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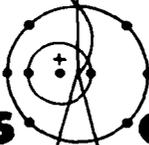
Nuclear Weapons, Their Role in U. S. Political and Military Posture, and an Example

by

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NUCLEAR WEAPONS, THEIR ROLE IN U.S. POLITICAL AND MILITARY POSTURE, AND AN EXAMPLE

by

R. G. Shreffler and R. R. Sandoval

ABSTRACT

The political and military role of the nuclear weapon in U.S. policy urgently needs to be reconsidered and redefined. This role is traced in its development since World War II, and the weaknesses of the present force are analyzed. A proposed force is described that will more effectively deter war and more adequately defend boundaries, while making fewer demands on our economy and resources.

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Part I: NUCLEAR WEAPONS AND THEIR ROLE IN U.S. POLITICAL AND MILITARY POSTURE*

by

R. G. Shreffler

It is popular today, even in the nuclear weapon laboratories of the United States, to set the political and military role of the nuclear weapon aside, and for very good reason. It is a rather distasteful subject, and also the role is hardly obvious. The simple approach would appear to be to trust in Washington to give us proper direction on these matters. A decade back, this author would have strongly recommended this approach. However, in 1967 he strayed from the Los Alamos mesa to NATO headquarters in Brussels to work as a nuclear planner and has been strongly disturbed ever since about the problems involved in deploying nuclear weapons to meet our political/military ends.

As a first step toward showing cause for this disturbed state, it is in order to review briefly the history of our military force since World War II, with the objective of focusing in some detail on the present force. Then a description of a proposed

force which more appropriately meets our present and future needs will be presented in the second part of this paper. These two forces, the one we have today and the one proposed here, are identical in the strategic elements; the rest of the forces--the general purpose forces--have essentially nothing in common. (The reader is forewarned that the proposed force, unlike the present force, depends upon nuclear weapons as a principal war-fighting element.) These two forces will be evaluated in this part of the paper relative to such features as their capability to deter war, their economic acceptability, and the potential they afford for arms control. And again forewarning the reader, it will be concluded that the approach proposed here is intrinsically a more realistic approach, even though it violates the two rules regarding nuclear weapons that our society has generally accepted--that the cardinal political/military sin is to use nuclear weapons in a military conflict; and that the second sin is to permit the acquisition of nuclear weapons by those countries that do not have them at present. Stated somewhat differently, the goal of most people has been to get

* This paper is based upon a colloquium presented at the Los Alamos Scientific Laboratory on May 20, 1975. The authors are indebted to William Bennett and Harold Agnew.

rid of nuclear weapons. The objective here will be to define a political/military structure which will deter war and permit us to face the realities of the day. Where most people would consider these two goals consistent, if not different ways of saying the same thing, it is argued herein that they are mutually exclusive--indeed, they are poles apart.*

Turning now to a description of the present force, attention will be focused upon Western Europe or NATO, though the conclusions drawn can have more general application.

It is most illuminating to take a historical approach to this task. Those of this author's vintage will recollect the state of euphoria that prevailed in the United States following World War II. The U.S. had demonstrated once again that, given a bit of time to muster our military forces and industrial plant, it could meet any crisis. Also, if it was a bit unlucky and things didn't go quite right, it now had the big "nuke" in the closet. (Pictorially, the post World War II force can be represented as shown in Fig. 1.) Indeed, it was so confident in its capability to resurrect the World War II machine at will that it essentially decommissioned the machine. However, President Truman had not left office before second thoughts were brought on by the Korean War and the unexpectedly rapid Soviet development of their own nuclear capability. As a consequence the U.S. reconstructed its conventional force to a token level, continued to improve its strategic force, and began early in the Eisenhower administration to deploy nuclear weapons in Europe. One reason for doing this, it will be remembered, was that most of the early strategic weapons were of rather limited range.

A third box will now be added to the diagram (Fig. 2), which is labeled "theater nuclear forces." It is convenient to separate this force into two components. The theater strategic forces, called GSP or General Strike Plan forces, are based in Europe and are treated as strategic forces directed against

* The Soviets have no such moral constraints over the use of nuclear weapons; indeed, they see no distinction between the use of conventional and nuclear weapons. See, for example, an excellent brief review of the Soviets' attitude in "The Theater Nuclear Force Posture in Europe," a report to the United States Congress in compliance with Public Law 93-365, James R. Schlesinger, April 1, 1975, pp. 9-10.

fixed military targets. These include submarines and aircraft-delivered high-yield systems, and the Pershing, a surface-to-surface missile with a high-yield warhead. These systems have been referred to as Forward Based Systems. The rest shall be referred to as tactical systems. They include Artillery Fired Atomic Projectiles (AFAP), Atomic Demolition Munitions (ADM), and a number of kinds of missiles.

Over the Eisenhower/Dulles years, the U.S. nuclear weapon stockpiles grew to a fair size. Since the U.S. had such a preponderance of nuclear force during this period, it unfortunately didn't really give much thought as to how it could be used. NATO's strategy of massive retaliation was focused totally upon the use of the cataclysmic strategic force--the GSP coupled with the Single Integrated Operational Plan (SIOP). The conventional force and the tactical nuclear weapons had a nebulous role for use after the release of the strategic force.

By the time President Kennedy came to office, the Soviet nuclear capability had begun its sharp increase in size. Kennedy could not have helped but be aware of the lack of military understanding for the use of tactical nuclear weapons, and he was certainly aware of the U.S. commitment to use strategic nuclear force as an umbrella in defense of allies--in my opinion, a commitment that both he and the allies knew deep down in their stomachs could not be executed. The French publicly announced this reality, and proceeded to develop their own military force. As a consequence of these factors, the U.S. policy shifted. The subliminal but real objective became the removal of the theater nuclear force from NATO at the same time with a minimum dislocation of the Alliance. A number of actions were taken to directly or indirectly meet this objective.

