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## Trends in North Korea's Ground Forces

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A Research Paper

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# **Trends in North Korea's Ground Forces**

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**A Research Paper**

This paper was prepared by [redacted] Office  
of East Asian Analysis. Comments and queries are  
welcome and may be directed to the Chief,  
Northeast Asia Division, OEA, [redacted]

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## **Trends in North Korea's Ground Forces**

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### **Overview**

*Information available  
as of 1 December 1986  
was used in this report.*

North Korea's ground forces development strategy suggests that the use of force remains an option for achieving P'yongyang's longstanding goal of reuniting the Korean peninsula. Since at least the late 1960s, the North has engaged in programs focusing first on expanding the size of its ground forces while improving firepower, and later on enhancing mobility through smaller, more maneuverable units deployed closer to the demilitarized zone. Although the ground forces are equipped with weapons of 1940-60s vintage, renewed military assistance from the Soviet Union raises the possibility that the North will be able to produce and deploy more modern weapons.

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, although most of the mechanized brigades will probably be fully mechanized by the end of the century, North Korea's ground forces will remain primarily a foot infantry force—as dictated by mountainous terrain and narrow approach routes. The regular ground forces will probably change little in overall size but will be buttressed by an increasingly capable reserve force.

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[redacted] North Korea will continue to depend on its own military production capabilities while trying to obtain assistance from the Soviets. P'yongyang will probably concentrate on completing a few weapon systems under development, such as a Scud-type surface-to-surface tactical missile and several self-propelled anti-aircraft gun systems, while producing at modest levels current weapons, such as self-propelled artillery and armored personnel carriers. The North will press the Soviets for weapons that are beyond its capability to develop and produce, such as modern armor and air defense weapons. [redacted]

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Overall, we believe that only a Soviet decision to transfer large quantities of modern weaponry to North Korea—which is unlikely, given Moscow's traditionally cautious approach to supplying its unpredictable ally in P'yongyang—would result in a dramatic improvement in the North's ground force capabilities. [redacted]

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**Trends in North Korea's  
Ground Forces**

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North Korea's ground forces, the sixth largest in the world and the major component in P'yongyang's military machine,

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Between the late 1970s and early 1980s, the focus changed from a major expansion of manpower and units to a reorganization of regular and reserve forces, formation of mechanized corps and brigades, and a forward deployment of forces toward the demilitarized zone (DMZ). Elements of the divisions that had already mechanized were combined with additional units and reorganized into four mechanized corps. P'yongyang also used some existing units to create an armor corps and an artillery corps. The armor and artillery corps and two of the mechanized corps were then moved to areas near the DMZ. An upgrade of the reserve forces, probably to play a more important role in P'yongyang's defense plans, began about the same time. [REDACTED]

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the presence of larger caliber weapons with reserve units. [REDACTED]

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During this period, [REDACTED]

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[REDACTED] changes in weapons deployment patterns.

Some major weapon systems, including tanks and APCs, began to enter the force in smaller numbers, suggesting production had slowed. To provide mobility for the mechanized force, the North combined its inventory of APCs with less expensive trucks imported from Japan to create a mix of mechanized-motorized brigades. Increased numbers of obsolete T-34 tanks—probably removed from storage—were identified with units deployed in the eastern half of the country, including one of the mechanized corps. Until 1981 the number of T-34s had been declining as newly produced T-55s and T-62s came on line. The reappearance of T-34s and the use of trucks as troop carriers may have been part of P'yongyang's effort to move ahead with its force reorganization without waiting for a full complement of new weapons.

