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CHECKING SOVIET ARMOR'S THREAT TO NATO

INTRODUCTION

The debate over the proposed U.S.-Soviet Intermediate-Range Nuclear Force (INF) Treaty is revealing the importance of conventional forces to keeping peace in Europe. A key element in the conventional lineup is the Soviet armor advantage: tanks, infantry fighting vehicles, and armored personnel carriers. To tanks and armored fighting vehicles, Moscow assigns the central role in attacking the West. And Moscow is well equipped to do so, with more than twice as many tanks as all of NATO.

In the wake of the INF agreement, modernization of NATO's tactical nuclear forces becomes an urgent priority. As important is the upgrading of NATO's conventional anti-armor defenses. The Soviet civilian leadership is talking about adopting a defensive military strategy in Europe, but there is no evidence of translating such talk into reality. Warsaw Pact military exercises still practice surprise offensive attacks on NATO, and nothing has been done to reduce Warsaw Pact superiority in tanks and artillery — weapons to be used in a surprise offensive — on the central front. The Soviet Union's military planning still requires its forces to break through NATO's lines as quickly as possible. Large numbers of tanks and other armored vehicles are to rush toward NATO's most important political and military installations before the Western Alliance has an opportunity to coordinate counterattacks or use nuclear weapons. The Soviets place great reliance on tanks because of their mobility, firepower, and protection for crews. The most effective way of defending against such armored formations is coordinated ground and air operations employing:

♦ ♦ **Tanks.** One way to kill a tank is with another tank. NATO tanks on the central front include the U.S. *Abrams*, the German-built *Leopard*-series tanks, and the British *Challenger* and *Chieftan*.

♦ ♦ **Man-portable anti-tank guided missiles.** NATO fields such anti-tank weapons as the U.S. *Dragon* and the French-German *Milan*. Many of these anti-tank missiles are tube-launched, optically sighted, wire-guided systems called TOWs. Both long and

medium-range anti-tank missiles use the TOW technology. Troops using TOW missiles must remain exposed to enemy fire as they aim, fire, and guide the missile to its target.

♦ ♦ **Attack helicopters.** Helicopter gunships armed with anti-tank weapons are an important element in defending against armored formations. The U.S. *Apache* and *Cobra*, and the British *Lynx* and the French *Gazelle* helicopters all carry guided anti-tank missiles such as the TOW and the laser-guided *Hellfire* missile.

♦ ♦ **Fixed-wing aircraft.** Fixed-wing aircraft such as the U.S. A-10*Thunderbolt II* are important in the battle against enemy armored formations. They provide speed and firepower superior to that offered by attack helicopters. Unlike fixed-wing aircraft, though, helicopters offer greater protection to infantry in close-in combat and can hover around the scene of the battle for a sustained period of time.

NATO, of course, does not need as many tanks and other armored vehicles as the Soviet-led Warsaw Pact because NATO, unlike the Pact, plans to use its weapons only to defend, not attack. For defense against Soviet armor, NATO traditionally has relied on such battlefield (or tactical) nuclear weapons as nuclear artillery shells, land mines, and aircraft-delivered bombs. The threat of retaliation by tactical nuclear weapons forces the Soviets to disperse their tanks and thus not mass them for an attack.

It was the key anti-armor role played by tactical nuclear weapons that prompted NATO members in 1983 to pledge to modernize the Alliance's aging tactical nuclear weapon arsenal. This decision was reconfirmed at last November's meeting of NATO defense ministers in Monterey, California.

To improve its conventional defenses against Soviet armor, the U.S. should:

Increase the rate at which M-1 *Abrams* tanks are converted to M1A1s by placing larger guns on them to increase their ability to destroy modern Soviet tanks.

Procure all the 675 AH-64 *Apache* attack helicopters originally planned to defend ground forces from enemy armor.

Continue to develop advanced low-cost anti-tank missiles such as the proposed "hypervelocity" missile that destroys tanks through the force of impact rather than with explosives.

