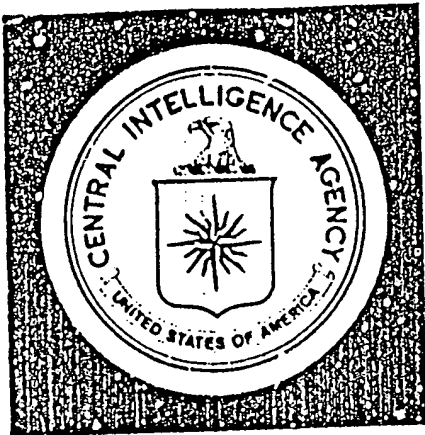


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The Balance of Forces in Central Europe

CIA HISTORICAL REVIEW PROGRAM
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The Balance of Forces in Central Europe

Central Intelligence Agency
Directorate of Intelligence

August 1977

Key Judgments

The balance of military power in Central Europe—especially as it contributes to deterrence there—is not fragile. NATO's military deterrence is multifaceted, being based on conventional forces as well as tactical and strategic nuclear weapons. A shift in the military balance great enough to significantly reduce deterrence in Europe would require achievement of a major technological breakthrough by one side or a major shift in numerical force ratios.

Nevertheless, a number of factors have been operating over the past few years to alter the military balance to NATO's disadvantage. These factors include:

- *Quantitative and qualitative growth of Soviet tactical nuclear forces.* Over the past several years, the Pact has matched NATO in the number of tactical aircraft and missile launchers deployed in Central Europe and intended for nuclear delivery missions. Within the next few years, the Soviets probably will field nuclear-capable tube artillery there, ending a longstanding NATO monopoly.
- *Modernization and augmentation of Soviet conventional forces.* Since the mid-1960s, Soviet conventional forces have begun to receive equipment as sophisticated as currently deployed NATO weaponry. This is

particularly true of aircraft. The new pieces of ground and air equipment are replacing older items on at least a one-for-one basis.

- *Continued Soviet political and economic commitment to improving the Pact's military force posture.* Economic pressures have increased over the past few years on both Eastern and Western governments, but it does not appear that the Soviets or their allies are considering cuts in military spending to relieve such pressures, as many NATO countries are doing.

While NATO still enjoys a measure of tactical nuclear superiority in Central Europe by virtue of its exclusive possession of nuclear artillery there and the quality of its tactical surface-to-surface missiles, the overwhelming advantage which it had in the sixties is being eroded by Soviet improvements. The Soviets probably reckon that the strengthening of their own theater nuclear forces has reduced the political as well as military utility of such forces to NATO. When the Soviets break the NATO monopoly on nuclear artillery in Central Europe, the deterrent value of these weapons will also be reduced. Moreover, the numerical advantage would swing to the Pact if forces based outside Central Europe, but likely to be targeted against Central Europe, were included in the balance. These peripheral strike forces also are being improved qualitatively.

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The balance of conventional forces also seems to be gradually shifting. Military analysts have long considered that NATO enjoyed a technological lead that offset the Pact's numerical superiority in conventional forces. Trends have emerged over the past several years, however, which suggest that the Pact is reducing its technological handicap.

Despite a perceptible shift of the theater force balance in the Warsaw Pact's favor, deterrence in Central Europe, from the military standpoint, does not appear immediately threatened. The Pact's gains must be viewed in the context of its own perception of need, as dictated by its political and economic weakness and its self-imposed requirement to be ready to attack, not merely defend. A force level that is considered adequate by the Pact (i.e., meeting Pact requirements for a potential conflict with NATO) may seem excessive by Western standards. Soviet planners also continue to be faced with what they see as an impressive NATO defense that they could not count on defeating and with uncertainty about whether the strategic forces of both sides could be kept out of a war in Europe.

The most serious results of the shift in the balance of forces in Central Europe could arise from both sides' perception of that evolving balance. There is a growing but largely unsubstantiated impression in the West that the vigorous, ongoing Soviet modernization effort constitutes a major conventional arms buildup which has caused the balance to shift radically. Some parliamentarians might believe that the Pact has pulled so far ahead in conventional forces that it is not economically or politically feasible for NATO to try to catch up. They would argue that it is useless, therefore, for NATO to spend money on conventional forces and that the Alliance should return to the massive retaliation doctrine of the fifties to deter Pact aggression. But, given the Soviet achievement of nuclear parity, the "tripwire" doctrine has even less credibility now than when it was discarded.

Moreover, should it become widely accepted that the balance has dramatically shifted, this view could depress NATO confidence and in turn increase Soviet assertiveness. Such a development could ultimately increase the risk of war through Soviet miscalculation.

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The Balance of Forces in Central Europe

Introduction

The nature of the military balance in Europe has undergone a gradual evolution over the past two decades. Between the late fifties and early seventies, both the US and the USSR saw intercontinental strike forces as a predominant factor in that balance. Perceptions of the significance of theater forces and of disparities in those forces were tempered by both sides' view that any confrontation in Europe would soon escalate to a mutually destructive intercontinental nuclear exchange by the two powers.

Gradual changes in the doctrine, strategy, tactics, and armament of the Warsaw Pact and NATO have now combined to give theater forces—both conventional and nuclear—greater prominence in any assessment of the military balance in Europe. Both sides recognize that the achievement of rough strategic parity between the USSR and the US raises doubts about whether either side would use intercontinental weapons to resolve a war in Europe. They now consider that such a war might not precipitate an intercontinental nuclear exchange and that a larger fraction of the burden of deterring or defeating aggression must fall on theater forces.

This appreciation of theater forces has focused attention on the status of the Warsaw Pact - NATO balance of such forces and on the ways in which the Pact might tip the balance in its favor. This study examines the air and ground forces in Central Europe in light of some of the most salient quantitative and espe-

cially qualitative factors, addresses strengths and weaknesses of both sides, and assesses trends affecting the future balance there.

Deterrence and Military Planning in Europe

The three postwar decades in Europe, a continent traditionally beset by major wars, have been punctuated by coups, violent uprisings in the East, several crises in Berlin with attendant ultimatums, and even armed confrontation. But none of these incidents resulted in armed conflict between the two major power blocs.

This uneasy peace can be attributed to a number of political, economic, and military factors, but the principal military deterrent has been uncertainty as to the scope and outcome of any conflict, given its potentially cataclysmic nature. This concern is inherent in the availability of nuclear weapons to both sides and the apparent capability of each side to inflict catastrophic damage on the other. Under these circumstances, the side making a deliberate decision to undertake a major war in Europe would do so only if it perceived war as the only available option to protect its vital interests. Nor would either side undertake an action short of war that seemed likely to threaten irreconcilably the vital interests of the other.

Either side might undertake operations—constrained in geography or in the type of weapons used—with the intent of limiting the consequences, but neither could be sure that such a conflict would remain confined. The

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well-defined alliances in Europe provide a credible sign that even a geographically limited attack could quickly involve the entire weight of the defending alliance. And NATO doctrine asserts that Pact aggression against one of its members would be met with whatever level of force—including nuclear weapons—that was required to bring the conflict to an acceptable conclusion.

Both sides have maintained large forces in Central Europe¹ for more than 30 years. Although each considers itself to be a defensive alliance intended to deter or defend against an attack by the other, the warfighting concepts of each differ widely. NATO's overall military planning reflects the defensive nature of the Alliance, whereas that of the Pact reflects the goal of being able to seize the strategic initiative once war seems inevitable or to launch a rapid counterattack if NATO should strike first.

This aspect of Pact doctrine probably stems from a resolve not to repeat the historical Russian experience of suffering a costly retreat until a counteroffensive can be mounted against an overextended enemy. The shock and suddenness of the Pact offensive would be intended to prevent NATO forces from preparing for an offensive or establishing a fixed defensive line, thereby forcing the Pact into prolonged positional warfare. Subsequent objectives would be to break into the NATO rear to disrupt mobilization, seize channel ports to prevent reinforcement, and destroy NATO military forces.

Soviet doctrine's requirement for overwhelming numerical superiority derives largely from the experience of World War II. Before launching their counterattack in July 1943 during the battle of Kursk, for example, the Soviets achieved overall advantages of 2.5 to 1 in men, 2.7 to 1 in tanks, 3 to 1 in artillery, and 2 to 1 in combat aircraft. During later stages of the

¹ Defined as Denmark, the Benelux countries, East and West Germany, Poland, and Czechoslovakia.

war, when more manpower and equipment were available, the Soviets often did not attack until they had achieved force ratios as high as 8 to 1 in men, tanks, and artillery.

Soviet doctrine for a conventional offensive still calls for achieving an overwhelming numerical advantage opposite a few sectors of the enemy's defense line. Current Pact planning for attacks against well-prepared defenses apparently calls for advantages of up to 3 to 1 in men and as high as 5 or 6 to 1 in tanks and 3 to 1 in artillery. In light of the offensive cast to Pact planning, the numerical advantages required by Soviet doctrine, and the high regard the Pact has for NATO's capabilities, Pact planners probably consider what the West sees as a preponderance of Pact forces in Europe to be at best adequate for the "defense" of the Pact, but certainly not excessive.

Neither NATO nor the Warsaw Pact maintains its theater forces at full strength in peacetime, and each would have to undergo extensive mobilization to put its forces on a wartime footing. Both could quickly bring their standing combat forces up to full wartime strength, but some of them—particularly NATO ground forces in northern Germany—would require substantial redeployment to reach their wartime operating areas. Both sides also intend to reinforce in Central Europe in wartime—NATO from the US, UK, and probably France; the Pact from the western USSR.

Warsaw Pact Strategy

To achieve the force ratios deemed necessary to accomplish its objectives, the Pact has evolved mobilization and attack concepts that are intended to maximize initial combat power—on the assumption that a war in Europe would be short and, therefore, decided largely by forces in being or quickly available.

