population (000)		Percent of Total a/ Population		30 KM	
	Sep 68	Oct 69	Sep 68	Oct 69	Sep 68	Oct 69
Secure Area (A, B)	719.8	1,197.4	43	68	297	545
Consolidation Zone (Secure Area, C)	1,158.5	1,573.2	69	89	2,582	3,701
Clearing Zone:						
Populated (D, E, VC)	522.8	197.0	31	11	2,133	815
Unpopulated	na	na	na	na	1,946	2,145

a/ Total population, 41st Division Tactical Area: 1,770,200.



LEGEND

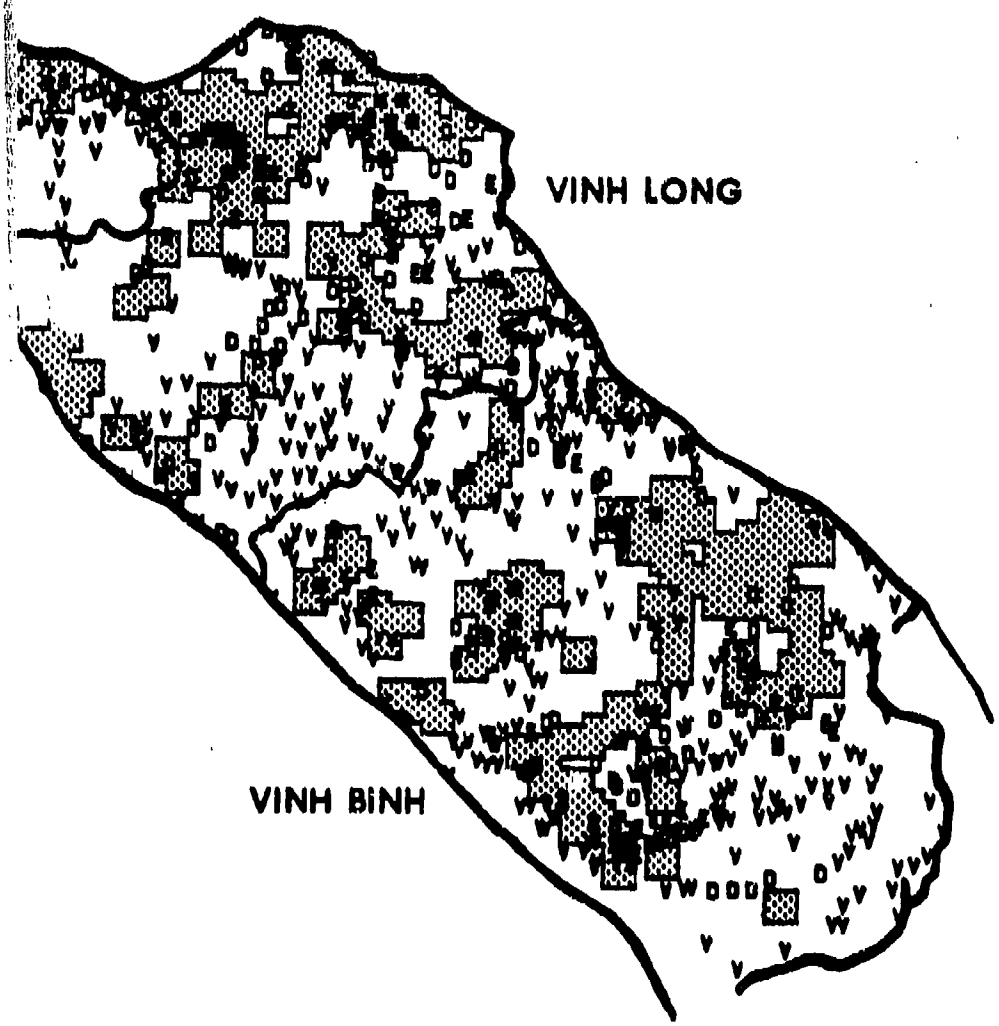
- SECURE ZONE (A+B)
- CONSOLIDATION ZONE (C+ADJACENT 1 KM)
- CLEARING ZONE

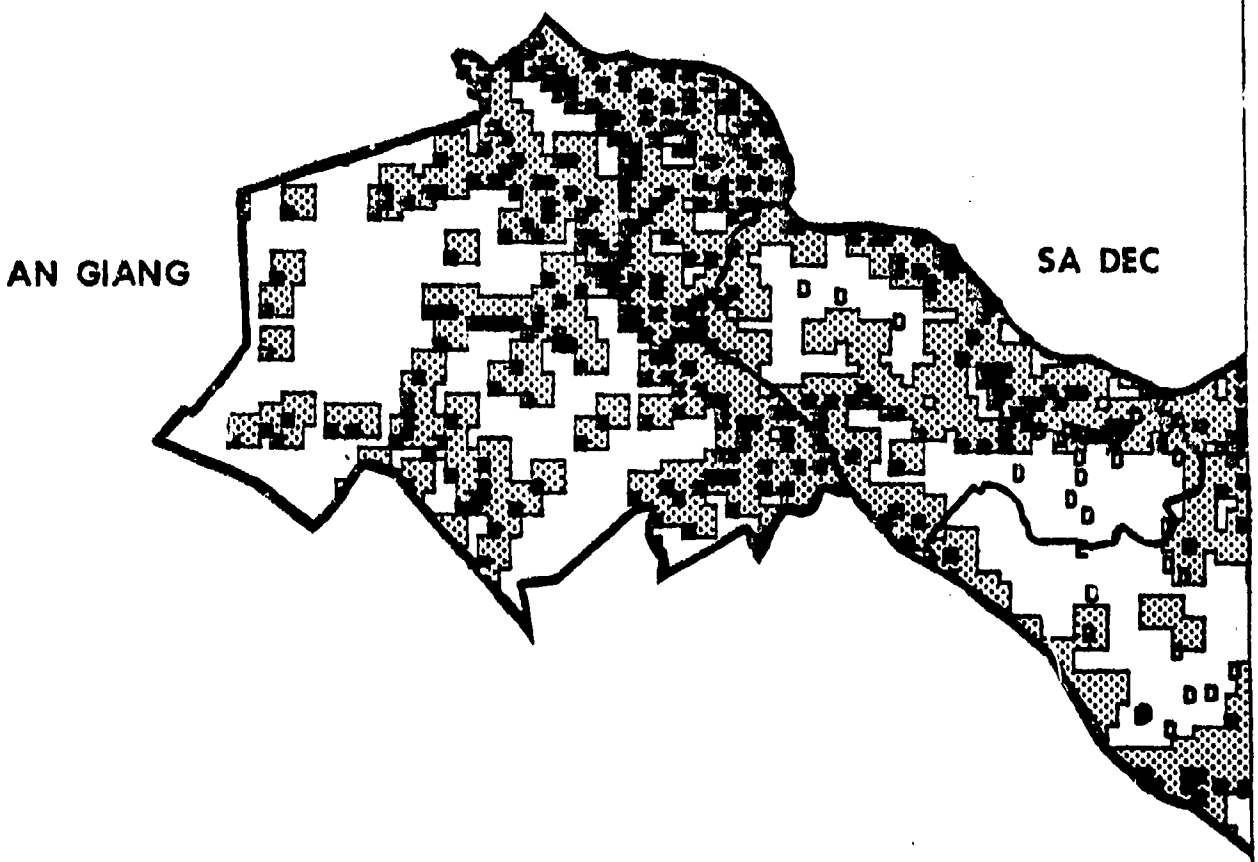
MAP 5

SOUTH VIETNAM

41st DTA

SEPTEMBER 1968





LEGEND

- SECURE ZONE (A+B)
- CONSOLIDATION ZONE (C+ADJACENT 1 KM)
- CLEARING ZONE

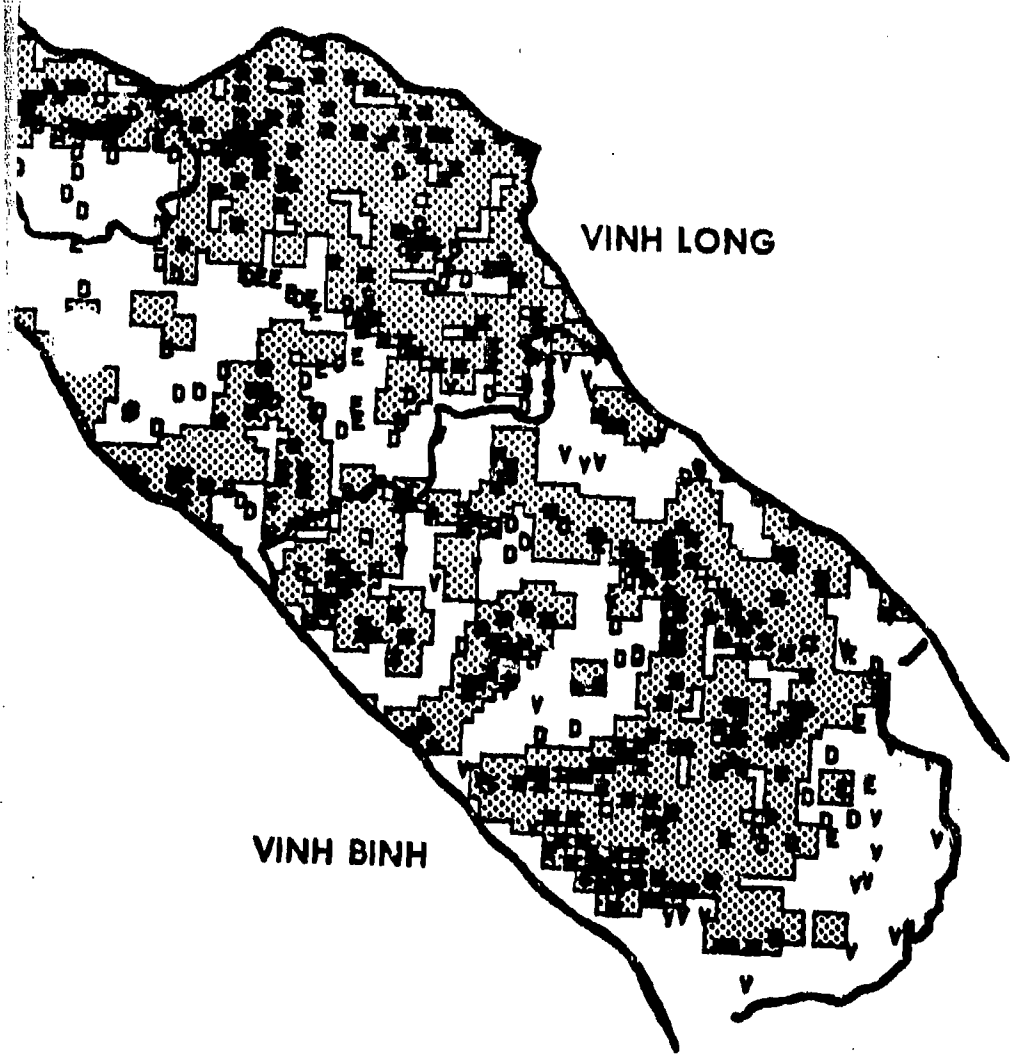
MAP 6

SOUTH VIETNAM

41st DTA

SA DEC

OCTOBER 1969



ILLUSTRATIVE RVNAF FORCE STRUCTURE TO IMPLEMENT THE AREA SECURITY CONCEPT IN SOUTH VIETNAM

Background

The Area Security Concept (ASC) is now an integral part of the 1970 Combined Campaign Plan and the 1970 GVN Plan for Pacification and Development. This strategy develops no radically new methods of operations, but focuses already tested concepts on the goal of population security. Allied operations are designed to separate the main force war from the populated areas, and to consolidate existing security through the use of intensive police-type operations in zones surrounding the secure areas. Since each segment of the RVNAF has a distinct mission and area of operation, the Area Security strategy provides a framework within which to examine RVNAF missions and force structure. This study is an attempt to develop the RVNAF force structure required to implement the ASC. However, it does not attempt to integrate the many qualitative factors which influence force effectiveness.

Brief Explanation of the ASC

The ASC divides the countryside of South Vietnam into four zones according to the relative security offered to the population (see Enclosure 1). The Secure Area and the Consolidated Zone encompass the population in all hamlets whose security ratings are A, B, or C, according to the MACV Hamlet Evaluation System. Regional Forces, Popular Forces, Peoples' Self Defense Force, and National Police all operate in these two areas under the control of the Province Chief. When requested by the Province Chief, regular ARVN units might also operate in these areas under his control. The concept emphasizes pacification and population and resources control operations. The Clearing Zone and Border Surveillance Zone encompass all the countryside outside of the Consolidation Zone. These zones are sparsely populated and contain VC-controlled areas. They are broken into areas of operation under the control of the ARVN division commanders. Operations therein are conducted by highly mobile regular combat forces to destroy or break up enemy forces and isolate them from the population in the Consolidation Zone.

Table 1 summarizes the ASC showing the four types of areas and their related command structures, forces, missions and operations.

TABLE 1

AREA SECURITY CONCEPT SUMMARY

	Type of Area			
	Secure Area	Consolidation Zone	Clearing Zone	Border Surveillance Zone
HES Rating	A,B (some C)	C (some D,E,VC)	VC (some D,E) and unpopulated areas	Unpopulated
Command	Province Chief	Province Chief	ARVN DTZ/SZ Commander	ARVN DTA/SZ Commander
GVN Forces Responsible	National Police (NP) Popular Forces (PF) People's Self Defense Forces (PSDF)	NP Field Forces (NPFF) PF RF Provincial Reconnaissance Units (PRU) PSDF (ARVN, US, FW as required)	ARVN US FW	CIDG/RF
Mission	Maintain & improve existing security without attempting expansion of area	Provide outer belt of protection for secure area, and raise level of security within zone	Keep VC/NVA away from consolidation zones	Detect, engage, and deter enemy attempting to infiltrate into RVN
Methods of Operation	NP-maintain law & order, neutralize VCI; PF, PSDF-reside and operate in secure areas only.	Continuous patrols & ambushes with mobile reaction forces. Police type operations to raise level of security.	Regular forces engage or drive enemy out, and isolate/neutralize enemy base areas.	CIDG operations

Source: MACV/JGS Combined Campaign Plan 1970 (AB 145).

ASC-type operations have been employed in certain areas for some time even before the concept's official endorsement. To see what kind of forces are required to make it work we selected "model" areas where the RVNAF successfully applied the principles of the ASC and we examined, in detail, the friendly forces in those areas. We chose the 11th Division Tactical Area(DTA)in I Corps, the 24th Special Tactical Zone (STZ) in II Corps and the 41st DTA in IV Corps because: (1) the units operating in these areas

during the observation period were committed to combat operations as opposed to pacification duties, thus conforming to the ASC, (2) the units received high performance ratings in accomplishing their assigned tasks, and (3) a great deal of information about operations in these areas was readily available.

Measuring Area Security - To describe our model areas in the terms of the concept, we devised a method of using HES scores and hamlet locations to approximate the geographic areas for each ASC zone and plotted these on maps of the three model areas. To show the Secure Areas, we blacked out every 1-kilometer square which contained one or more A-B hamlets. To show the Consolidation Zones, we shaded all the 1-kilometer squares containing C hamlets, plus those squares immediately adjacent to squares containing A, B and C hamlets. Finally, we printed a "D", "E", or "V", at the location of the remaining hamlets. The results shown in Enclosures 2-4 (Sep 68) and in Enclosures 5-7 (Oct 69) give dramatic evidence of the relative increase in security in these model areas. Note that some of the D-E-VC hamlets fall within the boundaries of a Consolidation Zone; this is consistent with the Area Security Concept.

Table 2 summarizes pertinent findings from the maps. It reflects that from September 1968 to October 1969 the Secure Areas of the three model areas nearly tripled in size and the overall Secure plus Consolidation Zone areas increased about 75%. At the same time, the total population under A-B security increased dramatically. By September 1968, 89% or more of the population in the model areas were rated A-B-C. More importantly, pacification scores continued to improve even during the second quarter of 1969 when enemy attacks increased compared to the preceding three quarters.

TABLE 2

SECURITY STATISTICS
MODEL AREAS

	Population (000)		Percent of Total a/ Population		SQ KM	
11th DTA, I CORPS	Sep 68	Oct 69	Sep 68	Oct 69	Sep 68	Oct 69
Secure Area (A, B)	327.0	684.2	35	70	116	297
Consolidation Zone (Secure Area, C)	585.7	929.2	62	96	871	1,556
Clearing Zone:						
Populated (D, E, VC)	352.5	42.0	38	4	868	52
Unpopulated	na	na	na	na	8.248	8,379
24th STZ, II CORPS						
Secure Area (A, B)	48.9	185.4	19	61	49	125
Consolidation Zone (Secure Area, C)	153.9	274.8	60	90	909	1,403
Clearing Zone:						
Populated (D, E, VC)	101.0	31.0	40	10	1,453	486
Unpopulated	na	na	na	na	16,629	17,102
41st DTA, IV CORPS						
Secure Area (A, B)	719.8	1,197.4	43	68	297	545
Consolidation Zone (Secure Area, C)	1,158.5	1,573.2	69	89	2,582	3,701
Clearing Zone:						
Populated (D, E, VC)	522.8	197.0	31	11	2,133	815
Unpopulated	na	na	na	na	1,946	2,145

a/ Total Population, 11th Division Tactical Area 971,200; 24th Special Tactical Zone 305,800; 41st Division Tactical Area 1,770,200.

We concluded that friendly operations in the model areas had a significant impact on population security, particularly in creating a shield for the population against enemy attacks.

Clearing Zone Forces - The forces in the 11th DTA, 24th STZ, and 41st DTA were the 1st ARVN Division, 42nd ARVN Regiment and 9th ARVN division, respectively, with U.S. combat and service support. Since these forces successfully executed Clearing Zone type functions in their areas of responsibility, we used them as models on which to base our total ARVN structure.

The size of the force required to successfully implement the ASC in each Division Tactical Area and Special Tactical Zone would depend upon many factors, some of which are purely qualitative. However, three quantitative factors seem most important: (1) the number and strength of VC/NVA units, (2) the intensity of enemy ground assaults and engagements, and (3) the size of the Clearing Zone in which the force must operate.

As a base period for our study we chose the 2nd Qtr, 1969, since during that period the combined forces successfully countered relatively intense enemy activity without degradation of population security. We collected data for the three factors above in all three model areas during that period and used that data in the denominators (models) for computing a relative threat index in each Corps area. The relative threat index equation has the form:

$$RTI = 1/3 \left[\frac{EMBE_{Corps}}{EMBE_{Model}} + \frac{\#EASLT_{Corps}}{\#EASLT_{Model}} + \frac{ACZ_{Corps}}{ACZ_{Model}} \right]$$

Where: RTI = relative threat index.
EMBE = enemy maneuver battalion strength equivalents (relative to a US battalion).
EASLT = enemy ground assaults/engagements.
ACZ = area of clearing zone.

We then collected data on each of the three factors for both a high and a low threat in each Corps Zone and computed the indices. The indices were multiplied by the number of maneuver battalions in the model force to yield a range of required maneuver battalions in each Corps Zone.1/ Table 3 summarizes these requirements for each Corps Zone and countryside.

1/ No qualitative refinements were made for differences in mobility, firepower or leadership; and each term in the threat index equation was weighted uniformly even though it was recognized that further study might show one term to be more important than another in assessing a threat. For instance, enemy assaults might be more significant than the size of a Clearing Zone.

TABLE 3

ARVN/VNMC MANEUVER BATTALION REQUIREMENTS

	Present Bns[a]			RVN Bns[b]	RVN Bns
	US/FWMAF	RVN	Total	Low Threat	High Threat
I Corps	43	40	83	58	69[c]
II Corps	35	34	69	68	80[d]
III Corps	51	63	114	68	85[c]
IV Corps	-	49	49	46	62[e]
SVN	129	186	315	240	296

a/ January 15 1970.
b/ October 1969 activity levels.
c/ 2nd Qtr 69 type activity levels in 11th DTA.
d/ 2nd Qtr 69 type activity levels in 24th STZ.
e/ 2nd Qtr 69 type activity levels in 41st DTA.

On a countrywide basis, 54 ARVN/VNMC maneuver battalions more than the present authorization appear necessary to counter the low (Oct 69 level) threat after US/FWMAF withdraw, while 110 battalions might be needed to counter a simultaneous increase of the threat in each Corps to sustained levels at or above the 2nd quarter 1969 enemy activity. In terms of US/FWMAF battalion strengths to make up the shortfall, this would equate to a range of 42-86 maneuver battalions.1/ Realistically, a simultaneous threat increase in all Corps is not likely and the ability to shift battalions to the threatened Corps would decrease the countrywide total required. Moreover, variations in combat effectiveness among US, FWMAF, ARVN and VC/NVA battalions compared to each other (and over time) might also change the range of battalions required.

We then combined the maneuver battalion calculations with model Clearing Zone forces to generate ARVN strength requirements by Corps and countrywide.

I Corps Model Force

We examined the structure of the ARVN 1st Division and supporting units during their successful combat operations in the 11th Division Tactical Area (11th DTA) between September 1968 and September 1969; and we sought to describe the force in detail and to identify the Corps and U.S. support it received during that period. To describe the force we applied the assigned

1/ An ARVN battalion is .78 X U.S. battalion in strength.

strengths from the accelerated Phase II unit authorization list (UAL) to the 1st Division's organization chart. Enclosure 8 shows the type units which made up the 1st Division in the period examined and the authorized strength for each.

We then applied UAL strengths to the I Corps organization chart and allocated one-half of I Corps ARVN support assets to our 11th DTA model, since the ARVN 1st Division had one-half the maneuver battalions assigned to I Corps.1/ In one exception to this allocation we assigned a total of two armored cavalry squadrons because we knew that two squadrons had been operating full time with the ARVN 1st Division. The Corps force and the portion allocated to the model are also shown in Enclosure 8.

We then studied the Systems for the Evaluation of the Effectiveness of RVNAF (SEER) and other data to isolate the support provided the ARVN 1st Division by U.S. units. While our data was probably quite exact for artillery and helicopter support to I Corps and the 1st Division, we could only estimate other support provided, based on such things as after-action reports, communications improvement program targets, total logistics tonnages handled for ARVN, etc. We also tried to take into account the support, such as helicopter lift and resupply, provided ARVN in the normal course of combined mobile operations. (Such support does not show in the SEER data.) Next we attempted to translate this support into individual U.S. units capable of providing that level of support and we converted those U.S. units into equivalent ARVN or VNAF units. Finally, based primarily on the I Corps battalion split, we allocated a portion of ARVN equivalent units to the model Clearing Zone force, and we used the VNAF equivalents in determining total VNAF requirements. These RVNAF equivalents of U.S. support are shown in Enclosure 8.

Then, we combined the ARVN 1st Division and its Corps support and U.S. non-aviation support to form a model ARVN/VNMC Clearing Zone force for the 11th DTA. The total force and the size of a battalion "slice" of the force are shown in Table 4. Because of the similarity of terrain, enemy, and intensity of operations in I Corps and III Corps, we decided to use the same model battalion slice in both I and III Corps.

1/ Twenty of 40, included armored cavalry squadrons.

TABLE 4

AREA SECURITY CONCEPT 11th DTA FORCE MODEL

ARVN Division Force	17,591
ARVN Corps Support	
Combat	3,372
Service	1,708
	5,080
U.S. Support Equivalent	
Combat	1,381
Service	509
	1,890
Total Division Slice (through Corps)	24,561
Battalion Slice a/	1,198

a/ 20½ battalions in model force including Armd Cav Sqdns and Ranger Bn allocations.

In a manner similar to that employed in structuring the I Corps model we constructed models for II Corps and IV Corps Clearing Zone operations.

II Corps Model Force

ARVN Task Force Lien, which was composed principally of the ARVN 42d and 47th Regiments and the ARVN 2d Ranger Group, conducted the Ben Het-Dak To campaign in the 24th STZ of II Corps. We chose Task Force Lien as our model ARVN force for Clearing Zone operations in II Corps because this task force with U.S. combat support operated successfully against strong enemy main force units in II Corps over an extended period without direct involvement of U.S. combat units. Further, because of a very complete "Lessons Learned" study prepared after the campaign we have a great deal of information about the size and structure of both the ARVN force and its U.S. combat support. Enclosure 8 details the ARVN force and the U.S. combat support it utilized. It also shows an allocation of ARVN II Corps forces and U.S. service support. The total force and the size of a battalion "slice" of the force are shown in Table 5.

TABLE 2

24th STZ FORCE MODEL

ARVN Regimental Forces	6,796
ARVN Corps Support	
Combat	2,889
Service	1,172
	4,061
U.S. Support Equivalent	
Combat	1,662
Service	365
	2,027
Total Model Slice (through Corps)	12,884
Battalion Slice (11-2/3 Bn)	1,104

IV Corps Model Force

In IV Corps we chose the ARVN 9th Division because during the period of the study it started to conduct mobile, Clearing Zone type operations throughout the Delta. ARVN 9th was also relatively successful, compared with the other IV Corps ARVN divisions, in executing these Clearing Zone functions. The breakdown in Enclosure 8 shows the ARVN 9th Division and its Corps and U.S. support. The total force and the size of a battalion "slice" of the force are shown in Table 6.

TABLE 6

41st DTA FORCE MODEL

ARVN Division Force	13,801
ARVN Corps Support	
Combat	2,128
Service	1,096
	3,224
U.S. Support Equivalent	
Combat	-
Service	376
	376
Total Model Slice (through Corps)	17,401
Battalion Slice (15 Bn)	1,160

Other Support

We also examined all other ARVN support assets assigned neither to specific ARVN maneuver divisions nor to the CTZ's but which would indirectly or directly support division forces. While we did not allocate these assets to our model forces we identified and counted them and computed a support "slice" which can be added to each model division force generated in our study. We computed the support "slice" by apportioning 1/15 of the unallocated portion of these units to each of the 15 division force equivalents in the RVNAF.1/ Table 7 lays out these division level combat and service support "slices."

TABLE 7

Type Unit	Total Strength
Special Zones Staffs	677
Artillery Command	49
Separate Infantry Units	12,877
Ranger Command	73
Special Forces	3,598
Military Police	8,094
Military Security	2,816
Military Intelligence	2,981
Political War and Civil Affairs	2,950
Signal	10,216
Engineer	17,862
Medical	10,449
Ordnance	12,515
Quartermaster	3,875
Transportation	12,979
Training Base	15,138
Pipeline	50,103
	167,252
Unallocated Division Combat and Service Support Slice (15 DFE's)	11,150

Finally, we lumped the GVN military offices, the RVNAF headquarters and General Staff, the special staffs, the Central Logistics Command and various other headquarters and administrative units which would not vary greatly with the size of the total force into a Headquarters and Administration figure shown below.

1/ The 15 DFE's include 10 ARVN divisions, 1 ABN division, 3 separate regiments, and all Ranger and Marine units.

TABLE 8

RVNAF HQ AND ADMIN

Type Unit	Strength
GVN Military Officers	1,481
RVNAF Hq/JGS	1,321
Special Staffs	1,575
Central Logistics Command	4,118
POLWAR Central Dept	2,116
Hq Units RVNAF	1,562
Admin Units	7,152
Total	19,325

Collectively, the model battalion slices, the unallocated DFE support "slice" and the Headquarters and Administration figure developed above provide the necessary building blocks for estimating the overall size and the disposition by CTZ of ARVN forces required to execute the Area Security strategy. Table 9 summarizes these figures.

TABLE 9

MODEL ARVN FORCES

Type Unit	Strength
Battalion Slice thru Corps	
I & III Corps	1,198
II Corps	1,104
IV Corps	1,160
Other Support, DFE "slice"	11,150
Headquarters and Admin	19,325

ARVN Force Requirements

In the Clearing Zone Forces section above we developed a range of ARVN/VNMC maneuver battalions required to execute Clearing Zone type operations in each Corps (See Table 3). Applying our model battalion "slices" to each CTZ requirement, we generated the following ARVN/VNMC Corps force requirements.

TABLE 10

ARVN/VNMC CORPS REQUIREMENTS

Area	Maneuver Bns		Strength	
	Low Threat	High Threat	Low Threat	High Threat
I Corps	58	69	69,489	82,662
II Corps	68	80	74,256	87,370
III Corps	68	85	81,464	101,830
IV Corps	46	62	53,360	71,920
Total	240	296	278,569	343,782

Considering the end FY 70 ARVN/VNMC force of 186 battalions as 15 division force equivalents (DFE) and assuming that each 12 maneuver battalions or major fractions thereof added to the ARVN force will constitute an additional DFE we have a total of 20 divisions for the low threat and 24 for the high threat. Applying our unallocated support slices to these DFE's we have:

	Low Threat	High Threat
Unallocated Combat and Service Spt	223,000	267,600

Finally, we added the Headquarters and Administration figure and subtracted Phase II authorized VNMC forces to derive the total ARVN force requirement.

TABLE 11

ARVN FORCE

Type Forces	Low Threat	High Threat
Maneuver (Corps) Forces	278,569	343,782
Other Support Forces	233,000	267,600
Headquarters & Admin Forces	19,325	19,325
Less: VNMC (present authorization)	(13,070)	(13,070)
Total	517,824	617,637

The ARVN force figures developed here are those required to maintain present security after all U.S. and FWMAF forces withdraw. Assuming that the enemy threat range envisioned in this study (1969 levels) remains constant, the ARVN force required to maintain present security levels

along with the present U.S. and FWMAF forces (109 maneuver battalions by April 15) is only 244,675 for low threat and 343,675 for high threat. If we assume that the U.S. and FWMAF force drops to about 50 maneuver battalions, the ARVN would need about 398,975 for low threat and 497,975 for high threat.

Consolidation and Secure Zone Forces - We used the 11th DTA model for all four Corps areas in determining Regional and Popular Force requirements because the RF and PF in the 11th DTA operated successfully in general agreement with the principles of the ASC. We also chose 2nd Qtr 1969 as the base time period for RF and PF forces since by that time at least 90% of the rural population in the 11th DTA model area was considered relatively secure. Use of the 11th DTA territorial force as a countrywide model is valid because the index we developed accounts for differences in population distribution and area size, the two most important determinants of RF/PF requirements. The relative requirement index for the Consolidation Zone is similar to the relative threat index for the Clearing Zone but includes the factors of (1) guerrilla and separate VC company and platoon strength, (2) size of the rural "C" population, and (3) size of the computed Consolidation Zone less Secure Areas.

$$RRI_{RF} = 1/3 \left[\frac{\text{ESTR Corps}}{\text{ESTR Model}} + \frac{\text{RUR "C" Pop Corps}}{\text{RUR "C" Pop Model}} + \frac{\text{ACNZ Corps}}{\text{ACNZ Model}} \right]$$

Where RRI = Relative Requirement Index
ESTR = Enemy guerrilla and separate unit strength
RUR "C" Pop = Rural population with "C" HES rating
ACNZ = Area of consolidation zone less secure zone

We then multiplied the number of RF units which maintained security in the model area 1/ by this index to calculate the number of RF units needed in each Corps. We calculated the numbers required both to maintain present security conditions (security levels of Oct 69) and to expand security (bringing all D, E, and VC hamlets up to "C" rating).

Similarly, we computed the number of PF platoons needed in each Corps Zone both to maintain present security and to expand security. The PF relative requirement index is based on two factors: (1) rural population with C or better HES rating and (2) size of the entire Consolidation Zone, including the Secure Zone.

$$RRI_{PF} = 1/2 \left[\frac{\text{RUR ABC Pop Corps}}{\text{RUR ABC Pop Model}} + \frac{\text{TACNZ Corps}}{\text{TACNZ Model}} \right]$$

Where TACNZ = total area of Consolidation Zone including Secure Zone.

1/ Units assigned to security missions according to the Territorial Forces Evaluation System (TFES).

Table 12 below shows the number of RF companies and PF platoons needed by Corps Zone and countrywide. It appears that presently there are more than enough companies countrywide to meet expanded security requirements. Since Territorial Forces cannot be shifted from one Corps area to another, however, special attention should be given to the RF now assigned to security missions in I Corps and IV Corps. In these two Corps, present levels appear to be too low (IV Corps) or marginally adequate (I Corps) to maintain present security. Similarly, present levels of PF in IV Corps are just above the minimum required to maintain present security, and for expanded security, 62 more platoons would be needed. We note that IV Corps traditionally keeps a larger percentage of RF companies on offensive operations than the other three Corps.

TABLE 12

REGIONAL FORCE COMPANY/POPULAR FORCE PLATOON REQUIREMENTS

	Present No. of Units[a]		No. On Security Mission		No. to Retain Security Levels[b]		No. to Achieve Expanded Security[c]	
	RF	PF	RF	PF	RF	PF	RF	PF
I Corps	212	920	171	863	169	743	183	863
II Corps	359	1311	291	1266	237	1121	261	1268
III Corps	372	1028	310	965	148	803	153	835
IV Corps	530	2413	307	2154	380	2004	465	2475
SVN	1473	5672	1079	5248	934	4671	1062	5441

a/ December 1969 for PF platoons, November 1969 for RF rifle companies.
b/ October 1969 HES ratings.
c/ All D, E, VC hamlets are brought to a "C" rating.

While the number of RF companies available countrywide is some 400 more than required for expanded security, some of these companies would be engaged in training and rehabilitation, while other units would act as a "swing force" to assist regular forces during periods of high enemy threat (such as the IV Corps situation); still others are required for border surveillance missions on a more or less permanent basis.

Recent GVN directives and comments by President Thieu indicate an apparent modification to the Area Security Concept as presently written, specifically in the formation of an elite PSDF force to replace PF platoons in A, B, and C hamlets during 1970. This program envisions formation of 35-man inter-teams (platoons) from the 500,000 arms-bearing PSDF and training four men per team (60,000 in all) in one week courses. If this program is successful the end result could provide substantial

assistance for the regular forces from RF units released by the "up-graded" PF platoons. We have not included the effect of this plan in our RF/PF calculations.

Total RVNAF

Our force structure development has concentrated on ARVN, RF and PF. In determining a total RVNAF Force Structure, we assume that a VNN and VNMC of about 37,900 and 13,400 respectively, by end FY 73[1] is appropriate. To determine the strength for the VNAF we took the Phase II authorized strength of 35,800 and added the Corps wide projection of the strengths of the Army helicopter and fixed-wing units which supported the model ARVN forces (see Enclosure 8). This resulted in a VNAF of about 52,300 to support the maneuver battalions in a low intensity threat and 57,100 to support them for a high threat. This large VNAF would be able to provide the expanded ARVN/VNMC combat forces with the same level of helicopter and fixed-wing support that the model forces received from the U.S. SVN manpower and U.S. fiscal constraints, however, would probably obviate building a VNAF of this size. The requirement for ARVN forces generated in Table 11 would of course vary with changes in enemy threat and activity and would decrease if the RF began to assume some of the Clearing Zone type missions which are envisioned as ARVN responsibilities in the Area Security Concept. Ignoring these possible variations for the moment, the total Regular Force requirement would be as shown below.

TABLE 13

VIETNAMESE REGULAR FORCE REQUIREMENTS
(Personnel - 000)

	Authorized Phase II	Low Threat	High Threat
ARVN	395.8	507.8	617.6
VNN	33.1	37.9	37.9
VNMC	13.1	13.4	14.4
VNAF	35.8	52.3	57.1
Total	477.8	611.4	727.0

1/ These force levels have been requested both by MACV and JCS in recent documents.

RF/PF Requirements

In the section on territorial forces we determined the number of RF companies and PF platoons needed by Corps Zone to maintain present levels of security and to achieve expanded levels of security. Using an RF company strength of 123 personnel and a PF platoon strength of 35 personnel and using existing RF and PF overhead strength percentages of 38% and 11%, respectively, we computed total RF/PF requirements countrywide.1/

TABLE 14

RF/PF REQUIREMENTS
(Personnel-000)

	Authorized Phase II	Present Security	Expanded Security
Regional Force	275.7	253.7	288.6
Popular Force	239.4	199.7	232.6
Total	515.1	453.4	521.2

In order to determine a total RVNAF, we added the regular forces required under period of low threat to the RF/PF needed for expanded security, since hopefully security will continue to expand during periods of low enemy activity. This yields an RVNAF of 1,132,600 personnel. On the other hand, during periods of high enemy threat, RF/PF would more than likely be attempting to maintain present security. This yields an RVNAF of 1,180,400. The present end FY 73 authorization for the total RVNAF (Phase II) is 992,900. Subsequent force structure requests have indicated a desire for up to 1,100,000 personnel.

TABLE 15

TOTAL RVNAF
(Personnel 000)

	Phase II	Low Threat	High Threat
Regular Forces	477.8	611.4	727.0
Territorial Forces	515.1	521.2	453.4
Total	992.9	1132.6	1180.4

1/ In addition we added 27% of the RF total and 7% of the PF total to account for units not on security missions.

Conclusions

1. Our study has generated a requirement for a 1.13 to 1.18 million RVNAF to implement the Area Security Concept successfully under threat levels existing throughout 1969 and with no U.S. or FWMAF combat forces in-country. This compares to an approved end FY 73 RVNAF of 0.99 million (Phase II) and subsequent requests for up to 1.10 million from the JCS. Current manpower surveys indicate that the 1.10 million level is attainable.

2. The requirement for from 240 to 296 ARVN/VNMC battalions to operate in the Clearing Zone considers that (1) the threat remains at 1969 levels, (2) all U.S. and FWMAF units are redeployed and (3) that no provisional RF battalions operate in the Clearing Zone. The present RF contains about 400 companies that are not used on security missions. Some of these can be employed to assist the ARVN in the Clearing Zone. By utilizing 40 RF battalions (160 companies) the total ARVN required (without US/FWMAF) would be 200 to 256 battalions. This would in turn reduce the total ARVN required from 517.8-617.6 thousand down to 427.8-547.9 thousand. These strengths compare with authorized and requested strengths as shown below.

ARVN STRENGTH
(Personnel-000)

	Authorized Phase II	OASD(SA) Projected	OASD(SA) Modified [a]	MACV Requests [b]
Low Intensity Threat	395.8	517.8	427.8	517.3
High Intensity Threat	395.8	617.6	547.9	517.3

a/ Forty RF battalions utilized in the Clearing Zone to assist ARVN.
b/ This strength has not been approved.

3. Additional RVNAF forces will be needed in each Corps Clearing Zone after U.S. units withdraw unless the threat diminishes. The precise number of maneuver battalions required, however, should incorporate qualitative adjustments based on differences in effectiveness and mobility between US/FWMAF, ARVN, and VC/NVA battalions. Further, since the size of the ARVN is a function of the three criteria in the Relative Threat Index any modifications of the index (for instance, to reflect differences in relative importance (weighting) of the factors) will change the requirement.

4. Our required RF/PF forces, from 453.4 to 521.2 thousand compare favorably with the 515.1 thousand (approved for end FY 73 Phase II) and subsequent requests for up to 544.2 thousand from the JCS. If Territorial Forces (RF/PF) operate as the ASC requires, there are sufficient RF rifle companies countrywide to bring all D, E, and VC hamlets to a C rating (expanded security) when the main force security situation permits access to these hamlets. At least 62 more PF platoons, however, will be needed

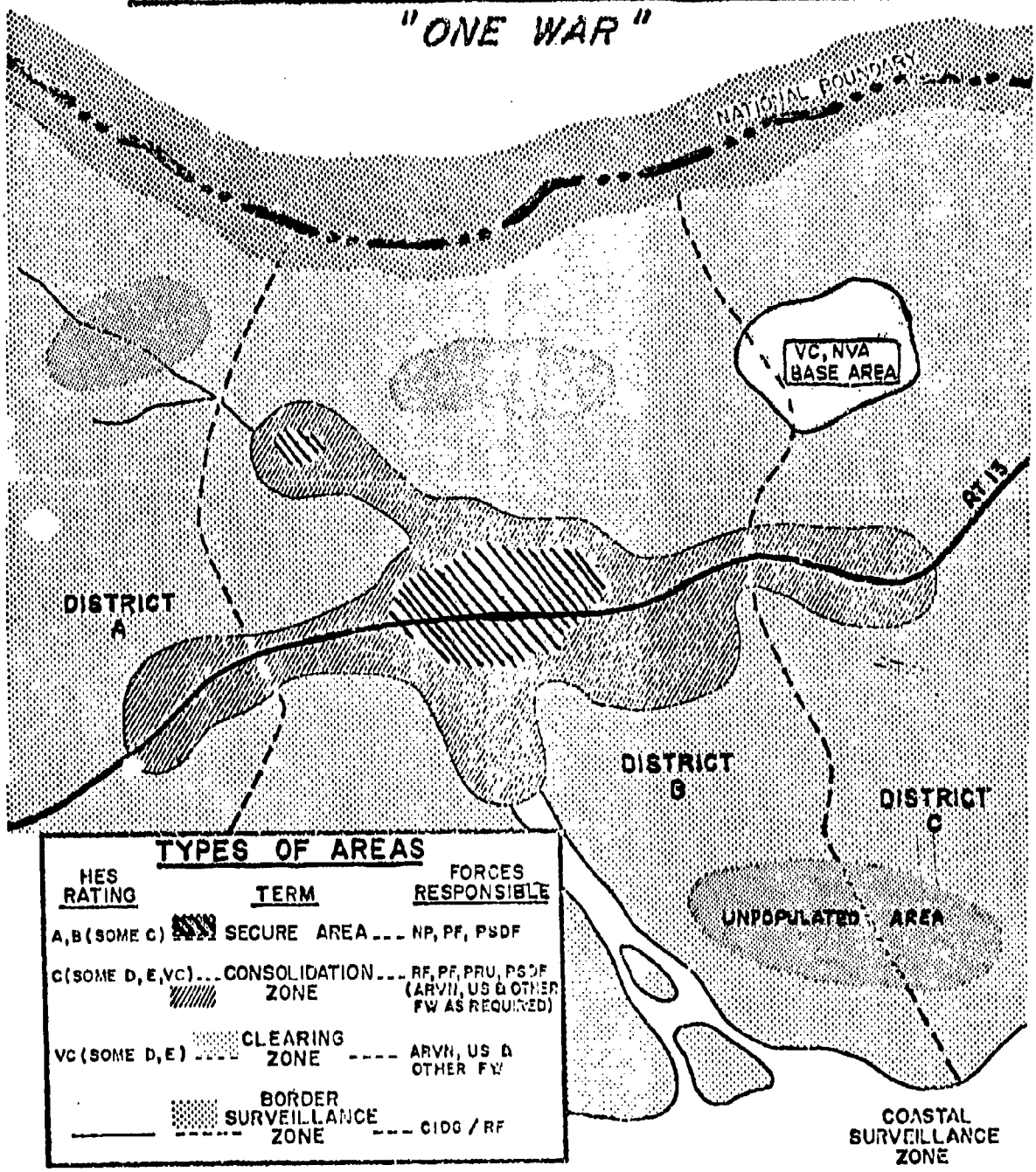
in IV Corps under conditions of expanded security. It would be reasonable to employ any excess RF units in portions of the Clearing Zone near their homes rather than to create more regular units.

5. We made no attempt to evaluate the Peoples' Self Defense Force (PSDF) as an effective force in the Secure Area primarily because we have very sketchy information about them. However, it is expected that the effect of at least the armed PSDF would release some PF platoons now on security or other type missions. This in turn would generate additional PF units for security expansion or consolidation; these were not included in our calculations. The apparent GVN change in strategy with regard to PSDF in 1970 will also impact on the regular forces, since more RF units will be made available for employment in the Clearing Zone. This in turn will reduce the requirements for ARVN units.