A new strategy of "flexible response" was introduced (Fig. 3). With this new strategy, the boundaries between these forces coalesced to give a continuity of force which was claimed to permit NATO to engage in a conflict at any level it deemed prudent. At the same time, a seemingly contrary philosophy was superimposed; namely, the concept of the firebreak. The firebreak was a political/military barrier between conventional and nuclear forces. This concept was made real by constraining the use of nuclear weapons and tightening up the control over their use. In brief, the NATO doctrine of

flexible response removed the emphasis on the use of the U.S. strategic force; the firebreak philosophy envisioned the non-use of all nuclear weapons and placed the emphasis on the use of the conventional force. However, flexible response with its continuity of force carries the risk of any conflict escalating to the release of the SIOP even when starting with a low level of conventional conflict. Thus this firebreak carried with it an unintended consequence: namely, it created or exposed another "firebreak" between "peace" and the "conventional force." The net result was a high likelihood that the entire NATO force would be held almost impotent in time of crisis.

As another of a number of actions, the U.S. established a Nuclear Planning Group, the NPG, within NATO composed of the defense ministers of a number of NATO members. The unstated purpose of Mr. MacNamara, in the author's opinion, was to educate Europeans to the dangers of nuclear weapons in the hope that they would request their removal. If indeed this was the purpose, it backfired. The Europeans not only became well educated in these nuclear matters; but they perceived, better than their American allies, the importance of nuclear weapons. The NPG continues as a principal action organ within NATO.*

There has been little change since that period in the announced U.S. approach to its political/military posture. However, to bring the situation up to date, it is useful to review the three elements of the force which Defense Secretary James Schlesinger refers to as a Triad. Strong remarks are made in his recent posture statement regarding the importance of the three legs. However, the Secretary acknowledges the inherent difficulties by noting that "after 30 years we are still struggling to adapt our concepts of conflict and its deterrence to nuclear weapons that range in yield from subkiloton to the multimegaton." The Secretary is absolutely correct, and his remark is well supplemented with respect to theater forces by the observation that no U.S. spokesman has in recent years succeeded in fitting the nuclear weapon into an acceptable political/

military posture. They have either been trying to make nuclear weapons fit into the present force structure--and they just won't fit; or they have been trying to eliminate them altogether. Their primary difficulty has been the inability to reconcile the need for an adequate deterrent to aggression against U.S. allies and a realistic view of the issues involved. The tragedy and frustration of this situation are summarized in a recent letter to the editor of Foreign Affairs by Alain C. Enthoven: "I am prepared to conclude that 20 years of efforts to find an acceptable doctrine for the use of nuclear weapons in the defense of Western Europe have failed because one does not exist. The planned first use of nuclear weapons for the defense of Western Europe simply doesn't make sense. It amounts to saying, 'we'll have to destroy this continent in order to save it'."*

Now let's review the individual elements. Consider first the present conventional force upon which the Secretary places major emphasis. Any military commander should find it painful to consider this force, simply because it is so completely vulnerable to nuclear attack. In fact, its World War II posture not only makes it inappropriate to engage in nuclear war but, as well, to engage in modern conventional war, which is placing increasing importance on the firepower of precision guided conventional munitions, or PGMs. PGMs, like nuclear weapons, favor a defensive posture and penalize exposed concentrated forces and high value units such as expensive tanks and aircraft. Not only is our current conventional force inappropriate, it is still of only token size. Were we to enter a World War III with such a force, and for some unexplained reason the conflict were to remain conventional, it is difficult to imagine how the force would develop from this token force. There would probably be some kind of mad rush to economic and resource exhaustion, an action which unhinges my imagination.

Little is said about the theater nuclear force except that we need it for deterrence. This is not surprising in light of the admission that we really don't know how to use it. Continuity of force or flexible response is stressed, although the disrupting firebreaks are as strong as they ever were.

Where the role and description of the first two

*It should be added that one of this author's duties in NATO was to act as the first Chairman of the staff group which supported the NPG.

*Foreign Affairs, Vol. 53, No. 4, July 1975, pp. 771-776.

legs of the Triad, commonly referred to as the General Purpose Force, present severe interpretational problems, the third leg, the Strategic Force, is well presented by the Secretary of Defense. It is recognized as a deterrent force; there are no specifics as to when or where it would be employed; in particular, there are no promises to use it to protect allies. The major reason for maintaining a strong strategic force is to counter the Soviet strategic force. Most importantly, there is a strong expression by the Secretary to reduce the size of this force if the reduction is reciprocated by the Soviets. This day may be a long time in coming in light of the military dilemma presented by our General Purpose Force. Until it does come, the smartest thing is to invest in a strong strategic deterrent.

There are a number of additional features of the current forces that are worth mentioning.

First, a point regarding force cost. The U.S. spends only 20% of its defense budget, or \$20 billion per year, on its very important strategic force. That leaves a whopping 80% to be spent on the rest--the General Purpose Force--a force which, as argued here, has but marginal value.

Second, a comment about the understanding of tactical nuclear warfare. One would expect that U.S. political and military organizations--particularly the Army--would know a great deal about this subject. This is not quite so. There is relatively little interest by the military services in the subject. There are some good reasons for this. Most importantly, military leaders feel very keenly their responsibility for defending the country and they are just unwilling to depend upon a nuclear force whose release is anything but assured. Moreover, they are reluctant to move in the direction of defining a force which could represent a radical departure from present forces.

