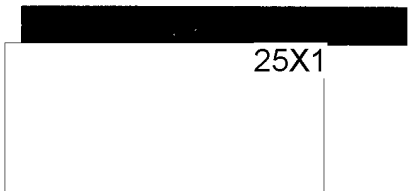




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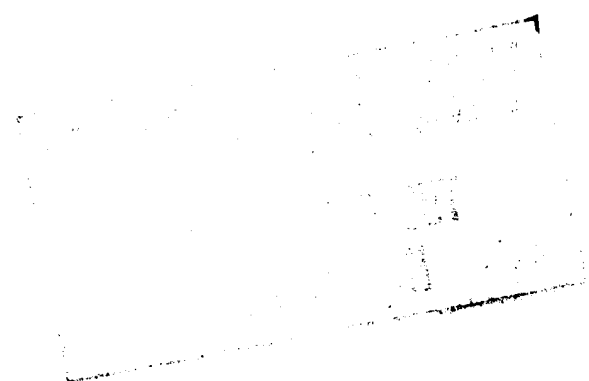
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Vietnam: Army Modernization, Tactics, and Doctrine (U)

A Research Paper



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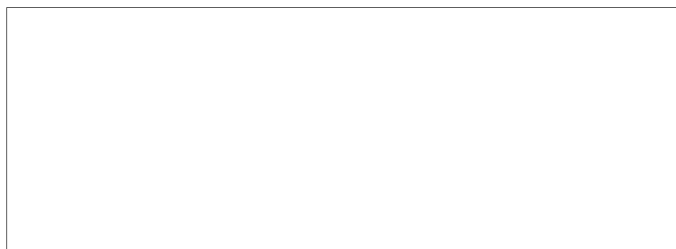


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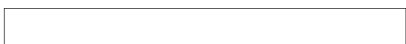
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Vietnam: Army Modernization, Tactics, and Doctrine (U)

A Research Paper



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**Vietnam: Army
Modernization, Tactics,
and Doctrine (U)**

Summary

*Information available as
of August 1984 was
used in this report.*

Since 1978, the People's Army of Vietnam (PAVN) has been engaged in a major reorganization, modernization, and expansion program. This program accelerated following the 1979 Sino-Vietnamese border war, and has resulted in the streamlining of the command and control system, the creation of new combat and combat-support units, and the organization of the PAVN's elite forces along Soviet lines.

With Soviet assistance, Vietnam has carried out widespread changes within its Army, including:

- **Reequipping** many main force divisions with newer weaponry.
- **Upgrading** the separate ground combat arms of the PAVN.
- **Developing** mechanized infantry forces.

These developments have enabled Hanoi to improve its offensive combat capability, emphasizing the use of heavily armed mobile army corps and regional forces in combined arms tactics.

While most of the modernization has involved PAVN forces located along the Chinese border, we have noted the upgrading of some Kampuchean-based forces since 1981. We expect that the modernization program will continue for at least several more years and that eventually all of the PAVN's main force strategic army corps will include some mechanized infantry divisions. These anticipated modernization efforts should enable the Vietnamese to maintain a strong deterrent force along their northern border with China, while continuing to maintain military domination over both Kampuchea and Laos.



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Vietnam: Army Modernization, Tactics, and Doctrine (U)

Introduction

Following its 1975 victory over South Vietnam, and the subsequent reunification of the country, the People's Army of Vietnam (PAVN) was assigned a new mission of rebuilding war-damaged areas of the country. With this new emphasis on essentially non-military tasks, there was little need to modernize Vietnamese ground forces. Aside from supplementing their existing equipment inventory with some of the substantial US equipment left behind in 1975, the PAVN initiated no major equipment replacement program. In the immediate post-war period there was no urgent need to accelerate training, develop new tactics or reexamine national defense doctrine. By the late 1970s, regional developments in Indochina, particularly Vietnam's 1978 invasion and occupation of Kampuchea and the 1979 Sino-Vietnamese border war, demonstrated to Hanoi the need for ground force improvements.

[Redacted]

By late 1979, the PAVN was engaged in a major expansion and modernization effort. With renewed Soviet military assistance and expertise, Hanoi began upgrading its ground force command and control system, integrating newer Soviet-supplied weaponry into its ground forces inventory, and creating new combat and combat-support units. Defense Intelligence Agency (DIA) order of battle analysis indicates that the PAVN has grown from an estimated main force of 21 divisions and 86 independent regiments in January 1975 to an estimated 88 combat and combat-support divisions by February 1984, with an estimated 1.2 million personnel under arms. The PAVN is now the third largest standing army in the world, behind China and the Soviet Union. The modernization and expansion of Vietnamese ground forces has enabled Hanoi to defend itself against China along its northern border, while enforcing its military domination over Kampuchea and Laos.

[Redacted]

[Redacted]

Although Hanoi has initiated a modernization program for the entire armed forces, including naval and air forces, this study addresses command, organization, and equipment upgrading changes which have been under way in the Vietnamese ground forces since 1978, and the effect these trends have had on the PAVN's ground combat capability and doctrine. While this study does not address the status of the PAVN's extensive military logistics apparatus, DIA analysis completed in January 1983 indicates that the PAVN Rear Services General Department has generally kept pace with modernization efforts within the ground forces, and that it is capable of providing logistical support to the army in both peacetime and combat situations. Information available as of August 1984 has been included.

[Redacted]

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Changes in Command and Control Structure

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A key element in the PAVN's overall modernization program has been its efforts to streamline the command and control system. We believe that changes in command and control after 1978 were initiated to tailor the ground forces to an operational doctrine better suited to the national defense priorities of post-reunification Vietnam, and to meet the tactical operational needs of PAVN occupation forces in Kampuchea.

[Redacted]

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The army is currently organized into five command echelons: strategic army corps (SAC) commands; Binh Doan commands; military region (MR) commands; provincial unit commands; and district militia commands. Of these, the SAC commands, the Binh Doan commands, the MR commands, and some elements of the provincial unit commands are made up of full-time, regular soldiers. While not considered main force, the provincial unit commands maintain at least one infantry regiment composed of full-time soldiers in each of Vietnam's 39

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provinces. All command echelons are subordinate to the High Command General Staff under the Ministry of National Defense in Hanoi (figure 1).

[Redacted]

In 1980, the Vietnamese Communist Party created a "one-man command" system for the PAVN, eliminating political cadres within military units and placing the responsibility for both command and political decisions into the hands of the senior military commander of each unit. This sweeping change in the command system promotes better coordination between commanders at all echelons, eliminates the clumsy and time-consuming process of coordination with political cadres on all day-to-day decisions, and encourages greater initiative within the military leadership. Vietnamese military essays over the past four years point directly to the new military threat from China and a need for army modernization as the principal reasons for the new command procedure. (U)

The present command and control system reflects a shift in Vietnam's military priorities following reunification. These objectives call for ensuring homeland defense against Vietnam's principal enemy, China, and for maintaining military domination over Vietnam's Indochinese neighbors, Laos and Kampuchea. Prior to reunification, the army was organized into both independent divisions—often referred to as national forces by the North Vietnamese—and other regionally organized independent regiments, with a primary strategy of conducting a war of national liberation.

[Redacted]

The present command and control system has its origins in the PAVN High Command's preparations for the 1975 spring offensive against South Vietnam. In developing their strategy, the High Command found it necessary to build five larger combined-arms strategic army corps (SACs)—referred to as Quan Doans by the Vietnamese—to ensure greater speed, mobility, and firepower.¹

¹One of these corps was formed as early as October 1973. Following the PAVN's failure to achieve a breakthrough during its 1972 offensive against South Vietnam, the Party Central Committee adopted the concept of combined-arms armies. The High Command continued to develop the remaining four corps in preparation for the final push of 1975. (C)

These SACs, supported by other independent regiments which remained under the command and control of North Vietnam's MR commands, spearheaded the PAVN offensive into the South. Following reunification, the High Command retained four of the five SACs in active service and redrew the boundaries of the national MR commands, incorporating the newly acquired territory of southern Vietnam, the addition of which roughly doubled the size of the country. By 1978, eight new national MR commands had been created (figure 2). By the time Vietnam invaded and occupied Kampuchea in late 1978, therefore, the High Command had already instituted some permanent changes in their command and control system. SACs serve as the major mobile strategic strike force of the PAVN. Geographically organized MR commands operate exclusively within specific regions or in support of forward combat fronts.

[Redacted]

Mobilization for Kampuchean Operations

Vietnam invaded Kampuchea in December 1978. The deployment of PAVN combat units to Kampuchea prompted the first expansion of Vietnamese ground forces since 1975. In preparation for the invasion, the PAVN High Command mobilized eight infantry divisions.

[Redacted]

As the fighting intensified, the High Command committed at least five additional divisions to the invasion, including at least one division each from the 2nd and 4th SAC Commands. Additionally, the High Command began to build six new infantry divisions under MR authority for Kampuchean service.

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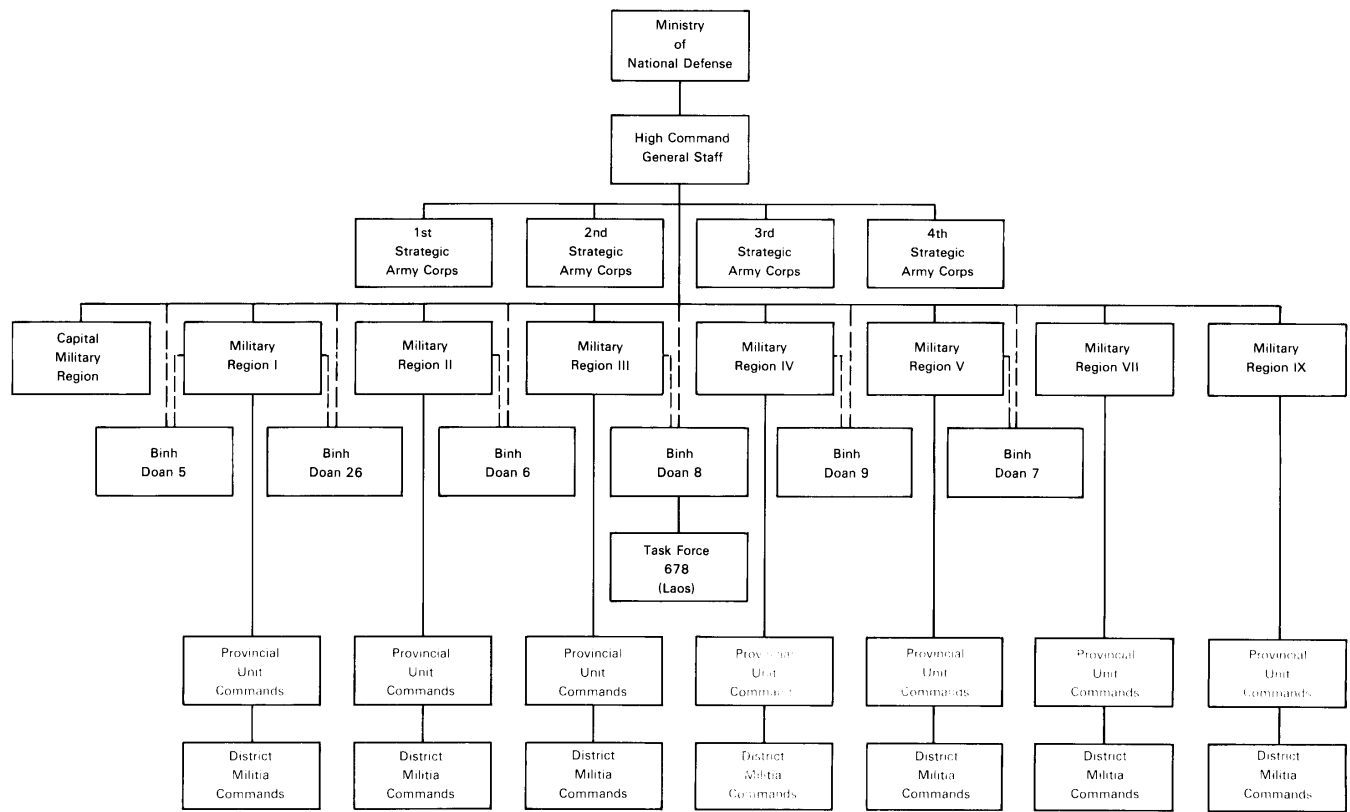
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Figure 1
Command Organization, People's Army of Vietnam, 1980-Present



