July 18, 1997

Mr. Walter Nelson
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Dear Mr. Nelson:


Two copies are returned herewith.

Sincerely,

[Signature]

John B. Hennessey
Acting Director
Security and Intelligence Office

Enclosures

cc:
F. A. Koether (97-50)
RAND DOCUMENT

A GROUND FORCE STRUCTURE AND STRATEGY FOR VIETNAM IN THE 1970s (U)

S. Canby, B. Jenkins, R. B. Rainey

June 15, 1970

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GROUP 3
Downgraded at 12 year intervals; Not automatically declassified.

Classification changed to: CONFIDENTIAL
Authority: AUTO-2019-3

By: date: 04-02-22
Operating Entity: The Rand Corporation
(U) In a speech on November 3, 1969 the President summarized the key elements of U.S. defense policy in Asia:

- The United States will keep all its treaty commitments.
- We shall provide a shield if a nuclear power threatens the freedom of a nation allied with us, or of a nation whose survival we consider vital to our security and the security of the region as a whole.
- In cases involving other types of aggression we shall furnish military and economic assistance when requested and as appropriate. But we shall look to the nation directly threatened to assume the primary responsibility of providing the manpower for its defense.

(U) Thus, at a minimum, we may continue to provide support to South Vietnam under the third point in that policy statement. The ongoing Vietnamization program is intended to implement that policy by strengthening the overall capability of the South Vietnamese armed forces and extending the pacification program. As a strategy, Vietnamization seems to mean that eventually all responsibility for fighting will be turned over to the GVN without losing the war.

(U) The war in the South, however, has been one in which an initially strong insurgency was later combined with an invasion from outside the country. Both the outside threat and, to a lesser extent, the internal one remain.

(U) The problem for the U.S. and for South Vietnam is to design forces which will be both adequate to deter that threat and to do so at a cost supportable by each country. These forces and their deployment will differ significantly from those which have been and currently are in the country. The question of whether or not such a posture might have been a cheaper and more effective way to prosecute the war is now moot. What is exceedingly clear, however, is that present RVNAF force levels are already too large to be supportable by the RVN for any extended period; a fortiori, increases which are contemplated to replace withdrawing U.S. forces are unsupportable.
I. THE STRATEGY OF COUNTERINSURGENCY

Before attempting to estimate future RVNAF force requirements, it is necessary to say something about the strategy of counterinsurgency. In the first place it should not be viewed as symmetrical to insurgency and composed of the three classic phases as outlined by Mao and Giap. Rather, it should be viewed as composed of three levels of countertactics which should be simultaneously satisfied.

The first level is police action to atomize, secure, and control the local populace. Second is protection of the police from small squad and platoon-sized guerrilla forces. And third is the containment, dispersement, and destruction of company and larger enemy groupings. Insurgency obviously begins and ends (if the government wins) at the first level; it is at the first level that ideology and "good" government are so important -- though of course willing support is desirable throughout for intelligence and sustenance reasons. Without this support, a counterinsurgent may be unable to consolidate politically his reduction of the insurgency and prevent a recurrence. Nevertheless, during phases 2 and 3, "good" government is insufficient to contain and reduce a virile insurgency; during these phases knowledge of the mechanics of power is a necessary condition for successful counterinsurgency.

If undue emphasis is placed on the third level at the expense of the first, the counterinsurgent is fighting a hydra and killing the very resources he is striving to preserve. A strategy of attrition against an open-ended indigenous component is therefore a contradiction in terms. If the first level is emphasized to the exclusion of the others when the insurgent is in his second or third phase, the dispersed government forces are non-viable against the larger insurgent groupings and the government will collapse. The government's task is, therefore, to design within its resource constraints an appropriate balance among these three activity levels.

The role of the government's military forces is to support and
interact with the police and the other agencies of government. For in the final analysis it is at the police or populace control level that the insurgency is finally won or lost. This fact is easily forgotten as the insurgency spirals out of police control. In such cases military action becomes an end in itself rather than as the means to sustain the police and other agencies. This is a means-ends relationship which needs to be kept continually in mind.

What is required now are low-cost schemes to harass, neutralize, and defensively contain the main forces, while the main effort is devoted to attacking the absolutely essential ingredient of a successful insurgency -- the political organization of the insurgent. We stand today in a situation in which the ability of the VC/NVA to mount significant main force attacks is severely limited, but the political structure of the Communist organization in the South has not been destroyed. At the same time, the U.S. is engaged in a withdrawal of forces which is probably irreversible, but the war is not over.

If South Vietnam is to retain its political independence, and if the U.S. is to reduce its role to one of providing economic aid and military advice and materiel (but little combat manpower) then forces and tactics must be designed to end the war at costs tolerable both to the GVN and the U.S.
II. AN ALTERNATIVE TO PRESENT STRATEGY

(U) If the argument of the previous section is accepted—that the war in Vietnam should be composed of three levels of countertactics, then, what should dominate decisions about the employment of forces, it follows, is their potential for providing protection to the population in the villages, hamlets, and urban areas. This is not to say that, in general, the Viet Cong and the NVA make the population a target nor that all our forces should be committed to population protection. It does say, however, that the government's presence and ability to protect its people must be sufficiently high and that the insurgents will have difficulty in punishing citizens who opt to support the government.

(U) The key to providing the necessary security to the population appears to be the use of many small units continuously in the villages that are to be defended. Until recently, this role has been filled by Popular Force units and is now augmented by People's Self-Defense Force Units. Clearly, the basic elements of an alternative posture—hamlet and village defense, along with small unit patrolling in the contested and enemy territory—must be part of a larger system. The ability of small units to survive if attacked by superior enemy forces depends upon the ability of the larger system to provide support through artillery, air, or ground forces.

(U) In summary, the key elements of a strategy which seeks to provide a high degree of protection to the bulk of the population of South Vietnam would be:

1. Constant, visible military presence at the hamlet level using small patrols—mostly at night—to increase the difficulty of Viet Cong access to the population.

2. Integration of village defense forces into a larger system that provides for an effective coordination of all forces in an area.

3. Provision for mobile reaction and exploitation forces to support the small units when they engage superior enemy forces.
(4) Police attack on the political structure of the Viet Cong as population defense measures become effective.

(5) Use of long-range strike teams to penetrate territory containing main force and NVA units in order to call in massive applications of artillery, tactical air, and occasionally ground troops when contact is made.
III. ORGANIZATIONAL REQUIREMENTS FOR A NEW STRATEGY

The posture proposed in this memorandum attempts to improve the capability of RVNAF forces in fulfilling three broad functions:

1. Defense of the Demilitarized Zone (DMZ);
2. Defense of the populated lowlands and the Delta;
3. Protection of population in the provincial capitals of the highlands.