A third point has to do with the difficulty of introducing change into the system. To change the U.S. national strategy and have it endorsed by the NATO authorities can take a number of years. More significant is the fact that these changes in national or alliance strategy have little impact upon the structure of our military forces or how our military commanders intend to fight a war in Europe. For example, the transition from a strategy of massive retaliation to one of flexible response produced

essentially no change in military force structure or tactics. In essence, our ground forces are designed to play World War II all over again; tactical nuclear weapons are, in effect, a military embarrassment; the Air Force and the undersurface Navy still intend to fight their war with a strategic force, some elements of which at the moment are deployed forward in the GSP. Only as long as a national strategy conforms to the existing force structure can it gain acceptance. Conversely, if the strategy requires a change in force structure, no matter how necessary the change, it will be in for rough sledding. If accepted, it can take years for the change to materialize.

Finally, a point which may appear trivial. Americans, for reasons difficult to fathom, seem to have an underlying notion that they can shoot nuclear weapons at an enemy and receive no nuclear response. It's like the GI who in battle sees his buddy fall from a bullet and still feels confident that he will not be struck down himself. This attitude is reflected in the definition of options for the use of theater nuclear weapons.

Now, we shall undertake a description of our proposed force referred to earlier. This entails a drastic change in force structure of the General Purpose Force; it envisages very large reductions in cost and increases in effectiveness of the force, and it requires that one think seriously about using nuclear weapons--really using them. (See Fig. 4.)*

For the proposed force the strategic element would remain the same. The GSP with its Pershings, aircraft, and U.S. submarines would be eliminated. The tactical nuclear force is combined with the conventional force, to produce a totally restructured theater force containing no offensive capability--no massed forces, no heavy tanks, and no air force elements: i.e., NATO forces present no targets that can be construed to be menacing to the Soviets or that invite a preemptive nuclear attack.

*The reader may feel with justification that the author is behaving in a strongly assertive manner in proposing a unique solution to the NATO problems. In fact, the proposal is backed up by considerable consultation and reasonable analysis. Certainly a great deal more is required. The point pleaded by the author is that the U.S. pursue a complete description and evaluation of the proposed force.

One result is the production of a large firebreak between the new theater force and the strategic force, and the elimination of the firebreak that now inhibits the use of any force.

Having discussed what the force doesn't contain, we shall now briefly outline what it does contain.

The essential--indeed the fundamental--aspect of the force is that it is defensive. It is based upon preponderant nuclear and conventional firepower, and the promise of presenting no threat of invasion to an enemy. Stated a bit differently, the fundamental law is "the best defense is a good defense." It applied to World War I situations where we also had a dominance of firepower over maneuver. It replaces the more dangerous cliché frequently heard that "the best defense is a good offense."

In order to further define the theater force, I want to use a figure which shows a map of a country which we will call Ally X. It is surrounded by other allies and enemies. (See Fig. 5.) As just stated, the force is composed of interdependent and highly survivable nuclear and conventional elements. The nuclear element (Fig. 6) would be composed of cheap, reasonably accurate, (~ 100 m CEP) missiles of about 75 km range. They would be armed with sub-kiloton warheads and their task would be to stop massed attacks as close to the border as possible. The conventional elements, the armament of which would include PGMs, would take care of lesser attacks from infiltrating enemy or from the air.

Deployed at full strength, the force size would be about one-tenth the size of a World War II force. It would be roughly the size of the force deployed in NATO today. However, about two-thirds of the proposed force would be composed of militia. United States forces could be reduced greatly, for the moment possibly to include only nuclear weapon custodial units. The number of subkiloton nuclear warheads to arm the missiles is estimated at about half the 7000 nuclear warheads currently deployed in Europe.

To insure prompt response of both conventional and nuclear elements to an attack requires intensive peacetime consultation between the U.S. and its allies. The resulting plans must contain no ambiguity that would jeopardize timely and effective defensive action. In particular, nuclear weapons must be ready prior to an attack.

Next we shall make a relative evaluation of these two military forces with respect to a number of topics. The first is escalation. As I mentioned, one cornerstone of our current military strategy is the ability to fight a war at any level and to change this level upward and downward with required precision, dispatch and without defining a priori what the levels of intensity might be. In light of our experience in Viet Nam plus the need for very rapid response, it seems highly unlikely that such a dangerous procedure could actually be followed in wartime.

With the proposed force, there is no such confusing and dangerous issue to be faced. There are no levels of escalation. It's like turning on the lights--they're on or they're off. At the same time, the force has great flexibility to meet any level of aggression, except one which essentially destroys Western Europe. The large firebreak between the theater force and the strategic force makes these two forces independent of one another. As a consequence, the President is free to release the theater force without committing the strategic force. No longer is the NATO force frozen into immobility.

A second topic is deterrence. Let me emphasize again that our goal is to define a political/military structure that will deter war. Now deterrence of political or military aggression can be defined as a produce of two factors: the manifest capability of the force and the assurance, particularly in the mind of the aggressor, that the force would be used if challenged.

Let's take a look at our current conventional force in this regard. For the reasons explained here, its manifest capability is very low, and the lower firebreak strongly inhibits its use. Thus the conventional force is impotent. The current tactical nuclear weapons are simply not intended as a war fighting element and both firebreaks prevent their release. Thus these weapons present no deterrent and, from a military standpoint, they should be removed from NATO if for no other reason than to make releasable the conventional force, infirm as it may be. It would, unfortunately, probably be impossible to remove those NATO nuclear weapons provided by the U.S. without fracturing the Alliance. The deterrence of NATO's force to date has rested on the GSP/SIOP force; with nuclear parity between the United

States and the Soviet Union the quality of this deterrence is rapidly dwindling. In the opinion of many people, it is becoming increasingly evident that the French were right all along--the nuclear umbrella is really full of holes. In fact, the fabric is gone; the holes have multiplied themselves into a void.

For the proposed force, the force capability would be very high, and there would be no question about its use. The President would feel no constraint in releasing the low yield weapons, having been convinced in advance that the best immediate political/military expedient is being followed, and he is in no way committing himself to the release of the strategic force. To repeat, the two essential features of the proposed force are its effectiveness and its releasability. The result, of course, is maximum deterrence.