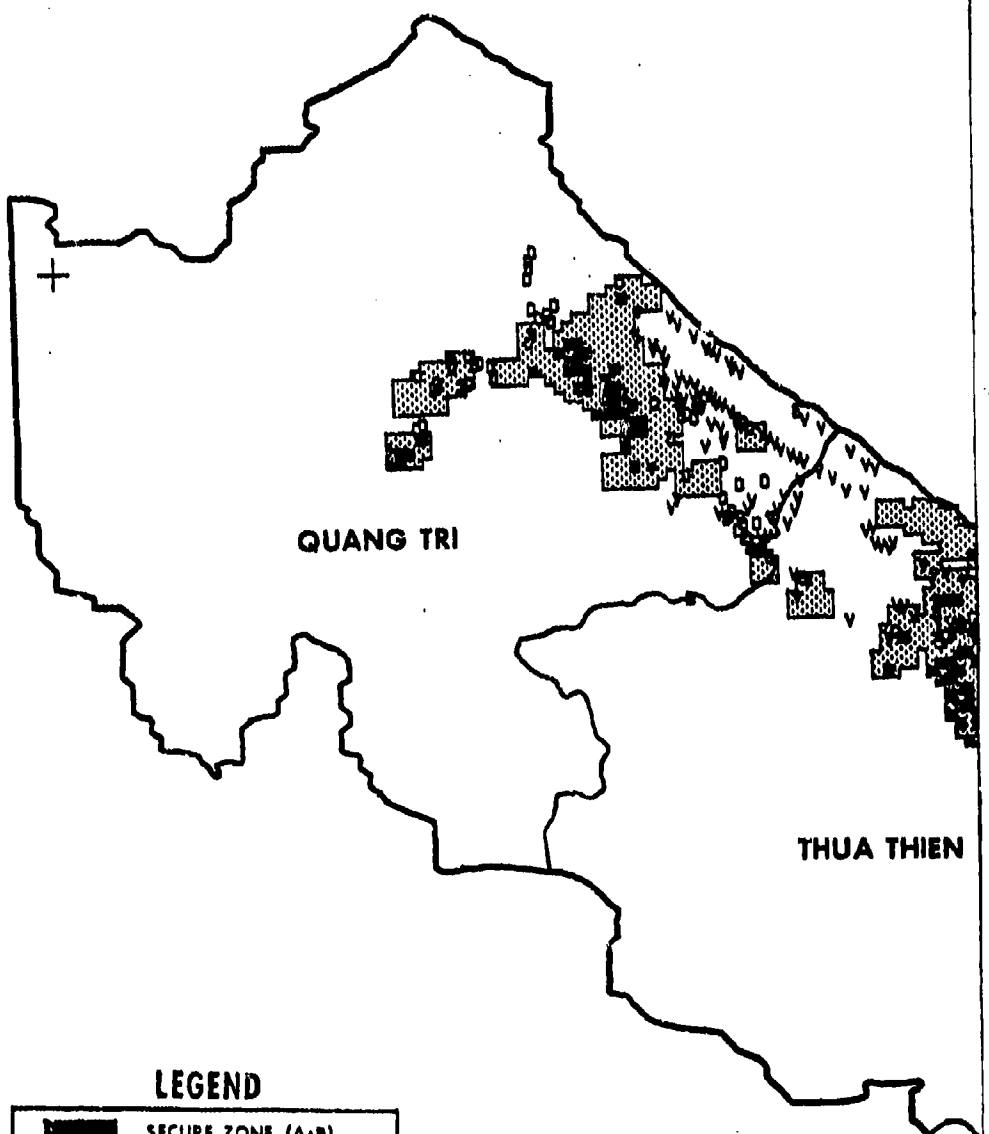
6. Re-calculation of threat and requirement indices should be made at least every 4-6 months, particularly where PSDF employment changes the ASC strategy.

TERMINOLOGY FOR AREA SECURITY

"ONE WAR"



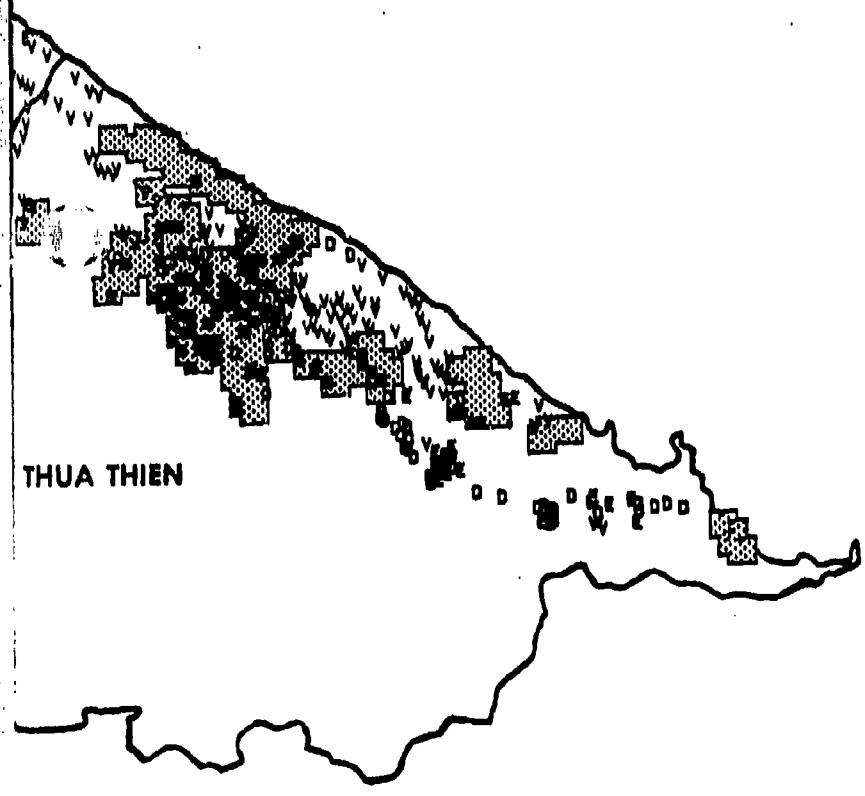
Enclosure 1

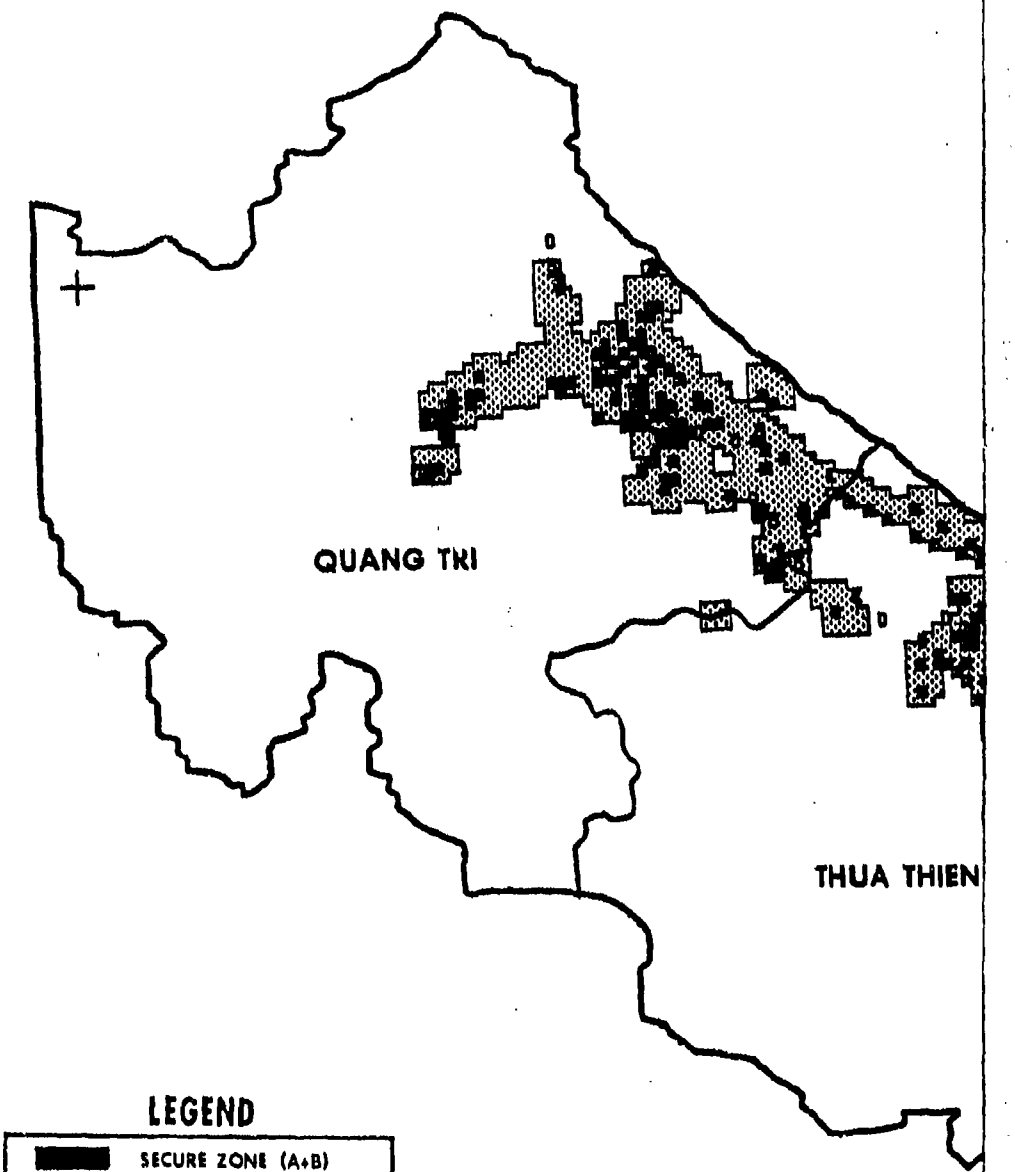

QUANG TRI
THUA THIEN
LEGEND
SECURE ZONE (A+B)
CONSOLIDATION ZONE (C+ADJACENT 1 KM)
CLEARING ZONE

SOUTH VIETNAM

11th DTA

SEPTEMBER 1968

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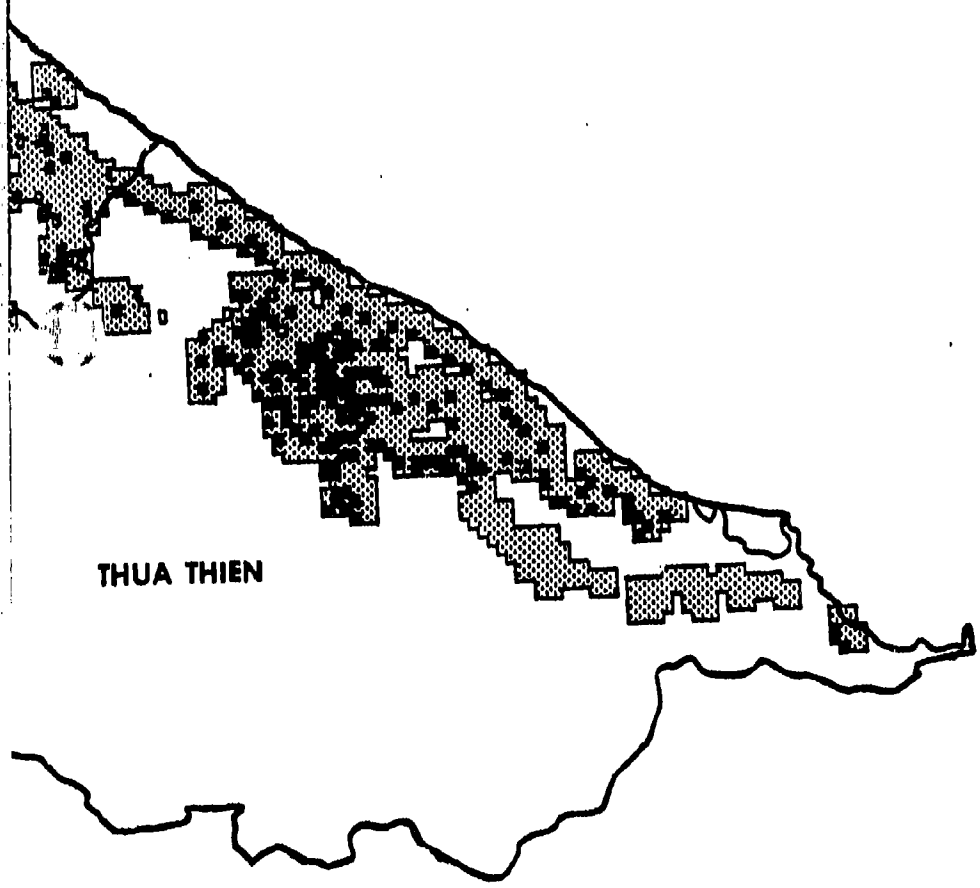
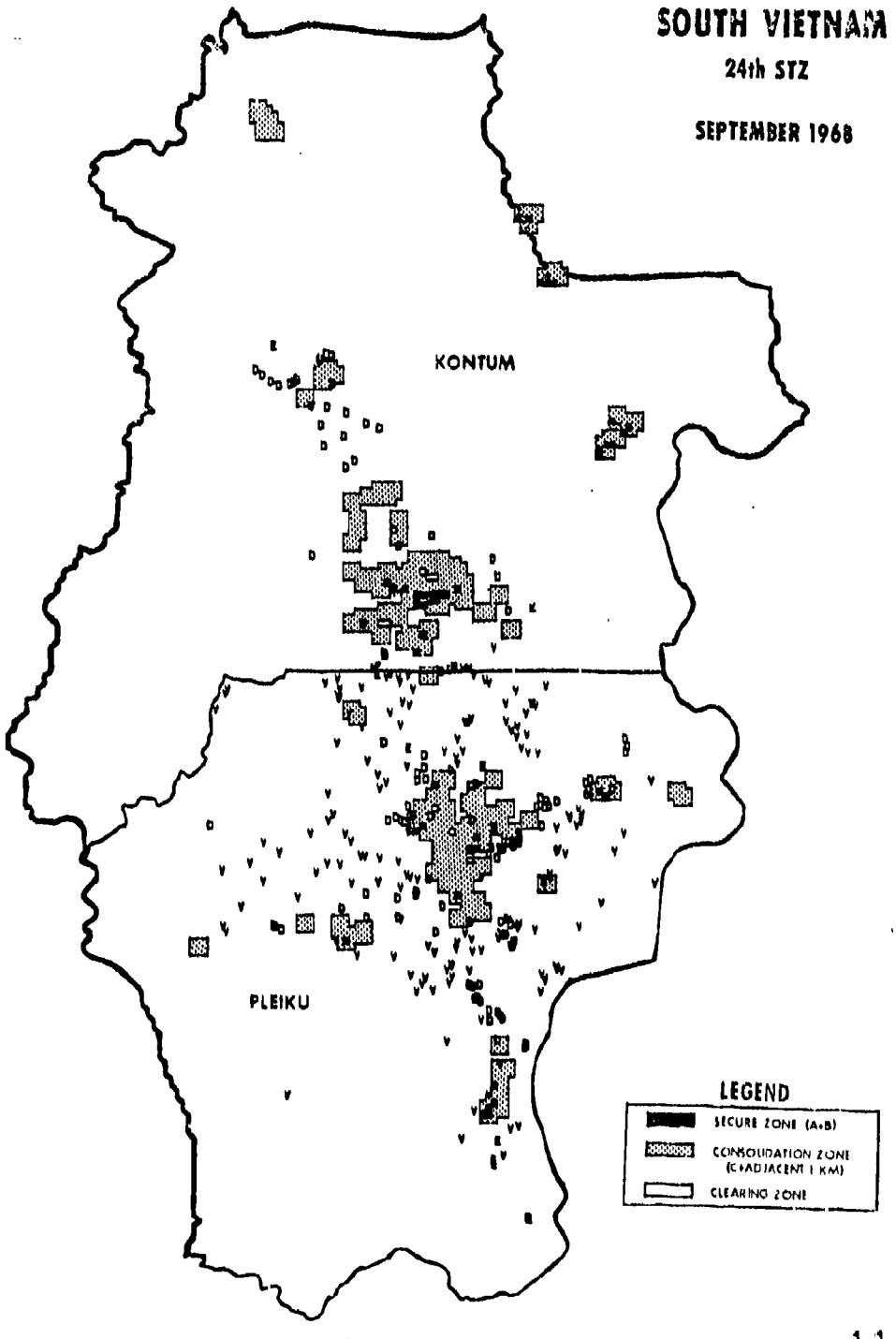
OCTOBER 1969




SOUTH VIETNAM
24th STZ
SEPTEMBER 1968
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SECURE ZONE (A+B)
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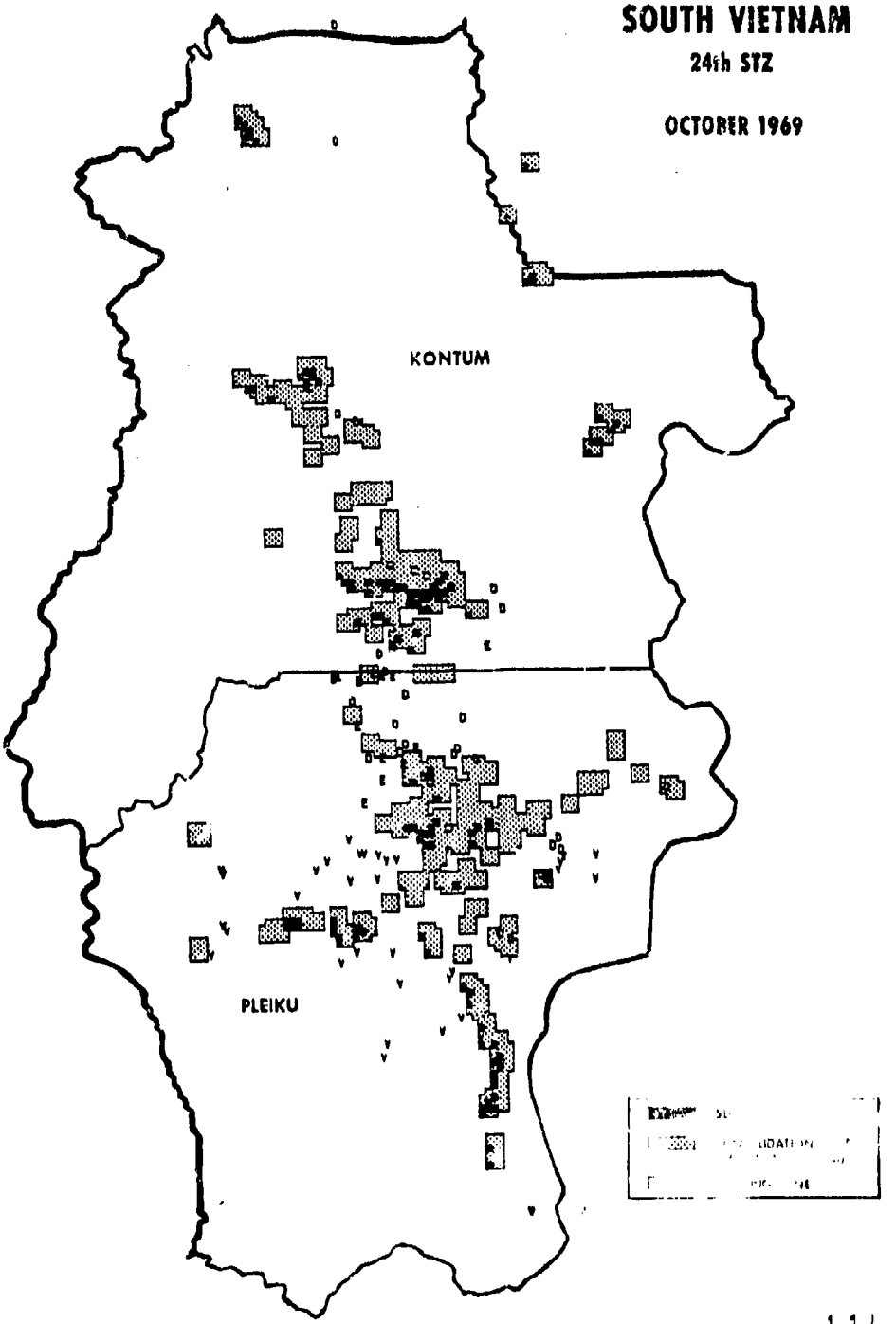
CLEARING ZONE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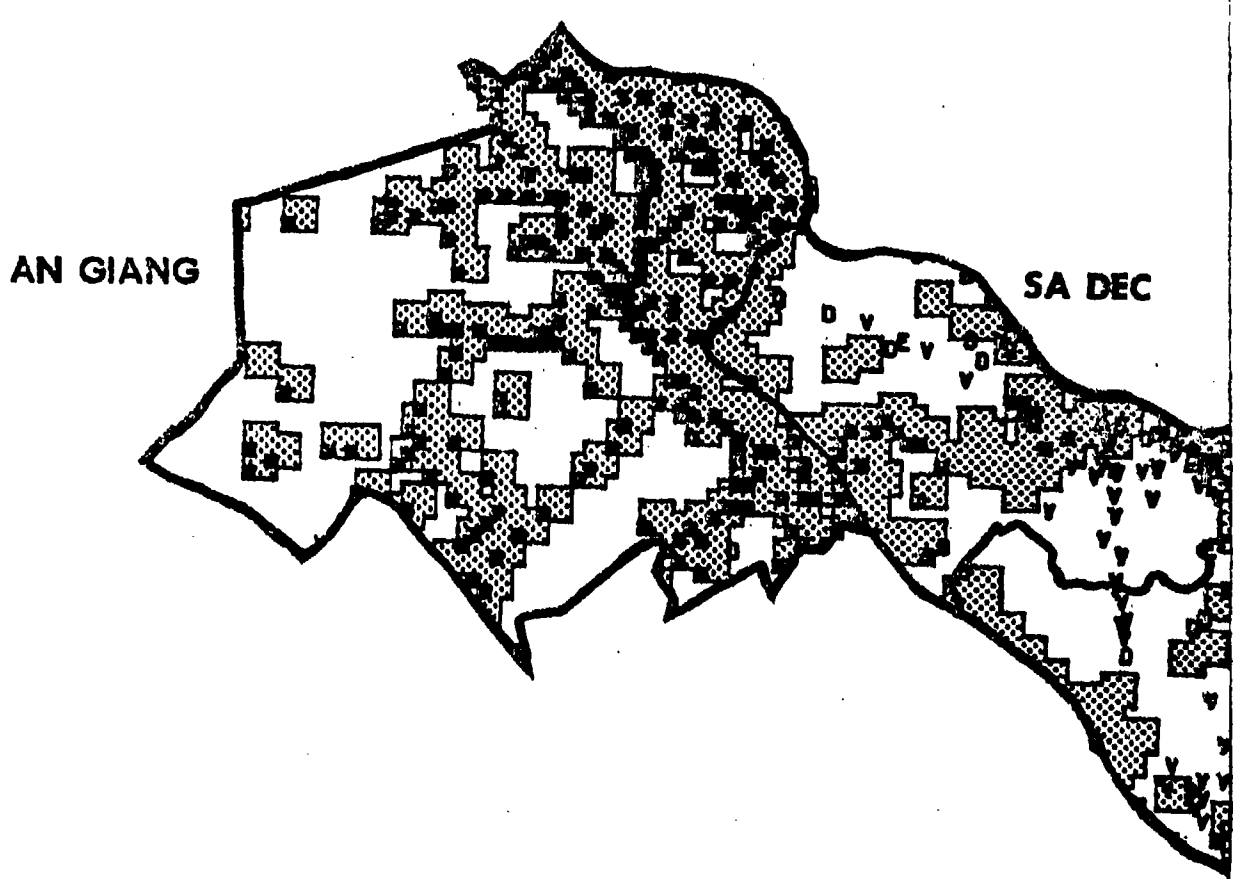


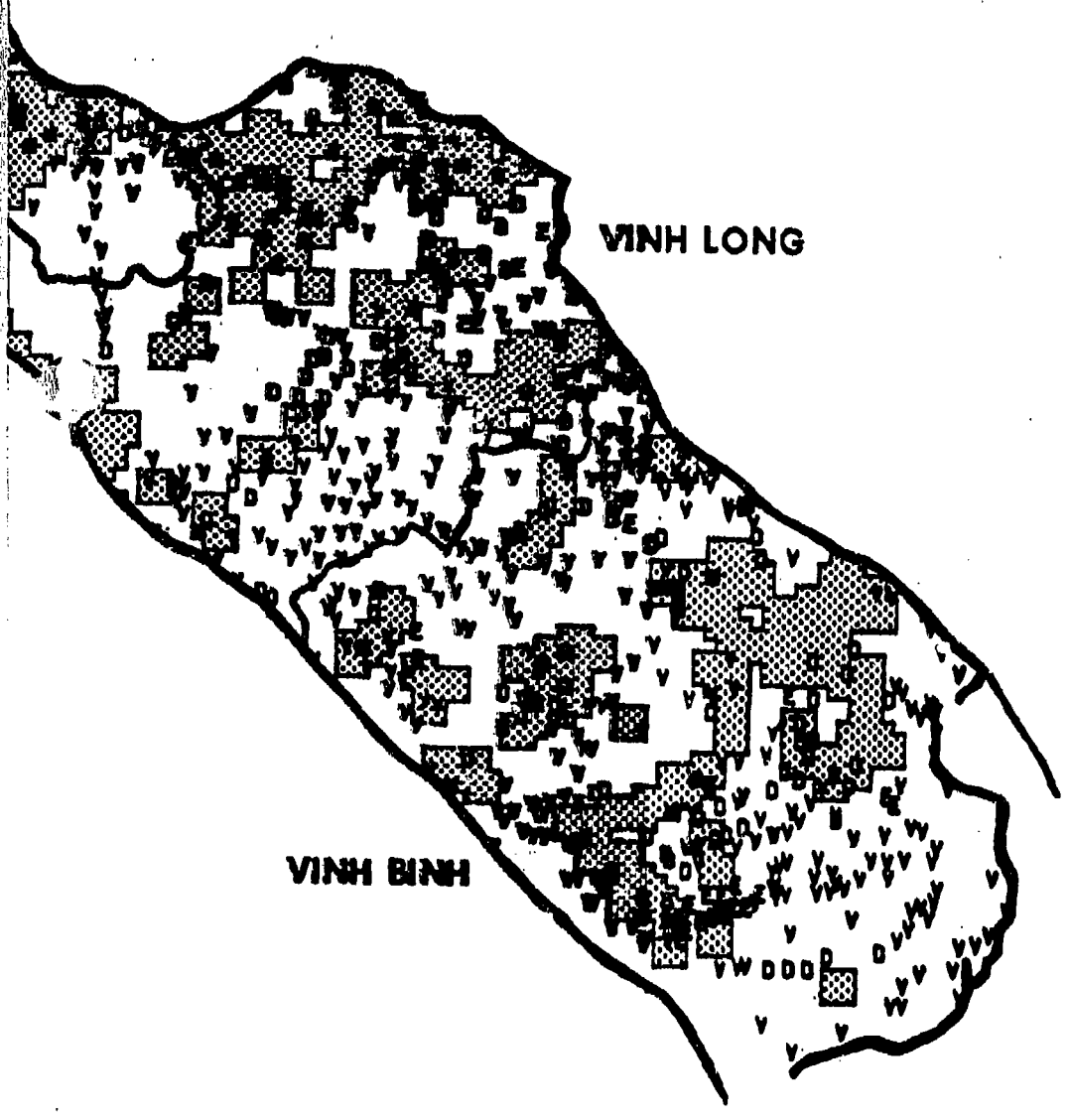
LEGEND

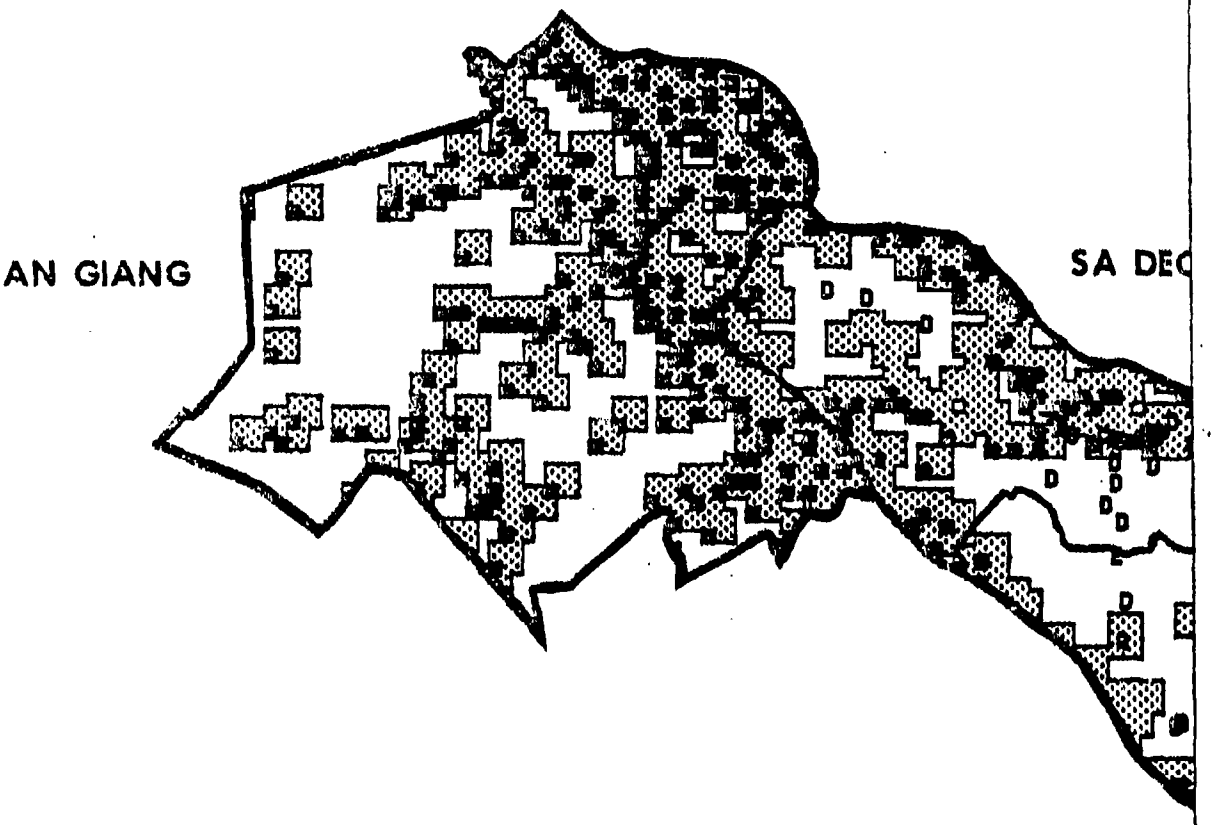
- SECURE ZONE (A+B)
- CONSOLIDATION ZONE (C+ADJACENT 1 KM)
- CLEARING ZONE

SOUTH VIETNAM

41st DTA

SEPTEMBER 1968





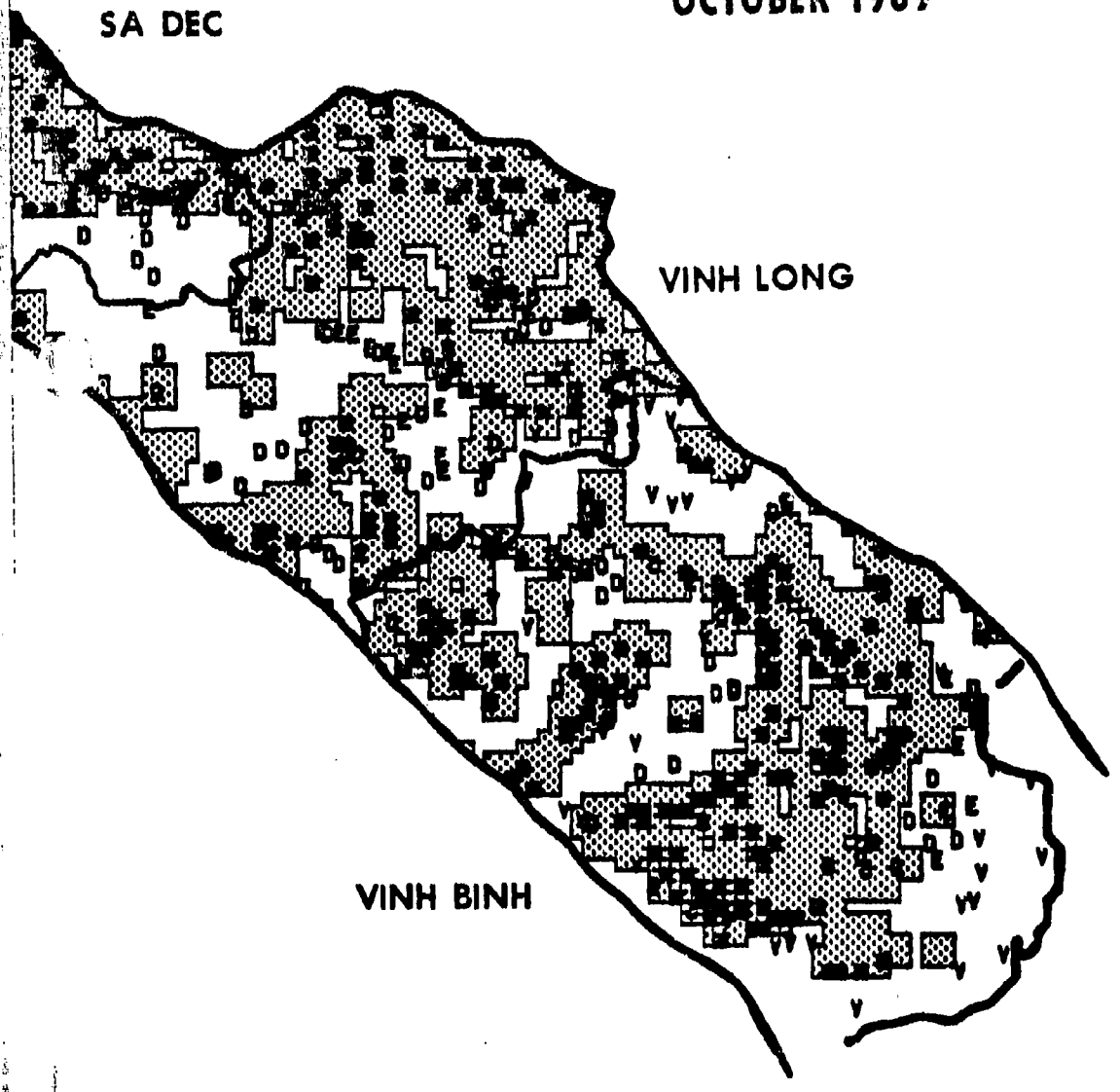
LEGEND

- SECURE ZONE (A+B)
- CONSOLIDATION ZONE (C+ADJACENT 1 KM)
- CLEARING ZONE

SOUTH VIETNAM

41st DTA

OCTOBER 1969



MODEL CLEARING ZONE FORCES, ARVN

Type Unit	Number			Unit Strength			Strength Allocation [a]		
	I CTZ	II CTZ	IV CTZ	I CTZ	II CTZ	IV CTZ	I CTZ	II CTZ	IV CTZ
Division Forces									
Infantry Bn	17	7	12	665	665	665	11,305	4,655	7,980
Arm'd Cav Sqdn	1	1	1	693	693	693	693	693	693
Div Recon Co.	1	-	1	111	-	111	111	-	111
Hq Inf Div	1	-	1	208	-	208	208	-	208
Hq Co.	1	-	1	124	-	124	124	-	124
Hq Inf Rgmt	4	2	3	200	-	200	800	400	600
STZ HHC	-	1	-	-	187	-	-	187	-
Rgmt Recon Co.	4	1	3	111	-	111	444	111	333
Div Arty	1	-	1	1,577	-	1,577	1,577	-	1,577
Arty Bty (2 plt)	-	1	-	-	123	-	-	123	-
Scout Co.	-	3	-	-	142	-	-	426	-
Eng Bn	1	-	1	437	-	437	437	-	437
Eng Co.	-	1	-	-	103	-	-	103	-
DS Bn	1	-	1	666	-	666	666	-	666
Sig Bn	1	-	1	378	-	378	378	-	378
Med Bn	1	-	1	488	-	488	488	-	488
Med Co	-	1	-	-	98	-	-	98	-
Lfght Trk Co.	1	-	1	152	-	152	152	-	152
Mil Band	1	-	1	29	-	29	29	-	29
Scout Dog Plt	1	-	1	25	-	25	25	-	25
Div Augment [b]	1	-	-	154	-	-	154	-	-
Division Forces Total							17,591	6,796	13,801
Corps Forces									
Arm'd Cav Sqdn	2	2	1	729	729	729	729 [c]	462 [d]	233
Corps Hq	1	1	1	573	573	573	287	196	182
Arty 155 Bn	3	1	3	540	540	540	810	142 [e]	517
Arty 105 Bn	2	-	2	501	-	501	501	-	320
Ranger Bn	3	3	4	655	655	655	983	1,965 [f]	836
Ranger Gp Hq	1	1	1	124	124	124	62	124	40
Corps Combat Support Total							3,372	2,889	2,128
Area Log Cmd	1	1	1	280	280	300	140	96	96
Engr Gp (Combat)	1	1	1	2,517	2,517	2,517	1,258	863	803
Corps Sig Bn	1	1	1	440	440	440	220	151	140
Med Grp	1			180	180	180	90	62	57
Corps Service Support Total							1,708	1,172	1,096

a/ Except where noted otherwise Corps and U.S. support forces allocated to model forces on basis of model force battalions/total Corps battalions split. I CTZ-20/40; II CTZ-12/35; III CTZ-15/47.

b/ Includes Radar Section (16), Direct Support (98) and Signal (40) augmentations.

c/ Two ACS's operated with ARVN 1st, we assume one was organic and the other assigned full time from I Corps.

d/ 3rd ACS and 14th ACS (-) operated with TF Lien; 1 squadron organic, 2/3 squadron allocated here.

Type Unit	Number			ARVN Equiv. Strength			Strength Allocation		
	I CTZ	II CTZ	IV CTZ	I CTZ	II CTZ	IV CTZ	I CTZ	II CTZ	IV CTZ
U.S. Support									
Arty 175 Bn	2	-	-	540	-	-	540	-	-
Arty 8" Bn	1	-	-	540 g/	-	-	270	-	-
Arty 155 Bn	-	2	-	-	138	-	-	276 h/	-
Arty 105 Bn	1	4+	-	501	123	-	226	532 h/	-
Air Def Bn	1	-	-	690	-	-	345	-	-
Arty Cmd Post	-	1	-	-	126	-	-	126 h/	-
Combat Engr Bn	-	1	-	-	540	-	-	540 h/	-
Equiv. U.S. Combat Support Total (ARVN)							1,381	1,474	-
Sig Spt Co. i/	1	1	1	122	122	122	61	42	39
Sig Co. i/	1	2- j/	1	226	226	226	113	280	85
Truck Co. k/	1	1	1	168	168	168	84	58	54
Port Term/Boat Co k/	1	1	1	200	200	200	100	69	64
Dir. Spt Co.	1	1	1	302	302	302	151	104	96
Med Det.	-	-	4	-	-	30	-	-	38
Equiv. U.S. Service Support Total							509	553	376
GRAND TOTAL Model ARVN Force							24,561	12,884	17,401
Model ARVN Battalion Slice 1/							1,198	1,104	1,160
Support				VNAF Equiv. Strength					
Air Cav Sqdn	1	1-	1	850	177	850	425	177 h/	271
Asslt Helo Co.	4	1+	6	288	300	288	576	300 h/	551
Asslt Spt Co.	2	1-	1	268	100	268	268	100 h/	85
Aerial Wpn Co.	-	-	1	-	-	250	-	-	80
Recon Co.	2	1	2	123	123	123	123	46	79
Avn Bn HHC	1	-	3	100	-	100	50	-	96
Surv. Co.	2	1-	1	331	150	331	331	51	105
VNAF Equivalent of U.S. Helo Support							1,773	674	1,267
VNAF Helo Support per Battalion							86	58	84

e/ One 155 bty plus 2 platoons of another.
f/ All 3 Ranger Battalions in II Corps operated with TF Lien.
g/ Since ARVN will have no 8" howitzers, 155 Bn substituted here.
h/ U.S. combat support for II CTZ model derived from actual units in support of TF Lien, therefore entire strength allocated to model.
i/ U.S. now providing about 2 Co. equivalents of signal support to each Corps during helo assaults, otherwise most divisions self sufficient.
j/ Includes 3 signal detachments with TF Lien.
k/ U.S. now providing some surface transport, primarily port service and truck; strength estimates based on number of U.S. units required to handle 20% of RVNAF tonnage (current figure in I CTZ).
1/ Model force contained 20-1/2 battalions in I CTZ, 11-2/3 battalions in II CTZ, and 15 battalions in IV CTZ.

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Aug - Oct 1971

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A GVN PEOPLE'S ARMY

Summary

A recent RAND study explored a people's army concept for South Vietnam as a way to reduce the burden of their large military structure. Noting that the Vietnamese have historically used this concept to cope with protracted war, the study concludes that:

- As US support declines, reorganization of the GVN force structure is inevitable. A systematic demobilization concept now may prevent disruption later, after manpower and economic stresses have mounted to intolerable levels.

- The Territorial Forces (RF/PF/PSDF) could be used as a nucleus for phasing into a people's army over the next five or six years, with large regular force reductions only in the later stages.

Our examination of the pertinent data shows:

- RVNAF can find the manpower to sustain the current force, but must dip into their manpower reserves and incur large costs to the economy.

- GVN force increases since 1968 have trended toward a people's army in fact, if not in name; the proposed nucleus now accounts for over 70% of all ground forces in RVN and has gradually assumed the bulk of the defensive burden since mid-1969.

- Less than 20% of the total RVNAF budget goes to the RF/PF, even though this force has been a major factor in providing population security, contains 50% of the military manpower, sustains half of all GVN combat deaths and contributes nearly 40% of the enemy KIA. Moreover, only $1.5 billion (about 10%) of the total war cost is allocated to territorial security.

The most compelling argument for the people's army is that the Vietnamese are already moving in that direction. President Thieu reportedly has announced to his Cabinet a new four year plan which he will send to the National Assembly shortly after his inauguration. His plan strongly resembles the phased approach to a people's army noted above.

Gradual movement toward a streamlined regular force which can deploy its units to any threatened area, coupled with development of the RF/PF/PSDF into a defense force should be acceptable to the US and GVN:

- It offers the US a chance to reduce the apparent $2-3 billion dollar floor on war costs with a lesser risk to US interests in SVN.

- It offers the GVN an opportunity to revitalize its economy and become less dependent on outside support without grave risks to their security.

The military situation, combined with economic and manpower realities, favors a shift in priorities. The shift need not be abrupt-the three phase plan seems to provide a reasonable transition in the time frame envisaged by President Thieu. We believe Vietnamese initiative in this direction should be encouraged and supported. But the initiative should remain with them.

A GVN PEOPLE'S ARMY

Details

Among the serious problems which inhibit improvement in RVNAF quality is their continued high desertion rates. The average RVNAF soldier now faces endless military service with little hope of resuming an active and productive role in Vietnamese society--a state of mind conducive to desertion but which a term of service might alleviate.

The RAND Corporation has explored in detail the concept of a people's army for South Vietnam.1/ The concept not only includes a term of service but also discusses the political, economic, and social costs of the GVN's large military structure. We felt it would be useful to summarize the RAND work and then explore the problem further.

The People's Army

Research into Vietnam's cultural and military history shows much historical precedent for their current problem of maintaining an adequate military force without stifling the country's economy. Historically, Vietnamese wars have:

-- Been prolonged conflicts involving the general populace, with no clearly defined end.

-- Ebbed and flowed in the military, political, and economic arenas.

