Policy Analysis

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Executive Summary

"The weapon adds very substantially to the capability of the United States and its allies to deter an attack based upon a tremendous preponderance of armor...that would be one of the characteristics of a Soviet attack on the central front [in Europe]," claimed Defense Secretary Caspar Weinberger to justify the neutron bomb. He continued: "We think [it] enormously increases our deterrent, our ability to demonstrate to the Soviets...that we have the capability to respond, and to inflict a cost which we hope they would regard as unacceptably high."[1]

That statement epitomizes the deception being used to rally support for the neutron bomb. Such claims have resulted in the "informed" U.S. population being about evenly divided in opinion as to whether this country should deploy that weapon.[2] But in Europe it is another matter -- paticularly since Ronald Reagan's inadvertent statement that a limited nuclear war could be confined to that continent. The people there have become even more skeptical about all U.S. nuclear weapons including the neutron bomb.

The neutron bomb, or "enhanced radiation warhead" as it is called in scientific circles, is basically a hydrogen bomb without the uranium-238 jacket which would absorb neutrons to increase the blast. By eliminating that jacket the full fusion emission of neutrons is released. A one-kiloton neutron bomb will spread a lethal dose of neutron radiation to exposed people over a one-mile radius. It would take a 13-kiloton fission (atom) bomb to produce a combined lethal dose of neutron and gamma radiation over that same distance.[3] Although the lethal radius for people inside tanks would be somewhat less because of the protection, pure neutron radiation is more penetrating than a mixture of neutron and gamma, and the lethal radius would be greater for a one-kiloton neutron bomb than for a 13-kiloton fission warhead. But the radius of destruction from blast and heat would be considerably less for the former. Neutron warheads are now in production for the Lance missile and the eight-inch artillery shell. Soon they will be available as projectiles for the more numerous 155-millimeter cannons.

So far it looks as if the claim that neutron bombs reduce "collateral damage" is true -- collateral damage being a euphemism for associated civilian casualties. The neutron bomb does seem to provide a greater penetrating dose of lethal radiation in a prescribed area without the wider-spread heat and blast effects typical of other designs. If we had only to choose among nuclear warheads, the enhanced radiation variety does seem to be the most desirable.

But this discussion of prompt effects is too confined and does not address subsequent fallout and lingering radiation from any nuclear weapon. Neither does it address the motivation behind the proliferation of nuclear weapons. The Soviets have promised to build neutron bombs if the United States deploys them, and that would be a gross escalation of the arms race. Egon Bahr, a leading West German disarmament expert, has concluded that the Soviets have already tested a neutron bomb.[4] Other nations are also certain to pursue development of enhanced radiation weapons. Deputy

Under Secretary of Defense for Research and Engineering, James P. Wade, Jr., told Congress that France is firmly committed to deploying such a device.[5]

Even worse, if the neutron bomb should ever be used in the surgical manner advertised by U.S. strategists, it could very easily and most likely trigger total nuclear war. Former Defense Secretary Harold Brown persistently warned that it is not at all clear "that an initial use of nuclear weapons -- however selectively they might be targeted -- could be kept from escalating to a full-scale thermonuclear exchange ...The odds are high, whether the weapons were used against tactical or strategic targets, that control would be lost on both sides and the exchange would become unconstrained." [6]

In light of these consequences it is a serious misrepresentation to imply that our only choice is among types of nuclear weapons and that there is no alternative to nuclear weapons for the defense of Western Europe. It is this notion that I wish to challenge in this paper. There are viable alternatives to the deployment of nuclear weapons to deter a massive armored attack, and the technologies for those conventional alternatives are being vigorously pursued. The Pentagon story changes abruptly when its spokesmen are trying to persuade Congress to finance non-nuclear, antitank weapons. Let us take a closer look.

