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The Theater
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PLANNING U.S. GENERAL PURPOSE FORCES:
THE THEATER NUCLEAR FORCES

The Congress of the United States
Congressional Budget Office

PREFACE

This paper is one part in a series of six papers on planning U.S. general purpose forces. While it does not directly address issues of major budgetary significance, it is nevertheless a necessary part of the series. Its primary purpose is to show the relationship between theater nuclear forces and conventional force planning. One possible response to the rising costs of conventional forces is to place more reliance on theater nuclear forces to deter the outbreak of war. This paper explores the reasonableness of that response, and attempts to answer the question: "Are theater nuclear weapons a useful substitute for conventional force capability, or a hedge against failure of conventional forces?"

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Alice M. Rivlin
Director

January 1977

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SUMMARY

For almost 20 years the United States has maintained nuclear weapons in Europe as a part of NATO's defenses against an attack by Warsaw Pact forces. These weapons were first introduced under the "massive retaliation" doctrine. That doctrine presupposed that its overwhelming nuclear superiority enabled the United States to fight and win a nuclear war against the USSR and its allies. Nuclear combat capability thus could be substituted for more expensive conventional forces. At that time members of the alliance saw no real prospect of NATO's matching Soviet ground forces. The doctrine was, therefore, especially important to Western Europe's feeling of security.

Since the mid-1950s the USSR has developed formidable strategic and theater nuclear forces. The United States no longer enjoys its former marked superiority. Because of the approximate U.S.-Soviet nuclear parity, it would be far more risky now to use U.S. theater nuclear forces to support NATO conventional defenses, if these were to falter. The threat of Soviet retaliation might undermine U.S. resolve to use these weapons. Parity has changed U.S. perception of the role of nuclear weapons, both strategic and theater. Two decades ago they were deployed to contain and defeat the enemy; today their aim must be to deter the enemy from using his nuclear arsenal.

The results of this different perception, however, have been inconsistent. The number of weapons was stabilized at about 7,000 in the early 1960s, when President Kennedy and Secretary of Defense McNamara grasped the implications of growing Soviet nuclear capability. The doctrine for weapons employment, however, and the kinds and numbers of weapons deployed, have been slower to adapt to the changing situation.

This slow response stems partly from the underlying logic of massive retaliation. In the eyes of our allies, the United States had offered them a "nuclear guarantee." We had assured them that we would engage in nuclear war to defend Europe. The NATO nations saw the

presence of nuclear weapons on European soil as a sign of U.S. commitment to use strategic nuclear forces in Europe's defense, should that be necessary. In European eyes, deployment of theater nuclear weapons became associated with U.S. willingness to fight in defense of Europe. The political sensitivities growing out of this view have thwarted change. It has proved difficult to make any but the most minor adjustments to the weapons stockpile, in spite of the greatly altered environment.

The present rationale for theater nuclear weapons emphasizes their role in deterring both Soviet first use of nuclear weapons and attack by conventional forces. These two concepts contain serious ambiguities, and they may be inconsistent with each other. Further, present configuration of theater nuclear forces may not serve either of these objectives, even if the ambiguities are resolved.

To the extent that deterrence depends upon theater nuclear forces, their survivability is a paramount requirement. A Soviet first strike must not be able to preclude a serious counter strike. U.S. nuclear weapons on European soil are based at about 100 sites that are easily locatable and identifiable. These sites are vulnerable to nuclear and conventional attack. A well designed and executed Soviet attack could destroy a large number of them. Such a preemptive attack would seriously impair NATO's capability for theater nuclear response, and would force greater reliance on Poseidon submarine-launched ballistic missiles committed to NATO, which would almost certainly be available for retaliation. If, however, deterrence rests in the end with the submarines, why have the weapons on land?

The second objective of theater nuclear forces is to deter conventional attack by threatening escalation to the use of nuclear weapons. This also presents some difficulties. Presumably in such a case NATO would first use its conventional forces to repel the Soviet attack. Only if this failed, and NATO forces were threatened with collapse and annihilation, would nuclear weapons be invoked. However, in such a situation it is hard to see how the weapons would salvage victory out of defeat. If NATO forces were in danger of collapse, the conditions for effective battlefield use of nuclear weapons would

not exist. Commanders would lack knowledge of the location and composition of friendly and enemy forces. They would not have the means for carefully planned and positively controlled modes of delivery. Military command and control would be breaking down.

Soviet ground forces, on the other hand, are well trained and equipped for sustained operations in a nuclear environment. Their tanks and armored vehicles offer good protection against fallout. Radiological monitoring and anti-contamination devices are widely distributed throughout their ground forces. On a nuclear battlefield the Soviets may be relatively better off than NATO forces.

Finally, if U.S. nuclear forces deter Soviet first use, why should not the reverse be true? Soviet retaliatory capability could act as a strong deterrent to U.S. first use, even if the alternative were a NATO defeat in the European battle.

Some demonstrative use of nuclear weapons might offer a chance to prevent the loss of Europe. Selected use of theater nuclear forces could signal our resolve to retaliate for the destruction of NATO armed forces and the occupation of Europe. This might give the Soviets pause, and lead to negotiations. But breaching the nuclear barrier could also trigger preemptive Soviet strikes at remaining NATO nuclear sites, and push the conflict to successively higher levels of destruction. A President confronted with choices involving such great risks would have a difficult decision to make.

The agonizing nature of that decision argues strongly for reducing the likelihood that a U.S. President would ever have to make it. This can be done chiefly by ensuring that conventional NATO forces are strong enough to prevent rapid and decisive Warsaw Pact victory without requiring NATO to resort to theater nuclear weapons. Some changes to U.S. theater nuclear forces may also be desirable, to improve their credibility as a deterrent. Such changes in the current force might include:

- o Reduction or elimination of marginally useful weapons;

- o Reduction or elimination of Quick Reaction Alert (QRA) forces that are vulnerable and destabilizing; and
- o Development of more survivable basing modes for theater nuclear forces incorporating combinations of hardening, concealment, and early dispersal in time of crisis.

Technical improvements, such as improved accuracy, greater artillery ranges, or tailored nuclear effects, do not appear to contribute strongly to deterring Soviet first use of nuclear weapons. Choices regarding theater nuclear weapons should focus on improving their value as a deterrent to Soviet first use rather than a general deterrent against aggression with conventional forces. For the latter purpose there is no substitute for NATO conventional capability.

A clearer definition of the deterrence objectives of theater nuclear forces and a clearer and more effective doctrine for NATO second-strike use of these forces might result in a smaller but more effective deterrent force.

CHAPTER I INTRODUCTION: A CHANGING CONCEPT
FOR THEATER NUCLEAR FORCES

For almost 20 years the United States has deployed theater nuclear weapons^{1/} in Europe and Asia, ashore and afloat. These weapons were originally introduced into Europe and the fleet in the mid-1950s. At that time the United States embraced the strategic concept of "massive retaliation." This concept presumed that a war with the Soviet Union would be nuclear from the outset, and that the strategic nuclear exchange would be decisive. Theater nuclear weapons in Europe would serve as a trigger for and an extension of U.S. strategic retaliatory forces, then composed largely of medium-range ballistic missiles (MRBMs) and bombers based on the territory of U.S. allies. It was also believed that theater nuclear forces could offset Soviet and East European conventional force advantages, and so reduce the need for the United States to maintain large and costly conventional forces abroad in support of NATO.

In accord with this prevailing concept of a likely Soviet-U.S. conflict, the U.S. stockpile of theater nuclear weapons grew rapidly, the rate of growth being apparently governed by the U.S. production capacity.^{2/} In the early 1960s the United States had deployed in excess of 7,000 theater nuclear weapons to Europe. That number has since remained relatively stable.^{3/}

At the time these theater nuclear forces were assembled, their use in a European conflict might well have

^{1/} For the purposes of this paper, theater nuclear weapons are regarded as those means of nuclear delivery either based in a theater of military operations or assigned to and targeted by the theater commander.

^{2/} Nuclear Weapons and Foreign Policy, Hearings before the Subcommittee on U.S. Security Agreements and Commitments Abroad and the Subcommittee on Arms Control, International Law and Organization of the Senate Committee on Foreign Relations, 93 Cong., 2 sess. (1974), pp. 140, 197-198.

^{3/} Ibid., p. 198.

permitted NATO to defeat a Warsaw Pact attack without serious destruction of NATO territory. The USSR then lacked both an effective tactical nuclear capability and a major intercontinental strategic capability. However, with the Soviet acquisition of both tactical and strategic nuclear delivery capabilities in the late 1950s and early 1960s, NATO's relative immunity to nuclear retaliation faded, and with it the credibility of a threat of first use of nuclear weapons.