The structure of the present RVNAF regular forces is better suited to fight a conventional western style war than to cope with a protracted struggle. When US aid is inevitably reduced or withdrawn, the GVN will have to adjust its force structure. Their reorganization alternatives seem bounded by the following grim choices:

-- Demobilization to a force size their manpower and economy can support. This alternative risks a reduction below the level needed to meet the threat, and the influx of unemployed veterans on an already burdened economy could create additional social unrest leading to renewed insurgency.

-- Retention of the present force structure. This alternative carries the danger that the country will crack under the weight of its own military investment rather than from enemy pressure At best it may survive only as an economically and socially stunted garrison state.

Within these bounds, there is an alternative which draws on Vietnamese traditions--an elite and mobile regular force backed up by a people's army--an army which bears most of the defensive burden and also functions as a productive social unit.

1/ A People's Army for South Vietnam: A Vietnamese Solution. R-897-ARPA, November 1971 (Preliminary draft), Brian Jenkins.

The study contends that the GVN cannot postpone demobilization, economic stabilization and growth, and political stability to some post-war era that probably won't come, or if it did, wouldn't be recognized.

The problem then, is how to move toward a people's army without destroying RVNAF, the GVN's most cohesive and efficient national institution. The study concedes that... "The argument that a people's army is less burdensome on the economy has little merit if it cannot also defend the country." Three phases of development are suggested over the next six years, with large reductions in the regular ground units only in the later stages:

-- Initial Phase (1972-73). During this period the program for a people's army would be established. Using the territorial forces (RF/PF/PSDF) as a nucleus, the command structure and tactical doctrine would be developed, but only minor reduction of the regular ground forces (about 10,000) would be involved. Additionally, a rotational reserve system (term of service) and military farming colonies[2/] are instituted.

-- Second Phase (1973-75). Additional measures can be taken to expand and increase the effectivness of the people's army based on evaluations of the initial phase. Limited demobilization (20-25%) of the regular ground forces begins, and regular units not involved in combat undertake some reconstruction and development tasks.

-- Third Phase (beyond 1975). The people's army gradually assumes a greater defensive role as the regular army is reduced to around 200,000. This force would be organized as mobile brigades, capable of deploying to any part of the country.

The gist of the argument is that:

-- Reorganization of the GVN force structure is inevitable. A systematic demobilization concept now may prevent a highly disruptive process later, after manpower and economic stresses have mounted to intolerable levels.

-- The organizational impact of moving toward a people's army could be minimized by using the Territorial Forces (RF/PF/PSDF) as a nucleus.

Based on data available in Washington, we have examined these points. Our major findings follow.

2/ Military farming colonies (Don Dien) are created by giving demobilized soldiers land in less secure areas which they would farm, defend, and eventually own. These colonies would provide a buffer between populated areas and enemy units which have been forced into uninhabited regions.

Manpower and Economic Implications

Considering estimates from several sources, we conclude that 115-150,000 physically fit 18 year olds are probably available for military service each year in South Vietnam. These sources also indicate:

-- A residual of about 200,000 men who are physically fit, but have not been drafted for various reasons.

-- About one million men aged 31-45 not up to RVNAF fitness standards, but who could serve in noncombat tasks.

During FY 71, a year of relatively high losses from crossborder operations, RVNAF assigned strength increased by nearly 42,000. The total potential losses (combat deaths, seriously wounded, missing, and net desertions) suffered by RVNAF during this period was about 227,000, while personnel gains (recruiting and conscription) amounted to more than 225,000. This indicates that RVNAF was able to replace its net losses and increase assigned strength during FY 71 by some combination of the following:3/

-- Extracting up to 100,000 from the residual manpower pools mentioned above. (Assuming they obtained about 125,000 incoming 18 year olds.)

-- Recovering an unknown, but probably substantial, number of regular force deserters who later join territorial forces near their homes. Net desertions account for 137,000 of the 227,000 potential losses.

-- Returning some of the seriously wounded and missing (about 68,000 during FY 71)to duty, or alternatively, not dropping them from the assigned strength figures.

-- Recruiting some of the Hoi Chanh (there were 27,000 Hoi Chanh during FY 71, and a yearly average of 20,000 since 1963).

Although the data seems to show that RVNAF will be increasingly hard pressed to find replacements, experience of the past four years warns against making a firm conclusion that a manpower shortage exists.

-- RVNAF has expanded over 70% since 1967 in the face of such pessimistic assessments.

-- The GVN can regulate manpower flows by manipulating policy (lowering standards, cracking down on draft dodgers and deserters, refusing deferments, etc.).

3/ RVNAF gains from CIDG conversion and losses to the National Police were about equal during FY 71.

Still, the data does suggest that RVNAF expansion and replacement of losses has absorbed virtually all of the physically fit 18 year olds and substantial numbers of skilled civilians already in the production base.4/5/

We therefore conclude that there is no demonstrable manpower shortage per se, but that the GVN has to resort to deficit manpower spending to maintain RVNAF--thereby adversely affecting social and economic productivity, an effect more likely to mount than to decline.

In economic terms, the GVN shoulders a mounumental defense burden. A 1968 international study of 26 countries revealed that South Vietnam's relative defense expenditures (percent of GNP) were exceeded only by Israel. The US, USSR, and China ranked well below South Vietnam, and 19 of the 26 countries had percentages less than half that for RVN. In the last five years:

-- The GVN has devoted 15-17% of its GNP and over 60% of its total budget to defense.

-- Revenues and foreign aid have more than doubled, but have not kept pace with inflation and expenditures.

Yet the GVN has borne only 3-7% of the total war cost in the past three years. In FY 71 the US picked up $14 billion (93%) of the $15.1 billion total cost, spending:6/

-- $11.3 billion on US forces, of which air and general support forces accounted for two-thirds ($7.5 billion).

-- $2.7 billion on RVNAF, including US advisors and their support, MASF, and $115 million joint support funding through the GVN budget.

4/ Particularly since we have not allowed for any VC recruitment from the manpower pool.

5/ Although no estimates are currently available concerning the maximum size of RVNAF which could be sustained and still assure economic growth, DA Pamphlet 550-40, Area Handbook for Vietnam-1962, estimated that manpower in RVNAF should not exceed 550,000 if mid-1962 economic levels were to be maintained. A linear extrapolation based on current population would impose a comparable limit for RVNAF of about 700,000.

6/ Vietnam Program Budget data, which records the amount actually spent in FY 71, even though the item might have been budgeted in FY 69 or 70. This is particularly applicable for equipment deliveries to RVNAF, some of which have long lead times. These are total costs, not incremental costs.

In the short run (through FY 73) it appears that the GVN's economic health depends on the US spending some $2.0-2.5 billion yearly on RVNAF plus another $0.5 billion in economic aid--a total Vietnam cost floor of $2.5-3.0 billion.

-- The GVN funds only about $1.1 billion (30%) of the current RVNAF cost. They would have to allocate nearly 65% of their GNP to absorb the entire load.

-- The total cost to the US will depend on the level of air and general support forces required for continued military security.

Beyond FY 73 the US cost floor should decrease, since relatively few equipment deliveries to RVNAF are scheduled for that period. This cost floor is also dependent on the level of conflict and GVN's ability to maintain their current contribution.

It appears that without a US spending floor of some $3 billion in South Vietnam, their economic outlook is indeed dismal. Yet even this level may not be enough to provide adquate military security. Moreover, their GNP growth rate from 1967-1969 was about equal to the annual rate of inflation. This failure to achieve a real increase in economic well being may be traceable to the manpower situation discussed earlier.

The Nucleus - Present Size and Capability

We examined the point that the RF/PF and PSDF already embody many characteristics of a people's army and could be the nucleus for such an organization.

Although it could be argued that strength distributions in the GVN Military Regions primarily reflect the nature of the threat and population density for that region, overall GVN force increases since early 1968 have nonetheless trended toward a people's army in fact, if not in name:

-- RF/PF increases have been twice as large as those for ARVN/VNMC (both entered 1968 with about 300,000), while paramilitary strength is about the same.

-- The PSDF, non-existent prior to Tet 1968, now number 4.4 million, including some 490,000 Key Interteam (KIT) personnel who are nearly equivalent to the PF in organizational cohesiveness. Our subsequent discussion therefore includes only the KIT PSDF.

Except in MR I, RF/PF strength is clearly dominant among the ground forces and they comprise more than half the total RVNAF strength in the country. Moreover, the combined RF/PF/KIT PSDF nucleus accounts for over 70% of all ground forces. At the Military Region level their proportion of total ground forces varies as follows:

-- MR I: 66%

-- MR II: 75%

-- MR III: 73%

-- MR IV: 83%

-- Saigon Area: 35%

Thus, the proposed nucleus already has the most ground force strength in all areas except Saigon. We next examined operational data to assess its capability.

Our investigation supports the contention that the nature of the war has changed considerably since 1968. Characteristics of this change are:

-- A decline in intensity. First half 71 data shows both friendly and enemy combat deaths in South Vietnam have decreased 50-60% from comparable 1968 data.

-- Enemy Activity Patterns. The net effect of the enemy strategy change in mid-1969 (COSVN 9) was a greater enemy emphasis on selective targeting and economy of force tactics.

-- A greater defensive burden on the RF/PF. Comparing the same periods for 1969, 1970, and 1971, friendly KIA from enemy ground attacks and total incidents shows:

- Increasing RF/PF KIA and either unchanged or declining paramilitary/civilian deaths.

- Declining US/FW KIA and either unchanged or declining GVN regular KIA.

Since the people's army would eventually take over much of the country's defense we looked at the RF/PF during the period they were gradually assuming greater defensive responsibilities (since mid-1969). We found no evidence of deterioration in their overall performance.

-- Nearly 40% of the toal enemy KIA in South Vietnam were attributed to the RF/PF in 1971, up from 20% in 1970 and 10% in 1969 (comparable periods).

-- The enemy to friendly KIA ratio showed an initial sag in GVN effectiveness against enemy ground attacks in 1970, followed by a partial recovery in 1971.

-- The country's HES A-B security rating rose more than 35 percentage points (from 50% in mid-1969 to 85% in mid 1971), together with a 15% reduction in paramilitary/civilian deaths since 1970.

The extent to which continued good performance is dependent on the regular force shield behind which RF/PF and PSDF operate is not easy to determine. Events of the past two years in MRs III and IV, however, indicate that this shield does not have to be nearby in order to be effective. Nowhere else has the war changed more dramatically; main force conflict by battalion size units has virtually disappeared in MR's III and IV except near remote base areas or in Cambodia. Yet in the two MRs combined:

-- RF/PF and paramilitary units accounted for about 60% of the enemy KIA and 70% of the friendly KIA during 1971.

-- HES A-B security ratings have continued to progress and are now the highest in the country.

On the other hand, RF/PF in southern MR I and northern MR II have demonstrated some sensitivity to the presence or absence of regular forces. The turbulence caused by the departure of US Marines and later shifts of US Army units appears to have contributed to declines in RF/PF performance this year, while, in MR II, the RF/PF have not yet attained performance levels which would allow regular forces to free themselves from the populated areas.

Overall Evaluation and Observations

We find the major thrust of the People's Army concept to be persuasive. The data suggest that it warrants serious consideration by both the Vietnamese and the US as a means to reduce defense costs without excessive security risks.

-- Without such a change, the US may be faced with an expenditure floor of about $3 billion for years.

-- The Vietnamese are at present hard pressed to accommodate the war cost even with such a US support level and have had to borrow against their future manpower productivity.

It would appear that current spending is out of balance with the changed nature of the war. Less than 20% of the total RVNAF budget goes to the RF/PF -- a force which has been a major factor in providing population security, contains 50% of the military manpower, sustains 40-50% of all GVN combat deaths (including civilians) and is contributing nearly 40% of enemy KIA in the country. Moreover, only $1.5 billion (about 10%) of the total war cost is allocated to territorial security.

The suggested movement toward a people's army does not call for large regular force reductions in the initial stages. Our own analysis recognizes two factors which support a measured and selective reduction of regular forces.

-- Events of the past year show that there are limitations on where ARVN troops can be deployed which render it less a national army than a federation of four semi-autonomous corps. Regular units operating out of their normal MRs for long periods begin to suffer severe morale problems leading to increased desertion rates.

-- The change in the nature of the war has differed among the GVN MRs and until the regular force becomes truly national, it is the MR, not the country-wide, threat which should dictate the appropriate force distribution between regulars and non-regulars.

The most compelling argument for the people's army is that the Vietnamese are already moving in that direction. President Thieu reportedly has announced a new four year plan recently to his Cabinet, which he will send to the National Assembly shortly after his inauguration. The key elements of the plan, which strongly resemble the three phased approach to a people's army, are:

-- The intensity of the war will continue to decline and the policy of the GVN is to develop and reconstruct the nation while the fighting is diminishing.

-- Defense policy must be based on the people's self defense. The country cannot continue with over one million men in the armed forces. Even after peace, the GVN must have the concept of the people with a gun in one hand and a plow in the other.

-- The armed forces cannot be reduced suddenly because of economic disruptions, but the regular forces will be reduced to 300,000 beginning in 1974. The Popular Force strength will be reduced by about 50,000 per year over a three year period beginning in 1972, while the Regional Force and National Police will remain at their current strength.

Some Vietnamese apparently feel that the liklihood of US resistance to the people's army will be a strong impediment to its implementation. We would agree that in the field and in Washington there is an understandable reluctance to undertake major organizational changes, which can breed inactivity at the operational level while the power elite jockey for positions in the new hierarchy. One GVN minister has reportedly suggested that some aspects could begin now in MR III and IV. We think the suggestion has merit:

-- Enemy main forces in both MRs have fragmented into company and platoon size since 1970.

-- By the end of the forthcoming 71-72 dry season we should be better able to evaluate the residual capability of enemy units in the MR IV base areas and those adjacent to MR III in Cambodia.

We conclude that the military situation, combined with economic and manpower realities, favors a shift in priorities. The shift need not be abrupt -- the three phase plan seems to provide a reasonable transition in the time frame envisaged by President Thieu. We believe Vietnamese initiative in this direction should be encouraged and supported. But the initiative should remain with them.

A gradual movement toward a streamlined regular force which can effectively deploy its units to any threatened area, coupled with an expansion of the RF/PF/PSDF into a cohesive force for defense should be acceptable to the US and the GVN:

-- It offers the US a chance to reduce the apparent $2-3 billion dollar floor on war costs with a lesser risk to US interests in the area.

-- It offers the GVN an opportunity to revitalize its economy and become less dependent on outside support without sacrificing their security.

-- It will likely provide a force tailored specifically to cope with the needs of the protracted struggle ahead

Feb 67

SMALL UNIT ACTIONS

A small unit action involves less than three companies, but at least one fire team, engaged in offensive operations (patrols or ambushes.) A measure of the effectiveness of small unit actions might be the number of contacts with the enemy per 1000 small unit actions. The quality of the US small unit action data shown below is felt to be fairly good as the reporting system is well defined. RVN data, on the other hand, is a less useful measure of patrolling and ambush activity, since the RVN forces report routine security and defensive patrols and guard post activity as small unit actions.

TABLE 1

SMALL UNIT ACTIONS AND CONTACTS
(Weekly Averages for Quarter)

	CY 1965		CY 1966				CY 1967
	3 Qtr	4 Qtr	1 Qtr	2 Qtr	3 Qtr	4 Qtr	Jan
US							
Contacts	44	134	93	121	159	135	136
Small Unit Actions	629	1,953	3,242	3,364	3,066	3,668	5,140
Contacts/1000 Small Unit Actions	70	69	29	36	52	37	26
RVN							
Contacts	99	90	52	52	85	96	85
Small Unit Actions	19,712	19,821	18,600	22,356	24,289	26,378	24,834
Contacts/1000 Small Unit Actions	5.0	4.5	2.8	2.3	3.5	3.6	3.4
3d Nation[a]							
Contacts	Unk	Unk	Unk	3	4	10	13
Small Unit Actions	Unk	Unk	Unk	577	670	648	760
Contacts/1000 Small Unit Actions	-	-	-	5.2	6.0	15.4	17.1
TOTAL							
Contacts	143	224	145	176	248	241	234
Small Unit Actions	20,341	21,774	21,842	26,297	28,025	30,694	30,734
Contacts/1000 Small Unit Actions	7.0	10.3	6.6	6.7	8.8	7.9	7.6

Table 1 shows a secular downward trend in contact rates for both the US and RVN forces since the last two quarters of CY 1965. RVN contact rates dropped off very sharply in the first two quarters of CY66 and have now leveled halfway between late 1965 and early 1966. It also seems that the US contact rates in CY66 are only 50 per cent of those in the latter half of CY65.

a/ Not reported until mid-March, 1966.

TABLE 2

DAY AND NIGHT CONTACTS
(Weekly Averages)

	CY 1965		CY 1966				CY 1967
	3 Qtr	4 Qtr	1 Qtr	2 Qtr	3 Qtr	4 Qtr	Jan
US CONTACTS							
Day	29(66)*	78(58)	54(58)	90(74)	121(76)	113(84)	120(88)
Night	15(34)	56(42)	39(42)	31(26)	38(24)	22(16)	17(12)
Total	44	134	93	121	159	135	137
RVN CONTACTS							
Day	59(60)	57(57)	27(52)	29(56)	55(65)	58(60)	53(59)
Night	40(40)	39(43)	25(48)	23(44)	30(35)	38(40)	37(41)
Total	99	90	52	52	85	96	90
3d NATION CONTACTS a/							
Day	Unk	Unk	Unk	2(67)	3(75)	9(90)	12(92)
Night	Unk	Unk	Unk	1(33)	1(25)	1(10)	1(8)
Total	-	-	-	3	4	10	13
TOTAL CONTACTS							
Day	88(62)	135(59)	81(44)	121(69)	179(72)	180(75)	185(77)
Night	55(38)	95(41)	64(56)	55(31)	69(28)	61(25)	55(23)
Total	143	230	145	176	248	241	240

Table 2 summarizes the contacts by day and night. Day contacts seem to be playing a larger role in the total contact picture for US and Third Nation forces than for RVN forces. RVN forces have provided 51 per cent of total night contacts since June 1965 and 65 per cent in the last 4 months. The percentage of day contacts (of total contacts) increased from 66 per cent in the third quarter of CY65 to 88 per cent in January 1967. Unfortunately, the day/night data do not permit a comparison of day versus night effectiveness, because data on the number of small unit actions do not provide a day-night breakdown.

* (%)

a/ Not reported until mid-March 1966.

Operation CEDAR FALLS

Operation CEDAR FALLS (7-26 January) engaged an average of 17 U.S. maneuver battalions per week for three weeks plus an average of 5 ARVN maneuver battalions per week for two weeks. This paper will compare the U.S. effort in CEDAR FALLS with other battalion or larger size search and destroy operations and with the results of efforts in all of III Corps. The results indicate CEDAR FALLS was about as effective as other III Corps operations in terms of numbers of VC/NVA killed; based on virtually all other measures it appears to have been considerably more effective. It may also have had a significant disruptive effect on VC organization and communications. It is still too early to assess this latter effect with any assurance.

The operation took place in an area encompassing the major portion of three long-identified VC base areas 25 km NW of Saigon. These were strongly fortified, contained numerous medical, storage, training and base facilities, and the headquarters of VC Military Region Four (MR 4), as well as those of the Binh Duong VC Provincial Committee and the Ben Cat VC District Committee. From the area the VC controlled and supported guerrilla and terrorist operations in and around Saigon. Some 10 VC main force battalions and 3 local force companies were known to frequent the area but only about 1500 enemy were thought to be present in the area (with an additional 700 within a six mile radius) just before the operation.

Objectives of Operation CEDAR FALLS

II FFORCEV had considered the area as a target for a major ground operation since October of 1965 when the 173rd Airborne Bde had penetrated the area with hard fighting as a result. By the latter half of 1966 troop strength had increased sufficiently to undertake such a major operation without loss of security in other areas. The objectives of the attack were to destroy the base areas and neutralize the VC control structure, rather than to inflict a large number of personnel losses on the enemy.

Conduct of the Operation. The II FFORCEV planned to attack with two U.S. infantry divisions (reinforced), with ARVN units in support, in a maneuver designed to seal the area, trap enemy force, destroy the base area, and evacuate the civilians in the "Iron Triangle" section. As planned, during the first phase (5-7 Jan) elements of the 1st and 25th Infantry Divisions (reinforced) deployed along the flanks of the "Iron Triangle" into blocking positions under the cover of small scale search and destroy operations. During the second phase (8 Jan) a surprise air assault was launched to seal and search Ben Suc while blocking positions were further improved. In the third phase (9 Jan) an armored attack was launched from Ben Cat to the Saigon River to cut the triangle in half while an air assault was made around the Thanh Dien Forest to complete the northern encirclement. All attacking forces

then began search, destroy, and evacuation operations south to the confluence of the Saigon and Thi Tinh Rivers while the blocking forces conducted search and destroy operations in their areas of operation.

Friendly forces met no organized defense or counter attacks except for the resistance met by the 2nd Bde/25th Infantry Division on 8 January from what was later identified as the 2nd Bn/165A VC Regiment. Contact was almost exclusively with platoon or smaller sized units trying to escape the area. When the operation ended approximately 6,000 refugees were removed from the "Iron Triangle" to Phu Cuong[1], cover had been removed along the main arteries of transportation, and landing zones were prepared to facilitate quick reentry. In all, some 9 of the 100 square kilometers of the "Iron Triangle" had been cleared. The area was declared a specified strike zone (area may be hit by air or artillery without prior clearance from the province chief). Achievements of the operation were credited to the surprise of the attack, the mass of troops employed, the use of Psyops (approximately 5,600,000 leaflets were dropped), and the cooperation between U.S. and RVN civil and military officials.

Results. This operation may be evaluated in terms of its own objectives, comparative results with other large operations, its relationship to other activities in the III Corps region where it took place, and its contribution to the war as a whole.

1. Objectives: The objectives mentioned earlier were destruction of the base areas and neutralization of the infrastructure.

- In regard to the base areas, II FFORCEV estimates that the major portion of the enemy's bases (in the form of tunnels, bunkers, storage and medical facilities) were destroyed to the best of its ability. However, tunnel systems (the heart of the base) cannot be literally obliterated, only interrupted by explosives and saturated with relatively short duration chemicals. Each major unit headquarters was provided with the latest maps and machine "printouts" of the location of VC installations and fortifications. These proved to be accurate. For example, the 11th Armored Cavalry Regiment, which located 177 separate facilities in its sector, found that 156 or 88% were within 500 meters of their reported locations, the average distance being 200 meters.

Whether the enemy can resume operations in this base area remains to be seen. It takes a minimum of three months following the operation to determine whether there is a resumption of enemy activity indicative of a base.

1/ However, the refugees were not required to remain there until resettled. There have been reports that half of them have disappeared and perhaps returned to their old homes.

In regard to infrastructure, a review of the interrogation reports of the 731 ralliers, prisoners, and detainees showed that about 70% were from the VC infrastructure in the area (guerrillas and combat support personnel). Only a few top level cadre were identified: an executive officer of Tay Ninh Military School, a captain from the MR 4 Political Staff Section, a lieutenant from a small guard unit, and two NVA political cadre.

In addition, more than 450,000 pages of documents were captured. These will take considerable time to evaluate; no doubt many are of negligible value to us and many have meaning only in the context of all other captured documents. A few, however, were considered of outstanding value, such as the Le Duan letter of March 1966.

2. Comparison with Other Large Operations: Table 1 compares CEDAR FALLS with all other U.S. Army search and destroy operations of 100 battalion days or more since 1 August 1966 in terms of battalion days of operation, friendly losses, enemy losses, and ratios between these quantities. The statistics are only those of the U.S. effort, since the statistics of the ARVN effort are scattered and incomplete. It also shows total figures for all U.S. battalion-sized or larger search and destroy operations from August 1966 to February 1967.

Compared with other large operations, CEDAR FALLS inflicted more enemy losses (KIA and captured) per battalion day than 8 of the 9 compared operations and was 72% better than the average of all U.S. operations from August to February. It had a higher enemy KIA/friendly KIA rate than 7 of the 9 compared operations. In terms of weapons captured per battalion day CEDAR FALLS was 63% better than its nearest competitor, Geronimo I, among the compared operations, and was more than four times better than the average of all U.S. battalion or larger operations from August to January.

3. Relation to III Corps: Table 2 presents a comparison between the efforts expended, personnel attrited, arms (to include ammunition, grenades, etc.) and food captured or destroyed in CEDAR FALLS and in the whole III Corps for the month of January. As in the last section, the figures for CEDAR FALLS represent only the U.S.; the III Corps figures for efforts expended represent only the U.S., while those for personnel, arms, and food represent everything taken by all friendly forces.

CEDAR FALLS represented only 43% of the battalion days in III Corps, and received 43% of the B-52 sorties and only 24% of the tactical fighter sources in III CTZ in January 1967. It produced 42% of the VC KIA, only slightly less than the effort in battalion days, but 72% of the captured arms and 91% of the rice taken in III Corps. CEDAR FALLS appears to have more than pulled its weight in the categories considered.

4. Contribution to the War: Unfortunately, the impact of Operation CEDAR FALLS on the war as a whole (either as a type or as an individual operation) cannot be measured at this time. This type of evaluation requires an historical perspective on information about the enemy not yet available. It is clear, however, that attrition of enemy personnel is not a completely adequate criterion of effectiveness of ground operations even when linked to the ability and will of the enemy to replace them. We must also consider arms and ammunition, food (chiefly rice), and base areas (for resupply, regrouping, R&R, etc.) linked, of course, to the enemy ability and will to replace them. Operation CEDAR FALLS was aimed precisely at a base area and took large caches of arms, ammunition, and food. Until we can adequately evaluate the impact of these other variables it cannot be finally said, in the context of the whole war, whether the month's effort of some 25,000-30,000 personnel (including all types of support) to destroy the base area (if it has been destroyed), kill 720 VC, capture enough rice to feed 5 regiments for a year, and capture large quantities of arms and ammunition was the most profitable one possible. At this point judgment, not statistical analysis, says yes.

TABLE 1

FRIENDLY AND ENEMY LOSSES IN SEARCH AND DESTROY OPERATIONS

	CEDAR FALLS 1/8 - 1/26	PAUL REVERE II 7/31 - 8/25	JOHN PAUL JONES 7/21 - 9/4	TOLEDO 8/9-9/7	PAUL REVERE III 8/25 - 10/18
Bn Days Opn	334	263	166	125	279
En KIA (BC)	720	620	158	11	46
En Capt	213	99	60	10	13
Wpns. Capt.	578	113	55	61	41
Fr. KIA	72	68 + 1 MIA	12	9	3
Fr. WIA	337	248	68	43	17
En KIA/BDO	2.16	2.36	.95	.09	.16
En Capt/BDO	.64	.38	.36	.08	.05
En KIA & Capt/BDO	2.79	2.73	1.31	.17	.21
Wpns. Capt/BDO	1.73	.43	.33	.49	.15
Fr. KIA/BDO	.22	.26	.07	.07	.01
Fr. WIA/BDO	1.01	.94	.40	.34	.06
En KIA/Fr. KIA	10.00	8.99	13.17	1.22	15.33
En KIA & Capt/Fr. KIA	12.96	10.42	18.17	2.33	19.67

a/ Not available.

Source: Guava File, NMCS

AUL REVERE III 8/25 - 10/18	ATTLEBORO 9/14-11/25	GERONIMO I 10/30-12/4	PAUL REVERE IV 10/18-12/31	PICKETT 12/8-1/19	THAYER II 10/24-2/11	All U.S. Search and Destroy Opns Aug 66-Feb 67
279	391	118	708	128	741	8,708
46	1,062	149	962	62	1,667	12,565
13	40	58	112	33	196	1,391
41	149	125	295	125	451	3,547
3	115+5 MIA	15	136	20	193+8 MIA	1,686
17	517	74	399	70	826	N/A a/
.16	2.72	1.26	1.36	.48	2.25	1.44
.05	.10	.49	.16	.26	.26	.19
.21	2.82	1.75	1.52	.74	2.51	1.62
.15	.38	1.06	.42	.98	.61	.41
.01	.31	.13	.19	.16	.27	.19
.06	1.32	.63	.42	.55	1.11	N/A
33	8.85	9.93	7.07	3.10	8.29	7.45
37	9.18	13.80	7.90	4.75	9.27	8.37

OASD/SA/SEA Programs Div.
April 15, 1967

TABLE 2

CEDAR FALLS AS PERCENTAGE OF III CORPS FOR JANUARY 1967

EFFORT	Unit	CEDAR FALLS	III Corps 1/	CF/III Corps	
Bn Days Opn.	ea	334	782	42.7%	
B-52 Sorties	ea	102	238	42.9%	
Tac Sorties	tons	1,113	4,732 3/	23.5%	
Psyops Leaflets	ea	5,612,000	38,900,000	14.4%	
PERSONNEL ATTRITED					
V.C. KIA(BC)	ea	720	1,736	41.5%	
V. C. Capt.	ea	213	N/A		
Ralliers	ea	518	713	72.7%	
ARMS CAPT.					
Ind. Weapons	ea	555	940	59.0%	
Crew Weapons	ea	23	31	74.2%	
S.A. Ammo	rds	60,896	74,826	81.4%	avg. = 71.5%
Large Caliber Ammo	rds	238	463	51.4%	
Bombs	ea	302	382	79.1%	
Grenades	ea	1,979	2,333	84.8%	
Mines	ea	883	1,252	70.5%	
FOOD CAPT.					
Rice	tons	3,636	4,013	90.6%	
Salt	lbs	9,000	15,778	57.0%	

Sources: Guava File, NMCS; CEDAR FALLS After-Action Report; MACV Monthly Summary for January 1967; DIA Intelligence Bulletins.

1/ Includes Capital Military Region, Gia Dinh, and Rung Sat Special Zone.

2/ These are select items only. Other items (e.g. medical supplies, clothes, documents, etc.) are either non-quantifiable or recorded in incompatible quantities.

3/ Represents only Close and Direct Air Support effort in the III Corps.

FORCE REQUIREMENTS IN I CORPS

In an attempt to determine possible future requirements for US forces in I Corps, the impact of past increases in friendly combat strength on the enemy KIA and population control was analyzed.

Population control in I Corps has been almost at a standstill since last fall due to a diversion of forces to fight infiltration from across the DMZ. A total force of about 35-37 Marine battalion equivalents (including the present 20 USMC & 3 ROKMC battalions) would be required to simultaneously defend the DMZ, patrol the mountainous areas of CTZ and to bring the remainder of the coastal population of I Corps into the Marine Tactical Area of Responsibility (TAOR). These battalions would virtually eliminate VC domination of 90% of the population of I CTZ, but probably would not fully secure them from VC harassment.

The weekly enemy KIA rate in I Corps has tended to be steady at 250-280 per week since September 1965 in spite of a 50% increase in friendly forces. Exceptions to this occurred in certain periods (July-August 1966, January-March 1967) in which the enemy chose to initiate large battles. In those periods the enemy loss rates increased 2 to 3 times. Allied operations responding to enemy activity, particularly infiltration across the DMZ, appear to be the primary influence on enemy KIA weekly average. Thus no prediction of enemy losses is possible.

Population Control

In our previous analysis of USMC pacification efforts in I Corps we stated that after September the USMC TAOR was not expanded and the pacification effort leveled off despite a continued build-up in troop strength. The primary reason was the need for forces at the DMZ in response to stepped up infiltration from the north. Since the Marines have reached their limit of authorized troop strength and they are now carrying two burdens, additional US forces have been temporarily moved from II and III CTZ to preserve gains made to date while coping with the added NVA forces. Even more forces would be needed to continue the desired expansion of the TAORs to form a continuous strip along the coast and to raise the level of security of the civilians within the TAOR.

Marine reports indicate some 90% of the I Corps population is concentrated along the coast. In September, when expansion leveled off, 1,087,000 people or 41.3% of the I Corps population were in the Marine TAOR. The remaining coastal population was approximately 1,283,000 persons.

An analysis was made to determine how many more Marines would be needed to bring the remainder of the coastal population within the TAOR and at the same time to maintain an adequate force at the DMZ.1/ Projections were based on the 15-month period July 1965 through September 1966, when the TAOR was expanding. We compared monthly increases in the number of civilians in the TAOR against the monthly increase in the maneuver battalion strength including the ROK MC.

1/The 1967 goal of the USMC is to have 74% (1,782,000) of the I Corps population 60% + secured (roughly equivalent to being secured & secured). The 90% goal is the ultimate Marine objective

(Thousands, End Quarter)

	1965 July	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1967 Jan	1967 Feb	Projected
No of USMC/ROK MC Bns in TAOR	10	13.3	13.3	16.7	18.7	19a/	14b/	15c/	15c/	29c/
No of Civilians in TAOR	198.8	350.1	436.1	577.4	797.9	1086.6	1109.5	1112.8	1170.7	2370

a/ Plus 4 on DMZ. b/ Plus 9 on DMZ. c/ Plus 8 on DMZ.

After September (the point at which the TAOR expansion leveled off) if the expansion had continued at the previous rate, each additional battalion would bring 89,000 more civilians within the TAOR. At this rate it would take an additional 14 battalions to complete the pacification of the coastal area provided the Marines wished to maintain the same ratio of troops to civilians that they had in September. From October on, the Marines have maintained between 13 and 15 battalions (including Koreans) in support of the TAOR and mountain patrols, diverting 8-10 battalions to the north. Taking this as the minimum necessary to maintain the TAOR at the point it leveled off, we can project that a total of 35-37 USMC battalion equivalents is needed to expand the TAOR to encompass 90% of the I Corps population and at the same time keep 12a/ battalions on the DMZ (as estimated by MACV for Practice 9).

Required (USMC Bn Equiv.)	
Hold TAOR	13-15
Increase TAOR	14
DMZ	8
	35-37

Available (USMC Bn Equiv.)	
20	USMC
3	ROKMC
8	ARVN
2a/	USAR (Practice 9)
33	
4a/	USAR (Temp)
37	

In view of the recent introduction of 13 ARVN battalions (7.7 weighted battalions) to formerly Marine tasks within the TAOR the additional battalion equivalents required would be only 4-6. The 6 temporary Army battalions (4 Marine equivalent battalions) already sent to reinforce I Corps, would be sufficient to meet the requirement if maintained in I CTZ along with the 3 Army battalions (2 equivalent) recently added to Program #4 for Practice 9.

Expanding the TAOR does not, however, complete the pacification of I Corps. When a VC area is first under Marine control it is considered to be 20% secure in the Marine system or undergoing clearing in the GVN system; from there on progress in securing is not determined by number of troops only but by a number of other criteria such as revolutionary development, permanent defense measures established. The Marine Corps is very successful in the initial clearing and securing stages. It is the topmost category, secured, which has shown no progress in the last year; as the table below indicates, it actually declined by 8,800.

a/ Two USMC battalions equivalent to 3 U.S. Army battalions in strength.

CIVILIAN POPULATION CONTROL IN I CORPS
(Thousands)

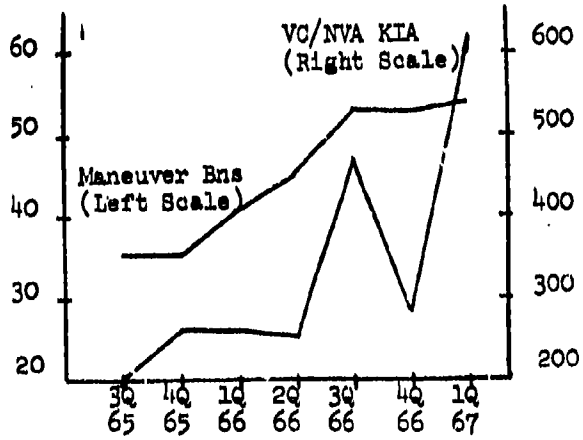
	1965		1966				
	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	End 1965-End 1966
Secured	883.7	938.0	950.2	916.4	934.3	929.2	- 8.8
Undergoing Secured	134.1	153.0	268.9	283.7	395.2	370.0	+216.1
Undergoing Clearing	713.1	591.0	483.4	499.3	661.1	568.8	- 22.2
Uncontested	49.2	66.2	36.9	36.9	36.9	124.4[a]	+ 58.2
VC Control	809.7	840.7	879.7	886.0	606.0	623.3	-217.4
Total	2589.8	2589.8	2619.1	2622.3	2633.5	2615.7	+ 25.9

a/ Increase due to redefinition of category.

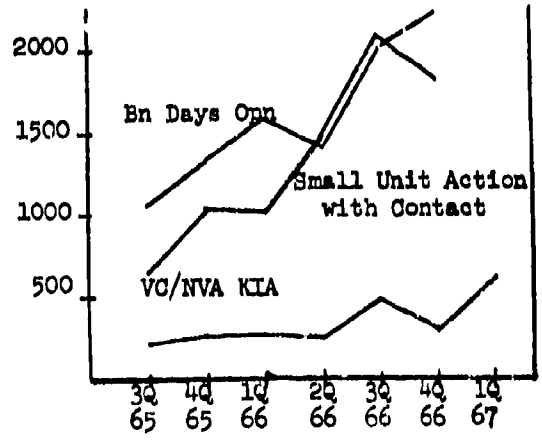
Enemy KIA

Although the general trend of the weekly enemy KIA is up over the past 20 months, peaks in the graph below are generally the result of large unit operations by the USMC.

VC/NVA KIA vs TROOP STRENGTH
(Weekly Average)



VC/NVA KIA vs TROOP ACTIVITY



	1965			1966			1967
	3rd Qtr	4th Qtr	1st Qtr.	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr
Maneuver Battalions[a/]	35.3	35.3	40.9	45.1	52.8	52.8	54.0
VC/NVA KIA[b/]	205	263	262	253	471	288	616[c/]
KIA/Man. Battalion	5.8	7.5	6.4	5.6	8.9	5.5	11.7
Small Unit Action with contact	666	1026	1002	1497	2088	1809	n.a.
Bn Days of Operation	1056	1337	1578	1397	2013	2219	n.a.

a/ Weighted (US Army = 1): USMC = 1.5, ROKMC = 1.5, RVN = .59
b/ Weekly average by quarter.
c/ January and February only.

For example, in December 1965, Operation HARVEST MOON accounted for 407 enemy KIA. In July and August of 1966, Operation HASTINGS was conducted in the vicinity of the DMZ and Operation PRAIRIE was begun in the same area. These two operations plus the activity of the first quarter of 1967, which caused the KIA rate to skyrocket, were the results of large-scale enemy infiltration and activity, particularly by the 324B NVA Division and parts of the 341st. Operation PRAIRIE II in February and March 1967 reported a total of 693 enemy KIA.

The weekly average of enemy KIA in I Corps was 412 in January 1967 up from 288 in fourth quarter 1966. In February it leaped to 820 and it is not yet possible to determine if this is a trend or if the rate will return to previous levels later in the year.

Curiously, there is little direct correlation between KIA and maneuver battalions, battalion days of operation or small unit actions. It is a willingness for the enemy to initiate large battles which causes the enemy KIA to go up. At the same time he diverts us from the pacification role. Statistics on enemy killed cannot be predicted on the basis of increases in friendly force strength. Similarly, predictions based on friendly activity cannot be made accurately since much of our activity is based on enemy initiatives. Should the enemy continue to engage in large-scale attacks his losses will continue to rise accordingly.

FORCE EFFECTIVENESS IN II CORPS

Pacification progress in II Corps was greater than in I Corps during CY 1966. As in I Corps (see April SEA Analysis Report) enemy KIA rates in II Corps cannot be predicted on the basis of increases in either friendly strength or friendly activity.

Population Control*

Table 1 shows an increase of 342,000 people in the II Corps secured category in contrast to I Corps' decrease of 8,800.

TABLE 1

CIVILIAN POPULATION CONTROL IN II CORPS
(thousands)

	1965		1966				
	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	End 1966 - End 1965
Secured	937	1020	1133	1079	1079	1362	+ 342
Undergoing Securing	112	116	72	171	155	136	+ 20
Undergoing Clearing	778	809	800	788	825	789	- 20
Uncontested	7	10	9	53	26	32	+ 22
VC Control	779	678	614	582	599	425	- 253
Total	2613	2633	2628	2673	2684	2744	+ 111

In comparing I Corps and II Corps in the VC control category, II Corps again was ahead--a decrease of 253,000 persons under VC control versus 217,000 persons for I Corps. Since II Corps had a slightly faster rate of increase in friendly maneuver battalion strength, the average reduction in the VC controlled population per battalion per month were essentially equal: 11,000 in II Corps versus 10,700 in I Corps.

Enemy KIA

II Corps data in Table 2 and graph A show no correlation between enemy KIA and increases in friendly battalion strength. Table 2 and graph B also indicate that we cannot predict future enemy KIA rates from previous trends in battalion days of operations and small unit actions with contact.

* Pacification progress in II Corps cannot be measured in terms of increases in the Tactical Areas of Responsibility (TAOR). An Army TAOR is a base area; the enemy main forces are outside the TAORs. The USMC TAOR is an area in which the Marines operate; they raise security inside gradually expanding TAORs.

The two peaks in enemy KIA are due to two large operations in each of the two quarters. In 1st quarter 1966 Operations VAN BUREN and MASHER/WHITE WING accounted for 1701 enemy KIA or 131 per week of the 401 weekly average for that quarter. Operations THAYER II and SAM HOUSTON killed 2400 enemy in 1st quarter 1967, or 185 of the 441 weekly average. If the enemy had chosen to fight in those quarters as he fought in the others, his losses would have been 270 and 256 per week, respectively. The average for the seven quarters would have been 300 per week, with a range of only ± 50 per week.

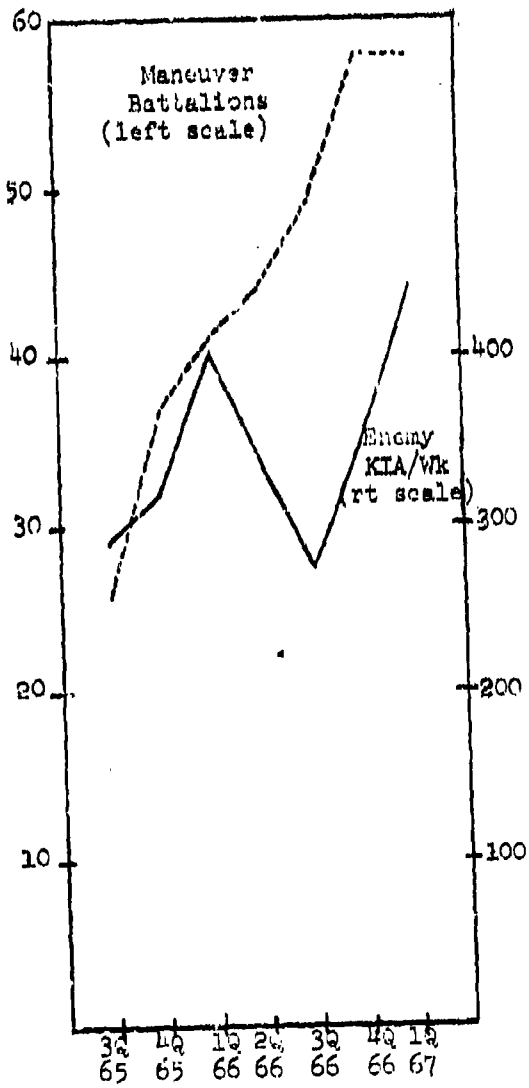
TABLE 2

	1965			1966			1967
	3Q	4Q	1Q	2Q	3Q	4Q	1Q
Enemy KIA per week	290	317	401	335	276	349	441
Battalion Days Operation	1466	1817	2762	2887	3147	4097	4987
Small Unit Action w/Contact	348	413	201	246	207	211[b]	304
Maneuver Bns [a]	25.8	36.8	41.0	44.0	49.3	57.7	57.7

a/ Weighted: U.S. Army = 1, ARVN = .59, ROK = 1, ROK MC = 1.5.
b/ U.S. Army did not report Small Unit Actions w/Contact after September 1966.