Accordingly, those forces in place in Central Europe (about half of them East Europeans)

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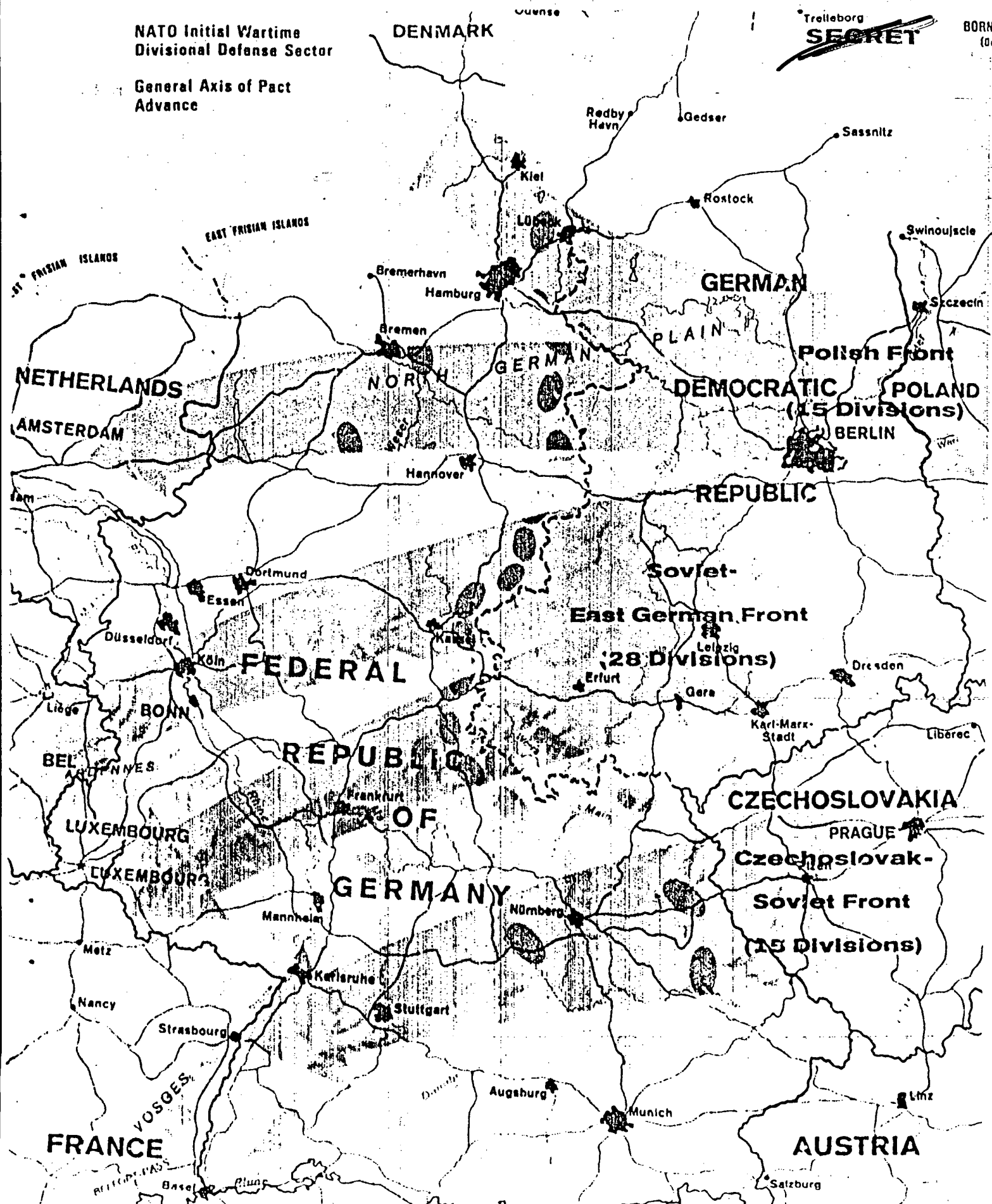
Warsaw Pact Ground Force Campaign (After 8-10 Days of Mobilization)

NATO Initial Wartime
Divisional Defense Sector

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would be required to defend against any NATO assault, initiate the Pact's offensive campaign and, bypassing strong resistance, carry the campaign well into NATO territory before reinforcements would arrive from the western USSR.²

Pact planning for the Central European theater evidently calls for three fronts initially: a Polish front to the north, a Soviet - East German front in the center, and a Czechoslovak-Soviet front in the south. Upon breaking through initial defenses in their area, the Poles would be responsible for advancing into Denmark and across northern Germany and the Benelux countries to the ports on the North Sea and English Channel. The forces of the Soviet - East German front are the strongest; once these forces penetrated NATO defenses, the two tank armies of this front would launch rapid thrusts to secure crossings over the Rhine near Essen and Frankfurt. The Czechoslovak-Soviet front would attack into southern Germany, probably to tie down strong US and German forces there. Additional fronts, formed from divisions and army-level units in the western USSR, would comprise a second-echelon force for reinforcement and subsequent operations in the depth of the theater.

The tenets of mass and shock which govern Pact planning for the ground campaign carry over into air planning as well. The Pact would seek to commit an overwhelming force of tactical aircraft and bombers to attack NATO air forces on the ground in a decisive campaign at the very outset of hostilities. The objectives would be to achieve air superiority from the start and to limit the capabilities of NATO's tactical air forces to affect the conventional ground battle or to deliver nuclear strikes in later stages of the conflict. Another objective would be to destroy as much of NATO's

²For a fuller discussion of Soviet operational planning for a conventional war in Central Europe, see *Soviet Concepts for Initial Military Operations Against NATO in Central Europe*, March 1977.

ground-based tactical nuclear capability as possible prior to a NATO nuclear decision.

NATO Strategy

NATO doctrine, on the other hand, eschews general offensive designs, embracing instead the establishment of a strong defensive line well forward. This defense, to be manned predominantly by ready US and West German divisions, would be intended to buy time for decision-making—particularly on the use of nuclear weapons—and to contain a Pact offensive until NATO could realize its mobilization potential, reinforce its defense, counterattack, and force the attackers back into Pact territory.

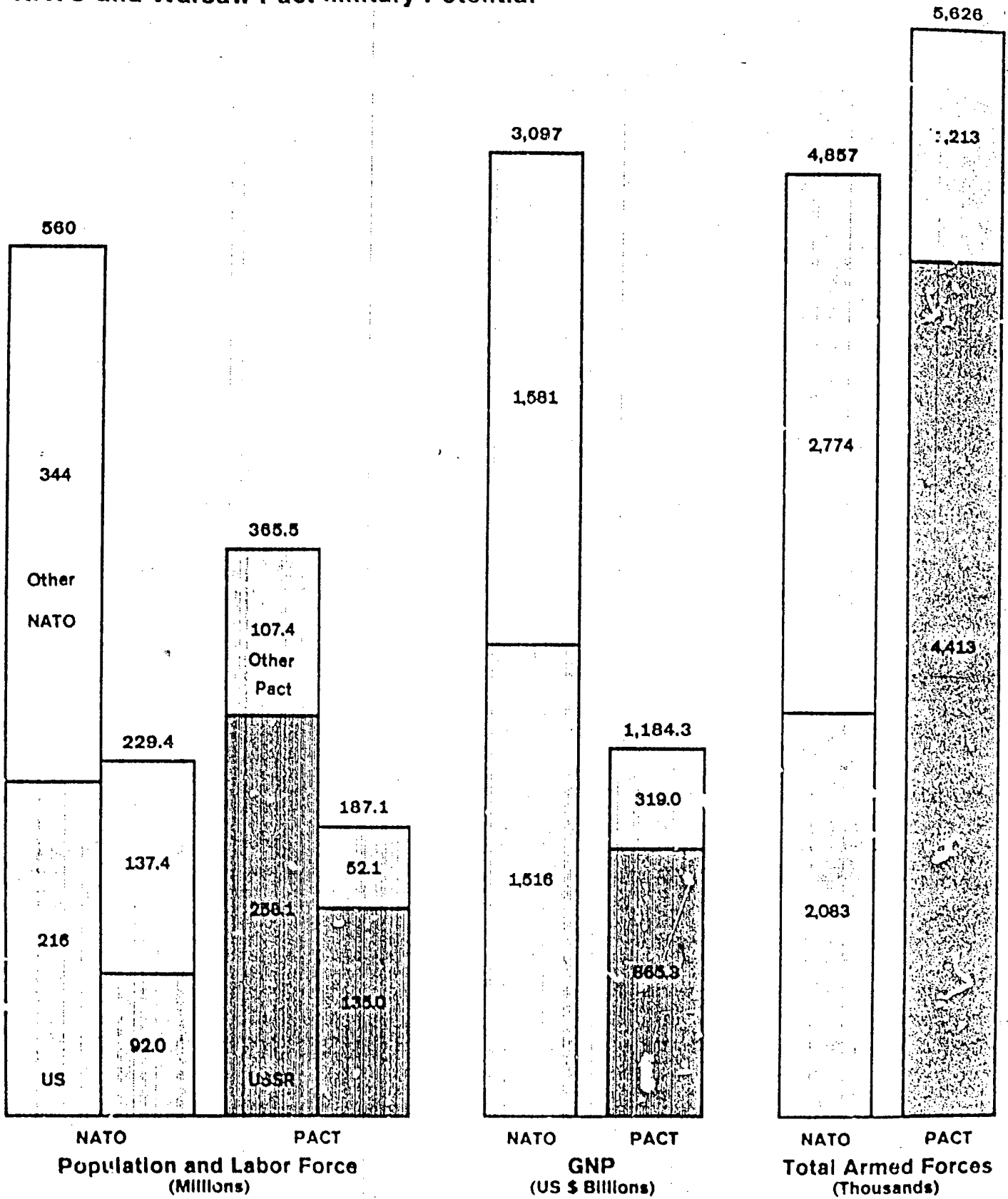
NATO's doctrine of flexible response is intended to permit fine tuning. It holds that a Pact conventional attack would be met with conventional forces. If conventional defenses were being overwhelmed, small-scale nuclear strikes could be launched to blunt Pact offensive thrusts, demonstrate NATO's resolve, and serve notice to Pact leaders that the conflict was about to take a vastly more destructive turn. If this failed to halt the assault, NATO's stated doctrine calls for gradual escalation of the use of nuclear weapons to whatever level was required to halt the attack.

The Status of Theater Forces

Although NATO's military potential greatly exceeds that of the Warsaw Pact, particularly in terms of mobilization base and overall economic capacity, the Pact currently has more men in uniform than NATO (see figure 1) and has a larger military force in the critical Central European region. In keeping with their doctrine that a military conflict in Europe would be decided by forces in being or readily mobilized, the Soviets and their allies appear to have committed themselves to maintaining a numerical superiority over NATO in Central Europe in such key theater-force elements as men, tanks, artillery pieces, and combat aircraft.