The United States, therefore, moved to adopt the concept of "flexible response." This doctrine held that a conflict with the Soviet Union should be confined to conventional arms if possible, and this in turn implied that the United States and NATO should provide more adequate conventional forces to conduct such combat. The implications of flexible response for NATO theater nuclear forces were several: early resort to theater nuclear weapons was to be deemphasized; nuclear weapons were to be secured away from firing units and positive control in peace and war was to be stressed; overseas deployments were to be limited; and vulnerable alert systems that might invite a Soviet nuclear attack were to be deemphasized.

Although some marginal changes in the composition of NATO theater nuclear weapons and delivery systems were made during the 1960s and early 1970s, as a consequence of modernization, the status of NATO theater nuclear forces and policy for their employment did not change significantly until 1974. In his foreign policy messages^{4/} President Nixon began to call for options for nuclear employment on other than a massive scale. In response to this desire, Secretary of Defense Schlesinger announced in 1974^{5/} a flexible strategic targeting doctrine. Finally, Public Law 93-365, required a comprehensive study of U.S.

^{4/} E.g., U.S. Foreign Policy for the 1970's: A New Strategy for Peace, A Report to the Congress by President Richard M. Nixon, February 18, 1970, pp.121-122.

^{5/} Annual Defense Department Report, FY 1975, p. 39. Although the more flexible targeting of U.S. strategic forces was confirmed in this report, it had been hinted at in December of 1973 and acknowledged in January of 1974 by Secretary Schlesinger.

theater nuclear forces. Under the combined impetus of these developments the Department of Defense has reassessed the role of theater nuclear forces.

This reassessment clarified the purposes, employment concepts and employment objectives for theater nuclear forces. Subsequently, the Department has advanced a major program of theater nuclear forces modernization. It consists of some programs that had long been in progress and others that were at a much earlier stage of development, including some that have yet to be proposed to the Congress.

The objective of this paper is to explain the purposes, composition, and employment concepts of NATO theater nuclear forces and their relationships to conventional general purpose forces. The explanation will provide a context for Congressional consideration of conventional force and theater nuclear modernization program requests. The discussion will focus on theater nuclear weapons intended for use in land engagements in Europe, with only passing reference to theater nuclear weapons afloat as they bear on theater nuclear employment on the land. This is, therefore, not intended to be a comprehensive study of all U.S. theater nuclear deployments. U.S. theater nuclear deployments in Asia and afloat are of interest and importance, but the issues associated with them appear to be sufficiently different from those associated with European deployments as to warrant separate consideration. The paper seeks to raise issues important to evaluating the appropriateness of proposed changes in the theater nuclear force structure and to considering the implications of changes in the conventional general purpose force structure.

CHAPTER II NATO THEATER NUCLEAR FORCES: PURPOSES, CAPABILITIES, AND EMPLOYMENT CONCEPTS

PURPOSES OF NATO THEATER NUCLEAR WEAPONS

The United States, in cooperation with its NATO allies, currently maintains theater nuclear weapons in Europe to contribute, along with conventional and strategic nuclear forces, to deterring Warsaw Pact initiation of a European conflict or coercion of the NATO allies. NATO theater nuclear forces are intended to deter two types of Soviet action:

- o Soviet first use of tactical nuclear weapons, and
- o Soviet launching of an overwhelming conventional attack against Western Europe.

For theater nuclear forces to deter these Soviet actions effectively, at least two conditions must be met:

- o NATO must be seen to have the capability and determination to use these forces if necessary, and
- o Enough NATO theater nuclear weapons must be able to survive a Soviet attack on them, and be able to threaten an appropriate response.

Consequently, the United States has formulated a twofold requirement for theater nuclear forces:

- o Warsaw Pact must appreciate that NATO has an assured capability to execute its theater-wide nuclear war options in the event of a surprise nuclear attack, and
- o NATO must be capable of executing effective nuclear attacks against Warsaw Pact military forces, with discrimination and limited collateral damage, in response to a major conventional or limited nuclear attack.^{1/}

^{1/} Annual Defense Department Report, FY 1977, p. 103.

It is fairly clear that the threat of theater nuclear response is intended to restrain the Soviet Union from a nuclear first strike or from mounting an overwhelming conventional attack. However, it is not equally clear how the execution of NATO's theater-wide nuclear war options would improve NATO's combat position in the event of a Soviet surprise nuclear attack. Nor is it clear precisely how NATO execution of limited tactical nuclear attacks would save NATO forces from defeat by an overwhelming Soviet conventional attack without provoking devastating Soviet nuclear retaliation. It is possible that these uncertainties may undermine the credibility of the theater nuclear deterrent.

The contribution of theater nuclear forces to the deterrence of a European conflict rests partly on the additional capability they potentially offer in support of conventional defenses and partly on the "linkage" they are thought to provide between the conventional and strategic nuclear forces. The precise nature of this linkage has not been satisfactorily explained. However, the basic idea is that a strategic nuclear response to a Soviet aggression would be intuitively more plausible if theater nuclear weapons had already been used and had failed to halt the Soviet attack. This basic idea is reinforced by the fact that the Nuclear Operations Plan (NOP)^{2/} for theater nuclear forces is integrated with the Single Integrated Operational Plan (SIOP) for U.S. strategic forces so that the two may be executed together.^{3/} Thus, the execution of certain theater nuclear strikes might signal the willingness of the United States to escalate to general nuclear war.

This perception of U.S. willingness to employ strategic nuclear weapons on behalf of Europe is very important to the NATO allies. They evidently believe

^{2/} Formerly called the General Strike Plan (GSP).

^{3/} U.S. Security Issues in Europe: Burden Sharing and Offset, MBFR, and Nuclear Weapons, A Staff Report prepared for the use of the Subcommittee on U.S. Security Agreements and Commitments Abroad of the Senate Committee on Foreign Relations, 93 Cong., 1 sess., December 2, 1973, pp. 21-22.

that the Soviet Union will be deterred from an attack on Western Europe only if such an attack would be likely to result in the destruction of the USSR. The continued presence of theater nuclear weapons in Europe remains important because the possibility of their use raises the possibility of further escalation.

In addition to their deterrent and combat functions, NATO theater nuclear forces serve an important political function. These forces provide an opportunity for the United States' NATO allies to participate to some extent in the alliance's nuclear deterrent, and so reduce whatever need some allies might feel to develop independent nuclear capabilities.

THE RELATIONSHIP BETWEEN CONVENTIONAL AND THEATER NUCLEAR FORCES

Although theater nuclear forces are intended to support the conventional forces in the event of a breakdown of deterrence, they are not considered to be a substitute for conventional forces. It has generally been accepted that a reduction of NATO's conventional forces would increase the probability that NATO would face a choice between defeat or resort to nuclear weapons. However, it is important to note that use of nuclear weapons in such a case would by no means assure turning defeat into victory. Rather it might provoke a large-scale response from formidable Soviet nuclear forces.

If the objective is to maintain a constant level of security against both the conventional and nuclear capabilities of the Soviet Union and its allies, an increase in NATO theater nuclear strength does not permit a reduction in conventional forces. A Soviet theater nuclear deterrent now exists. Consequently, any reduction in NATO conventional forces, whether or not accompanied by increases in NATO theater nuclear forces, simply lowers the conventional deterrent threshold. Conventional forces, however increased, do not provide the same deterrent against Soviet attack as do NATO theater nuclear weapons. Thus, conventional forces are not regarded as a substitute for theater nuclear forces.

Since theater nuclear forces and conventional forces are not, in principle, substitutes for each other, the most important issue does not appear to be that of achieving conventional force reductions through improvements in theater nuclear forces. Rather, the most significant issue is the extent to which projected improvements in theater nuclear forces will enhance their ability to deter a Soviet first use of tactical nuclear weapons.

COMPOSITION OF THE NATO THEATER NUCLEAR FORCES

As of August 5, 1974, the effective date of the Defense Authorization Act of 1974, the United States had about 7,000 nuclear warheads deployed in Europe.^{4/} The great majority of these weapons are intended for use by NATO air and ground forces on the continent. NATO is also supported by aircraft carriers with additional tactical nuclear bombs and by other naval forces with submarine-launched ballistic missiles (SLBM), nuclear anti-submarine warfare (ASW) weapons and nuclear air defense weapons.^{5/}

A substantial proportion of the U.S. warheads in Europe are deployed under Programs of Cooperation (POCs) and stockpile agreements. These are formal bilateral agreements between the United States and other nations which involve the transfer of delivery vehicles capable of nuclear delivery or deployment of nuclear weapons for use by the host nation under the direction of SACEUR or SACLANT. Host nations provide support for U.S. weapons and weapons provided for their use. The nuclear warheads remain in U.S. custody until release by the U.S. President in time of war.^{6/}

^{4/} Secretary of Defense James R. Schlesinger, The Theater Nuclear Force Posture in Europe, A Report to the Congress in Compliance with Public Law 93-365, April 1, 1975, p. 6.