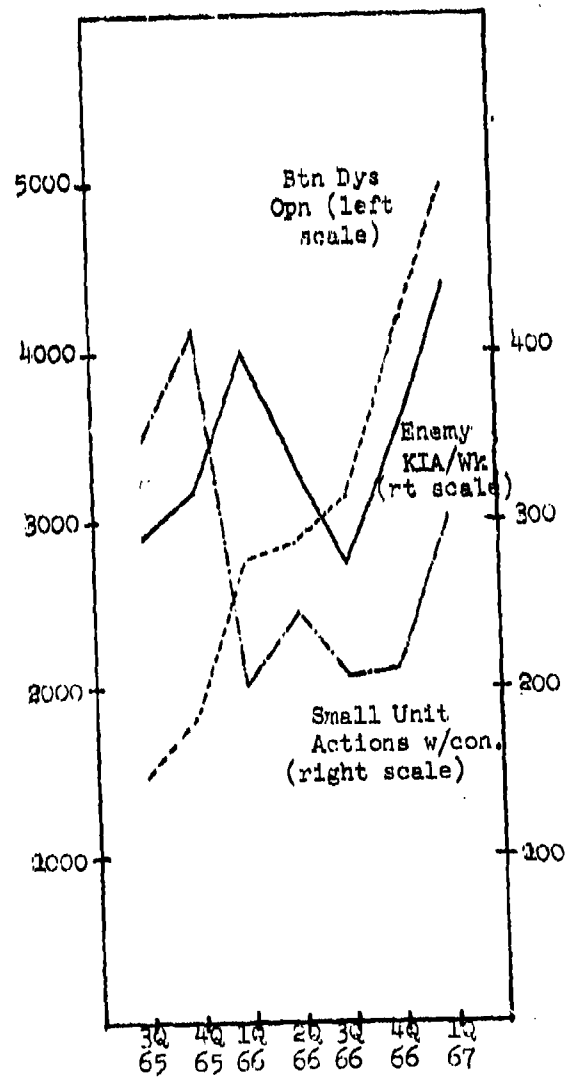
Graph A

Enemy KIA vs Friendly Strength



Graph B

Enemy KIA vs Friendly Activity



LARGE U. S. ARMY GROUND OPERATIONS IN II CORPS

The U. S. Army conducted 60 search and destroy operations in II Corps from August 1965 to March 1967, using over 75% of the battalion days of operation (the rest were used for security operations). The search and destroy operations killed (body count) 14,526 VC/NVA in 7,055 battalion days of operation - 2.1 KIA per battalion day. However, while the average number of battalion days per operation and the average number of battalions committed per operation has increased steadily, the enemy killed per battalion has decreased equally as sharply since the 1st quarter of 1966. (See Table 1) The lowest point occurred in the 3rd quarter of 1966, the same quarter in which there was the highest average of battalions committed per operation. (See graphs)

The last two quarters of 1965 seem to represent a period of learning for both the enemy and the U. S. In the subsequent period between January 1, 1966 and April 5, 1967 the U. S. Army started and completed 32 search and destroy operations[a] in II Corps. Table 2 groups these operations according to size, both in terms of battalions committed and battalion days of operation. Short operations produced between two and three times as many enemy killed per battalion day as long operations.

a/ This number does not equal the one found on Table 1 because (1) long operations were not divided; (2) two operations included on Table 1 were not completed by April 5th; (3) four small operations totalling 24 battalion days with only one or two committed battalions were eliminated.

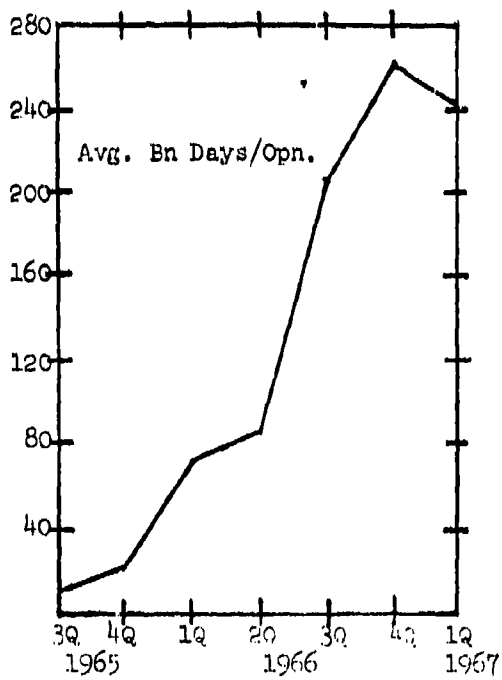
TABLE 1

U.S. ARMY SEARCH AND DESTROY OPERATIONS IN II CORPS

	1965		1966				1967
	3Q	4Q	1Q	2Q	3Q	4Q	1Q
No. Operations 1/	7	11	9	12	6	7	8
Avg Bns/Opn.	1.6	2.3	3.5	3.3	6.5	4.7	4.5
Avg Bn Days/Opn.	10.3	22.6	71.9	86.1	207.7	263.9	245.1
Avg VC/NVA KIA/Opn	46.7	152.9	199.0	236.1	263.5	470.6	377.3
VC/NVA KIA/Bn Day	4.54	6.76	2.77	2.74	1.27	1.78	1.54
VC/NVA KIA/US KIA	13.63	5.53	5.83	8.64	10.13	9.89	6.33

1/ Operations are grouped by the quarter in which most of the operation took place. However, 4 operations took place in two quarters, e.g., Adams. These were divided into two operations and the results divided between quarters in proportion to the days in each quarter.

Source: NMCS Computer File, After Action Reports, and PEPAC Summary. Every effort was made to obtain all operations, but a few may have been missed due to missing records early in the war.



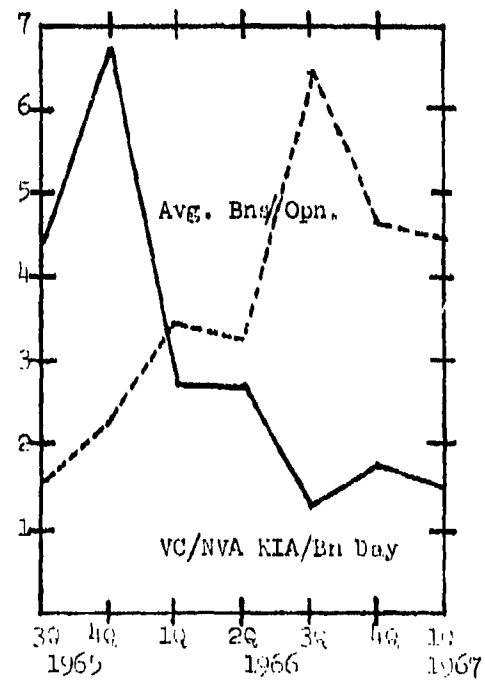


TABLE 2

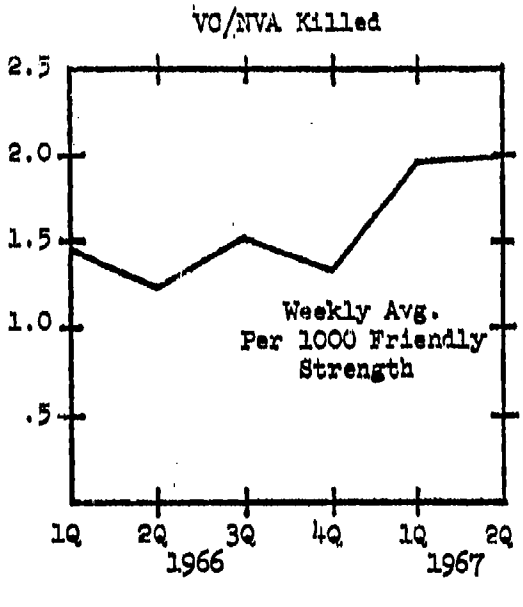
ARMY SEARCH AND DESTROY OPERATIONS IN II CORPS
JANUARY 1, 1966 - APRIL 5, 1966

SIZE		RESULTS			
Range of Bn Days	Bns Committed	No. Opers	Bn Days	VC/NVA KIA	VC/NVA KIA/Bn Day
over 100	4 or more	11	3900	7123	1.83
over 100	less than 4	7	1260	1511	1.20
25-100	4 or more	4	252	946	3.75
25-100	less than 4	10	424	1499	3.54

EFFICIENCY IN INFLICTING LOSSES: ENEMY VERSUS FRIENDLY

During the first half of 1967 the enemy loss rate increased more than the friendly loss rate. But enemy efficiency in killing friendly forces has remained comparable to friendly force efficiency in killing VC/NVA. For every 1000 VC/NVA forces 1.5 friendly forces per week were killed; for every 1000 friendly forces, 1.5-2.0 VC/NVA per week were killed.

GRAPH 1



GRAPH 2

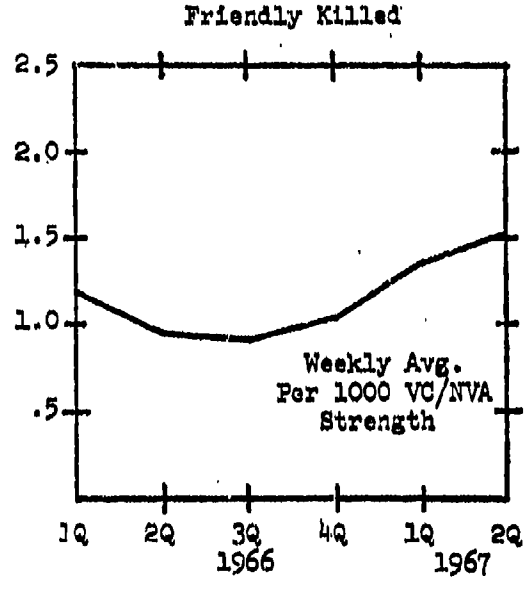


TABLE 1

VC/NVA KILLED PER 1000 FRIENDLY STRENGTH
(Weekly Average)

	1966 1st Qtr	1966 2nd Qtr	1966 3rd Qtr	1966 4th Qtr	1966 Avg	1967 1st Qtr	1967 2nd Qtr
VC/NVA Killed							
Body Count	1005	915	1200	1150	1067	1750	1800
Died of Wounds a/	350	320	420	405	374	615	630
Total Killed	1355	1235	1620	1555	1441	2365	2430
Avg. Friendly Strength (000)	930	982	1043	1144	1025	1188	1217 b/
VC/NVA Killed Per 1000 Friendly Strength:							
Body Count	1.1	.9	1.2	1.0	1.0	1.5	1.5
Total Killed	1.5	1.3	1.6	1.4	1.4	2.0	2.0

a/MACV Factor of .35 times body count.
b/April-May average.

Table 1 and Graph 1 show that by body count, friendly forces increased their weekly VC/NVA kill rate from 1.1 per 1000 friendly strength in 1966 to 1.5 in 1967; additions of the MACV died of wounds raises the rates from 1.4 in 1966 to 2.0 in 1967. Thus, friendly efficiency has increased about 50%.

Table 2 and Graph 2 show that VC/NVA forces increased their weekly kills of friendly troop from 1.0 per 1000 VC/NVA strengths in 1966 to about 1.5 in 1967. Thus, VC/NVA forces also increased their efficiency by 50%.

TABLE 2

FRIENDLY KILLED PER 1000 VC/NVA STRENGTH
(Weekly Average)

	1966					1967	
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1966 Avg	1st Qtr	2nd Qtr
Friendly Killed	315	265	270	305	290	395	440
Avg. VC/NVA Strength (000)	265	282	297	291	284	289	289
Friendly Killed Per 1000 VC/NVA Strength	1.2	.9	.9	1.0	1.0	1.4	1.5

Table 3 shows that the straight Enemy/Friendly Kill ratio for 1967 is higher than the 1966 ratio. But when the two ratios are adjusted to reflect opposing force strengths, the 1966 and 1967 ratios remain the same.

TABLE 3

KILL RATIOS

	1966					1967	
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1966 Avg	1st Qtr	2nd Qtr
Enemy/Friendly							
Body Count Only	3.2	3.5	4.4	3.8	3.7	4.4	4.1
Body Count & Died of Wounds	4.3	4.7	6.0	5.1	5.0	6.0	5.5
Enemy KIA Per 1000 FR/Friendly KIA Per 1000 Enemy							
Body Count Only	.9	1.0	1.3	1.0	1.0	1.1	1.0
Body Count & Died of Wounds	1.2	1.3	1.7	1.3	1.4	1.5	1.3

CONFIDENTIAL

ALLOCATION OF GROUND FORCE EFFORTS IN SVN

U.S. forces reportedly accounted for 70% of the search and destroy effort in SVN. They reportedly spend 80% of their time on such operations. About half of their total effort is against regional main force units.

In August 1967, MACV began to account for all battalion days available to US, RVN and FWF maneuver battalions in accordance with the categories and definitions set forth below. The maneuver battalion days are reported without any adjustment for the varying number of companies per battalion* or any weighting for the significant variation in numbers of personnel assigned to battalions (ARVN battalions are much smaller than US-FW battalions). Moreover, it appears that the data is not flowing smoothly yet and the figures used in this report represent only a two week sample** from August. The categories and functions are as follows:

SEARCH AND DESTROY (REGIONAL): Operations to destroy or neutralize VC/NVA main forces, base areas and supply points.

SEARCH AND DESTROY (PROVINCIAL): Operations conducted continguous to populated areas under GVN control or to areas in which RD is in progress which assist in providing a secure environment by destroying or neutralizing VC/NVA forces which pose a potential or immediate threat to those areas.

SEARCH AND DESTROY (LOCAL): Operations which are conducted in or adjacent to RD areas for the purpose of destroying VC guerrilla and infrastructure.

SECURITY OPERATIONS: Operations whose purpose is to protect political, economic and military resources and installations, such as district capitals or populated areas, to include previously pacified areas; lines of communications; food stores and production areas; and depots and base areas.

RESERVE: Units in reserve.

All of the foregoing categories except reserve imply that forces are active. Table 1 below therefore indicates that all forces are active more than 95% of the time, since less than 5% of the total battalion days are reported as reserve. But units train, refit, rest, and weather probably interferes with operations. An explanation of how the system reports units in these categories is being sought.

* The number of companies in a battalion can vary as follows: USA-3, USA-augmented 4, USMC-4, FW-3 or 4, ARVN 3, VNMC 4.

** Figures for both weeks (aug 6-12 and 20-26) were identical.

TABLE 1

USE OF FORCES BY NATIONALITY
(% of Time Employed)

	US	FWF	RVN	ALL FORCES
Search & Destroy				
S&D(R) Regional	46.9	26.7	6.4	21.0
S&D(P) Provincial	12.0	53.4	17.9	19.2
S&D(L) Local	21.1	9.3	17.0	17.6
Subtotal	80.0	89.4	41.3	57.8
Security	19.7	10.6	51.9	38.0
Reserve	.3	--	6.8	4.2
Total	100.0	100.0	100.0	100.0

1. US forces spend 80% of their time on search and destroy operations including almost half of their time operating against regional main force units. Less than 1% of the time is spent in reserve. Thus, the numbers confirm the image of US forces engaged mostly in the "main force" war.

2. Free World forces spend 90% of their time on search and destroy operations including over half of their time operating against provincial forces. No time is spent in reserve.

3. RVN forces spend more than half of their time on security missions (the allocation of 54 ARVN battalions to full time support of revolutionary development activities probably helps account for the high proportion of effort here). RVN search and destroy activities are fairly evenly split between operations against the provincial and local forces, with a few operations against regional main forces. Seven percent of the time is spent on reserve.

4. Overall, the search and destroy missions appear to be evenly proportioned against regional, provincial, and local units with about 60% of the total time spent on search and destroy operations.

Table 2 which shows the respective forces' share of each mission, indicates that:

1. US forces accounted for 70% of the total battalion days allocated to search and destroy operations against regional main force units.

2. RVN forces accounted for more than half of the battalion days of operation against provincial units and local force units. They also accounted for 80% of the battalion days of security operations and almost all of the reserve time.

TABLE 2

USE OF FORCES BY MISSION
(% of Battalion Days Employed)

	Search and Destroy			Security	Reserve
	Regional	Provincial	Local		
US	70.4	19.8	37.8	16.3	2.6
FWF	11.3	24.6	4.7	2.5	-
RVN	18.3	55.6	57.5	81.2	97.4
Total	100	100	100	100	100

Table 3 shows the allocation of total forces within each Corps Tactical Zone in South Vietnam. It indicates that:

1. In I Corps, $\frac{2}{3}$ of the total effort is allocated to search and destroy operations and half of that is against regional main forces.

2. In II Corps 85% of the total effort is reportedly allocated to search and destroy operations with most of this effort split between operations against regional and provincial forces. II Corps has the lowest proportion of effort devoted to security.

3. In III Corps less than half of the effort is devoted to search and destroy operations, mostly against local forces with very little effort against regional main forces. III Corps has the highest proportion of effort devoted to reserve, probably because it is the home of the RVNAF general reserve units.

4. In IV Corps, 70% of the effort is devoted to security with the remainder evely split among search and destroy operations against regional, provincial and local VC units. The low proportion of search and destroy activity undoubtedly reflects the absence of US units.

USE OF FORCES BY CORPS
(% Of Time Employed)

Search & Destroy	I CTZ	II CTZ	III CTZ	IV CTZ a/	COUNTRYWIDE TOTAL
Regional	33.2	36.7	5.1	8.2	21.0
Provincial	13.0	36.9	14.8	9.3	19.2
Local	18.8	10.4	25.7	10.0	17.6
Subtotal	65.0	84.0	45.6	27.5	57.8
Security	35.0	13.4	44.9	70.0	38.0
Reserve	---	2.6	9.5	2.5	4.2
Total	100.0	100.0	100.0	100.0	100.0

a/ ARVN battalions only.

The new reporting format shows promise of being exceptionally useful and as the data shakes down, we will publish more extensive studies of it.

January 68

8

VC/NVA KILLED BY ARMY HELICOPTERS AND CIDG FORCES

Civilian Irregular Defense (CIDG) forces and US Army helicopters accounted for 23% of all VC/NVA forces killed in South Vietnam during January - November 1967, according to the VC/NVA combat death figures in the USARPAC Monthly Highlights and the 5th Special Forces Group's Monthly Operational Summaries. The table indicates that Army helicopters accounted for 15% of the total, and CIDG forces for 8%, with both forces claiming a larger proportion of the VC/NVA KIA as the year progressed.

VC/NVA KIA ATTRIBUTED TO
US ARMY HELICOPTERS AND SVN CIDG FORCES
(Monthly Average)

	1967 1st Qtr	2nd Qtr	3rd Qtr	Oct Nov	Avg Jan-Nov
SVN TOTAL VC/NVA KIA					
Total VC/NVA KIA[a]	7586	7797	6696	6967	7288
KIA Attributed to:					
CIDG[b]	586	658	466	723	598
US Army Helicopter[c]	703	1232	1203	1334	1098
% Helicopter	9	16	18	19	15
% CIDG & Helicopter	17	24	25	30	23
II & III CTZ					
Total VC/NVA KIA[e]	3895	3056	2460	3196	3148
KIA Attributed to:					
CIDG[b]	325	421	326	492	382
US Army Helicopter[d]	490	860	840	935	770
% Helicopter	13	28	34	29	24
% CIDG & Helicopter	21	42	47	45	37

a/ OSD Statistical Summary, Table 1.
b/ Monthly Reports - CIDG, 5th Special Forces Group.
c/ USARPAC Monthly Highlights.
d/ 70% of US Army helicopter kills are assumed to have occured in II and III CTZ.
e/ OSD Statistical Summary, Table 53.

About 44% of all VC/NVA killed in II and III CTZ during the April - November 1967 period may be attributable to Army helicopters and CIDG forces, with the helicopters accounting for about 30% of the total. This finding is based on the assumption that II and III CTZ account for 70% of all VC/NVA killed by helicopter, since most of the US Army armed helicopters are reportedly located there. (CIDG figures are available by CTZ.)

Thus, the figures in the table would indicate that Army helicopters and CIDG forces are playing a major and increasing role in carrying out the allied strategy of attrition, particularly in II and III CTZ. We are not certain, however, that all of the CIDG and Army helicopter kills are counted in the MACV total estimate of VC/NVA killed, although the Special Forces and USARPAC report their figures as confirmed. We assume that the MACV reported enemy KIA include "confirmed" kills inflicted by: US Army, USMC, CIDG and FW ground forces; USN, VNN, and FW Naval forces; USAF, USMC, USN and VNAF tactical air sorties; B-52 sorties; ARVN, VNMC, RF, and PF. If the CIDG and Army helicopter kills are fully counted in the MACV total, these two forces are extremely efficient in killing the enemy compared to most of the other forces. For example, the CIDG, with about 3% of the total allied forces in South Vietnam, accounted for about 8% of the enemy killed; they accounted for 12% in II and III CTZ, with only 4% of the allied strength there.

May 68

RESULTS OF FRIENDLY LARGE UNIT OPERATIONS

Since August 1966, US forces have consistently lost about 60% of their KIA in large unit operations they initiated. About 64% of all enemy KIA were killed in allied large operations. The enemy/US kill ratio dropped 20% during second quarter 1967 and remained lower than 1966 levels until the 1968 Tet offensive.

Table 1 shows that in most of the quarters since August 1966 about 40% of all allied KIA were killed in large operations we initiated. US forces consistently lost about 60% of their KIA in large unit operations; RVNAF lost about 25%. Third nation KIA averaged 29%, but the portion of their total KIA killed in large operations declined steadily during the period. This resulted primarily from a sharp II CTZ decline in the number of ROK forces killed in large operations. I CTZ had the most US KIA in large operations.

Table 2 shows that about 64% of all enemy KIA were killed by friendly large unit operations in the 20 month period from August 1966 through March 1968; throughout most of the period the percentage was a steady 71-75%. After falling to 44.7% in Jan-Feb 1968 as a result of the Tet offensive, the percentage resumed its former level in March 1968 (71.7%). I CTZ had the most enemy KIA in large operations (39% of the total). The I CTZ enemy KIA rate jumped sharply at the beginning of 1967 and has remained higher than the other CTZ's ever since.

Table 3 shows an average kill ratio of 7.5 enemy KIA for each allied KIA in large operations. Third nation forces had the highest ratio, averaging 13.3; US forces averaged 7.9, followed by RVNAF at 6.3. ROK forces reportedly killed 22.2 enemy for every ROK KIA in II CTZ, but averaged only 7.4 in I CTZ.

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a/ A large operation is defined as an operation conducted by a battalion size or larger force. However, the operations reported in this category may actually contain many small unit actions. II CTZ, for example, reports large US operations only; no US small unit actions at all are reported.

b/ The source for most of the data in this article is the JCS GUAVA computer file. The KIA data in the file are taken from operational reports and are not updated to include died of wounds figures. We also know that operations are occasionally reported in the wrong CTZ, and that other errors exist. Despite the errors, we believe that the GUAVA data are useful for general trend analysis.

TABLE 1

FRIENDLY KIA IN LARGE UNIT OPERATIONS VS TOTAL FRIENDLY KIA

	1966 Aug-Sep	4th Qtr	1967 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1968 1st Qtr	20-Month Total
RVNAF								
KIA in Large Ops a/	384	623	779	875	743	842	1270	5516
Total KIA b/	1717	2732	3396	3222	2834	3564	5436	22601
% KIA in Large Ops	22.4	22.8	23.2	27.2	26.2	23.6	23.4	24.4
US								
KIA in Large Ops a/	467	765	1317	1738	1192	1672	2730	9881
Total KIA b/	814	1243	2113	2770	2091	2384	4847	16262
% KIA in Large Ops	57.4	61.5	62.3	62.7	57.0	70.1	56.3	60.8
3rd Nation								
KIA in Large Ops a/	48	84	103	67	95	30	60	487
Total KIA b/	74	179	226	242	341	296	346	1704
% KIA in Large Ops	64.9	46.9	45.6	27.7	27.9	10.1	17.3	28.6
Total Friendly								
KIA in Large Ops a/	899	1472	2199	2680	2030	2544	4060	15884
Total KIA b/	2605	4154	5735	6234	5266	6244	10629	40567
% KIA in Large Ops	34.5	35.4	38.3	43.0	38.5	40.7	38.2	39.2

a/ Source: JCS CUAVA
b/ Source: Table 2, OSD SEA Statistical Summary

TABLE 2

ENEMY KIA IN LARGE UNIT OPERATIONS VS TOTAL ENEMY KIA

	1966 Aug-Sep	4th Qtr	1967 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1968 1st Qtr	20-Month Total
I CTZ								
Enemy KIA in Large Ops a/	2726	2568	4843	7666	7632	5495	15113	46043
Total KIA b/	3831	3747	8207	11504	10318	8129	33470	76266
% KIA in Large Ops	70.1	68.5	59.0	66.6	74.0	67.6	45.6	60.4
II CTZ								
Enemy KIA in Large Ops a/	2138	4601	4830	3612	3196	4574	5343	28294
Total KIA	2646	4541	5446	4236	4175	5105	12312	38460
% KIA in Large Ops	80.8	101.3	88.7	85.3	76.6	89.6	43.4	73.6
III CTZ								
Enemy KIA in Large Ops a/	912	2344	5528	3506	2028	3015	12870	30203
Total KIA b/	1613	3484	6238	4932	3206	4853	20540	44866
% KIA in Large Ops	56.5	67.3	88.6	71.1	63.3	62.1	62.7	67.3
IV CTZ								
Enemy KIA in Large Ops a/	863	1663	1652	1866	1798	2643	4034	14519
Total KIA b/	2170	3204	2865	2717	2388	3785	9133	26262
% KIA in Large Ops	39.8	51.9	57.7	68.7	75.3	69.8	44.2	55.3
Countrywide								
Enemy KIA in Large Ops a/	6639	11176	16853	16650	14654	15727	37360	119059
Total KIA b/	10319	14976	22756	23389	20087	21872	72455	185854
% KIA in Large Ops	64.3	74.6	74.1	71.2	73.0	71.9	51.6	64.1

a/ Source: JCS GUAVA.
b/ Source: Aug-Dec 1966 data source is JCS GUAVA. Jan 1967-Mar 1968 data source is Table 53, OSD(C) SEA Statistical Summary.

TABLE 3

EN/FR KILL RATIOS IN LARGE UNIT OPERATIONS[a]

	1966 Aug-Sep	4th Qtr	1967 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1968 1st Qtr	20 Month Average
I CORPS								
US	9.28	6.74	8.60	5.24	6.88	6.68	9.61	7.62
RVNAF	5.45	4.80	5.84	6.83	6.93	7.03	8.59	6.53
3RD NATION	1.11	4.21	4.73	13.18	10.21	11.29	-	7.44
TOTAL	7.43	5.34	7.08	5.85	7.07	6.81	9.44	7.27
II CORPS								
US	8.81	8.98	7.51	6.61	8.09	7.17	12.13	8.27
RVNAF	6.54	5.60	4.02	3.85	4.59	5.94	6.64	5.16
3RD NATION	22.62	26.64	22.81	15.45	21.79	-	24.38	22.18
TOTAL	9.42	9.94	7.72	6.65	7.57	6.88	11.22	8.27
III CORPS								
US	2.73	7.71	8.07	6.59	7.45	4.90	10.68	7.79
RVNAF	4.24	2.38	5.72	2.35	3.70	1.80	6.68	4.55
3RD NATION	14.72	12.33	1.18	5.00	3.67	6.83	6.67	6.65
TOTAL	4.22	6.30	7.46	5.66	6.46	4.28	9.38	6.96
IV CORPS								
US	-	-	-	-	10.52	7.00	9.31	8.94
RVNAF	9.70	10.66	11.16	8.97	7.97	7.24	5.71	7.96
TOTAL	9.70	10.66	11.16	8.97	8.36	7.20	6.60	8.09
COUNTRYWIDE								
US	7.34	8.11	8.03	5.92	7.31	6.28	10.25	7.86
RVNAF	6.40	5.97	6.42	6.28	6.31	5.93	6.73	6.33
3RD NATION	15.63	14.92	12.40	13.00	13.13	7.87	13.75	13.26
TOTAL	7.38	7.59	7.66	6.21	7.22	6.18	9.20	7.50

a/ Source: JCS-GUAVA.

The kill ratio for US forces dropped from 7 to 5.9 during the second quarter 1967 and did not regain the higher level until the Tet offensive in early 1968. Prior to April 1967 the kill ratio averaged 7.8; from April through December it averaged 6.7. This means that the enemy killed 20% more Americans per enemy KIA during the latter period. In contrast, the RVNAF average kill ratio remained the same during the two periods.

Table 4 shows that in CTZ where US large operations kill more enemy they have less favorable kill ratios; i.e., high kill rates generated low kill ratios. Conversely, RVNAF forces have much better kill ratios in CTZ where they kill a lot of VC.

TABLE -

ENEMY KIA VS EN/FR KILL RATIOS[a]/
August 1966-March 1968

	Enemy KIA	Rank	En/Fr Kill Ratio	Rank
US				
I CTZ	31779	1	7.62	4
III CTZ	24503	2	7.79	3
II CTZ	19269	3	8.27	2
IV CTZ	2145	4	8.94	1
RVNAF				
I CTZ	13036	1	6.53	2
IV CTZ	12374	2	7.96	1
III CTZ	4882	3	4.55	4
II CTZ	4612	4	5.16	3

a/ Source: JCS GUAVA

Table 5 shows that enemy forces suffer an average of 3 KIA for every weapon lost as a result of large allied operations. The ratio has remained relatively stable. Third nation forces captured twice as many weapons per enemy KIA as the US forces; RVNAF captured 20% more than the U.S. forces.

TABLE 5

ENEMY KIA PER ENEMY WEAPON LOST IN LARGE UNIT OPERATIONS a/

	1966 Aug-Sep	4th Qtr	1967 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1968 1st Qtr	20 Month Total
US:								
Enemy KIA	3430	6204	10571	10283	8718	10501	27989	77696
Enemy Weapons Losses	622	2040	2920	4530	2439	3425	7192	23168
KIA per Weapon Lost	5.51	3.04	3.62	2.27	3.57	3.07	3.89	3.35
RVNAF:								
Enemy KIA	2459	3719	5005	5496	4689	4990	8546	34904
Enemy Weapons Losses	1204	1133	1749	1202	1565	2074	3480	12407
KIA per Weapon Lost	2.04	3.28	2.86	4.57	3.00	2.41	2.46	2.81
3rd Nation:								
Enemy KIA	750	1253	1277	871	1247	236	825	6459
Enemy Weapons Losses	488	711	935	711	550	210	395	4000
KIA per Weapon Lost	1.54	1.76	1.37	1.23	2.27	1.12	2.09	1.61
TOTAL:								
Enemy KIA	6639	11176	16853	16650	14654	15727	37360	119059
Enemy Weapons Losses	2314	3884	5604	6443	4554	5709	11067	39575
KIA per Weapon Lost	2.87	2.88	3.01	2.58	3.22	2.75	3.38	3.01

a/ Source: JCS GUAVA.

COMBAT PERFORMANCE OF US AND ARVN DIVISIONS

Summary. ARVN Divisions assumed more of the combat burden in 1968, but their performance remained well below that of the US Divisions. Wide disparities exist among the US Divisions and among the ARVN divisions, in terms of enemy and friendly combat deaths and kill ratios. US divisions which inflicted and took high combat deaths in 1968 tended to have low kill ratios and vice versa. The ARVN pattern was opposite, with the high combat loss divisions having the highest kill ratios. There seems to be no consistent relationship between the level of friendly combat deaths in an ARVN division and its desertion rate.

Method

Three measures are used in this analysis to compare the performance of each US and ARVN division in large operations[1]: kill ratios, percentage of total enemy killed, and percentage of friendly killed.

The data came from a computer file based on reports of total enemy and friendly killed by operation, not by unit, in the weekly OPREP-5 messages. The total enemy and friendly killed in each operation during a week were divided among the individual battalions listed as participating in the operation that week. The individual battalions were then hand matched to the proper divisions and the totals for each division and kill ratios were computed. Thus, the data is only approximate, but all we have. Since two full years are covered, the numbers are probably good enough for trend analysis and to give us a reasonably accurate picture of each division's performance in killing VC/NVA. Of course, a unit's location, the enemy it faces, its mission, and a host of other variables affect the three measures we are using, and the results of our analysis must be judged with these factors in mind.

US Divisons

Table 1 shows that the enemy killed by US divisions in large operations rose 90% at a cost of only 32% more US combat deaths in 1968; the average enemy/US kill ratio went from 7:1 in 1967 to 10:1 in 1968.

The disparities among the nine US divisions in terms of combat deaths and kill ratios are quite large. In 1968 the kill ratios varied from 4:1 for the 4th Infantry Division to 16:1 for the Americal Division. The 1st Infantry Division inflicted 23% of the enemy KIA inflicted by the US divisions and took 22% of the US KIA; the 4th Division figures were 1% and 3%.

1/ Three companies or more.

TABLE 14/

US DIVISIONS

ENEMY/FRIENDLY KIA IN LARGE UNIT OPERATIONS
(1967 - 1968)

	January - June						
	Enemy Killed	% of Enemy	Friendly Killed	% of Friendly	En/Fr Kill Ratio	Enemy Killed	% of Enemy
1967							
1st Infantry	1762	9	277	10	6:1	1053	6
4th Infantry	2358	12	310	11	8:1	1841	11
9th Infantry	2971	15	312	11	10:1	1868	11
25th Infantry	2787	14	419	15	7:1	1671	10
1st Air Cavalry Division	3191	16	382	14	8:1	4136	24
101st Air Cavalry Division	738	4	100	4	7:1	2137	12
1st Marine Division	3169	16	423	15	8:1	1192	7
3rd Marine Division	2789	14	571	20	5:1	3362	19
Total	19765	100	2794	100	7:1	17250	100
1968							
1st Infantry	6455	14	519	12	12:1	9691	36
4th Infantry	287	1	41	1	7:1	560	2
9th Infantry	5622	13	548	12	10:1	2368	9
25th Infantry	6695	15	508	11	13:1	N O D A T	
1st Air Cavalry Division	6869	18	613	14	11:1	1239	5
101st Air Cavalry Division	3455	8	291	7	12:1	1585	6
Americal	1138	2	82	2	14:1	3284	12
1st Marine Division	5268	12	760	17	7:1	4730	17
3rd Marine Division	7567	17	1087	24	7:1	3609	13
Total	43356	100	4449	100	10:1	27036	100

a/ Source: GUAVA OPREP-5. Data is not precise. Used to show trends only. Computed by apportioning enemy/friendly KIA to battalions listed as participating in given operation in a weekly OPREP-5 report. Battalions were then hand matched by division and ratios were computed.

July - December

Enemy Killed	% of Enemy	Friendly Killed	% of Friendly	En/Fr Kill Ratio	Enemy Killed	% of Enemy	Friendly Killed	% of Friendly	En/Fr Kill Ratio
1053	6	138	6	8:1	2815	7	415	8	7:1
1841	11	371	14	5:1	4199	11	681	13	6:1
1868	11	258	10	7:1	4839	13	570	10	8:1
1671	10	385	15	4:1	4458	12	804	15	6:1
4136	24	334	13	13:1	7327	20	716	13	10:1
2137	12	212	8	10:1	2875	8	312	6	9:1
1182	7	243	9	5:1	4351	12	666	12	7:1
3362	19	654	25	5:1	6151	17	1225	23	5:1
17230	100	2595	100	7:1	37015	100	5389	100	7:1
9691	36	1053	39	9:1	15146	23	1572	22	10:1
560	2	151	7	4:1	847	1	192	3	4:1
2368	9	170	6	14:1	7990	11	718	10	11:1
N O D A T A A V A I L A B L E					6695	10	508	8	13:1
1259	5	129	5	10:1	8128	12	742	10	11:1
1585	6	79	3	20:1	5040	7	370	5	14:1
3284	12	190	7	17:1	4422	6	272	4	16:1
4730	17	476	18	10:1	9998	14	1236	17	8:1
3609	13	429	16	8:1	11176	16	1516	21	7:1
27036	100	2677	100	10:1	70442	100	7126	100	10:1

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In 1968, US divisions which took and inflicted high combat deaths tended to have low kill ratios; divisions with low enemy and friendly KIA tended to have high kill ratios. The 4th Division, with the lowest KIA and lowest kill ratio, was a notable exception. During 1967 the pattern was not clear.

The two Marine divisions in I CTZ consistently carried a heavy share of the combat. In 1967-68 they accounted for 29-30% of the enemy KIA by US divisions, and for 35-38% of the US KIA. In 1968 the 1st Infantry Division (Army) apparently saw much more action because it accounted for 23% of the enemy KIA and 22% of US KIA, compared to 7% and 8% in 1967. The increase probably stems from the heavy III CTZ fighting during the Tet and May offensives.

Vietnamese Divisions (ARVN)

Interpretation of the ARVN figures requires even more caution than interpretation of the US figures, because they are based on preliminary casualty data, which may represent only 67% of the final, refined casualty totals. This, in turn, may mean that the ARVN kill ratios are significantly less favorable than shown in Table 2 and that ARVN losses are closer to US losses than we indicate. (It is also probable that the US loss figures are too low, but we have no basis for estimating how low.) In comparing ARVN and US division death rates, the reader should also remember that the Vietnamese Regional and Popular forces, which are not covered here, account for a significant portion of total RVNAF combat deaths. Thus, we are comparing combat deaths for almost all US forces with combat deaths for about half of the RVNAF forces.

As expected, the data show that enemy KIA, friendly KIA and average enemy/friendly kill ratios of the Vietnamese divisions were lower than those for the US divisions. But the Vietnamese divisions showed significant improvement during 1968. In 1967 US divisions killed 4.6 times as many enemy and sustained 3.6 times as many friendly KIA as the ARVN. In 1968 the US divisions killed 3.4 times as many enemy and sustained 2.3 times as many KIA. This indicates that ARVN took on more of the combat burden in 1968.

Table 2 shows that the enemy killed by ARVN divisions in large operations rose 160% at a cost of 108% more ARVN combat deaths in 1968: the average enemy/ARVN kill ratios went from 5:1 in 1967 to 7:1 in 1968.

The disparities among the 10 ARVN divisions in terms of combat deaths and kill ratios are also quite large. In 1968 the kill ratios varied from 2:1 for the 18th Division to 9:1 for the 1st Division. The 1st Division inflicted 23% of the enemy KIA by ARVN divisions and took 17% of the ARVN KIA; the 18th Division figures were 1% and 3%. The two lowest performers, the 18th and 5th Divisions, are both in III CTZ, which is also the location of the US 1st Infantry Division, which inflicted and took the highest losses among the US divisions in 1968.

TABLE 3 a/

ARVN DIVISIONS

ENEMY/FRIENDLY KIA IN LARGE UNIT OPERATIONS
(1967 - 1968)

	JANUARY - JUNE					JULY -		
	Enemy Killed	% of Enemy	Friendly Killed	% of Friendly	En/Fr Kill Ratio	Enemy Killed	% of Enemy	Friendl Killed
1967								
1st Infantry	1635	33	324	37	5:1	1321	42	167
2nd Infantry	697	14	124	14	6:1	911	29	156
23rd Infantry	204	4	20	2	10:1	17	1	38
25th Infantry	112	2	57	6	2:1	190	6	51
5th Infantry	91	2	59	7	2:1	23	1	61
18th Infantry	13	1	13	2	1:1	23	1	40
22nd Infantry	367	8	103	12	4:1	629	20	105
7th Infantry	376	8	36	4	11:1	N O D A T A A V		
9th Infantry	438	9	55	6	8:1	N O D A T A A V		
21st Infantry	933	19	86	10	11:1	N O D A T A A V		
Total	4866	100	877	100	6:1 b/	3114	100	618
1968								
1st Infantry	3201	26	374	20	9:1	1637	20	166
2nd Infantry	824	7	107	5	8:1	2082	25	250
23rd Infantry	525	4	155	8	3:1	303	4	90
25th Infantry	2358	19	297	16	8:1	625	7	100
5th Infantry	444	4	82	4	5:1	108	1	41
18th Infantry	83	1	75	4	1:1	52	1	12
22nd Infantry	314	2	68	4	5:1	451	5	97
7th Infantry	2335	19	355	19	7:1	808	10	142
9th Infantry	1176	9	125	7	9:1	1195	14	188
21st Infantry	1189	9	232	12	5:1	1045	13	161
Total	12449	100	1670	100	7:1 b/	8307	100	1247

a/ Source: GUAVA-OPREP-5. Data is not precise. Used to show trends only. Computed by apportioning enemy/friendly KIA to battalions listed as participating in given operation in a weekly OPREP-5 report. Battalions were then hand matched by divisions and ratios were computed.

b/ Average kill ratio for period.

JULY - DECEMBER					TOTAL				
% of Enemy	Friendly Killed	% of Friendly		En/Fr Kill Ratio	Enemy Killed	% of Enemy	Friendly Killed	% of Friendly	En/Fr Kill Ratio
42	167	27		8:1	2956	37	491	33	6:1
29	146	25		6:1	1608	20	280	19	6:1
1	38	6		1:1	221	3	58	4	4:1
6	51	8		4:1	302	4	108	7	3:1
1	61	10		0:1	114	1	120	8	1:1
1	40	7		0:1	36	1	53	3	0.7:1
20	105	17		6:1	996	12	209	14	5:1
DATA AVAILABLE					376	5	36	2	10:1
DATA AVAILABLE					438	5	54	4	8:1
DATA AVAILABLE					933	12	86	6	11:1
100	618	100		5:1 b/	7980	100	1495	100	5:1 b/
20	166	13		10:1	4838	23	540	17	9:1
25	250	20		8:1	2906	14	357	11	8:1
4	90	7		3:1	828	4	245	8	3:1
7	100	8		6:1	2983	14	397	13	8:1
1	41	4		3:1	552	3	123	4	5:1
1	12	1		4:1	134	1	87	3	2:1
5	97	8		5:1	765	4	165	5	5:1
10	142	11		6:1	3144	15	497	16	6:1
14	188	15		6:1	2372	11	313	10	8:1
13	161	13		7:1	2234	11	393	13	6:1
100	1247	100		7:1	20756	100	3117	100	7:1 b/

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The relationship between total combat deaths and kill ratios for ARVN divisions is the opposite of the US pattern. ARVN units inflicting and taking high losses tend to have more favorable kill ratios than units inflicting and taking low losses. Thus, the active ARVN units seem to fight both more efficiently and harder than the poorer units.

ARVN Combat Deaths Versus Desertion Rates

There seems to be little consistent relationship between an ARVN division's friendly combat death rate and its annual desertion rate (Table 3). One might expect that units with high losses would have high desertion rates and vice versa, but this does not occur often enough to generalize. For example, the 1st and 7th Divisions ranked 1-2 in friendly losses, but had relatively low desertion rates. Conversely, the 21st and 25th Divisions also had high losses accompanied by very high desertion rates. The two poorest performers, the 5th and 18th Divisions, fell into the mid-level desertion rates. Thus, it seems clear that a division's desertion rate is affected strongly by factors other than its level of losses.

TABLE 3[a]

ARVN DIVISION SIZE UNITS
DESERTION RATES/EFFECTIVENESS
(Large Unit Operations)

	1967				1968			
	% of En Killed	% Fr KIA	Kill Ratio	Desertion Rate/1000 Strength	% of En Killed	% Fr KIA	Kill Ratio	Desertion Rate/1000 Strength
1st Inf	37	33	5:1	12.5	23	17	9:1	27.9
2nd Inf	20	19	6:1	10.8	14	17	8:1	28.6
7th Inf	5	2	10:1	20.0	15	16	6:1	28.5
9th Inf	5	4	8:1	26.7	11	10	8:1	50.1
21st Inf	12	6	11:1	27.5	11	13	6:1	48.4
5th Inf	1	8	1:1	24.8	3	4	5:1	30.6
18th Inf	1	3	1:1	31.2	1	3	2:1	38.6
22nd Inf	12	14	5:1	12.2	4	5	5:1	17.6
23rd Inf	3	4	4:1	11.7	4	8	3:1	25.7
25th Inf	4	7	3:1	41.6	14	13	8:1	45.5

a/ Source: GUAVA OPREP-R. Desertion rates from SEAPRO January Statistical Tables, Table 4B.