Purchase the French-German *Milan 2* anti-tank missile for the U.S. Army to replace the inferior *Dragon.*

As an alliance, NATO should:

Shift more brigades forward to lessen dependence on reinforcements from rear areas.

Increase specialization of missions among members of the Alliance to prevent unnecessary duplication and to give each NATO member responsibility for specific tasks.

Continue to develop and deploy the means, including surveillance and target identification systems, to attack targets behind Warsaw Pact lines, such as Soviet reinforcements.

Establish a Command Covering Force to provide the Alliance with a combat-ready multinational force able to deploy anywhere along the front lines.

THE NATURE OF ARMOR

Armor is a term commonly used to refer to tanks and armored personnel carriers (APCs). A tank is an armored vehicle that moves on caterpillar treads. Because of its firepower, rapid movement, and ability to operate over most kinds of terrain, tanks have been the weapons of choice for invading armies in the 20th century. Armored personnel carriers also are armored and move on treads. They are used to transport squads of six to twelve infantrymen into battle, thereby reducing the danger from enemy small arms fire and from shrapnel from artillery shells and mortars.

Tanks were first introduced into battle in World War I. In the period between the world wars, Germany and the Soviet Union invested heavily in building large tank forces, the value of which was demonstrated by the success of Nazi Germany's lightning raids deep into Russia in 1941. The Soviets had been developing their own theories on the impact of new weapons systems like tanks, artillery, and aircraft on the future of warfare. Soviet Generals led by Mikhail Tukhachevskiy formulated theories in the 1920s and 1930s on "deep operations," in which tanks and mechanized formations played an important role in defeating adversaries by striking at their rear areas. This continues to be the underlying rationale for Moscow's armored force production and deployment.

THE WARSAW PACT ARMOR ADVANTAGE

The Soviet Union maintains very large ground forces pointed at Central Europe, an area the Soviet Army candidly refers to as the "Western Theater of Military Operations." Soviet military strategy calls for the rapid defeat of Western Europe before NATO's superior industrial infrastructure mobilizes for war or before NATO political leaders decide to use nuclear weapons.

To this end, the Soviets emphasize maintaining superior armored forces: tank divisions and motorized rifle divisions combining large numbers of tanks, armored personnel carriers, and infantry fighting vehicles. The Soviet Union has about 53,000 tanks, 19,500 of which are directed against NATO's central front. The Warsaw Pact as a whole has 27,500 tanks deployed in East Germany, Poland, Czechoslovakia, and the western areas of the USSR (the Baltic, Byelorussian, and Carpathian Military Districts).

Late Generation Models. The USSR is rapidly modernizing its tank force with advanced models like the T-64B, an advanced version of the T-64 first introduced in 1970. In addition, Moscow is deploying the T-72, introduced in 1972, which has more advanced armament and fire control systems than the original T-64 and the T-80. The T-80, along

with the T-64B, is the USSR's main tank deployed with combat-ready units in East Germany. The T-80, first seen in 1981, carries improved armor plating for better protection against NATO anti-tank missiles. Of the some 53,000 tanks in the Soviet inventory, about 20,000 are later generation models. Moscow deploys around 32,000 armored fighting vehicles facing the central front.[1] Finally, the Soviet Union has some 34,000 anti-tank guided missile launchers to destroy NATO armored vehicles.[2]

Victims of Submarines. In comparison, NATO has about 10,586 main battle tanks deployed in West Germany, of which only about 6,500 are in active combat-ready units.[3] The remainder are in storage west of the Rhine river and in Southwest Germany. The main U.S. tank is the M-1 *Abrams*, first introduced into the U.S. Army in 1980. The M-1 provides improved protection, mobility, and firepower over its predecessor, the M-60, which is still in use with many active Army and National Guard units. The Belgians, Danes, and Canadians currently use the German-built *Leopard 1,* a 1960s tank that is becoming increasingly obsolete relative to developments in Soviet armor technology. The British have 1,200 tanks, 300 of which are modern *Challengers* being fielded to replace the *Chieftan,* which was produced between 1962 and the early 1970s. The West Germans are upgrading 1,300 of their 2,437 *Leopard 1A1* tanks with improved fire control systems and larger guns. In addition, the *Leopard 2,* introduced into the German army in 1979, provides West Germany with an advanced, highly capable tank.