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We do not know why P'yongyang moved away from the major buildup of the 1970s, but we suspect that economic problems were an important factor. Shortages of energy and industrial materials are endemic in

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### Historical Perspective

Our analysis of historical [REDACTED] data indicates that since at least the late 1960s P'yongyang has been pursuing ground force development programs directed first at expanding the force and increasing firepower and then at enhancing mobility. During the 1970s the North's domestic arms industry began to produce tanks, armored personnel carriers (APCs), and self-propelled artillery. As part of the buildup, the North also began to mechanize its forces, and, by the end of the decade, two infantry divisions had been fully mechanized, with a third under way. [REDACTED]

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the economy. Stagnating exports and costly oil imports have prevented P'yongyang from meeting its debt obligations. In 1982, Kim Il-song publicly announced increased priority for infrastructure projects involving agriculture, electric power, and transportation. Nonetheless, despite Kim's statements and the more recent highly publicized commitment of military forces to industrial projects, [REDACTED]

[REDACTED] over the last few years the North has added to its defense production capacity [REDACTED]

Additional improvements have come from the outside in the form of Soviet shipments of major weapon systems. During the past two years, Moscow has provided P'yongyang [REDACTED] MIG-23 Flogger fighters and enough components to equip about nine SA-3 Goa low-altitude, surface-to-air missile (SAM) sites. [REDACTED]

#### North Korean Ground Forces Today

[REDACTED] data base provides a good snapshot of the current status of the North's ground forces. The force stands at almost double its size in the 1960s, before the buildup began, and is equipped with a variety of Soviet-designed weapons, which P'yongyang has copied and modified to meet its needs. [REDACTED]

**Force Size and Manning.** [REDACTED] data show that the ground force numbers about 750,000 men, with a wartime strength of 820,000. The force consists of about 64 major maneuver units, including a total of 26 infantry divisions and 38 combat brigades. Also included with the ground forces are about 22 lightly armed brigades—about 65,000 troops—trained to conduct specialized warfare behind enemy lines. Complementing the regular forces is an increasingly capable ready reserve force organized into about 26 divisions and equipped with weapons that are being phased out of the regular forces.<sup>2</sup> [REDACTED]

<sup>2</sup> These figures are in general agreement with current Intelligence Community estimates of North Korean ground forces. For example, estimates of current peacetime strength range from 743,000 to 794,000. Varying assessments of growth in the forces since the 1981 reorganization and the use of different counting rules probably account for the discrepancies. [REDACTED]

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**Organization.** The Ministry of People's Armed Forces (MPAF) exercises control of the ground forces through about 14 corps-level organizations, eight of which have responsibility for a geographic region. A geographic corps typically includes one or more infantry divisions, an artillery brigade, a multiple rocket launcher (MRL) brigade, and an armor brigade. Six corps-level organizations, which are colocated with [REDACTED] several of the geographic corps, apparently have [REDACTED] functional rather than geographic responsibilities. Of [REDACTED] these six functional corps, four are mechanized, each [REDACTED] with a mix of five or six mechanized or motorized infantry brigades; one is an armor corps consisting of at least four tank brigades; and one is an artillery corps, with four brigades. Two of the mechanized corps and the armor and artillery corps have been deployed close to the DMZ and appear intended for use as a second-echelon exploitation force. The other two mechanized corps are deployed to the rear, one near each coast [REDACTED]

**Weapons.** The ground forces are equipped with large numbers of Soviet-designed weapons, albeit of 1940-60s vintage, whose makeup clearly reflects Korea's emphasis on firepower (see figure 2 and figure 3).

- **Fire support.** The most common models of tube artillery are the 122-mm howitzer, the 130-mm field gun, and the 152-mm gun-howitzer. P'yongyang has improved the mobility of its artillery by mounting some on tracked chassis to produce a family of self-propelled weapons unique to North Korea (see figure 4).
- **Armor.** The bulk of the medium tank force consists of T-54/55s, with lesser numbers of newer T-62 and the obsolete T-34 tanks (see figure 5).
- **Troop carriers.** Both APCs and trucks—mostly long-bed trucks—are used for troop transporters and reconnaissance, providing mobility for about one-third of the North's infantry battalions. The