A third topic is collateral or unintended damage resulting from a conflict, a parameter which is usually measured in civilian deaths though property damage is also an issue. The offhand reaction of most people would be that the proposed force with its subkiloton nuclear weapons would have associated with it very high levels of such damage when compared with a conventional engagement. However, one should stop and think about it for a minute. Does one want to consider a protracted World War II-like event which plows back and forth over the entire European continent, or does he prefer to cope with a very short confrontation within a restricted battle area near the border with a force designed to minimize collateral damage? Further, with the proposed NATO force, the military targets for the Soviet nuclear weapons have been removed.

The time element is a fourth important issue. One can expect that wars, either conventional and certainly nuclear, will be fought in a matter of a few days--a month at the most. Armies would fight with what they have in the field. There will not be the 60 or 90 days presently planned for the mobilization of forces. The proposed force, on the contrary, requires only to muster its militia and many of them would be manning local defenses. There would be no mad rush to economic and resource exhaustion.

A fifth important issue is force vulnerability and its implications. As mentioned, the present conventional force, because of its massed character and

exposed target complex, presents lucrative and easily found targets for Soviet nuclear weapons. Present massed NATO forces, the airstrips, and Pershings present inviting targets for preemptive nuclear attack. In short, the present NATO force is a liability to us considering the temptation it offers the Soviets whose force is designed to destroy it.

The proposed force presents few, if any, targets and it is defensive in character; hence, there is little opportunity or incentive for the military use of Soviet nuclear weapons, particularly in the preemptive mode. Indeed, the deployment of the proposed NATO force would negate the present ability of the Warsaw Pact to engage in operations to seize territory intact. It is not at all clear how restructuring the Warsaw Pact military force would restore this capability.

The sixth point has to do with the confidence of the U.S. and its allies toward the theater force and how crucial it is to the general well-being of the Alliance. It is strongly suggested here that the principal reason for the political and economic disarray within Western Europe and the U.S. is its lack of confidence in its military force. There is concern about NATO's backbone. The proposed force is based on intense peacetime consultation and confidence in a force that will really work within very sensible economic constraints. It would provide the needed backbone.

As a seventh point--a word about the contribution of technology to this subject. One can hardly deny its importance nor the necessity for encouraging a strong technical research and development program. The danger comes from forcing the product of this effort into present forces. This problem is particularly bothersome with respect to the theater nuclear force. It has led to a stockpile of weapons in Europe which, as critics increasingly argue, is largely useless. Secondly, these weapons have served to distract us from the real issue--the development of a rationale with an associated strategy and tactic for the theater force.

The proposed force meets these objectives by proposing a simple, cheap arsenal of missiles carefully tuned to a defensive force. To repeat, instead of a complex, expensive, and vulnerable stockpile, a cheap, easily procurable missile, with a simple, cheap, subkiloton fission warhead is proposed--

something that can be easily concealed by carrying three or four missiles on a conventional army five-ton truck. Such a system should have and could have been fielded 20 years ago. We then could have proceeded to develop it into a more serviceable piece of ordnance--a golden opportunity missed.

This leads naturally into the next topic--arms control. In achieving our ultimate goal of deterring war we must eliminate the dangerous strategic forces. Given sufficient time (and it may not take long), some set of circumstances could release these forces and turn this world into a very unpleasant place. Events have demonstrated that it is difficult, if not downright impossible, to eliminate--even reduce--this force in the current reference frame. The only alternative is to focus deterrence away from the strategic force and into a strong defensive theater force--one which threatens nobody, one which we can afford to proliferate. We want to turn all nuclear countries into porcupines. They cannot attack--but they cannot be overrun. It is the only solution I can see to the arms control problem, and it is a good solution.

Within the next ten years, it is quite possible that we will see a dramatic proliferation of nuclear weapons. The development in India of a nuclear device was not an anomalous act. It was to be expected. The problem is how to turn proliferation to advantage. Again, it is by employing the strategy wrapped up in the proposed force. Let these seemingly threatened countries turn themselves into porcupines. Let them develop their own backbones. Certainly, there will be problems, but it won't be nearly the mess we see today--a mess which only threatens to get worse.

With respect to NATO, the proposed force has much to offer.

First, it could bring France back into the Alliance as a participating military member. The new strategy would be fully consistent with French thought as it now exists.

Second, it would eliminate the necessity for a GSP which could devastate Eastern Europe and quite likely bring on the destruction of West Europe.

Third, as an immediate Arms Control measure, its implementation would result in the removal of the U.S. Forward Based Systems and ultimately bring under consideration the removal of the British and

French land-based strategic forces.

Fourth, it would give NATO a new, credible military force. At the same time, it would give the individual countries a much greater degree of independence--oddly enough, something they must have in support of a United Europe.

Finally, it would obsolete the Soviet Union's offensive force. It is not at all clear that a suitable alternative Soviet force exists, since it is not clear how a much different force could be used to control vassal states and to promote the Communist ideology.

Probably the greatest prospects for this defensive concept lie with the third world--with Israel, India, Pakistan, South Korea, Argentina, Brazil. This list goes on and on. Think what a cheap, reliable defense force would do for these countries, particularly in a context that recognizes the barbaric character of a city-busting strategic nuclear force.

In this context, some general comments about the Middle East are in order. The situation there presents a real world context in which to assess what has been discussed here. It is only through the analysis of such very immediate dramatic situations that the role of the nuclear weapon can take on real meaning.

The Israelis have won two engagements with the Arabs primarily because they have been very competent fighters, because they have had the strong support of the United States, and because they have been very lucky. Clearly Israel has to play with a stacked deck. It has relatively very few people and very little money. In fact in the October 1973 War, which lasted less than three weeks, they spent their annual gross national product. This symbolizes what is meant by "quickly reaching exhaustion in a modern war."