Many of NATO's tanks that will reinforce the front line divisions will have to be transported from the U.S. and Great Britain. In wartime, some of these tanks would be victims of Soviet submarine attacks on allied transport ships. Other NATO tanks would come from France and the Netherlands along routes certain to be interdicted by Soviet attack aircraft. The 16,500 U.S. anti-tank missile launchers, meanwhile, are becoming gradually ineffective because of Soviet advancements in armor hardening techniques.[4]

SOVIET MILITARY STRATEGY

Soviet military strategy understandably is designed to take optimal advantage of NATO weaknesses. It emphasizes offensive operations. The Soviets almost certainly intend to strike first and to continue attacking until NATO is defeated or sues for peace on terms favorable to Moscow.

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1 Figures are calculated from data provided in the International Institute for Strategic Studies, *Military Balance 1987-88* (London, 1988) and U.S. Department of Defense, *Soviet Military Power 1987* (Washington, D.C.: Government Printing Office, 1987).

2 John M. Collins, *U.S.-Soviet Military Balance 1980-1985* (New York: Pergamon-Brassey's, 1985), pp. 129-130.

3 International Institute for Strategic Studies, *op. cit.*; for example, the U.S. has 5000 main battle tanks in Germany, but fewer than half are in active service; the rest are in pre-positioned stocks, awaiting the arrival of crews from the U.S. in the event of war.

4 Collins, *op. cit.,* pp. 129-130.

Soviet forces are structured to conduct high speed offensive operations and to disrupt NATO's rear area — political and military command centers, reserve forces, and supply stores. According to Army General P. Kurochkin, writing in *Voennaya mysl'*, the journal of the Soviet General Staff, the Soviets calculate that, if their forces can break through NATO's forward defenses, they will seize or destroy vital command centers and nuclear weapon stores before NATO commanders can order the use of these weapons.[5]

Soviet Use of Size and Surprise

The Soviets believe that overwhelming superiority in forces is generally required to ensure success in an offensive. In the first phase of an invasion, Soviet military strategy calls for attack along the entire West German border. Attacking along this broad front forces NATO to stretch its own numerically inferior forces along an equally long expanse and it disperses Soviet forces enough to deprive NATO of targets for nuclear strikes. This dispersal of forces, however, creates a problem for Soviet Army commanders: It makes it much more difficult to force decisive breakthroughs in NATO defenses. In the second phase of attack, the Soviets plan to concentrate their forces to break through the weak points in NATO's defenses exposed by the initial engagement.[6]

Soviet strategy aims at attaining surprise to enable attack with a force level lower than might otherwise be necessary.[7] Soviet military literature frequently stresses the importance of surprise to deal a psychological blow to the enemy, preempt his ability to use nuclear weapons, and obstruct his mobilization and reinforcement operations.[8] This emphasis on surprise could result in a quick Soviet victory, given NATO's vulnerable forward defenses.

Soviet Exploitation of Gaps in NATO Defenses

To exploit best the penetration of NATO lines by the initial attack, the Soviets have revived the World War II concept of maneuver groups, today called Operational Maneuver Groups or OMGs.[9] These vary in size from division strength up to several divisions, which

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5 See, Army General P. Kurochkin, "Operations of Tank Armies in Operational Depth," *Voennaya mysl'* (n. 11, 1964), FBIS translation FDD 924.

6 Colonel V. Chervonobab, "Principles of Military Art and their Development," *Voennaya mysl'* (n. 11, 1973).

7 According to the Office of the Chief of Staff, U.S. Army, a 1.5:1 advantage in on-line forces is sufficient to guarantee a 5-6:1 advantage in combat power on a few select axes of attack, a ratio that assures success in an offensive.

8 See, for example, Major General S. P. Solov'ev, "Strategic Surprise," *Voennaya mysl'* (n. 1, 1979) and Colonel N. Shishkin, "Vnezapnost' v boyu i puti ee dostizheniya" (Surprise in Battle and Ways of Achieving It), *Voennii vestnik* (no. 6, 1978).