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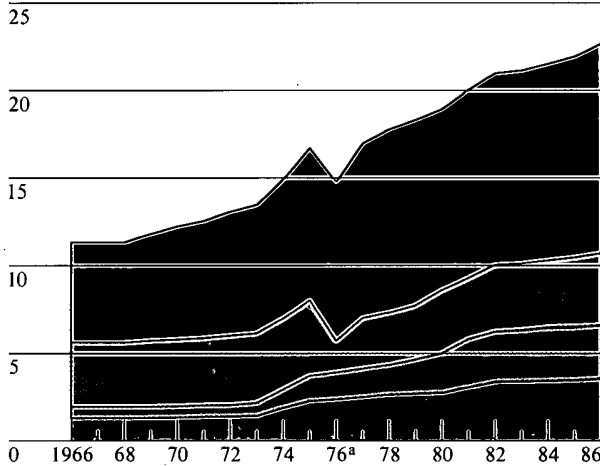
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**Figure 2**  
**North Korean Weapon Trends, 1966-86**

Thousands of weapons

■ Fire support  
■ Tactical air defense  
■ Troop carriers  
■ Tanks



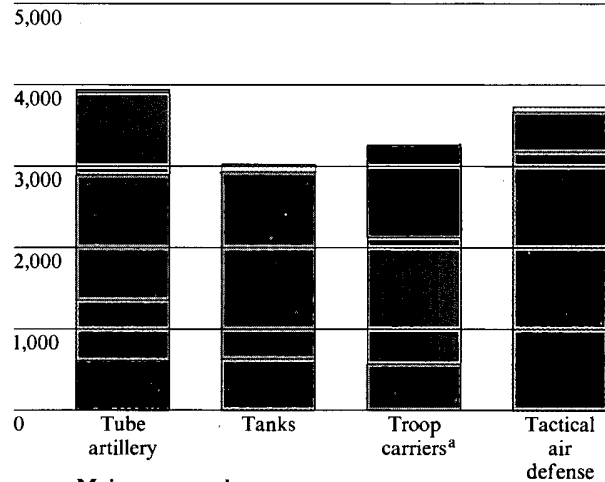
<sup>a</sup>Drop resulted from organizational change affecting numbers and types of weapons.

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**Figure 3**  
**Technological Ages of Weapons in the North Korean Ground Forces**

Number of weapons

■ 1970  
■ 1960  
■ 1950  
■ 1940  
■ 1930



<sup>a</sup>Half are trucks.

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APCs are primarily the domestically produced M-1973, a highly modified version of a Chinese 1960s model.

- *Air defense.* The North relies heavily on gun systems in both tactical and fixed defense roles. Some types are fielded in both towed and self-propelled models. The only missile systems deployed are the SA-2 and SA-3 surface-to-air missiles and an unknown number of the SA-7, a manpack, shoulder-launched missile.

#### Operations and Tactics

The little direct evidence we have on how the North Koreans plan to fight a war with the South, on the basis of their force development and deployment to

date, suggests they probably will focus on penetrating Seoul's forward defenses and defeating the bulk of South Korean and US forces before reinforcements can arrive. We assume the element of surprise would play a major role in these plans, giving P'yongyang the advantage of choosing the time and place and of massing superior forces in critical areas.

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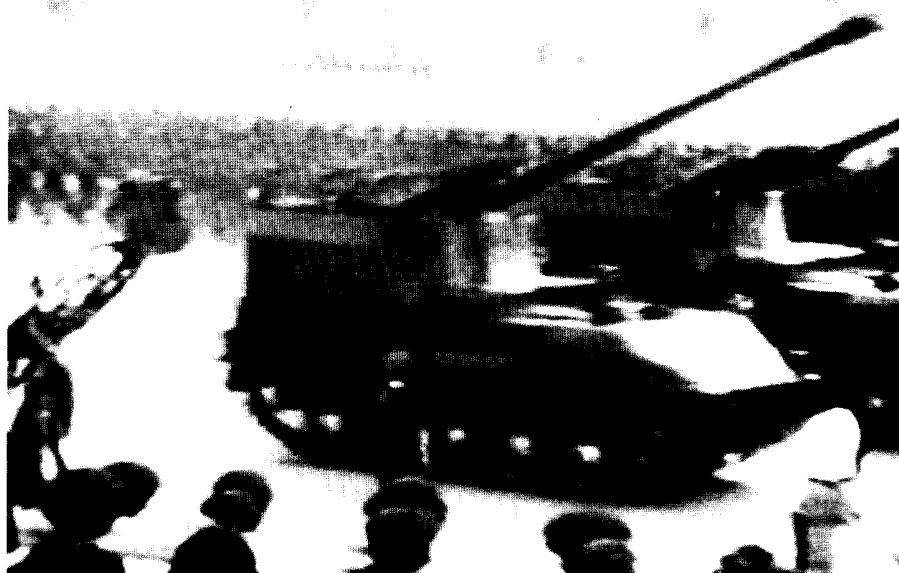
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Figure 4. North Korean self-propelled artillery