Selected Indices of NATO and Warsaw Pact Military Potential

FIGURE 1



Reliance on numerical comparisons alone, however, can yield simplistic and misleading results. Greater numbers alone do not assure either deterrence or victory. Qualitative factors can affect the outcome of wars more than numbers of men or weapons, and such factors must be taken into account to provide a reliable perception of the balance. In addition to political and economic factors, such things as reliability, readiness, organization, geography, technology, and the ability of each side to direct and support its military forces in wartime strongly influence the balance. The following sections treat the comparison of Pact and NATO forces in this broader qualitative context.

Ground Forces

Reliability. The Pact's numerical advantage in ground forces in Central Europe (see table 1) is tempered by the questionable reliability of the East European forces. The East Germans, Czechoslovaks, and Poles provide nearly half of the Pact's manpower and more than half of its divisions in Central Europe, yet they probably would respond with a total military commit-

ment only to a clear and present danger to their homelands. Nevertheless, Soviet doctrine calls for these forces to assume a critical offensive role:

- The Soviets would count on attacks by Polish forces in the north and Czechoslovak units in the south to tie down large NATO forces and permit the concentration of Soviet and East German forces in the critical central sector.
- The major Pact lines of communication from the USSR run through Poland, East Germany, and Czechoslovakia, and nationals of these countries are chiefly responsible for operating and maintaining them.
- East European air defenses are intended to provide forward air defense for the western USSR and to protect the Pact's logistic and rear area support.

Refusal by any East European ally to participate fully in an offensive against NATO would severely lessen Pact capabilities. Soviet forces located on the territory of the recalcitrant ally would be tied down with "policing" and with logistic transport responsibilities, and the Soviets probably would have to bring in additional forces from the USSR prior to hostilities, thus affording NATO additional warning and reaction time.

Leadership. The proficiency and leadership of tactical unit commanders, especially at platoon and company levels, is another potential limitation of Soviet—and presumably other Pact—ground forces. Analysis of Pact writings reveals widespread concern within the Soviet military over the quality of its junior leadership cadre.³

Much of the concern of senior Soviet military leaders is over the lack of initiative in tactical

Ground Forces

Table 1

	NATO Forces in West Germany, Benelux, and Denmark	Warsaw Pact Forces in East Germany, Poland, and Czechoslovakia
Men ¹	762,000	928,000
Divisions ²	25	58
Tanks	9,200	18,600
Artillery ³	3,000	5,800
Major Antitank Weapons ⁴	5,600	2,800
Surface-to-Air Missile Launchers ⁵	1,300	1,400

¹ Excludes national air defense personnel and national administrative staffs. Includes Polish and West German territorial forces.

² See tables 3 and 4 for a summary of the differences between NATO and Warsaw Pact divisions.

³ Guns and multiple rocket launchers.

⁴ Guns and missiles with a range of 1,000 meters or more which have a primary antitank mission. Excludes missiles mounted on personnel carriers.

⁵ Excludes man-portable systems.

³ For an analysis of this subject, see *The Soviet Leadership Cadre*, US Army Intelligence Threat Analysis Detachment, September 1976.

operations stemming from the rigidity of the Soviet command structure and the stereotyped nature of tactical training. Apparently the military hierarchy has been unable to resolve the conflict between initiative and imagination on the one hand and the need for "undeviating adherence to regulations and instructions"⁴ on the other.

Ground Force Manpower in Central Europe Table 2

	NATO	Warsaw Pact
Divisions and Nondivisional		
Maneuver Units	429,000	523,000
Combat-Support Units	114,000	120,000
Command and Control	44,000	72,000
Service-Support Units	134,000	132,000
Territorial Defense Forces	41,000	72,000
Total	762,000	928,000

Organization and Logistics. On a force-wide basis NATO and Pact combat-to-support ratios are roughly the same: about 70 percent of each side's ground force manpower is assigned to frontline units (divisions, nondivisional maneuver units, and combat-support units) and 30 percent to support elements (see table 2). At division level, however, there are a number of differences between the two sides, including the size of Pact divisions relative to NATO's, combat equipment levels, and staying power.

⁴ *Red Star*, 24 August 1971.

Taken together, these factors bring into question the utility of simple comparisons of numbers of divisions.

By virtue of their larger size, most NATO divisions have more combat and combat-support manpower and a larger inventory of most types of combat equipment than their Pact counterparts (see tables 3 and 4). US and West German divisions, for example, have more armored vehicles and generally more antitank weapons than Soviet divisions, and German armored divisions have more artillery. In the number of tanks, however, Soviet divisions are roughly equal to their NATO counterparts.

The relative capabilities of NATO and Pact ground forces, in quantitative terms, are perhaps best expressed as a function of the number of armored division equivalents (ADE) each side has there.⁵ By this measure, each NATO and Pact combat unit is rated according to a common standard which is based on the quantity and quality of its combat weapons. The resultant application of ADE scores to major NATO

⁵ An ADE is a unit of measure that relates ground combat units to a standard US armored division. The degree of equivalency is determined by combining the unit's total number of ground combat weapons and the quality of each weapon in terms of firepower, mobility, and survivability. A separate ADE is calculated for the unit in the offense and the defense. The analysis used for this study assumes that NATO and Pact forces are on the offense half of the time and on defense the other half.

Soviet, West German, and US Divisions¹

Table 3

	Soviet Tank Division	West German Armored Division	US Armored Division	Soviet Motorized Rifle Division	West German Mechanized Division	US Mechanized Division
Personnel	9,500	24,000	15,400	12,200	24,600	15,000
Medium Tanks	325	915	324	206	278	270
Other Armored Vehicles ² ...	249	715	968	460	777	1,029
Artillery ³	78	88	66	90	88	66
AAA Weapons ⁴	173	121	120	206	121	120
Major Antitank Weapons ⁵ ...	15	50	225	63	61	270

¹ Personnel and equipment strengths are estimated model wartime strengths; actual wartime strengths vary from division to division.

² All tracked, armored vehicles, including light tanks and excluding engineer vehicles.

³ Includes guns and multiple rocket launchers.

⁴ Guns and missiles, including Redeye and SA-7 Grail.

⁵ Guns and missiles with a range of 1,000 meters or more, excluding missiles mounted on personnel carriers.

Divisional Manpower¹

Table 4

	Soviet Motorized Rifle Division	West German Mechanized Division	US Mechanized Division
Maneuver Units.....	6,220	8,030	8,355
Fire-Support Units.....	1,926	3,858	2,454
Combat-Support Units.....	1,544	3,822	1,671
Service-Support Units.....	1,069	7,604	2,198
Command and Control.....	805	1,287	963
Total Manpower.....	12,164	24,601	15,641
Combat Elements ²	8,146	11,888	10,809
Support Elements ³	4,018	12,713	4,832

¹ Wartime strength based on model TO&Es; actual wartime strengths vary from division to division.

² Maneuver and fire-support units.

³ Combat-support and service-support units and command and control.

and Pact combat units (when mobilized to wartime strength) in Central Europe yields the Pact a 1.7 to 1 numerical advantage in ADEs over NATO as opposed to the 2.3 to 1 advantage in numbers of divisions.

The organizational structures of Pact and NATO divisions also reflect fundamental doctrinal differences, particularly with respect to logistic support. Soviet doctrine stresses immediate firepower over organic logistic support capabilities. Unlike NATO forces, Pact forces are not organized with the extensive support structure at battalion level and below that is necessary to provide divisional units with independent staying power (see table 5). The Pact would rely upon second-echelon and reserve

forces to replace frontline units worn down by NATO defenses (in other words, a unit replacement system). NATO, on the other hand, stresses independent staying power and unit integrity. NATO divisional combat units have more extensive organic logistic support and would rely chiefly on replacing individuals, not units.

The Pact's weaker logistic support at battalion level and below would likely be a disadvantage against a well-prepared NATO defense in a prolonged conventional war. Although a unit replacement policy would be advantageous in a nuclear war, the need to bring in fresh units as others were worn down might disrupt the momentum of an offensive in a conventional conflict. NATO divisions in the defense, on the other hand, would be less likely to suffer the confusion that often accompanies unit replacement in a tactical environment.

Combat Readiness. A large fraction of both NATO and Pact ground forces—some of their divisions and much of their rear-area support and command-and-control structure—would require a major increase in personnel to reach wartime strength.⁶ Of the 58 Warsaw Pact

⁶ For the peacetime deployment and readiness posture of NATO and Warsaw Pact divisions, see map on page 25.

Battalion Manpower Combat-to-Support Ratios Table 5

	Percent of Total Battalion Manpower	
	Combat	Support
Soviet Tank Battalion.....	88	12
US Tank Battalion.....	73	27
Soviet Motorized Rifle Battalion.....	91	9
US Mechanized Infantry Battalion.....	81	19
Soviet Howitzer Battalion.....	91	9
US Howitzer Battalion.....	72	28
Soviet AAA Battery.....	89	11
US AAA Battery.....	73	27

divisions in Central Europe, 42 are estimated to be maintained at between 80 and 90 percent of their intended wartime strength. These divisions could be filled out in about 24 hours, but it would require four days to get them and the bulk of those support forces essential for a coordinated offensive, which are maintained at about half strength or below, into position. Even then, this force would still lack some nondivisional service support, and initial command-and-control capabilities would be low.

The remaining Pact divisions in Central Europe could be filled out in about 72 hours, but it would take at least eight days from the beginning of Pact mobilization before all 58 divisions and the army- and front-level support elements were in position to launch an offensive.

The greatest incremental increase in Pact manpower and divisions would result from reinforcement by the 31 Soviet divisions in the Baltic, Belorussian, and Carpathian Military Districts of the western USSR. These divisions and their support structure probably could mobilize, move to Eastern Europe, and be ready for offensive operations in about two weeks.

With concurrent preparations—or even with a warning lag of one or two days, which is more likely—NATO could rapidly mount a credible defense against a Pact offensive. Within about two days, NATO could expect to have up to 21 divisions and eight separate brigades in forward defensive sectors. The level of nondivisional support available in forward positions in this short time would vary from one national force to another. Many of these support units are located in rear areas, and their forward deployment progress would depend largely on the amount of warning NATO had and their alert status at the time the order to move was given. Nonetheless, most of the 21 divisions would be expected to have their essential nondivisional support available.