Full-time regular forces
Part-time reserve forces
Full-time regular forces and part-time reserve forces
Note: Dashed lines indicate command relationship which is unclear.

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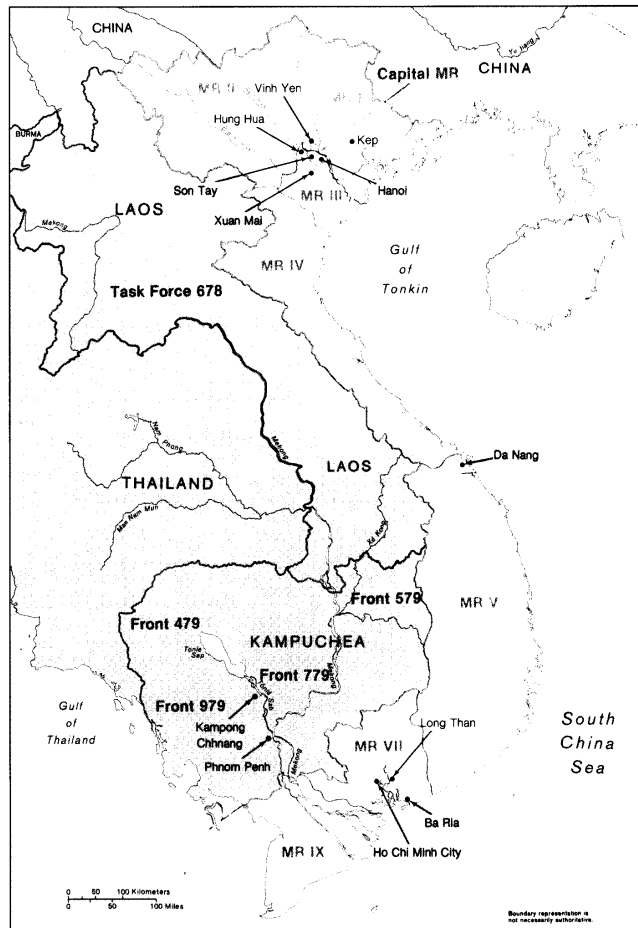
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Figure 2
Vietnam's Military Regions and Out-of-Country Commands



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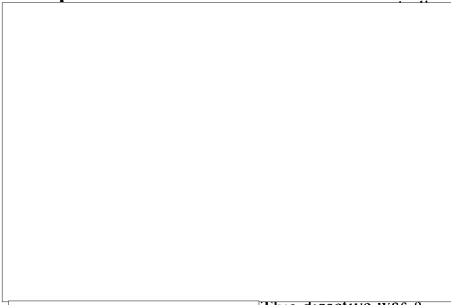
Those infantry divisions subordinate to MR commands which were deployed to Kampuchea remained under MR operational control initially, while those subordinate to SAC commands were under the control of the High Command General Staff in Hanoi. The High Command subsequently created four MR forward commands in Kampuchea, later designated as fronts.² These fronts were given the responsibility for military operations in specific regions of Kampuchea.



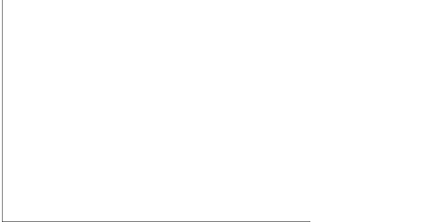
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The April 1979 Party Directive

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A second High Command forward headquarters was established in Phnom Penh during mid-1979. Although the fronts continued to maintain a command relationship with their parent MR commands in Vietnam and depended on them for logistical support, operational control over all maneuver units in Kampuchea was assumed by these High Command forward staffs (figure 3).

This directive was a major factor in determining the scope and direction of military modernization efforts in Vietnam. Besides increasing the overall size of the army, the directive led to further refinements in the organizational structure of PAVN main forces. The resumption of large-scale Soviet military assistance and equipment deliveries resulted in significant changes to the tables of organization and equipment (TO&E) of PAVN ground force units. All of these developments were key factors in the establishment of a new ground force operational doctrine, and resulted in a major upgrading of the PAVN's tactical ground combat capability after 1979.

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Post-1978 Force Modernization

In response to Hanoi's invasion and occupation of Kampuchea, China launched a major military incursion into Vietnam's northern border provinces in February 1979. At the time of the incursion, we estimated that Vietnam had only four main force infantry divisions deployed in its five northernmost MRs.

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²The PAVN has used the term 'front' in connection with combat operations since the 1960s. The term refers both to a theater of operations as well as to a military command echelon. The initial numbers of each front designation indicates its parent military region. The Kampuchean front designations are: Front 479, located in northwestern Kampuchea; Front 579, located in northeastern Kampuchea; Front 779, located in southeastern Kampuchea; and Front 979, located in southwestern Kampuchea (figure 1).

¹A PAVN Economic Construction Division is a division comprised of from two to 11 subordinate regiments manned by construction workers and laborers. It has a primary mission of rebuilding war-damaged areas, although the personnel receive infantry training and are capable of supporting main force infantry. Since 1976, we estimate that Vietnam has created at least 22 of these divisions, but as of April 1983, only 12 remained active. Vietnam's reaction to the Chinese incursion and subsequent border developments were examined in depth in CIA. EA EAJ 82-001C, (Secret Codeword), 6 January 1982, "Vietnam: Massive Force Expansion in the North," *East Asian Journal* (supplement), and in CIA. IS-10137J, December 1981, *Vietnamese Ground Forces Opposite China: Organization, Deployment, and Defensive Preparations*.

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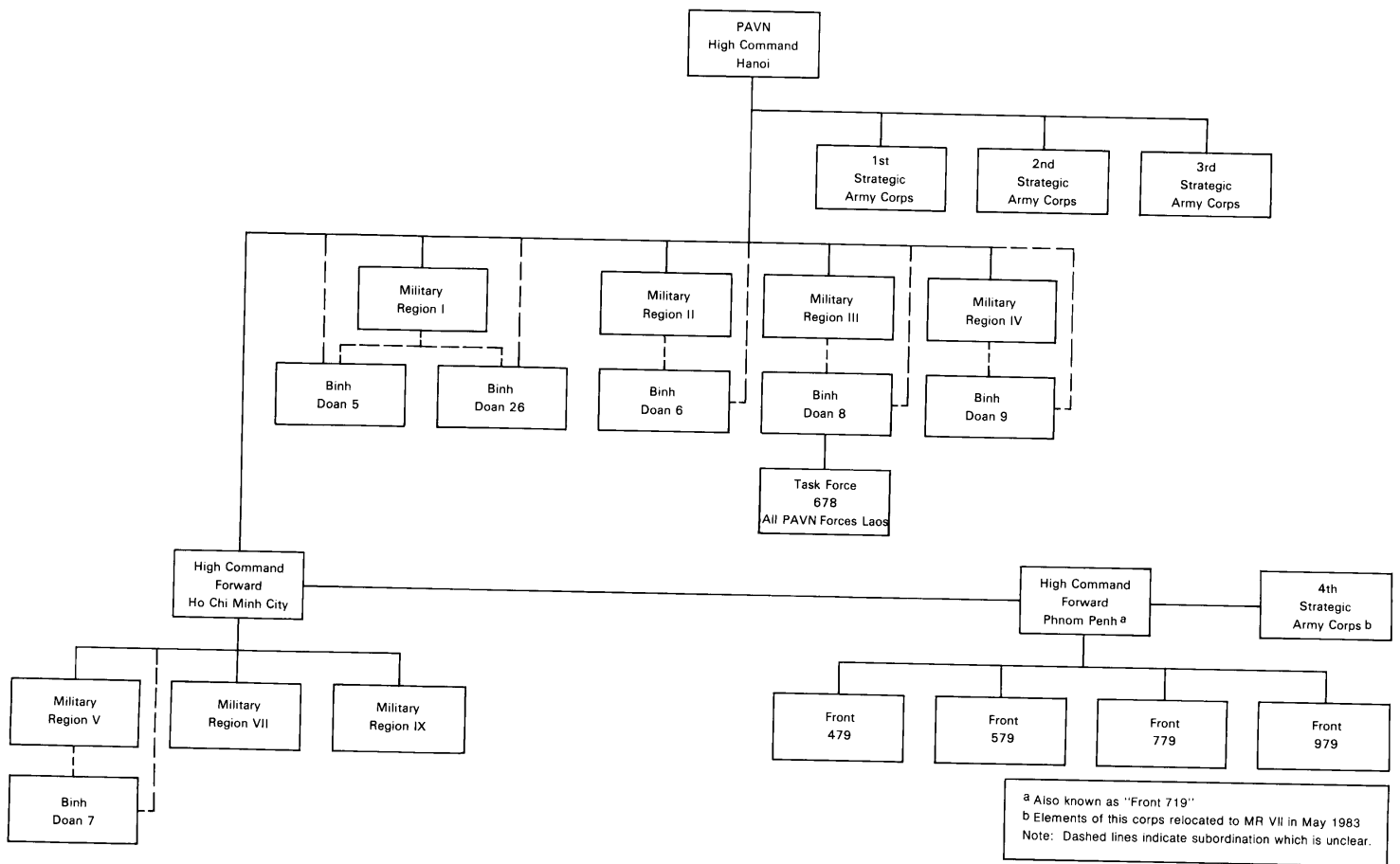
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Figure 3
Tactical Command Channels, PAVN Ground Forces



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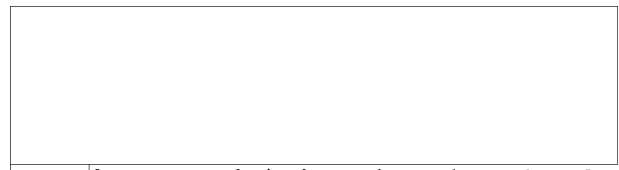
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Growth of the Military Commands in Northern Vietnam

Within months of the April 1979 directive, the size of the PAVN began to increase. To accomplish this growth, the main force commands of MRs I, II, and III in northern Vietnam were augmented with additional infantry divisions. Other new divisions subordinate to new corps-like entities—referred to as Binh Doans by the Vietnamese—were identified

sources (figure 4). At least six of these new infantry divisions were created by converting economic construction divisions into infantry divisions. We believe that manpower for other new divisions may have been drawn from the provincial reserve forces.