9 The use of maneuver groups in World War II and their role in contemporary strategy is discussed in Colonel A. Poltavets, "Use of Support Echelons and Reserves in Offensive Operations," *Voennaya mysl'* (n. 8, 1973).

comprise an "army."[10] These formations consist of a large number of tanks and infantry fighting vehicles and are intended to exploit breaches in NATO lines by moving at high speed deep into the enemy rear to seize nuclear weapons storage sites, command, control, and communications facilities, and supply bases before NATO can respond.

Behind these Soviet front-line forces are the second echelon troops and reserve formations. The Soviets place great importance on the timely introduction of these forces into battle.[11] A delay in their arrival could enable NATO to prepare for organized resistance and would upset the flow of the offensive. These second echelon Soviet forces are assuming increased importance in NATO defense planning.

NATO DEFENSE PLANNING

To exploit weaknesses in Soviet military planning, NATO is developing the capability to strike at Warsaw Pact armored divisions before these divisions enter the battle. To do this, the Western Alliance is reassessing how it traditionally has deterred a Warsaw Pact attack.

NATO strategy up to now has relied to a large extent on the ultimate threat of a retaliatory U.S. strategic nuclear strike against the USSR. Increasingly, the credibility of this nuclear deterrent is being questioned. U.S. allies ask if the U.S. really would risk its own cities to save Europe from Warsaw Pact attack. In addition, NATO's tactical nuclear weapons, because of their short range, could be fired on attacking Warsaw Pact forces inside West German territory if they were used. Understandably, this worries the West Germans. Consequently, NATO is considering conventional means to deter an attack and to develop longer-range tactical nuclear weapons to improve the credibility of NATO's nuclear deterrent.

The Importance of Forward Defense

Much of the burden for NATO's defense falls on West Germany, the country directly bordering the Iron Curtain on the central front. And Bonn's armed forces are among NATO's most capable.

Defense is made difficult, however, by West Germany's narrow width. To make matters worse, NATO member France, which withdrew from the Alliance's integrated military command in 1966, does not permit the peacetime stationing on its territory of foreign military forces. Consequently, NATO's strategic depth is very limited; as many as 90 percent of NATO's highest value military installations are located within 180 miles of the inter-German border. These include air bases, nuclear weapon storage sites, air defense

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10 Soviet tank divisions on the Western front have 328 tanks each, and motorized rifle divisions have 271 each. IISS, *op. cit.*

11 See Colonel M. Loginov, "Vvod v boy vtorogo echelona" (The Introduction of the Second Echelon into Battle), *Voennii vestnik* (n. 3, 1977), p. 47.

sites and support facilities.[12] A successful Warsaw Pact invasion, spearheaded by armored divisions, could cross West Germany in less than a week.

Ordinarily, a country under attack can fall back into its territory to absorb the attack and regroup for a counterattack. Because of West Germany's narrow width, such a policy is politically and militarily untenable. For NATO to fall back would be to acquiesce to Soviet occupation of a key NATO member. For this reason, a Forward Defense policy was adopted whereby NATO would guarantee the security of West Germany by countering a Soviet attack as close to West Germany's eastern border as possible.

To compensate for its lack of strategic depth, NATO has developed a strategy of attack into the Warsaw Pact's rear areas. Known as Follow-On Forces Attack (FOFA), this strategy postulates that the key to upsetting a Soviet offensive is to deprive it of the reinforcements, especially the reinforcing armored divisions, it will need desperately if NATO is to contain Warsaw Pact forces at the inter-German border.[13]

NATO Anti-armor Deficiencies

NATO lacks sufficient medium and long-range anti-tank missiles to destroy enemy tanks. Currently, the U.S. Army uses the *Dragon* medium-range missile, a lightweight hand-held model introduced in 1975 that is carried and fired by a single soldier. The *Dragon's* tripod stand, however, is often difficult to use in high tension environments; its range and kill-probability are too low; and it requires the soldier using it to remain exposed from the waist up while aiming, firing, and guiding the warhead to its target. An Advanced Anti-tank Missile System (AAWS) is being developed to replace *Dragon,* but it will not be available until the mid-1990s.