If things get really rough in the next engagement they could, of course, unload Jericho missiles on Cairo and Damascus. We should remember that people do such terrible things in the heat of a war. The U.S. behaved that way in World War II with both nuclear and conventional armament and, unlike Israel, its immediate survival wasn't really at risk. The point is that countries dare not end up in such a situation as Israel finds itself in today.

With this point in mind, consider what would happen if the Israelis had the kind of force proposed here. They would require relatively few military personnel; the cost would lead to a greatly reduced military budget. As the Arabs would perceive the kind of defense facing them, they almost certainly would be deterred from attacking Israel. If for some reason the Arabs did attack, as they invaded Israeli territory they would be destroyed. It would be difficult for foreign countries to complain about a country repulsing invading forces on its own territory. When one combines this drastically reduced probability of any conflict taking place at all with the low probability of failure in the event of war, the risk to Israel would be reduced by many orders of magnitude.

Finally, let me turn to the United States. Consider again the European Theater, still by far our most important area of concern. At the present time the defense community is trying to address the Amendments made by Senator Nunn to the FY 75 military appropriations act (PL 93-365). Specifically, Senator Nunn requested that, "The Secretary of Defense shall study the overall concept for use of tactical nuclear weapons in Europe; how the use of such weapons relates to deterrence and to a strong conventional defense; reductions in the number and type of nuclear warheads which are not essential for the defense structure for Western Europe; and the steps that can be taken to develop a rational and coordinated nuclear posture by the North Atlantic Treaty Organization Alliance that is consistent with proper emphasis on conventional defense forces." (Author's italics.)

Clearly the premise of Senator Nunn is that a strong conventional defense force is essential. However, unless there are drastic changes in the definition of a conventional force, this exercise is doomed before it starts. Nuclear weapons are just not compatible with conventional forces as they are now defined. The possible enlargements of a conventional force only make it a more lucrative and appealing target for nuclear weapons.

To be consistent with the political/military policy advocated herein, the U.S. would be required to redefine its position in the Pacific theater. The best solution may be for the U.S. to retreat, particularly if our allies were seriously to consider an option to defend themselves with their own independent nuclear forces similar to the ones proposed here. If, on the other hand, it were decided for the U.S. to remain in the theater, the best use of its forces may rest in a capability for air delivery of low-yield nuclear weapons and conventional PGMs on targets to be defined by allies. It does not seem likely that a role would exist for ground forces or high-yield nuclear weapons.

It is hoped that this discussion has raised some questions in the reader's mind about the role of nuclear weapons. In the context of the strategy we have today, they can be extremely dangerous instruments. Given sufficient time, they may well lead to the destruction of our way of life. However, with a more credible and rational strategy, they could be used as a potent factor to create stability, to deter war, and to promote peace throughout the world.

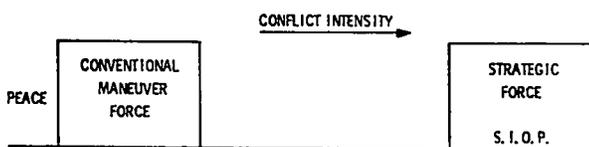


Fig. 1. Post WWII U.S.-NATO force.

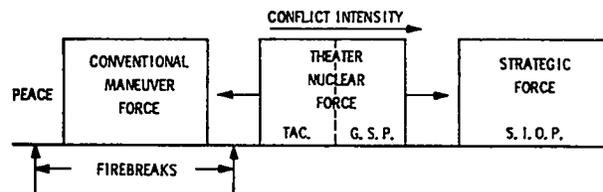


Fig. 3. Present U.S.-NATO force.

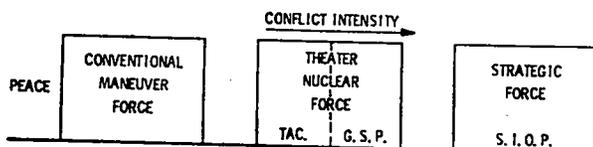


Fig. 2. U.S.-NATO force with nuclear weapons deployed.

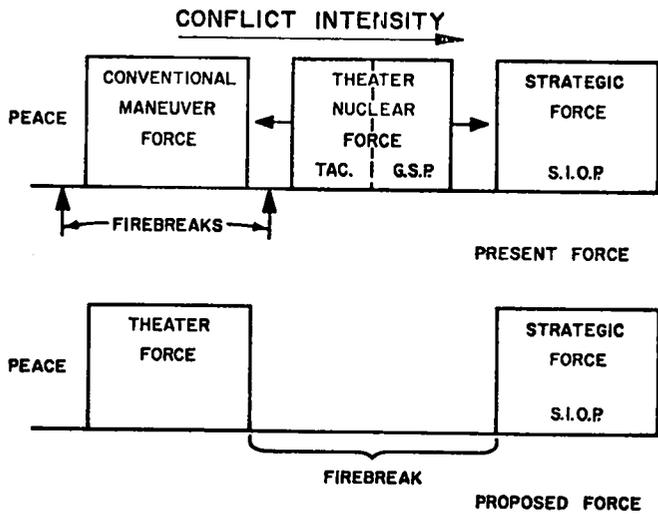


Fig. 4. Comparison, present vs. proposed U.S.-NATO force.