A different posture is required for each mission, but the emphasis and reallocation of resources will be on defense of the heavily populated lowlands. Political control of population is, after all, going to remain a major requirement.

In the coastal plains and Delta, the concept envisions the integration of PF and PSDF units into a larger provincial organization. Their function in the hamlets will be to protect the police and other government agents from attack by guerrilla or other enemy military forces.

Defense of the DMZ and other invasion routes and the provision of large-unit reaction forces in cases of invasion by conventional units would be handled somewhat differently from defense of the heavily populated areas since the requirement for continuous presence of protective forces is not the same as it is for village defense. This is not to argue that invasion routes do not need to be continuously defended, but only that big units can use their superior mobility to mass when necessary rather than being tied down in static defense of these routes.

Reaction support to invasion route and population defense forces will be provided by mobile strategic reserve brigades. These brigades will largely be based in low-population areas. Deployed in a linear fashion along the edge of the lowlands and in northern I Corps, they will have the primary mission of reinforcing lowland and invasion route defenses. Secondarily, these mobile forces would be responsible for forming a dense patrol barrier between the highlands and the coastal
plains, and for the surveillance of enemy forces in remote areas using extensive small-unit patrolling where feasible. While the former would emphasize ambushing, the latter would concentrate on scouting for lucrative targets for artillery, air strikes, or ground troop attacks.

**INVASION ROUTE FORCES**

(\(\nu\)) For those forces defending the DMZ, a defensive-offensive strategy and a reduction of forces to one brigade of three mechanized U.S. and two ARVN infantry battalions is appropriate. The posture would combine this initial defense with mobile strategic reserve forces from nearby areas to block and trap major enemy attacks. This means that large forces would not be kept in the DMZ to forestall an invasion.

(\(\nu\)) This is possible, first, because the probability of a direct conventional invasion is very low. The utility of additional units in the DMZ is, therefore, less than their utility if employed elsewhere. They can be held to this level since reinforcements could be shifted quickly by helicopter or by sea to counter any conventional attack. Second, a direct conventional invasion actually creates a military opportunity since it is more suitable to the style of warfare for which U.S. and regular ARVN units have been equipped and trained. It
could potentially permit the destruction of the enemy before he disperses into small units with which our more conventional forces have had difficulty in coping.

The DMZ brigade should be mechanized to provide (1) greater firepower per man, (2) for taking advantage of the relatively favorable terrain at the eastern end of the Zone for the use of armored and mechanized forces, (3) a blocking force against a surprise major thrust, and (4) a mechanized core to be reinforced by the light infantry units of the mobile strategic reserve which can be moved more easily than mechanized or armored units. Overhead troops in this brigade should be reduced by providing four rifle companies per battalion and by greater pooling of firepower and logistics support at the brigade level.

HIGHLANDS-BASED MOBILE RESERVES

The sparsely populated highlands are a secondary area. Enemy troops in these areas have very low value per se. Because of ARVN mobility and firepower, the utility of enemy troops in defending their own supply routes is marginal. Their major value has been their ability to attract U.S. and ARVN forces, causing an uncovering of the critical populated areas and a stretching of allied logistics. If the enemy can be isolated from the populated areas without tying up allied strength, his highland troops become almost valueless. Without the sustenance and intelligence obtainable from the populated regions, the indigenous VC portion becomes of little use in providing support to the larger VC/NVA forces in conventional operations.

In the lowlands, since the strategy is essentially one of freezing enemy night movement by integrated small-unit random ambush points and the systematic rootout of the hard-to-replace political infrastructure by police and other GVN government action, large reaction units must be available for reinforcement.

For reasons of economy, reaction speed, and terrain familiarity, the protection of the decentralized village defense system requires that these reserves be echeloned.

The billeting of these large units in the lowlands would not,
however, materially increase village defense capabilities. The presence of such units as such has little security value. Security or the protection of the population would only be increased if the strength of these units were dispersed to the various village defense units—an act that would degrade the reaction mission.

† Yet if the strategic reserve units are not routinely integrated in the population protection forces, resources are lying idle. To avoid this, most of the strategic reserve units should be based in the highland border areas, but be sufficiently mobile that they can be redeployed quickly if needed. When not required for reaction purposes, they can be engaged in productive patrolling activity in the sparsely populated highlands. Their role as a reserve force would be degraded to only a minor extent because of the ability to transport them quickly by helicopter.

(U) To implement these changes the present ARVN regiment and battalion must be reorganized to reflect the special conditions of insurgency in Vietnam. Table I shows a comparison of a proposed ARVN brigade with the existing U.S. infantry brigade. Appendix A contains the detailed, organizational structure of the brigade.

† Although the primary mission of the mobile brigades is to provide reaction and pursuit forces when required by the lowlands population defense forces, their secondary activity in small-unit patrolling will also be a highly productive use of resources. The mobility, firepower, and communications available to ARVN forces represent a major technological advantage over the enemy. Using this advantage, teams of five to ten men can be inserted by helicopter into unpopulated highlands territory where they can hide from and observe any enemy movement.

† Analysis of the limited use of this tactic in Vietnam suggests that much more extensive use could be made of it. The result would be a reduction in casualties (from those incurred in orthodox sweep

Table 1

COMPARATIVE DETAILS OF BRIGADE ORGANIZATION

<table>
<thead>
<tr>
<th>Item</th>
<th>Proposed Organization</th>
<th>Present TO&amp;Es (3-1/3 Bns)</th>
<th>Modified Vietnam TO&amp;Es (3-1/3 Bns 4 Co/Bns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total strength</td>
<td>2981</td>
<td>3371</td>
<td>3674</td>
</tr>
<tr>
<td>Maneuver companies</td>
<td>20</td>
<td>10</td>
<td>13-1/3</td>
</tr>
<tr>
<td>Maneuver platoons (equiv)</td>
<td>70-2/3</td>
<td>33-1/3</td>
<td>43-1/3</td>
</tr>
<tr>
<td>Infantry Sqd/plt strength</td>
<td>1780</td>
<td>1320</td>
<td>1760</td>
</tr>
<tr>
<td>Cav/Scn plt strength</td>
<td>76</td>
<td>106-2/3</td>
<td>106-2/3</td>
</tr>
<tr>
<td>Inf.plt/total strength</td>
<td>59.7%</td>
<td>39.2%</td>
<td>47.9%</td>
</tr>
<tr>
<td>Inf plt/total U.S. strength</td>
<td>91.2%</td>
<td>39.2%</td>
<td>47.9%</td>
</tr>
<tr>
<td>81 mm mortar</td>
<td>0</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>4.2 inch mortar (107 mm)</td>
<td>24</td>
<td>13-1/3</td>
<td>13-1/3</td>
</tr>
<tr>
<td>105 mm How.</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Inf Tactical Deployment^a:

<table>
<thead>
<tr>
<th>Item</th>
<th>Proposed Organization</th>
<th>Present TO&amp;Es (3-1/3 Bns)</th>
<th>Modified Vietnam TO&amp;Es (3-1/3 Bns 4 Co/Bns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base sec consumption</td>
<td>15%</td>
<td>33-1/3%</td>
<td>25%</td>
</tr>
<tr>
<td>Strength releasable for continuous patrolling</td>
<td>50%</td>
<td>33-1/3%</td>
<td>50%</td>
</tr>
<tr>
<td>Reaction reserve</td>
<td>35%</td>
<td>33-1/3%</td>
<td>25%</td>
</tr>
<tr>
<td>Patrol leverage factor/man</td>
<td>2.28</td>
<td>1</td>
<td>1.8</td>
</tr>
</tbody>
</table>

^a Assumes three Bn base camps for proposed brigade. Four companies of the 4th Bn held in continuous reserve.
operations), increase in surveillance and harassment of the enemy, and less visible evidence of troops.

**POPULATION-DEFENSE FORCES**

The key to counterinsurgency is population control. In order to accomplish this, it is necessary to root out the remaining Viet Cong political infrastructure so that the average citizen is not living under constant fear of reprisal if he chooses to support the government. Strategy must be designed to smother enemy day and night movements. By freezing enemy movement, the necessary security environment can be provided to enable the police and government to function. The result of freezing enemy lowland movement and the destruction of his infrastructure is the isolation of his highland forces. Without access to the lowlands where the population is, the enemy highland forces lose their reason for being.

To derive estimates of the forces needed to implement this component of the strategy, a sample deployment was projected for the I Combat Tactical Zone (I CTZ). The assumptions were:

1. That there would be a minimum of one reinforced popular forces platoon assigned to each village. In villages that are quite extensive in territory, two or even three, reinforced platoons could be assigned.

2. That augmented platoons would be assigned to the popular forces platoons located in villages where the enemy threat is considered great. In the sample deployment it was assumed that Quang Tri and Thua Thien Provinces would all have augmented platoons. Augmented platoons would also be assigned to the popular force platoons in the villages nearest the highland areas in the other provinces.

3. That a platoon headquarters of 18 personnel would have the responsibility of reacting, reinforcing and monitoring the operations of three to five village platoons. This headquarters would normally be found in one of the villages under its supervision.
(4) That at district level there would normally be a company or, in the case of larger districts, a battalion headquarters with two or three subdistrict companies under it. In either case both the battalion and company headquarters (where no district battalion existed) would have assigned to them a reaction force composed of a regional forces company, a mechanized infantry platoon, and an armored cavalry scout section. Companies in the district where there was a district battalion would have the responsibility of coordinating and monitoring the platoons under their command, but would not have the large reaction force.

(5) That a brigade headquarters would be deployed in each provincial capital. Each brigade would have a battalion (of variable size) of 155 mm howitzers and a task force composed of three ARVN rifle companies, and a mixed mechanized infantry and cavalry company. Each brigade would have its own helicopters capable of lifting one company at a time into battle.

(6) Using these criteria, detailed estimates of force requirements were made for I CTZ. Troop requirements shown in Figures 1 through 5 are summarized in Table 2. Appendix C contains a model to estimate the effectiveness of these forces in village defense in I Corps, while Appendix B outlines the detailed organization of these defenses.

(7) Using the same method employed in estimating force requirements for I CTZ, estimates were made for the other three tactical zones of the country.

II CTZ

(8) The provinces of Phu Yen and Binh Dinh in II Corps, which are now occupied by Korean troops, were not included in the projection. It was assumed that they would be left to the Koreans.
Table 2

SUMMARY TROOP REQUIREMENTS

<table>
<thead>
<tr>
<th>Brigade</th>
<th>Requirement Details</th>
<th>Troops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quang Ngai Brigade</td>
<td>2 battalions and 4 independent companies at district level, with 48 regular and 55 augmented squads</td>
<td>7,823</td>
</tr>
<tr>
<td>Quang Tin Brigade</td>
<td>4 battalions and 1 independent company at district level, with 46 regular and 73 augmented squads</td>
<td>10,753</td>
</tr>
<tr>
<td>Quang Nam Brigade</td>
<td>3 battalions and 6 independent companies at district level, with 71 regular and 49 augmented squads</td>
<td>9,616</td>
</tr>
<tr>
<td>Thua Thien Brigade</td>
<td>9 independent companies at district level with 87 augmented squads</td>
<td>7,823</td>
</tr>
<tr>
<td>Quang Tri Brigade</td>
<td>3 battalions and 2 independent companies at district level, with 87 augmented squads.</td>
<td>7,391</td>
</tr>
</tbody>
</table>

Total troop requirements for I CTZ .................. 43,406

*The figures shown do not include those troops deployed on the Demilitarized Zone, those troops stationed in Hue or Danang, the support troops assigned to the Corps Headquarters, nor those assigned to the Strategic Mobile Reserve. All figures are approximate.*
In Pleiku the area covered included the provincial capital and surrounding villages, which is one-third of the total number of villages in Pleiku Province or about 36 to 40 percent of the total population. In Kontum the cities of Kontum and Dak To and surrounding villages were included.

For the highland provinces of Darlac, Quang Duc, and Phu Bon, the average numbers of troops required for Kontum and Pleiku were provided for each province. It was felt that in the highland provinces it would be most important to maintain maximum military presence in the provincial capitals and surrounding territory.

III CTZ

The projections for III Corps were made on the basis of a formula worked out for the coastal districts of I CTZ and found to be fairly reliable for districts with a similar population density and distribution. Since some of the districts of the III CTZ have a much higher population density, the formula projected a somewhat greater number of troops. A deployment solely on the basis of the formula would probably result in a supersaturation of three or four squads combined with three or four PF platoons in each village. The figure was corrected by taking into account the number of villages and total area. The second set of figures, which result in a lower total for the corps, are probably more accurate.