COMBAT PERFORMANCE OF US AND ARVN DIVISIONS: AN UPDATE

Summary. ARVN divisions assumed more of the combat burden in 1968 and have continued this trend in first quarter 1969. However, their performance remained well below that of the US divisions. Wide disparities continue to exist among the US divisions and among the ARVN divisions, in terms of enemy and friendly combat deaths and kill ratios. The ARVN 5th and 18th Divisions inflict and take low casualties despite the high casualties taken and inflicted by the US 1st Infantry and 1st Air Cavalry Divisions fighting in the same area (III CTZ).

Method

Three measures are used in this analysis to compare the performance of each US and ARVN division in large operations[1]: kill ratios, percentage of total enemy killed, and percentage of friendly killed.

The data came from a computer file based on reports of total enemy and friendly killed by operation, not by unit, in the weekly OPREP-5 messages. The total enemy and friendly killed in each operation during a week were divided among the individual battalions listed as participating in the operation that week. The individual battalions were then hand matched to the proper divisions and the totals for each division and kill ratios were computed. Thus, the data is only approximate, but all we have. Since more than two full years are covered, the numbers are probably good enough for trend analysis and to give us a reasonably accurate picture of each division's performance in killing VC/NVA. Many of our findings are substantiated by data from the "System for Evaluating RVNAF" (SEER) published in the MACV "ARVN Marine and Naval Forces Advisory Report." Of course, a unit's location, the enemy it faces, its mission, and a host of other variables affect the three measures we are using and the results of our analysis must be judged with these factors in mind.

US Divisions

Table 1 shows that during the first quarter 1969 US divisions killed the enemy in large operations at about the same quarterly rate as in 1968 (17,018 vs. 17,610) but US deaths were 18% lower. The average enemy/US kill ratio went from 10:1 in 1968 to 12:1 in first quarter 1969.

The disparities among the nine US divisions in terms of enemy killed, combat deaths and kill ratios are quite large. In 1968, the kill ratios varied from 4:1 for the 4th Division to 16:1 for Americal Division. The 1st Division inflicted 23% of the enemy KIA inflicted by US divisions and took 22% of the US KIA; the 4th Division figures were 1% and 3%. In 1969 similar

1/ Three companies or more.

disparities exist. The kill ratios varied from 5:1 for the 4th Division to 26:1 for the 9th Division. The 9th Division inflicted 33% of the enemy KIA inflicted by US divisions and took 15% of the US KIA; the 4th Division figures were 6% and 12%.

In 1968, US divisions which took and inflicted high combat deaths tended to have low enemy/friendly kill ratios; divisions with low enemy and friendly KIA tended to have high kill ratios. In first quarter 1969 the pattern reverses somewhat; the 3 divisions with high friendly and enemy KIA had the 3 highest kill ratios.

In 1967-1968 the two Marine divisions in I CTZ consistently carried a heavy share of the combat, accounting for 29-30% of enemy KIA by US divisions, and for 35-38% of the US KIA. In 1969 the figures were substantially reduced to 16% and 25% respectively. Also in 1969, all four US divisions in I CTZ reported the same kill ratios (8:1). Conversely, in III Corps the 1st Air Cavalry Div and 1st Infantry Division together accounted for 37% of the enemy and took 37% of the US KIA. The increase probably reflects the heavy III CTZ fighting in late 1968 and first quarter 1969.

Vietnamese Divisions (ARVN)

Interpretation of the ARVN figures requires even more caution than interpretation of the US figures, because they are based on preliminary casualty data, which may represent only 67% of the final, refined casualty totals. This, in turn, may mean that the ARVN kill ratios are significantly less favorable than shown in Table 2 and that ARVN losses are closer to US losses than we indicate. (It is also probable that the US loss figures are too low, but we have no basis for estimating how low.) In comparing ARVN and US division death rates, the reader should also remember that the Vietnamese Regional and Popular forces, which are not covered here, account for a significant portion of total RVNAF combat deaths. Thus, we are comparing combat deaths for almost all US forces with combat deaths for about half of the RVNAF forces.

As expected, the data show that enemy KIA, friendly KIA and average enemy/friendly kill ratios of the Vietnamese divisions were lower than those for the US divisions. But the Vietnamese divisions showed significant improvement during 1968. This trend is continuing in 1969. In 1967 US divisions killed 4.6 times as many enemy and sustained 3.6 times as many friendly KIA as the ARVN. In 1968 the US divisions killed 3.4 times as many enemy and sustained 2.3 times as many KIA. In first quarter 1969 US divisions killed 2.9 times as many enemy and sustained 1.7 times as many KIA. This steady downward trend indicates that ARVN are progressively assuming more of the combat burden. Table 2 also shows improvement in the ARVN kill ratios between 1967 (5:1) and 1968 (7:1) with the 1968 average kill ratio of 7 to 1 continuing into 1969.

The disparities among the 10 ARVN divisions in terms of combat deaths and kill ratios are also quite large. In 1968 the kill ratios varied from 2:1 for the 18th Division to 9:1 for the 1st Division, in 1969 the range was 3:1 for the 5th Division to 17:1 for the 1st Division. The two lowest performances

TABLE 1 a/

US DIVISIONS

ENEMY/FRIENDLY KIA IN LARGE UNIT OPERATIONS
(1967-1968)

	Enemy Killed	% of Enemy	Friendly Killed	% of Friendly	En/Fr Kill Ratio
1967					
1st Infantry	2815	7	415	8	7:1
4th Infantry	4199	11	681	13	6:1
9th Infantry	4839	13	570	10	8:1
25th Infantry	4458	12	804	15	6:1
1st Air Cavalry Division	7327	20	716	13	10:1
101st Air Cavalry Division	2875	8	312	6	9:1
1st Marine Division	4351	12	666	12	7:1
3rd Marine Division	6151	17	1225	23	5:1
Total	37015	100	5389	100	7:1
1968					
1st Infantry	16146	23	1572	22	10:1
4th Infantry	847	1	192	3	4:1
9th Infantry	7990	11	718	10	11:1
25th Infantry	6695	10	508	8	13:1
1st Air Cavalry Division	8128	12	742	10	11:1
101st Air Cavalry Division	5040	7	370	5	14:1
Americal	4422	6	272	4	16:1
1st Marine Division	9998	14	1236	17	8:1
3rd Marine Division	11176	16	1516	21	7:1
Total	70442	100	7126	100	10:1
1st QTR 1969					
1st Infantry	2501	15	266	18	9:1
4th Infantry	968	6	181	12	5:1
9th Infantry	5582	33	218	15	26:1
25th Infantry	DATA NOT AVAILABLE				
1st Air Cavalry	3815	22	283	19	13:1
101st Air Cavalry	495	3	65	4	8:1
Americal	803	5	99	7	8:1
1st Marine	1129	6	143	10	8:1
3rd Marine	1725	10	214	15	8:1
Total	17018	100	1469	100	12:1

a/ Source: MACV OPREP-5. Data is not precise. Used to show trends only. Computed by apportioning enemy/friendly KIA to battalions listed as participating in given operation in a weekly OPREP-5 report. Battalions were then hand matched by division and ratios were computed.

in 1968, the 18th and 5th are both in III CTZ, which is the location of the 1st US Division which inflicted and took the highest losses among US divisions in 1968. In 1st quarter 1969, the Vietnamese 18th and 5th divisions repeated their poor performance while the US 1st Division and 1st Air Cavalry Division in the same CTZ together inflicted and took the highest losses among the US divisions in the same period. Our evaluation of the "worst" and best ARVN divisions is substantiated by advisor evaluations reported by MACV.

The relationship between total combat deaths and kill ratios for ARVN divisions was the opposite of the US pattern. In 1968 ARVN units inflicting and taking high losses tended to have more favorable kill ratios than units inflicting and taking low losses. In 1st quarter 1969, the trend is not clear.

ARVN Combat Deaths Versus Desertion Rates

There seems to be little consistent relationship between an ARVN division's friendly combat death rate and its annual desertion rate (Table 3). One might expect that units with high losses would have high desertion rates and vice versa, but this does not occur often enough to generalize. For example, the 1st and 7th Divisions ranked 1-2 in friendly losses in 1968, but had relatively low desertion rates. Conversely, the 21st and 25th Divisions had high losses accompanied by very high desertion rates. The two poorest performers, the 5th and 18th Divisions, fell into the mid-level desertion rates. Thus, it seems clear that a division's desertion rate is affected strongly by factors other than its level of losses.

Overall, the divisions' desertion rates declined 23% in 1st quarter 1969 from the 1968 average. The 9th and 25th divisions cut desertion by more than the MACV goal of 50 percent. Seven of the division lowered their desertion rates while three divisions increased theirs (21st, 18th and 2nd).

TABLE 2 a/

ARVN DIVISIONS

ENEMY/FRIENDLY KIA IN LARGE UNIT OPERATIONS
(1967-1968)

	TOTAL				
	Enemy Killed	% of Enemy	Friendly Killed	% of Friendly	En/Fr Kill Ratio
1967					
1st Infantry	2956	37	491	33	6:1
2nd Infantry	1608	20	280	19	6:1
23rd Infantry	221	3	58	4	4:1
25th Infantry	302	4	108	7	3:1
5th Infantry	114	1	120	8	1:1
18th Infantry	36	1	53	3	0.7:1
22nd Infantry	996	12	209	14	5:1
7th Infantry	376	5	36	2	10:1
9th Infantry	438	5	54	4	8:1
21st Infantry	933	12	86	6	11:1
Total	7980	100	1495	100	5:1 b/
1968					
1st Infantry	4838	23	540	17	9:1
2nd Infantry	2906	14	357	11	8:1
23rd Infantry	828	4	245	8	3:1
25th Infantry	2983	14	397	13	8:1
5th Infantry	552	3	123	4	5:1
18th Infantry	134	1	87	3	2:1
22nd Infantry	765	4	165	5	5:1
7th Infantry	3144	15	497	16	6:1
9th Infantry	2372	11	313	10	8:1
21st Infantry	2234	11	393	13	6:1
Total	20756	100	3117	100	7:1 b/
1st QTR 1969					
1st Infantry	204	3	12	1	17:1
2nd Infantry	2610	45	333	38	8:1
23rd Infantry	169	3	12	1	14:1
25th Infantry	260	4	30	3	9:1
5 th Infantry	110	2	33	4	3:1
18th Infantry	222	4	57	7	4:1
22nd Infantry	226	4	34	4	7:1
7th Infantry	539	9	134	16	4:1
9th Infantry	540	9	85	10	6:1
21st Infantry	979	17	138	16	7:1
Total	5859	100	868	100	7:1

a/ Source: JUAVA-OPREP-5. Data is not precise. Used to show trends only. Computed by apportioning enemy/friendly KIA to battalions listed as participating in given operation in a weekly OPREP-5 report. Battalions were then hand matched by divisions and ratios were computed.

b/ Average kill ratio for period.

TABLE 3[a]

ARVN DIVISION SIZE UNITS
DESERTION RATES/EFFECTIVENESS
(Large Unit Operations)

	1968				1969 (1st Qtr)			
	% of En Killed	% Fr KIA	Kill Ratio	Desertion Rate/1000 Strength	% of En Killed	% Fr KIA	Kill Ratio	Desertion Rate/1000 Strength [b]
1st Inf	23	17	9:1	27.9	3	1	17:1	17.5
2nd Inf	14	17	8:1	28.6	45	38	8:1	23.0
7th Inf	15	16	6:1	28.5	9	16	4:1	17.8
9th Inf	11	10	8:1	50.1	9	10	6:1	23.4
21st Inf	11	13	6:1	48.4	17	16	7:1	59.4
5th Inf	3	4	5:1	30.6	2	4	3:1	21.9
18th Inf	1	3	2:1	38.6	4	7	4:1	45.5
22nd Inf	4	5	5:1	17.6	4	4	7:1	18.5
23rd Inf	4	8	3:1	25.7	3	1	14:1	20.3
25th Inf	14	13	8:1	45.5	4	3	9:1	17.0

a/ Source: GUAVA OPREP-R. Desertion rates from SEAPRO March Statistical Tables, Table 4B.

b/ Estimate based on Jan-Feb data. March data not available at time of publication.

IMPACT OF US MANEUVER BATTALIONS IN SOUTH VIETNAM

Summary. A highly tentative preliminary analysis suggests that, in provinces where US presence has been high, a significant increase in US battalions is associated with a rise in HES security scores and decreased ARVN activity. Conversely, small increases have little or no effect on security scores but are accompanied by increased ARVN activity. For provinces where US presence is low, no apparent effects are associated with changes in levels of US battalions. Enemy activity seems to react briefly to additional US battalions but reverts quickly to countrywide patterns.

This analysis is a preliminary survey of historical data in an attempt to determine the impact of US maneuver battalions on Hamlet Evaluation System (HES) scores, enemy activity, and RVNAF activity in South Vietnam. We examined countrywide, corps and sample province data available in Washington, starting with January 1967. We regard our observations and findings from this initial assessment as promising, but highly tentative. Future papers will refine the approach to achieve greater validity.

Approach

We examined correlation patterns for HES security scores against US battalions employed countrywide and by Corps Tactical Zone. The hypothesis for this investigation was that increases in US battalions should result in increases in relatively secure (A+B+C) HES scores and a reduction in either the contested (D+E) or VC controlled (V) categories; a reduction in US battalions should have opposite effects. In the HES part of the analysis, we examined correlation results for 11 of the 27 SVN provinces which had a history of US battalion presence. Our first two findings listed below result from this initial investigation.

For a more detailed look at the impact of changes in US maneuver battalion deployment, we narrowed the number of sample provinces to five, and looked at the effect of changes on enemy and RVNAF activity. Data for each province was displayed graphically for interpretation and observations leading to the remainder of the findings below.

Tentative Findings

1. When the data is aggregated countrywide or by Corps Tactical Zone, no consistent relationship between the presence of US battalions and HES security scores emerges for either total hamlets or total population. 1/ However, for total population, an increase in US battalions is associated with an increase in secure population and a decrease in contested or VC controlled populations for countrywide data, I Corps and IV Corps.

1/ Total population does not include the population of Saigon and the other autonomous cities, but does include the other urban population.

2. When provinces are grouped according to the numbers of US battalions present (instead of by CTZ), the provinces with more than four US battalions present each month since April 1967 show a pattern consistent with our hypothesis, in which addition of battalions seems to raise HES scores, and withdrawal seems to lower them. However, the time lag for effects to become apparent varies throughout the range available (from 0 to 8 months), depending on the province.

3. Deployment of one US battalion into a new area, or small increases over previous levels, seems to have little effect on hamlet security scores at the province level. These relatively small increases, however, are usually followed by a period of greater ARVN activity which, in turn, seems associated with an increase of secure hamlets.

4. A large influx of US battalions is accompanied not only by a rise in security scores but also in an almost immediate decrease in ARVN activity.

5. If not balanced by increased ARVN activity, a decrease of more than 50 per cent of the US battalions present seems to be associated with a reduced rate of growth for secure hamlets, but not necessarily in a loss.

6. Enemy activity seems to show an initial marked increase subsequent to the appearance of additional US battalions or entry of US battalions into a new area. This activity seems to subside quickly, with the enemy apparently reverting to his previously planned campaign.

Details of the Analysis

To allow for future refinement and to accommodate tenuous data, we chose the three broad areas of possible US force impact already mentioned. Since HES security scores are clearly defined and reflect a very important facet of the war, their relationships to US battalion deployments were used as the initial screening device for this analysis.

We assumed that relationships between US maneuver battalions and HES scores would vary by province to some extent, but that grouping the provinces by reported levels of US presence might yield the most consistent pattern. Accordingly, we categorized US battalion employment during 1967-68 in the following levels of presence for the 24 month January 1967-December 1968 period:

High	-	More than 96 battalion months. 1/
Medium	-	Between 24 and 96 battalion months.
Low	-	Less than 24 battalion months.

We also included a reference province (Phong Dinh) with no recorded US presence.

1/ A battalion month represents the reported presence of a US battalion in a province during one month. (Divide by 24 to yield the average battalions present during the period.)

While HES security scores are a tabulated statistic, no general agreement on a single indicator of enemy or RVNAF activity exists. For the purpose of this article, we define an enemy activity index (VC/NVA AI) as the ratio of VC/NVA total attacks to VC/NVA strength for any given month and province. Similarly, the RVNAF activity index (ARVN AI) is defined as the average battalion days of operation per RVNAF battalion.

Correlation of HES Security and US Battalions - Countrywide and by Corps Tactical Zone

The influence exerted on the HES security scores in any given area can be both direct and indirect, depending on the local situation. We therefore used a regression technique containing a lag routine in assessing the extent to which the scores correlated with the presence of US battalions during the period April 1967 to November 1968. In plotting the number of US battalions present against the security score for each of the 20 months, the lagging technique essentially shifts the security score curve until its fluctuations match, as closely as possible, those of the fixed US battalion curve. Table 1 shows the results of our regression analysis by CTZ using the lag which gave the most significant correlation value in each case. Zero entries indicate either no correlation or that correlation was not significant at the 95% confidence level regardless of lag. In this paper we are more interested in basic patterns than in the amount of correlation, so we have included only the signs of the significant correlations for comparison with our hypothesis.

The corps and countrywide data aggregation in Table 1 shows no clear pattern. In the Countrywide, I CTZ and (to some extent) IV CTZ columns, the total population scores agree with expected results, showing a general upgrading through the three score categories. The total hamlet correlation trends for these columns, as well as all other entries, show little agreement with expected results. In fact, II CTZ scores seem relatively indifferent to the presence of US battalions.

Battalion Month Distribution

Since corps and countrywide results were not encouraging, we decided to investigate the situation by province. As a preliminary step, we tabulated the number of battalions present during each month for 1967 and 1968. This served the dual purpose of providing us the total battalion months by province and highlighting significant shifts of US battalions into or out of a particular area.

TABLE 1

REGRESSION ANALYSIS a/

HES SECURITY SCORES AGAINST US BATTALIONS
BY MONTH, APR 67 THROUGH NOV 68

	I CTZ	II CTZ	III CTZ	IV CTZ	Countrywide
Total Hamlets:					
Relatively Secure (A+B+C)	-	0	-	-	-
Contested (D+E)	0	0	+	-	+
VC Controlled (V)	-	0	-	+	-
Total Population					
Relatively Secure (A+B+C)	+	0	-	+	+
Contested (D+E)	+	0	+	+	+
VC Controlled (V)	-	0	-	0	-

a/ + Significant positive correlation.
- Significant negative correlation.
0 No significant correlation.

Table 2 displays the total battalion months for 1967, 1968 and their sum. The table also shows US presence levels by the high, medium or low categories previously explained. From this display we selected at least one province from each category in all four CTZ (except IV Corps, where the battalion in Kien Hoa has been deployed only recently). The 11 circled selections in the table exhibit US battalion employment level changes of interest such as:

1. Entry where no US battalions had previously operated - Kontum, Binh Long, Binh Thuan, Lam Dong and Phuoc Long.

2. Significant increases over previous commitment - Quang Tri and Dinh Tuong.

3. Significant withdrawals - Quang Duc, Binh Dinh, Pleiku, Hau Nghia, Lam Dong, and Phuoc Long.

4. Consistent US battalion employment at a low level - Binh Thuan.

5. Consistent US battalion employment at a medium level - Binh Long and Dinh Tuong.

6. Consistent US battalion employment at a high level - Quang Tri, Binh Dinh, Hau Nghia and Dinh Tuong.

TABLE 2

CUMULATIVE MONTHLY TOTALS 1967-68
US MANEUVER BATTALIONS BY PROVINCE
(Battalion Months)

	1967	1968	Total	US Presence: High	Medium	Low
I CTZ						
Quang Tri	90	209	299	(X)		
Thua Thien	51	165	216	X		
Quang Nam	116	148	264	X		
Quang Tin	51	65	116	(X)		
Quang Ngai	64	46	110	X		
II CTZ						
Binh Dinh	97	50	147	(X)		
Pleiku	76	52	128	(X)		
Kontum	10	56	66		(X)	
Phu Yen	23	8	31		X	
Binh Thuan	8	12	20			(X)
Ninh Thuan	14	0	14			X
Darlac	2	8	10			X
Lam Dong	4	6	10			(X)
Quang Duc	0	10	10			X
Phu Bon	0	1	1			X
Tuyen Duc	0	1	1			X
III CTZ						
Bien Hoa	167	95	262	X		
Binh Duong	105	117	222	X		
Hau Nghia	72	54	126	(X)		
Long An	30	43	73		X	
Long Khanh	31	30	61		X	
Tay Ninh	12	46	58		X	
Binh Long	3	34	37		(X)	
Gia Dinh	0	9	9			X
Phuoc Long	0	9	9			(X)
IV CTZ						
Dinh Tuong	30	53	83		(X)	
Kien Hoa	0	1	1			X
				10	7	10

Source: SEAFA Computer File.
(X) Used in the analysis.

Correlation of HES Security Scores and US Battalions - Selected Provinces

We grouped the eleven selected provinces according to the level of US presence and again looked at the results of the regression analysis with respect to HES security scores. Table 3, while showing variations similar to Table 1, does indicate a pattern of good agreement with expected results for the provinces with high US presence. The amount of lag required for the

best correlation varied considerably from province to province in each score category, possibly showing the influence of the local situation. Except for Dinh Tuong and Kontum, province HES security scores in the medium and low level categories seem relatively indifferent to the presence of US battalions. Dinh Tuong mirrors the countrywide and IV CTZ picture for population security scores, while the Kontum scores show a negative correlation.

Since grouping the provinces by level of US battalion presence provided better results than a CTZ grouping, we have used this technique for the rest of this analysis. For the detailed analysis of US battalions versus enemy activity, ARVN activity and HES scores all together, we narrowed the sample from 11 down to 5 provinces: Quang Tri, Binh Dinh, Dinh Tuong and Binh Thuan (because they each have at least two of the US presence characteristics discussed earlier in the paper) and Phong Dinh (as a control province, with the same characteristics as Binh Thuan, but no US battalion presence).

TABLE 3

REGRESSION ANALYSIS

HES SECURITY SCORES AGAINST US BATTALIONS
BY MONTH, APR 67 THROUGH NOV 68

	High US Presence [a]					Medium US Presence [b]			Low US Presence [c]		
	Quang Tri	Binh Ding	Pleiku	Hau Nghia	Quang Tin	Dinh Tuong	Kontum	Binh Long	Binh Thuan	Lam Dong	Phuoc Long
Total Hamlets:											
Relatively Secure (A+B+C)	+	+	+	+	+	+	-	0	0	0	0
Contested (D+E)	-	-	-	-	-	0	-	0	0	0	0
VC Controlled (V)	-	+	+	+	0	-	0	0	0	+	0
Total Population:											
Relatively Secure (A+B+C)	+	+	+	+	+	+	-	0	0	0	0
Contested (D+E)	-	-	-	-	-	+	+	0	0	0	0
VC Controlled (V)	-	-	+	+	-	-	0	0	0	+	0

a/ 97 or more US battalion months.
b/ 24-96 US battalion months.
c/ 23 or less US battalion months.

US Battalion Employment Versus Secure Hamlets (A+B+C), Enemy Activity and ARVN Activity

We present this data for the selected provinces as a series of five pairs of graphs, one pair for each province. For each pair, the top graph displays US battalions versus total hamlets rated relatively secure (A+B+C) and ARVN activity. The bottom graph depicts US battalions versus VC/NVA activity. Since we are most interested in how changes in US battalions compare with changes in the other variables, the graphing technique used was similar to a price index. For each set of data, the average value for 1st quarter 1967 was used as a base figure, and each subsequent entry represents the per cent change from that base level. The single exception is for US battalions in Binh Thuan province. Since there were no US battalions present in 1st quarter 1967, the actual number of battalions is plotted for that province. These graphs are attached in order of descending US battalion presence level and yielded the highly tentative observations which follow.

US Battalions and Secure Hamlets

All five sample provinces show either a constant secure hamlet score or a small but steady improvement up to the 1968 Tet offensive, which caused a drop of 10-50 per cent. The improvement in Quang Tri and Dinh Tuong during the pre-Tet period shows a step increase following a US battalion increase of more than 100 per cent. The associated lags were 6 and 2 months respectively. For Phong Dinh (no US battalions) the secure hamlet line shows a gradual, steady increase prior to the Tet offensive. In Binh Thuan (one US battalion new to the area) and Binh Dinh (50 per cent decrease in US battalions) there was either no effect or the resultant lag encountered the blurring effects of the Tet offensive.

After the 1968 Tet offensive, Quang Tri once again begins a sharp rise in ABC hamlets about 6 months after a sharp rise in US battalions, with progress leveling off for several months after the US battalions were substantially reduced. In Dinh Tuong the curves for US battalion changes and A+B+C hamlet changes are quite similar in the post-Tet 1968 period. In Phong Dinh significant recovery began in August 1968 and continued steadily upward to substantial gains. In Binh Thuan a pattern emerges in the post-Tet period. The US battalion drop is accompanied and followed by a decline in A+B+C hamlets, which then levels off throughout the rest of 1968 as the US battalion presence remains level. In Binh Dinh the pattern is still not very clear.

US Battalions and ARVN Activity

1. US Battalion Increases - Binh Thuan, Quang Tri and Dinh Tuong

In Binh Thuan, one US battalion initially entered in August 1967. In Quang Tri and Dinh Tuong a US battalion increase of around 100 per cent occurs during April and May 1967. Following these changes in US deployment, ARVN activity showed a marked increase and then a decrease to the base level. In all three provinces this was followed, at different intervals, by an erratic but steadily increasing climb to activity levels well above the first quarter 1967 base activity level by December 1968. In Quang Tri and Dinh Tuong, increases of US battalions to more than 250 per cent above base level seemed to depress ARVN activity.

2. US Battalion Decreases - Binh Dinh and Quang Tri

In Binh Dinh the 50 per cent withdrawal of the US battalions was matched by a 75% decrease in ARVN activity, which has remained relatively steady at this lower level. In Quang Tri the effect of the 140 per cent decrease has not yet been apparent. Based on observed lags, these effects should materialize by June 1969.

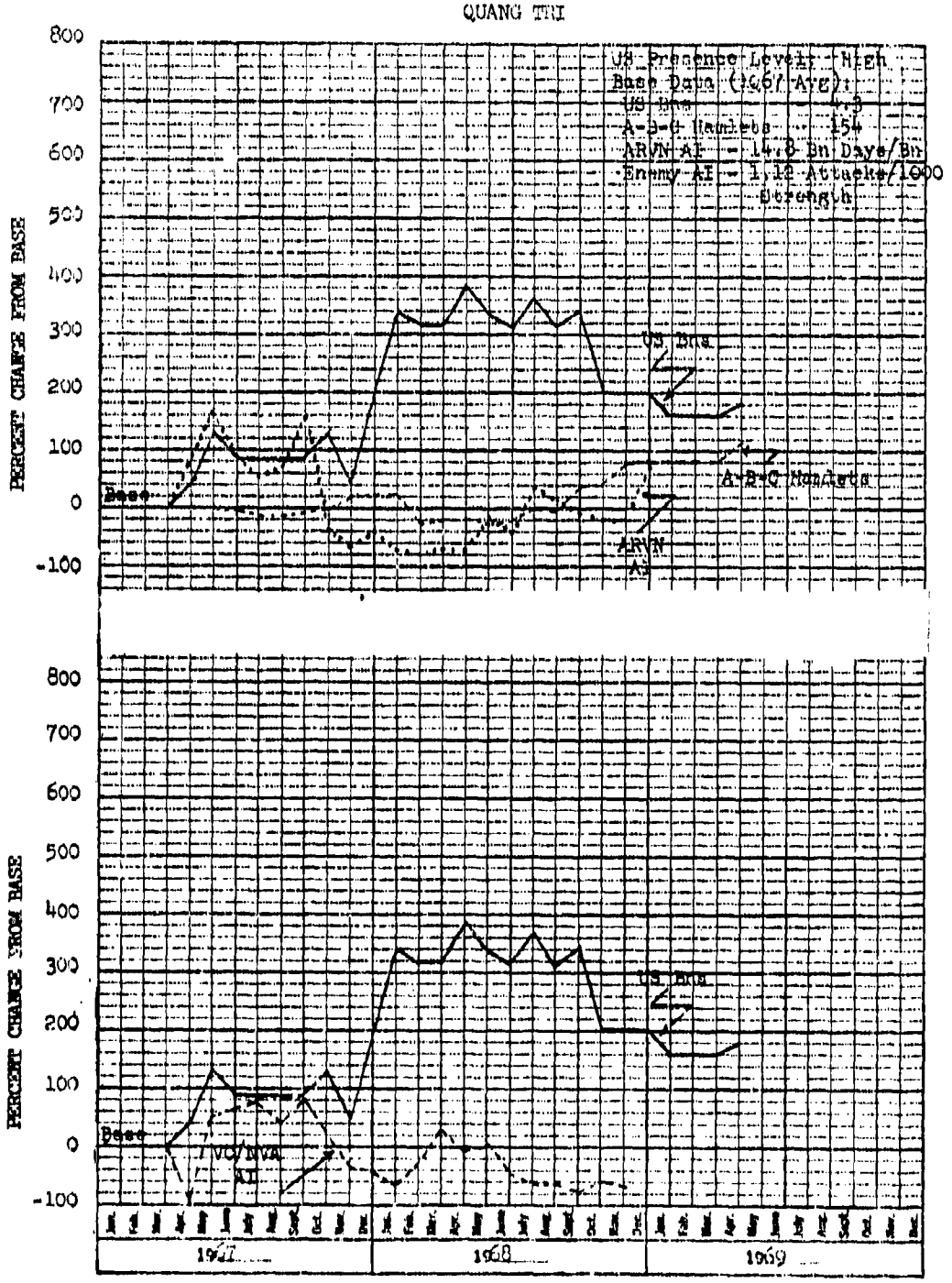
3. Control Province - Phong Dinh

In Phong Dinh, ARVN activity has oscillated generally around the base level throughout. Unlike the other sample provinces, additional ARVN battalions have been deployed there.

US Battalions and VC/NVA Activity

US battalion increases show an accompanying rise in enemy activity. Otherwise enemy activity follows almost the same pattern for all sample provinces. Activity peaks in Quang Tri, where US presence is highest, are much less pronounced. After the 1968 Tet offensive, there is a definite damping of enemy activity to levels generally below the first quarter 1967 base in 4 of the 5 provinces. The single exception is Binh Dinh where, except for a lower level in June and July 1968, enemy activity has persisted at around 300 percent higher than the base level since the 1968 Tet offensive.

QUANG TRI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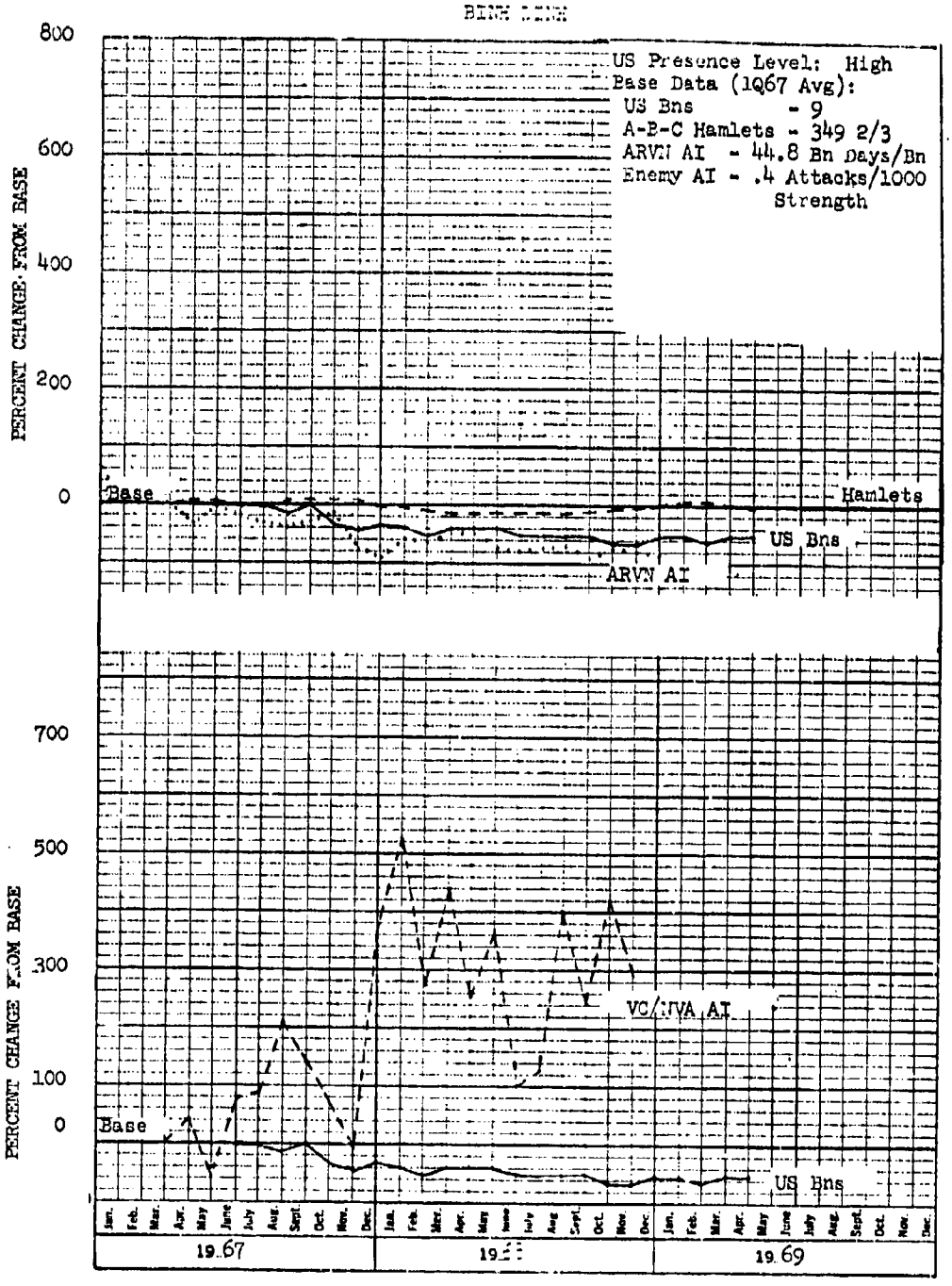
Base Data (1967 AVG):
US Bns 4.3
A-B-C Hamlets 154
ARVN AI - 14.8 Bn Days/Bn
Enemy AI - 1.12 Attacks/1000 Strength
PERCENT CHANGE FROM BASE
800
700
600
500
400
300
200
100
0
-100
US Bns
A-B-C Hamlets
ARVN AI
Base
VC/NVA AI
1967
1968
1969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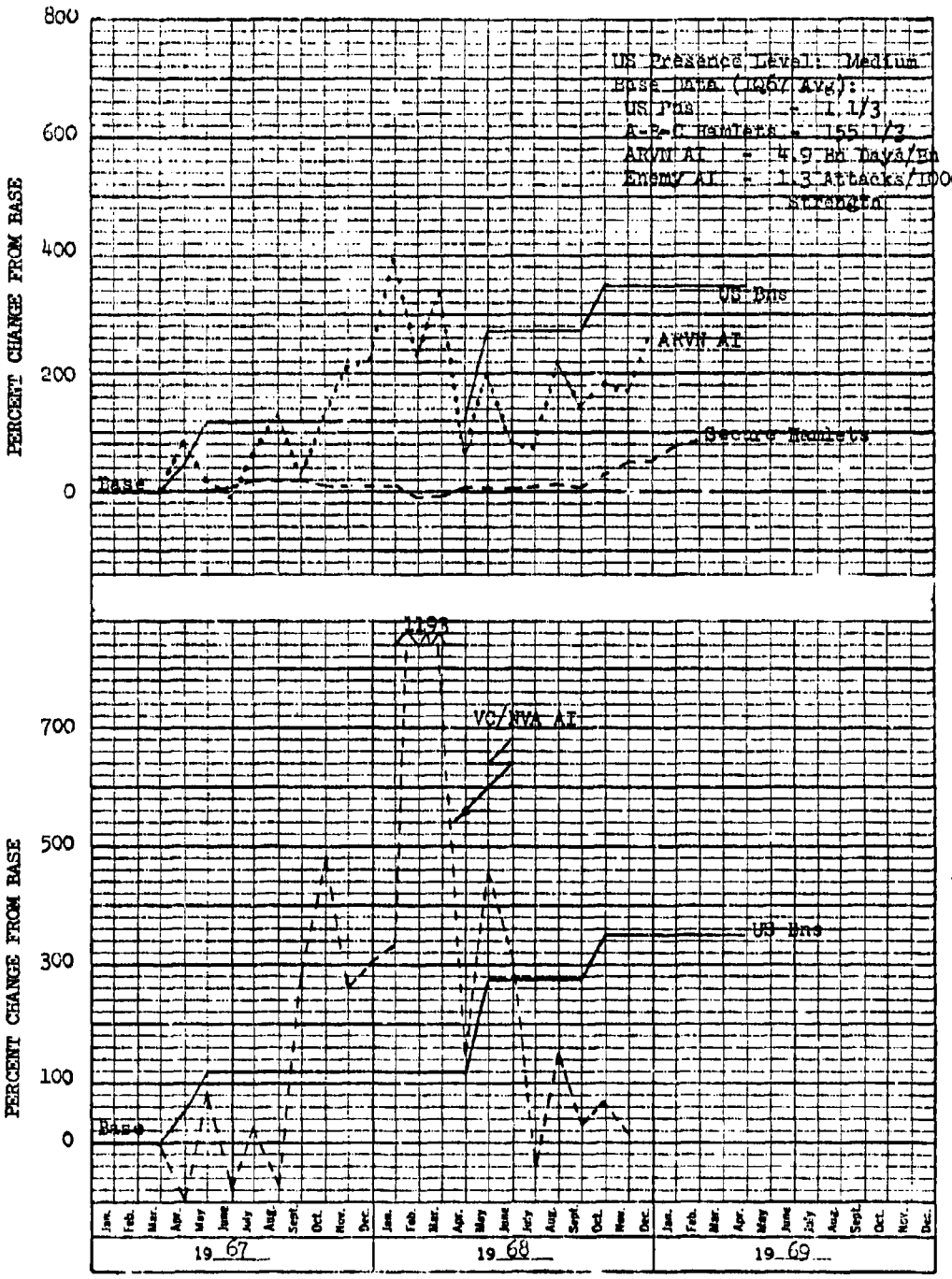
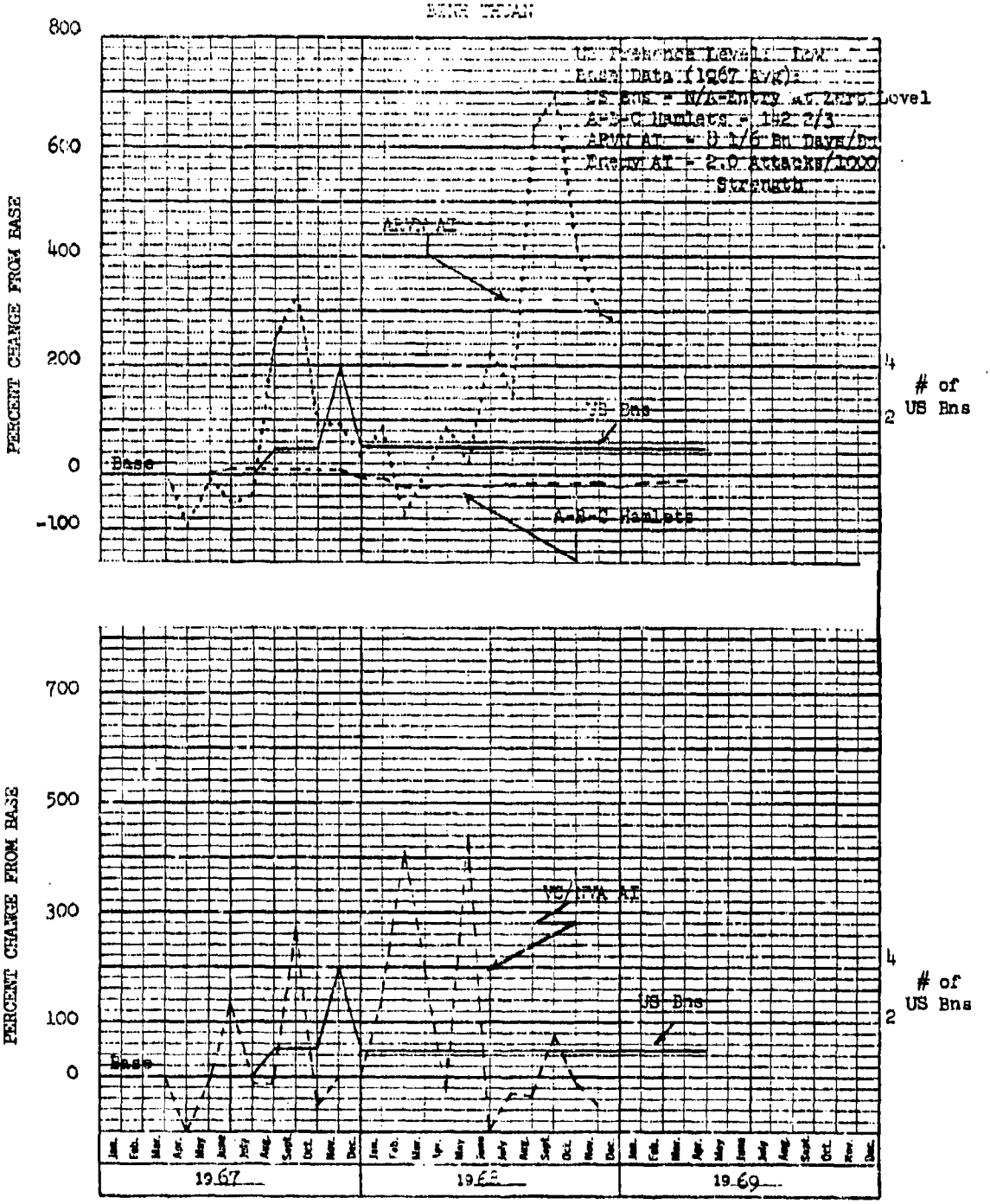
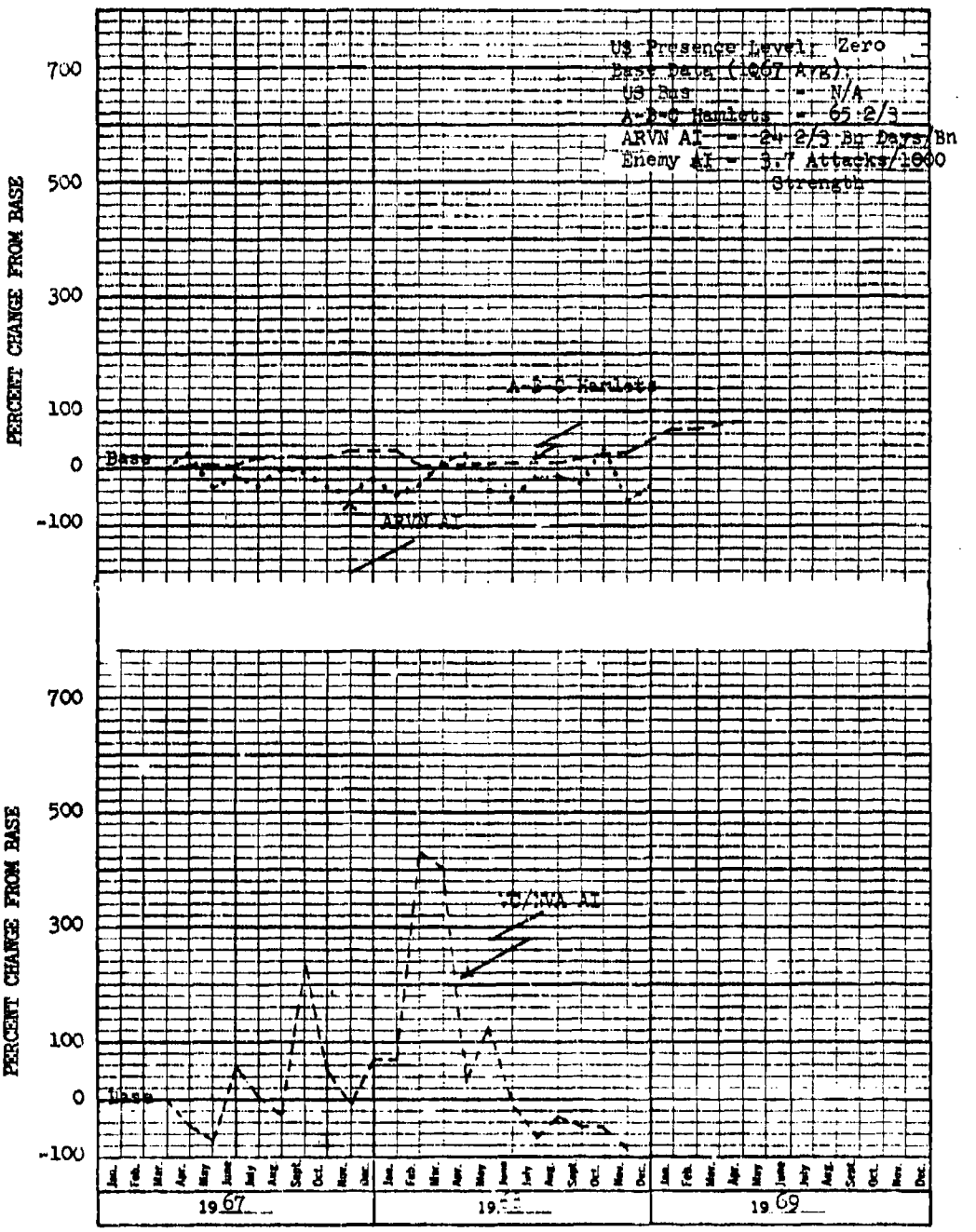
Base Data (1Q67 Avg):
US Bns - 9
A-B-C Hamlets - 349 2/3
ARVN AI - 44.8 Bn Days/Bn
Enemy AI - .4 Attacks/1000 Strength
PERCENT CHANGE FROM BASE
800
600
400
200
0
Base
Hamlets
US Bns
ARVN AI
700
500
300
100
0
VC/NVA AI
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1967
1968
1969

DINH TUONG


US Presence Level: Medium
Base Data (1Q67 Avg):
US Bns - 1 1/3
A-P-C Hamlets - 155 1/3
ARVN AI - 4.9 Bn Days/Bn
Enemy AI - 1.3 Attacks/1000 Strength
PERCENT CHANGE FROM BASE
800
600
400
200
0
US Bns
ARVN AI
Secure Hamlets
Base
1193
VC/NVA AI
700
500
300
100
0
US Bns
Base
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
19 67
19 68
19 69


PERCENT CHANGE FROM BASE
800
600
400
200
0
-100
Base
AP/PF AT
VB Bns
A-B-C Hamlets
4
2
# of US Bns
PERCENT CHANGE FROM BASE
700
500
300
100
0
Base
VB/PFK AT
US Bns
4
2
# of US Bns
1967
1968
1969

PHONG DINH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US Bns - N/A
A-B-C Hamlets - 65 2/3
ARVN AI - 24 2/3 Bn Days/Bn
Enemy AI - 3.7 Attacks/1000 Strength
PERCENT CHANGE FROM BASE
700
500
300
100
0
-100
A-B-C Hamlets
Base
ARVN AI
PERCENT CHANGE FROM BASE
700
500
300
100
0
-100
VC/NVA AI
Base
1967
1968
1969

WITHDRAWAL OF THE US 9TH DIVISION FROM IV CTZ

Summary. By the end of August all US ground combat forces (1st and 2nd Brigades of the US 9th Division) will be withdrawn from the IV CTZ area in South Vietnam. These forces moved into IV CTZ early in 1967. RVNAF and enemy force deployments apparently did not change significantly as a result of the introduction of US ground forces. The enemy attack patterns also showed little change from the patterns elsewhere in IV CTZ. However, the entry of US forces seems to have raised Hamlet Evaluation Security scores in the four provinces where the 9th Division operated most, and there could be some security regression after the forces withdraw. In recent weeks, enemy attacks have not diminished in IV CTZ as they have elsewhere in Vietnam, but most are attacks by indirect fire. Except for a few rocket attacks, the US 9th Division apparently has not been made a prime enemy target after the announcement of its withdrawal, because its combat death rate has followed the countrywide trend for US deaths in the lull.