^{5/} Ibid., p. 6.

^{6/} Ibid., pp. 6-7.

The NATO theater nuclear weapons maintained in Europe are stored in over 100 Special Ammunition Storage sites (SAS).^{7/} These sites consist of storage magazines, called igloos, as well as ancillary and security structures. The installations are commonly set in a clearing and are surrounded by a double perimeter security fence that is floodlit at night.^{8/} Thus, in its peacetime deployment, the NATO theater nuclear stockpile, together with the delivery systems maintained at fixed bases, constitute a limited number of readily identifiable, high value targets for Warsaw Pact attack. The locations of these targets are assumed to be known to the Soviet Union.^{9/}

NATO currently maintains nuclear-capable artillery, surface-to-surface missiles (SSM), nuclear-capable aircraft, Nike-Hercules air defense weapons, Poseidon submarine-launched ballistic missiles (SLBM), and atomic demolition munitions (ADM) for possible use in Europe.

NATO nuclear-capable artillery consists of 8" and 155 mm. artillery pieces, which are able to fire relatively small nuclear weapons over distances of several miles. The principal advantages of nuclear-capable artillery are said to be their high accuracy, relatively low yields, and short delivery ranges. These characteristics are thought to reduce the danger of nuclear escalation arising from a local defensive use of nuclear weapons.^{10/} Currently, the U.S. forces possess most of the 8" artillery pieces in Europe; the much more numerous 155 mm. artillery pieces are more evenly distributed among NATO forces.

^{7/} U.S. Security Issues in Europe, pp. 14-15.

^{8/} Ibid., p. 15.

^{9/} Nuclear Weapons and Foreign Policy, pp. 36, 135.

^{10/} The Theater Nuclear Force Posture in Europe, p. 17.

There are currently three NATO surface-to-surface missiles: Honest John, Lance, and Pershing. Each of these missiles can deliver a single nuclear weapon at distances of tens or hundreds of miles. Although Lance has replaced Honest John and Sergeant SSM in the U.S. forces, a few Honest John launchers are retained by NATO allies. Honest John is an older, unguided tactical support rocket whose low rate of fire, low accuracy and high yields are seen as inappropriate to its mission. Lance, also a tactical support weapon, has greater mobility and accuracy than its predecessors. Pershing is a longer range SSM, maintained by U.S. and West German forces and intended for use largely against fixed interdiction-type targets on Warsaw Pact territory. Some Pershing missiles are maintained on peacetime Quick Reaction Alert (QRA) at fixed sites for possible employment against "specific (Warsaw Pact) high priority, time sensitive targets."^{11/}

The NATO allies maintain a large number--at one time estimated at roughly 1,000^{12/}--of nuclear-capable tactical aircraft on land, with additional carrier-based aircraft at sea. These aircraft are capable of dropping nuclear weapons on designated enemy targets. A small number of U.S. and allied land-based aircraft are maintained on peacetime QRA. These are probably also designated for fixed, high priority, time sensitive targets. More aircraft would presumably be put on alert in time of crisis, though this would reduce the numbers of aircraft available for conventional missions.

Fixed-based, nuclear-capable Nike-Hercules surface-to-air missiles (SAM) are useful for deterring and countering massed, high-altitude Warsaw Pact air attacks. These weapons can be used for operation in a surface-to-surface mode.

A portion of the U.S. Poseidon SLBM force, as well as the whole United Kingdom's Polaris SLBM force, are currently committed to the NATO nuclear deterrent force.

^{11/} The Theater Nuclear Force Posture in Europe, p. 16.

^{12/} Nuclear Weapons and Foreign Policy, p. 199.

They are presumably intended for employment against fixed soft targets in Warsaw Pact territory.^{13/} These are the least vulnerable elements of the NATO theater nuclear forces. Because the Poseidon is commonly regarded as an element of the U.S. strategic nuclear forces, its tactical use in a European conflict would be ambiguous. The USSR would not immediately know whether its target was in the European theater or in the Soviet Union.

Atomic Demolition Munitions (ADMs) are nuclear devices that must be manually emplaced and mechanically or electronically detonated. They are used to create barriers to retard and force the concentration of attacking enemy forces. Because these weapons require suitable terrain features for optimal effectiveness, and because they must be set in place before the arrival of enemy troops, there are definite territorial and temporal limits to their usefulness in combat.

All U.S. nuclear weapons deployed in Europe are fitted with Permissive Action Links (PAL), coded devices designed to impede unauthorized use. Further, all weapons are maintained at all times under positive control by at least two U.S. military personnel, so that one person, acting alone, cannot arm or fire the weapon.

THEATER NUCLEAR FORCES MODERNIZATION PROGRAMS

A number of programs are currently in progress for improving the NATO theater nuclear force posture. Because some of these programs will require near-term funding, and have important implications for employment doctrine, it seems desirable to summarize them briefly.

Improvements in Peacetime Security

The increasing frequency of incidents of international terrorism in the early 1970s prompted a realization that highly determined, well organized, trained, and equipped groups of terrorists might succeed in an attempt to penetrate SAS and gain control of a nuclear

^{13/} The Theater Nuclear Force Posture in Europe, p. 18.

weapon. Consequently, the Department of Defense has undertaken a three-year program, now nearing completion, to consolidate some SAS and to improve the security of the other sites with additional lighting and sensors and improved security forces and structures.

Nuclear-Capable Artillery and Surface-to-Surface Missile Improvements

It has been recognized that the employment of high yield, inaccurate NATO theater nuclear weapons would produce substantial collateral damage to civilian targets, especially on NATO territory. Such use might also lead to large-scale Soviet retaliation in kind. These circumstances suggested that NATO might seem to be restrained from using theater nuclear weapons. If so, the credibility of their deterrent to the Soviets would be weakened.

Consequently, the United States has undertaken the development of new 8" and 155 mm. artillery-fired atomic projectiles (AFAPs). Both of these weapons will have a lower-yield warhead to minimize collateral damage. Their extended range and ballistic similarity to the conventional round will improve the response time and the survivability of the artillery.^{14/} Additionally, the replacement of the current 8" shell will permit the recovery of large amounts of nuclear materials that could then be put to other uses. Long lead-time procurement for the new 8" AFAP will begin in fiscal year 1978. The new 155 mm. AFAP is at a much earlier stage of development, with no commitment to proceed from design into engineering development.

The Pershing II program will improve the present Pershing Ia missile with the addition of Radar Area Correlator (RADAG) terminal guidance. Its greater accuracy will permit a reduction of the warhead yield and an expansion of the number of targets that can be attacked within collateral damage constraints. The system will also include the option of a low-yield earth-penetrator (EP) warhead to facilitate attacking certain hardened targets. These improvements will not

^{14/} Department of Defense Program of Research, Development, Test and Evaluation, FY 1977, pp. IV-107; IV-109.

alter the basic mission of Pershing. In fiscal year 1978 funding will be requested to continue Pershing II development, in anticipation of an engineering development decision late in that year.^{15/}

No further improvements in nuclear Lance are now planned, but the Army has indicated that development of a successor system should begin in fiscal year 1979, to have the system available when Lance reaches the end of its projected life.

Reassessment of Existing Theater Nuclear Systems

The Department of Defense has initiated studies of the requirements for other theater nuclear systems, such as the nuclear Nike-Hercules air defense weapons and Talos and Terrier fleet air defense weapons,^{16/} as well as Honest John and ADMs. The limitations of each of these systems make a reassessment of its role in the current strategy desirable.

As mentioned earlier, the large yields and delivery inaccuracies of Honest John make it largely unusable in situations where collateral damage would be unacceptable. The territorial and temporal limitations on the use of ADMs severely restrict their usefulness in the fast-moving combat anticipated in Europe.

In the case of air defense weapons, recent advances in guidance and control have improved the effectiveness of conventional weapons over older nuclear weapons, and have permitted the substitution of conventional for nuclear weapons.

The option to employ any of these nuclear systems does not seem to threaten the Soviets with enough damage to deter them very seriously. Moreover, these weapons do not have the direct, immediate effect on the course of the battle and the Soviet perception of the war situation as is required by current Defense Department doctrine. Under these circumstances, the costs of maintaining these

^{15/} Ibid., pp. IV-108-109.

^{16/} The Theater Nuclear Force Posture in Europe, p. 23; Annual Defense Department Report, FY 1977, p. 107.

weapons overseas or including them in any programs to increase the survivability of theater nuclear forces may outweigh whatever advantages their continued deployment offers. As a consequence, it is expected that the Department of Defense reassessment of these systems will result in a reduction of the number of these weapons deployed.