The Christian Science Monitor recently reported that there "are 19,500 tanks in the Soviet-controlled forces of the Warsaw Pact aimed at Western Europe. Of these, 12,500 are Soviet tanks in Soviet units. NATO has 7,000 tanks on its side facing the 19,500."[7] The article went on to point out that this "massing of Soviet tanks facing Western Europe is one of the important elements in the power politics of Europe. For years it has meant a Soviet capability of mounting a massive armored offensive into Western Europe."[8]

During a speech in El Paso, Texas, former Defense Secretary Brown pointed out the pitfall of this type of comparison. He said that there is "a tendency to compare NATO and [Warsaw] Pact forces in terms of static measures, like numbers of tanks." He went on to explain that "this kind of shorthand obscures other important differences between them. To name only two, NATO designs its forces to repel, not to launch, a tank invasion. And its ground forces are designed and deployed to take advantage of the classic principle that the attack needs at least a substantial numerical edge to overcome the natural advantages of prepared but mobile defense."[9]

Brown elaborated on that statement in his fiscal year 1982 posture statement: "Let me illustrate this general point with the case of ground forces. The Soviets have a substantial advantage in numbers of troops and armored assault vehicles. Therefore, we need to deploy greatly improved anti-armor weapons for our ground forces and to maintain air superiority in order to deny the Soviets air cover for an armored attack."[10] He then went on to describe three generations of conventional antitank weapons which the United States has deployed or has in production or development. These will be discussed in detail later.

During hearings in 1978 before a House Appropriations subcommittee the former Under Secretary of Defense for Research and Engineering, Dr. William J. Perry, presented his evaluation of the superior Eastern Bloc forces:

> ...the reason they push so hard in things they can do well, like building lots of tanks and building lots of airplanes, is an attempt to compensate for what they perceive as our technical superiority.... The difficulty with their approach is that they never have a chance to use those great quantities of weapons. If they don't have a chance to use them in the next few years they have made the wrong decision because they have, today, 20,000 tanks deployed in Europe. In the meantime we are developing something called precision-guided weapons which will allow 155-millimeter artillery shells to destroy tanks. By the time that becomes operational they have the wrong force deployed. Twenty thousand tanks of the design they have will be the wrong thing in the early '80s....[11]

Those precision weapons Perry was referring to are operational, and they are not nuclear. It was also in 1978 that the Center for Defense Information in Washington, D.C., announced that the United States and NATO forces have 49 separate types of antitank weapons in their inventory or under development, which range from hand-carried devices (evolutions of the World War II bazooka) to air-launched, precision-guided munitions from airplanes and helicopters. It concluded that "all of these antitank weapons...have increased the superiority of defense over offense."[12]

First Generation, Precision-Guided Antitank Weapons

It is not feasible, within the limits of this paper, to discuss every conceivable antitank weapon the United States has in inventory or development. I will confine this discussion to precision-guided munitions. The first generation of U.S. antitank guided missiles is called TOW -- an acronym for tube-launched, optically-tracked, and wire-guided.

TOW

TOW can be fired from the ground, from light motor vehicles, and from helicopters. It has been in service since 1968 with the Army and Marine Corps. Thirty-three countries have bought 275,000 TOW missiles, including 107,000 which have gone to the U.S. armed forces. The Army alone is procuring them at the rate of 12,000 per year. The Marine Corps operates 51 Seacobra helicopters of which 23 can launch TOW. The remaining 28 are being converted to do so.

TOW is launched toward the tank from a recoilless tube, like almost any rocket. After it is fired the gunner keeps the crosshairs of the launch tube sight on the target. This, of course, means the gunner has to remain somewhat exposed. An infrared sensor alongside the sight tracks the missile by means of a small beacon signal on the missile's tail. At the same time a small wire unreels behind the missile as it flies, in much the same way that a fishing line unwinds from a spinning reel during a cast. It is through this wire that course corrections are sent to the missile's steering system from the guidance computer associated with the launch tube sight. In this fashion it is possible for TOW to change course to track and destroy a moving and maneuvering tank.

The Soviets have a missile comparable to TOW which is called SAGGER. It weighs about 25 pounds and was first introduced in 1972, in Vietnam. TOW, which has been in service since 1968, was introduced into Vietnam the day after SAGGER. In the following year, during the 1973 Arab-Israeli war, Russian-built SAGGER missiles took a heavy toll of enemy armor. More than 1,500 Israeli, Syrian, Iraqi, and Jordanian tanks were destroyed. One Israeli tank brigade lost 77 tanks -- three-quarters of its total complement -- to antitank weapons in just 16 hours. After the fighting the battlefield was crisscrossed with fine wires that had been reeled out behind the missiles.