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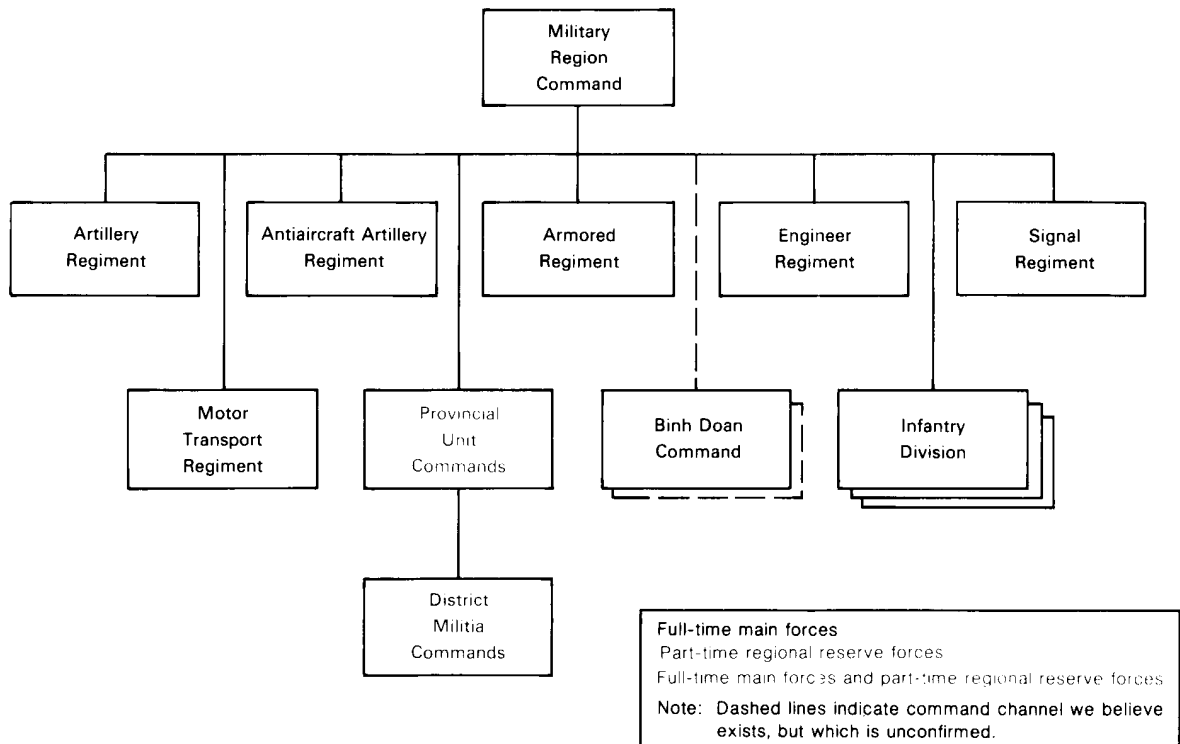
Imagery analysis shows that at least nine of the new divisions deployed along the border re-equipped with armored battalions. There is no evidence that the High Command further expanded either the number of infantry divisions or the MR-subordinate combat-support units in Military Regions IV, V, VII, or IX, which had already undergone expansion as early as 1978 in preparation for the Kampuchean operation, and which had largely been committed to that theater.

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**Figure 4
Organization of a PAVN Military Region Command, 1979-1984**



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Upgrading of the Strategic Army Corps

[Redacted]

[Redacted] The structure of these corps was standardized to include three subordinate infantry divisions and as many as seven subordinate combat-support brigades and regiments (figure 5). Additionally, analysis of PAVN command and control exercises conducted in Vietnam since 1981, analysis of PAVN command and control practices during the invasion of Kampuchea, imagery analysis of the SAC's TO&E, [Redacted]

[Redacted]. The SACs are independent from MR authority and are

under the direct operational control of the High Command General Staff. [Redacted]

Vietnamese military media reports since 1980 indicate that these corps have been in the process of developing mechanized infantry forces mounted in armored personnel carriers (APCs) within some of their subordinate infantry divisions, and that other corps-subordinate combat-support units have received Soviet-built, truck-mounted multiple rocket launchers (MRLs), self-propelled field artillery, and engineering equipment.⁴ We have not been able to identify a fully-equipped mechanized infantry regiment or infantry division within the SACs because of infrequent photographic coverage, but we have confirmed that these types of equipment have been delivered to selected units of the 1st SAC in Military Region III and the 2nd and 3rd SACs in Military Region I since late 1980. Additionally, we have confirmed that all three of these SACs have been augmented with additional cargo trucks and artillery prime movers since that time. Although this equipment has been confirmed in only selected units within these corps, we believe that the mechanization process is well under way within the SACs. While less is known about the status of the 4th SAC, which presently has combat elements in both Kampuchea and southern Vietnam, imagery suggests that 4th SAC units in Vietnam are receiving mechanized infantry training. These developments suggest that the High Command intends to equip each of the SACs with enough armored vehicles, artillery, and motor transport assets to give them significantly more firepower and mobility than any other group of PAVN forces. [Redacted]

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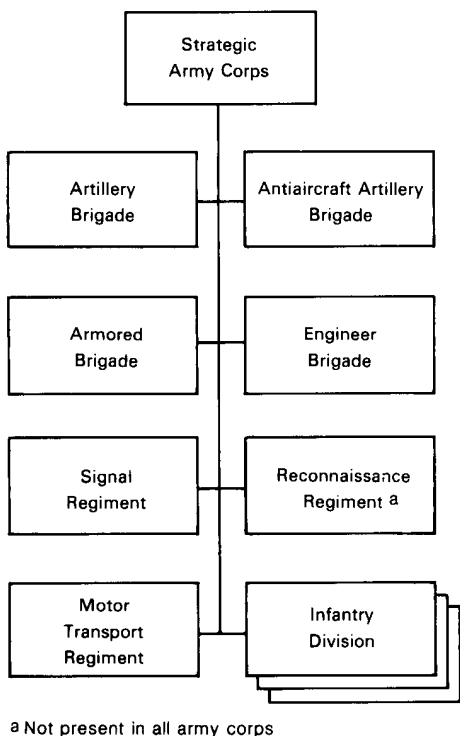
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Figure 5
Organization of a PAVN Strategic Army Corps Command



⁴The Vietnamese Government routinely disseminates information regarding the activities of specific military units, military doctrine, and tactics — in radio broadcasts; in the official party theoretical journal, *Tap Chi Cong San*; and in the Army's daily newspaper, *Quan Doi Nhan Dan*. Methodical examination of this open-source information against existing imagery, [Redacted]

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Creation of New Binh Doan Commands

Since the April 1979 directive, at least six new corps-type entities—called Binh Doans by the Vietnamese— in Vietnamese military media reports. According to these sources, each of these Binh Doans serves as the controlling authority for one or more subordinate infantry divisions and a varying number of combat-support brigades and regiments. Two of the Binh Doans—the 5th in MR I, and the 6th in MR II—control six and seven subordinate infantry divisions, respectively (figure 6). Five of these new entities are located in the northernmost MRs of Vietnam, near the Chinese border. We believe that another Binh Doan—the 8th, headquartered in MR IV—is the controlling authority for Task Force 678, which comprises all PAVN forces in Laos.

The role of these Binh Doans in the PAVN command and control system is still unclear. however, that they are more likely to be specially constituted regional task forces or frontline corps which operate either under the direct operational control of the MR commands, or in concert with them.

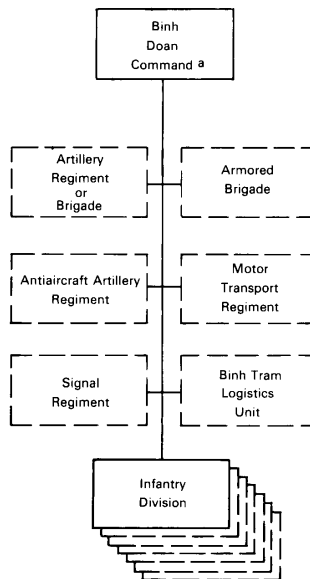
To date, we have no evidence indicating that any of these new Binh Doan commands share a combat mission similar to the SACs. In addition, our analysis of the TO&E of the 5th and 6th Binh Doans shows they lack the motor transport assets, and thus the mobility, of the SACs. Moreover, while we have observed newer Soviet-built APCs, MRLs, and engineering equipment in selected units subordinate to the SACs since late 1980, to date we have not observed this equipment with the newly formed Binh Doan Commands.

Because the new Binh Doans lack the organizational uniformity of the SACs, as well as their mobility and firepower, we believe they may be independent from the MR command, and like the SACs, directly subordinate to the High Command. Alternately, they may be under the direct operational control of MRs I, II, III, and IV in northern

Vietnam, and of MR V, in central Vietnam. In either case, we believe that, in the event of future hostilities in the northern border area, Binh Doans would form the first echelon of combat forces of the MR defense plan. The role played by five of the six Binh Doans during an October 1983 command and control exercise in northern Vietnam supports this first-echelon hypothesis. During that exercise,

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Figure 6
Estimated Organization of a PAVN
Binh Doan Command



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^a Binh Doan Commands are estimated to be specially constituted regional corps or regional task forces either under military region authority or under direct control of the High Command.

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Note: Dashed boxes indicate units not present in all Binh Doan commands.