Seventeen of the 25 active NATO divisions—the 11 West German, four US, and two French⁷ divisions—plus the three German airborne brigades and three US separate brigades are manned at roughly 90 percent of full strength. These could begin moving out of garrison in a matter of hours and, together with their essential nondivisional support, probably would be in forward positions within 48 hours.

The three British divisions in NATO's Northern Army Group (NORTHAG) also could deploy forward with most of their essential support, although at reduced strength.⁸ Belgian and Dutch forces in NORTHAG could deploy rapidly, but their corps sectors would be less well covered initially than those of West Germany, the US, and the UK. The Belgians maintain units which equate to one full division in Germany in peacetime, and these units would have to move some 250 kilometers from their peacetime garrisons. The Dutch maintain only one reinforced brigade in West Germany, and adequate early coverage of the Dutch corps area would require temporarily shifting the German 3rd Armored Division into the area.

Mounting the full NATO defense along the West German border with the Pact would require from seven to 10 days' mobilization and reinforcement—roughly the same time the Pact would need to organize its 58 divisions.⁹ At the end of this period, NATO probably could have

⁷Two French divisions are permanently stationed in West Germany under a bilateral agreement. Although French forces are not under NATO command and have not agreed to any forward deployment, the Pact almost certainly regards at least the two divisions in West Germany as contributing to NATO capabilities.

⁸The British divisions initially would be short about five combat battalions that are located in Northern Ireland. These units would require at least 72 hours to return to Germany.

⁹There are a number of possible scenarios for a Pact buildup in Europe. Those that are considered most plausible are covered in greater detail in *Warsaw Pact Concepts and Capabilities for Going to War in Europe: Implications for Warning of War in Europe*.

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a force of some 29 divisions and eight separate brigades, with their support units, in forward defensive areas.

Reforger units from the US—two brigades of the 1st Mechanized Infantry Division, an armored cavalry regiment, and several artillery units—are the only additional NATO reinforcements that could support initial combat operations. These units probably could not arrive in West Germany for at least two weeks, and they probably would not be capable of participating in combat operations for three to seven days upon arrival.

Peacetime Deployment: A Major NATO Weakness. NATO's strategy of defending against a Warsaw Pact attack as close as possible to the eastern border of West Germany depends upon early availability of strong ground forces in forward positions. The strength of NATO's forward defenses in the northern part of the Central Region is sharply reduced, however, by a shortage of readily available brigades and by the limited antitank assets of the units involved.

Only 22 of the 34 brigades assigned to NORTHAG are stationed in West Germany in peacetime. Of the 12 missing brigades, nine are Dutch and must be filled out through mobilization in the Netherlands, then moved together with divisional and nondivisional support—some 400 kilometers eastward. The three other brigades are in Belgium. One of these is maintained at full strength and the other two at less than 10 percent of authorized wartime strength. Moreover, one of the three Belgian brigades currently in West Germany is scheduled to return to Belgium soon.¹⁰

¹⁰To a lesser degree, the Pact's initial combat capabilities also are lessened by the peacetime location of some of its forces. Pact ground forces in East Germany are located relatively close to the West German border, but the 13 Polish mechanized and armored divisions destined for operations against northern Germany and the Jutland Peninsula and the two Soviet divisions in Poland would have to move from 200 to 800 kilometers west before launching operations. Also, four Czechoslovak and two Soviet divisions are located in eastern Czechoslovakia, between 300 and 600 kilometers from the West German border.

In addition, Dutch, Belgian, and British brigades, which comprise about 65 percent of NATO's combat forces in NORTHAG, have relatively poor antitank capabilities. Yet these forces face a large part of the Pact's tank forces and have to defend some of the West German terrain more suitable for tank warfare. US and West German units in central and southern Germany, on the other hand, have better antitank capabilities but are deployed in a region less suited to armored operations.

The deployment problem in northern Germany could be mitigated by the greater urbanization of the area and by improvements in the antitank capabilities of the forces that are intended to defend it. Increasing congestion on the north German plain is making this area less suited for large-scale armored operations. And NATO countries, particularly Belgium, are adding large numbers of sophisticated antitank weapons to their forces there.

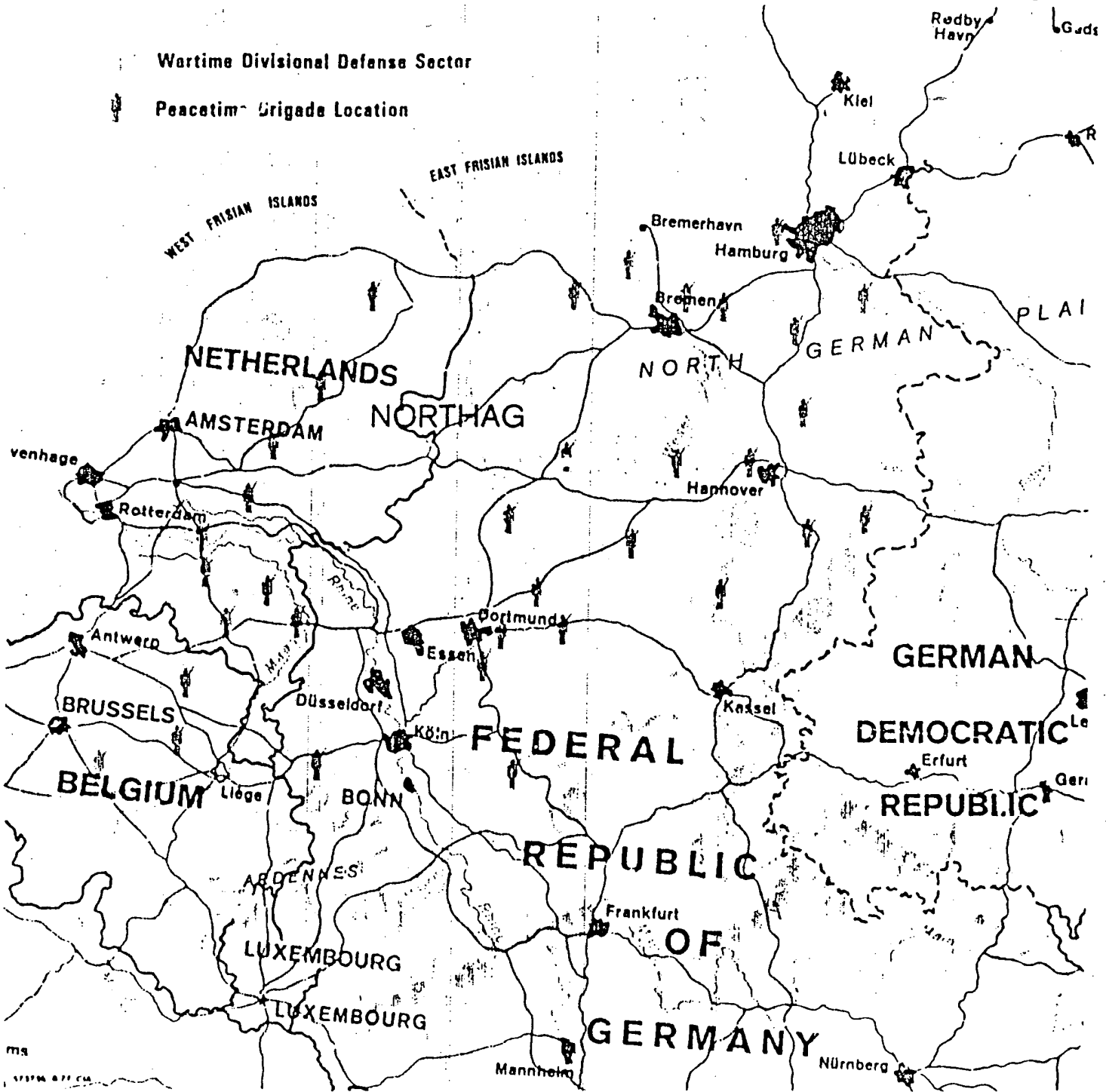
The peacetime disposition of NATO forces is based largely on nontactical considerations and is both a function of present-day political and economic constraints and a carryover from the postwar occupation zones. Reliance on a vulnerable north-south line of communication is dictated by denial to NATO of port facilities in France and of lines of communication across France into central and southern Germany.

These factors have had a particularly strong influence on the location of US forces in southern Germany, where many US units are garrisoned at installations that have existed since World War II. One division is stationed so far to the rear that its defensive zone would have to be covered initially by other units in the area. The vast urban growth in Germany since the war has severely reduced the space available to NATO forces for training and, together with the high cost of building new garrisons, has also reduced the possibility of more favorably positioning US forces.

Disposition of Units in NATO's Northern Army Group

Wartime Divisional Defense Sector

Peacetime Brigade Location



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FORM 871 CA

Major Weapon Systems. There has been much modernization of Warsaw Pact ground forces over the past few years, and recently fielded Soviet weapon systems and equipment have tended to match those of the West in quality. The Pact's numerical superiority in most major ground force systems (see table 1) is still tempered, however, by NATO's overall superiority in technology and by differences in doctrine and force structure. With the size of its forces constrained by both economic and political factors, NATO has tended to rely on fewer but qualitatively superior weapon systems to counter the Pact's numerical superiority. While the Soviets in some instances have surpassed the West with sophisticated application of on-the-shelf technology, they have generally lagged behind the US and Western Europe in developing and applying new technology in most major ground force weapon systems, except for battle-field air defense systems. In the past, the Soviets looked to quantity to compensate for qualitative shortcomings. As more advanced weapons have been fielded, the Pact has not sacrificed its quantitative edge.

Tanks and Antitank Weapons. Soviet reliance on the tank is both a strength and a potential weakness. The tank is the chief source of the Pact's preponderant ground force strength in Central Europe and would be the mainstay of a ground offensive.¹¹ The Pact has twice as many tanks as NATO, and Soviet and East European divisions are generally more tank heavy, relative to their size, than their NATO counterparts. On the other hand, because the type of offensive that Pact planners envision in Central Europe is so dependent on the mobility and shock effect offered by large numbers of tanks, the Pact would be more vulnerable than NATO to a breakthrough in armor-defeating weapons technology or tactics. Thus, NATO planners have

¹¹ For a detailed discussion of the role of armor in Soviet strategy for Central Europe, see *Flexibility in Soviet Offensive Concepts: The Roles of Armor and Other Ground Forces*, July 1975.

sought to counter the Pact's numerical advantage in armor with increasing numbers of highly sophisticated antitank weapons and with a defensive doctrine that is keyed to defeating tank forces.