A far superior system is the French-German *Milan*. Because it weighs more than the *Dragon* and requires a man to carry the launcher and a second to carry its two missile tubes, the U.S. Army rejected it. British successes with the *Milan* against Argentine forces in the Falklands, however, and Chad's successes with the *Milan* in knocking out Soviet-built Libyan tanks testify to the weapon's capability.[14] Today, nine NATO nations are using the *Milan*.

Countering Soviet Reactive Armor

In 1986, the Soviets began placing a new kind of armor on their newer main battle tanks. Called reactive armor, it uses small explosive charges embedded in the armor that ignite

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12 Phillip A. Karber, "In Defense of Forward Defense," *Armed Forces Journal International* (May 1984), p. 28; and Dennis M. Gormely, "A New Dimension to Soviet Theater Strategy," *Orbis*, Fall 1985, p. 538.

13 A thorough review of FOFA is available in the Office of Technology Assessment study *New Technology for NATO: Implementing Follow-On Forces Attack* (Washington, D.C.: Government Printing Office, 1987).

14 The *Milan's* weight did not seem to bother the British Royal Marines, who carried it the length of the island and used it to great effect in knocking out dug-in Argentinian positions. Another advantage of the *Milan* is its durability and simplicity.

upon impact of an incoming anti-tank round, thereby slowing down the round's momentum and preventing penetration of the armor. About 80 percent of the Soviet tanks in East Germany now carry reactive armor. This makes as many as 95 percent of NATO's hand-held anti-tank weapons largely ineffective.[15] The obsolete long-range NATO TOW missile and its successor, the TOW 2, truck or helicopter-mounted missiles which, like *Dragon,* are guided to the target by wires running from the missile to its launch tube, have only a 40 percent chance of killing a Soviet T-80 tank equipped with reactive armor.

A TOW 2A, which uses a small explosive charge fitted on a probe on the nose of the missile to pre-detonate the reactive armor, currently is entering the U.S. Army inventory. But the fundamental problem of the TOW missile, the vulnerability of the troops using it, remains. To increase NATO's capability to kill Soviet tanks, NATO is developing as a successor to the TOW 2 a "hypervelocity" anti-tank missile (HVM) that relies on the force of impact rather than on explosive power to penetrate armor.

Tanks are very important in defeating enemy armored divisions. The main U.S. Army tank is the M-1 *Abrams*, first deployed in 1980. Its main weapon is a 105mm gun, which is not capable of penetrating the improved armor on Soviet tanks. Only 700 M-1 tanks have the larger 120mm gun needed to penetrate Soviet tanks with reactive armor. According to BDM Corporation expert Phillip Karber, the U.S. Army should have at least 3,000 of these advanced M-1s, known as M1A1s, in Europe.[16] In addition to the U.S. M1A1 tanks, West Germany and Great Britain are upgrading their tank forces with *Leopard 2* and *Chieftan* tanks, both of which have 120mm guns.

Shortages in Attack Helicopters

Another means of destroying tanks is by missiles fired from helicopters. The two main attack helicopters in the U.S. arsenal are the AH-1 *Cobra* and the AH-64 *Apache*. Both are very good aircraft, but the *Cobra* was first deployed twenty years ago and is armed with an outdated anti-tank missile. The Army, meanwhile, has been seeking to halt production of the *Apache;* 603 have been produced, 72 fewer than planned. Rather than buy the full number of *Apaches,* the Army had preferred to work on the next attack helicopter generation, the Light Helicopter Experimental (LHX); thus far the LHX exists only on the drawing board, as recent budget cutbacks are delaying the program. As such, the *Apache* will continue to be the Army's main attack helicopter for the foreseeable future.