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Soviet Military Assistance

Vietnam's ground force modernization and expansion program after 1978 would not have been possible without Soviet assistance. During the immediate post-reunification period, Soviet military aid to Vietnam was gradually reduced; by 1977, according to Defense Intelligence Agency (DIA) estimates, shipments of Soviet military equipment to Vietnam had reached their lowest level in 10 years, with only an estimated \$10 million worth of material delivered. The aid was increased to an estimated \$90 million during 1978, probably in response to the PAVN's mobilization for Kampuchea. Following the February 1979 Chinese incursion, the Soviets increased their military aid substantially. The DIA estimates that \$1.8 billion worth of Soviet materiel was provided to Vietnam during that year. Although the level of military aid apparently peaked during 1979, Soviet military equipment deliveries to Vietnam have continued since then. [Redacted]

Soviet ground force equipment deliveries have included tanks, APCs, artillery, air defense weapons, river crossing and engineering equipment, and cargo trucks. Although most of the equipment deliveries have not included the latest models of Soviet weapons and vehicles, the equipment has been generally newer and better than equipment held in PAVN inventories prior to 1979, and it is generally superior to equipment in either the Chinese or Thai armies. The Soviet equipment has included 122-mm D-74 and 130-mm M-46 long-range field artillery guns; 122-mm D-30 howitzers; BM-14/16 and BM-14/17 truck-mounted MRLs; BMP, BTR-60 and BRDM-2 APCs; PT-76 light amphibious, T-55, and medium tanks; and GSP, PMP, and PTS engineering and river crossing vehicles. Since 1982, the PAVN has upgraded its long-range artillery assets opposite China with the deployment of two brigades of Soviet-

built Scud-B tactical surface-to-surface missiles in MR I. [Redacted]

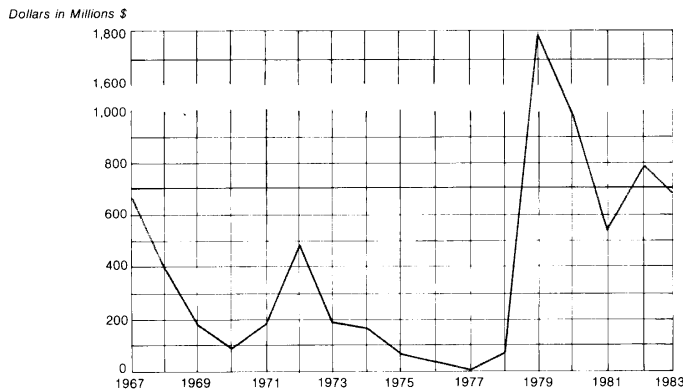
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In addition to equipment, the Soviets are providing military advisors to assist the PAVN in its modernization effort. According to PAVN defectors of unestablished reliability, since 1979 Soviet advisors have helped the Vietnamese build modern ground force training facilities. We have identified Soviet-style infantry and armor training ranges on imagery at PAVN ground force training bases in MR II, MR III, MR V, and in MR VII. Other PAVN defectors have stated that Soviet advisors have been assigned to Vietnam-based units down to the regimental level since 1981, while Soviet advisors reportedly joined some PAVN regiments in Kampuchea in mid-1982. [Redacted]

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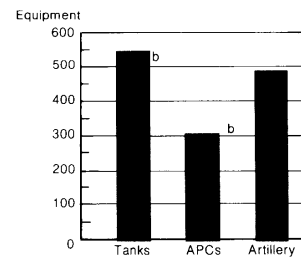
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Estimate of Soviet Military Aid to Vietnam, 1967-1983



Note: These estimates are based on shipborne deliveries of metric tons of military equipment.
Source: Defense Intelligence Agency

Estimate of Major Soviet Ground Force Equipment Delivered to Vietnam, 1979-March 1984^a



^a These estimates are based on photographic confirmation of weapons delivered to Vietnamese ports and therefore are considered to be the minimum levels.

^b At least eight additional arms shipments which included at least 53 tanks and 16 armored vehicles departed Vladivostok, USSR between September 1983 and January 1984. The destination of these ships is unknown, but we believe they went to Vietnam.

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Additionally, a 15 July 1983 PAVN High Command doctrinal essay published in the Vietnamese military newspaper specifically outlined the mission of the 6th Binh Doan (also known as the Song Thao Group) as that of providing for defense of the northern border in an area of difficult terrain. Two of the largest Binh Doan commands in northern Vietnam—the 5th and 6th—are deployed in defensive positions covering extensive areas of rugged terrain along the Sino-Vietnamese border, while all three of the SAC commands in the northernmost MRs are deployed in rear area garrisons surrounding Hanoi; this positioning further suggests that the new Binh Doans serve a regional defense mission either under the authority of the MRs in which they are deployed, or under the direct authority of the High Command. [redacted]

Effects of Modernization on Ground Combat Capability

We believe that the reorganization and upgrading efforts within the PAVN since 1978, in addition to Soviet influences, have improved the army's ground combat capability. The PAVN High Command has recognized the need for mobility and a combined arms capability since the creation of the first SACs in preparation for the 1975 spring offensive. The acquisition of more modern equipment, coupled with Soviet assistance, has enabled Hanoi to develop the army from a predominantly infantry force into a more conventional ground combat arms team, incorporating separate infantry, artillery, armor, engineering, and air defense branches. This combined-arms development, in addition to the reorganization of the main force SACs and MR commands and the establishment of the Binh Doan Commands after 1979, has contributed to the establishment of a conventional ground combat doctrine within the PAVN. [redacted]

Development of Combined Arms Tactics

The PAVN executed its first successful large-scale combined arms offensive against South Vietnam in spring 1975. Since then, the High Command has emphasized further combined arms training; this emphasis has intensified since the end of the 1979 Sino-Vietnamese border war. [redacted]

[redacted] combined infantry/armor assault training ranges were identified for the first time from imagery at a PAVN ground force training base at Long Than, in MR VII. November 1983 imagery shows that a combined infantry/armor assault range had been newly constructed at the PAVN's Infantry Officer's School at Son Dong, in the Capital MR. Furthermore, [redacted]

In Kampuchea, the PAVN began to employ more effective combined arms operations against Khmer resistance forces during their annual 1982/83 dry season offensive. Although the PAVN has employed combined infantry, armor, and artillery tactics in Kampuchea since 1979, these earlier operations frequently depended upon mass infantry assaults against well-defended resistance strongholds, supported by a few armored vehicles and frequently deficient artillery fire support. [redacted]

[redacted] During the 1982/83 dry season, and again during the 1983/84 dry season, the PAVN conducted more effective combined arms assaults than previously against several large Khmer resistance bases along the Thai-Kampuchea border. PAVN commanders maneuvered full infantry regiments, supported by one or more artillery regiments and armored battalions, to attack and overrun these bases. PAVN commanders pre-positioned their artillery and armored forces during both dry season campaigns to better support multiregimental infantry sweep operations, and they better

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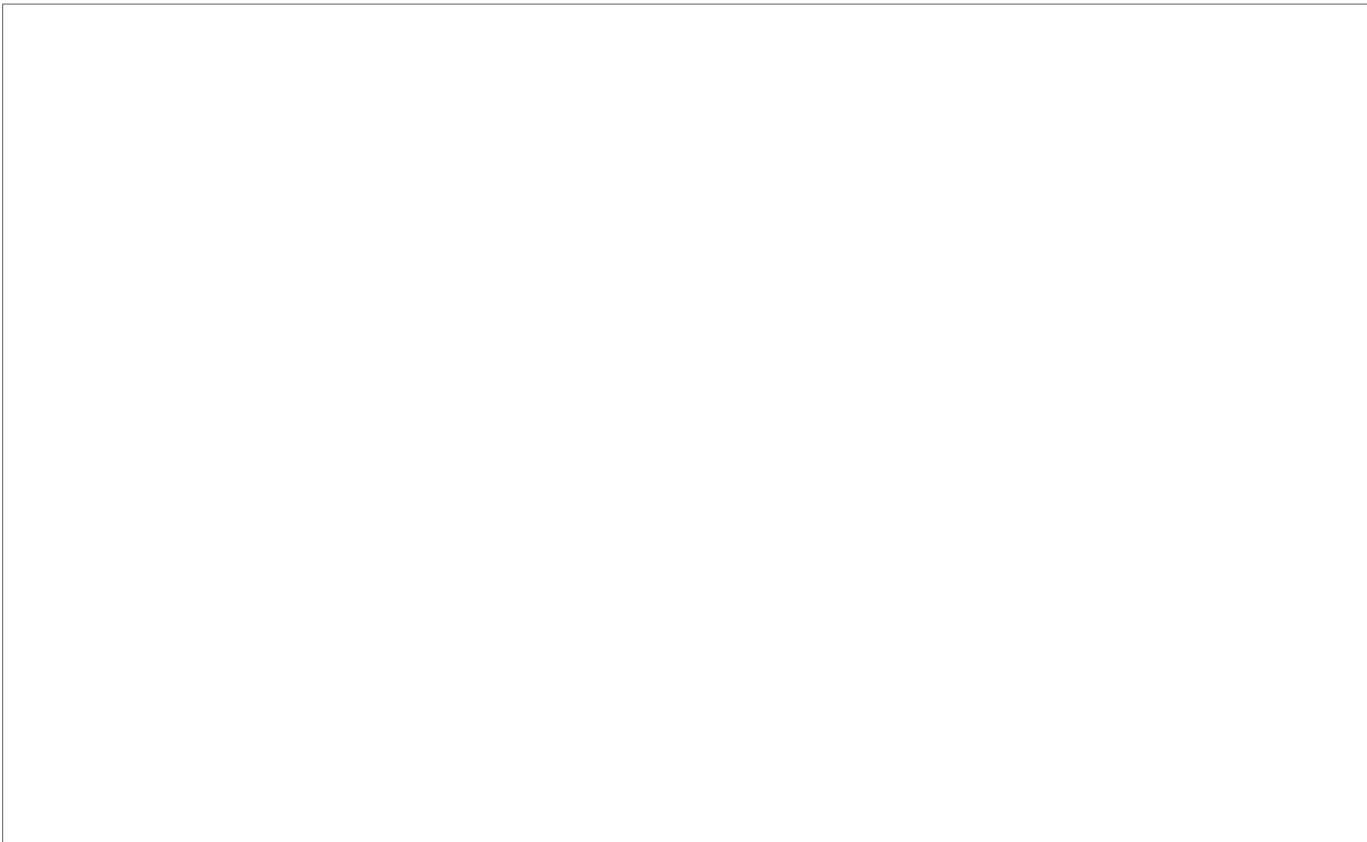
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coordinated artillery fire support with infantry maneuvers. [Redacted]

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Although Khmer resistance forces are poorly equipped and incapable of withstanding PAVN frontal assaults against their bases, the PAVN's more effective combined arms tactics against these fixed targets during the 1982/83 and 1983/84 dry seasons resulted in PAVN forces quickly seizing their objectives with fewer equipment losses than in previous dry season border campaigns. They may also have suffered fewer casualties. [Redacted]

[Redacted] imagery analysis indicates that these tactical successes resulted from combined arms training exercises which took place prior to the initiation of operations. In our judgment these successes reflect an improved combined arms capability, a direct result of modernization efforts over the past few years. [Redacted]

The PAVN's concentration on conventional combined arms operations in Kampuchea, however, particularly since mid-1982, may have left them less flexible, and therefore more vulnerable to increasingly effective hit-and-run tactics of the Khmer resistance forces. Since late 1983, as these Khmer forces have acquired better arms and effectively penetrated into Kampuchea's interior, PAVN combat fronts have had a difficult time countering these growing attacks. In March 1984, the Vietnamese began for the first time to use tactical aircraft in support of ground forces operations designed to suppress resistance concentrations in the interior, [Redacted] Imagery analysis also showed that beginning in mid-1983, the Vietnamese took extraordinary defensive measures—including the construction of large earthen berms and fences—to protect strategic logistics depots and base camps deep inside the country. [Redacted]

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Development of Combined Arms Combat Doctrine

The establishment of the SAC commands after 1975, the improvements in command and control practices, the establishment of Binh Doan commands after 1979, and the emphasis on combined arms tactics have all paralleled the evolution of a new conventional ground combat doctrine for Vietnamese ground forces. This doctrine has its origin in the High Command's strategy for the 1975 spring offensive, and it has been refined and modified since then to meet Vietnam's current military challenge from China. The doctrine currently calls for a counteroffensive strategy involving employment of mobile, heavily armed groups of divisions to seize the initiative and develop offensive operations against an invading enemy force. The objectives of this strategy are the defense of Vietnamese territory and the annihilation of the invading enemy forces. This is a prevailing theme in contemporary Vietnamese military media essays.