New Concepts for Theater-Wide Interdiction

Poseidon reentry vehicles, the U.K. Polaris force, and U.S. and German Pershing missiles are available to perform deep-interdiction missions against fixed targets. Moreover, increased Warsaw Pact air defenses pose an additional threat to tactical aircraft deep-interdiction missions. This changed situation called for a new doctrine for the employment of nuclear tactical aircraft. The new concept being developed emphasizes operations against identified targets in the Warsaw Pact tactical rear area, between the forward edge of the battle area (FEBA) and troop assembly areas.^{17/} This will maximize the prompt impact of nuclear tactical air operations on the immediate battle situation. The success of this concept depends on the development of a capability to locate non-fixed targets at long ranges, the ability to penetrate dense air defenses near the FEBA, and the ability to operate at night and in all weather conditions.^{18/}

Enhanced Stockpile Survivability

The requirement for a survivable theater nuclear deterrent must be balanced against the requirement for secure peacetime control over nuclear weapons. This is so because considerations of peacetime security lead to the concentration of weapons at storage sites under heavy guard, while considerations of survivability lead to hardening, dispersal, mobility, and concealment measures, some of which make guarding the weapons more difficult. In order to try to satisfy the requirement for enhanced theater nuclear survivability within the constraints of

^{17/} Annual Defense Department Report, FY 1977, p. 106.

^{18/} Ibid.

the current peacetime basing structure, the Department of Defense has articulated a need for NATO to be able to disperse its nuclear weapons rapidly in response to a surprise Warsaw Pact dispersal.^{19/} The Department is also studying concepts for accelerated theater nuclear weapons dispersal. This approach to enhanced stockpile survivability may conform to current budgetary and security constraints. However, there is some question as to whether the accelerated dispersal measures under consideration will appreciably improve survivability. If not, then perhaps more survivable alternative delivery systems and basing modes should be more vigorously pursued.

Future Theater Nuclear Systems Under Study

A number of weapons systems are under consideration for possible theater nuclear roles by the Department of Defense. As the U.S. Navy reevaluates the role of tactical nuclear weapons in the fleet, nuclear versions of some presently conventional systems may be proposed. The Standard Missile 2, the Harpoon missile, the Mk48 torpedo, and the SUBROC anti-submarine rocket are all being considered for nuclear capability. Similarly, the other services are reviewing tactical nuclear versions of the Modular Glide Weapons System, the Maverick missile, and the Short Range Attack Missile (SRAM), together with tactical earth penetrators and perhaps an improved tactical bomb that would reduce collateral damage.^{20/} However, these programs are merely contemplated or undergoing preliminary study and will require no near-term funding.

THE EMPLOYMENT CONCEPT FOR NATO THEATER NUCLEAR FORCES

In the event that NATO forces were to fail to deter the Warsaw Pact from initiating a European conflict, the United States and its NATO allies would confront a vital decision as to whether to prepare all of the theater nuclear forces for possible use.

^{19/} Nuclear Weapons and Foreign Policy, p. 156.

^{20/} Department of Defense Program of Research, Development, Test, and Evaluation, FY 1977, pp. IV-109-109.

Preparing for and ordering the employment of NATO theater nuclear forces requires that a number of activities must be completed: many of the weapons must be moved from peacetime storage sites to using units; higher political authorities must determine the circumstances that warrant the use of nuclear weapons; suitable targets for nuclear weapons must be located; the use of weapons against these targets must be authorized by the political authorities; and the designated nuclear strikes must be carried out. The authorization to use nuclear weapons must be guided by previously established military or political objectives if the strikes are to make some contribution to NATO's defense.

If NATO were seen to be likely to experience difficulty in carrying out any of the essential steps, the credibility of the U.S. threat to use these weapons would be partially undermined, and the deterrent effect of this threat would presumably be reduced, though never completely eliminated.

In the event of a war in Europe, NATO theater nuclear weapons would have to be moved from their peacetime storage sites to the vicinity of the using units if the weapons were ever to be used. This would also reduce the risk of their destruction by Soviet military action.

The theater commander can decide to disperse weapons from the SAS at any time before or during the conflict. Removing the weapons from the SAS prior to the outbreak of war would require either "early and persuasive warning of an imminent (conventional or nuclear) attack"^{21/} or a period of unprecedentedly high crisis. The successful evacuation of the SAS after the outbreak of war would require that there be an initial conventional phase of combat, since early Soviet use of nuclear weapons would probably be directed toward the destruction of NATO's theater nuclear assets.

Finally, the dispersal of NATO theater nuclear weapons, either before or after the outbreak of war,

^{21/} The Theater Nuclear Force Posture in Europe, p. 20.

would require the presence of adequate transport. This would compete to some extent with the transportation requirements for conventional operations.

Assuming that NATO theater nuclear weapons were effectively dispersed, a determination would have to be made as to what circumstances might necessitate the use of these weapons. The decision to employ theater nuclear weapons can only be made by the National Command Authority (NCA), in consultation with the NATO allies if time permits. There appear to be no particular circumstances which constitute a necessary or sufficient condition for their use without NCA authorization. However, it is possible to identify some conditions or criteria that might make a decision to employ theater nuclear weapons more likely, such as when:

- o the Warsaw Pact had initiated the use of nuclear weapons;
- o an unacceptably large amount of NATO territory had been lost, perhaps with further losses imminent;
- o a significant portion of NATO's nuclear assets had been, or were in danger of being destroyed, so as to seriously erode the potential effectiveness of a nuclear response;
- o NATO defensive positions were in imminent danger of being breached by a Warsaw Pact offensive and reserves were unavailable or inadequate to contain the attack.

These situations are only hypothetical and illustrative, however, and the NCA would not be constrained to use nuclear weapons in these or any other situations.

While it is possible to identify circumstances that might occasion the use of theater nuclear weapons, there are some situations in which the use of nuclear weapons by the NATO defenders would be unlikely to improve their situation. This would be the case if NATO defenses had been breached and Warsaw Pact forces were moving rapidly through NATO territory. In such an instance, the extreme difficulty of quickly locating enemy

units and directing nuclear strikes on them would minimize the effectiveness of any battlefield nuclear weapons used. It is not clear that the use of longer-range nuclear strikes against Warsaw Pact territory would affect the operations of attacking forces. Therefore, NATO theater nuclear weapons would have the greatest effect on the battle if they were used while sufficient conventional forces remained to hold defensive positions or to retake lost territory.22/

In the event that the use of theater nuclear weapons should be authorized, the current NATO objective in employing these weapons would be to:

cause significant loss to the attacker, including damage to his allies, cause him to reconsider his actions by demonstrating NATO resolve and altering his assessment of early victory, and allow NATO to militarily exploit the use of nuclear weapons in order to bring about a termination/settlement of the conflict on terms which are advantageous to NATO.23/

The actual employment of theater nuclear weapons has traditionally been divided into two types: selective use and general nuclear response.24/

The current concept for selective use involves the preplanning of "packages" of nuclear weapons for use

22/ Cf., U.S. Army Field Manual 100-5, Operations, July 1, 1976, p. 10-7; U.S. Army Command and General Staff College Reference Book 100-30, Vol. 1, Conventional-Nuclear Operations, August 6, 1976, p. 21.

23/ Annual Defense Department Report, FY 1977, p. 104.

24/ U.S. Security Issues in Europe, p. 21.

against advancing Warsaw Pact troops or selected rear area targets of immediate military significance. "A package is a group of nuclear weapons of specific yields, for employment in a specified area, within a limited timeframe to support a tactical contingency."^{25/} The numbers and yields of weapons and the spatial limitations included in a package are determined by the collateral damage constraints imposed by political guidance.^{26/} The objective in employing a package of nuclear weapons is to quickly and decisively influence the immediate military situation by destroying enemy military forces.

Apparently, both long-range and short-range NATO theater nuclear delivery systems can be used in planning various types of employment packages. Such packages could range from a relatively few tactical nuclear bombs or longer-range missile warheads to perhaps 150 shorter-range nuclear weapons.^{27/} Preplanning the use of weapons in specified areas streamlines the procedure for requesting authorization for nuclear employment, and reduces the sensitivity of targeting to a time delay in securing authorization.

NATO general nuclear response involves the launching of large numbers of longer-range nuclear delivery systems, such as SLBM, Pershing, and tactical aircraft, against targets in Warsaw Pact territory under the NOP. Within the NOP is the Priority Strike Program (PSP), which comprises the highest priority targets of concern to SACEUR^{28/} and against which the QRA systems are targeted, as well as the Tactical Strike Program (TSP). The magnitude of the full NOP strike would probably be such that it could only be intended to inflict retaliatory

^{25/} FM 100-5, Operations, p. 10-7.