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P'yongyang probably would employ one or more of the following tactical options in implementing such an offensive plan:

- *Manpower.* Use the DMZ divisions backed by massed armor and artillery to break through the South's defenses.
- *Firepower.* Use substantial amounts of firepower, primarily from artillery, to soften and open holes in the defense.
- *Maneuver.* Use the mechanized corps as a second-echelon force to exploit any breach in the South's defenses or to block a counterattack.
- *Infiltrate.* Use the special operations forces to infiltrate behind the DMZ in large numbers, spread panic, and cause the South's DMZ defenders to desert their defenses and open the way for the North's penetration.

North Korean units have trained in using a conventional ground attack coupled with a rear area assault by special operations forces, as well as a massive artillery barrage followed by a conventional ground attack with additional supporting armor and artillery.

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#### Looking Ahead

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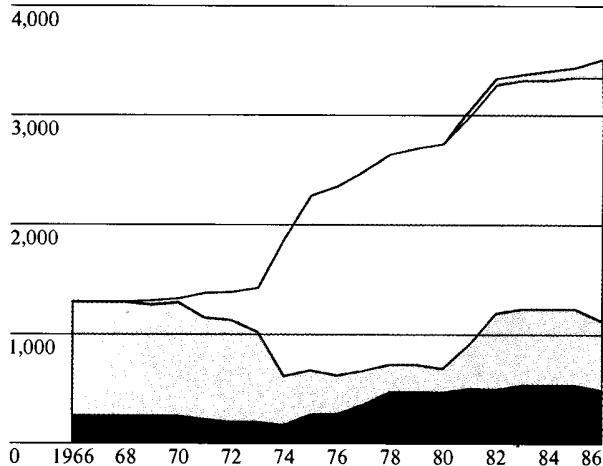
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**Figure 5**  
**North Korean Armor, 1966-86**

Number of tanks

- ☐ T-62  
☐ T-54/55  
☐ T-34  
☒ Light tanks/assault guns



**North Korea: Ground Force Weapons, December 1986<sup>a</sup>**

**Fire support**

Tube artillery	3,900
Multiple rocket launchers	2,100
Mortars	5,800

**Armor**

Medium tanks	3,000
Light tanks/assault guns	500

**Troop carriers**

Armored personnel carriers	1,500
Trucks as APCs	1,500

**Tactical air defense<sup>b</sup>**

Antiaircraft artillery	4,100
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<sup>a</sup> Does not include weapons with reserve units.

<sup>b</sup> Another 5,900 weapons are deployed in fixed defenses and in support of the air forces.

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In forming our projections, we have considered several key factors that we believe will influence future force planning. Perhaps most important will be the state of the North's economy. We estimate that annual economic growth for at least the next 10 years will average only 2 to 3 percent, enough to permit some continued force growth but too little to free P'yongyang of difficult choices between new civil or more sophisticated and expensive military programs. With defense spending already high—up to 25 percent of gross national product (GNP) by our estimates—P'yongyang has little latitude for shifting more resources from heavy industry or agriculture to the military.

Nor is P'yongyang likely to find economic relief abroad. The North remains at the bottom of the international credit list, having failed repeatedly to meet its hard currency debt obligations. Most Western countries, therefore, are unwilling to provide financing for sales to North Korea. Faced with few options, P'yongyang probably will continue pushing for technological and military aid from Moscow. Assistance from Beijing is also possible, but for the most part China has not yet deployed in quantity in its own forces the modern weapons P'yongyang wants.