There is considerable interest in the effects of the withdrawing of all US ground combat forces (9th Division) from the IV Corps area. To develop a better perspective for assessment of possible future changes in enemy activity, GVN security status, and RVNAF performance in the area, this paper describes the entry of US forces into IV CTZ in early 1967, identifies their primary areas of operation, and attempts to examine the impact of the US forces' entry on RVNAF and enemy force deployments, enemy attacks, and HES security scores. Finally, the enemy and South Vietnamese reactions to the announced withdrawal are discussed.

Deployment of US 9th Division into SVN

The 9th US Infantry Division moved into the upper delta region of III and IV Corps in early 1967. This was the initial deployment of US units into IV CTZ, except for one brief joint US/Vietnamese amphibious operation conducted earlier.

After a short in-country training period in Bien Hoa province, the 9th Division units moved into base camps in Dinh Tuong, Long An (III Corps) and Kien Hoa provinces. The 3rd Brigade moved into Dinh Tuong with one battalion in January 1967 and then moved to Long An as the 1st and 2nd Brigades deployed into Dinh Tuong. The 2nd Brigade became the Mobile Riverine Force with one battalion ashore and two afloat. As a riverine force, it operated in conjunction with the US Navy along the major waterways in the area, particularly in the coastal province of Kien Hoa. In January 1969, the 2nd Brigade Headquarters and battalion ashore were shifted to Truc Giang (Ben Tre) in Kien Hoa. The 1st Brigade remained in Dinh Tuong. By late 1968 the tactics of all three brigades had evolved to relatively small unit actions responding to intelligence, instead of large unit sweeps tied to specific terrain.

Table 1 indicates about 90% of the Division's effort has been in Dinh Tuong, Long An and Kien Hoa, plus extended operations of three maneuver battalions in Bien Hoa in 1967. Units from the Division also made brief forays into the III CTZ provinces of Hau Nghia and Gia Dinh, according to MACV order of battle reports.

TABLE 1

9TH INFANTRY DIVISION PRESENCE [a]
(Battalion Months [a] - Jan 1967 through May 1969)

	IV Corps		III Corps			
	Dinh Tuong	Kien Hoa	Long An	Bien Hoa	Other [b]	Total
1st Brigade	38	0	25	33	5	101
2d Brigade	75	6	0	0	7	88
3rd Brigade	1	0	63	17	7	88
9th Division Total	114	6	88	50	19	277

a/ Source: The SEAFA Computer File, which reports the location of each maneuver battalion monthly. One battalion month is the reported presence of a battalion in a province during 1 month.
b/ Operations in Gia Dinh, Hau Nghia and predeployment training.

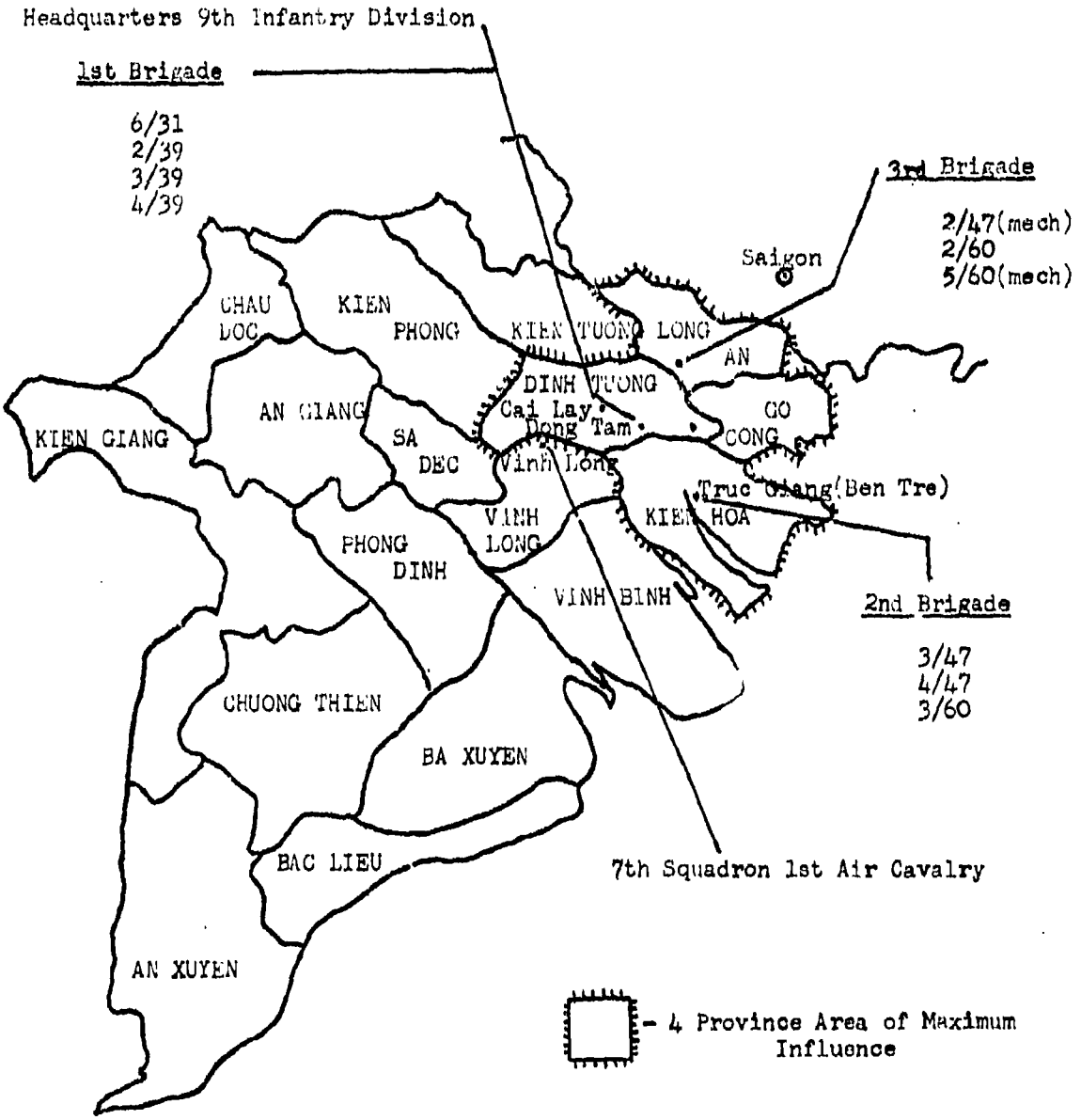
The location of each brigade and its maneuver battalions in May 1969 is shown in Figure 1, along with the location of the 7th Squadron, 1st Air Cavalry, which supports US and ARVN operations in the IV Corps area with helicopter gunship and reconnaissance operations. While the monthly MACV order of battle reports show US maneuver battalions present only in Dinh Tuong and Kien Hoa, operations by units smaller than battalion size, short riverine operations, and support by artillery helicopters have undoubtedly transmitted the 9th Division's influence to adjacent provinces.

Since Go Cong is surrounded by the 9th Division provinces, we are including it within the 9th Division area of maximum impact. Thus, for this analysis, the 9th Division area includes the four provinces of Dinh Tuong, Kien Hoa, Long An, and Go Cong. The sections below examine the enemy and ARVN deployments, enemy activities, pacification status of the area, and events since 1 June 1969.

RVNAF and Enemy Deployments

The 21 ARVN maneuver battalions in the 9th Division area (i.e., the four provinces) at the end of 1966 consisted of 13 battalions, controlled by the ARVN 7th Division, in the IV CTZ portion, and 8 battalions in Long An, under the 25th ARVN Division. Table 2 shows the increase in US battalions during the last two years and indicates that the location and number of ARVN

FIGURE 1


Headquarters 9th Infantry Division
1st Brigade
6/31
2/39
3/39
4/39
3rd Brigade
2/47(mech)
2/60
5/60(mech)
Saigon
CHAU DOC
KIEN PHONG
KIEN TUONG
LONG AN
DINH TUONG
Cai Lay
Dong Tam
GO CONG
AN GIANG
KIEN GIANG
SA DEC
Vinh Long
Truc Giang(Ben Tre)
VINH LONG
KIEN HOA
PHONG DINH
VINH BINH
2nd Brigade
3/47
4/47
3/60
CHUONG THIEN
BA XUYEN
BAC LIEU
7th Squadron 1st Air Cavalry
AN XUYEN
- 4 Province Area of Maximum Influence

battalions have not changed significantly during that time. However, RVNAF Regional and Popular Forces in the area have increased as a result of the RVNAF force expansion. Table 2 also indicates that enemy strength did not change much, but the enemy force figures are from collateral intelligence and may not be very reliable.

TABLE 2

FORCE LEVELS IN 9TH DIVISION AREA a/
(End of Quarter Status)

	1967 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1968 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1969 1st Qtr
US Battalions	5	6	6	6	6	9	9	10	10
ARVN Battalions	22	23	22	21	21	21	19	21	20
VC/NVA Strength (000's)	7.7	7.3	8.6	7.5	7.3	7.0	8.3	7.6	N/A

Source: SEAPRS Computer file (from SEAFA).
a/ Includes provinces of Dinh Tuong, Kien Hoa, Go Cong, and Long An

Enemy Activity

Table 3 indicates that the level of enemy attacks in the 9th Division area has fluctuated independently of changes in the US maneuver battalion presence there. Enemy attacks in the 9th Division area averaged about 40% of the IV CTZ total in 1966, 1967 and 1968.

TABLE 3

ENEMY ATTACKS
(Quarterly Average)

	1966	1967	1968	1Qtr 1969
Total Attacks				
IV CTZ	80	175	265	178
9th Div Area a/	31	70	107	94
%	39	40	40	53

a/ Dinh Tuong, Long An, Kien Hoa and Go Cong provinces.

Population Security

Table 4 shows that, at the time of the 9th Division's arrival in first quarter 1967, the percentage of the population in its four provinces rated "C" or "Contested" (D+E) was about the same as the rest of the country. In the other two categories, "A+B" and "VC Controlled" (V), IV Corps lagged slightly behind the countrywide ratings, but the 9th Division area was far behind, with 44% of its population under VC control.

During the periods in which security scores improved, the 9th Division area improved faster than IV Corps or the country as a whole. Moreover, its A+B ratings did not drop below 1st quarter 1967 levels during the 1968 Tet offensive. The marked security improvement beginning with the 4th quarter 1968 scores is probably best explained as the effect of the Accelerated Pacification Campaign operating within the security provided by the 7th ARVN Division, 9th US Division, US Air Cavalry and US Navy.

TABLE 4

SECURITY STATUS - END OF QUARTER

	1967				1968				1969
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q
Total Population a/									
Per Cent Rated A&B									
Countrywide	35	36	38	35	23	25	26	38	43
IV Corps	31	30	32	31	23	25	28	36	39
9th Div Area b/	13	15	19	19	15	18	20	29	31
Per Cent Rated C									
Countrywide	26	25	25	28	30	31	34	35	36
IV Corps	23	23	23	23	23	25	25	29	34
9th Div Area b/	26	24	24	24	22	21	21	27	35
Per Cent Contested (D&E)									
Countrywide	16	17	16	17	25	23	20	13	10
IV Corps	17	19	18	19	24	22	20	13	9
9th Div Area b/	17	22	16	16	21	21	20	15	9
Per Cent VC Control (V)									
Countrywide	23	22	21	20	22	21	20	14	11
IV Corps	29	28	27	27	30	28	27	22	18
9th Div Area b/	44	39	41	41	42	40	39	29	25

Source: HAMLA Computer File.

a/ Excluding autonomous cities in countrywide total.

b/ Dinh Tuong, Kien Hoa, Go Cong and Long An.

Table 5 is a regression analysis presentation using data from April 1967 through November 1968. This approach was used in an earlier article to assess the impact of US maneuver battalions. 1/ If security scores are dependent upon the presence of US battalions, then the increase in US battalions during the period should be accompanied by an increase of population within GVN security (A+B+C) and a decrease of either contested population (D+E) or VC controlled population (V). A reduction in US battalions should have the opposite effects.

Table 5 shows just such a pattern for Dinh Tuong, Long An and countrywide data. In Dinh Tuong, the GVN secure and contested categories increase at the expense of the VC controlled category when US battalions are increased. The effect of US presence (or absence) shows immediately; there is no time lag. In Long An the GVN secure category increases at the expense of the VC category, with the contested category having no relationship to the input or withdrawal of US battalions, and it takes four to seven months for the full effect to show. The countrywide pattern is similar to Dinh Tuong's, but the lag is nine to ten months.

TABLE 5

REGRESSION ANALYSIS[a/]
HES SECURITY SCORES AGAINST US BATTALIONS
BY MONTH, APR 67 THROUGH NOV 68

	Dinh Tuong		Long An		Countrywide	
	Corr	Lag (Months)	Corr	Lag (Months)	Corr	Lag (Months)
Total Population						
Within GVN Security (A+B+C)	+	0	+	4	+	10
Contested (D+E)	+	0	0	1	+	0
VC Controlled (V)	-	0	-	7	-	9

Source: SEAPRS computer file (HAMLA data).
a/ + significant positive correlation.
- significant negative correlation.
0 no significant correlation.

Thus, Dinh Tuong may prove to be a useful case study for evaluating the immediate impact of withdrawing US forces because there seems to be some relationship between the Hamlet Evaluation System (HES) security scores and the presence of US maneuver battalions. Moreover, the relationship shows immediately after a change in US presence. However, the relationship

1/ SEA Analysis Report, June 1969, p. 7.

is not an extremely strong one; only 20-25% of the change in the HES scores can be explained by the change in US battalions. Nonetheless, the withdrawal of US battalions from Dinh Tuong could adversely affect HES security scores there soon, unless other factors (which influence the other 75-80% of the changes in HES scores) overcome the influence of the US withdrawals.

Table 6 shows the changes in maneuver battalion employment for IV Corps which will have occurred by September 1, 1969, assuming no change in ARVN deployment after 8 July. The 9th Division redeployment will result in a 14% reduction of IV Corps friendly maneuver battalions and a 21% decrease in battalions on combat operations. Of course, the impact on the four 9th Division provinces will be greater.

TABLE 6

IV CTZ MANEUVER BATTALION DEPLOYMENT

	8 June	30 June	17 July	1 Sep[a]
Combat Operations				
US	6	4	3	0
ARVN	28	27	27	27
Security/Pacification				
US	1	0	1	0
ARVN	12	12	12	12
Reserve/Training				
US [b]	0	3	1	0
ARVN	3	4	4	4
Total				
US	7	7	5	0
ARVN	43	43	43	43

Source: NMCC Operational Summary
a/ Estimated.
b/ US Battalions standing down for movement.

Events Since 1 June 1969

Friendly Operations. The 9th Division began its IV CTZ operations in June with one battalion in security and the remaining six battalions of the 1st and 2nd Brigades committed to combat operations. Following the June 8 Midway conference announcement, these two brigades were publicly designated (on 17 June) for redeployment. On 20 June, the 2nd Brigade moved to the Division Headquarters at Dong Tam in Dinh Tuong province, and by 4 July all three battalions (3/47, 4/47 and 3/60) were standing down for redeployment. On 8 July the 3/60 departed for the US followed by the 4/47 on 13 July The remaining battalion and 2nd Brigade Headquarters will move to the US for demobilization by 27 August. On 23 July, the 1st Brigade turned over the fire support base at Cai Lay to the 7th ARVN Division. The 9th Division Headquarters and the 1st Brigade will redeploy to Schofield Barracks, Hawaii, and become a part of PACOM reserve between 30 July and 30 August.

Vietnamese Reaction[1/] Outside the 9th Division operational area, the Vietnamese appear to be relatively unconcerned, but in the provinces of Kien Hoa and Dinh Tuong, there is reportedly a mixture of relief and apprehension. This ambivalence apparently stems from uncertainty regarding security without American support, coupled with a feeling that heavy US firepower can be as large a personal threat as VC terror.

Officers from the 7th ARVN Division express some optimism, stating that ARVN soldiers will go on the same number of missions as before, and that adequate US air, artillery, and helicopter support has been assured. On the other hand, there are some fears that RF/PF performance will suffer from reduced US materiel and fire support. There are no indications that the Vietnamese accept the VC contention that the withdrawal is a tacit US admission of defeat.

Recent Enemy Actions The countrywide lull in combat started during the week ending 28 June, with enemy ground, ambush and indirect fire attacks, averaging 66 per week through 19 July, compared with 123 per week during the two weeks before the lull. In IV CTZ, the opposite happened: average attacks increased to 14 per week, versus 10 per week before the lull. On the other hand, IV CTZ closely followed the countrywide trend in harassment, terror, and sabotage incidents, with a 5.5% decline (vs 5.6 decline countrywide), as shown by Table 7. Thus, the enemy may have reacted to the withdrawal announcement by deciding to keep his attack level up in IV CTZ, particularly attacks by indirect fire.

TABLE 7

RECENT ENEMY ACTIVITY LEVELS - IV CTZ
(Weekly Totals)

	June 14	21	28	July 5	12	19
Total Attacks [a/]						
Countrywide	127	119	88	61	67	49
IV Corps	9	11	13	9	20	14
H/T/S Incidents						
Countrywide	495	501	413	441	507	521
IV Corps	95	49	50	41	75	107

Source: DIA
a/ Includes assaults, ambushes and indirect attacks by fire.

1/ Based on recent CIA and American Embassy assessment.

After the redeployment announcements there were indications that the VC had changed tactics in the upper delta region; elements of the 9th Division had difficulty finding and engaging the enemy and there were numerous reports of small Viet Cong units hiding out in villages. In the lower delta (VC Military Region 3), the VC are reportedly moving into pacified areas, and their operations indicate the possibility of strong attacks.

Primary VC emphasis in the 9th Division area has been on propagandizing the withdrawal as a defeat for US forces, supported by harassment of US bases during and after the withdrawal. On 10 July a 107mm rocket landed in the Dong Tam base, resulting in 23 US WIA, the first such attack since 20 June. Since then there have been other attacks by fire, and captured documents indicate continued VC reconnaissance of US bases.

Despite the harassment and reported targeting of the withdrawing units, 9th Division combat deaths declined from an average of 17.6 per week in the 5 weeks before the lull to 9.3 per week during the lull, following the countrywide trend.

During the 3 week period preceding the Midway conference, 44% of the 9th Division KIA were due to gunshot wounds or grenade fragments; for the 3 week period which followed the conference, this figure had dropped to 34%. Wounds caused by gunshot and grenade fragments are reasonable indicators of forces in contact, so the decrease tends to support assertions that the VC are relying on attacks by fire and avoiding ground contact.

BATTLE PROSPECTS IN THE MR 2 HIGHLANDS

Summary

Recent assessments indicate the strong possibility of an enemy offensive in MR 2 early in 1972. The enemy has historically mounted offensives in the highlands of MR 2 normally employing a 3 regiment force. The major difference in this year's enemy build-up is the deployment of the 320th Division to the B-3 front. This will substantially increase enemy capability. The critical factor in judging enemy intentions is the employment of the 320th NVA Division; its arrival from North Vietnam is imminent but there are two differing views on its likely employment.

- Strong Offensive. This view, strongly held by COMUSMACV, sees the 320th augmenting organic B-3 Front units in MR 2. This would lead to a 1½ to 1 force ratio in favor of the enemy, the worst in the history of the Highlands but not as bad as the 2 or 3 to 1 faced by RVNAF during Lam Son 719.

- LOC Protection. Those holding this view believe the 320th will provide a reserve to protect the enemy logistic network in Cambodia and South Laos. This would release all of the organic units of the B-3 Front for action in MR 2 but the force ratio would be about the same as in last year's FSB6 attacks.

Despite the adverse ratio of forces if the 320th is employed, MR 2 units will be on defense in familiar home terrain, in contrast to RVNAF in Lam Son 719. Should it become necessary, the adverse ratios could be improved to about 1 to 1 by using more units from the ARVN 23rd Division or MR 3.

Analysis of support furnished during past enemy offensives reveals that combat support now available to MR 2 should be adequate:

- Of 13 ARVN artillery battalions available, the 5 under MR control would more than double the amount used at Ben Het/Dak To.

- The three VNAF helicopter squadrons now in the Highlands provide about 3 times the support furnished RVNAF during Ben Het/Dak To.

- Major engagements in MR 2 have never received more than 8% of the total US/VNAF tactical air sorties, and support equalling the highest level ever flown in MR 2 would require less than 15% of the current US/VNAF capability.

- In May-June 1969, Ben Het/Dak To received almost 25% of the B-52 sorties being flown in SEA. Support equivalent to that provided at Ben Het/Dak To would require 40% of the current capability.

Since last year's battle in MR 2 a new armored cavalry squadron has been activated and a VNAF gunship squadron transferred from MR 3. More recent RVNAF actions to counter the expected offensives include alerting two brigades of the general reserve for movement to MR 2 and replacement

of the 23rd Division's commander.

Principal RVNAF shortcomings noted during the intense action at Lam Son were battlefield coordination and casualty replacement. After action reports from MR 2 cite the same deficiencies in addition to poor staff planning.

Details

Introduction. Recent assessments indicate the strong possibility of an enemy offensive in western MR 2 around mid-February 1972. Despite general agreement on the enemy capabilities in the area, there are some understandable differences among analysts as to his actual intentions. Moreover, RVNAF preparations and activity will influence not only the outcome but also the intended scope of the enemy's activity. This analysis discusses current enemy capabilities and intentions, the historical data on past enemy offensives in the Highlands, and RVNAF preparations to counter the expected offensives this year. Additional perspective is provided by comparing the scope of past and projected enemy offensives with Lam Son 719.

Current Enemy Capability and Intentions

The OJCS/CIA recently updated last spring's assessment of enemy capabilities in RVN and noted that enemy preparations since then in the B-3 front (increased personnel and unit infiltration) give them an added capability to launch an offensive in the Highlands early in 1972. In addition, Hanoi's search for a dramatic (albeit temporary) tactical success might focus on this region, where RVNAF units are more dispersed and of poorer quality than those in MR 1.

Informal discussions with intelligence analysts from several agencies reveal considerable unanimity not only with regard to the capability assessment but also the enemy's probable scheme of maneuver -- a main thrust in Kontum province with supporting attacks in Pleiku and northern MR 1 to tie down ARVN forces there. To further restrict the RVNAF reinforcing capability, increased activity is also expected in MR 3 and the coastal provinces of northern MR 2 and southern MR 1. According to some analysts, the intelligence signals countrywide are more reminiscent of 1964 (heavy attacks in the Kontum area and northern MR 1, low level activity elsewhere) than 1968.

The principal difference in analysts' views of the current situation revolves around the intended use of the 320th NVA division whose arrival in the B-3 front is imminent and thus the probable intensity of this year's enemy offensive in the Highlands compared to those in the past.

- Strong Offensive. This view, strongly held by COMUSMACV, assumes employment of the 320th NVA division in the battle area and thus the largest enemy effort since TET 1968.

- LOC Protection. Those holding this view believe the 320th is to provide a reserve and protect the South Laos portion of the supply network, while the three regiments normally organic to the B-3 front conduct an offensive similar to the Ben Het/Dak To campaign in 1969.

In addition to the 320th Division, the B-3 front has apparently been augmented by up to a battalion of 130mm field guns (10-12 tubes). The significance of this added combat support to an enemy offensive, however,

may be more psychological than real; the 122mm guns have a greater range than the ARVN 155mm howitzer (22km vs 15 km) but the 155 is more accurate and its projectile weight is nearly twice as large. Moreover, the 122mm gun is vulnerable to allied air strikes; it is 15% heavier than the 155mm and has only been sighted behind tracked vehicle movers.

Intelligence reports from the field show no distinct pattern and could support either view, depending on the analyst's interpretation. Since there has been no significant change in enemy capabilities over the past weeks, COMUSMACV's recent request for new authorities may simply reflect his growing conviction in the strong offensive interpretation.

The LOC protection view is primarily based onthe importance of the expanded Ho Chi Minh Trail to the enemy and declining levels of US support to RVNAF:

- Elements of two B-3 regiments have been helping to expand and protect the routes through South Laos and northern Cambodia sincemid-1970. Enemy sensitivity to RVNAF ground interdiction threats may have dictated the dispatch of the 320th to assume this mission. This would release organic B-3 units for action in the Highlands this year, leaving them the option to employ the additional division in 1973.

- Return of all B-3 units for a 1969 style activity upsurge would probably achieve the desired publicity this year, while next year would be more opportune for a major offensive. US combat support to RVNAF, already reduced over previous levels, will be essentially nil by 1973, and the 320th would have gained valuable familiarity with the terrain.

Historical Perspective. The highlands of MR 2 have been the scene of large scale enemy action for the past several years, usually beginning in late March/early April, peaking in May and subsiding in June after which enemy units retire to their sanctuaries across the border.

Enemy attacks in the eastern portion of MR 2 are smaller in scale and generally avoid major confrontation with friendly main force units. Enemy base areas supporting his coastal units are more vulnerable to friendly penetration, which restricts his ability to mass without detection in this area.

Battle Detail. The enemy opens these setpiece battles in the highlands with scattered attacks by fire which build to a crescendo and are followed by multi-battalion ground assaults against isolated GVN outposts. Normally two infantry regiments and the bulk of his artillery regiment attacks in Kontum, with one or two regiments and the rest of the artillery in Pleiku.

Since 1969 this two province area has been on a par with all of MR 3 in number of enemy ground attacks during the April-June period. Moreover, during this same period in 1971 friendly regular KIA there equalled the

total for both MRs 3 and 4. A comparison of these past battles and projected force ratios for this year in the area (Table 1) shows:

- Employment of the 320th NVA Division is the key issue. 1/

- If the 320th is used in the enemy attack, friendly to enemy force ratios approach that for Lam Son 719 (.7 compared to .5).

- If the 320th is not used, force ratios will be about the same as last year (about 1 to 1).

Despite the adverse ratio of forces should the 320th be deployed, in contrast to Lam Son 719, the MR 2 forces will be on defense in their home territory. Moreover, the ratios above assume only the same reinforcement as last year. As discussed later in the RVNAF preparations section, it would be possible to provide enough reinforcement to raise the combat strength ratio to nearly 1 to 1, should that prove necessary.

TABLE 1

BATTLES IN KONTUM/PLEIKU a/

	1969 (Ben Het/Dak To)	1970 (Dak Seang)	1971 (FSB 6)	1972 (320th NVA) In	1972 (320th NVA) Out	LAM SON 719 1971
Combat Bns						
Friendly	20 (8 US)	16 (3 US)	25	25b/	25b/	20
Enemy	19	18	26	38	26	40
Fr/En Ratio	1.1	.9	1.0	.7	1.0	.5
Combat Str (000)						
Friendly	15.6	8.6	11.6	11.6	11.6	12.5
Enemy	5.8	5.5	8.7	13.5	8.7	27.1
Fr/En Ratio	2.7	1.5	1.3	.9	1.3	.5
Enemy Attks (per month)	72	72	24	-	-	N/A
Results						
Enemy KIA	3241	1699	4526	-	-	13642
Friendly KIA	330	708	577	-	-	1532
En/Fr Ratio	9.8	2.4	7.8	-	-	
GVN Control (%)						
Before Battle	34	52	50	60(Nov 71)		—
After Battle	27	48	50	-	-	—

a/ Data is for the entire two province area during the course of the battle. KIA results are operational (OPREP) figures, not final verified casualties.

b/ Assumes the 2 airborne brigades and a regiment of 23rd Division are moved to the battle area.

1/ Although there are some tentative indications that the 271st Regiment may also be destined for the B-3 Front, it was not included in our assessment, because the sketchy intelligence information available indicates that the 271st currently consists of only one battalion, and this would not materially affect either the calculations or outcome.

Artillery and Helicopter Support. Since much of the enemy KIA in these battles is credited to artillery and air we examined available data to determine the scope of such support in the past and the impact of US redeployments.

US forces furnished all of the helicopter support and most of the artillery and TAC AIR support for the 1969 Ben Het/Dat To Campaign.

- Two battalions (36 tubes) of light and medium artillery augmented by a composite heavy (175/8") battery(5 tubes). All of the heavy artillery and half of the light/medium tubes were US.

- US Army Aviation units provided 32 helicopters (6 gunships, 20 utility, 6 heavy) per day. In sharp contrast, more than 20 times that number (659) were used on LAM SON 719.

By the time of the FSB6 attack in 1971, US artillery in MR 2 had been reduced about 2/3 (to 5 bns). A medium (155mm) and heavy (175/8") battalion were in Pleiku but were not employed in the actual battle area. According to the commander of the VNAF 2d Air Division,* his division furnished all of the air support in the actual area of operations (2 helicopter squadrons, 2 fighter squadrons, and a liaison squadron).

Based on the above, RVNAF seems to have adequate combat support available in MR 2 for the predicted enemy offensive even though all US artillery has been withdrawn and US helicopters have been reduced:

- Of the 13 ARVN artillery battalions, the 5 under MR control would more than double those employed in the Ben Het/Dak To battle.

- Although ARVN does not have heavy (175mm/8") artillery in MR 2, available US heavy artillery was not actually used in the battle area during the FSB6 battle last year, although it was used during Ben Het/Dak To.

- VNAF in MR 2 has three of its four UH-1 helicopter squadrons (31 helicopters each) stationed in Pleiku, giving them about 3 times the number provided in support of the Ben Het/Dak To battle.

*CIA field report dated 27 May 1971.

Tactical Air and B-52 Support

Tactical air sorties have not been used extensively in Kontum and Pleiku provinces. Even in the months characterized by major battles, no more than 8% of the total U.S. and VNAF sorties in Southeast Asia (and 17% of all those flown in South Vietnam) were flown in support of operations in the two provinces. This is in contrast to the air effort devoted to LAM SON 719 which, during February and March 1971, received about 30% of all tactical air sorties flown in SEA and over 50% of those flown in South Laos.

The level of B-52 effort supporting the significant engagements in Kontum and Pleiku provinces has never exceeded 25% of the total sorties flown during the period of the battles. However, during the time LAM SON 719 was in progress over 80% of all B-52 sorties flown (and 90% of those flown in Laos) were in support of the operation.

The table below shows the level of tactical air and B-52 effort supporting the major engagements in Kontum and Pleiku during 1969-1971, as well as the levels during LAM SON 719. Sorties flown in conjunction with these operations are compared with the air activity in the remainder of SEA during the times the operations were in progress, and with the capability now available.

US/VNAF AIR OPERATIONS IN KONTUM AND PLEIKU a/

	Ben Het/Dak To May-June 1969	Dak Seang Apr-May 70	FSB6 Apr-June 71	LAM SON 719 Feb-Mar 71
Tactical Air b/				
Sorties supporting battle	2,037	2,577	721	8,512
(monthly avg.)	(1,019)	(2,035)	(240)	(5,674)
Sorties in all SVN	37,154	15,519	12,675	16,063 c/
Total SEA Sorties	60,707	32,343	46,846	29,824
% of SVN total for battle	5	17	6	53 c/
% of SEA total for battle	3	8	2	29
% of current monthly capability	6	13	2	35
B-52				
Sorties supporting operation	804	114	96	1,358
(monthly avg.)	(402)	(90)	(32)	(906)
Sorties in all SVN	3,019	1,015	791	1,485 c/
Total SEA sorties	3,544	1,778	3,425	1,664
% of SVN sorties for battle	27	11	12	91 c/
% of SEA sorties for battle	23	6	3	82
% of current monthly capability	40	9	3	91

a/ Sortie data for Ben Het/Dak To and Dak Seang from USAF reports of air support for the operations. Data for FSB6 include all sorties in Kontum and Pleiku provinces. LAM SON 719 data from USAF report of COMMANDO HUNT V.
b/ Includes gunship sorties.
c/ Sorties in South Laos for LAM SON 719.

CURRENT US/VNAF AIR CAPABILITIES

Tactical Air	(sorties/Month)
US	10,000
(Air Force)	(6,700)
(Navy)	(3,300)
VNAF	6,500
Gunship	
US	750
VNAF	500
B-52	1,000

Through June 1972 Air Force aircraft based in South Vietnam and Thailand will have the capability to fly 6,700 tactical air sorties, 750 gunship sorties and 1,000 B-52 sorties each month. Navy aircraft will add an additional 3,300 sorties monthly to the tactical air total. The VNAF have been programmed to fly 6,500 tactical air and 500 gunship sorties monthly; however, their contribution will probably not be more than 5,000 tactical air sorties and 500 gunship sorties each month. Thus, about 15,000 tactical air 1,250 gunship and 1,000 B-52 sorties should be available each month until June 1972 (this does not include monthly totals of 3,000-3,500 T-28 and 200 gunship sorties flown by the Lao).

As can be seen in the above table, engagements of a magnitude similar to Ben Het, Dak Seang and FSB 6 would not require significant portions of the current US/VNAF tactical air monthly sortie capability. To fly the level of B-52 support flown during Ben Het would require 40% of the current B-52 capability. B-52 support equivalent to that at Dak Seang and FSB 6 would require 9% and 3%, respectively, of the current sortie level.*

As noted previously one squadron of A-1s (24 aircraft) are at Pleiku. A squadron of A-37s (24 aircraft) is at Nha Trang. To fly the level of tactical air support flown during Ben Het would require the sortie capability of one A-37 or two A-1 squadrons. Twice that number of aircraft would have to be used to support an operation of the magnitude of Dak Seang. B-52 support as used at Ben Het would require approximately 18 aircraft; support as used at Dak Seang, 4 B-52s and FSB 6, less than 2 B-52s.

RVNAF Shortcomings. In LAM SON 719, battlefield coordination and casualty replacement were considered the principal RVNAF shortcomings. In addition, a series of MR 2 RVNAF performance assessments during periodically intense combat since 1969 shows a consistent set of deficiencies. The previous MR 2 senior advisor noted in his final report that "shortcomings which existed at Dak Seang (1970) were also present to a lesser extent at FSB 6 (1971)." Among those cited were:

- Command and Control. Failure to quickly establish a forward command post when the operation is large and involves units from several organizations.

- Planning. MR 2 has neither a campaign nor a seasonal plan. Although MG Dzu moves forces quickly to the scene of action, there is no accompanying scheme of maneuver, chain of command, or fire support plan.

- Coordination. Coordination of intelligence, aviation, artillery, and Tac air was poor.

- Personnel and Unit Management. Casualty reports were not timely or accurate and there was little or no attempt to establish a priority system for casualty replacement. Moreover, units were often rotated in and out of the battle area without regard to their performance potential or casualties taken.

*While not germane to the current build-up in MR 2, air support of an operation of the magnitude of LAM SON 719 would require 35% of current US/VNAF tactical air and 91% of the current B-52 capability. Since the period of LAM SON 719 combined US/VNAF tactical air capability has decreased less than 10%; however, since early 1970 the decrease has been over 30%. B-52 capability is down 10% from a year ago and down 30% from early 1970.

Current RVNAF Preparations

In addition to the two ROK divisions (18 bns) along the central coast of MR 2, there are 35 RVNAF maneuver battalions operating generally as follows:

- The 22d Division (17 bns) has two regiments operating in the threatened northern Highlands (Kontum and Pleiku) and two in the perennially troublesome Binh Dinh area.

- The 23d Division (13 bns) has its three regiments operating over a wide area from Binh Thuan on the southern coast to Darlac in the highlands south of Pleiku.

- MR forces (5 bns) include a 3 battalion ranger group and a 2 squadron armored cavalry brigade now operating around Pleiku.

The OJCS RVN assessment (January update) cited measures taken to strengthen MR 2 since last May--an armored cavalry squadron activated and a VNAF gunship squadron transferred from MR 3. More recent actions include:

- Two airborne brigades (3 bns each) withdrawn from Cambodia and alerted for movement to MR 2, leaving 2 brigades (1 Abn, 1 Marine) as JGS general reserve in MR 3.

- Replacement of the 23rd Division commander by the deputy MR commander and new province chiefs in Binh Dinh, Darlac, and Quang Duc.

While it seems strange that the 22nd Division commander, whom COMUSMACV rates incompetent, was not relieved, it is probable that the MR commander (MG Dzu) will personally direct operations in the northern highlands as he did in last year's FSB 6 attacks. Thus having his former deputy in command of the other division might facilitate rapid movement of reinforcements to the battle area from the 23rd Division.

In past years, MR 2 commanders have reinforced the highlands with regiments from either the 23rd Division or the Binh Dinh area. The present MR 2, senior advisor has stated, however, that the two regiments now in Binh Dinh would remain there to preclude the usual GVN control losses in Binh Dinh which have accompanied this turbulence.

In addition to the 6 airborne battalions then, 6-8 battalions could be provided from the 23rd Division. Depending on the situation in MR 3 and MR 1, one of the two remaining general reserve brigades might also be made available, since the JGS has alerted a reinforced regiment in MR 4 for possible movement to MR 3.

AIR AND ARTILLERY STRIKES OTHER THAN CLOSE SUPPORT

(S) Less than 35% of the total tonnage of bombs and artillery rounds are used against targets located by maneuvering troops or patrols. The other 65% is aimed at places where the enemy might be (e.g. free strike zones, suspected routes of VC movement, reported VC encampments) but usually without reliable information that he is there. The evidence is too fragmentary to give a reliable estimate of the results of such strikes. What little hard evidence there is consistent with the conclusion that such strikes may have killed as few as 50 to 100 VC/NVA in 1966.

(S) However, the 27,000 tons of dud bombs and shells each year from such attacks provide the enemy with more than enough material to use in mines and booby traps. In 1966 about 1100 U.S. soldiers were killed this way of which more than 100 may have been killed by duds from unobserved strikes. Even from a purely military standpoint, the exchange is bad. The effects on civilians in VC and friendly areas are also undesirable. Such strikes may create more VC than they eliminate. Such strikes cost about $2.2 billion per year.

1. Calculating Artillery and Air Strikes Away From Friendly Ground Forces (S)

Artillery and air strikes in South Vietnam, besides supporting friendly troops engaged in combat, hit suspected enemy position in the general area of our forces; this is to harrass, discourage, and drive off the enemy if he happens to be around. Fire is also directed at enemy held areas and villages declared hostile by GVN province chiefs.

We used Service data to classify strikes as "close support" (strikes in support of engaged ground forces or adjusted by ground forces) and "other" (harrassment and interdiction strikes, LZ preparations, and other strikes unobserved by nearby ground forces). The figures run uniformly below 13% for close support. Changing the definitions somewhat does not change the basic conclusion.

CY 66 Artillery and Air Strikes
(in % of fire missions or sorties)

	Close Support	Other
Army Artillery a/	8.8	91.2
Marine Artillery b/	11.4	88.6
Tactical Air c/	12.6	87.4
B-52s d/	-	100.0

a/ In Support of Major Operations only. "Close Support" includes all observed fire on identified targets; "Other" includes H&I missions and LZ preps. Data from 22 major operations of the 1st Division, the 25th Division, the 1st Air Cav, and the 101st.

b/ Includes all observed strikes, both in close support and on targets spotted by reconnaissance patrols. Data from FMF Pac, A STATISTICAL PORTRAYAL OF MARINE ACTIVITIES IN SEASIA, Dec., 1966.

c/ January-November only. Includes Air Force, Navy, Marine Corps and Vietnamese Air Force. NMCS data.
d/ Very few of the 5023 B-52 sorties in SVN in CY 66 were close support.