^{26/} Ibid., p. 10-9.

^{27/} RB-100-30, Vol. 1, Conventional-Nuclear Operations, p. 37.

^{28/} U.S. Security Issues in Europe, p. 22.

punishment on the Warsaw Pact. The plan is so constructed that the execution of selective use options against targets in the NOP will not impair NATO's capability to attack the remaining NOP targets. However, the general nuclear response (i.e., the execution of the entire NOP) would apparently occur with the simultaneous execution of the SIOP.^{29/}

Regardless of the circumstances under which the NOP might be executed, it is clear that it requires a capability that is survivable against a possible Soviet attack in order to pose a credible deterrent.^{30/} However, if some NATO assets for executing the NOP are vulnerable to Soviet nuclear attack,^{31/} and if "NATO has an assured capability to execute its theater-wide nuclear war options in the event of a surprise nuclear attack"^{32/} then it must be inferred that this capability resides largely in the NATO-committed SLBM forces, and perhaps to a lesser extent in Pershing. If NATO-committed Poseidon reentry vehicles, perhaps in conjunction with the U.K. Polaris force, are adequate to perform the NOP mission, then one could question the need for other relatively more vulnerable assets, such as tactical aircraft or Pershing, to perform this same mission.

^{29/} Ibid., pp. 21-22.

^{30/} Annual Defense Department Report, FY 1977, p. 103.

^{31/} The Theater Nuclear Force Posture in Europe, p. 20.

^{32/} Annual Defense Department Report, FY 1977, p. 103.

CHAPTER III SOVIET THEATER NUCLEAR CAPABILITIES AND DOCTRINE

It is necessary to examine Soviet capabilities and doctrine for the use of nuclear weapons in a European conflict to evaluate the appropriateness of NATO's current theater nuclear posture and the prospective improvements in it. This is so because, apart from their contribution to the deterrence of any Soviet aggression, the most important function of NATO's theater nuclear forces is to deter Soviet use of nuclear weapons to coerce or to attack the United States' European allies. Conventional forces, however adequate, cannot provide this same deterrence against a Soviet nuclear threat to Europe. Moreover, it is widely thought that U.S. strategic nuclear forces could not fully and credibly deter this threat without theater nuclear forces that can provide more limited, local responses to a Soviet attack.

SOVIET THEATER NUCLEAR CAPABILITIES

The Soviet Union possesses a very large array of capabilities for delivering nuclear weapons against NATO military forces and territory. The Soviets have emphasized the development of "operational tactical missiles" as the principal means of delivering nuclear strikes to support ground operations. This emphasis has led to the Soviet deployment of large numbers of the unguided FROG tactical rocket, the short-range (85-160 nautical miles) SCUD tactical ballistic missile, and the longer-range SCALEBOARD surface-to-surface missile.^{1/} In 1972, the number of these tactical missile launchers was given at 850,^{2/} but this may well have increased in the years since. The Soviets may possibly have nuclear-capable field artillery,^{3/} though the status

1/ United States Military Posture for FY 1977, p. 71.

2/ Annual Defense Department Report, FY 1973, p. 45.

3/ The Department of Defense Program of Research, Development, Test and Evaluation, FY 1977, pp. IV-101-102.

and scope of this development have not been disclosed. Most of the Soviet tactical aircraft--an estimated 1,100 in 1972--are said to be capable of nuclear delivery. In addition to these tactical nuclear capabilities against Western Europe, the Soviets are also said to deploy a variety of nuclear cruise missiles and surface-to-air missiles, nuclear-capable naval artillery, and nuclear torpedos and depth bombs.^{4/}

Elements of the Soviet strategic nuclear forces also pose a serious threat to the European allies. The Soviet Union's medium and intermediate range ballistic missiles (M/IRBMs), currently estimated to number 600 launchers and perhaps 1,000 missiles when refires are included, are capable of attacking targets throughout Western Europe with nuclear warheads.^{5/} The current Soviet MRBM and IRBM are older systems, dating from the late 1950s and early 1960s. However, the Soviets have been testing a new, mobile IRBM--the SS-20--which is said to be ready for deployment at any time,^{6/} and which is capable of carrying multiple independently-targetable reentry vehicles (MIRV). Although it is not clear whether the SS-20 will replace or augment the current Soviet M/IRBM force, this new MIRV capability represents a significant increase in Soviet strategic delivery potential against Western Europe. The USSR has also maintained a number of dual-purpose, variable-range SS-11 intercontinental ballistic missiles (ICBMs), which were credited with a capability against European targets.^{7/}

Finally, the nuclear-capable aircraft of the Soviet Long Range Aviation, numbered at 700 in 1972, and Soviet Naval Aviation, numbered at 500 in 1972,^{8/} could also be

^{4/} Ibid.

^{5/} United States Military Posture for FY 1977, pp. 70-71.

^{6/} Statement of Secretary of Defense Rumsfeld at Pentagon News Briefing, September 27, 1976 (Department of Defense News Release 454-76), p. 2.

^{7/} Annual Defense Department Report, FY 1973, p. 45.

^{8/} Annual Defense Department Report, FY 1973, p. 45.

employed for nuclear missions against Western Europe. The recent Soviet deployment of the BACKFIRE bomber for such peripheral attack missions will significantly augment the nuclear delivery capability of both of these Soviet air arms.

It is the use of these large nuclear delivery capabilities against Western Europe that NATO theater nuclear forces, in conjunction with U.S. strategic forces, are to deter.

SOVIET THEATER NUCLEAR DOCTRINE

The Soviet portrayal of their post-war military doctrine can generally be characterized as offensively oriented. Although a NATO aggression is postulated for the beginning of a European war, Soviet doctrine emphasizes the assumption of the offensive at the earliest feasible moment, with the objective of not only recapturing supposedly lost territory but of destroying NATO military forces in detail. Soviet military writings portray this offensive as beginning with a massed nuclear strike, followed by the rapid advance of Soviet maneuver units through the breaches in enemy defenses opened by the nuclear strikes.^{9/}

Because NATO theater nuclear forces pose a strong threat to Soviet forces massed for the offensive, the paramount objective of Soviet nuclear strikes would be the destruction of NATO theater nuclear forces.^{10/} The Soviets stress that these forces must be destroyed without delay, as soon as their presence is detected, to minimize their threat to Soviet troops.^{11/} The Soviets

^{9/} A.A. Sidorenko, The Offensive (A Soviet View), trans. U.S. Air Force (Washington, D.C.: U.S. Government Printing Office, 1974), p. 62.

^{10/} N.A. Lomov, Scientific-Technical Progress and the Revolution in Military Affairs (A Soviet View), trans. U.S. Air Force (Washington, D.C.: U.S. Government Printing Office, 1974), pp. 150-151.

^{11/} Sidorenko, op. cit., p. 134.

emphasize two principles to improve the effectiveness of their attempts to neutralize NATO theater nuclear forces: surprise, in the sense of misleading NATO as to Soviet intentions so as to forestall nuclear weapons dispersal, as well as tactical surprise in the delivery of nuclear strikes;^{12/} and anticipation and preemption of NATO nuclear employment.^{13/} Still, Soviet writers do not expect that all NATO nuclear weapons will be destroyed with one nuclear strike, and anticipate the need for follow-on strikes to destroy additional nuclear delivery units as they are detected.^{14/} Soviet efforts to neutralize NATO theater nuclear forces would not be confined to nuclear strikes, but would include conventional artillery and aviation barrages, airborne assaults,^{15/} and perhaps other non-nuclear military operations. These could also take place in an early, conventional phase of the war, before nuclear use by either side.

In addition to its stress on destroying enemy means of nuclear attack, Soviet doctrine calls for very high rates of advance by ground forces in exploiting breaches in enemy defenses, penetrating into enemy rear areas, encircling and destroying enemy troops, and seizing territory. A prime motive for achieving such rapid rates of advance is to complicate the delivery of enemy nuclear strikes on fast-moving Soviet troop formations and so minimize exposure to this risk.^{16/} Soviet troops are said to be better trained and equipped than their NATO counterparts for operations in a radiological environment created by either Soviet or NATO nuclear strikes.

^{12/} Joseph D. Douglass, Jr., The Soviet Theater Nuclear Offensive (Washington, D.C.: U.S. Government Printing Office, 1976), p. 72; V. Ye. Savkin, The Basic Principles of Operational Art and Tactics (A Soviet View), trans. U.S. Air Force (Washington, D.C.: U.S. Government Printing Office, 1974), p. 235.

^{13/} Lomov, op. cit., p. 147.

^{14/} Sidorenko, op. cit., p. 114.

^{15/} Ibid., p. 119; Savkin, op. cit., p. 260.