Absence of Anti-tank Barriers

The use of barriers constructed along the inter-German border is occasionally discussed as one method to block Soviet tanks. Explosives, for example, could be buried along the border and detonated on warning of an attack. This would create an impenetrable ditch. Such barrier defenses are politically problematic, though, as the West German government

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15 Much of the information on reactive armor comes from the Benjamin Schemmer interview with Phillip Karber, BDM Corporation, *Armed Forces Journal International*, May and June 1987.

16 *Ibid.*; tank figures are also gleaned from Benjamin Schemmer, *op. cit.*, pp. 114 and 120 (June) and p. 54 (May) and from IISS, *op. cit.*

is hesitant to take any action that might implicitly formalize the split between the two Germanies.

Current plans call for sowing the border region with anti-tank mines upon warning of attack and blowing up bridges over which Warsaw Pact tanks would have to cross to penetrate into West Germany. If the Soviets successfully surprise NATO – response to warning being a product of political decision making – they may be able to seize the bridges and penetrate into West Germany before mines can be planted.

Responding to Soviet Reserves

The Soviet method of attacking in waves or echelons provides NATO with an opportunity to strike at Soviet armored formations before they enter battle. On their way to the front, these follow-on forces need to roll across bridges over the Oder, Elbe, and other rivers. Before entering battle, moreover, Soviet armored formations would assemble at pre-selected sites to organize and refuel. These assembly areas would be attractive targets for NATO.

The Alliance is already developing the means to detect and identify moving and stationary targets behind Warsaw Pact lines and to fire weapons at them. This is the so-called Follow-On Forces Attack strategy. Disagreements have arisen, however. The West Germans, fearful that emphasis on Warsaw Pact rear areas will divert attention from the front lines, is least enthusiastic about the strategy. With one-fourth of its industry and one-third of its population within 60 miles of the East German border, West Germany is reluctant to see resources used for new missions. Britain, the Netherlands, and Belgium, meanwhile, support the concept of FOFA but lack the resources to contribute to it and, as with the Germans, place higher priority on stopping the first wave of Warsaw Pact forces. Consequently, the U.S. must assume most of the responsibility for preparing deep attacks into Warsaw Pact territory.[17]

Choke Points. Equipment to carry out the FOFA mission is designed to exploit Western technological proficiency, especially in target detection and identification. Requirements differ for targeting stationary and moving objects. Such fixed targets as choke points and tank and infantry assembly areas are easiest to locate and provide more attractive targets when successfully located.[18]

The main means of striking at targets behind Warsaw Pact lines is with fixed wing fighter/attack aircraft like the F-15E *Eagle* and the F-16 *Fighting Falcon.* Also, the multinational *Tornado* is very effective at hitting such targets as air fields and rail lines. In addition to aircraft, surface-to-surface missile systems like the Multiple Launch Rocket

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17 Office of Technology Assessment, *op. cit.*, pp. 112-117.

18 The situation can change, however, if the Soviets successfully conceal their troops and equipment from NATO surveillance systems. The Soviets place very high priority on strict adherence to camouflage discipline. Soviet military writings frequently note that any time forces are stationary they should be immediately concealed from enemy reconnaissance. See, for example, Colonel General P. Mel'nikov, "Operativnaya maskirovka,"*Voennoe-istoricheski zhurnal* (n. 4, 1982).

System (MLRS) and Army Tactical Missile System (ATACMS) can strike targets behind enemy lines. The need for a long-range non-nuclear air-launched cruise missile to strike bridges and command, control, and communications facilities that support Soviet armored forces has also arisen.

The job of providing close-in air support to troops threatened by enemy armor belongs to the Air Force's A-10 *Thunderbolt II*. The A-10 is a fixed-wing aircraft specially configured for the close air support mission. With its armor protection, 30mm rapid fire gun, and ability to carry a large amount of explosive ordnance for use against tanks, the A-10 is a highly capable aircraft. It is designed for easy maintenance and a high level of combat readiness. The A-10, however, is becoming too expensive for the Air Force to afford in large numbers. There is need, therefore, for a successor aircraft to the A-10 that is less expensive to produce yet fulfills the close air support role better than other existing aircraft such as the F-15E and F-16.[19]

NATO STRENGTHS ON THE CENTRAL FRONT

Vital to a successful NATO forward defense is the ability to destroy large numbers of Soviet-bloc tanks as they thrust forward. West Germany's terrain is conducive to such a defense. The northern region, called the North German Plain, consists of soil too soft for large-scale armored operations, while the south's thick woods are a natural barrier against armored formations. In addition, an unnatural, though effective, tank barrier is the towns and cities that have sprung up in former rural areas.