This massacre of heavy armor prompted Soviet Defense Minister Marshall Andrei Grechko to acknowledge that "combat actions in the Middle East...have put anew the question of the relationship of offense to defense...Tanks have become more vulnerable and the use of them on the battlefield more complicated."[13]

That was back in 1973 and a lot has happened since then to make tanks even more vulnerable. An improved TOW with a more potent five-inch diameter warhead and better armor-piercing capability is now fully deployed. It can be used both day and night and in adverse weather. It has a range up to three miles.

The year 1982 sees the beginning of deployment of the still more effective TOW-2 missile with a six-inch diameter warhead that uses the full volume in the missile's body and has even greater armor-piercing capability. It also has a more accurate guidance system based on microprocessors, and a new tracking beacon which is visible in smoke. TOW-2 is capable of destroying the Soviets' most advanced technology armor.

TOW launchers are also being improved to maximize the effectiveness of the digital guidance of the TOW-2 missile. And Hughes Aircraft Company, manufacturer of TOW missiles, is looking at additional improvements which most likely include replacing the trailing wire with a new high-strength optic fiber. Besides providing guidance corrections to the missile, as is presently done, fiber optics will allow information to be transmitted from a video scanner in the missile to the guidance computer on the ground. This would provide high precision under more adverse circumstances while at the same time eliminating the need for the gunner to remain exposed.

DRAGON

Besides TOW, the Army also has a semi-automatic, wireguided, light-infantry weapon called DRAGON which was deployed in the mid-1970s and has a range of about two-thirds of a mile. Two men can operate the 32-pound launcher, which can also be equipped with a 22-pound night site. DRAGON has had problems of complex electronics and difficult maintenance. It can also be obscured by smoke and haze. But under favorable conditions it is effective.

Second Generation, Fire-and-Follow Antitank Weapons

The second generation of precision-guided antitank weapons are still classed as fire-and-follow but they are laser-guided instead of visibly. That means the missile follows, or "rides," a laser beam to its target. As long as the beam is pointed at the tank the missile will destroy that tank. The most prominent of these weapons is HELLFIRE.

HELLFIRE

The new HELLFIRE helicopter-borne antitank weapon is a seven-inch diameter missile which has significant improvements over TOW in range, speed, and lethality. Its laser target designator has been developed to meet the Army's need for a system that can counter the most advanced tank design, even in light fog. Other types of target-homing seekers, such as infrared and radar, are being developed as modules which can be inserted to handle different battlefield conditions.

The HELLFIRE missile is slated to go into production during 1982. The Pentagon plans to purchase 502 missiles during that year and another 1,213 in fiscal year 1983. Rockwell International, manufacturer of HELLFIRE, expects to soon be able to turn out 500 missiles per month on a single shift to meet the Army's total goal.

This second generation, guided missile will be the main antitank weapon of the Army's new Apache attack helicopter -- the AH-64. Apache also is scheduled to go into production in early 1982 with 11 aircraft delivered that year. The total number to be procured by the Army is 446. Originally there were plans for 536 Apaches at a total production cost of $4.84 billion but the unit price estimate jumped 50 percent. Consequently, the total buy was reduced to 446 at a cost of $6 billion. Research and development has cost another $1.2 billion.

Apache is a peculiar aircraft. As an antitank weapons carrier it needs the speed of an airplane. But a 1947-48 series of agreements aimed at stemming interservice rivalry between the Army and Air Force limits Army airplanes to 5,000 pounds. There are no restrictions on helicopters, however. Consequently, Apache is classed as a helicopter with twin jet engines but it does have stubby wings and its rear rotor folds up so it can fly like an airplane. Besides carrying HELLFIRE the Apache helicopter will also be equipped with a 30-millimeter cannon and 2.75-inch rockets. HELLFIRE, on the other hand, may also be fitted into upgraded Marine Seacobra helicopters and Army Blackhawk helicopters.