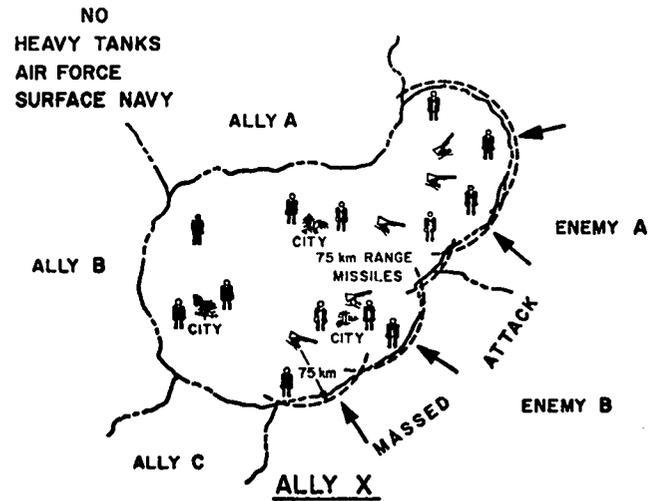


Fig. 6. Hypothetical conflict situation with force deployment.

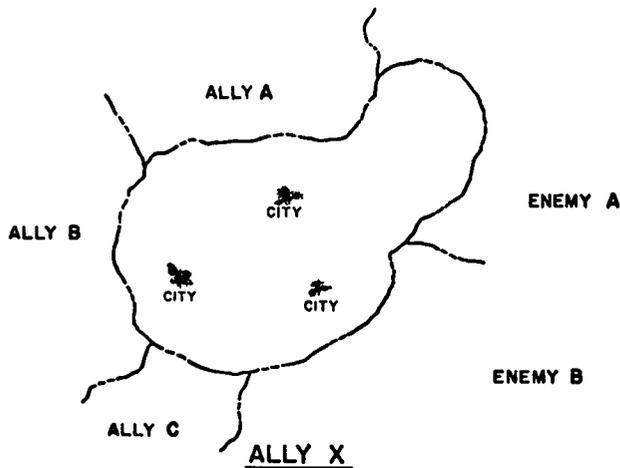


Fig. 5. Hypothetical conflict situation.

Part II: A DEFENSIVE FORCE FOR NATO'S CENTRAL REGION

by

R. R. Sandoval

I. INTRODUCTION

This part of the paper presents the results of an examination in some detail of force requirements for the NATO central region: i.e., the force required to repel an attack across the Eastern border of the Federal Republic of Germany (FRG). The first part of this paper and the Los Alamos Scientific Laboratory report LA-5785-MS, "U. S. National Security Policy and Nuclear Weapons," November 1974, provide the context for the examination of a NATO force posture strong enough to eliminate NATO's dependence on U. S. strategic power to deter Warsaw Pact aggression.

The defensive force described in this paper explicitly acknowledges the threat posed by the presence of nuclear weapons in Warsaw Pact forces and the role given to those weapons in Soviet doctrine. Accordingly, the force has been designed so as not to present critically important targets for Soviet nuclear weapons used either in a preemptive disarming attack or against the defense in conducting an invasion attempt. The defenders would rely on their ability to deliver low-yield nuclear weapons on attacking forces in sufficient numbers to stall an attack before the attack succeeded in taking a significant amount of West German territory. Low-yield nuclear weapons delivered quickly with requisite accuracy could defeat attacks by massed ground-gaining elements without the self-defeating unwanted destruction attending the use of high-yield weapons. The defensive force proposed here also includes conventional weaponry and manpower to defeat those attacks in which the attackers would be dispersed. For much of the latter capability, the force would depend on large numbers of quickly-mobilizable German militia trained to deal with dispersed attacks and armed with precision-guided conventional munitions (PGMs).

The object in designing the force has been to present to Soviet planners a problem whose inherent uncertainties offer little prospect of successful resolution through the use of military force. Due

primarily to the profound effects of nuclear weapons on offensive military operations, these uncertainties would be accompanied by Soviet realization that the required defensive effort would not be so self-destructive as to keep the defenders from making that effort.

Before they could hope to degrade seriously the defensive capability of the proposed force, the Soviets would have to improve vastly, in some unforeseeable manner, their ability to find and destroy large numbers of small mobile elements dispersed over a wide area. The proposed force includes large numbers of conventional surface-to-air weapons to complicate further the Soviet target acquisition problem during those times when European weather failed to do so.

This defensive force was designed in stages that included a preliminary description, an evaluation from an assumed point of view of Soviet planners uninhibited as to choice of available means to take West German territory, and, finally, adjustments to the design to foreclose Soviet options. The obvious Soviet option to inflict total destruction cannot, of course, be defended against with any force.

II. DEFENSIVE FORCE STRUCTURE

The area within which the force would be deployed to defend would extend about 100 km inside the FRG border with the Warsaw Pact nations, a border some 700 km long. Defensive elements would be dispersed throughout this area, with the density of nuclear delivery units greater to the rear, and that of close combat and target acquisition elements greater near the border. There would be no concentrations of men or material to draw nuclear attention. The force would include the following:

A. Composite combat units would provide short-range target acquisition, local defense against infiltrators, a contribution to local air defense in

the form of shoulder-launched ground-to-air seeker missiles, and PGMs to counter dispersed attacks. Elements of these units would acquire attacking maneuver units, call for the launching of low-yield nuclear warheads, and terminally guide the warheads onto the attackers. These units, a majority of which would be militia, would be organized in defensive zones of about 100 km width and depth.

B. Nuclear fire units, each containing a launcher, four terminally guided missiles with nuclear warheads of less than a kiloton yield, communications gear, and crew, would launch missiles on request from composite combat units. Each nuclear fire unit would move to a new location immediately after launching a missile. Largely automated fire direction would assign launchers to target acquisition elements for specific fire missions. The elapsed time from target identification to weapon arrival over the target would be no more than five minutes. The fire units would be dispersed in a wide band extending from about 25 km to 100 km from the border. The depth of this band, and the width and depth of the defensive zones, is established by the maximum and minimum ranges of the missiles, about 100 km and 20 km, respectively.

C. Short-range air defense units dispersed throughout the defensive zones would cover the force against real-time reconnaissance and attack from the air. Medium-range and other short-range air defense units would be deployed throughout the FRG, together with militia units for local defense, to prevent air-mounted attacks from seizing territory behind the defensive zones.