These barriers force the Soviets to channel their armor formations into narrow approaches. As a result, Soviet commanders will be forced to hold back their tank and other armored forces rather than mass them across a broad front. These forces would, in turn, be stacked up in the rear of the front, giving NATO aircraft and missiles time and opportunity to strike at them.[20]

RECOMMENDATIONS

The U.S. and its NATO allies must take action to develop a credible conventional force structure. Some of these actions the U.S. can take unilaterally; others require the cooperation of the European allies. Without a high degree of cooperation and a determination to see these measures through to fruition, NATO will continue to be forced to confront the problem of the nuclear threshold sooner than it would like. Specifically, the U.S. should:

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19 See Jeffrey Barlow, "Close Air Support and the Soviet Threat," Heritage Foundation *Backgrounder* No.203, August 11, 1982.

20 Phillip Karber, *op. cit.*, pp. 33-34; and Lt. Philipp Borinski (FRG), "Another Look at USAEUR Deployment,"*Military Review*, March 1987. Borinski argues persuasively that southern German terrain is significantly more conducive to the movement of armored divisions. In the area of Brunswick and Gottingen, for example, the sparsely settled terrain is highly favorable to large-scale military operations. (pp. 53-54).

Accelerate the conversion of M-1 *Abrams* tanks to M1A1s to increase their ability to kill Soviet tanks. The Soviet deployment of reactive armor on its tanks has reduced substantially the ability of the M-1 to destroy them. M1A1s only have the large guns needed to penetrate modern Soviet tanks.

Retrofit AH-1 *Cobra* attack helicopters with modern anti-tank munitions and keep open the *Apache* production line. Otherwise, the reduction of funding for the proposed Light Helicopter Experimental may result in a serious shortage in Army of attack helicopters.

Continue to develop the hypervelocity missile, whose impact penetrates armor. This relatively low cost tank killer for the 1990s can be deployed on armored fighting vehicles and on Air Force F-15Es and F-16s. This will allow the U.S. to defend against advances in Soviet armor technology.

Buy the French-German *Milan 2* medium-range anti-tank missile to fill a void in U.S. Army capabilities. Currently, the army depends on the U.S.-made *Dragon* anti-tank missile, an ineffective system. The *Milan* is already used by most members of NATO and has proved its reliability.

Develop the surveillance systems needed for Follow-On Forces Attack. NATO needs to be able to track Soviet armor formations as they move forward. The U.S. and its allies should continue to develop JSTARS (Joint Surveillance Target Attack Radar System), an airborne radar system that can "look" over borders to locate moving targets. Because JSTARS is placed aboard slow moving E-8A aircraft vulnerable to Soviet anti-aircraft weapons, NATO should continue to develop the Precision Location Strike System (PLSS). This is an airborne surveillance and control system designed to locate enemy radar transmitters and guide weapons to them. Carried aboard the TR-1 high-flying aircraft, PLSS is more survivable than JSTARS.

Procure munitions needed to destroy Soviet rear area targets. The Multiple Launch Rocket System (MLRS) is a truck-mounted multitube rocket launcher which, when combined with the precision guided munitions, can attack massed tanks as they move forward. The Army Tactical Missile System (ATACMS), when fired from the MLRS, will allow NATO to attack Soviet tank formations as they advance to battle. To attack bridges, airfields and other fixed targets and to sow mines along likely routes of attack, NATO should continue to procure such anti-armor submunitions as the West German MW-1 to be carried by fighter aircraft such as the European *Tornado* and the American F-15E *Eagle*. Aircraft like the *Tornado,* F-15E and the F-16 *Fighting Falcon* will also be capable of striking Warsaw Pact rail lines moving reinforcements forward. Additionally, the Joint Chiefs of Staff should establish a requirement for very long-range conventional air-launched cruise missiles to hit bridges and command, control, and communications posts that support Soviet armored forces or operations.