The current generation of tanks—the Soviet T-62 for the Pact, and the West German Leopard I, British Chieftain, French AMX-30, and US M-60 series for NATO—offers neither side an overall qualitative advantage. NATO's inventory is relatively more modern, however. Modern tanks comprise less than 50 percent of the Pact tank force in Central Europe; nearly all East European forces still have the older T-54/55s. On the other hand, modern tanks make up nearly 80 percent of NATO's inventory in the area.

Although both the Pact and NATO are engaged in tank modernization programs, the bulk of each side's armor force probably will continue to be comprised primarily of the current generation of tanks for the next few years. The Soviets began producing their new T-72 tank in 1974, some 13 years after initial deployment of the T-62. The T-72 is being deployed in the USSR, and about 1,300 have been delivered to Soviet forces in East Germany, apparently replacing T-54/55 series tanks—which in turn have replaced obsolete heavy tanks.

Two new NATO tanks, the West German Leopard II and the US XM-1, are in the final stages of development. Series production should begin in West Germany by 1978 and in the US by 1980, but these tanks will not appear in significant numbers until the mid-eighties, by which time the Soviets could have delivered as many as 5,000 T-72s to Central Europe. In the interim, several NATO tanks—the M60A1, the Leopard I, and the Chieftain—are being upgraded with many of the same components that will be found in the new tanks: more sophisticated fire control, including ballistic computers;

new suspension systems; laser rangefinders; and new fin-stabilized, armor-piercing ammunition, which is a significant improvement over older tank rounds.

The two new NATO tanks probably will be superior to the newly deployed Soviet tanks, largely because of their advanced armor. This armor will greatly increase protection against known Soviet antitank rounds, particularly missiles. The NATO tanks also have advanced stabilization, suspension, and fire-control systems, providing an improved capability for firing while on the move and greater accuracy at long ranges.

The T-72 incorporates a number of improvements over its predecessor, the T-62, including a larger gun, a new engine and suspension system, an automatic gun-loading system, and probably a laser rangefinder. It also appears to have improved ballistic protection, but probably not as much as that provided by the advanced armor on the new NATO tanks.

NATO appears to be ahead of the Pact in developing and deploying antitank weapons technology, especially "second generation" antitank guided missiles (ATGMs).¹² The number of ATGMs fielded has grown in recent years, especially in US and West German forces, and these weapons now comprise some 70 percent of NATO's larger inventory of major antitank systems, in contrast to less than 60 percent of the Pact's.

The Pact, however, is well ahead of NATO in providing missile antitank protection for its armored personnel carriers (APCs). Soviet- and Czechoslovak-made BMP infantry combat vehicles in service with all Pact forces in Central Europe mount a Sagger ATGM launcher, and some Czechoslovak and Polish APCs also are believed to have ATGMs. The West Germans

¹² These improved ATGMs are distinguished primarily by their use of semiautomatic guidance as opposed to the manual guidance systems of their predecessors.

plan to retrofit their Marder mechanized infantry combat vehicle (MICV) with the MILAN missile; some US M113 APCs are being retrofitted with TOW ATGM launchers; and the new US MICV—scheduled to be operational by the mid-eighties—will mount a TOW launcher.

Substantial additional procurement of ATGM systems is programmed over the next several years throughout NATO. Plans call for the British to procure the MILAN, the Germans to purchase some 3,000 ATGM systems, the Belgians to procure 400 second-generation ATGM systems, and the US to acquire the Hellfire laser-guided ATGM. In addition, both West Germany and the US will have begun fielding advanced attack helicopters by the early eighties.¹³

The Soviets too have developed a new family of ATGM systems—some of which apparently have already been fielded. The antiquated Swatter and Sagger missiles have been upgraded: the Swatter with infrared terminal homing and the Sagger with semiautomatic infrared guidance. Three newer systems include a man-portable system, a long-range ground or air-launched system, and another long-range system for the Hind helicopter. The first two systems probably are already in use, and the third is likely to be operational by 1980. All three systems probably employ semiautomatic guidance systems and may have better minimum-range capabilities and accuracy. These developments may lessen, but are not likely to overcome, NATO's lead in these weapons.

The Soviets also are responding to NATO's improved antitank capabilities by revising tactics, by using artillery and motorized infantry units to suppress or overrun antitank de-

¹³ Most NATO and Pact helicopters deployed in Central Europe—except heavy-lift cargo and light observation types—can mount ATGMs. NATO has an advantage over the Pact, however, in the number of the more advanced models used in an antitank attack—about 500 US Cobra gunships to some 100 Soviet Hind helicopters.

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fenses, and by attempting to reduce the vulnerability of tanks to antitank missiles, mainly by defeating the missiles' high-explosive antitank (HEAT) warheads.

Artillery. Soviet doctrine has traditionally stressed the role of artillery on the conventional battlefield, and the Pact now has in Central Europe more than twice as many artillery pieces as NATO. But again, NATO holds the qualitative edge. Although Soviet artillery has greater range, NATO artillery is more accurate, is generally of larger caliber, and fires more advanced and effective ammunition.

In addition, more than 75 percent of NATO's artillery weapons are self-propelled, versus about 10 percent of the Pact's. Most self-propelled artillery weapons have armor-protected crew compartments and high mobility—attributes that enable them to withstand counterfire better and to accompany rapidly advancing mechanized and armored maneuver units more easily and closely than towed artillery.

One area of Pact artillery superiority is in the large number of multiple rocket launchers (MRL) deployed with their forces. These weapons have a greater range than most NATO artillery, have the capability to deliver a massive volume of fire over a large area in a short time, and thus would be well suited for counterbattery fire or suppression of antitank defenses. In NATO, only West Germany has deployed MRLs with its forces.

Pact artillery doctrine stresses a preplanned, massed barrage, which is a particularly effective tactic in nonnuclear breakthrough operations requiring a heavy concentration of fire against relatively static defenses. In the highly fluid tactical environment following a breakthrough, when speed, mobility, and fire-support flexibility are critical, massed fire is less effective. Under these conditions, NATO probably would have some advantage. Its artillery is highly

mobile, and it has more sophisticated fire-control systems which provide better accuracy through adjusted rather than barrage fire and which stress aimed or observed fire rather than preplanned strikes.

The Soviets evidently also lag behind the US in advanced artillery munitions. They have only recently fielded ammunition with proximity fuzes, and there is no evidence that the Soviets have deployed equivalents to such US advances as rocket-assisted projectiles or have developed cannon-launched, laser-guided projectiles (CLGP).¹⁴ These types of artillery ammunition are much more accurate at long range and make indirect antitank fire practical.

Standardization. One of the major disparities between NATO and Warsaw Pact forces lies in their relative levels of standardization. This is particularly apparent in ground-force weapon systems. Most major Pact weapon systems are Soviet-made or are produced by the East Europeans under Soviet license using basically Soviet designs. Such homogeneity reduces the cost of weapons and enables simplified logistic support.

NATO's general lack of standardization, most notably in equipment, tactical communications, and logistics, derives from the nature of the Alliance. Unlike the Pact, NATO is an amalgam of economically competitive states, most of which have highly developed arms industries. Competition among armaments producers and national control over weapons procurement have led to duplication in research and development within NATO and to loss of the economies gained from large production runs. Such competition has contributed to the high cost of research, development, and procurement and has resulted in the fielding of a variety of weapon systems that are incompatible, especially in terms of ammunition and spare parts.

¹⁴ CLGP systems are not yet deployed with US or other NATO forces.

Another problem for NATO arises from difficulties in rapidly and effectively coordinating operations among units of different nationalities because of deficiencies in tactical communications. Language differences complicate international military communications in any case, but variations in equipment, operating techniques, and frequency ranges heighten the barriers. Progress is being made, but achievement of fully integrated tactical communications is still far off.

Another serious impediment to NATO defense planning under the present force structure is the lack of a common, integrated logistics system. Logistic support remains the responsibility of a military unit's parent government, and an allied commander could not be assured of logistic support and supply of his multinational force by the host nation.

The Pact also lacks an integrated logistic system. Because of greater standardization, however, it could more easily shift the materiel of one national force to another and carry out other ad hoc support measures. Attempts are being made in both NATO and the Pact to improve logistic support through bilateral arrangements between national forces and host countries.

Competition and diversity are not all to NATO's disadvantage, however, for they contribute to its technological lead. Competitive development of the West German Leopard II and US XM1 tanks, for example, will eventually give each country a better tank than either prototype. Warsaw Pact forces, for the most part, have to buy or coproduce Soviet equipment without such competitive evaluation.

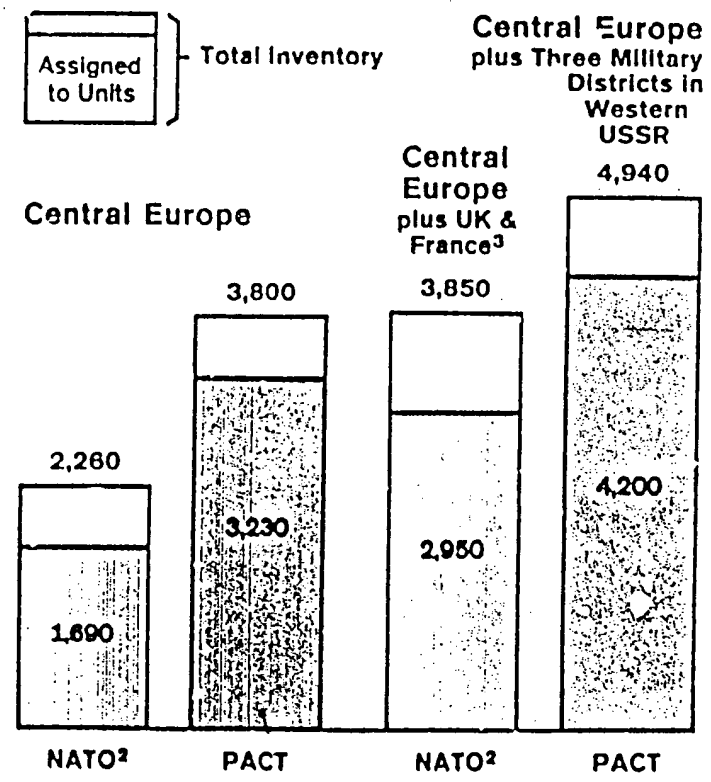
Tactical Air and Air Defense Forces

The USSR, and to a lesser extent the rest of the Warsaw Pact, has modernized its air and air defense forces extensively in recent years. Improvements in tactical air forces have enhanced

the Pact's ability to conduct the large air offensive in Central Europe that Pact planners consider critical to the success of a ground offensive. Growth in Pact air defenses has increased the challenge for NATO's air forces.