^{16/} Savkin, op. cit., pp. 172-173.

In summary, Soviet doctrine attempts to deal with the NATO theater nuclear threat to a successful offensive in two ways: nuclear strikes and conventional attacks to neutralize NATO theater nuclear forces, and high rates of advance to minimize the exposure of Warsaw Pact troops to strikes by surviving NATO nuclear weapons.

LIMITATIONS OF SOVIET DOCTRINE AS A GUIDE TO U.S. POLICY

Although Soviet military writings proceed on the assumption that Soviet military capabilities are fully adequate for the missions identified in their doctrine, there may be serious questions as to whether the Soviets could actually muster the required resources and capabilities. Similarly, though many Soviet military writings place heavy emphasis on early use of nuclear weapons and assume that political authorization for this would be received, there are great uncertainties over whether Soviet leaders would authorize such early nuclear use. Political leaders are certainly not constrained to follow established military doctrine in time of war. Given the tremendous significance and the unforeseeable consequences of a Soviet decision to use nuclear weapons, it is certainly possible that the Soviet leaders would not resort to their early use.

However, it can also be argued that if the Soviet leaders ever began or allowed themselves to be dragged into a European war, knowing that it would involve a direct conflict with the United States, then they would have had to recognize and accept the risks of nuclear conflict associated with such a course of action. If, by this line of reasoning, Soviet conduct of a war in Europe would imply acceptance of the risk of nuclear warfare, the Soviet leaders might well elect to use nuclear weapons first to degrade NATO theater nuclear capabilities.

In summary, the arguments about the intentions of Soviet leaders are inconclusive. But given that Soviet forces are equipped, trained, and postured for the type of warfare described in their doctrine, it seems prudent that the United States seriously consider the possibility of a Soviet first use of nuclear weapons.

It is possible that the Soviets would not elect to begin a war in Europe with nuclear weapons; there have been indications of interest in such a possibility in Soviet military writings.^{17/} In such a situation, NATO would be better situated to use nuclear weapons first in the event that conventional defenses should fail. Nevertheless, the dangers of preemptive or retaliatory Soviet nuclear strikes would remain.

Because NATO theater nuclear forces would pose a threat to the success of a Soviet conventional offensive, the Soviets would probably attempt to destroy them by conventional means, especially before they were dispersed. The effectiveness of direct Soviet conventional attacks is limited by formidable NATO air defenses and conventional bombing inaccuracies. However, the vulnerability of NATO theater nuclear forces to such conventional operations as airborne assault may be substantial. Moreover, the seriousness of a Soviet conventional threat to NATO theater nuclear forces will probably be increased with the eventual Soviet acquisition of conventional precision guided munitions (PGM) capabilities. Soviet acquisition of such conventional PGM capabilities would not only pose an independent threat to the survivability of NATO's nuclear means in the early stages of a postulated conventional conflict, but would supplement Soviet nuclear means of attack.

IMPLICATIONS FOR NATO THEATER NUCLEAR FORCES

From an examination of Soviet capabilities and doctrine for the use of nuclear weapons in a European conflict, at least three important conclusions relevant to NATO theater nuclear force structure can be drawn:

- o The United States and its NATO allies may very well not be the first to employ nuclear weapons in a European conflict. Therefore, a theater nuclear force posture predicated upon a Soviet conventional aggression to which NATO, at some

^{17/} See Col. Ransom E. Barber, "The Myth of Soviet Nuclear War Strategy," Army Magazine, Vol. 25, No. 6 (June, 1975), pp. 10-17, esp. p. 13.

point, might respond with theater nuclear weapons may be an inappropriate scenario for planning U.S. theater nuclear forces.

- o To constitute an effective deterrent to Soviet attack in Europe directed at the destruction of NATO's nuclear assets, NATO theater nuclear forces should be sufficiently survivable to be able to deliver theater nuclear responses consistent with stated U.S. objectives. They must be able to survive both a Soviet theater nuclear and conventional PGM attack.
- o The United States and its NATO allies should have a carefully thought out doctrine and objectives for employment of theater nuclear attack in response to a Soviet theater nuclear attack.

The translation of such general conclusions into specific force structure and posture changes is clearly very difficult. However, such conclusions may be useful as a point of departure in evaluating the appropriateness of various proposed changes in the NATO theater nuclear force structure, discussed above.

CHAPTER IV PERSISTENT DILEMMAS OF NATO THEATER NUCLEAR FORCES

While the United States and its allies have made substantial progress recently in improving theater nuclear capabilities and employment doctrine, several fundamental problems remain associated with these forces. These problems must be taken into account in evaluating the role of these forces in NATO strategy.

AMBIGUITY OF PURPOSE

As noted earlier, the purposes of theater nuclear weapons are to deter a Soviet nuclear or conventional attack in Europe, and to augment conventional defenses in the event that deterrence should fail. However, the precise nature of the deterrent threat remains ambiguous.

It is not apparent how these nuclear forces are intended to deter a Soviet attack. It could be by the threat of inflicting or triggering unacceptably high damage to Warsaw Pact territory, or it could be by their capability to deny the Soviet Union its military objectives by destroying attacking forces. NATO currently maintains some theater nuclear systems suitable for retaliatory missions of the first type--Pershing, tactical aircraft, and SLBM. It also has systems appropriate for strikes against attacking forces, such as Lance, Honest John and nuclear-capable artillery. Apparently, it is thought that both types of deterrent threat are essential to dissuade the Soviets from theater nuclear attack. However, it may be questioned whether this is true, or whether a credible theater nuclear capability to execute only one of these threats would constitute an adequate deterrent. If it were determined that a credible capability to pose only one of these deterrent threats would be adequate, then it would have to be determined which type of threat the Soviets should be forced to confront.

If NATO were to emphasize a retaliatory theater nuclear deterrent threat, then it could be asked whether

the maintenance of retaliatory assets in the European theater would be essential to fulfill this function or whether the Poseidon reentry vehicles assigned to SACEUR for this mission would be adequate. This line of reasoning could lead to the conclusion that all European-based theater nuclear weapons could be eliminated, but such a course of action would raise serious political difficulties with the NATO allies. These weapons are important symbols of U.S. commitment to Europe.

Alternatively, if theater nuclear forces designed to deny the enemy his military objectives were emphasized, then it might be possible to orient the theater nuclear forces around battlefield systems. This implies a reduction or elimination of longer-range nuclear strike assets based in the theater. Again, because QRA aircraft and Pershing constitute an important and highly visible capability that allows the NATO allies to participate in the alliance nuclear deterrent, there would be formidable political obstacles to the removal of these systems. Moreover, so long as a realistic prospect existed that these capabilities could be traded for reductions in Soviet armaments in Europe, in the context of the Mutual and Balanced Force Reduction (MBFR) talks, there would be serious questions about whether such unilateral NATO reductions would forfeit potentially important "bargaining chips."

The important point, however, is not whether NATO should or should not adopt one or the other of these deterrent concepts for theater nuclear forces. Rather, the point is that until the Department of Defense either makes a clear choice between these two concepts--or else explains why this continuing ambiguity about the nature of the theater nuclear deterrent is vital--Congress will be asked to authorize modernization of theater nuclear forces; these will incorporate capabilities for both types of deterrence without assurance that both capabilities are essential or adequate.

INCONSISTENCY OF THE SCENARIO

A second persistent difficulty of theater nuclear forces is what appears to be an inconsistency in the conception of events leading to the use of the weapons.

The Warsaw Pact allies can start a war in Europe in two ways: exclusively conventional combat or a combination of conventional and nuclear combat. If the war were initially conventional, it would be partly due to the deterrent effect of U.S. theater nuclear weapons against a Soviet nuclear offensive. If the Soviets should be so successful in their conventional offensive as to confront NATO with an impending collapse of its conventional defenses, then the United States and its allies might resort to theater nuclear weapons to stave off imminent defeat. At this point, however, the Soviet Union would still have large unexpended theater and strategic nuclear capabilities for use against NATO. Most of these would presumably have been moved to a dispersed and ready posture earlier in the conflict. If the NATO theater nuclear deterrent is expected to constrain the Soviets to initially conventional combat, it is difficult to see why NATO should not be similarly deterred from the use of theater nuclear weapons by the continued presence of large and capable Soviet theater nuclear forces.

The current changes in NATO theater nuclear forces emphasize discriminate use and weapons with tailored effects. This may represent an attempt to circumvent the dilemma. These developments may indicate a NATO pursuit of nuclear employment capabilities to which the Soviets would be unwilling or unable to respond for lack of appropriate response options. Such capabilities may not be attainable, however, since the Soviets could always choose to retaliate on a massive scale for even a discriminate NATO use of theater nuclear weapons. They could also develop capabilities and options for discriminate responses in kind.