D. Since areas of the defense could be blanketed with the effects of Soviet nuclear weapons, numbers of highly mobile units similar to the armored cavalry units in present forces would be charged with determining the boundaries of these devastated areas and assisting in the re-establishment of the defense along these boundaries. A large number of repetitions of this blanketing tactic by the invaders would destroy not only the defense but the FRG as well, and, of course, there can be no defense against this kind of attack. Such an attack would require a much larger number of nuclear weapons to achieve the same effect as an attack on FRG cities and industry to start with.

E. Command and control within the defensive zones would be greatly decentralized to make the defense highly responsive to the moves of the attackers. Since the means, including high-yield weapons, to widen the purposes for which nuclear weapons would be used would not be available to defensive zone commanders, escalation control within the defensive zones would not be a problem. Automated fire direction centers would be manned so the safety of friendly troops would be given proper consideration. Nuclear weapon employment doctrine would include population-avoidance provisions.

F. Logistic support for the force would also be greatly decentralized. Since offensive operations against Warsaw Pact forces armed with Soviet nuclear weapons would be, for practical purposes, impossible, no contingency for these operations would be allowed for in the logistic structure. A large number of small, widely dispersed, concealed supply points would constitute the essence of the logistic structure. Combat elements would carry several days of supplies.

III. ADVERSARY EVALUATION

Soviet military planners, presumably charged with planning an attack to seize West German territory, and facing the defense broadly described in the preceding section, have two major options, with variations and combinations. These are to mount attacks with dispersed elements that individually appear to offer no targets worth the expenditure of nuclear weapons, or to execute blitzkrieg attacks in which the defense is overwhelmed in corridors chosen by the attackers. In this section, we attempt to identify the factors that Soviet planners would consider in assessing the probability of success of each option, and estimate the numbers of the types of defensive elements described above that would be required to make these probabilities low enough to be acceptable to NATO. We do not dispute the objections that it is extremely difficult to anticipate the principal features of unprecedented forms of warfare, and that it may be even more difficult to define the complex elements that make up the acceptability of a NATO force posture significantly different from that of the present. We nevertheless consider that realistic planning for the

contingency of Soviet aggression in Europe necessarily entails making the effort to do both.

A. Dispersed Attack Options

Two basic forms of dispersed attack are distinguishable. In one, the offense would try to introduce into the fabric of the defense a large enough number of observers and other target acquisition means to discover, and attack with supporting firepower, as many defensive elements as necessary to nullify the defense. If successful, this tactic would enable the offense to employ its ground-gaining elements with impunity. A different kind of dispersed attack would send numbers of units with ground-taking capability against the defense in the expectation that the individual units would not be large enough to attract nuclear fire. Aggregation of the attacking units would not take place until defensive elements were so closely engaged that nuclear weapons used then against the attackers would also kill defenders, presumably precluding their use.

In providing for an effective defense against these dispersed attacks, we must not underestimate the inhibiting influence on the offense of the presence of substantial numbers of nuclear weapons in the defense. While the number of these weapons will primarily be determined by the requirement to deny the attacker the option to mass his forces, we must not allow the planner of the attack to believe that he can confidently predict when he will be presenting a nuclear target. The disruptive effect of even a few nuclear weapons on the necessarily highly orchestrated plan to coordinate the activities of large numbers of small, independently operating units would be extremely difficult to allow for in the plan. Great redundancy of defensive elements capable of bringing even those few weapons to bear would complicate enormously any plan to eliminate enough of those elements to permit the attack to succeed.

Nevertheless, we cannot allow ourselves to be vulnerable to a tactic through which our store of nuclear weapons would be exhausted by our attacking a large number of small units whose loss would not be decisive. Accordingly, the defense would have a strong capability to deal with attempted incursions by small attacking elements without defenders having to mass. This capability comprises both the density of defensive elements and the nature of the conven-

tional weaponry with which they would be armed. The necessary characteristic of the latter is that it have long enough effective range to prevent the aggregation of a superior force of attackers around a single defensive unit at too short a distance to allow the defenders to call for nuclear weapons. Appropriate weapons for the defenders appear to be available now, at least in a first generation, in recently developed anti-tank and anti-personnel PGMs.

As to the density of defensive elements, which would be the composite combat units for this purpose, an average of one unit of about 30 men per 4 sq km of defensive zone, with greater density toward the border and less to the rear, would pose a very difficult problem for hypothetical Soviet planners. About 18 000 of these units would be required, most of which could be militia. The proportion of professional NATO force units in this part of the force would also be higher forward, decreasing to the rear.

To assist the composite units in protecting against the introduction of attackers by airplane or helicopter, the force would have large numbers of short-range air-defense weapons that could be the recently developed Roland. Five thousand of these would provide double coverage of the defensive zones. A smaller but still substantial number of medium-range air-defense systems such as Improved Hawk would complete a formidable defense against dispersed attacks by ground or air.

B. Massed Attack Options

Two basic forms of massed attack can also be distinguished: those that mass the firepower of nuclear weapons against the defenders, and those that mass the manpower of ground-gaining elements in attacks of which World War II was full of examples. In combination, as published Soviet doctrine holds they would be executed, these attacks pose the most serious threat to any defense.

The use of Soviet nuclear weapons to devastate defended areas cannot be stopped by any means available today or likely to become available in the foreseeable future. On the other hand, the time required to move invading echelons into areas cleared of defenders by the use of nuclear weapons is enough to reconstitute the defense around the peripheries of those areas and to deny their use to the attackers by delivering nuclear weapons in the same areas.

This latter statement depends for validity on the defense being organized in great depth that cannot be negotiated in a single offensive thrust.