Tactical Air Forces. The continued influx of new and better Soviet tactical aircraft into Central Europe and the relatively slow pace of NATO air force modernization have narrowed NATO's qualitative advantage. Although NATO air forces still are generally superior in such areas as pilot training, munitions, and avionics,

NATO and Warsaw Pact Tactical Aircraft¹



¹Includes combat-capable trainers and support aircraft for such missions as reconnaissance and electronic warfare.

²Including Denmark.

³France has a total inventory of 770 tactical aircraft of which 520 are assigned to units.

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the Pact is lessening two of NATO's longstanding advantages--aircraft range and payload--while maintaining its numerical advantage.

But the Warsaw Pact's growing tactical air capabilities in Central Europe are mitigated by several factors. The Pact's numerical advantage in aircraft in active units there (see figure 2) is cut significantly (from nearly 2 to 1 to only 1.4 to 1) if NATO aircraft capable of striking targets in Central Europe from bases outside the area are included in the equation.¹⁵ These other aircraft include those in the French tactical air force and British and US aircraft (including the F-111) stationed in the UK. On the Pact side, Frontal Aviation assets in the three western Soviet military districts would be included, but most of these would have to be relocated to bases in Eastern Europe to reach NATO targets. In addition, the Soviets have more than 500 medium bombers in the western USSR that would be committed to operations against NATO even in a nonnuclear war.

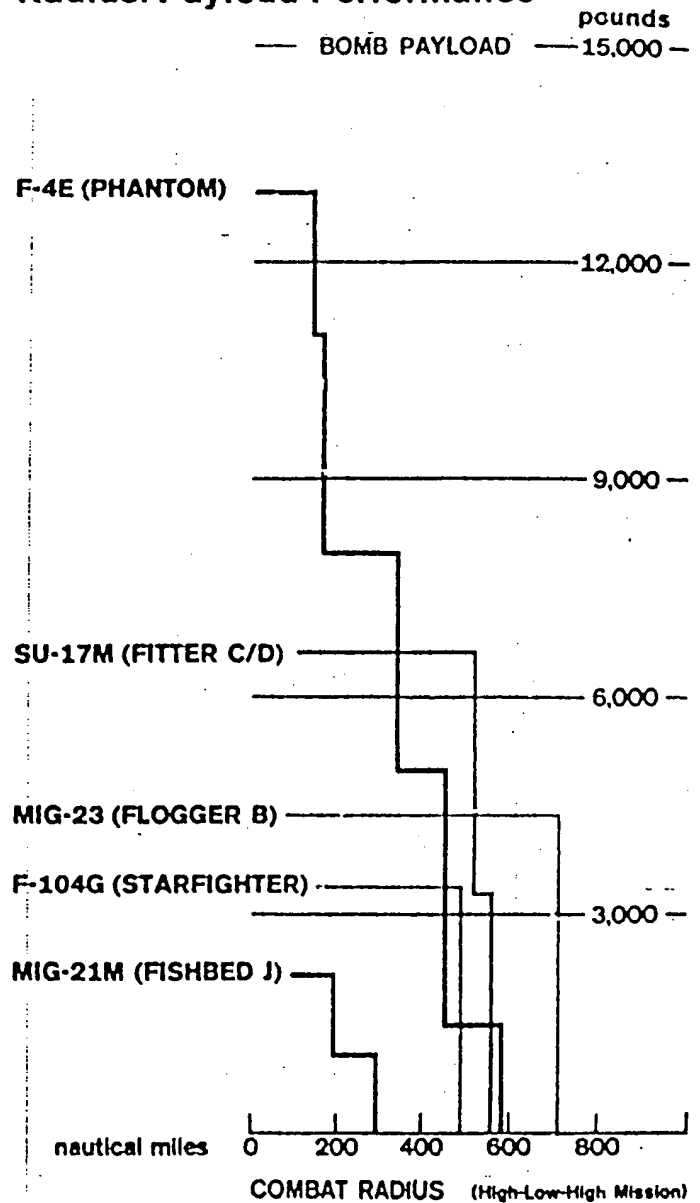
The range and payload characteristics of such new Soviet fighter aircraft as the Fitter C/D and Flogger B/D (see figure 3) are distinct improvements over those of older Soviet aircraft and exceed those of the Phantom F-4--the most advanced NATO ground attack aircraft now deployed in significant numbers in Central Europe.¹⁶ The new Soviet aircraft make up only about 25 percent of the total Pact inventory there, however, and NATO's tactical air forces still can deliver the greater overall ordinance payload.

The greatest potential weakness in NATO's air capabilities is the age of tactical aircraft in

¹⁵ In terms of combat potential--as reflected by total combat aircraft inventory--the Pact advantage also is less formidable. The Pact has an inventory of some 4,900 combat aircraft in active units, training units, and in storage in Central Europe and the western USSR. NATO has a total inventory of nearly 3,900 combat aircraft in Central Europe, the UK, and France.

¹⁶ The F-4 retains a payload advantage over these Soviet aircraft at distances up to about 350 nautical miles.

Tactical Aircraft Radius/Payload Performance



non-US NATO forces. The US Air Force inventory in West Germany and the UK is comprised entirely of the F-4 Phantom and the F-111, respectively, and some of the F-4s are now being replaced by the advanced F-15 fighter. The bulk of NATO aircraft in non-US forces in Central Europe, however, is composed of older models such as the F-104. New aircraft that will

enter NATO inventories represent a jump in technology over current models, but these will not be available in significant numbers until the early eighties. The number of new aircraft in the Pact's inventory will have grown significantly by then.

The Soviets are flight testing a new ground-attack aircraft with increased ordnance-delivery capabilities similar to the US A-10. Initial deployment, which could begin by mid-to-late 1979, probably will be limited to East European units in Central Europe and Soviet units in the USSR.

Combat Readiness. Because of differences in aircraft range and basing patterns, NATO could direct more aircraft against enemy targets than could the Pact within 24 to 48 hours of an alert. After about 72 hours of mobilization and redeployment, the Pact would gain numerical superiority in aircraft that were within range of enemy targets, but a concurrent augmentation of NATO forces with aircraft from the US would hold this Pact advantage to about 25 percent.

Under normal peacetime conditions, no more than about 5 percent of the Pact's air forces are kept in full combat readiness, primarily for air defense. To prepare for sustained offensive operations, Pact air force units would require extensive preparations, including:

- Mobilization of some support personnel (Pact combat air regiments may be manned as low as an average 70 percent of their wartime strength).
- Establishment of command-and-control nets, including forward-based ground-controlled intercept and navigation sites.
- A buildup of POL and munitions stocks from depots off base.

Under wartime mobilization conditions, the Pact probably could deploy:

- About 1,500 aircraft in Eastern Europe that are based well within range of NATO targets. The units to which they are assigned could be ready for sustained offensive operations within 24 hours of notification.

- Another 600 aircraft in Eastern Europe that are based beyond the range of NATO territory and, along with ground-support equipment, would have to be moved to forward bases. This would require about 24 to 48 hours.

- About 1,000 tactical aircraft and associated ground support that are in the USSR's three western military districts. These would require about 72 hours to move to forward bases.

These 3,100 aircraft comprise the tactical air strike force that probably would be targeted against NATO. Another 700 Soviet and East European tactical aircraft in Central Europe and the western USSR are believed to be designated for air defense missions. About 400 training aircraft assigned to active units could supplement these forces.

NATO's entire inventory of tactical aircraft intended for initial operations in Central Europe is based within striking range of Pact forces in Eastern Europe. In response to the threat of a Pact incursion into Western Europe, NATO could employ:

- About 2,950 aircraft within 24 hours (some 1,220 in West Germany, 740 in the UK, 360 in Belgium and the Netherlands, 110 in Denmark, and 520 in France).¹⁷

- An additional 150 dual-based US aircraft that can be deployed to predetermined bases in Europe from the US within 24 to 48 hours.

¹⁷ French air forces are not committed to NATO in peacetime, and their availability to NATO would depend on a decision by the French political leadership.

- Another 250 aircraft in the US designated for rapid reaction and as SACEUR reserves that can be deployed within 72 hours.

These 3,350 tactical aircraft would comprise NATO's offensive and air defense capability in the Central Region after immediate reinforcement. Although most NATO aircraft are—like the F-4 Phantom—multipurpose, about two-thirds of those based within the theater probably would be designated for offensive missions. The remainder would be for air defense and such other missions as reconnaissance. At least half of the 400 US dual-based, rapid-reaction aircraft would be designated for offensive missions.

Air Defense. Both NATO and the Warsaw Pact recognize the vulnerability of their ground forces to air attack. Yet, possibly because of NATO's longstanding emphasis on ground attack and the qualitative superiority of NATO's tactical air forces, the Pact has placed greater emphasis than NATO on air defense. The Pact air defense system is dense and technologically advanced and has helped to partially offset NATO ground-attack capabilities. The deployment of large numbers of highly mobile tactical SAMs also has lessened the ground forces' dependence on fighter aviation for battlefield air defense, thus freeing more aircraft for offensive roles.

NATO recently has come to recognize the weaknesses of its own battlefield air defenses in light of the improving ground-attack capabilities of Pact air forces. It is introducing several new weapon systems designed to enhance both the density and mobility of its battlefield air defense, particularly at low altitudes.

Tactical Nuclear Forces

The military doctrine of both sides considers that a war in Europe—even if it began with conventional weapons only—could escalate to nuclear warfare. The Pact has placed far greater

emphasis than has NATO on passive defense and decontamination capabilities, but it is problematical how effective these preparations would be in a nuclear war.