Adding artillery and tactical air landing-zone-preparatory strikes to "close support" would add only 2.5% to the numbers above. Adding air strikes that hit identified enemy targets, usually under airborne forward air control, would probably have a bigger impact. However, we have no figures on what fraction of air strikes are airborne controlled, nor have we any idea how many hit well-confirmed hostile targets. We can get a rough measure by using enemy KBA as a basis, by assuming that our aircraft attack personnel only when they fire at us, and that this is the main way to be sure that a target is hostile. Close air support strikes in 1966 killed 3,682 enemy, and all other types of strikes killed 10,261. a/ If the non-close-support strikes on confirmed hostile targets had the same average effectiveness as close support strikes, such strikes would need 36% of the total sorties to get this result. Close support and these other strikes together would be about 48%; the remaining 52% would be unobserved strikes and strikes on targets not definitely known to be hostile (including unseen targets in the jungle).

As to artillery strikes, two major adjustments are needed. One is to account for the larger number of rounds per fire mission in close support strikes. The other is to adjust for the strikes not included in above data (which is based only on major operations); the other strikes are mostly unobserved. Adjusting for these factors,

Estimated Artillery Rounds Fired, Close Support and Other
(1966 in %)

	Close Support	Other
Army artillery	15	85
Marine Corps artillery	27	73

15% of Army rounds are in close support and 27% of Marine Corps. These figures exclude mortar shells, which we assume are used only in close support.

2. Cost & Side Effects of Unobserved(Non-close-support)Air and Artillery Strikes

The VC get most of the materials they require for mines and booby traps from dud bombs, dud artillery shells, and captured ordnance. b/ Total air and tube ordnance delivered within South Vietnam levelled off at about 1.44 million tons per year by June 1967. Of the total tonnage, 42,600 tons (3%) per year or 117 tons per day are duds, using standard rates. This compares with total infiltration of 45 tons per day, including 12-20 tons of ammunition. c/

a/ NMCS data.
b/ Local materials also contribute to their supply. USMC Bulletin 3480, Professional Knowledge Gained ---, reports the predominant role played by duds and other captured items. These other items are mainly captured grenades and mines.
c/ NIE 14.3

ORDNANCE EXPENDITURES IN SOUTH VIETNAM, NON-CLOSE SUPPORT (NCS) AND DUDS

	Annual Rates, June 1967						Daily Rates	
	Total Tons	NCS Tons	Total Cost ($ Million)	NCS Cost ($ Million)	Est Dud Rate	Tons Duds	Total Tons Duds	NCS Tons Duds
Tac Air & B-52's	400,000	200,000	$1200 a/	$ 660 a/	5%	20,000	55	27
	180,000	180,000	360 b/	360 b/	5%	9,000	25	25
Artillery	720,000	610,000	1440 b/	1220 b/	1.5%	10,800	29	25
Mortars	140,000	-	280 b/	- b/	2%	2,800	8	-
TOTAL	1,440,000 (100%)	970,000 (67%)	$3280	$ 2240		42,600	117 (100%)	77 (65%)

a/ $3000 per ton
b/ $2000 per ton

US KIA from mines and booby traps must be estimated. 1st Division data for 13 months show at least 22% of KIA and 29% of WIA due to mines and booby traps. The Marines have higher percentages, due to their emphasis on pacification; few, if any, Army units would be lower than the 1st Division since it emphasized big operations last year. However, even the 1st Division percentages imply that we lost 1100 KIA to mines and booby traps in all SVN last year, plus 8720 WIA. How many of these are due to converted duds is unknown.

U.S. CASUALTIES, 1966

	KIA	WIA	TOTAL
Total	4,989	30,060	35,049
% due to mines & booby traps	22%	29%	28%
Number due to mines & booby traps	1,100	8,720	9,820

Could we reduce US KIA by stopping all unobserved strikes? We do not know. The daily rate of duds would drop from 117 to 41 tons. The enemy can only find and modify a portion of the 41 tons. It is possible that he could still find enough to mine at current rates. However, if the number of mines and booby traps fell by as little as 10%, about 110 American lives would be saved, more than the enemy we estimate are killed by unobserved fire. (See next section)

The logic of curtailing unobserved strikes does not apply to close support. Close support kills many times as many enemy as we lose to mines and booby traps made out the duds. For example, if all the ordnance expended in South Vietnam were as effective as that used in close support, the enemy kills would rise from the estimated 20,000 to about 90,000 per year. This kind of improvement would make our losses to mines and booby traps tolerable. It would also justify the $2.2 billion cost of the ordnance for unobserved strikes.

3. VC KIA Due to Unobserved Strikes

Unobserved strikes are of two types; those aimed at the approaches to friendly units and bases, and those aimed at enemy camps, facilities, and assembly areas. The first type aims to discourage attacks, and the second aimes to catch the enemy by chance at the most likely places.

Approach routes to friendly units and bases take a major share of the unobserved artillery fire. There are about 50 US/FW fixed base areas, cantonments, etc. There are also about 50 battalions in the field on major operations at any one time; each in an average of about three distinct perimeters each night. The enemy attacked about 2 of these 200 targets (1%) per day in 1966 a/. If there are ten approach routes to each friendly unit we are firing at 2000 approach routes and if the harassing fire laid on the 2 routes actually used by the enemy has the same effectiveness per pound as have strikes in close support of engaged troops, then the effectiveness of the harassing fires is .001 times that of close support strikes.

Although strikes on enemy camps and assembly areas are more effective than strikes on the approaches to friendly units, they don't effect the basic conclusion. There are thousands of identified camps, facilities, and assembly areas, far more than the number of units. Moreover, enemy units often hide in villages we try not to hit; this is particularly true of the guerrillas, who reportedly assemble for military missions only once every two or three months. Main force battalions each may have fifty different prepared camps and at least that many trails to them. And we are less accurate in hitting whatever target we are shooting at. The best guess at the accuracy of unobserved artillery fire is that it puts one-tenth as many shells on the intended target as does observed fire. b/ Air strikes on camps have the same problem, because the pilot can seldom see his target. In order to have a number, we estimate that the average strike of this type has to hit 50 locations to find one occupied. This and the lower accuracy of unobserved fire place the effectiveness of this type of strike at twice that of harassing fire, or .002 times that of close support.

a/ Total attacks from MACV Weekly Summary, prorated by target type using MACV Daily INTSUM.

b/ Data from World War II.

In 1966, at most 20,000 VC/NVA were killed by air and artillery in close support of major operations. b/ Observed air strikes not in close support killed another 10,000. c/ These 30,000 KIA were caused by 215,000 tons of air and tube ordnance (including mortars), or .14 enemy KIA per ton. Unobserved strikes used 350,000 tons of ordnance; at an effectiveness .001 to .002 times as great as that of close support, they accounted for 50 to 100 enemy KIA.

Observed and Unobserved Strikes
1966

	Tons	Enemy KIA	Enemy KIA per ton
Observed	215,000	30,000	.14
Unobserved d/	350,000	50-100	.00014-.00028

b/ Data from U.S. Army DCSOPS, Far East & Pacific Division, and from Marine After-Action Reports, Hq. USMC, indicated 22,000 enemy KIA in major operations; we assume at least 10% were killed by infantry.
c/ NMCS data. See the discussion of these KBA on page 2, above.
d/ Including air strikes aimed at suspected, not confirmed, enemy. Total tons from SEA Stat. Summary Table 211; allocation to "observed" by method of sec. 2, above.

How good these numbers are depends on which side outguesses the other. U.S. artillerymen and pilots aim at areas they think may contain enemy, using intelligence when available but avoiding friendly populated areas. The enemy tries to avoid being hit, using villages and hamlets along main roads which provide linear sanctuaries if close together. The safety zone varies by type of weapon from 400 meters to a kilometer on each side of a hamlet, providing a wide strip in which enemy units can move without being hit. To cross the gaps between hamlets, the enemy will do the best he can after noting the pattern of our harassing fire. In addition, the enemy stays in areas where we can hurt him least: our guns cover only about half the areas of the country. We, in turn, move our guns and use aircraft to strike him by surprise. The enemy exploits predictable patterns in air activity caused by weather, time of day, and other factors.

In maneuvering against our infantry, the enemy surprises us about ten times as often as we surprise him. The intelligence and tactical initiative is at least as bad for artillery and air as it is for infantry. Therefore, we will be lucky to do better than the above calculations show.

However, suppose we have underrated the results of unobserved strikes. Frequent moves of artillery and occasional bad judgement by enemy units might lead to larger-than-estimated kills among enemy groups caught in vulnerable postures. A II Field Force Vietnam Artillery report for the three months ending 31 January 1967 tells of two instances of apparently good results. In one case a captured VC said that artillery fire killed 60 of his fellows at the time and aim point of a known H&I fire mission; in another case an ARVN unit, guided by a captured VC, reported finding the bodies of 30 VC at such a location. No U.S. ground forces went in to verify the results in either case. Suppose, however, that both results are true and that in each of the three CTZ with major U.S. forces unobserved strikes, with similar luck, kill 100 enemy per quarter. If so, these strikes would kill 1200 per year, country-wide, or more than ten times the high end of our previous estimate, and over ten times the possible U.S. dead from mines and booby traps made from the duds in these strikes. By present standards, this good an exchange ratio of enemy to U.S. dead is satisfactory, although we could do still better by extensive use of small patrols that call in observed strikes. (Such patrols now get an exchange ratio of over 30 to one).

If a rationale for unobserved strikes is hard to find in supposed enemy kills, it must be found instead in their effects on enemy operations, namely "Harassment and Interdiction." If these strikes killed no enemy at all they might still produce militarily valuable limitations on enemy movement and enemy attacks. However, there is no evidence that they have done so and no reason to expect that they should do so. When U.S. forces entered South Vietnam in strength in 1965, bringing with them an immense increase in fire-power and in the volume of unobserved strikes, VC initiated incidents, attacks, etc. almost doubled, from a countrywide total of 6,141 in the first quarter of 1965 to 11,073 in the fourth quarter. During 1966 they dropped back part way, and seem to have stabilized in the range of 8,000-10,000 per quarter, well above the levels prevailing before 1965. Analysis of the geography of VC incidents shows no tendency for them to be pushed out of any vital or hotly contested areas.

It is, indeed, surprising that anything different was expected from the broadcast expenditure of air and tube ordnance. Although enemy combat units make it a practice to camp just outside the range of our artillery, if they wish they can march in one day to the center of the circle covered by our largest guns from their camp at the edge of the circle. When they advance to an attack in the covered area, the losses they take from occasional chance hits by unobserved strikes will be negligible compared to the losses they take in the attack itself; our previous calculations of losses during the approach to attack show that such losses are trivial in comparison to losses in direct engagements, in spite of assuming that the advancing unit takes no countermeasures like staying near populated areas. And, even if that calculation was low by a factor of ten, the losses involved are still minor compared to those in combat. Therefore, the losses during the advance will fail to deter a unit that is already prepared to take much heavier losses when it reaches its target. It should be no surprise that the incident rate has failed to drop below its level of early 1965 and before. "Harassment and Interdiction" fire doesn't interdict, and according to our evidence doesn't harass very much.

As an offset to these points, we should note that the effects of unobserved strikes on VC defections could be larger than their effects on VC KIA. Losses to strikes out of the blue may be more frightening than losses in close combat, and may therefore have a disproportionate effect on defections. However, we get this same benefit if the strikes are controlled and adjusted by clandestine patrols, which offer a practical alternative to unobserved strikes.

4. Additional Side Effects

In addition to the foregoing, the huge expenditure of ordnance on unobserved strikes affects our relationship to the civilian population. To them it is a constant, noisy menace, creating an image of indiscriminate, unthinking use of force. Every new visitor to a U.S. base camp is startled by the constant roar of artillery, day and night. It is bound to be frightening to Vietnamese, many of whom have been hurt by the careless and incompetent use of artillery by their own army. Moreover, our own unobserved strikes are less than perfectly aimed. Artillery commanders save up their best, most uniform powder lots for the crucial times when they must work close to U.S. troops; they expend their mixed powder lots on unobserved strikes. They may or may not take care to make continuous adjustments for changes in the weather, which without such adjustment will throw their shells several hundred yards off the mark after a few hours, or even after a few tens of minutes. Inevitably, there are accidents.

No figures exist on total civilian casualties in SVN. AID reports 34,000 civilian hospitalizations in 1966 due to war injuries, and we do not know how many were killed or injured but not hospitalized. About one-third of the hospitalizations were due to artillery and bombs (friendly induced) and one-third to mortars, mines and booby traps (enemy induced). Even in the enemy induced category, unobserved friendly strikes may contribute to civilian casualties via duds. Civilian casulaties and property damage from both accidental and intentional strikes on populated areas undoubtedly generate some refugees into secure areas. What is not known is how many people become VC recruits and willing VC collaborators, nor how many stop providing intelligence and other forms of cooperation to friendly forces and to local GVN officials, in villages we strike. We know that the VC exploit our heavy use of artillery and air in their propaganda, but we do not know how effective this propaganda is or how people react to the strikes themselves.

Although unobserved and poorly aimed tac air and artillery strikes sometimes hit villages, such strikes have the wrong effect even when they don't. Our harassing fire encourages the enemy to hide in villages and increases the probability that firefights will develop in them, unavoidably hitting civilians. The only way to correct this problem is to improve intelligence collection, police work, and screening operations to make villages safe for the people and unsafe for the enemy. Then, when the enemy retreats from the villages, it would be better to have reconnaissance patrols call in air and artillery strikes on enemy units they have spotted. This tactic improves the effectiveness both of our men and of our fire support while also reducing the chance of accident.

5. Concluding Remarks

Although the foregoing evidence is too weak to prove the need for a change in policy, it does suggest that such a change deserves consideration. In the light of the papers in earlier editions of this publication on battlefield initiative and on clandestine patrols, the policy change that might prove best would be to increase sharply the resources put into such patrols to require that artillery and air strikes be adjusted by observers who can confirm the existence and location of hostile targets, and perhaps to cut back on total ordnance allowances. The most clearly demonstrated need, however, is for better data in this area.

Air and Artillery Strikes Other Than Close Support: A Rebuttal

Comments have been received from the Army Staff (ODCSOPS) in rebuttal to the July 1967 Southeast Asia Analysis report item (page 13), which concluded that statistics on unobserved artillery and air strikes indicate that the strikes cause few VC/NVA casualties and provide the enemy with large amounts of material for making mines and booby traps.

"The purpose of air and artillery strikes, other than close support, vary as much as the ordnance delivered on the targets. The strikes may be artillery fire used to interdict or deny a wooded area which local villagers claim are used by the VC each night as a bivouac, or they may be B-52 bombers on a disruption mission against the confirmed enemy build-up in the A Shau Valley of western Thua Thien Province. It is most desirable to have a man on the ground directing all air and artillery strikes but in instances, such as in NVN and Laos, political restrictions prohibit this. In RVN, there simply are not enough forces to maintain influence over all areas or restrict the unimpeded use of all land and water lines of communication. This necessitates the use of other means to acquire lucrative targets and, at the same time, eliminate indiscriminate application of our firepower."

"Considerable effort is devoted to the development of targets for 'unobserved' air and artillery strikes. Airborne radio direction finders, aerial radar and photography, forward air controllers, and aerial observers, coordinated with information from various intelligence sources, assist materially in taking the guess work out of these strikes. POW interrogations, captured enemy documents, and discovery of graves in target areas support the contention that considerably more than 100 VC/NVA were killed by unobserved air and artillery strikes in 1966. As an example, one captive reported that 'when the 5th Battalion (24th NVA Regiment) began infiltrating into SVN, its strength was over 500 men. By the time the battalion reached its destination, malaria and bomb attacks had caused many casualties, cutting the battalion strength to about 200 men.' Another NVA captive stated that two B-52 raids on a facility in Binh Dinh Province resulted in 50 men being killed. Recently, U.S. Marines, on Operation BUFFALO, found fresh graves containing 30 enemy dead, presumably killed by 'unobserved' artillery or air strikes."

"There is no evidence to support a conclusion as to how much material the VC acquire from duds for use in mines and booby traps. However, we know that considerable quantities of potassium chlorate are received from Cambodia. Additionally, primers and detonator cord are received from NVN, as are large quantities of standard mines. The trawler recently sunk off Quang Ngai Province contained 1,960 anti-personnel mines, 6,880 lbs. of plastic explosive, 3,102 lbs. of TNT, 900 non-electric detonators, and 444 electric detonators."

"Our commanders in RVN recognize, more than anyone, the problems resulting from casualties being inflicted on civilians. In order to keep non-combatant casualties to the absolute minimum, RVNAF and US/FWMAF have been directed to apply the following procedures:

a. In sparsely populated areas, artillery, naval gunfire and air strikes may be directed against enemy forces in contact in accordance with normal procedures. When not in contact, unobserved fire will be directed only on targets or target areas declared hostile by GVN, Vietnamese liaison personnel, ground observers, or forward air controllers.

b. Artillery fire, naval gunfire and air strikes against known or suspected VC targets in hamlets and villages occupied by non-combatants are governed by the following:

(1) All attacks will be controlled by an airborne or ground forward air controller, tactical air controller (airborne), ground observer or RVNAF observer and will be executed only after US-GVN-RVNAF approval, as appropriate.

(2) Hamlets and villages not associated with ground operations will not be attacked without prior warning (by leaflet and/or speaker or other appropriate means) even though light fire is received from them.

(3) Hamlets and villages may be attacked without prior warning if the attack is in conjunction with a ground operation involving the movement of ground forces through the area, and if, in the judgment of the ground commander, his mission would be jeopardized by such warning.

Undeniably, there have been occasions when hamlets and villages were hit by air and artillery; however, captured enemy documents state that VC guerrillas and cadre have been denied access to villages because "the villagers were afraid this would cause the government forces to attack the village with guns and planes."

"Captured enemy documents and interrogation of prisoners of war have provided the most conclusive information concerning the true impact of unobserved air and artillery strikes on the enemy. B-52 raids alone have proven their effectiveness to the point that the enemy has adopted an intricate warning system. When a unit receives warning of a possible B-52 strike, activities are suspended for several hours and individuals disperse or take cover. A member of the signal company, 324 B NVA Division, stated that such measures would commence seven to eight hours prior to a raid and that his unit was bombed eight times in fifteen days. A cadre of an enemy main force supply transport unit in Tay Ninh Province reported that, because of losses suffered in previous B-52 strikes, his unit and other units in the area cancelled all transport missions during the alert periods. In a survey of prisoners of war conducted in the second half of 1966, interviewees repeatedly mentioned air and artillery as the weapons they feared most, even though most personnel were usually well entrenched. A captured enemy critique of two VC battalions located in Darlac Province noted, "Friendly units (VC) were so afraid of enemy planes and artillery that they withdrew from battle." and "Some units were so afraid of artillery and aircraft that, while on the way to battle, they turned back."

7th AIR FORCE REBUTTAL: AIR AND ARTILLERY STRIKES

The Tactical Air Analysis Center, 7th Air Force, has joined the growing list of those who doubt the validity of the conclusions and/or research methodology of the July SEA Analysis Report item (p. 13) on Air and Artillery Strikes other than Close Support. For the benefit of our readers SEAPRO is not convinced either, except as to the following conclusions: (1) the VC are using dud bombs, bomblets, shells and granades to make booby-traps, (2) much of our bombing and artillery consumption is of unknown value, and (3) the concept and value of such fire needs to be reexamined. SEAPRO is preparing a follow-on study of this subject.

The 7th AF rebuttal follows:

"While there may be merit in the theory developed, the validity of conclusions in the article is compromised in a number of ways.

1. Speculation should not be substituted in the absence of reliable data. However, in some instances, such as the fraction of air strikes airborne controlled, a fairly reliable figure could have been easily developed through research on the rules of engagement.

2. Terms used are not well defined and are not in agreement with standard reporting systems (Oprep, Joprep). Such terms as "unobserved" and "non-close support" are vague and are not readily identifiable categories.

3. The same criteria of success (KIA) is applied to strikes having different primary objectives. It would not be expected that an interdiction strike on a road or bridge would produce as many enemy dead as a close support strike against troops in contact.

4. Impractical logic is applied specifically in the statement at the bottom of page 15 to the effect that one mine or booby trap kills one friendly troop. In addition a comparison is made to support the argument on the basis of data (50-100 VC/NVA killed by unobserved strikes in 1966) which the author himself says is not supported by sufficient reliable evidence.

In general, it is suggested that articles of significant consequences should be strongly supported with accurate and completely identifiable data."

UNOBSERVED AIR AND ARTILLERY STRIKES

Introduction

The unobserved air and artillery strikes article in the July issue of the Southeast Asia Analysis Report (pg 13) created considerable controversy. Consequently, we felt it useful to study this question in greater detail. Our objective is to determine if we are getting sufficient return from our bombing and artillery fires on unobserved targets to justify the cost in friendly lives and resources.

The war in Vietnam is a new type of war and we are learning many lessons as the war progresses. Unobserved strikes (H&I fire, B-52 strikes, etc.) proved their worth in "front line" wars, such as Korea; but they may be ineffective or counter-productive in the type of war being fought in Vietnam. This question is addressed below.

Certain terms and expressions throughout this paper are defined in Appendix 1. A brief review of this appendix would be useful for persons not familiar with various categories of air/artillery strikes.

Principal Issues

1. What is the magnitude of the Dud munitions problem?

2. How many U.S. casualties are caused by mines and booby-traps using our duds?

3. How many civilian casualties are caused by unobserved strikes?

4. How many Viet Cong are killed by our unobserved strikes?

5. Is the net impact of our unobserved fire favorable or unfavorable?

Magnitude of the Dud Problem

Our approach in considering the dud problem has been to separate rounds, tons and costs into two categories, observed and unobserved missions. Observed missions are normally employed in support of troops in contact or against a target being watched by a patrol or a spotter aircraft. For observed missions, considerations of dud rates and costs are largely meaningless since we are concerned with a tactical situation where the enemy has been observed and is hit as fast as possible, with as much firepower as is available. The results (i.e. KIA, destruction of materiel) are normally observable. We assume that these expenditures are justified and necessary and they will be continued despite their cost or the duds they may produce.

The second category is the unobserved mission. We estimate we are dropping and firing 35,000 tons of ordnance a month (worth $40 million) on an enemy whom we can neither see nor gather data that proves we are inflicting significant damage. On the other hand there is sufficient

evidence to conclude that the enemy is reclaiming a portion of about 800 tons of dud explosives we estimate are expended each month. The Viet Cong use these duds to manufacture mines and booby-traps, which they use against our troops.

Table 1 breaks down the ordnance expended each month (based on data for the first half of 1967) into the two categories observed and unobserved missions. These estimates were made using the following assumptions:

1. Ninety percent of all Arc Light sorties (B-52) are considered unobserved. By their very nature, high altitude drops on suspected enemy troop and supply concentrations cannot be observed. However, some strikes are conducted in close support of ground troops and we assume 10% to be in this category.

2. Tactical air sorties are generally considered observed. Tactical air sorties can be generally separated into close air support, direct air support, and air interdiction. Of these we consider the first two to be observed (i.e. ground observer, FAC, or the pilot himself can assess results). Air interdiction is questionable and we have assumed approximately half of these are unobserved and about 10% of total ordnance expended is in this category. Because of inadequacy of data reporting this figure is questionable and perhaps should be much higher.

3. Of the total tube ordnance expended between 1 January 1967 and 30 June 1967, we estimate 45% are unobserved.1/

(a) Based on field reports from artillery commanders, 35% of total artillery rounds expended in SVN are used on harassment and interdiction (H&I) fire missions.

(b) 8% of the missions were neutralization fire.2/ These were considered 75% observed and 25% unobserved based on field reports.

(c) Another 16% of artillery fire was for registration, and landing zone preparatory fire missions.2/ These two categories were considered observed.

(d) 16% of total rounds fired consisted of illumination, smoke and chemical shells. These are all considered in the observed category.

(e) The remaining 25% are considered close support artillery fire and are classed as observed.

1/ Data collected first half '67 shows a significant decrease in this category as compared to 1966.

2/ Estimates on close support fire missions, SEA Analysis Report, 25 July 1967, pages 2 and 3.

TABLE I

OBSERVED AND UNOBSERVED FIRE MISSIONS AND AIR STRIKES
IN ROUNDS/BOMBS AND TONS EXPENDED IN SVN

TONS EXPENDED (000) PER MONTH a/

ITEM	Observed Mission	Unobserved Mission	Total Ordnance
B-52	1.6	14.0	15.6
AF Tac Air	11.9	1.2	13.1
Navy & Marine Air	7.8	.8	8.6
Mortar Fires	5.8		5.8
Artillery Fires	22.1	18.2	40.3
TOTAL	49.2	34.2	83.4
Percent of Total	59.0	41.0	100.0

ITEMS EXPENDED (000) PER MONTH a/

ITEM	Observed Mission	Unobserved Mission	Total Ordnance
B-52	4.8	43.6	48.4
AF Tac Air	65.0	6.4	71.4
Navy & Marine Air	34.2	3.4	37.6
Mortar Fires	503.3		503.3
Artillery Fires	612.3	438.7	1051.0
TOTAL	1219.6	492.1	1711.7
Percent of Total	71.2	28.8	100.0

a/ Based on data for the period Jan-June 1967.
b/ Operation ARC LIGHT sorties in SVN only.

Table 2 estimates the costs of the ordnance consumed in observed and unobserved artillery and air strikes. Costs were based on the unit prices of the items expended. Delivery costs are not included. Thus, the actual cost is understated significantly.

TABLE 2

MONTHLY COST OF EXPENDED ROUNDS/BOMBS OF OBSERVED AND UNOBSERVED FIRE MISSIONS AND STRIKES IN SOUTH VIETNAM a/

ITEM	Observed Missions Cost ($ Millions) Ordnance Expended	Unobserved Missions Cost ($ Millions) Ordnance Expended	Total Cost ($ Millions) Ordnance Expended
B-52 b/	1.7	14.8	16.5
AF Tac Air	14.2	1.4	15.6
Navy & Marine Air	11.6	1.2	12.8
Mortar Fires	11.2		11.2
Artillery Fires	26.5	22.2	48.7
TOTAL	65.2	39.6	104.8
Percent of Total	62.2	37.8	100.0

a/ Based on data for Jan-June 1967.
b/ Operation ARC LIGHT

Table 3 computes the volume and cost of recoverable duds resulting from unobserved strikes during the first half of 1967. It was estimated that only 50% of B-52 duds are recoverable. At altitudes of 20,000 feet and above dud bombs will normally bury themselves 20 to 30 feet below the surface. Locating and retrieving this type dud would be extremely difficult and probably not worth the effort. On the other hand heavy foliage can slow the fall of a dud bomb or cause it to tumble, thus impeding its penetration into the ground. For lack of any substantial data as to what portion would be buried, we simply assumed that 50% of duds are retrievable. We used a 5% dud rate for the bombs carried by the B-52s.4/

The BLU-3 bomblets are considered in a separate category because of their light weight and their extremely high dud rate of 20%.5/ Foliage is the single most important factor that contributes to this rate. The bomblet has a tendency

4/ Memorandum to: W. G. McMillian, MACSA from Paul E. Landes and Everett Pyatt (ODDR&E), Pg. 3.
5/ Ibid.

to tumble when penetrating successive layers of foliage and they are likely to land relatively undamaged on their side or tailfin, and not explode.

The remainder of the unobserved ordnance is artillery rounds which have an estimated 2% dud rate. Costs were attributed to each of the three categories on a basis of unit price per item.

TABLE 3

DERIVATION OF ESTIMATED DUD BOMBS
AND SHELLS INCLUDING DUD COST IN SVN
Monthly Average a/

ITEM	Tons Expended Unobserved Strikes	Retrievable Dud Group	Dud Rate	Tons of Duds	Cost of Duds ($ Mil)
B-52	13,971	6,986	5%	349	.7
AF, Tac Air, Navy & Marine Air Excluding BLU-3B	1,957	1,957	5%	98	.1
BLU-3B	9	9	20%	2	.1
Artillery	18,236	18,236	2%	365	.5
TOTALS	34,173	27,188		814	1.4

a/ Based on data for Jan-June 1967.
b/ Excludes all small arms type ammunition to include 20mm.

Based on the above calculations, we estimate that we are potentially providing the enemy with about 800 tons of duds per month which cost us about $1.4 million. COMUSMACV estimates the VC/NVA forces have a total average monthly munitions requirement of 300 to 450 tons.

U.S. CASUALTIES CAUSED BY MINES AND BOOBY TRAPS

The table below, covering the period 1 Jan to 30 Jun 67, indicates that 17% of all U.S. casualties are caused by enemy mines and booby traps. During the 6 month period, 539 U.S. lives were lost and 5532 were wounded. The need for a vigorous program to minimize these casualties is apparent.

TABLE 4
U.S. CASUALTIES
1 Jan - 30 Jun 1967

	ARMY		MARINES a/		TOTAL CASUALTIES		
	KIA	WIA	KIA	WIA	KIA	WIA	TOTAL
Total Casualties b/	2829	18058	1780	12705	4609	30763	35372
Caused by Mines & Booby Traps	235	2362	304	3170	539	5532	6071
% Caused by M&BT	8.3%	13.1%	17.1%	24.9%	11.7%	18.0%	17.1%

Source of Data: Army ODCSOPS Memo dated 3 Oct 67, subj: "Request for Data", NMCS, and HQ Marine Corps, Office of G-1.

a/ Marine Corps casualties are grouped in a category "mines, booby traps and explosive devices". In preparing this table, we assumed that 50% of explosive devices are mines or booby traps.
b/ Breakdown of WIA into hospitalized and non-hospitalized not available.

Army casualties resulting from mines and booby traps are likely to increase in the future, approaching those of the Marine Corps. A high percentage of the Marine Corps troops have been engaged in operations in their TAORs. As the Army begins to remain in place more often and actively engage in revolutionary development support activities, susceptibility to mines and booby traps will increase. No data is available to determine ARVN mine and booby trap casualties; however, it is thought to be high.

There is ample evidence that the VC are using U.S. ordnance to make mines and booby traps. It includes a captured VC training film showing the individual VC soldier how to dismantle duds and use the explosive. The film demonstrates how one captured 100 lb. bomb can be used to make four 25 lb. mines; even the containers used were expendable U.S. cans. Intelligence reports also state that the VC place a premium on obtaining duds as a supply of explosives. Rewards and incentives are offered for each dud brought into the mine factory. Some skeptics state it is too difficult or dangerous for the VC to waste time doing this; this is clearly not the case. Reclaiming U.S. duds is not a small size effort nor is it localized to any area of SVN - it is an overall VC objective. Of course, it greatly simplifies VC logistical problems.

There are no statistics to indicate how many VC mines and booby traps contain U.S. explosives; but from the tonnages of our duds available, there is enough for every mine and booby trap the VC is willing to make. If we assume ½ of his mines and booby traps contain our explosives, then yearly about 540 people will be killed and 5500 will be wounded as a result.

CIVILIAN CASUALTIES

It is also contended that many friendly non-combatant casualties result directly from our unobserved fire. No statistics are available either to deny or support this allegation. The general consensus of personnel who have served in Vietnam, however, seems to indicate that with few exceptions, the civilians killed or wounded by the unobserved fire are living in areas known to be under tight VC control. Most of the areas are very lightly populated and anyone in these areas are probably either VC or are sympathetic to the VC.

If we concede that some unknown number of non-combatant casualties are caused by our unobserved fires, the next question is what impact does this have on our efforts in Vietnam. If purely humanitarian aspects are excluded, there are two possible results: (1) we alienate the civilians by our indiscriminate fire; or (2) the civilians attempt to disassociate themselves from the VC in order to reduce the likelihood of attack or they may blame the VC for carrying on the war and thereby causing the attack. There is evidence to support either thesis and we have no sound basis to determine which is most probable or which result happens most frequently. The latter result, however, probably occurs more frequently in observed fire circumstances when the villagers see that VC anti-aircraft fire provokes a U.S. retaliatory air strike. The VC's role in provoking unobserved fire, however, would be less clear, and we can assume our unobserved fire alienates the local peasants in most cases, thus harming our efforts to break down their loyalty to and support for the Viet Cong.

A separate question is the indirect casualties caused by our duds and the mines and booby traps made from them by the VC. Civilian casualties appear to be running at about 75,000 to 100,000 per year. Various official U.S. estimates are that 40% of these are unquestionably VC caused - and mines and booby traps are the primary factor. Other studies indicate that mines and booby trap casualties are even higher. In any event, it would seem that 30,000 to 40,000 civilians are killed or wounded by VC mines and booby traps, many of which are made using our dud munitions. They also cause considerable damage to roads, bridges and equipment. The magnitude or cost of this damage is unknown.

VC KILLED BY UNOBSERVED FIRE

There are no data indicating how many VC have been killed by unobserved fires. There are, however, intelligence reports (mainly POW and rallier statements) that indicate many VC casualties can be attributed to air attacks. Other reports state that VC morale is undermined by frequent tactical and B-52 strikes. But there appears to be no way to make any valid estimates of the

number of VC killed or what the real impact of the loss of morale is on VC combat effectiveness. However, until better evidence is available we have no basis to believe the numbers of enemy killed is large.

WHAT IF WE STOPPED ALL UNOBSERVED FIRE?

Two things are clear: (1) the VC use our duds, many of which came from unobserved fire, to kill our troops as well as civilians; (2) unobserved fire fails to kill large numbers of enemy troops. But, if we stopped all unobserved fire, would it result in a real drop in US/Civilian casualties? Perhaps, but very possibly not.

It would reduce friendly casualties only if the VC would be unable to get a sufficient supply of duds from our previous bombing or from "unobserved" strikes which would presumably be continued. However, the fact the VC pay bonuses for duds indicates they do not have an oversupply. At least we might force the price of duds higher. At best we would reduce friendly military and civilian casualties to some degree.

On the other hand, there would be some unmeasurable loss in our effectiveness. Fewer VC would be killed or injured. Some B-52 strikes are evidently extremely effective; evidence is building up that we killed sizeable numbers of NVA troops along the DMZ in Sept. and October. Interdiction fire has some effect in reducing our casualties by making an attack on our positions more difficult. But we are unable to measure with precision the favorable results of these fires.

CONCLUSION

Based on available evidence we cannot recommend that all unobserved fire be stopped. However, we can conclude that it does lead to large numbers of friendly casualties (mainly through VC retrieval of duds) and it should be minimized. Troop commanders at all levels must realize that unnecessary missions may cause more harm than good. The cost to the taxpayer is only a minor part of this, the cost in friendly lives and limbs is the major factor. We are solving a significant part of the VC logistical problem for him, thereby reducing the effectiveness of our interdiction program.

Specifically, some of the following actions could be taken:

1. Improve the reliability of our ordnance (DDR&E has established a study group to do this.) a/

2. Use ordnance, such as the BLU-3B, which has high dud rates only where the tactical situation clearly justifies it.

3. Conduct field studies to determine what other types of ordnance can be used easily by the VC. Then hold down consumption of these items.

4. Expand efforts to judge the effectiveness of B-52 operations as they provide large numbers of dud bombs. If warranted by these studies, restrict the mission to cases where the intelligence makes the pay-off clearly worth the cost.

a/ It is interesting to note recent statistics of enemy artillery fired in DMZ area indicate enemy artillery dud rate is less than 1%.

5. Increase our efforts to reclaim or destroy duds. This might include bonuses to civilians who report the location of a dud.

6. Raise the cost of the duds to the V.C. This might be done by use of self- destruct devices, "phoney duds," etc.

7. Conduct an educational campaign to apprise our troops of the dud problem. "The life you take may be your own."

APPENDIX I

DEFINITION OF TERMS [a]

Much confusion can be caused by the improper use of military terms. The following is a condensed list and definition of terms most commonly used in this paper:

1. Close Air Support - Air action against hostile targets which are in close proximity to friendly forces and which require detailed integrations of each air mission with the fire and movement of those forces.

2. Tactical Air Support - Air operation carried out in coordination with surface forces which directly assist the land or naval battles. (B-52's are normally involved in this type of operation).

3. Observed fires - Fire for which points of impact or burst can be seen by an observer. The fire can be controlled and adjusted on the basis of observation.

4. Harassing Fire - Fire designed to disturb the rest of the enemy troops, to curtail movement and, by threat of losses, to lower morale.

5. Interdiction Fire - Fire placed on an area or point to prevent the enemy from using the area or point.

6. Destruction Fire - Fire delivered for the sole purpose of destroying material objects. This is observed fire with precise adjustments usually fired by one gun.

7. Close Supporting Fires - Fire placed on enemy troops, weapons, or positions which because of their proximity present the most immediate and serious threat to the supported unit.

8. Neutralization Fire - Fire which is delivered to hamper and interrupt movement of an enemy force.

9. Free Strike (Fire) Zone - A battle area in which fires may be brought upon without authorization of military and civilian authorities.

[a] Joint Chiefs of Staff, "Dictionary of United States Military Terms for Joint Usage", JCS Pub. #1, Washington, 1962.

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APPENDIX III

Interview a/

From our experience in Vietnam, it is clear that the VC are taking extreme risks when handling and attempting to use our dud air and artillery ordnance.

Despite the fact that the average VC received considerable training in demolitions during his basic training, crude methods of handling explosives must cause considerable losses of life and limb among his ranks.

In early 1966, in the village of Ben Cat, north of Saigon, a search and destroy operation uncovered a VC anti-vehicular mine manufacturing operation. The VC had a 100 pound bomb slung from a hoist mounted on a tripod. The bomb was not deactivated but instead, the tail and end was hacksawed off, allowing an opening sufficient enough to extract the explosive by means of a steam jenny. It would take about 4 hours to extract all the explosive and pour it into 25 pound capacity tin cans.

In other instances, the VC have been known to drill through the tops of dud BLU-3B bomblets in order to place an activating mechanism (fuse) within them. Hand drills are most likely used. This officer also noted that while in RVN he read a VC training manual regarding the conversion of the BLU-3B into various booby traps and mines. The manual was very detailed with many diagrams and illustrations.

The VC probably have few difficulties using our artillery round as most of them are armed with point detonation fuses which are extremely easy to deactivate. Only in the case of some freak malfunction of the firing mechanism, will this type of fuse activate a dud artillery round. We use very few mechanized time fuses in artillery shells. Duds containing these fuses have been known to be highly dangerous.

a/ Army Officer, an EOD expert, was interviewed on 27 Sept. 1967 concerning his field experience in South Vietnam from Aug 1965 to Aug 1966.

ARTILLERY FIRE IN VIETNAM

Summary. The average artillery consumption for the first four months of 1970 was only 10% lower than the four month average during the Tet 68 offensive; average consumption during the Cambodia operations (May-June 1970) increased 15% over that for the first four months and was 5% higher than the Tet 68 four month average. The combined number of USARV and RVNAF artillery tubes has increased more the 12% since early 1968, with a 25% decrease for USARV and a 78% increase for RVNAF. This is reflected in the RVNAF share of artillery ammunition expenditures up from less than 14% during the Tet 68 period to more than 30% during May-June 1970. Except for the Tet 68 period, some 70% of all USARV artillery rounds have been fired in a situation of light or inactive combat intensity, as judged by the reporting artillery unit.

FY 69 ammunition expenditures were directed against two general target categories:

(1) Those representing the most direct threat to friendly ground forces (confirmed, counterbattery and preparation targets), and

(2) Those representing a probable or possible threat (acquired and interdiction targets).

Our analysis shows that targets in the first category received 50% of the US ARVMY Vietnam (USARV) artillery rounds fired in FY 69 and absorbed 43% of the total USARV artillery ammunition cost; targets in the second category received about 38% of the rounds but accounted for more than 47% of the cost.

Within the second category, the bulk of the expenditures was against targets acquired by special intelligence sources, radar, and unattended ground sensors. These acquired targets accounted for 15% of USARV artillery rounds and almost 40% of the cost, while interdiction targets (likely enemy locations) accounted for 13% of the rounds but only about 7% of the cost..

The estimated US and RVNAF artillery distribution by RVN Military Region in 1969 shows I MR leading with 40%, followed by III MR (29%), II MR (19%), and IV MR (12%). HES/70 data for 1970 shows that, except for an increase in II MR, the percentages of A, B, and C villages subjected to sporadic or repeated artillery fires/air strikes declined in the second quarter of 1970.

General

Artillery ammunition expenditures in Southeast Asia have remained relatively constant for the past three years and in June 1970 were only 6% below the highest monthly rate ever recorded (Feb 1968). Variations in the intensity of the main force conflict, (generally trending downward since 1968), the considerable pacification gains during 1969-1970, and US redeployments have all had little apparent effect on artillery consumption. Some US advisors are unofficially reported to feel that the present level of artillery fires and air strikes is excessive in view of the improved combat situation.

Increased consumption by ARVN/VNMC artillery battalions and a greater use of sensor systems have been cited as key factors leading to the level trend in artillery expenditures, while operations in Cambodia apparently account for the unusually high level in June. This analysis examines these and other factors using data from the Army's Ground Munitions Analysis reports, Combat Loss and

Expenditure Data - Vietnam (COLED-V), the System for Evaluating the Effectiveness of RVNAF (SEER), and HES/70. Some preliminary cost data from the NSSM 77 Study was also found useful.

While these sources provide an insight to artillery distribution by mission, target, and RVN Military Region, we are unable to directly assess the effectiveness of artillery. The best witness for artillery effectiveness is the supported soldier engaged in ground combat, who relies on the artillery's timely, accurate, all-weather delivery of munitions to a much greater extent than air strikes and who is more likely to complain about inadequate support than excessive use of artillery. We can, however, show the percent of expenditures supporting friendly ground forces on offensive missions versus other missions, as well as the frequency of artillery fire and air strikes directed in or near villages.

Artillery Expenditures - Southeast Asia

Artillery expenditures in Southeast Asia reflect artillery unit fires of the following organizations, listed in rank order of their contribution to the overall consumption:

(1) US Army Vietnam (USARV)

(2) ARVN/VNMC

(3) U.S. Marine Corps

(4) Other Free World Forces (FWF) in Vietnam

(5) Laotian

(6) U.S. Special Forces

Their recorded monthly expenditures in thousands of short tons since 1967 are:

1967	1968	1969	1970 (thru June)
69.2	85.5	81.6	85.6

In early 1968, USARV and ARVN/VNMC artillery units accounted for over 60% of 105mm and 155mm ammunition consumptions; USMC and FWF units expended the rest with only about 1% going to Laos and the Special Forces. By 1970 the USARV and ARVN/VNMC proportionate consumption had increased to more than 70% due to ARVN/VNMC increases. Of the heavier (8 inch and 175mm) artillery, USARV and USMC units are the only consumers. Table 1, a comparison of artillery expenditures in early 1968 (Tet offensive, Phase I and II) with those for 1970, shows the increased ARVN/VNMC consumption and the effect of the Cambodia operations.

Table 1

US/FWF - ARVN/VNMC Artillery Consumption
(1000 tons)

	1968		1970		
	Feb	Feb-May Avg	Jan-Apr Avg	May-June Avg	June
ARVN/VNMC	13	13	23	31	34
US/FWF	96	81	62	66	67
Total	109	94	85	99	101

Consumption for the first four months of 1970 was about 10% lower than the four month Tet period in 1968, but during the Cambodia operations was somewhat higher than for the Tet 68 offensive even though the peak expenditure in 1968 (Feb) was higher. The ARVN/VNMC share was more than 30% during May-June 1970 compared to less than 14% in 1968. Weapons density data for USARV and ARVN/VNMC artillery units show an increase of 205 tubes (all calibers) from early 1968 to June 1970. ARVN/VNMC tubes increased from 599 to 1064 (+78%) while USARV tubes decreased from 1052 to 792 (-25%).