<table>
<thead>
<tr>
<th>Province</th>
<th>Total Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khanh Hoa</td>
<td>9,867</td>
</tr>
<tr>
<td>Ninh Thuan</td>
<td>6,747</td>
</tr>
<tr>
<td>Binh Thuan</td>
<td>8,226</td>
</tr>
<tr>
<td>Tuyen Duc</td>
<td>7,010</td>
</tr>
<tr>
<td>Lam Dong</td>
<td>5,067</td>
</tr>
<tr>
<td>Pleiku</td>
<td>6,153</td>
</tr>
<tr>
<td>Kontum</td>
<td>5,530</td>
</tr>
<tr>
<td>Darlac</td>
<td>5,843</td>
</tr>
<tr>
<td>Quang Duc</td>
<td>5,843</td>
</tr>
<tr>
<td>Phu Bon</td>
<td>5,843</td>
</tr>
<tr>
<td></td>
<td>66,130</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Estimate</th>
<th>60,870</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Estimate</td>
<td>52,107</td>
</tr>
</tbody>
</table>
**Fig. 1 -- Sample deployment Quang Ngia Province, I CTZ** (U)

*Only the 6 coastal districts are included in the deployment. The 4 mountain districts of Ba To, Tra Bong, Minh Long, and Son Ho already have SF/CIDG forces.*

**All companies at district level are augmented with an additional reserve platoon.*

---

**TOTAL TROOP REQUIREMENT**

<table>
<thead>
<tr>
<th>UNITS</th>
<th>U.S.</th>
<th>PF</th>
<th>RF</th>
<th>ARVN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Brigade HQ</td>
<td>668</td>
<td></td>
<td></td>
<td>269</td>
</tr>
<tr>
<td>2 Battalion HQ</td>
<td>108</td>
<td></td>
<td></td>
<td>260</td>
</tr>
<tr>
<td>4 Companies of District</td>
<td>196</td>
<td>578</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Regular Companies</td>
<td>126</td>
<td>108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 Platoons</td>
<td>260</td>
<td>224</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 Augmented Squads</td>
<td>660</td>
<td>1,870</td>
<td>440</td>
<td></td>
</tr>
<tr>
<td>48 Regular Squads</td>
<td>384</td>
<td>1,632</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,422</td>
<td>3,502</td>
<td>1,630</td>
<td>269</td>
</tr>
</tbody>
</table>
Fig. 2 -- Sample deployment Quang Tin Province, I CTZ (U)
Fig. 3 – Sample deployment Q. Nam Province, I CTZ (U)
**TOTAL TROOP REQUIREMENT**

<table>
<thead>
<tr>
<th>UNITS</th>
<th>U.S.</th>
<th>PF</th>
<th>RF</th>
<th>ARVN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Brigade HQ</td>
<td>668</td>
<td></td>
<td></td>
<td>269</td>
</tr>
<tr>
<td>3 Battalion HQ</td>
<td>162</td>
<td></td>
<td>420</td>
<td></td>
</tr>
<tr>
<td>2 Companies at District</td>
<td>98</td>
<td></td>
<td>284</td>
<td></td>
</tr>
<tr>
<td>6 Companies</td>
<td>126</td>
<td></td>
<td>108</td>
<td></td>
</tr>
<tr>
<td>25 Platoons</td>
<td>250</td>
<td>3,026</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>89 Augmented Squads</td>
<td>1,068</td>
<td></td>
<td>712</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,372</td>
<td>3,026</td>
<td>1,724</td>
<td>269</td>
</tr>
</tbody>
</table>

* Does not include DMZ defense command nor the districts of Trung Luong, Huong Hiep (both on DMZ) and Ba Long.

**1 augmented squad per village; 2 in Hai Quy and Hai Xuan which are adjacent to Provincial Capital.**

***1 augmented squad per village; 2 in Trieu Long, Trieu Thanh, Trieu Tai and Trieu Trung which are adjacent to Provincial Capital.***

---

Fig. 5 -- Sample deployment Quang Tri Province, I CTZ (U)
All of the populated portions of the first four provinces were covered by the deployment. In the province of Lam Dong, a rough calculation was made to include the area surrounding the provincial capital and Bao Loc and Di Linh cities (approximately 20 percent of the land area). The city of Saigon and adjacent province of Gia Dinh were not included in the sample deployment; they would be part of the special Saigon defense command.

IV. CTZ
(c) (6) The formula was again used with probably less reliability. An Xuyen, Bac Lieu, and Chau Doc Provinces were not included in the first projection; they are included in the second total.

Total RVN

<table>
<thead>
<tr>
<th>Minus Three Provinces</th>
<th>Including All Provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>78,597</td>
<td>96,243</td>
</tr>
</tbody>
</table>

This gives us a high estimate of 267,000 to cover all provinces in Vietnam except those occupied by the Koreans. It must be remembered that the projections are only rough estimates and not to be considered the result of a detailed examination of the terrain or the situation.

(j) (6) The key to this strategy is the continuous presence of military forces in the village to protect the police and other GVN agents while freezing enemy movement in and between villages. Are such units viable against large enemy formations? The experience of Marine-combined action platoons indicates that the answer is yes.*

(j) (6) Even though not integrated into an echeloned support and reaction force as proposed in this memorandum, they were highly effective and remained viable even though located in I Corps among the greatest concentration of main-force VC and NVA units. Compared with other U.S. operations, they have been able to kill and capture proportionally more of the enemy at lower cost. Above all, they have been

able to neutralize the village guerrilla and political structure. In addition, they have frequently provided warning of the passage of large enemy forces and have been able to defend themselves against much larger enemy forces.
Appendix A

PROPOSED MOBILE BRIGADE REORGANIZATION

Figure 6 indicates the proposed brigade in the variable mixed American-ARVN form. Independent of integration, the reorganization accomplishes the following:

1. Increases the percentage of personnel in infantry squads or Platoons.

2. Increases command flexibility and innovative capacity at brigade and battalion levels by increasing the number of rifle companies, e.g., battalion commanders can deploy with combinations of five rather than three.

3. Tightens officer command and information relay control by smaller rifle companies and Platoons.

4. Structures a pressure for more imaginative use of resources at company and platoon level by reducing resource availability.

5. Permits company commanders to deploy three Platoons in the initial contact while still retaining an emergency reserve, i.e., permits 90 percent of the rifle strength to be deployed initially vs. only 67 percent for the two up, one back system.

6. Pools mortar support at battalion level for economy and to relieve the company commander of a low-value fire support element.

7. Pools logistical support at brigade level for greater economy and to streamline and lighten the infantry battalion.

The standard infantry battalion and brigade was designed for conventional conflict in Europe, as indicated by comparing the structure of the various infantry battalion and brigade types. This ignores the differences between conventional and insurgency wars — a point on which everyone agrees in principle, if not in substance. If true, a brigade fighting insurgency in geographically inaccessible areas should not be structured and equipped like a European brigade. Major differences exist in the span of control, fire support, and logistic requirements. Additional problems exist because the Army has not changed its structure upon receiving new equipment.