[redacted]

The differences in organization and firepower reflected in the TO&E of the SACs and the MR commands since 1978, in addition to the procedures developed to control these forces, indicates that the High Command has tailored each of them to carry out distinctly different combat missions to implement this strategy.

[redacted]

[redacted]

Analysis of PAVN national command and control exercises conducted regularly since 1980 provides additional evidence of two distinct combat missions for the SAC commands and the MR commands. During a large-scale exercise conducted in Novem-

ber 1980, for example, the participating SAC commands remained mobile and were ordered to attack various notional objectives at the direction of the High Command General Staff. The MR commands provided the forces necessary to create several combat fronts. These fronts were commanded by the General Staff, although they continued to report to their parent MR Commands, which controlled supporting forces in the rear areas of the fronts. This command and control practice indicates that in wartime, the MR commands are responsible for developing fronts, or the first echelon of combat forces, and for committing additional forces to the battle areas as those fronts are developed. The mobile, more heavily armed SACs remain independent from MR front operations. They would not be committed during the initial stages of battle, but held in reserve until additional forces and firepower are needed. Once that decisive point in the battle is reached, the SACs would be committed either singly or in groups to contain an enemy breakthrough, or to exploit the enemy's weaknesses by executing counteroffensive strikes capitalizing on the tactical success of the fronts to assure overall operational success.

[redacted]

Although the exact role of the new PAVN Binh Doan commands in the command and control structure is unclear, their apparent lack of mobility, their non-standard organizational structures, and their peacetime deployment along the Sino-Vietnamese and Sino-Lao borders suggest that they are designed as regional task forces assigned to reinforce the five northernmost MR commands. As such, we postulate that their wartime mission is to serve as frontline forces for each MR front command as those fronts are developed. During an October 1983 national command and control exercise in northern Vietnam,

[redacted]

at least five of the six Binh Doans deploying to the immediate Sino-Vietnamese border area to assume first line defensive positions.

[redacted]

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Organizational Trends

Since 1979, most of the PAVN's modernization has occurred in domestically-based forces, especially those opposite China. Until recently, PAVN forces

[redacted]

[redacted] Imagery analysis indicates that although Kampuchean-based units have received some newer equipment and better training in the past two years, they still lag behind Vietnam-based forces in numbers of transport vehicles, artillery, and heavy engineering vehicles.

PAVN forces in Laos appear to operate with severe equipment shortages. We believe the buildup of forces in northern Vietnam is largely completed, which has allowed the High Command to begin upgrading out-of-country forces. [redacted]

[redacted]

[redacted] Two important trends since 1979 have been an increase in Soviet influence on the PAVN TO&E, and efforts of the PAVN High Command to standardize unit organization. [redacted]

Soviet Influence on PAVN Organization and Training

In addition to the influx of newer Soviet-built weapons and equipment we have observed with Vietnamese ground forces since 1979, [redacted]

[redacted] Vietnamese military media reports have also provided increasing evidence of Soviet influence over PAVN unit organization and training. [redacted]

[redacted]

[redacted] while imagery analysis shows Soviet-style TO&Es emerging in selected PAVN artillery and engineering units over the past five years, particularly among PAVN forces deployed opposite China. Perhaps more significant has been the emergence of mechanized infantry forces within the

SACs. While we have not yet identified a fully equipped and operational mechanized infantry regiment, there is strong evidence indicating that development of mechanized infantry forces is well under way within all four PAVN SAC commands. This has included equipping some PAVN infantry units with Soviet-built APCs. Additionally, the development and employment of mechanized infantry has become a recurring theme in PAVN doctrinal essays published in the Vietnamese military media since 1982 (appendix A).

[redacted]

Equally significant has been the identification from imagery of at least seven Soviet-style training facilities at PAVN bases throughout Vietnam since 1980. Soviet-style infantry antiarmor ranges have been noted at PAVN training bases at Long Than in MR VII and Vinh Yen in MR II since 1981, for example. Moreover, we have identified new tank live-firing ranges—identical to those used by Soviet and Warsaw Pact tank forces—at four armor installations in northern Vietnam and one armor base in MR VII since 1982. [redacted]

[redacted]

Another important development underscoring Soviet involvement on PAVN organization and training was the identification in early 1984 of a PAVN airborne commando regiment modeled after Soviet *spetznaz*, or special-purpose forces. This regiment—designated the 76th Airborne Special Purpose Regiment—is headquartered at Tong Airfield, near Son Tay, 39 kilometers west of Hanoi. [redacted]

[redacted]

[redacted]

[redacted] As of mid-1982, at least six Soviet GRU advisors were reportedly serving the regiment as

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instructors in parachuting, weapons, and logistics. Imagery analysis shows that the regiment's training area contains Soviet-designed parachute rigging and jump training apparatus, as well as a Soviet-style special purpose forces-type obstacle course and a special training area for martial arts practice.

While it is clear from imagery analysis that only selected PAVN ground force branches and units are benefiting from Soviet advisory expertise, the modest but growing number of Soviet-style training facilities observed at PAVN garrisons over the past five years suggests that Soviet-Vietnamese military cooperation is well established, and we expect to see further evidence of Soviet advisory involvement during the next several years.

Infantry Forces

The organization of most PAVN infantry divisions based in Vietnam has been standardized since 1979, although equipment holdings may still vary. Based on our analysis of 15 SAC-, Binh Doan-, and MR-subordinate infantry divisions in Vietnam since 1980, we have determined that they each consist of three subordinate infantry regiments and an artillery regiment. These divisions also have their own organic antiaircraft artillery (AAA) and transport battalions, as well as engineering battalions or companies (appendix B).

Since 1979, at least nine of the 15 PAVN infantry divisions identified on imagery in northern Vietnam have been expanded to include armor battalions, consisting of both tanks and APCs. While the number and types of equipment in these armored battalions is not uniform, all nine battalions consist of from 25 to 35 armored vehicles of mixed type. Most of the vehicles are medium tanks, while the remainder of the battalion is composed of light amphibious tanks, armored reconnaissance vehicles or APCs of various types.

[redacted] Our analysis of the SAC and MR headquarters garrison areas in the four northernmost MR shows that some of them lack armored vehicles, [redacted]

[redacted] For this reason, we believe that those armor battalions which have been identified with infantry divisions are actually subordinate to the SAC and MR commands, and that they have been assigned to support selected divisions in key areas along the Chinese border.

The 10 PAVN infantry divisions stationed in Kampuchea are less rigidly organized than the Vietnam-based infantry divisions, although they have some common characteristics. Divisions in Kampuchea are primarily organized and equipped to carry out specific combat missions within their own areas of operation. Consequently, while the Vietnam-based infantry divisions contain three subordinate infantry regiments, analysis of imagery and [redacted] shows that three of the Kampuchean-based infantry divisions have four subordinate infantry regiments, including a border security regiment which is reinforced by an artillery or AAA battery. One division—the 5th, operating with Front 479 in northwestern Kampuchea—contains five subordinate infantry regiments, including two reinforced border security regiments. These additional border security regiments are believed to be temporarily detached from Vietnam's Border Guard Command, and have been assigned to support those divisions operating near the Thai-Kampuchea border. At least seven of the 10 Kampuchean-based infantry divisions also have organic reconnaissance battalions, equipped with US-built M-113 APCs. [redacted]

if these battalions are organic to those divisions, or if they are front-level assets assigned to reinforce these divisions (appendixes C, D).

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Artillery Forces

Since 1979, the PAVN High Command has gradually standardized divisional artillery regiments as well as SAC-subordinate artillery brigades and MR-subordinate artillery regiments in Vietnam-based forces. Through imagery analysis we have determined that divisional artillery regiments have been standardized to include three firing battalions equipped with Soviet-built weapons: a 122-mm howitzer battalion; a gun battalion equipped with either 85-mm or 100-mm antitank guns; and a field artillery battalion equipped with either 122-mm D-74 or 130-mm M-46 long-range field guns. MR-subordinate artillery regiments are organized and equipped similarly. Two of the four SAC-subordinate artillery brigades identified through imagery analysis consist of four firing battalions. [REDACTED]

Prior to 1983, the artillery brigades of the 1st and 2nd SAC included a howitzer battalion, a gun battalion, and two long-range field artillery battalions. Since April 1983, we have identified truck-mounted BM-14/17, BM-14/16 and BM-21 MRLs with both of these brigades. In November 1983 we identified the first fully operational battalion of MRLs with the 1st SAC's 45th Artillery Brigade, based at Xuan Mai. At the same time we observed that two howitzer battalions had replaced the antitank guns in the 45th Brigade, providing it with more indirect-fire capability. These MRLs probably are replacing one of the long-range field artillery battalions within SAC-subordinate brigades. Their deployment will increase the firepower and versatility of the main force SACs. [REDACTED]

Since 1979, there have been references in the Vietnamese military media to the equipping of some PAVN forces with Soviet-built 122-mm self-propelled field artillery guns. Although we have not confirmed these press reports from imagery, we believe that the acquisition of newer Soviet-built self-propelled artillery would be consistent with the High Command's current effort to mechanize its SAC commands. The Vietnamese have retained some older SU-76 self-propelled assault guns in their inventory, but we have not observed any of these weapons in operational units. And, while the PAVN is known to have captured US-built self-

propelled artillery models in 1975, less than 10 have been observed throughout Vietnam; a few are on display as museum pieces at PAVN ground force training centers and at least four 175-mm models are in open storage at a PAVN depot near Danang. To date, none of these former US guns has been observed with operational PAVN units, probably because the PAVN lacks ammunition and spare parts for them. [REDACTED]