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North Korea's poor credit rating, as well as its traditional emphasis on self-reliance, has precluded the acquisition of modern technology and expertise. In our judgment, the North would need a major infusion of technology in such key areas as electronics, precision machine tools, and metals technology, as well as

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more and better training programs for its own scientists and engineers, before it could effectively produce modern weapons. [REDACTED]

A less clear-cut factor influencing the development of North Korea's ground forces is the succession issue. Kim Il-song's advancing age makes a change in leadership in P'yongyang likely within the next decade. Overt sources indicate that Kim's son—Kim Chong-il—already is in charge of many of the country's daily affairs, and we expect that senior military leaders, who Kim Il-song has handpicked, could well transfer their loyalty to Kim Chong-il. Upon succession, however, we doubt the younger Kim would have the absolute authority his father enjoys. Although Kim Chong-il might be willing to accede to requests for additional resource allocations to weapon programs in an effort to ensure military support, he still would be limited by economic conditions. [REDACTED]

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The North's view of South Korean force improvements will be another major factor in its military planning. In the early 1980s the South embarked on the second of its force improvement programs intended to close the gap with the North in terms of both numbers and firepower. Major aspects of the plan are an increase in the number and range of artillery weapons, including self-propelled models; deployment of the indigenously produced K-1 tank incorporating some of the most modern features of the US M-1 tank; and introduction of the South's own infantry fighting vehicle on the basis of a US design for an APC from the late 1950s. According to current Intelligence Community estimates, South Korea's ground forces consist of 544,000 personnel organized into 19 infantry divisions, two mechanized divisions, two armor brigades, and one infantry brigade. Additionally, South Korea's Naval Marine Force has two infantry divisions and an infantry brigade. The inventory of South Korean major ground force weapons includes:

Artillery	2,600
Medium tanks	1,260
Armored personnel carriers	700
[REDACTED]	

Although budget cuts and technological problems have delayed South Korea's plans, P'yongyang almost certainly is monitoring progress with concern, particularly in light of the potential the South's dynamic economic performance offers. The South Korean economy already is about two and a half times larger and is currently growing two to three times the rate of the North's. We estimate that Seoul will maintain a 5.5- to 6-percent allocation of GNP for defense spending. At this rate the South will be outspending the North on defense in absolute terms by at least the end of the decade. [REDACTED]

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In considering the factors that could affect military planning for North Korea's ground forces, we have also weighed the element of time. Because of the relatively large size of North Korea's ground forces, overall changes, particularly those involving the introduction of new weapon systems, stretch out over several years. Thus, our projections for the near term (up to 10 years) are heavily influenced by the reorganization in progress and weapon systems under development. Long-term projections (10 to 20 years) are more arbitrary and are based on our assumptions ranging from the potential for economic growth and technological breakthroughs in North Korea to the quality and quantity of outside aid, particularly from the Soviet Union. [REDACTED]

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#### Future Forces

Our projections suggest that for the next two decades North Korea will pursue a ground force development program that relies principally on its own capabilities, combined with selective aid from the Soviet Union. Manning of the active force probably is near its peak, and we expect only limited additional growth (see figure 6.) Our projections show an increase, however, in the size of the reserves, which we believe also will be equipped with better weapons. P'yongyang will concentrate its resources on completing development of a few new weapon systems, such as a Scud-type tactical surface-to-surface missile and several self-propelled anti-aircraft gun systems. To complement its

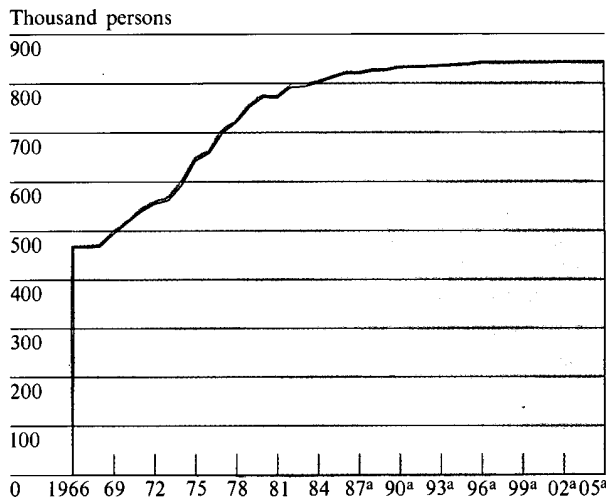
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**Figure 6**  
**North Korean Ground Forces Wartime**  
**Manning, 1966-2005**



<sup>a</sup> Projected.