(U) In particular, the Army failed to change the infantry company organization when the M-1 and 1919 models BAR and LMG were replaced in 1962. If the small-arms firepower generated by these weapons was optimal for the given rifle company (a logical deduction if one is to assume the validity of the previous structure), then certainly the new small-arms family generates redundant firepower.

(U) With this much firepower, the platoon and company would seem to be larger than necessary; the question is what should be cut. Should each squad be reduced or should the weapons squad be merged with the rifle squad? With the old small-arms family, a separate weapons squad was needed because of the awkwardness of the M-1919 LMG. It was not a weapon that could be quickly deployed or readily carried in the assault. Doctrine for its deployment called for placement to the rear to give fire support to the attacking rifle squads. This meant that a unit as small as a platoon was split into two groups — an undesirable but perhaps unavoidable situation. While the new M-60 LMG is not the best by European standards, it is adaptable for rifle squad use, particularly with such minor modifications as a vertical hand grip for better handling in the assault and a "mid-point" bipod in lieu of the muzzle bipod for better tracking ability (like the Bren). The validity of this proposal is suggested by the fact that all the European armies have had an integrated LMG for at least a decade; the new Russian squad even has two * along with their pre-Korean AK-47. **

(U) A three-squad platoon also has span-of-control advantages over a four-squad platoon. The army is typically triangularly organized at every echelon, but this misses the point that span-of-control difficulties vary by level and context. The most difficult level is at platoon and company because of the immediate pressure and confusion of

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*A Type Soviet Front, 1970-75, USADC, October 1967.

**Paradoxically, the American Army, which has the largest logistical tail, has been the most reluctant to adopt individual automatic weapons because of ammunition resupply.
actual combat. These leaders are in the midst of incoming fires; leadership problems occupy a large share of their time. They cannot tightly control more than three maneuver elements and still coordinate and control the various higher level supporting fires. Yet at the one-level where span of control is the most difficult, the army has saddled these combat leaders with elements of four. A more appropriate structure would allow these leaders to concentrate their efforts upon quickly deploying their maximum fire power. The platoon would thus be limited to three squads.*

(U) Similarly the rifle company would be stripped of its weapons platoon. Instead, the company would be structured for the immediate deployment of three smaller rifle Platoons rather than two up and one back as at present. To hedge against uncertainty, the "one back" reserve platoon would be replaced by a heavy infantry squad. By such a device a 96-man infantry company could deploy almost as many (81 vs. 88) infantrymen at the critical initial impact as the existing 180-man company.

(U) Besides span of control, an efficiency argument exists for removing the weapons platoon. Anti-tank weapons are obviously unnecessary here, as well as at platoon and battalion.** A more elaborate argument is required for removing the 81 mm mortar because of the infantry's emotional attachment to the piece. First, the 81 mm mortar has caused a perpetual dilemma in the Vietnam highlands - leave it behind for close and continuous support and risk it being overrun, or take it with the main body and thus forego its use and slow the main body. Second, much of its close-in support function can now be performed by the M-79 grenade launcher. Third, in battalion bases, the 81s are not needed because of higher unit mortar-artillery fires.

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*This makes an eight-man rather than a six-man squad. Each has advantages in isolation; a six-man squad is more appropriate when control is particularly difficult, such as in night helicopter raids. The argument would then be for three six-man squads.

**If a requirement exists beyond the LAW auxiliary weapon, higher level AT elements or stored AT weapons could be flown in. This was apparently recognized by the Army since the battalion anti-tank platoon was dropped in 1966. However, it was done worldwide.
Fourth, since fire direction at company level is now by radio, company fire support might as well come from the more efficient and centralized battalion mortar and direct support artillery.*

(U) A final argument for a smaller company in Vietnam is that if control is difficult in Europe, it is certainly more difficult in the terrain, surprise, and night conditions of Vietnam. Manpower reductions facilitate control; this permits the remainder to be more tightly controlled and more cleverly manipulated. Commanders with large units tend to be frontally oriented because of bulk strength and control difficulties. Resource reduction would thus increase pressure for more innovation in maneuver and simultaneously simplify control. A final reason for tighter officer control is information relay. In decentralized counterinsurgency, higher commanders are necessarily more dependent on reports than on personal observation. If tactics are to pivot on reaction reserves, reports have to be accurate assessments, which means the company commander has to observe personally his situation and communicate personally to the battalion commander or his operations officer.

*In the age of the helicopter and armored personnel carrier, the 4.2 generally dominates the 81. A 4.2 mortar is 290 percent more effective than an 81 mortar man in the weight unconstrained context. In such contexts weight per se has a low shadow price; manpower, being the scarce and expensive factor is then quite dominant and the relevant peg for effectiveness per scarce input. As weight becomes more constraining, its economic value increases. In the comparison of 4.2s and 81s, the weight advantage favors the 4.2 as a system. Neither is suitable for "footmobile" operations, except special missions, as the cost in ammo bearers is too high. For helicopter movements, a 4.2 mortar, crew, and 153 rounds of packaged ammunition have the same weight as the equivalent 81 system without ammunition (largely owing-to-crew weight savings).

\[
\frac{1}{2} \left( \frac{20 \text{ rds/min}}{12 \text{ rds/min}} \right) \left[ \frac{600 \text{ m}^2}{500 \text{ m}^2} + \frac{27 \text{ lbs/proj}}{9 \text{ lbs/proj}} \right] = 3.5 \text{ more effectiveness per tube}
\]

\[
\frac{3.5}{\frac{48 \text{ men}/81 \text{ plat}}{43 \text{ men}/4.2 \text{ plat}}} = 3,9017 \text{ more effectiveness per man}
\]

This figure abstracts from the 4.2's range advantage as the criterion under discussion is unit protection.
(U) To compensate for the removal of the three 81s and 27 men/company, two 4.2s and ten men have been added to a scaled down, Artillery-operated mortar battery, as in the former battle group structure. Reductions can be justified in that:

(1) Integrating heavy mortars into the artillery provides better fire planning expertise, usage of artillery survey data, and reductions in forward and observers (FO).*

(2) Pooling supply functions at higher levels conserves supply personnel and equipment, eliminating platoon vehicles and drivers.

(3) Fire demands will generally be much lower than in European sustained combat. Not only will calls be less frequent, but fewer than the six available tubes can usually handle fire requests. To avoid idle capacity, crew men can double up on supply tasks and "store" capacity for peak load periods.