Despite recent upgrading efforts, most of the divisional artillery regiments which we have identified from imagery in Kampuchea remain underequipped. Our analysis of the divisional artillery regiments of those located close to the Thai border in the area of heaviest fighting—the 307th, 302nd, 5th, 309th, 339th, and 4th Divisions—shows that they contain only enough guns to constitute two firing battalions, rather than the three typically observed with artillery regiments in Vietnam. Imagery analysis [REDACTED]

[REDACTED] indicates that during the 1982/83 and 1983/84 dry season campaigns along the Thai-Kampuchea border, two divisional artillery regiments had to be reinforced with guns and troops from those divisions' front-level artillery regiments in order to complete their missions. We believe that the understrength artillery regiments within Kampuchean-based divisions may be due either to lack of trained gunners or equipment, or because typical PAVN artillery fire support missions against the resistance forces do not require a larger TO&E. When more firepower is required—during frontal assaults against border camps, for example—divisional commanders can call upon front-level artillery assets for additional support. The artillery regiments subordinate to Kampuchean-based divisions are equipped with a mixture of older US, Chinese, and Soviet-built guns, including 105-mm (M-101 and M-102 models) and 155-mm howitzers, 122-mm M-1938 howitzers, 152-mm howitzers, 107-mm towed rocket launchers, and 85-mm antitank guns. It is common to observe 37-mm AAA guns colocated with Kampuchean-based artillery regiments, and we believe that the PAVN employ these in a direct-fire, field artillery role as well as in an air defense role (appendixes C, E). [REDACTED]

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Armor Forces

SAC-subordinate armor brigades and MR-subordinate armor regiments in Vietnam are organized into three tank battalions, an APC-equipped reconnaissance company, an AAA battalion, an engineering company, and a transport battalion. The tank battalions are equipped with Soviet-built PT-76 light amphibious and T-55 medium tanks. The PAVN also continues to use older Chinese-supplied Type 63 light amphibious and Type 59 medium tanks. At present the PAVN's main battle tank is the Soviet-built T-55. Reconnaissance companies within PAVN armored brigades contain a variety of Soviet-supplied APCs, including the BTR-50, BTR-60, BMP, and BRDM-1 and -2 armored reconnaissance vehicles. Additionally, the PAVN has retained a variety of older US-built and Soviet-built armor vehicles in their inventory. For example, we have identified Soviet-built T-34/85 medium tanks in storage at the Vinh Yen armor training depot in MR II and since 1977, the PAVN has been refurbishing captured US-built tanks and APCs at a former US armor maintenance facility in Ho Chi Minh City. These refurbished vehicles have been deployed with PAVN units in Kampuchea since 1978, and in November 1983 we identified platooned M-113 APC units at two locations in MRs III and IV. [redacted]

At least two combat fronts in Kampuchea—Front 479 and Front 979— have organic armor regiments. Imagery analysis shows that from 1979 through 1980, these regiments were equipped with a mixture of US- and Chinese-built medium and light tanks and APCs. Since 1981 we have observed none of the light tanks with either regiment, although the US-built M-113 APC remains the standard armored reconnaissance vehicle with Kampuchean-based forces, and the PAVN continues to use older Chinese Type 59 medium tanks in Kampuchea. Since 1981 we have identified the Soviet-built T-55 in the country. In 1981, Soviet-produced BRDM-2 armored reconnaissance vehicles made their first appearance with Front 479 forces operating near the Thai-Kampuchea border, although to date we have identified less than 12 of these at any one time in the country (appendixes B, C, and D). [redacted]

Engineering Forces

Divisional engineering battalions and companies in Vietnam have been equipped with Soviet-built engineering and river crossing equipment since late 1979. This equipment includes GSP heavy amphibious ferries, PMP and TMM bridging vehicles, and BTM and BAT-M trenching vehicles. Since late 1980, we have observed PAVN SAC-subordinate engineering brigades and regiments adopting Soviet organization practices, including the creation of assault river crossing and bridging companies (figure 8). [redacted]

[redacted]

[redacted] we have identified heavy combat engineering equipment with two divisions—the 5th and the 339th—and with two fronts—Front 479 and Front 579. Moreover, each of these units had less engineering and river crossing vehicles than battalions and regiments observed in Vietnam-based forces. Because of this apparent lack of equipment, we believe that most of the PAVN divisional engineering battalions and front-level engineering regiments in Kampuchea do not have any heavy combat engineering equipment, but rather comprise primarily laborers who may be equipped with trucks and occasionally graders and bulldozers. Since 1979 we have noted numerous instances in the open press and in [redacted] of PAVN forces conscripting Kampuchean civilians for work on military engineering projects, such as road repair and base construction (appendixes B, C, and F). [redacted]

Air Defense Forces

Since 1979, divisional AAA battalions have been standardized to include either four or five firing batteries of four guns each. At present, the PAVN's tactical air defense combat arm is largely equipped with older weapons. The towed 37-mm AAA gun continues to be the primary divisional and brigade air defense weapon, although we have identified some lighter ZSU-23 AAA guns with both Vietnam-based and Kampuchean-based forces. Although the Vietnamese do have some ZSU-57/2 and ZSU-23/4 self-propelled AAA guns in their inventory, we have only observed four of these

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weapons at the PAVN's air defense training school at Son Tay, in MR III, and none have been confirmed with operational ground force units since 1975. There has been at least one reference in the Vietnamese military media since 1983, however, which reports that the 1st SAC has received the ZSU-23/4 weapon. This development may indicate that the SACs' air defense assets will be upgraded, which would be consistent with mechanization trends in these corps. [Redacted]

[Redacted]

try units are equipped with heavy machine guns and the shoulder-fired SA-7 surface-to-air missile for additional air defense. SA-2 and SA-3 surface-to-air missile battalions, and AAA regiments containing 57-mm, 85-mm, and 100-mm AAA—subordinate to air defense divisions and deployed to protect cities, airfields, and industries throughout Vietnam—are under the operational control of the Vietnamese Air Force, and are not tactical ground force assets (appendixes B and C). [Redacted]

[Redacted] Vietnamese military media reports indicate the PAVN infan-

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Laotian-Based Forces

Because of inadequate photographic coverage, a comprehensive TO&E study of PAVN forces in Laos is not possible. Our analysis of one PAVN infantry division and one engineering division deployed in northern Laos indicates that these forces are probably the poorest equipped in the army. For example, we have not identified any organic armored battalions with PAVN infantry divisions based in Laos. Also, a divisional artillery regiment identified in northern Laos in 1981 contained only a single battery of towed 120-mm mortars and a battalion of mixed field artillery models, rather than the standard compliment of three artillery battalions found with most divisional artillery regiments in Vietnam. Some PAVN engineering units in Laos have received newer Soviet-supplied river crossing equipment, including GSP heavy amphibious ferries; however, equipment levels have not been standardized in these units. [redacted]

will emerge as a more modern combat force modeled after the Soviet forces of the late 1960s and early 1970s. [redacted]

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We believe it is in the USSR's interest to continue to provide Vietnam with weapons and vehicles to accomplish these goals. In addition to newer models of artillery and APCs, we anticipate that the PAVN may also receive either a modernized version of the Soviet T-55 medium tank with improved armor, more horsepower, and more sophisticated firing optics, or possibly a newer-model medium tank from the Soviets, to keep pace with armor improvements within Chinese ground forces, most notably China's deployment in 1983 of a new main battle tank. The Soviets may also provide the Vietnamese with additional Scud tactical surface-to-surface missiles to augment their artillery forces, and they may also help the PAVN to upgrade its tactical air defense combat arm. [redacted]
[redacted]

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Outlook

Based on the organizational and equipment upgrading trends observed under way in PAVN units since 1978, we believe that all PAVN SAC forces will be modernized with newer Soviet-supplied weapons and vehicles by 1990. While the PAVN will continue to standardize the organization and equipment levels in most units, we expect that Kampuchean-based infantry divisions will continue to be organized on a mission-specific basis.
[redacted]

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The modernization of Vietnamese forces along the Chinese border will continue to take precedence over the upgrading of other PAVN forces. Hanoi's efforts to reorganize some of its SAC-subordinate combat and combat-support units along Soviet lines, in addition to the development of these army corps commands as mobile strike forces, suggests that this echelon of forces is being tailored to serve as a strong deterrent against China, with the goal of resisting or repelling an all-out Chinese invasion. We believe that all of the PAVN's SAC commands will be at least partially mechanized by 1986 and that when mechanization is completed, the PAVN

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Appendix A

**Soviet Influence on PAVN
TO&E**

There has been increasing evidence [redacted]
[redacted]

PAVN is organizing and equipping selected combat and combat-support units of their SACs along Soviet lines. [redacted]

[redacted]

[redacted] Imagery analysis of the 304th Division's headquarters garrison near Kep and two other garrisons in the 304th Division's area of operation showed that at least nine Soviet-built BMP APCs had been delivered to the division by early October 1980. The BMPs observed at the Kep garrison were parked near vehicle storage buildings which had an estimated capacity of at least 72 vehicles—large enough to store sufficient BMPs to equip the major elements of a mechanized infantry regiment. A new armored vehicle live-fire training range was also detected at the Kep garrison at that time. Subsequent imagery, obtained in April 1983, confirmed that the 2nd SAC's subordinate 164th Artillery Brigade, located southeast of Kep, had received at least one battery of four Soviet-produced BM-14/17 MRLs.

[redacted]

Elsewhere in northern Vietnam, imagery analysis indicates that elements of the 1st SAC may have begun mechanized infantry training under Soviet guidance. Imagery of October 1980 confirmed that 25 Soviet-built BRDM-2 armored reconnaissance vehicles had been delivered to Vinh Yen, the PAVN's principal armor training base in northern Vietnam, and one of the PAVN's main armored vehicle receiving and storage depots. The 1980 imagery also showed that an armored training regiment, consisting of three mixed battalions of tanks and APCs, was present at the Vinh Yen complex. Subsequent imagery of November 1983 indicated that elements of the 1st SAC—head-

quartered at Xuan Mai in MR III—had moved north to Vinh Yen and were undergoing combined infantry/armor or mechanized infantry training there. The 1983 imagery showed that in addition to the armored training regiment, a reconnaissance company of Soviet-built PT-76 light amphibious tanks and BRDM armored reconnaissance vehicles was present. We also observed a regimental-sized infantry garrison at Vinh Yen which contained infantry obstacle courses and several newly constructed infantry/armor assault ranges; and significantly, we observed the Vietnamese name for the 1st SAC—Quyet Thang—painted on a hillside in large, clear letters near the garrison. The identification of these infantry signatures at Vinh Yen and the presence of Soviet APCs indicates that mechanized infantry training involving PAVN 1st SAC units is under way there.