Alternatively, if the war began with a Soviet conventional and nuclear attack, it would presumably stem from a Soviet judgment that whatever was at stake was sufficiently important to accept the consequences of nuclear war and from a determination to eliminate the NATO theater nuclear deterrent. In such an event, the Soviet nuclear strikes would be massive, conducted with surprise, and aimed primarily at the destruction of NATO theater nuclear assets. Consequently, a significant attrition of NATO theater nuclear assets could be expected.

Under current NATO doctrine, the capability to respond to such an attack rests in a theater-wide nuclear strike with surviving theater nuclear assets, presumably consisting in large measure of Poseidon assets.^{1/} However, it is difficult to see how the execution of such an option would improve NATO's defensive situation, because a Soviet nuclear attack would probably be followed by a conventional and nuclear offensive that might well overwhelm defending NATO forces. A question arises as to whether it might not be desirable for NATO to retain significant capabilities for the defensive use of nuclear weapons against attacking enemy forces even after a concerted Soviet effort to eliminate NATO land-based theater nuclear forces. The retention of such a capability would require a more survivable peacetime basing structure for theater nuclear forces. This might significantly reduce the Soviet opportunities to neutralize the NATO theater nuclear deterrent. Improved survivability would provide NATO with options of greater potential tactical utility in response to a Soviet initial nuclear attack.

In summary, it is difficult to see how the use of theater nuclear weapons under current doctrine in these two most commonly cited contingencies would either be a reasonable choice in view of the continuing presence of Soviet nuclear deterrent assets, or would materially improve NATO's military position.

PROBLEMS OF SURVIVABILITY

As has been alluded to earlier, NATO theater nuclear forces in their normal peacetime deployment are highly vulnerable to direct nuclear attack. They may also be increasingly vulnerable to some forms of conventional attack. Currently, though, a surprise Soviet nuclear attack is regarded as unlikely, and the survivability of NATO theater nuclear weapons would be increased through dispersal. However, there is some question about whether the prerequisites for dispersal, i.e., adequate warning and transportation assets, will be met. Moreover, there is an inherent dilemma to ensuring the survivability of theater nuclear forces through dispersal in wartime. If a conventional attack should occur, it might be decided not to order the dispersal of these weapons, in the hopes of containing the conflict by not raising the possibility

^{1/} See p. 20.

of the use of nuclear weapons. But as long as these forces remain undispersed to avoid a provocation, they present a limited number of highly lucrative targets for a Soviet attack. Their peacetime posture may indeed invite rather than deter such an attack, if the Soviets should see a need to intensify the offensive or to destroy NATO's nuclear means of attack. On the other hand, if a conflict in Europe broke out, it might be decided to disperse the theater nuclear weapons early, to minimize their vulnerability. In this case, however, if the Soviets regarded an observed NATO dispersal as a crucial indication of NATO preparations to use nuclear weapons^{2/} they might employ nuclear weapons first in a preemptive strike.

This, then, is the nature of NATO's dilemma: if NATO maintains the theater nuclear weapons undispersed, attempting thereby to contain the conflict to conventional means, the weapons remain in the posture that is most vulnerable to Soviet destruction; if NATO elects to disperse the weapons, attempting thereby to deter a Soviet attack, it incurs the risk that the Soviets will interpret such an action as a preparation for imminent nuclear use and will choose to strike them

^{2/} It should be noted that there is not universal agreement that the Soviets would regard the dispersal of NATO theater nuclear weapons as posing the danger of their imminent employment. General Andrew Goodpaster has testified of such a NATO dispersal that: "If they identified it, it would have much the same significance as a whole range of other alert and preparatory measures which dispose the forces in a field deployment to improve their readiness and lessen their vulnerability." Military Applications of Nuclear Technology, Part 2, Hearings before the Subcommittee on Military Applications of the Congressional Joint Committee on Atomic Energy, 93rd Congress, 1st session (1973), p. 113.

first.^{3/} How this dilemma would be resolved in actual operations is uncertain, but either course of action must appear to be fraught with risk.

This dilemma points up the limitations of ensuring the survivability of NATO theater nuclear weapons solely through dispersal techniques. It suggests the need for more vigorous pursuit of peacetime basing modes that are more survivable and at the same time highly secure. Without such survivability improvements, the value of adding to their capability through modernization, and even the rationale for maintaining these weapons in Europe, may be called into question.

An additional dimension of the problem of survivability is provided by the QRA aircraft and Pershing in Europe. These forces are maintained on QRA to deter against a Soviet surprise nuclear attack by posing a capability to rapidly deliver a retaliatory strike. The likelihood of such an attack would presumably increase in time of high crisis or military conflict and more QRA forces would be put on alert to pose a greater retaliatory threat.

In peacetime, these QRA forces constitute a limited number of high value targets for the Soviets. Moreover, because these forces sit poised to carry out nuclear strikes against the Warsaw Pact, their bases would probably be priority targets for the type of surprise attack that the QRA forces are intended to deter. In fact, the

^{3/} However, in the latter case, if the Soviets followed their doctrine and seized upon indications of a NATO dispersal to launch a preemptive attack, they too would confront a paradox. If NATO were able to complete the dispersal before the Soviets could evaluate their intelligence and deliver the attack, then the Soviets would have enormous difficulty in destroying NATO's widely dispersed nuclear weapons and NATO would be in the best position to deliver an effective response. Thus, the situation in which the Soviets have emphasized the use of nuclear weapons would be precisely the situation in which the use of nuclear weapons would be least productive.

alert status of these forces may increase the Soviet incentive to attack them with nuclear or conventional weapons early in the war. Failure to do so would expose the Soviets to the risk that these forces could at any time deliver nuclear strikes against the Warsaw Pact.

It is paradoxical, therefore, that the type of attack that the QRA forces are intended to deter is precisely the attack that, if executed, would probably destroy the QRA forces and seriously hamper NATO's ability to execute the deterrent threat. This situation has led to the periodic suggestion that Pershing and aircraft be removed from QRA^{4/} and their mission either eliminated or assigned to other force elements. The assumption is that their deterrent value is not worth the risk of being destroyed.

The Department of Defense, however, points out that QRA forces constitute a highly visible symbol of the U.S. commitment to use nuclear weapons in the event of an aggression against NATO. Further, they allow the European members of the alliance an opportunity to participate in the alliance nuclear deterrent. It is apparently the view of the Department that the elimination of the small numbers of aircraft and missiles on peacetime QRA would not be worth the potentially adverse political reaction of the NATO allies. Rather, the thrust of the Department's effort appears to be to reduce requirements for more QRA aircraft in time of crisis or conflict, to make more aircraft available for conventional missions.^{5/}

4/ E.g., Nuclear Weapons and Foreign Policy, p. 75.

5/ Annual Defense Department Report, FY 1977, p. 106. This has apparently long been an objective of the Defense Department. For example, Secretary of Defense McNamara justified the acquisition of Pershing Ia missile partially on the basis of allowing a reduction in generated QRA aircraft requirements. See, Annual Defense Department Report, FY 1969, p. 94. The extent to which a reduction of generated QRA requirements was actually accomplished by the introduction of Pershing has not been revealed.

Whereas this approach has many political merits, it will undoubtedly fail to fully satisfy those who believe that the dangers of Soviet preemptive nuclear attack against QRA forces outweigh their deterrent effect. If such a view were widely held, then further consideration might be given to reassigning the QRA mission of these forces entirely to Poseidon. Additional nuclear capable artillery or Lance could be provided to the NATO allies to compensate for the removal of these forces from QRA. This would also reaffirm the U.S. commitment to European defense. However, if such an approach were adopted, it would have to be carefully negotiated with the NATO allies.

INCONSISTENCY OF DOCTRINE AND MISSIONS

As discussed earlier, the current concept for the use of NATO theater nuclear weapons attempts to maximize their immediate effect on the tactical situation. The objective is to alter the Soviets' perception of the war situation so dramatically as to cause them to cease the attack and/or enter into negotiations. This concept appears to emphasize inflicting damage on attacking Warsaw Pact forces near the forward edge of the battle area, thus strengthening the short-term impact of the nuclear employment. However, Pershing and land- and carrier-based tactical aircraft, as well as NATO-committed SLBM forces, appear to be currently intended to attack targets in the Warsaw Pact rear area. There may be serious questions about whether it is desirable to maintain theater-based systems for such missions.

First, it is difficult to see how nuclear interdiction could make an important long-term contribution to the course of the conflict. The density and redundancy of the transportation network in Eastern Europe would make effective interdiction very difficult, and the Warsaw Pact air defenses would exact a considerable toll of aircraft in nuclear interdiction missions. Moreover, it is doubtful that such nuclear interdiction missions would have the immediate effects on the tactical situation that seem to be required by current doctrine. A considerable time lag is usually postulated before interdiction operations begin to bear on the combat effectiveness of front line troops. Further, the launching of large numbers of sorties from NATO territory for a nuclear interdiction effort might well be counterproductive; it might well evoke a similarly large-scale Soviet attack against NATO.