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units will be reformed, but at least two infantry divisions already have been, and at least another three that had been based in geographically strategic areas probably will be [redacted]

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To supplement the active force, we project P'yongyang will continue to upgrade the capabilities of some reserve units. District commands have been formed to control local forces organized into divisional equivalents. These units are being equipped with weapons retired from the active force. For example, in the Liberation Day ceremonies in 1985 reserve forces paraded with multiple rocket launchers, towed field artillery, and antiaircraft guns—weapons that [redacted] are being replaced in the active force by newer models. We have also seen such equipment on imagery of industrial facilities, where it is probably used by personnel in reserve units. We believe the North has already formed about 26 reserve infantry divisions, as well as several artillery and possibly armor units. North Korea maintains a sizable force—perhaps as many as 5 million personnel in varying degrees of reserve status—from which it could draw to form additional reserve divisions. They would be equipped with weapons retired from the regular forces. [redacted]

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efforts, P'yongyang, we believe, will try hard to acquire a new infusion of weapons and technology from the Soviets, particularly in the areas of armor and air defense. [redacted]

**Size and Organization.** The limited growth under way in the force will continue to focus on fully equipping the six new corps, and on eliminating gaps created when forming them. Analysis [redacted] suggests that the manpower—as well as the equipment—for the four mechanized corps came primarily from about nine infantry divisions, which were widely dispersed throughout the country. The armor corps was formed primarily from previously existing units of two armor divisions directly subordinate to the Ministry of People's Armed Forces (MPAF) and an armor brigade that had been subordinate to one of the geographic corps. MPAF units probably were also used to create the nucleus of an artillery corps, while the remaining units to fill out the corps were newly formed. We are uncertain how many of the depleted

**Weapons.** We expect that the moderate pace in fielding weapon systems already in production will continue through the remainder of the 1980s, along with the introduction of several systems under development. Domestically produced weapons incorporating newly acquired Soviet technology probably will not begin to appear with operational units before the early 1990s, although the Soviets could transfer small numbers of such weapons to North Korea at any time:

- **Artillery.** Emphasis will continue on increasing the size of the self-propelled artillery force (see figure 7). We believe that, to correct a major deficiency in current self-propelled artillery, by the mid-1990s the North will introduce several models that incorporate a fully enclosed turret design to afford better

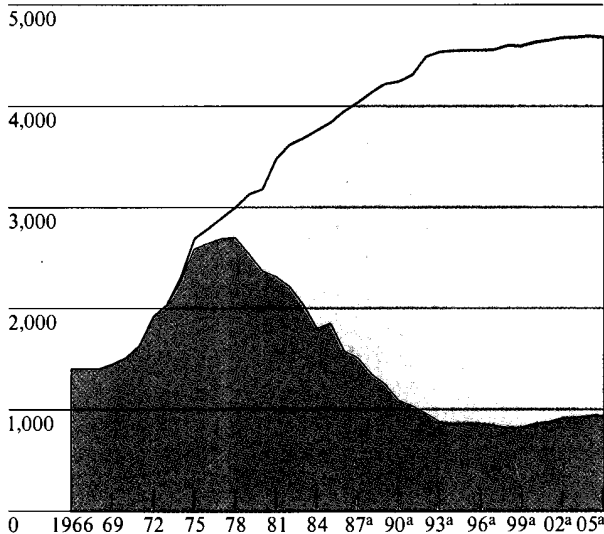
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**Figure 7**  
**North Korean Artillery, 1966-2005**

Number of weapons

□ Self-propelled  
■ Towed

<sup>a</sup> Projected.