(C) Logistically, company and battalion have been stripped. Units are no longer responsible for delivering their own resupply. Supply and maintenance functions are consolidated for economies of scale at brigade and corps, with brigade often serving as a coordinator for supply delivery and item replacement.** Within the battalion, only the support platoon is assigned vehicles, though battalion units can request vehicles without assigned drivers. The support platoon also serves as emergency resupplier for battalion units and coordinates/channels supply requests to brigade. Such stripping is made possible by recognizing the nonsustained nature of counterinsurgency and the fact that not much is gained by continually shifting brigades from

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* Each officer and patrol commander has to be his own FO. By cutting the company almost in half and freeing it of most administrative duties, the company executive officer's duties can be merged with the artillery FO's. This duty can be performed by either the senior infantry lieutenant or by an artillery lieutenant with the senior platoon leader designated as second in command.

** In the proposed scheme, division would be eliminated and its functions performed at corps. A corps would then have as many as a dozen province brigades and strategic reserve brigades reporting directly. Such a span of control is permissible because of the decentralized nature of the many local conflicts. For major confrontations, division task forces can be organized.
area to area as in search and destroy missions. By pooling at corps
the transport and additional resupply capabilities needed for sustained
combat and large mobile operations, major logistical cuts can be made
at all levels with only a fraction prorated to corps.*

( ) The battalion staff has been trimmed to funnel information directly
to the commander rather than filtering it through his staff. To facili-
tate this, signal communication has also been directly integrated into
the command group. Rather than being used for elaborate preplanning,
which is often more burdensome than helpful, the staff has been
designed for quick decisionmaking to exploit targets of opportunity.

( ) The battalion span of control has been increased from three to
five. ** This is to reflect the decentralized nature of the conflict
and the battalion commander's relative personal isolation from chaotic,
combat conditions. The greater span of control also emphasizes his
role as a coordinator rather than a combat leader. His task is to
develop and execute diverse operations to envelop and annihilate any
discovered enemy. *** Annihilation tactics with combinations of three
are difficult because in effect the battalion commander is reduced to
only one maneuver element after subtracting his holding and base
security elements. Requesting additional maneuver elements from bri-
gade is a possibility, but this has institutional penalties.
Rearranging internal boundaries for more battalion maneuver elements
is a more viable alternative from the commander's perspective; but
this also has costs.****

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(U) * In addition, since the logistical tail has the characteristics
of an input-output matrix, each logistical cut has a multiplied impact.
(U) ** A fallout from increased spans of control are reduced overhead
ratios.
(U) *** The object is more than annihilation or attrition per se. The
main object is to prevent the escape of their irreplaceable leadership.
Normal contacts kill the "pawns" but permit the leadership to escape.
Particularly important is the destruction of the top leaders who are
often billeted and travel extensively in the fringe areas.
(U) **** Organizational formats serve a variety of purposes. For a
military organization the two most important are confusion minimization
and leverage maximization. In lay parlance, this means that the
organizational format adopted should set an environmental framework
The brigade span of control is typically 4; 3 would be too few, while 5 would begin to stretch brigade's monitoring of its patrolling area. An advantage of 5 is that 4 battalions would be freed for mobile operations while one remained for base camp security and continued Tactical Area of Responsibility operations. On the other hand, a 4-battalion brigade could leave a provisional battalion of one company and two mortars from each battalion. This would give it some capability to continue limited TAOR operations while desirably reducing battalion maneuver elements to four during helicopter operations or sustained combat.

Brigade is also assigned an organic 105 howitzer (T) battalion. Although the 155 mm howitzer has efficiency and range advantages, the 105 has mobility advantages. However, if the many mobile brigades are quasi-permanently assigned, alternative solutions are mixed mobile 105/stationary 155 battalions or scaled-down 155 half-battalions with a portion of the released personnel allocated to specially designed 105 battalions. The battalion shown is scaled down to reflect the special counterinsurgency conditions of normally sporadic fire requests, generally static bases, and corps resupply responsibility.* During mobile operations, an augmentation from corps artillery is required to flesh out battalion-control overhead to reflect increased workloads.

Brigade logistical support has been described in the battalion section. Brigade staffing also follows the battalion principles.

which reduces the Clauswitzian "friction in war" and induces pressures for more efficient resource utilization. The American practice of padding units for endurance meets neither of these criteria. Leanness meets the latter criterion by providing an incentive for efficiency, and partially meets the former by improving manipulative control.

* An empirical observation of just the opposite description does not prove anything about the validity of practices producing these results. The strategy proposed would produce this description and permit scaling down.
ORGANIZATION OF LOWLANDS AND PROVINCIAL CAPITAL DEFENSE

(U) Defense of populated areas is based upon the assumption that by halting all enemy movement by night and assisting the National Police in controlling movement by day, the enemy's political hold on the country could be broken, his logistics system disrupted, his recruiting capability reduced, and his ability to mass his forces for an attack impaired. This is primarily a strategy to halt movement.

(U) The economical provision of forces for population defense would require to a certain extent that existing political boundaries in Vietnam be followed. In the proposed deployment, the military units are tailored to the political unit to which they are assigned.

(U) The principal tactic of the population defense units would be the ambush. A Popular Forces platoon, keeping two-thirds of its strength out, should be able to deploy at least four 5- to 7-man ambushes every night. A Popular Forces platoon reinforced with 2 augmented squads of 20 Regional Forces soldiers should be able to deploy 5 ambushes nightly. The main benefits to be gained from reliance upon ambushes is that it ought to increase the chances of intercepting the enemy and allow the friendly forces the first shot at him. In our present operations, the enemy almost always initiates contact. The opportunity to fire first would greatly enhance the effectiveness of the small ambush team far beyond what its small size seems to indicate.

(U) It would be neither possible nor desirable for the forces remaining within the village fort or those at district headquarters to reinforce any of the ambush elements. First, the distances involved would be too great for reinforcement to arrive on the scene in time to affect the outcome of a fire-fight. Furthermore, as the reaction force moved to reinforce the ambush element, they would run the risk of being ambushed themselves. The safety of the ambush element is inherent in its small size, which makes it a difficult target to attack and pursue at night, and in the fact that in pursuing one ambush
team, the pursuers may stumble into another ambush. This is the principle of the tactic of ambushes, which is entrapment rather than reinforcement.

(U) The forces available at district headquarters would include a minimum of one reinforced Regional Forces Company. Keeping one-fourth of its strength out at night and the remaining three-fourths for daytime operations or as an exploitation force, the district battalion or reinforced district company should be able to deploy four additional 10-man ambushes in each district. This deployment would produce a fairly dense network of ambushes (one per three
square kilometers), as can be seen in the map of Quang Nam Province on the following page. In the map the "A's" represent Popular Forces platoons reinforced by augmented squads, and the "R's" represent Popular Forces platoons reinforced by regular squads. The points are the ambushes that each unit has the capacity to deploy.