[redacted]

In addition to the evidence at Vinh Yen, Vietnamese military media reports have made three references since 1982 to a mechanized infantry regiment equipped with Soviet APCs that operates with the 1st SAC's subordinate 308th Infantry Division (figure 9). Imagery obtained in November 1983 showed that a large new garrison area—including vehicle storage buildings large enough to accommodate as many as 270 vehicles—had been constructed at the 1st SAC's headquarters area at Xuan Mai, southwest of Hanoi in MR III. The imagery also revealed small numbers of Soviet and US-built APCs, including BTR-60s, BMPs, and M-113s. Although we have not yet observed enough APCs to equip a mechanized infantry regiment, the evidence at Xuan Mai suggests that one may already exist at that location, or at least that the PAVN is in the process of establishing such a unit there. We believe that the new garrison at Xuan Mai may headquarter the 308th Infantry Division, heretofore unlocated.

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Figure 9
PAVN 1st Corps Mechanized Infantry Unit Training With a Soviet-Built BMP APC,
15 July 1984



Unclassified

While imagery evidence at Kep, Vihn Yen, and Xuan Mai strongly suggests that the PAVN's SACs are building Soviet-style mechanized infantry forces, [redacted]

[redacted] During a PAVN ground force training exercise conducted in northern Vietnam in October 1982, [redacted]

[redacted] At this time, this terminology is most often used to denote mechanized infantry within Soviet forces. [redacted]

Soviet organizational influence has also been observed in the 1st SAC's 45th Artillery Brigade, headquartered near Xuan Mai in MR III. October 1980 imagery revealed that the brigade was equipped with four firing battalions: two 85/100-

mm antitank gun battalions; one 122-mm D-74 field artillery battalion; and one 130-mm M-46 field artillery battalion. November 1983 imagery of the brigade showed that a battalion of 12 BM-14/17 and 6 BM-21 MRLs had replaced the 130-mm field artillery battalion, while both antitank gun battalions had been replaced by two battalions of 12 Soviet-built 122-mm D-30 howitzers. This is the first time we have observed operational PAVN artillery battalions equipped with the newer Soviet D-30 howitzer model; the D-30 is superior to older 122-mm M-1938 and to captured US 105-mm howitzers, which the PAVN had relied on previously. Significantly, a photograph published in the Vietnamese Army newspaper on 15 July 1984 shows PAVN gunners training with a new model 122-mm D-30. This howitzer—designated the 122-mm MD-30 by the Intelligence Community—

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was first identified with Soviet and Warsaw Pact ground forces in 1980. The weapon has an improved muzzle brake, a pneumatic braking system, and may have improved firing characteristics and more range than the standard D-30. This is the first identification of this howitzer outside of Soviet and Warsaw Pact forces. [redacted]
[redacted]

[redacted] 25X1

In May 1983, the 7th Division was identified [redacted] 25X1

[redacted] and elements of the division were subsequently reported to be in MR VII by the Vietnamese military media. Since 1981, the PAVN has developed a major ground force training base at Long Than in MR VII. Because this facility contains Soviet-style infantry, armor, and anti-armor training ranges, we believe that Soviet advisors are assigned there to assist the PAVN 343rd Training Division. Our analysis of April 1983 imagery showed Soviet-built BTR-60 APCs at Long Than, indicating that mechanized infantry training was underway there or about to begin. We believe this training may involve elements of the 7th Infantry Division, or other 4th SAC subordinates. Such training would be consistent with the pattern of mechanization of the SAC-subordinate infantry divisions already established in northern Vietnam since 1980. [redacted] 25X1 25X1

While the new organizational structure of the 45th Artillery Brigade does not match the TO&E of any present Soviet artillery unit, it does resemble a TO&E formerly used in some Soviet army-level artillery regiments. The replacement of the antitank guns with howitzers and the addition of MRLs within the brigade provides greater indirect-fire capability, more suitable to the mission of a corps-subordinate artillery brigade. The brigade would probably be collocated with corps headquarters to the rear of the immediate combat area during wartime. [redacted]

Additional PAVN defectors from artillery units stationed in Kampuchea have stated that these units are scheduled to receive newer Soviet-built artillery models to replace older captured US-built guns still widely used in Kampuchea. We identified newer Soviet-built models—including 130-mm M-46 field artillery guns and 152-mm howitzers—with PAVN artillery forces that took part in the 1982/83 and 1983/84 dry season operations along the Thai-Kampuchea border. In addition, Soviet-built howitzers and at least one truck-mounted MRL have been seen at a rear area training base and at other storage depots in Kampuchea since mid-1982. Despite these developments, we have no evidence that a widespread artillery replacement program has begun in Kampuchea. [redacted] 25X1 25X1

Our analysis of PAVN engineering forces based in northern Vietnam also reveals Soviet influence. For example, October 1980 imagery of the 1st SAC's subordinate 229th Engineering Brigade, headquartered at Dong Lau in MR III, revealed that its TO&E matched that of a Soviet engineering brigade. Additionally, we have identified a divisional engineering battalion near Hanoi modeled after a Soviet engineering battalion. In 1980 this battalion was equipped with Soviet-built GSP heavy amphibious ferries and PMP bridging vehicles (figure 8). By September 1983, this battalion had been organized into three Soviet-style assault crossing and bridging companies. [redacted]
[redacted]

PAVN soldiers who have defected from units in Kampuchea have also stated that infantry divisions there are scheduled for reorganization along Soviet lines. While there is no evidence from other sources to indicate that a widespread reorganization of Kampuchean-based forces has begun, there are indications that some units were preparing to reorganize. In February 1982, for example, a

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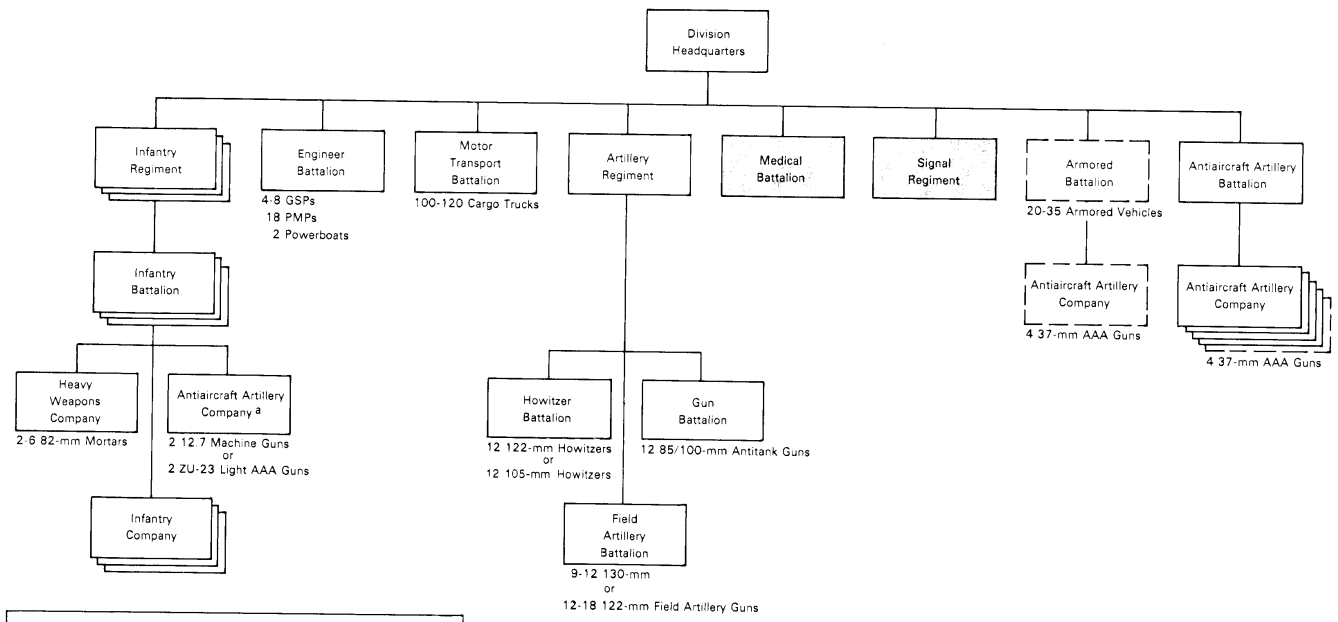
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Appendix B

Estimated Organization of a PAVN Infantry Division in Vietnam



^a May be organic to army corps or MR antiaircraft artillery brigade or regiment.
 Note: Dashed boxes indicate units not always present and shaded boxes indicate units reported to exist, but which have not been confirmed.

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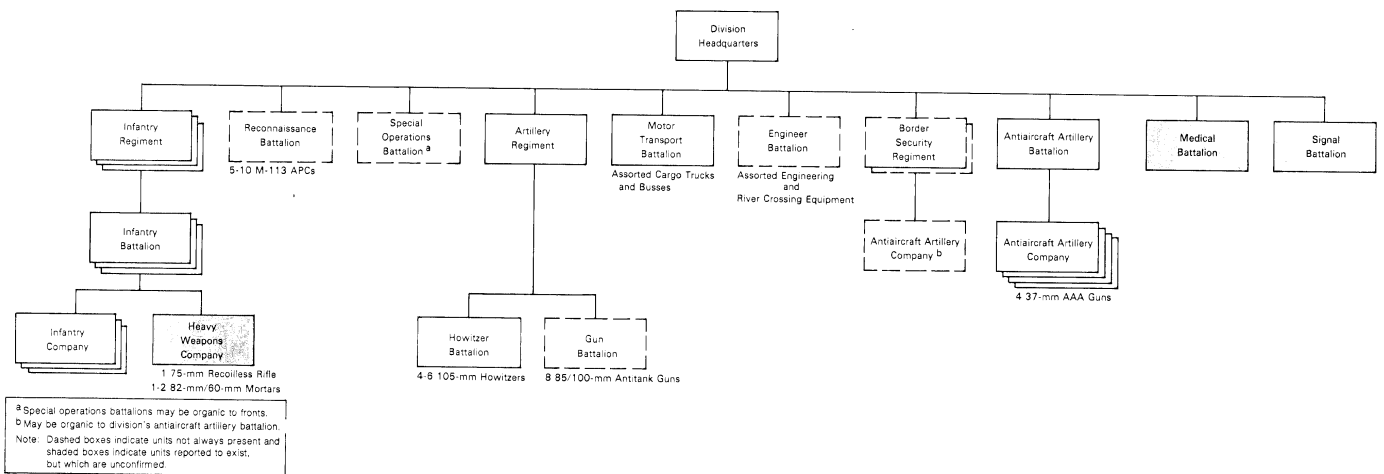
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Appendix C