Developments under way in Soviet tactical nuclear forces have reduced, but not overturned, NATO's tactical nuclear advantage in Central Europe. Despite the slightly larger number of nuclear-capable aircraft and tactical missiles now present with Pact forces in Central Europe, NATO retains a numerical and qualitative advantage because it has nuclear rounds for much of its tube artillery (see table 6). Some 670 NATO gun crews are qualified to handle nuclear rounds, and all US-made 155-mm and 203-mm (8-inch) self-propelled howitzers—the bulk of NATO's artillery—are capable of firing nuclear rounds.

Tactical Nuclear Systems in Central Europe¹ Table 6

	NATO	Pact
Artillery ²	670	0
Aircraft ³	380	400
Missiles/Rockets.....	300	390
Total	1,350	790

¹ Excludes French tactical nuclear systems.

² All US 155-mm howitzers and 203-mm (8-inch) guns can fire nuclear projectiles, but only 670 NATO gun crews have been certified for a nuclear mission.

³ About 580 NATO and possibly as many as 1,600 Pact aircraft assigned to combat units are capable of delivering nuclear ordnance. Only 380 NATO nuclear-capable aircraft are assigned to units that have a nuclear delivery role in wartime. It is estimated that only about 400 Pact pilots in Central Europe are qualified for nuclear weapons delivery.

The numerical advantage in delivery systems would swing to the Pact, however, if forces based outside Central Europe but likely to be targeted against Central Europe were included in the balance. For the Pact, such forces would include ground force rocket and missile units and nuclear-capable tactical aircraft and bombers deployed in the western USSR and the bulk of their strategic forces for peripheral attack. For NATO, potential theater assets include

French nuclear forces, British strike aircraft and Polaris submarines, US aircraft based in the UK, and some Poseidon submarines.

Despite the Pact's potential advantage theater-wide, the availability of nuclear artillery provides NATO with a flexibility in its theater nuclear planning that the Pact lacks. Nuclear artillery weapons have distinct advantages over missiles and aircraft in reaction time, accuracy, and most important—low warhead yield. Lacking similar low-yield systems, the Soviets would have either to tolerate limited NATO low-yield tactical strikes or respond in escalatory fashion with larger yield systems.

Soviet Improvements. The Soviets apparently have developed nuclear artillery munitions for heavy artillery pieces. Heavy artillery brigades, believed to have a nuclear mission and equipped primarily with obsolete 203-mm howitzers and 240-mm mortars, have been identified since the early seventies at several locations in the western USSR. The Soviets are beginning to replace these weapons with a new, heavy, self-propelled howitzer and mortar. Heavy artillery has not been identified in Central Europe, however, and there is no convincing evidence that the Soviets have developed nuclear rounds for their widely deployed 152-mm weapons.

Soviet tactical nuclear capabilities will be enhanced with the deployment—apparently already under way in the USSR—of a new missile (the SS-21) to replace the FROG-7 rocket at divisional level. The SS-21 offers significant advantages over the FROG-7, such as increased range, accuracy, and mobility. Its deployment with Soviet units in Central Europe will permit the transfer of FROG-7s to non-Soviet Pact forces to replace even older systems in these forces.

The Soviets also are improving their peripheral nuclear strike forces. They are expected to begin deploying this year the SS-X-20 IRBM, a multiple-warhead, mobile system that is less

vulnerable and more accurate than the SS-4 and SS-5 missiles it will replace. The Backfire bomber now being deployed in the USSR also enhances Soviet conventional and nuclear strike capabilities, especially against targets deep within heavily defended areas of Western Europe. Unlike the obsolescent Badger and Blinder bombers that comprise the bulk of Soviet Long Range Aviation, the Backfire is designed to fly at low altitudes, has a supersonic dash capability, and probably is equipped with more advanced electronic countermeasures against enemy air defenses.

NATO Force Improvements. NATO has responded to the Soviet advances by programming significant improvements to its own tactical nuclear forces. For example, the number of US F-111 aircraft stationed in the UK is being doubled. The new aircraft are replacing F-4s, which are less versatile in the nuclear delivery role. NATO's nuclear strike capabilities will be further improved by the replacement in the early eighties of Belgian F-104 aircraft with a nuclear-capable version of the F-16, which has greater range and payload, better avionics, and more maneuverability, and by British and West German deployment of the nuclear-capable MRCA (multirole combat aircraft).

NATO's ground-based tactical nuclear capability will be improved substantially by the deployment of the US Lance tactical missile with West German, Belgian, and British forces in the Central Region. This program will be completed next year. The Lance, which has already replaced Honest John rockets in US units in Germany, is much superior to comparable Soviet systems, especially in accuracy and range.

France, too, is continuing to upgrade its nuclear forces. It has deployed 24 launchers for the Pluton tactical missile, which is similar to the US Lance, and is expected to add six more. A fourth ballistic missile submarine (SSBN) is

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operational, a fifth is under construction, and a new class of SSBNs apparently has been funded. The French also have a multiple-warhead missile under development for their SSBN fleet.

Chemical Warfare Capabilities

The capability of the Warsaw Pact to conduct ground force operations in a toxic chemical environment is superior to that of NATO. Some analysts believe that this disparity and the potential advantage of the surprise use of chemical weapons could lead Soviet planners to use such weapons in a conventional conflict. Others believe that, given NATO's relatively poor defenses against chemical strikes, Soviet planners probably would view the use of chemical weapons in a nonnuclear environment as risking a NATO nuclear response. In any case, chemical weapons are classed in Soviet doctrine with nuclear weapons as "weapons of mass destruction," and the employment of toxic chemicals would require a decision at the highest political level.

Pact chemical planning emphasizes both protection and rapid decontamination, and combat units down to regimental level have organic chemical defense units capable of providing a full range of reconnaissance and decontamination support.

NATO troops are supplied with individual protective equipment, and most NATO armored vehicles, like those of the Pact, have collective filtration systems providing protection against toxic agents.¹⁸ NATO forces do not engage in

¹⁸The US-hull M113 armored personnel carrier provides protection for only its crew. US M60 tanks are being upgraded and will incorporate a collective filtration system.

extensive training under simulated CBR conditions, however, and their overall defensive capability against chemicals—particularly in the area of decontamination—is limited. Only the US and West Germany have chemical defense units capable of performing more than marginal reconnaissance and decontamination at division and corps levels. At brigade and lower levels, NATO has almost no capability for extensive decontamination.

The Soviets have developed a variety of toxic chemical agents and the tactical doctrine for their use. Although numerous facilities in the USSR have produced and stored toxic chemicals, there is little evidence upon which to base a quantitative estimate of offensive capabilities. There is good evidence the Soviets have stocks of chemical agents in Eastern Europe, but we do not know the amount stored there.

NATO's offensive chemical capability is limited primarily to nontoxic agents. Only France and the US maintain toxic chemical munitions stockpiles. The French have storage facilities for toxic agents and a munitions stockpile of unknown size. The US has roughly [] of toxic agents in usable form (e.g., filled munitions and spray tanks), of which [] tons are deployed in artillery shells []

Outlook

The balance of military power in Central Europe—especially as it contributes to deterrence there—is not fragile. Any significant shift in this balance would require a major change either in the quality of weapons fielded by one side or in the numerical force ratios. Except for the political collapse of one side or a rapid unilateral military buildup during a grave political crisis, such a shift in the balance almost certainly would occur only gradually over the long term—thus increasing the possibility of long warning time.

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The reaction by either side to important shifts in the balance—even if such shifts are identified—could be tempered in various ways by the political-economic background. For example, much of the Soviet modernization effort in Europe took place while the US was preoccupied with the war in Southeast Asia.

The size and structure of both sides' forces have been relatively stable over the past few years; changes in the balance have resulted almost exclusively from qualitative gains arising from the application of improved technology. Soviet and East European forces facing NATO in Central Europe have not been expanded structurally (no divisions or brigades have been added) since 1968, when the Soviets established a five-division garrison in Czechoslovakia after intervening there.

Similarly, there have been few significant structural changes and almost no increase in manpower in NATO forces since the late sixties. Two new US combat brigades are being added in Germany, but this is being accompanied by a corresponding reduction in support troops there. The Germans also have added three brigades to fill out three understrength divisions.

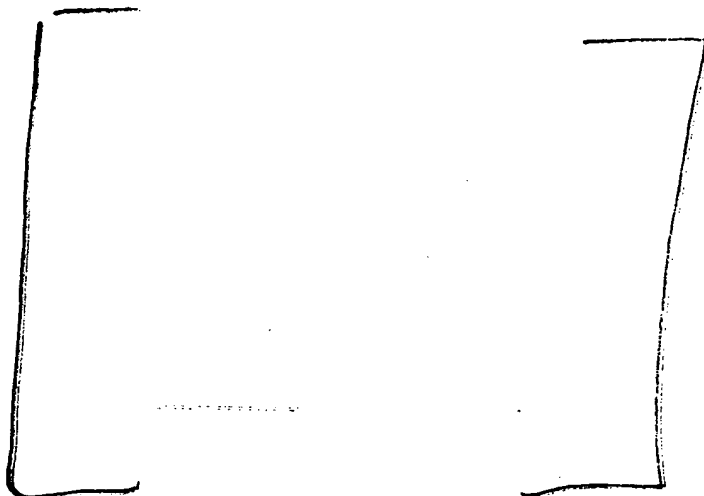
Several developments, however, have the potential of altering the balance of forces in Central Europe to the Warsaw Pact's advantage. Chief among these are the actual and anticipated improvement in Soviet theater nuclear forces and in Pact ground and tactical air forces, and a flagging of the defense effort on the part of some NATO countries.

Tactical Nuclear Forces

Among the most significant of the recent changes in Pact forces in Europe is the increased capability of their tactical nuclear forces. Deployment of additional tactical nuclear missile launchers and tactical nuclear delivery aircraft since the late sixties has given the Pact a small

numerical advantage over NATO in these systems. NATO still has a numerical superiority and some qualitative advantage in tactical nuclear weapons, however, by virtue of its exclusive possession of nuclear artillery rounds—deployed in Central Europe. These weapons—with their low yields and high accuracy—give NATO artillery the capability to provide close, responsive battlefield support to engaged ground force units.

This monopoly is likely to be broken in the next few years, however. At the same time, a large part of the deterrent value of battlefield artillery will be lost because even with a few nuclear artillery pieces the Pact could respond to NATO use without the potentially escalatory use of larger yield systems.