Develop an aircraft to replace the A-10 *Thunderbolt II.* The close air support mission requires a plane specially designed for that role. The F-15E and F-16, while good for hitting targets behind Warsaw Pact lines, are nevertheless unsuited for close air support, a mission for which they were not designed.

Maldeployments and Underdeployments

The recommended measures will prove of little value if NATO forces continue to be poorly deployed. NATO forces currently are stationed far from where they would be needed in a crisis or war.[21] The Dutch, for example, base only one of their six brigades in Germany; the remainder will have to move by rail to their forward positions upon warning of possible attack.[22] This is a serious weakness; if Warsaw Pact forces are able to achieve surprise and knock out targets of such obvious importance to NATO as the rail lines linking Dutch brigades to their forward positions, crucial NATO forces needed to defend against Soviet armor will be absent from the North German Plain. Similarly, French, Belgian and U.S. forces and equipment are heavily concentrated west of the Rhine River and in the southwest corner of Germany. Should the Soviets knock out key Rhine bridges, many of NATO's most important ammunition, equipment, and weapons stocks could be lost or delayed from entering the battle.

For this reason, NATO should:

Establish a multinational Command Covering Force (CCF) as a cost-effective substitute for barrier defenses. Such a force would be under the direct control of the Supreme Allied Commander in Europe. The CCF would be capable of moving rapidly to critical areas to bolster defenses against Warsaw Pact armored divisions until reinforcements arrived.[23] To maintain combat-ready status, the CCF should be fully manned and equipped in peacetime and stationed at the front to become familiar with the terrain on which it may have to fight. The existence of such a force would alleviate concerns about having to redeploy units during a crisis when mobilization could be seen as destabilizing.

Correct deployment problems by moving a larger number of brigades forward to improve defenses against Soviet armored divisions. This should be done during peacetime to avoid the potentially provocative nature of large-scale troop movements during a crisis. If the Dutch and Belgians do not agree to redeploy closer to the front, they should be encouraged to develop an ability to fight their way forward so as to lessen dependence on rail lines. Such a capability can be attained through procurement of self-propelled artillery and supporting aircraft.

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21 Including the West German military, there are stationed in the FRG in peacetime forces from seven nations: West Germany, the U.S., Great Britain, the Netherlands, Belgium, France, and Canada. The stationing of foreign troops in West Germany is a product of post-World War II diplomatic arrangements and exists irrespective of military necessity.

22 Interview with Dr. Phillip Peterson, Assistant for Europe and the Soviet Union, Office of the Deputy Under Secretary of Defense for Policy, October 26, 1987; interview with Michael Moody, Senior Fellow, Center for Strategic and International Studies, December 8, 1987.

23 Project on a Resources Strategy for the U.S. and its Allies, *NATO: Meeting the Coming Challenge* (Washington, D.C.: Center for Strategic and International Studies, 1987), p. 19.

CONCLUSION

The conventional military balance will receive increasing attention in the wake of the U.S.-Soviet treaty eliminating medium-and intermediate-range nuclear forces. Such attention is welcome. NATO is wise to base its strategy on defending as far forward as possible. To fulfill this strategy, however, NATO must take the kinds of actions the members of the Alliance long have recognized as necessary but just as long have postponed.

The problem of defending against Soviet armored divisions has in the past depended too much on an increasingly obsolete inventory of tactical nuclear weapons. NATO has made the decision to modernize these weapons, and it should proceed to do so. Tactical nuclear weapons force Soviet military commanders to reassess their plans for armored thrusts into West Germany. At the same time, though, NATO must upgrade its conventional capabilities. Well-armed troops capable of stopping a Warsaw Pact offensive without resort to nuclear weapons are essential for the continued credibility of NATO's deterrent posture.

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