The effective depth of the defense depends most on the number of surviving quickly-responsive nuclear weapon delivery units whose fires can be brought to bear onto the formations the offense attempts to move into the areas struck by its nuclear weapons. While a great profusion of short-range delivery means could be used to provide the required depth, it is more efficiently provided by delivery systems whose range encompasses the entire depth, since fewer systems are needed.

To determine the location of the outer edges of areas destroyed by offensive nuclear fires, the defense would have appropriate numbers of highly mobile units dispersed in the defensive zones. These units could very closely resemble the armored cavalry units of present forces, and their mission would also be close to the screening mission often given to armored cavalry in conventional engagements. The principal additional capability required is a link through fire direction centers with the nuclear weapon delivery units of the force. The equivalent of 20 armored cavalry troops per defensive zone, or about 150 altogether, could satisfy this requirement.

It is difficult to calculate the number of delivery units required for the nuclear weapons of the defense, but a density corresponding to one launcher per km of front would set Soviet planners' problems of target acquisition and anticipated volume of fire that could not be solved with high confidence. They could not be addressed at all without considering the use of Soviet nuclear weapons. The difficulty of penetrating a deep defense armed with nuclear weapons could be made even more severe by the provision of protection for the defensive elements against the effects of nuclear weapons. How much protection to provide obviously depends on many factors, but even that provided by the field fortifications that can be constructed by the units themselves, augmented by a few combat engineers, would further reduce Soviet prospects of taking any intact part of FRG territory.

C. Other Attack Options

If the Soviet Union chooses to attack the FRG without regard to what might survive intact, its nu-

clear weapons will destroy as much as the Soviets decide to destroy. It has long been assumed that the threat of retaliation deters such attacks. Who retaliates, against whom specifically the retaliation would be carried out, and what purpose would be served by retaliation after the fact, are questions that have no easy answers. In any case, they will not be addressed here.

It is perhaps conceivable that the Soviets might mount a sea-borne invasion attempt to outflank NATO's West German defense. If this possibility were to be seriously taken into account, it would be a simple matter to use the same kinds of defensive elements as described above to make a landing from the sea completely infeasible.

IV. TECHNOLOGICAL ISSUES

Any proposal to take at face value the threat posed to Western Europe by the Warsaw Pact military force, including its nuclear aspect, raises a number of technological issues. The technical community has been directed towards technology of increasing sophistication for strategic systems and for means of fighting conventional war. One result has been the accumulation of more advanced technology than that required to equip the nuclear defense.

The development of PGMs, although failing in some important respects, notably in providing weapons effective under all likely conditions of visibility, has potentially enhanced defensive capabilities to a degree suitable for dealing with dispersed attacks. Further development of PGMs is hardly likely to result in the possibility of substituting PGM firepower for massed manpower to deny success to massed attacks. We must turn to sub-kiloton nuclear weapons to cope with the blitzkrieg kind of attack without presenting critical easily-found targets for the attacker's nuclear weapons.

In planning for the defensive use of low-yield nuclear weapons, at least three significant differences between these weapons and conventional weapons must be recognized. The first is that the precise location of individual elements of area targets need not be known when the targets are to be attacked with nuclear weapons. The second is that no very great accuracy of delivery is required to

cover an area target with appropriate levels of nuclear weapon effects. Lastly, nuclear weapons must be used discriminately to avoid inflicting unwanted damage. The distinction between combatants and non-combatants must be maintained if the defensive strategy is to be other than mutual destruction. Each of these differences has significant implications for technology. They have not been sufficiently recognized. Target acquisition and delivery accuracy, in particular, have focused on the much more stringent requirements imposed by planning for conventional engagements.

Nuclear technology also offers opportunities for nuclear defense that have not been exploited. The most important of these lies in the possibility of designing weapons that would considerably alleviate the problem of assuring authorized custody of fissile material. The associated problems of accidental nuclear explosions and the accidental dispersal of radioactive particles could also be solved. Nuclear weapons that could safely be widely dispersed in peacetime, and delivered discriminately and responsively against forces attempting invasion of the FRG, would reduce Soviet prospects of profitable aggression in Central Europe to a very low level.

In brief, no unsolved technological problems pose obstacles to the adoption of workable nuclear defense in Europe.

V. COST

The analysis on which this paper is based included a comparison of the costs associated with present forces and those projected for the force proposed here. The latter would have supporting elements not described above and these were included in cost estimates.

The costs of any force are dominated by the number of active military men maintained in the force. In general, 10 members of the militia can be supported at the cost of supporting one active soldier. The major opportunity for saving thus lies in depending on militia for all that does not clearly

require a full time military man. The proposed force, containing a little more than 1 000 000 men, assumes that 30-40% of the total should be professional military.

Nonrecurring costs of present forces are difficult to estimate because of uncertainties related to future force modernization measures. It is safe to say that these will be very expensive, even if only those already announced are adopted. The acquisition costs of the arms for the proposed force, on the other hand, which would have a much larger number of ground combat and surface-to-air PGMs than are apparently being planned for the present force, would be kept low by relying on cheap, simple systems. The missile for nuclear delivery would have no stringent accuracy requirement to drive its cost up, and the simple subkiloton fission warhead could be made very cheaply.

The principal conclusion to be drawn from comparing costs of the present and proposed forces is that the former contains many costly elements that cannot easily be related to defense against ground invasion. The cost of the proposed force would be considerably less than that of even the defensive elements of the present force. Although no attempt was made in this study to allocate force elements among the various nations involved, the cost of the U. S. contribution could be proportionally even smaller.

Thus, there are no economic constraints barring adoption of a workable nuclear defense for Europe.

VI. SUMMARY

Part I of this paper and report LA-5785-MS give the reasons for examining the feasibility of defending Europe against possible Soviet aggression with appropriate means continually deployed in peacetime. Having conducted this examination and considered the nature of the threat inherent in the military force arrayed in Eastern Europe, we conclude that effective defense is militarily, technologically, and economically feasible.