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protection for the crew. Towed weapons with long-range capabilities, such as the 122-mm and 130-mm field guns, will probably remain in ground force units.

- **Armor.** We expect that by the early 1990s the North, with Soviet help, could begin production of the Soviet T-72 medium tank. Deployment of the T-62, North Korea's newest tank, appeared to end in the early 1980s, although [redacted] T-62 chassis being used for a new self-propelled antiaircraft weapon system. Because of the marginal improvement of the T-62 over the T-55—the tank the North has the greatest number of—and the lack of evidence that significant numbers of T-62s are

being deployed into armor units, we believe that any additional T-62 production and deployment will be negligible

The T-72 would be a logical follow-on to the T-55 and T-62 programs. Moscow may even supply P'yongyang with a limited number of T-72s before the end of this decade, perhaps in response to the deployment of the South's K-1 tank (see figure 8). The Soviets have exported the T-72 to such countries as Syria, India, Iraq, Algeria, and Libya; and Moscow has licensed production of a version of the T-72 in Poland, Czechoslovakia, and India. P'yongyang may also decide to upgrade the large force of T-54/55 tanks to improve their operating capabilities and useful life.

- **Troop carriers.** North Korea probably will continue to produce and deploy the M-1973 APC, and what appears to be an indigenous infantry fighting vehicle on the basis of the M-1973 design, to replace the long-bed trucks in its mechanized forces. Nonetheless, the majority of North Korean infantry will probably remain on foot because of the high cost of mechanization, and because Korea's mountainous terrain and narrow valleys are not conducive to armor operations.
- **Air defense.** We believe that by the early-to-middle 1990s the Soviets will probably assist P'yongyang in deploying the SA-9 and SA-6 SAM systems, which would provide better air defense for mechanized and armor units. Both systems have been widely deployed outside the Soviet Union and Warsaw Pact countries, including Syria, Libya, and Yugoslavia. The SA-9 is a mobile, low-altitude missile system, while the SA-6 is a mobile system that is effective against high-performance aircraft at low-to-medium altitudes. Overall, however, gun systems—including a growing number of self-propelled chassis—will continue to provide the bulk of the air defense protection for the ground forces (see figure 9 and figure 10).

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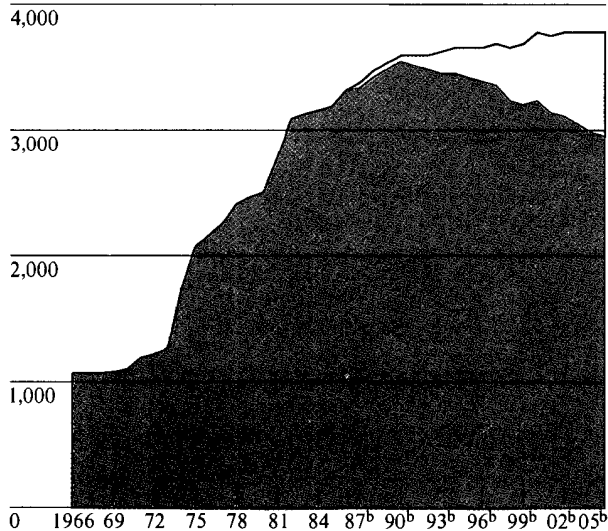
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**Figure 8**  
**North Korean Tanks, 1966-2005**

Number of weapons

□ New tanks<sup>a</sup>  
■ Old tanks

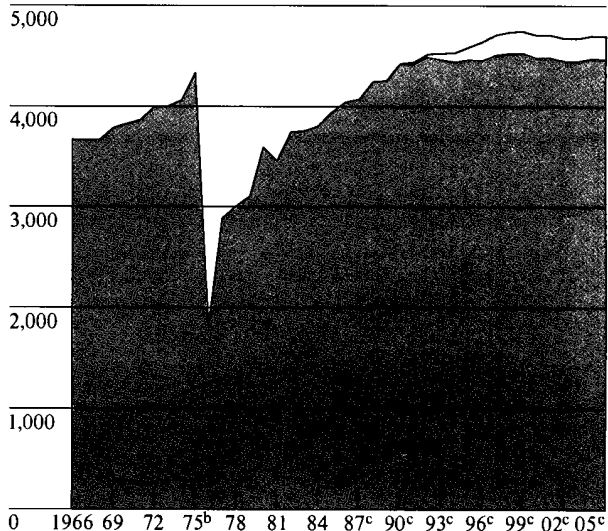
<sup>a</sup>T-72 and new light tank.<sup>b</sup>Projected.