(U) It is vital that each point be equipped with a radio that would enable it to communicate with the other points in the area as well as its own headquarters. When it became apparent that a larger unit was moving through the area, the exploitation forces at battalion or brigade could deploy to trap it by increasing the number of ambush points across all the exit routes from the area. In a situation like this, the existing ambush points would act as sensors to keep track of the unit's movement until a larger force or artillery could be brought in to destroy it or at least compel it to disperse. Only in the case of a sustained attack on a village would the reaction forces be deployed as reinforcements. Sustained attacks are rare, however; most attacks on village garrisons succeed or are repulsed within a few minutes.

(U) During the day, the remaining forces could be used to assist in police operations -- cordon and search, check-points, etc. -- or conduct their own patrolling activities in areas suspected to contain enemy units.

(U) The emphasis would primarily be on night operations as opposed to the present practice of operating during the day and "bottling-up" at night.

(U) There are several reasons for the present predilection toward daytime operations. Control is easier to maintain during the day than it is in the dark and, since we are accustomed to operating in large units control, is important. As the size of the unit decreases, the control requirement becomes less of a factor.

(U) Probably all soldiers are reluctant to operate at night. They cannot see well and stumble about, certain that they are about
"A's" are augmented squads
"R's" are regular squads
Points represent ambushes

Sample deployment of ambushes Quang Nam Province, I CTZ
to be annihilated by enemy soldiers, evil spirits, or other hostile forces of the night without realizing that the enemy is similarly stumbling about, terrified by his own visions of doom. The Viet Cong cannot see any better at night than our soldiers. The ability to see at night can be greatly increased by the issue of the starlight scopes and night binoculars in sufficient quantity so that every ambush point could have at least one.

(U) Figures 7 to 11 indicate the tailored organization designed to satisfy the principles discussed above. The major characteristics are an accordion span of control, echeloned reserves, low logistical requirements and support, and consolidated fire support.

(U) Eight infantrymen are assigned to each village (Fig. 7); in the augmented version (Fig. 8), twelve infantrymen plus an eight-man RF squad. In addition to individual M-16s, each squad is assigned a small armory for its night ambushes and as leverage in the squad leader's relationship with his PF counterpart. These include 3 LMG, 12 M-79, 2 Sniper, an 81 mm mortar, 7 PRC-25, and 6 Starlight.* The mortar has no assigned crew; its purpose is close-in defense.

(U) Squads are grouped in spans of three to five. With static positioning, a span of control larger than three is permissible. By flattening the chain-of-command pyramid, one gains the double advantage of reducing overhead and horizontal (or lateral) command boundaries, which facilitates lateral communication and area control. In the more secure unaugmented areas, spans of four to five are appropriate; in the less secure augmented version, three to four. Neither guide should be rigid, since Platoons would have similar spans and a minimum of one company would be assigned to each district.

(U) Each platoon would be assigned a reserve of fourteen R.F. Its main function would be setting a reinforcing ambush screen after the enemy had been detected. Secondary functions would be daylight patrolling and establishing additional night ambush

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*The augmented version is assigned an additional 1 LMG, 1 PRC-25, 1 Starlight, and 4 M-79.
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Fig. 7 -- Company
Fig. 8 -- Augmented company
Fig. 9 -- Schematic battalion for a large district
Fig. 10 -- Schematic brigade for a large province
Fig. 11 -- Command relationships
points. Both augmented and nonaugmented versions would have identical reserves; this means in effect the augmented version would be stronger via its reduced TAOR and fewer subordinated squads. It would be located with one of its squads.

(U) Platoons would be similarly grouped in spans of three to five. Companies would vary according to assignment to sub-district or district, the difference being the district company would have a "battalion" (Fig. 9) reserve. The sub-district company would have a reserve of sixteen RF, and a scout/supply section of two M-114s and an APC. The Company reserve would have the same missions as platoon. Company reserve would be kept small because of the distances involved. A light armored scout section would be assigned for reserve mobility, a high firepower base with on-carrier ammunition re-supply and to complicate enemy defenses with an armor threat.

(U) Companies in large districts would report to battalion, in smaller districts, directly to brigade at province. For the battalion districts, companies would be grouped in spans of two to five depending on the district. In these districts, distances are typically large. Outlying areas could usually expect no timely support from battalion; to compensate for this, company reserves would be located with squads near outlying areas. Battalion reserve would be grouped in Task Force form to eliminate a special staff. The TF would be commanded and staffed by a spinoff from battalion. The reserve would be a mechanized platoon of three infantry squads, a RF company (minus), and an armored scout section. Its primary mission would be to destroy any enemy trapped by its companies and platoons.

(U) The final level is brigade (Fig. 10). Each district, whether company or battalion, would report directly to brigade. Brigade's span would therefore depend on the number of districts within the province. While this is a large span of control, counterinsurgency war is composed of a large number of small contacts which do not need brigade supervision. Brigade's role would be to monitor and to stand by for major contacts. For this role brigade reserve would be assigned three light infantry companies; an armored cavalry troop, and a helicopter detachment with two gunships and a
transport capacity of one light company. The light infantry platoon
would be composed of 4 six-man groups to match the Huey's troop capacity.
The compactness of the company/platoon/squad would also tighten con-
trol and facilitate night reaction by helicopter. The cavalry troop
would be assigned to serve as an organic light armored base.
Additional infantry reserves would be available on call from the
corp reserve brigades stationed on the highland fringes.
(U) The brigade is designed to minimize logistical requirements.
Provincial brigade units are viewed as stationary, which would reduce
fuel and maintenance requirements and permit larger resupply shipments
for on-site storage. Village units would be encouraged (through a C-
ration alternative) to eat Vietnamese food both to reduce logistical
support and to establish local rapport. Since no vehicles would exist
at this level, the primary support requirement would be small arms
ammunition, a small amount of mortar ammunition, and item replacement
of malfunctioning equipment. Distribution would be through company,
which would have an armored scout/supply section with three armored
vehicles, a two and one-half-ton truck, a utility jeep, and three
platform mules. Fuel for the vehicles could be stored at company
and supplemented by local purchase, if necessary.
(U) Distribution to company would be direct from brigade, either from
convoy runs or by helicopter on short notice. Brigade would in turn
depend heavily on corps. Emphasis would be on quick repair, item
replacement, and from corps to brigade rather than vice versa for
transport economy. For heavy loads, such as 155 mm ammunition, dis-
tribution would be made directly from the logistical commands with
only coordination and channeling by corps and brigade.
(U) The brigade's fire support would come from an organic 155 mm
howitzer bn (SP) with batteries 13-16 kilometers apart.* This would
place the entire TAOR within the fire area of at least 12 tubes. The
battalion would be scaled down for reasons analogous to the discussion

(U) *The 155 mm howitzer has a normal range of 14,600 meters; with
extended range ammunition, 18,500 meters. Infantry Reference Data,
op. cit., p. 480.
on p. 30. Self-propelled 155s would be used because of their relative efficiency, * their 6400-mil traverse, the nonmobility requirement, and their greater self-defense capacity via armor plate and vehicle machine gun.