USARV Artillery Fire by Mission/Target

The FY 68 and FY 69 year end report of the U.S. Army Combat Developments Command Study of Combat Operations Loss and Expenditure Data Vietnam (COLED-V) shows the distribution of USARV artillery fires by mission, target and combat intensity. For a complete description of the listed categories, see the attached definitions Annex. (The FY 70 report will not be available until Oct-Nov but we hope to receive the rest of the CY 1969 data by the end of August.) Table 2 displays the data by percent and shows that:

(1) Except for the Tet 68 period, about 70% of all artillery rounds are fired in a light to inactive combat intensity environment as judged by the reporting artillery unit.

(2) About 50% of the artillery is fired in support of combat units on offensive missions while some 30% are fired on Harassment and Interdiction (H&I) or "other"1/ missions. The remaining 20% is divided between security and base camp defense missions.

(3) Confirmed targets comprise about 30% of those engaged; these targets represent an enemy presence determined by actual contact or observed activity and are probably the most effective. This category, together with counter-battery and preparation targets, accounts for most of the direct threat to friendly ground forces and corresponds closely to the offensive mission category.

(4) Acquired targets are targets based on detection by special intelligence sources (SPAR), aerial surveillance systems, radars, and unattended ground sensors, as well as enemy activity patterns, and terrain analysis; together with interdiction targets they account for almost 40% of the artillery expenditures. The upward trends in acquired targets in 1969 may reflect increased use of sensors but we have not yet acquired data which shows artillery fire based only on unattended sensor detection; preliminary FY 70 data seems to reflect USARV efforts to decrease the proportion of rounds directed against acquired targets even though the number of unattended sensors in use was considerably greater than in FY 69.

1/ The mission categories refer to mission of the supported maneuver unit, therefore the Harassment/Interdiction mission category was discontinued in FY 69 on the basis that this could not be a supported unit's mission. The effect of this change shows in the mission category "other" which increased from 2% in FY 68 to 32% in FY 69.

TABLE 2

Artillery Ammunition Expenditures - US Army
(Monthly Average)

	FY 68	FY 69	CY 1967 3Qtr	CY 1967 4Qtr	CY 1968 1Qtr	CY 1968 2Qtr	CY 1968 3Qtr	CY 1968 4Qtr	CY 1969 1Qtr	CY 1969 2Qtr
No. of Rounds (000) a/	913	877	850	789	1028	985	802	892	975	840
Rds per Weapon	1058	870	1045	1025	1152	1009	825	877	949	926
Distribution of Rds (%)										
Combat Intensity										
Moderate-Hvy	37	30	29	34	40	45	30	31	32	29
Lt. - Inactive	63	70	71	66	60	55	70	69	68	71
Mission										
Offensive b/	49	51	44	47	51	53	56	49	54	45
Security	9	10	15	9	7	8	12	10	8	11
Base Camp Def.	4	7	2	3	4	5	7	8	7	7
Harass/Interdict c/	36		37	39	36	31				
Other	2	32	2	2	2	3	25	33	31	37
Target d/										
Confirmed		32					28	40	32	26
Counterbattery		5					4	4	6	5
Preparation		13					10	11	15	17
Subtotal		50					42	55	53	48
Acquired		25					22	22	27	28
Interdiction		13					22	13	9	10
Subtotal		38					44	35	36	38
ARVN Support		2					2	3	2	1
Spec/other		10					12	7	9	13
Subtotal		12					14	10	11	14

Source: Combat Operations Loss and Expenditure Data - Vietnam (COLED-V)

a/ Includes only 105mm, 155mm, 8 inch, and 175mm rounds.

b/ Includes cordon and search, clear and secure, search and destroy, and Recommaissance in Force Missions.

c/ Not reported in FY69.

d/ Not reported in FY68.

ARVN/VNMC Artillery Fires by Target

In the monthly SEER report, U.S. artillery advisors report the number of artillery rounds fired in support of RVNAF by target category. These categories are similar but not identical to those in COLED-V for USARV. Table 3 shows the distribution arranged for comparison to the Table 2 USARV data. ARVN/VNMC artillery interdiction fires are about 30% of the total, much greater than the identical USARV category. The defense concentration category consists of pre-planned fires against likely enemy routes of attack; since this differs little from interdiction (fire against suspected enemy locations) these two categories are subtotaled and the result is quite close to the USARV acquired/interdiction data or about 40%. Around 55% of the ARVN/VNMC fires are directed against the more direct threat to friendly ground forces; this is somewhat higher than the comparable USARV data but not significantly so.

TABLE 3

CY 1969 Artillery Ammunition Expenditures - RVNAF[a]
(monthly average)

	1Q	2Q	3Q	4Q	Year
No. of Rounds (000)	303	439	349	368	365
No. of Arty Wpns[b]	908	908	944	976	934
Distribution of Rds (%)					
Target					
Tgt of Opportunity	47	32	31	35	36
Counterbattery	5	9	13	6	8
Preparation	7	13	9	17	12
Sub total	59	54	53	58	56
Defense Concentration	6	6	6	11	7
Interdiction	32	37	33	27	32
Sub total	38	43	39	38	39
Spec/Other	3	3	8	-	5

a/ Includes US artillery support, about 2-5% of the rounds shown.
b/ 105 and 155 artillery tubes, from Army CMAS report.

Artillery Fire by RVN Military Region (MR)

The percent of ARVN/VNMC artillery fire in each of the Military Regions for 1969 was:

I	II	III	IV
24	15	22	39

While USARV artillery data for the same period is not available, preliminary calculations obtained from the NSSM 77 study group shows the following distribution based on artillery costs in FY 69:

I	II	III
29	20	51

Apparently, US artillery units supporting the two 9th US Division brigades in IV MR during FY 69 were lumped with III MR units. By combining the USARV and ARVN/VNMC distributions and including USMC and FWF expenditures, an approximate distribution by Military Region in the 1969 time frame would be:

I	II	III	IV
40	19	29	12

While the I MR estimated share may be slightly high, it is worth noting that in May 1970 a USARV ammunition officer indicated to the NSSM study group that I MR had consumed 150% of programmed artillery expenditures, in contrast to 120% for the entire country.

Artillery/Air Strikes Near Populated Areas

A village level question in HES/70 asks: "Where any friendly artillery fires or air strikes directed in or near the inhabited area of this village during the month?" The advisor may choose one of six responses: (1) No, (2) Yes, once, (3) Yes, sporadically, (4) Yes, repeatedly, (5) Not applicable, and (6) Unable to judge. Table 4 displays villages rated A or B and C in security in which the advisor chose response (3) or (4) above.

Around 8% of A or B rated villages report sporadic occurrences of artillery fire or air strikes, and a little over 1% report repeated occurrences. II MR sustained the highest frequency with I MR recording the lowest. 40% of the C rated villages are subjected to sporadic artillery fire/air strikes and 12% report repeated occurrences. The 2nd quarter 1970 data is lower in all areas except II MR, which shows an increase generally in all village and frequency categories.

TABLE 4

FREQUENCY OF FRIENDLY ARTILLERY FIRES/AIR STRIKES
VS.
VILLAGE SECURITY SCORES

	1st Qtr 70		2nd Qtr 70	
	Mo. Avg.	%a/	Mo. Avg.	%a/
Sporadic Occurrence				
A, B Villages				
I	17	6.0	14	4.6
II	41	12.9	39	14.6
III	20	7.4	19	6.3
IV	22	6.0	21	5.7
RVN	100	8.1	93	7.5
C Villages				
I	32	41.5	28	32.8
II	75	40.5	77	39.7
III	48	41.2	42	38.0
IV	77	44.0	84	44.0
RVN	232	41.9	231	39.8
Repeated Occurrence				
A, B Villages				
I	0	0	0	0
II	9	3.0	9	3.3
III	1	0.4	2	0.7
IV	6	1.7	4	1.0
RVN	16	1.3	15	1.2
C Villages				
I	8	10.9	8	9.1
II	23	12.2	29	14.8
III	14	11.6	10	9.0
IV	22	12.7	21	11.2
RVN	67	12.1	68	11.7

Source: HES/70 Monthly response to question VMC02

a/ Percent by category, e.g.: the 17 villages shown for I MR under the AB category in 1st qtr 70 represent 6% of all villages rated A or B for that quarter.

Costs. The cost of artillery ammunition shipped to USARV by the Army Materiel Command (AMC) was $916.5 million in FY 69 and $923.3 million in FY 70; the expected cost in FY 71 is $890.1 million. At a cost of $1150 per ton the total SEA artillery consumption in FY 70 was approximately $1.2 billion. Table 5 shows the percent distribution of the FY 69 USARV cost by target and caliber.

TABLE 5

USARV FY 69 Artillery Cost by Caliber and Target
(%)

Target	105 mm	155 mm	8 inch	175 mm	Total
Confirmed, Counter-battery & Preparation	32.7	6.7	2.0	1.1	42.5
Acquired and Interdiction	33.1	9.1	2.9	2.2	47.3
Special/Other	7.7	1.8	0.4	0.3	10.2
	73.5	17.6	5.3	3.6	100.0

The lighter caliber artillery (105 and 155mm) account for over 90% of the total cost and the cost of artillery ammunition expended on acquired and interdiction targets is greater than that expended against the more direct threat, reversing the distribution based on rounds shown in Table 2. This is primarily due to greater use of the heavier artillery against acquired and interdiction targets although the 105mm ammunition costs are dominant in all target categories.

DEFINITIONS ANNEX

1. MISSIONS.

a. Reconnaissance in Force - These operations are designed to locate enemy installations, destroy or evacuate supplies and equipment, and to destroy or capture enemy forces. Less importance is attached to seizing and holding critical terrain than to finding and finishing the enemy armed forces and political intrastructure.

b. Clear and Secure - These are offensive combat operations aimed at driving the enemy forces out of a designated area and keeping them out. The operations are generally initiated by reconnaissance in force actions but differ from pure reconnaissance in force actions in that they are sustained and emphasis is placed on seizing and holding key population and communication centers.

c. Cordon and Search - A military operation in which an area is first sealed by a military force and then searched by another force (or part of the sealing force). It normally implies an operation in and around a village or hamlet.

d. Security - These operations include convoy, route, fire bases and temporary area security. Convoy security operations can be accomplished by temporarily securing the route to be used or by accompanying the convoy with an appropriate mix of combat units; time involved is limited to that required to complete the movement

of the convoy. Security operations are for the purpose of seizing and holding routes, installations and facilities.

e. Base Camp Defense - All units combat and non-combat support engaged in action defending or supporting the defense of the permanent base camp when under attack will report this tactical mission.

f. Not Under Attack - A period during which a unit may be firing but not under attack by the enemy.

g. Training - All ammunition used for training and demonstrations.

2. INTENSITIES OF CONFLICT.

a. Heavy - A high degree of intensity which may include short periods of moderate and/or light, combat, resulting in heavy casualties and large expenditures of ammunition.

b. Moderate - A degree of intensity which may include short periods of heavy fighting resulting in moderate casualties and moderate expenditures of ammunition.

c. Light - Sporadic contact with the enemy with little or no organized enemy resistance, and resulting in light or no casualties and small expenditures of ammunition.

d. Inactive - A period during which a unit is not engaged against the enemy but may suffer losses of equipment and ammunition resulting from enemy action, such as sabotage, mine, grenades, rockets and air raids.

3. AMMUNITION LOSSES. Ammunition items destroyed, lost, or abandoned as a result of enemy action. These losses may occur in transit, within ammunition supply points, or during combat missions against the enemy. (Basic loads lost in destroyed vehicles will be included.)

4. TARGET ANALYSIS.

a. Confirmed Targets: The enemy location is known, and his presence has been determined by contact with friendly forces or activity seen by air or ground observers. This category includes missions fired against hard targets such as bunker complexes.

b. Acquired Targets: Enemy locations based upon SLAR, SPARs, Red Haze missions, ground surveillance radars, airborne personnel detectors and other detection devices. Targets in this category must be based upon timely reaction and additionally must meet all of the following criteria:

1. Detection by one or more of the sensory devices listed.

2. Validation by an evaluation of enemy pattern of operations.

3. Terrain analysis by competent targeting agencies.

c. Counterbattery Targets: Known or suspected locations engaged by friendly artillery immediately before, during, or immediately after enemy rocket/mortar/artillery attacks.

d. Preparation Targets: Landing zones, fire support bases and objectives or areas which receive precautionary artillery fire prior to air assault or ground occupation by friendly forces. This

category includes reconnaissance by fire missions and blocking fires.

e. Interdiction Targets: Areas or points which the enemy is likely to use at some unpredicted time. Fire is delivered for the purpose of denying the unrestricted use of an area or point. This category includes targets fired as a result of agent reports that are not timely or lack sufficient reliability to fall in the confirmed category.

f. Special Purpose Targets: Those targets fired which assist artillery and maneuver elements to improve the technical effectiveness of their operations. This category includes registrations, marking missions, navigation missions, calibrations, adjustment of defensive concentrations and illumination missions.

g. ARVN Support Targets: Missions and rounds fired in support of ARVN forces are extracted from overall totals and reported in this category.

h. Others: Those fired for service practice, training, demonstrations and other categories not included above.

NAVAL GUNFIRE SUPPORT - KOREA AND SEA

A comparison of the average monthly Naval gun ammunition consumption is shown below. Figures include 5", 6", 8" and 16" ammunition.

Monthly Naval Gunfire Expenditure [a]

Korean War			SEA Conflict		
Year/Quarter		Ave Monthly Rounds Fired (000)	Year/Quarter		Ave Monthly Rounds Fired (000)
1950			1965		
	3rd	20.5		2nd	1.5
	4th	10.1		3rd	12.8
				4th	14.5
	Total	15.3		Total	10.6
1951			1966		
	1st	25.5		1st	16.0
	2nd	36.8		2nd	22.9
	3rd	35.9		3rd	21.1
	4th	40.8		4th [b]	31.8
	Total	34.5		Total	23.0
1952			1967		
	1st	37.9		1st (Jan-Feb)	32.1
	2nd	44.5			
	3rd	25.0			
	4th	18.7			
	Total	31.5	Ave 1965 - 1967		19.1
1953					
	1st	17.5			
	2nd	16.7			
	3rd (July)	17.6			
	Total	17.1			
Ave 1950 - 1953		27.2			

[a] Excludes 5" rockets as data for the Korean War period were not available.
[b] SEA DRAGON firing began on Oct. 25, 1966 (targets north of 17° N.).

Until recent weeks the rate of Naval Gunfire in Southeast Asia has been somewhat lower than during the Korean War. It appears, however, that the expansion of SEA DRAGON operations will change the picture rather significantly. The 38,400 5", 6" and 8" rounds fired in November 1966 (the peak month to date) is well below the 54,000 rounds fired in November 1951. However, during the first 12 days of March 1967 23,600 rounds were fired (20,700 5" and 2,900 8") indicating the March expenditures may approximate the Korea peak month. There are a number of interesting differences between the Korea War experience and in Southeast Asia; the principal ones are outlined below.

1) Type Rounds Fired

Korea			Southeast Asia		
Type	Number	Percent	Type	Number	Percent
5"	871.3	86.5%	5"	382.5	94.2%
6"	34.3	3.4%	6"	8.0	2.0%
8"	81.2	8.1%	8"	15.5	3.8%
16"	20.4	2.0%			
Total	1007.3	100.0%	Total	406.0	100.0%

The obvious difference is that battleships mounting 16" guns were used in Korea. In addition wider use of 8" ammunition was made during the Korean conflict, although 8" expenditures have increased considerably during the past six months. Two or three 8" gun cruisers were normally on-line during the Korean compared to one 8" gun cruiser in SEA.

2) Principal Missions. In Korea Naval gunfire was used primarily for interdiction of supplies moving along the coasts of the Korean peninsula to the battle front. Except for the areas on the coastal flanks of the front line there was limited opportunity to support ground troops with Naval gunfire. By contrast the long Vietnamese coastline and the dispersed nature of the fighting (most of it close to the coast) permit extensive use of Naval fire support. A very large proportion of South Vietnam is within range of Naval gunfire. However, in recent months SEA DRAGON operations north of the 17th parallel have been expanded and Naval fire is being used much more extensively for interdiction. The SEA DRAGON missions are very similar to those during the Korean War - firing on roads and bridges, gun emplacements, coastal traffic and logistic facilities. Radar sites do provide one new target for our ships in Southeast Asia.

Effectiveness in Korea

In view of the above similarities and differences, it is interesting to note the effectiveness of Naval fire during the Korean War. The major impact was as follows:

1) It effectively neutralized the North Korean Navy and permitted the Allies virtual free use of the waters off Korea.

2) The impact on the flow of supplies during the early part of the war was significant as the major roads and railways ran along the coast. The Koreans reacted in part by constructing new roads inland (at considerable cost as the mountains reach the sea in many areas) and by a stenuous effort to repair the roads and rail lines. For this reason it was not possible to stop the North Koreans from using the East Coast rail line although traffic was reduced sharply. The enemy was effectively precluded from using coastal shipping after the initial phase of the war.

3) The shoals, mud flats, and extreme tides limited Naval gunfire interdiction and support to the east coast of Korea. In the west, Naval gunfire was limited to a few areas (primarily the Han River estuary) and it had little effect on enemy LOC's.

4) In those areas where it could be used, Naval fire support for ground forces was employed accurately and with considerable effect. Fire support was furnished to U.S. Army and ROK troops as well as U.S. Marines.

SEA DRAGON COSTS COMPARED TO TAC AIR COSTS

Operation SEA DRAGON, the U.S. Navy surveillance and interdiction operation against NVN, began October 15, 1965. Initially, the authorized targets were waterborne logistic craft between 17° - 17°30'N, the area adjacent to and slightly north of the DMZ. The area was progressively extended north to 18° and 19° in November 1966 and January 1967. On February 23, 1967, shore targets were authorized and the operational limit was set at 20°N. The SEA DRAGON force consists of four destroyers and a gun cruiser. Carrier based spotter aircraft are used for gunfire adjustments and damage assessment.

Since the operation began, over 2,400 targets have been destroyed or damaged (D/D). The bulk have been moving targets (2,100), largely small craft with a few railway cars included.

Table 1 computes the number of attack sorties required to D/D the same number of targets D/D by SEA DRAGON. We used the IDHS data base to determine the number of attack sorties required to D/D a target each month, by route package. These factors were then multiplied by the targets D/D by SEA DRAGON, providing the number of attack sorties required to provide the same damage levels as SEA DRAGON. On this basis, the SEA DRAGON targets D/D in the past year would have required about 9,400 attack sorties, or about an average of 130 aircraft, and we would have lost about 12 aircraft. The effort of the last six months, however, only required 2691 sorties, about 16 aircraft equivalents, and about 4 losses. Collateral benefits from naval operations such as pilot search and rescue, intelligence collection and suppression of AAA for strike aircraft were not considered.

On balance, we believe this sortie equivalent comparison is biased in favor of tactical air for the following reasons:

1. The mix of targets (fixed and moving) struck by aircraft and ships differs. The SEA DRAGON target mix is more heavily weighted with moving targets than the air sortie target mix. The November SEA Analysis Report article, "Armed Reconnaissance Efficiency in North Vietnam - A Re-appraisal," indicated that more armed reconnaissance sorties are required to D/D a moving target than a fixed target. In our calculations we used the average targets D/D by air sorties, not just moving targets D/D. This should work in favor of the air sorties.

2. The estimates of target destruction on attack sorties are based on pilot reports and undoubtedly overstate target damage. SEA DRAGON damage assessment is conducted by spotter aircraft which should provide a more conservative assessment of damage. The reason is that the spotter pilot is loitering near the target in

a slow, prop aircraft (A-1) and can concentrate on estimating damage. The attack pilot, by contrast, is in a jet aircraft and is concentrating on delivering ordnance, not assessing damage.

3. With regard to aircraft attrition, loss rates against coastal targets (where naval gunfire is effective) may be higher than in other parts of the route package. Active AAA sites and radars are denser in coastal areas than in many inland areas. In calculating equivalent aircraft losses we used the average loss rate by route package.

We estimate that the SEA DRAGON operation costs about $65 million per year, about half the equivalent tactical air cost of $130 million. These costs exclude the initial capital investment. The tactical air costs were computed as follows:

		Total Cost
9388 sorties x $11,000[a]	= 103.3	$103.3
12 losses x 2.5 million[b]	= 30.0	30.0
		$133.3

SEA DRAGON annual costs were computed as follows:

SEA DRAGON - Annual Direct Operating and Maintenance Costs[c]

	On Line	Backup	Total	Cost per Ship ($Million)	Total Cost ($Million)
Ships					
Destroyer	4	4	8	$3.0	$24.0
Cruiser	1	1	2	7.7	15.4
Ammunition					27.0
Total SEA DRAGON Cost					66.4

There have been no losses of naval vessels in NVN to shore fire. There have, however, been 21 hits by NVN coastal batteries on SEA DRAGON ships with 20 WIA and 4 KIA. Damage repair costs are unknown.

Using the same factors for the April - September 1967 period, however, SEA DRAGON cost $33 million versus $39 million for equivalent tactical air capability.

a/ Excludes attrition and pilot costs.
b/ F-4 replacement cost.
c/ Source: Department of the Navy -- NAVSO P-1986

TABLE 1

SEA DRAGON - Sortie Equivalents

	1966	1967							
	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	Total		Attrition/[a] 1000 Attack Sorties		Expected A/C Losses
Route Package 1									
Targets D/D by NGF	611	406	391	114					
Tac Air Sortie per Tgt D/D[b]	4.0	9.7	2.4	2.9					
Sortie Equivalent of NGF	2456	3926	946	325	7653	X	1.19	=	9.11
Route Package 2									
Targets D/D by NGF	..	88	50	77					
Tac Air Sortie per Tgt D/D[b]	3.0	1.9	2.5	1.5					
Sortie Equivalent of NGF	-	171	125	119	415	X	.80	=	.33
Route Package 3									
Targets D/D by NGF	-	44	164	271					
Tac Air Sortie per Tgt D/D[b]	3.0	2.5	2.6	1.6					
Sortie Equivalent of NGF	-	112	424	423	959	X	1.84	=	1.76
Route Package 4									
Targets D/D by NGF	-	12	116	53					
Tac Air Sortie per Tgt D/D[b]	2.2	2.7	2.0	1.8					
Sortie Equivalent of NGF	-	32	233	96	361	X	1.57	=	.57
Total Route Packages 1-4 Tgts Destroyed/Damaged NGF	611	550	721	515					
NGF Sortie equivalents	2456	4241	1723	963	9388	X	1.25[c]	=	11.77

a/ January - November 1967. Source: OSD (C) Office of Statistical Services.
b/ Source: NMCS - COMBA Data Base.
c/ Computed.

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CONFIDENTIAL

SEA DRAGON COSTS COMPARED TO TACTICAL AIR COSTS: A REBUTTAL

The Air Staff has provided comments in rebuttal to our December article comparing naval gunfire and tactical air costs of destroying targets in North Vietnam. Our article concluded that: "Since September 1966, naval gunfire has destroyed or damaged moving targets at roughly half the cost of equivalent tactical air capability. However, during good weather months the costs were roughly comparable."

The air staff comments are set forth below, followed by ours.

Air Staff Comments

a. The use of ships to damage or destroy targets within range of the ships' guns such as in Sea Dragon is known to be effective. The Air Force has, in fact, encouraged the use of naval gunfire (NGF) against interdiction targets along the coast as a valuable contribution to the overall interdiction campaign. Hence, the purpose served by the analysis is not clear. Comparing the capability of ships with tactical air to accomplish the job being performed by Sea Dragon is basically, as made in the SEA report, an "apples and oranges" comparison. Naval gunfire obviously cannot accomplish inland the tasks performed by tactical air.

(1) The target system has a significant bearing on the results achieved. Inland target types include many in addition to those in the coastal target system attacked by NGF (primarily vehicles and boats). It appears that the high cost advantage portrayed for Sea Dragon results primarily from the difference in target types.

(2) The number of sorties required to destroy or damage (D/D) a target is critical to the analysis. This sortie requirement is based on a number of factors including type of target, terrain, accuracy of delivery, etc. Targets destroyed or damaged by Sea Dragon as stated in the report have been primarily moving targets (87%), largely small craft with a few railway cars. In addition to these, targets for Tac Air include weapons, bridges/tunnels, roads, and buildings. Using all target types and all attack sorties flown against them in Route Packages I-IV for a 12-month period, the analysis derives from data in the SEA Statistical Tables 1/ an average number of Tac Air sorties (3.9) to destroy or damage a target. This means that 9388 Tac Air sorties would be required to D/D the same number of targets D/D by NGF (2397). The analysis would be more valid if the comparison were restricted to the target types attacked by NGF.

1/ OASD(SA) "SEA Statistical Tables through Oct 1967", Nov 30, 1967.

(3) The relationship of the Rec Air effort and target types is considered in an Air Staff Study 1/ which covered all areas of Route Package I during August 1966. The following results were obtained:

Target Type	Average Number Aircraft Attacks Required to D/D a Target 2/
Boat	1.5
Vehicle	2.3

(4) An examination of more recent data taken in October-November 1967 indicates what can be accomplished by a program aimed specifically at moving target interdiction. The case examined is the 56th Air Commando Wing night interdiction program. Data from this program show that 1.4 sorties were required to D/D a moving vehicle and reflects the increased effectiveness from use of the Starlight scope for night interdiction. 3/ This figure is in close agreement with one of 1.5 sorties per truck D/D determined in a recent Air Staff examination of attack sorties flown by propeller aircraft against truck targets in Laos, Sector E, during October and November 1967.

(5) Future systems should bring about a further decrease in the number of sorties needed to D/D moving targets. For example, the Gunship II system has demonstrated multiple vehicle targets D/D per sortie, considerably less than one sortie per vehicle D/D. 4/

1/ HQ USAF (AFGOA) Memo 67-4, "Analysis of Air Operations in Route Package I, North Vietnam, during August 1966", July 28, 1967.

2/ In terms of sorties, the number would be the same or slightly less since occasionally more than one boat or vehicle were attacked per sortie.

3/ Obtained from figures as given in SEA End of Trip Report, Col Harry C. Aderholt, USAF, Dec 19, 1967.

4/ Hq USAF (AFRDD) Interim Report, "Gunship II Flight Test and Combat Evaluation," Dec 11, 1967.

(6) Using the figure of $11,000 per sortie, the attrition values and the number of targets (2397) D/D by NGF as stated in the SEA Analysis Report, the cost for Tac Air would be as indicated in the following table when the average number of sorties per target D/D are based primarily on boats and vehicles. It is assumed that the targets destroyed/damaged by NGF consist of 75% boats, 12% vehicles, and 13% fixed targets (based on the statement made in the SEA Analysis Report that the bulk have been moving targets (2100), largely small craft with a few railway cars included). For the fixed targets, a figure of 3.2 sorties per target D/D is used.1/

CASE	AVERAGE NUMBER SORTIES PER TARGET D/D	SORTIE EQUIVALENT OF NAVAL GUNFIRE	ANNUAL TAC AIR COST INCLUDING ATTRITION
I 2/	1.7	4095	$58M
II 3/	1.8	4354	$62M

1/ Hq USAF (AFCOA) Memo 67-4, "Analysis of Air Operations in Route Package I, North Vietnam, during August 1966," July 28, 1967.

2/ 1.4 sorties per vehicular target D/D; 1.5 sorties per small craft D/D.

3/ 2.3 sorties per vehicular target D/D; 1.5 sorties per small craft D/D.

(7) Based on data for similar target types, it appears that the Tac Air cost to accomplish the same job that Sea Dragon is doing would not be twice the Sea Dragon cost ($65M) but more nearly equal.

(8) The sensitivity of the results to a change in the aircraft attrition was checked. An increase in the attrition by 50% increases the total cost by only 10%.

(9) Additional comments follow:

(a) Some of the figures used in Table I of the report do not correspond to previous data listings. Sorties per target D/D for 1st quarter 1967 in Route Package I are listed as 9.7. SEA Statistical Tables through October 1967, Table 7A, depicts this figure as 7.0.

(b) There is a considerable uncertainty in costs. For example, ship repair, spotter aircraft, combat air patrol costs, etc. are not shown."

SEAPRO Comments

We welcome the Air Force comments. It is spurring us to do further analysis to determine the number of sorties flown in areas within naval gunfire range, examination of the types of targets killed and more elaborate exploration of the weather effect. Our one initial comment is that the Air Force bases its calculations on data from August 1966 and Oct-Nov 1967, good weather months. We are not surprised that the Air Force finds tac air and Naval gunfire competitive in cost under these circumstances--we found the same thing. However, in bad weather months we still gingerly believe that NGF finds moving targets more easily (and therefore kills them cheaper) than does tac air. Nevertheless, more work is needed.

MARKET TIME EFFECTIVENESS

Summary

Combined sea-air-ground interdiction is crucial to an effective all-Vietnamese Market Time operation.

Renewed enemy emphasis on seaborne resupply by trawlers and smaller, intracoastal craft, plus observed shortcomings in Vietnamese Navy (VNN) forces, prompted a field re-evaluation of Market Time effectiveness this Spring. The review disclosed that Market Time's effectiveness could be expected to decline sharply as the Vietnamese take over the operation, if current plan are not changed. Several corrective measures have been initiated or recommended.

Analysis shows, however, that RVNAF is unlikely to attain past US effectiveness levels, unless it provides Market Time with coastal air surveillance and responsive air and ground reaction forces:

- Recent field assessments indicate that 8 or 9 trawlers out of 10 would probably penetrate the Market Time barrier after the US Navy P-3 air patrol is replaced by the coastal radar system, unless the VNN changes its current doctrine and practices. When the US Navy operated the barrier, the comparable probability was 1 or 2 trawlers out of 10.

- This effectiveness decline is primarily caused by two factors:

-- The VNN has only 4 craft (destroyer escorts and coast guard cutters) believed capable of intercepting and sinking an armed trawler.

-- The P-3 air patrol provides 2-3 days warning time for reaction, but the radar system replacing the P-3's provides only 2-3 hours warning.

To increase Market Time effectiveness against trawlers, RVNAF must take action to provide additional warning time or to increase the number and effectiveness of its reaction forces. The corrective measures already underway will improve performance against intracoastal sampans, but will not help much against trawlers.

The consolidated RVNAF Improvement and Modernization Plan provides for Vietnamese Air Force (VNAF) participation in a Market Time identification and reaction role "with currently programmed assets and within the tactical air control system." But periodic Vietnamization reports do not indicate the status of VNAF plans to assume this role. Without a concentrated US and GVN effort to streamline command and control procedures, it is unlikely that a VNAF reaction to a VNN request staffed through the tactical air control system would be responsive within the 2-3 hours warning time.

Details

Background. The Market Time operation currently consists of an inner barrier (0-12 mi), an outer barrier (12-[illegible] mi), and air surveillance by US P-3 aircraft over and beyond the outer barrier.

The April 1970 Consolidated RVNAF Improvement and Modernization Plan (CRIMP) rejected the concept of providing the Vietnamese Air Force (VNAF) with air assets to assume the US air surveillance mission and opted for a VNN operated coastal radar system instead. It was felt that the radar system provided adequate detection probabilities at significantly lower long term costs and with a shorter lead time for implementation.

The plan also provided for VNAF to supplement the coastal radar system by providing identification and reaction forces with their programmed assets, operating through the tactical air control system. Necessary pilot training for this role was to be accomplished during the estimated two years it would take to construct the radar system.

At the present time, the VNN mans the inner barrier and the USN is responsible for the jointly manned outer barrier. The land based coastal radar system (ACTOVRAD), intended to replace the P-3 air surveillance and USN ships in the outer barrier, is scheduled to be operational in early 1972. This radar has an average range of 40-50 miles, which drops to only 30 miles at some of the low sites in the Delta. By July 1973, VNAF can reportedly provide a supporting reaction capability for Market Time.

There have been seventeen known infiltration attempts by enemy steel hull trawlers since March 1970, primarily concentrated along the coastline of MR IV. Of the seventeen, two were sunk by Market Time forces, while two other attempts were considered successful.

The increasing number of intelligence reports concerning seaborne infiltration and coastal transshipment in MR IV suggests a greater enemy reliance on this method of resupply to augment land infiltration down the Ho Chi Minh Trail. The mid-1969 closing of Kompong Som (Sihanoukville) and the operations into Cambodia and Laos probably made seaborne resupply more attractive to the enemy; a successful trawler landing in MR IV could provide the enemy there with more than a year's supply of large caliber ammunition at his 1971 expenditure rates.

Recent Effectiveness Assessments. Increased enemy emphasis on seaborne resupply and observed shortcomings in VNN Market Time units prompted COMNAVFORV to re-evaluate the February 1970 Market Time II study. Results of the May 1971 review, in terms of detection results, are shown in the following table.

Current detection performance of the surface barrier against trawlers is shown to be no better than the worst estimate in Market Time II and considerably below its previous high (fair weather) estimate and the US performance standard. The review also found that effectiveness against

the intracoastal transshipment threat was very low. This year's degradation was attributed to poor performance in maintenance, leadership, and employment of available ships.

ESTIMATED DETECTION PROBABILITY
(No. of Trawlers Detected of 10 Infiltration Attempts)

Market Time Component	Market Time II (Feb 70)	Current Detection Performance (May 71 study)	Projected (mid-72)	US Performance (goal)
USN Air Patrol	6-8	6-8	N/A	N/A
VNN Radar System	--	--	8-9	6-8
VNN Surface Barrier[a]	3-8	2-3	[b]	7-8

a/ Includes combined efforts of inner and outer barrier. The Market Time II and projected estimates are based on an all VNN barrier, while the May 71 re-evaluation estimate is based on the current composition (inner barrier 100% VNN, outer barrier 50% VNN).
b/ No detection estimate provided.

The May 1971 review also noted that the US Navy P-3 air patrols were a key element in Market Time surveillance capabilities and provided a warning time of several days. After these aircraft are replaced by the coastal radar system (early 1972), overall Market Time capability is projected to be only 1-2 successful trawler interdictions (versus 8-9 detections) out of 10 infiltration attempts unless the VNN changes its present doctrine and practices. This low estimate is primarily due to a combination of the reduced reaction time (from 2-3 days down to 2-3 hours) provided by the radar system and fewer ships in the outer barrier.

Detection and Interdiction - How Market Time Works. The preceding discussion focuses primarily on detection estimates, with interdiction performance mentioned only in the last paragraph. Unless the knowledge that he has been detected causes the infiltrator to abort the mission (deterrence), successful interdiction requires detection to be followed by interception and destruction of the enemy craft before he reaches the coast. This sequence of events is as applicable to the smaller enemy craft ferrying supplies from one point to another along the coast (intracoastal transshipment) as it is to the large steel hull trawlers bringing in 100-400 tons of supplies from North Vietnam. Ordinarily only the inner surface barrier, augmented by close-in coastal air surveillance, is involved in countering the intracoastal transshipment threat.

Against trawlers, however, all Market Time components--inner and outer surface barriers as well as the offshore P-3 air patrol or (in 1972) land based radar--may be engaged. The interaction between the detection/interception/destruction capabilities of the various components in the more complex trawler interdiction operation is depicted in Figure 1 and discussed below.

The schematic Market Time diagram (figure 1) shows six possible scenarios evolving from a single trawler infiltration attempt. If the trawler is detected by the P-3 air patrol or radar (upper branch), two of the 3 scenarios result in a successful interdiction. If undetected by the P-3's, only one of the three scenarios yields success.

Since the purpose of Market Time is to prevent enemy resupply by sea, a deterred trawler is considered to represent a successful interdiction. However, the air patrol or radar can only track the trawler. The trawler commander's decision to abort will be influenced by his estimate of the surface barrier's capability to intercept and destroy him, and the liklihood that he would be detected again if he decides to resume his infiltration.

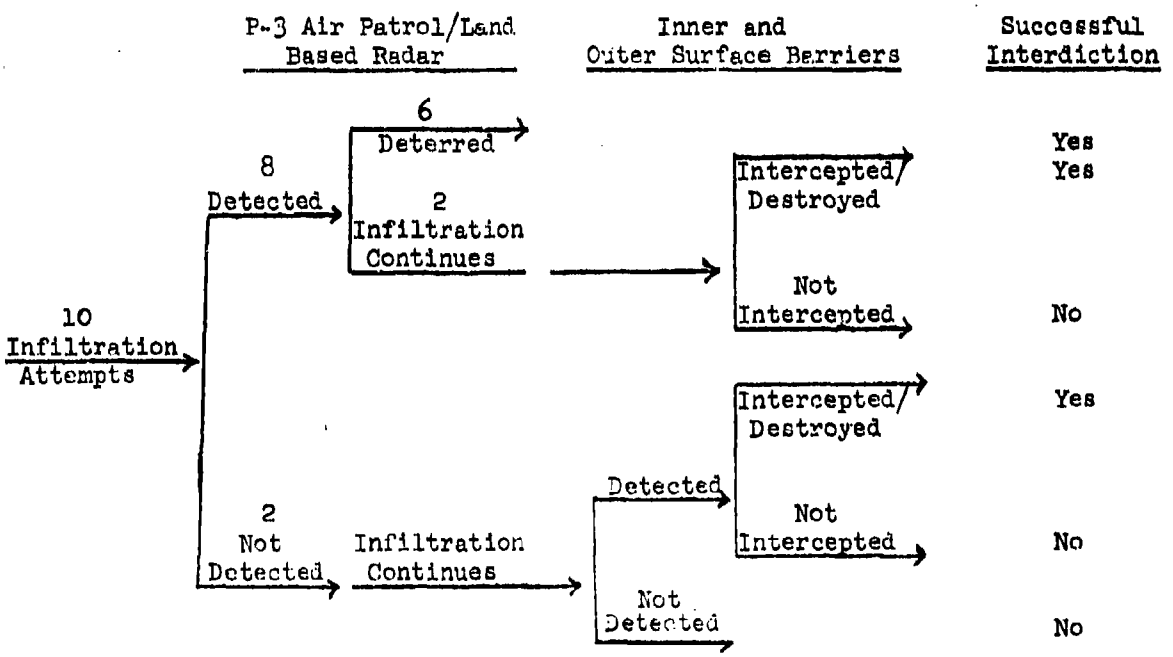
From our previous discussion of MR IV trawler infiltration attempts (17 in the past year, with 2 interdictions and 2 penetrations) and detection estimates for the air patrol, the P-3 air patrol or land based radar detection results against 10 infiltration attempts would probably be about as follows:

-- Eight would be detected, but only two would continue their infiltration. The other six would be deterred by the realization that they had been detected.

-- Two would be undetected and continue their infiltration.

FIGURE 1

MARKET TIME OPERATION AGAINST ENEMY TRAWLERS



Interception and destruction effectiveness is in turn a function of the amount of warning time provided the reaction force and the number of force elements available which can sink an armed trawler.

Experience gained in sinking an SL-8 trawler off MR IV in April of this year indicates that only the larger VNN craft in the outer barrier (destroyer escorts and coast guard cutters) can cope with a heavily armed trawler.

Four such ships are currently programmed for the VNN inventory; two are currently on station and the other two are scheduled to join them by early 1972. Since the outer barrier still has US Navy augmentation, and the U.S. P-3 air patrol continues to provide 2-3 days warning time for the surface craft to intercept and engage the enemy trawler once it enters the 12 mile territorial limit, successful interdiction is very nearly assured at the present time.

After the US Navy ships are gone and the P-3 air patrol is replaced by the radar system, successful interdiction of a detected trawler will depend on the ability of one of the four large VNN ships to intercept within the 2-3 hours warning time provided by the radar system - unless VNAF or ground reaction forces are provided.

This does not mean the detection capability of the inner and outer barrier is unimportant; it is crucial against the intracoastal transshipment threat and could contribute about 20% of the overall Market Time effectiveness against trawlers, even though its current contribution is almost nil.1/

Projected Capability and Corrective Measures

The inner barrier is currently buttressed by close in coastal air surveillance, primarily by US air units; VNAF is providing only three flights a week. CINCPAC has stated that since the US can provide only near term augmentation, VNAF will eventually have to provide full air support and should start as soon as possible. In addition, the VNN has begun to improve its employment of craft in the inner barrier; instead of a uniform distribution along the coast, mobile groups are being formed to concentrate in high threat areas with junks employed in the shallows.

Together with other recommended maintenance and leadership improvements, these measures should materially increase effectiveness against the coastal transshipment threat. The improved detection capability will also contribute to performance against trawlers, and concentrations of the smaller craft should provide an intercept force which could at least delay a heavily armed trawler.

The greatest improvement in performance against trawlers, however, depends upon an RVNAF capability to either increase the warning time or provide additional reaction forces which can effectively engage trawlers within 2-3 hours.

1/ See Annex A for a somewhat more rigorous mathematical explanation of the relative importance of detection versus interception/destruction capability against trawlers.

While some enemy trawlers can reportedly tell when they have been detected by radar, this knowledge will not deter them unless the reaction force poses a credible threat. Moreover, the radar system can be defeated by transferring trawler cargo to small wooden junks and sampans just out of radar range, or only about 30 miles offshore in some areas of MR IV.

It seems imperative then, that the VNN be augmented by quickly available VNAF and (if intercept appears impossible) ground reaction forces. It is unlikely that current command and control procedures set up for inter-service coordination will be adequately responsive, nor is it evident that RVNAF has begun planning to provide such support. In the near term, the question of terminating the US P-3 patrols also needs reconsideration.

ANNEX A

MARKET TIME INTERDICTION PROBABILITY AGAINST TRAWLERS

The overall interdiction probability of Market Time is a function of the detection, interception and destruction probability of the various components. The early warning component (P-3 air patrol or coastal radar system) has a detection capability only, whereas the surface reaction forces of the inner and outer barrier have the capability to detect, intercept and destroy an infiltration trawler.

Based on discussions with the Center for Naval Analyses (CNA), Market Time interdiction probability against a steel hull trawler; in terms of component probabilities, can be symbolically expressed as follows:

$I = DS + d(1-D)S$; where:

Symbol	Definition	Probability Current/Projected Estimate [a]
I	Overall Interdiction	unk/.13 - .27
D	Detection by P-3s or Radar	.65-.8/.85
d	Detection by surface barriers	.26/unk
S	Interception and Destruction by surface barriers	1.0/.14-.30

a/ From May 1971 Market Time re-evaluation

Note that the expression does not explicitly account for the deterrence factor, an added benefit which is directly proportional to the interception and destruction capability of the reaction force.

Substituting the given estimates into the expression yields the following interdiction estimates:

Current Probability. (using 0.8 for the P-3 detection)

$$I = (.8)\ 1 + (.26)(1-.8)\ 1 = .8 + .05 = .85$$

Projected Probability (no improvement in surface barrier detection)

Outer barrier with two coast guard cutters on station:

$$I = (.85)(.14) + (.26)(1-.85)(.14) = .12 + .01 = .13$$

Outer barrier with 2 cutters and 2 destroyer escorts on station:

$$I = (.85)(.30) + (.26)(1-.85)(.30) = .26 + .01 = .27$$

Projected Probability (surface barrier detection improved to U.S. standard of .75 with 2 cutters and 2 destroyer escort on station).

$$I = (.85)(.30) + (.75)(1-.85)(.30) = .26 + .03 = .29$$

It is obvious from the above that the first term[1/] (DS) provides the major contribution to overall trawler interdiction. The current probability calculation shows that the maximum contribution of the second term[1/] in the expression is only 15 to 20% of the total interdiction probability, even if detection interception and destruction probabilities are unity.

1/ The first and second terms in the interdiction expression are the mathematical equivalents of the upper and lower branches respectively of the schematic in Figure 1 of the basic analysis, less the deterrence branch.