Conventional Forces

While conceding the Pact an advantage in most measures of conventional ground and air forces, military analysts have long considered that NATO enjoyed a technological lead which offset that advantage. Trends have emerged over the past several years, however, which suggest that the Pact is reducing its technological handicap. Recently introduced Soviet equipment designed in the mid-to-late sixties is in many respects as sophisticated and effective as currently deployed NATO equipment. Because the new equipment is replacing older, less

capable equipment on at least a one-for-one basis, technological improvements have thus far not been at the expense of force levels.

This pattern is most prominent in the tactical air forces, where the destabilizing potential is greatest. Newer Soviet aircraft being deployed to Central Europe far outperform the models they are replacing. Although they cannot match NATO's current aircraft in such things as avionics and ordnance, and although NATO has superior pilots, the new aircraft are so improved over previous Pact aircraft as to raise doubts about NATO's ability to continue its air dominance by pitting quality against quantity. The balance of air power will be at issue over the next few years, as the Pact deploys more of its late-generation aircraft but before new NATO aircraft, such as the F-16, A-10, and MRCA, are introduced in significant numbers in the early eighties.

The evolution of Pact ground forces has been as pronounced as, and more publicized than, that of the tactical air forces. Since the late sixties, the Soviets have introduced a complete new generation of ground force equipment, ranging from tanks, self-propelled artillery, and air defense weapons to sophisticated electronics and support equipment. Again, the introduction of improved equipment brought no decrease in the number of weapons deployed. The Soviets apparently intend to maintain their numerical advantage as they make qualitative improvements.

As with tactical air forces, the ground force balance almost certainly will shift in favor of the Pact for at least the next few years. NATO has better equipment under development than the Soviets are deploying, but the NATO equipment has not yet been fielded, whereas much of the Soviet equipment with which it is compared has been in service for several years. The XM-1 and Leopard II, for example, appear to be far superior to the T-72, but, depending

on production and deployment patterns, the Soviets could deliver as many as 5,000 T-72s to Central Europe before the new NATO tanks are fielded in significant numbers.

Economic Considerations

Economic pressures are likely to have a greater impact on NATO's military capabilities than on those of the Pact. Both alliances apparently are feeling the competition for resources between the military and the civilian economy. Growing pressure in the East European countries to move further and faster toward a consumer-oriented society could force leaders of these countries to reexamine priorities. But the Soviets almost certainly will keep pressure on their allies to sustain their defense efforts. While economic pressures may slow modernization efforts--particularly with the East European forces--it is doubtful that such pressures will be allowed to cause any significant diminution in Pact force levels.

Several NATO allies, on the other hand, have already responded to economic and political pressures by reducing their force commitments--albeit with little impact on NATO's military capabilities thus far. What is more important in the long run, however, is the tendency on the part of some NATO allies to make unilateral force cuts--an example being Belgium's plan to withdraw from the NATO air defense belt--which suggests a reduced individual commitment to the common defense.

Recently several NATO countries pledged to increase spending to arrest the continuing decline in their conventional forces' capabilities relative to those of the Pact. Even if these pledges are kept, it will be a few years before any increased expenditures can be translated into more capable forces in the field.

A Continuing Balance

Despite these perceptible shifts of the force balance in Central Europe in the Pact's favor,

the ability of NATO's military forces there to deter conflict does not seem to be immediately threatened. The Pact's numerical advantages and qualitative gains must be viewed in the context of its own perception of need, as dictated by its political and economic weakness, and its self-imposed requirement to be ready to attack, not merely defend. Many of the Pact's improved weapons have not been deployed in large numbers and thus cannot yet be said to give the Pact a true technological advantage over NATO. And future Pact technological gains will be slow. Even if the Soviets began deploying nuclear artillery in Central Europe immediately, for example, they probably would need several years to develop the doctrine, storage, handling procedures, training, and stock of nuclear rounds needed to match NATO's capability with nuclear artillery.

Future changes in the balance of forces in Central Europe probably will continue to be marked by qualitative, not quantitative, gains, thus offering NATO the opportunity to take advantage of its more advanced technological bases. As noted, NATO is preparing to field a new generation of more sophisticated weapons, and, although history has shown that the West does not always fully translate its technological advantage into fielded weaponry, it has never lost its overall lead.

In sum, for at least the next few years, Soviet planners will continue to be faced both with

what they see as an impressive NATO defense that they could not count on defeating and with uncertainty about whether the strategic forces of both sides could be divorced from a war in Europe.

The most serious results of the shift in the balance of forces in Central Europe could arise from both sides' perception of that evolving balance. There is a growing but largely unsubstantiated impression in the West that the vigorous, ongoing Soviet modernization effort constitutes a major conventional arms buildup which has caused the balance to shift radically. Some parliamentarians might believe that the Pact has pulled so far ahead in conventional forces that it is not economically or politically feasible for NATO to try to catch up. They would argue that it is useless, therefore, for NATO to spend money on conventional forces, and that the alliance should return to the massive retaliation doctrine of the fifties to deter Pact aggression. But, given the Soviet achievement of nuclear parity, the "tripwire" doctrine has even less credibility now than when it was discarded.

Moreover, should it become widely accepted that the balance has dramatically shifted, it could depress NATO confidence and in turn increase Soviet assertiveness. Such a development could ultimately increase the risk of war through Soviet miscalculation.

author of this paper is
Office of Strategic
Research. Comments and queries are welcome
and should be directed to

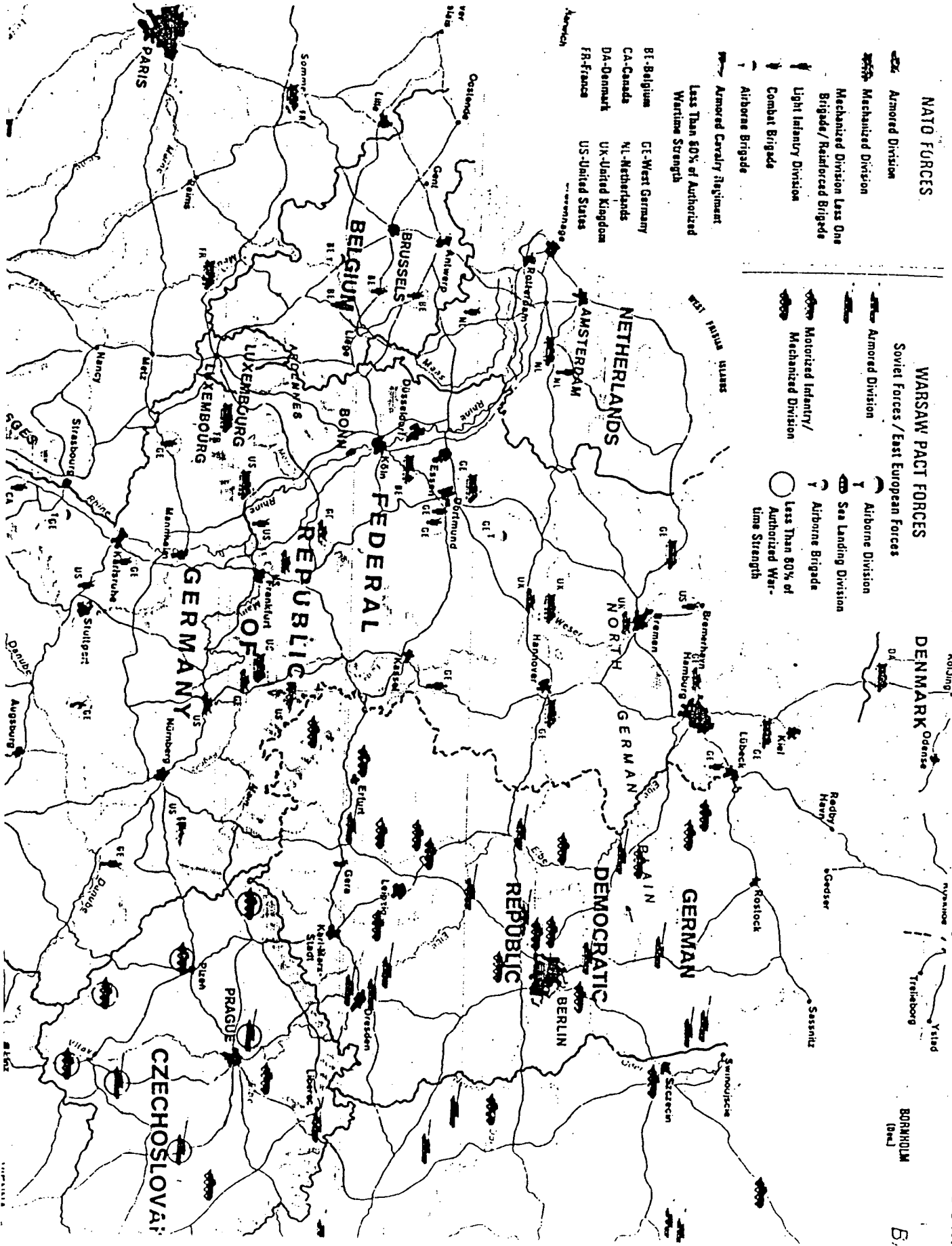
Peacetime Deployment of Major NATO and Pact Com

NATO FORCES

- Armored Division
- Mechanized Division
- Mechanized Division Less One Brigade/ Reinforced Brigade
- Light Infantry Division
- Combat Brigade
- Airborne Brigade
- Armored Cavalry Regiment
- Less Than 80% of Authorized Wartime Strength

WARSAW PACT FORCES

- Soviet Forces / East European Forces
- Armored Division
- Motorized Infantry / Mechanized Division
- Sea Landing Division
- Airborne Division
- Airborne Brigade
- Less Than 80% of Authorized Wartime Strength



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4 October 1977

MEMORANDUM FOR: Recipients of CIA Report SR 77-10100
SUBJECT : Errata

1. Recipients of SR 77-10100, *The Balance of Forces in Central Europe*, are requested to note the following corrections:

a. The second sentence of footnote 13 on page 13 should read: "NATO has an advantage over the Pact, however, in the number of the more advanced models used in an antiarmor attack--about 230 US Cobra-TOW helicopters to some 100 Soviet Hind ATGM helicopters."

b. The map "Peacetime Deployment of Major NATO and Pact Combat Units" on the last page of the document should be replaced with the attached map, which contains corrected unit locations.

2. These changes do not affect the judgments and conclusions of the report.

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