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**Figure 9**  
**North Korean Tactical Air Defense Weapons, 1966-2005**

Number of weapons

□ Missiles<sup>a</sup>  
■ Guns

<sup>a</sup>Does not include SA-7.<sup>b</sup>Drop resulted from organizational change affecting numbers and types of weapons.<sup>c</sup>Projected.

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- **Tactical missiles.** Initial deployment of a tactical missile system similar to the Soviet Scud B is likely before the end of the decade, and about two brigades, each equipped with 12 missile launchers, could be operational by the mid-1990s. [redacted] test launches have been conducted this year. The Scud B has a maximum range of 300 kilometers, giving P'yongyang more options for striking targets in the South. [redacted]

#### What Could Change the Forecast?

Our projections do not point to another surge in force improvements, and we have no evidence P'yongyang has been laying the groundwork to launch such an effort in the 1990s. We cannot rule out that possibility, however, because the North has made abrupt

changes in force-development programs in the past. In arriving at our projections, we could have overestimated the severity of the North's economic and technological difficulties. P'yongyang may have used the period since the late 1970s to assimilate its earlier gains and at the same time to begin investing in the plant, equipment, and technology necessary to upgrade its defense industry to produce more modern weaponry. [redacted]

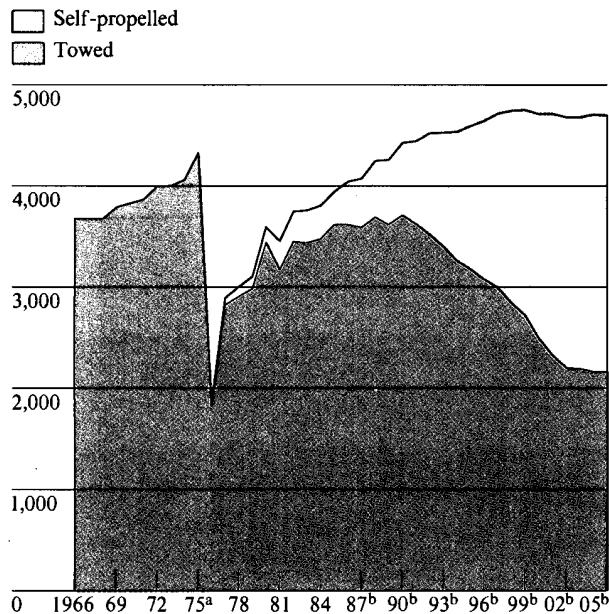
The evolution of North Korean-Soviet relations could also affect the accuracy of our projections because we view Moscow's role as key to P'yongyang's ground

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**Figure 10**  
**North Korean Tactical Air Defense**  
**Weapons, 1966-2005**

Number of weapons



<sup>a</sup>Drop resulted from organizational change affecting numbers and types of weapons.

<sup>b</sup>Projected.

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force modernization efforts. On its own, North Korea is likely to make only limited progress. With a modest amount of Soviet aid [redacted]

[redacted] modernization will affect only a part of the force. The Soviets in the past have been careful about the types and amount of military aid they have provided to P'yongyang. Nonetheless, P'yongyang and Moscow have drawn steadily closer over the past two years, with recent highlights including a Kim-Gorbachev summit in Moscow and the first joint military exercise off North Korea's northeastern coast. The USSR has the capability to transfer large quantities of modern weaponry to North Korea, and such a shift in policy would cause a dramatic improvement in North Korea's ground force capabilities [redacted]

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