Perhaps as a result of the realization of these difficulties, the Department of Defense is moving to adopt the new employment concept for nuclear tactical air missions (discussed in Chapter II) and to develop a capability for conducting a highly selective interdiction campaign against Warsaw Pact territory, as described earlier. Such developments perhaps would remove many of the difficulties associated with a large-scale nuclear interdiction campaign. However, as noted earlier, the success of nuclear tactical air operations against the Warsaw Pact tactical rear area is critically dependent upon the solutions to problems of target location and identification and penetration of air defenses. If these problems do not have ready solutions, the future role of nuclear-capable tactical aircraft will be uncertain.

Similarly, the development of a highly discriminating nuclear interdiction capability may also raise some serious questions. If such a capability were used to mount a highly selective strike, perhaps with a very few weapons, against Warsaw Pact territory, primarily to signal NATO's resolve to continue resistance and increase the scale of violence, the value of such a signal might well be questionable. It is possible that such a limited, longer-range nuclear strike would give the Soviets pause to reconsider their course of action. It is also possible that such an employment, presumably coming in the later stages of a conflict when NATO defenses were near collapse, would indicate to the Soviets the imminent prospect of success for their offensive. On the other hand, the restraint of the NATO response might well convey the impression of NATO weakness that would scarcely deter further aggression.

Of course, the ambiguity associated with discriminating nuclear interdiction does not necessarily mean that it should be forsaken by NATO. Such a capability is not expensive to maintain, and might well succeed in its intended purpose. There is, however, some question as to whether such a capability should rest in part on systems based in the theater or whether it could be adequately accomplished by out-of-theater forces, such as the SLBM committed to NATO. If it were judged that such a capability were available in the NATO-committed SLBM forces, then the requirement for assets based in the theater and intended for such missions, such as Pershing, might be called into question.

In the period of U.S. nuclear ascendancy during the 1950s, theater nuclear weapons might have been successfully used to offset Warsaw Pact conventional advantages in fighting a European war. However, the subsequent development of Soviet strategic and theater nuclear forces roughly equal to those of the United States has greatly increased the risks associated with the actual use of theater nuclear forces to support faltering NATO conventional defenses. Consequently, the most important function of NATO theater nuclear forces has become the deterrence of a Soviet first use of nuclear weapons in Europe.

To provide an effective deterrent to a Soviet first strike, NATO theater nuclear forces must be able to survive the attack and to credibly threaten a tactically appropriate nuclear response. However, current programs to modernize the theater nuclear forces appear to focus on improving NATO capabilities and doctrine for a discriminate first use of nuclear weapons to prevent the defeat of NATO conventional forces. Such emphasis on the use of theater nuclear forces to supplement conventional defenses may be of dubious value in view of the ambiguities associated with their employment and the possibility of Soviet nuclear retaliation. This emphasis might also be unproductive and risky. It could lead to greater reliance on theater nuclear weapons and increased resistance to the provision of more adequate conventional forces for a short, intense European conflict.

These considerations lead to the conclusion that, while the modernization of individual theater nuclear weapons may be desirable for technical reasons, the increased theater nuclear capabilities will not be an effective substitute for adequate NATO conventional forces. Moreover, the currently planned improvements may not go far enough toward improving the theater nuclear deterrent to a Soviet first use of nuclear weapons. Accordingly, it may be desirable to increase U.S. and NATO efforts to:

- o reduce or eliminate marginally useful or highly vulnerable and destabilizing theater nuclear

systems such as Honest John, ADM, nuclear Nike-Hercules, and QRA forces; and

- o more vigorously pursue more survivable peacetime basing modes for theater nuclear weapons, such as sea-basing and combinations of hardening, concealment, and early dispersal to improve the survivability of theater nuclear weapons remaining in Europe.

In addition, long-run changes in the theater nuclear forces may well result from a clearer delineation of the deterrent objectives underlying these forces, and the development of a clear and effective doctrine for NATO second-strike use of these forces. Such doctrinal developments could produce a smaller and differently configured theater nuclear force. Such a force may well pose a more effective deterrent to Soviet nuclear capabilities in Europe.

GLOSSARY

GLOSSARY

ADM. Atomic Demolition Munitions. Manually emplaced mines producing nuclear explosions used to create land barriers in the path of enemy forces.

AFAP. Artillery Fired Atomic Projectiles. Artillery shells that produce a nuclear explosion.

Collateral Damage. Unintended damage to civilian facilities (population centers, roads, bridges, railroads, dams, etc.) or casualties to civilian personnel incurred as a consequence of a nuclear strike against a different, usually military, target.

EP. Earth Penetrator. A device that mechanically buries a nuclear warhead in the ground before detonation. It could be used to create physical barriers to enemy military operations, to destroy hardened enemy targets, or to conduct nuclear strikes that require the confinement of nuclear effects to the ground.

Honest John. A short-range, unguided, truck-mounted rocket intended to deliver a nuclear weapon against enemy combat forces. Being phased out of the U.S. inventory.

ICBM. Intercontinental Ballistic Missile. A land-based missile capable of delivering nuclear weapons to intercontinental ranges (in excess of 3,000 nautical miles).

Interdiction-type Targets. Targets that are essential to the movement or employment of enemy forces, the destruction or damage of which will interrupt or impede further military operations through or by that target element.

IRBM. Intermediate Range Ballistic Missile. A land-based missile capable of delivering nuclear weapons to ranges between 1,500 and 3,000 nautical miles.

Lance. A newer short-range inertially-guided tactical missile, mounted on a tracked vehicle or trailer, capable of delivering a nuclear weapon against enemy combat forces.

MBFR. Mutual and Balanced Force Reductions talks. Currently ongoing negotiations between NATO and the Warsaw Pact representatives concerning troop reductions in Europe.

MIRV. Multiple Independently Targetable Reentry Vehicles. Two or more reentry vehicles carried by a single missile and capable of attacking different, separate targets.

MRBM. Medium Range Ballistic Missile. A land-based missile capable of delivering nuclear weapons to ranges between 600 to 1,500 nautical miles.

NCA. National Command Authority. The U.S. national political decisionmakers responsible for commanding the use of U.S. nuclear forces. The group comprises the President, the Secretary of Defense, and their designated successors.

Nike-Hercules. A ground-launched anti-aircraft missile system capable of using nuclear or conventional explosives.

NOP. Nuclear Operations Plan. The plan developed by the Supreme Allied Commander, Europe (SACEUR), for the execution of nuclear strikes with the nuclear weapons under his command.

Nuclear-capable Artillery. Cannon artillery capable of firing AFAPs.

PAL. Permissive Action Link. A coded device attached to nuclear weapons deployed abroad that impedes the unauthorized arming or firing of the weapon.

Pershing. A truck-mounted, inertially-guided short-range missile capable of delivering a nuclear weapon against enemy rear area targets.

PGM. Precision Guided Munition. A bomb or missile capable of being guided during the terminal phase of its trajectory with a 50 percent or greater probability of making a direct hit on its intended target.

PSP. Priority Strike Program. A plan that provides for the delivery of nuclear strikes against the highest priority targets in the NOP.

QRA. Quick Reaction Alert. A condition in which specified numbers of aircraft and Pershing missiles are readied to deliver designated nuclear strikes on very short notice.

RADAG. Radar Area Correlator Guidance. A guidance principle that compares a radar image of terrain along the reentry vehicle flight path with an image of the target area stored in an onboard computer and that makes corrections in the reentry vehicle flight to establish correspondence between the two images and accurately strike the target with the vehicle.

SAM. Surface-to-Air Missile. An anti-aircraft missile launched from the ground or from surface ships.

SAS. Special Ammunition Storage sites. Storage facilities for nuclear weapons deployed abroad.

Sergeant. A truck-mounted, short-range tactical missile capable of delivering a nuclear weapon against enemy combat forces. Being phased out of the U.S. inventory.

SIOP. Single Integrated Operational Plan. The U.S. plan for the coordinated delivery of nuclear strikes by strategic nuclear forces.

SLBM. Submarine-Launched Ballistic Missile. A ballistic missile carried in and launched from a submarine.

SSM. Surface-to-Surface Missile.

Talos. A ship-launched anti-aircraft missile system capable of using nuclear or conventional explosives.

Terrier. A ship-launched anti-aircraft missile system capable of using nuclear or conventional explosives.

TSP. Tactical Strike Program. A plan for conducting nuclear strikes against targets in the NOP other than PSP targets.