Estimated Organization of a PAVN Infantry Division in Kampuchea

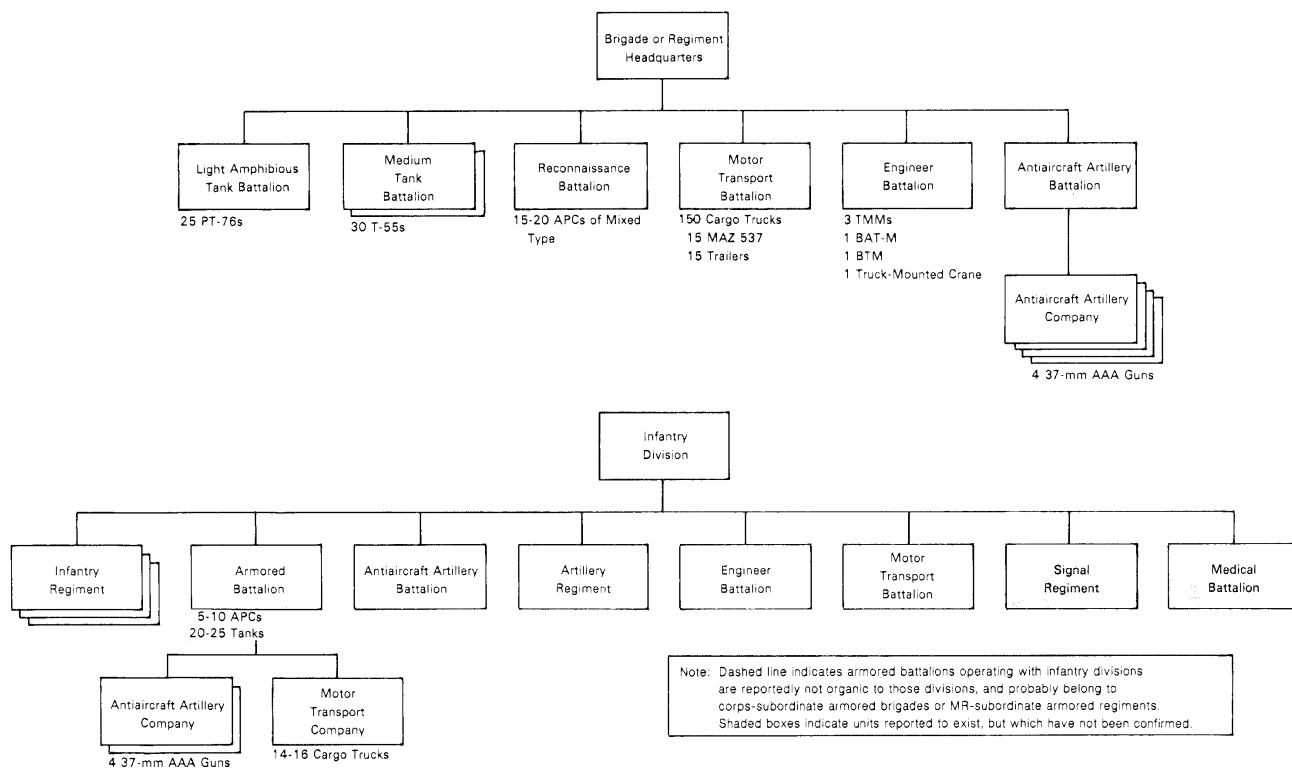


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Appendix D

Estimated Organization of a PAVN Armored Brigade/Regiment;
Organization of a PAVN Divisional Armored Battalion



Secret

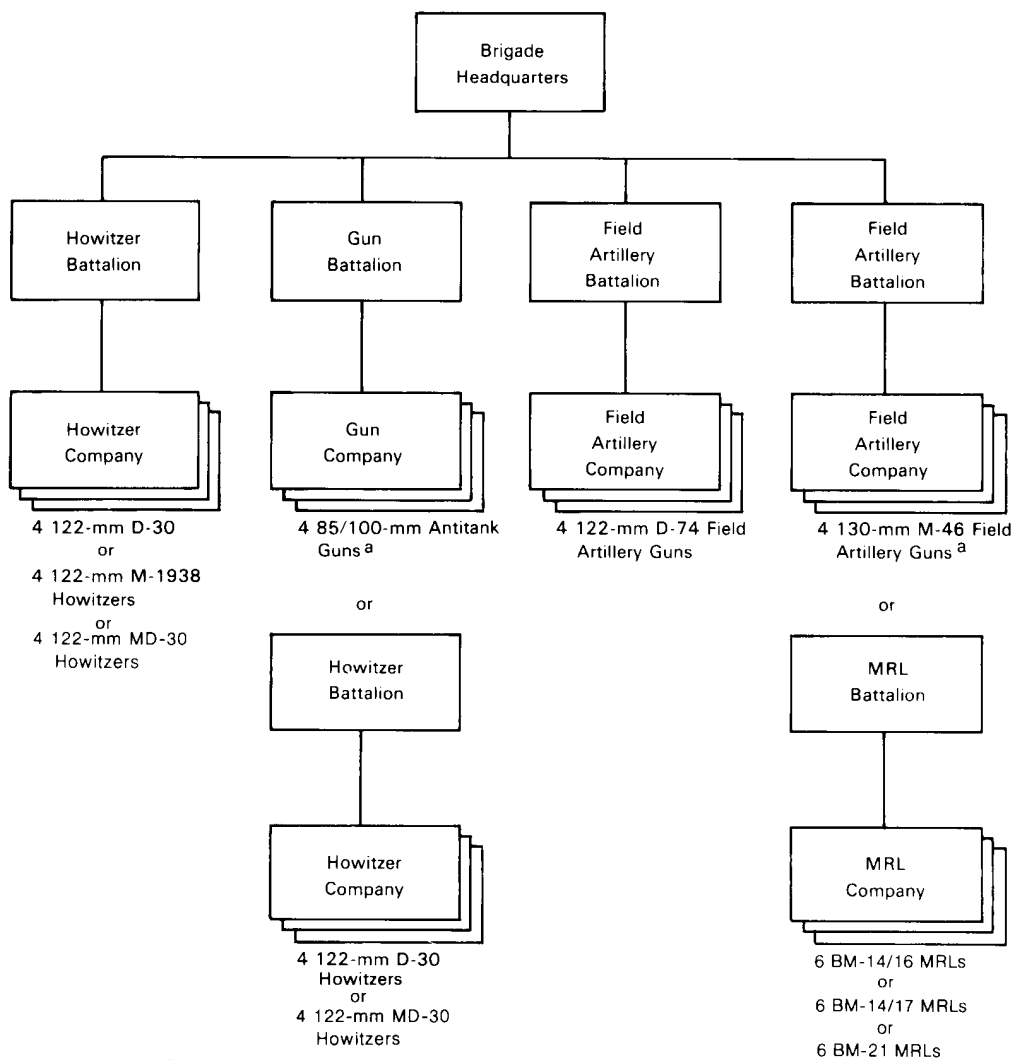
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Appendix E

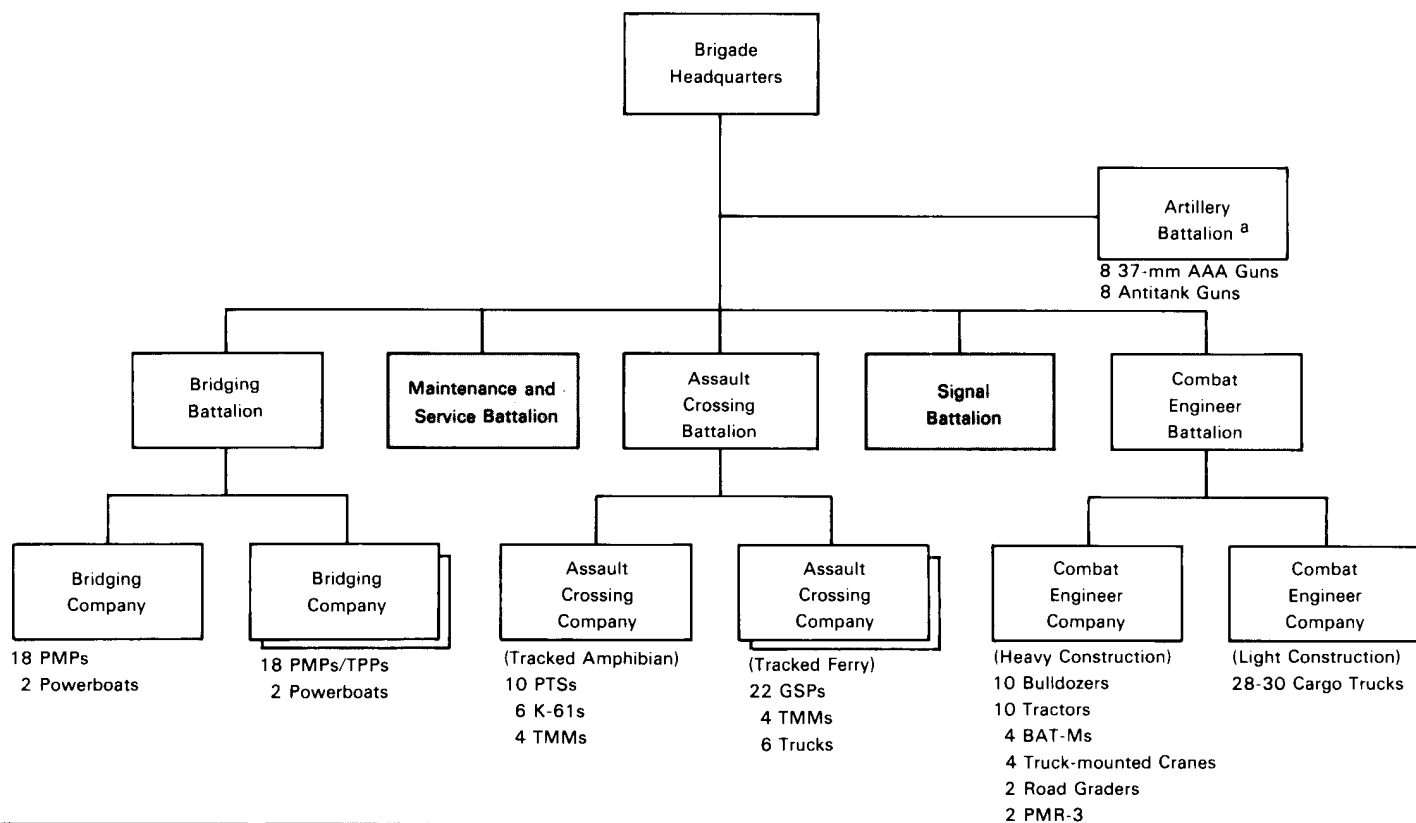
Estimated Organization of a PAVN Artillery Brigade



^a Imagery acquired in 1983 indicates the antitank gun battalion is being replaced by a second howitzer battalion and the field artillery battalions are being replaced by an MRL battalion.

Appendix F

Estimated Organization of a PAVN Engineering Brigade



^a Probably not organic to brigade; may be army corps asset assigned to provide combat support.
Note: Shaded boxes indicate units reported to exist, but which have not been confirmed.

Secret



Secret