(U) *In sustained fire, from underutilized (capacity) quasi-fixed points, a 155 mm howitzer artilleryman is 197 percent more effective per man (the relevant constraint) than a 105 mm artilleryman. For the index per gun, a weighted average of tonnage thrown out and effective bursting area was used.

\[
\frac{1}{2} \left( \frac{30 \text{ rds/155}}{40 \text{ rds/105}} \right) \left( \frac{95 \text{ lb/proj}}{33 \text{ lb/proj}} \right)^{1/2} \left( \frac{30 \text{ rds/155}}{40 \text{ rds/105}} \right) \left( \frac{1500 \text{ m}^2}{600 \text{ m}^2} \right) = 2.017 .
\]

More effectiveness per tube

\[
2.017 \left( \frac{487 \text{ men/105 bn}}{583 \text{ men/155 bn}} \right) \left( \frac{14,600 \text{ meters/155}}{11,000 \text{ meters/105}} \right)^2 = 2.968 .
\]

More effectiveness per man
Appendix C

EFFECTIVENESS OF SMALL UNIT AMBUSHES

In order to estimate the effectiveness of the village defense forces, a probability model was developed to apply to the sample deployment in I CTZ. Assuming that two-thirds of the Popular Forces platoons and RF reinforcing squads would be out at night, in 5- to 10-man (average 7) ambushes, and that one-fourth of the company and battalion reserve forces would be in 10-man ambush points, the number of ambushes that could be deployed nightly in each province would be as shown in Table 3.

Table 3 (X) C

<table>
<thead>
<tr>
<th>Province</th>
<th>Area Covered in km²</th>
<th>Number of Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quang Ngai</td>
<td>1,846</td>
<td>501</td>
</tr>
<tr>
<td>Quang Tin</td>
<td>2,480</td>
<td>594</td>
</tr>
<tr>
<td>Quang Nam</td>
<td>3,900</td>
<td>591</td>
</tr>
<tr>
<td>Thua Thien</td>
<td>1,765</td>
<td>485</td>
</tr>
<tr>
<td>Quang Tri</td>
<td>1,063</td>
<td>481</td>
</tr>
<tr>
<td>I CTZ Total</td>
<td>11,769</td>
<td>2,652</td>
</tr>
</tbody>
</table>

The formula is:
Total no. ambushes = \( \frac{2/3 \text{ (PF strength + RF/U.S. reinforcing squads)}}{7} + \frac{1/4 \text{ company and bn reserve}}{10} \)

This is approximately one ambush per 4.44 square kilometers. If the PF platoon headquarters are counted as one ambush point each, since they will have at least one sentry on duty, and likewise with the company headquarters, battalion headquarters, and brigade headquarters, then there would be an additional 590 ambush points in the I Corps area that would limit enemy movement even though they would not have the primary mission of an ambush team.
It is estimated that these obstacles combined with natural obstacles to enemy movement would enhance the saturation features of the proposed deployment so that there would be approximately one ambush point per two to three square kilometers.

Assuming one ambush point per three square kilometers, and that, with the aid of starlight scopes and night binoculars, the members of the ambush are capable of seeing and taking under fire an enemy that comes within 150 meters of their position, then the probability of interception is very high.

To compute this probability, a model was designed which consisted of a piece of terrain of 900 square kilometers containing 300 ambush points each. Each of the ambush points would have an effective range or visibility of 150 meters. If it is assumed that the ambushes are distributed randomly throughout the piece of terrain, targets would be any enemy soldiers attempting to travel between two locations. In order to illustrate the calculation, these locations are assumed to be five-kilometers apart. Enemy movement could be over any possible route through this terrain. Although in the simplified example the enemy is assumed to travel only five kilometers to reach his destination, in practice he would probably have to travel considerably more than this since trails do not go in a straight line or he would have to go around natural obstacles. Therefore, these assumptions are conservative.

Of primary interest is the enemy's "vulnerable swath." This is his route of march which is five kilometers long which will be called "L."

\[ L = 5K \]

He would be vulnerable to interception if there were any ambush point 150 meters or less to the left or right of his route of march, which describes a rectangle 5 kilometers long and 2r or 300 meters wide.
He would be similarly vulnerable if the point from which he began or if his final destination were within 150 meters of an ambush point. This produces a "vulnerable swath" that looks like this:

![Diagram of vulnerable swath]

The following formula will give the area (A) of the swath:

\[ A = \pi r^2 + 2rL \]
\[ A = 1.57 k^2 \]

The next step is to formulate the relationship between this "vulnerable swath" and the density (d) of our ambush points.

\[ d = \text{number of ambushes per } k^2 \]
\[ d = \frac{1}{3} = \text{density parameter of Poisson process} \]

The formula for the probability that the "vulnerable swath" does not contain one of the ambush points is:

\[ e^{-dA} \]

The probability that the swath contains one or more points is then:

\[ 1 - e^{-dA} \]

and the probability of interception of each enemy movement by at least one ambush point will be:

\[ P \{\text{interception}\} = 1 - e^{-dA} \]
\[ = 1 - e^{-0.52} \]
\[ = 1 - .59 \]
\[ = .41 \]
The enemy anywhere in the area where ambushes are deployed would thus confront a 41 percent chance of being intercepted.

To keep in mind the different variables that affect the probability of interception, we can use the following approximation formula:

\[ P(\text{interception}) = 1 - e^{-2drL} \]

In other words, the chances of interception are increased, if the number of ambushes per square kilometer is increased \((d)\), if on a bright moonlight night, the visibility of the ambushes is increased \((r)\), or if the enemy walks a greater distance \((L)\). Further, this is a minimum intercept probability that applies independently to every single enemy movement in the area. Since repeated penetrations into populated areas are required if the NLF is to be able to assert political control, its troops and political cadres must expose themselves repeatedly to interception by passing through the area in which ambush points are located. The probability of eventual interception is very high. For example, the intercept probability rises to 80 percent, if an enemy patrol attempts three movements of 5 km length each, either during one night, or during different nights.