COPPERHEAD

Another long-range, second generation, antitank guided missile is named COPPERHEAD. It is fired from a 155-millimeter cannon and is deadly over a range of 10 miles -- an improved version is supposed to extend that range. COPPERHEAD also homes on a tank designated by a laser beam and is claimed to have a high probability of kill with the first round. Procurement began in 1980 for the first buy of 2,100 projectiles which became operational in 1981.

VIPER

In the area of second generation, man-portable antitank weapons, the successor to DRAGON is the laser-guided VIPER. Procurement began in 1980, and the Army plans to have 93,000 VIPER missiles by September 1982.

Third Generation, Fire-and-Forget Antitank Munitions

Prior to guided missiles it took many rounds of ammunition to destroy one tank. With the procurement of first generation, precision-guided weapons the number of rounds needed to destroy each tank was greatly reduced. Second generation guided munitions brought the kill ratio close to one missile for each tank. Now, with third generation, precision-guided antitank weapons the capability is moving to where one missile can destroy many tanks. We are also moving from the fire-and-follow species to fire-and-forget. That name means exactly what it says. Once the missile is fired, the gunner or pilot, as the case may be, forgets about it. Sensors and computers take over to make a very precise kill. These third generation, precision-guided munitions have branched into a huge spectrum of weapons, all of which are in development and scheduled to become operational during the mid-1980s. Also, the Air Force is joining in the competition for this lucrative and far-reaching market. Each program is discussed in turn below.

SADARM

The third generation SADARM, which is acronymic for Sense and Destroy Armor, is an Army program which started development at the beginning of 1981. Honeywell and Aerojet have 38-month competitive contracts to develop this munition which can be fired from an eight-inch howitzer. It will have a 15- to 20-mile range in that mode but it will also be capable of being dropped from an airplane.

Each SADARM round will carry three submunitions, and each of those will be equipped with a miniature radar sensor to search for tanks. After a round is fired from a cannon or dropped from an airplane, the submunitions are dispensed over the battlefield in parachutes where they drift slowly to the ground, rotating slowly and searching for targets below. Former Under Secretary of Defense Perry describes how this weapon works:

This is a device which we have already tested which is dropped from an airplane or it can be launched from an artillery projectile. When it approaches the target, which is a tank, this parachute opens up and the object drifts to the ground in a rotating fashion. As it rotates this antenna which you see on the front projects a very small beam down to the ground.... As soon as that beam passes over a tank it tells the computer that there is a target below.

Those explosives then go off and take the piece of metal you see here and project it forward with hypervelocities and with very great heat generated. That causes this piece of metal to form a slug which is then directed at exactly the position where the beam is pointed and will cause this high velocity slug to strike the tank from the top which is its most vulnerable position. Now we have demonstrated this in experiments and we have found that at distances of several hundred feet this slug will essentially destroy the tank. The accuracy is such that we are getting direct hits on the tank every time it ignites.[14]

That self-forging slug, as it is called, travels at many times the speed of sound and strikes the tank from the top. It will most likely burn a hole through the tank and spray the inside with molten metal -- incinerating the crew and igniting fuel and ammunition. But even if the metal is too thick to penetrate, the terrific impact sends a shock wave through the metal causing the inside surface to spall -- that is, to fly off at terrific speeds in much the same way that plaster can be knocked off a wall. These sharp and jagged metal fragments ricocheting and bouncing about inside the tank have a lethal effect on the crew.

SADARM will be able to operate both day and night and essentially in all weather. It also overcomes the limitations of camouflage, such as smoke, because radar sees through that as well. And it allows the operator to immediately take cover -- once it is launched all the operations are controlled by a microcomputer. This weapon is scheduled for deployment in 1985 or 1986.

WAAM

An Air Force program known as Wide Area Anti-armor Munitions (WAAM) is developing weapons which can be dispensed by tactical fighter planes. The WAAM family is based on three concepts: Anti-armor Cluster Munitions (ACM), an antitank missile known as WASP, and Extended Range Anti-armor Munitions (ERAM).

ACM. Anti-armor Cluster Munitions can be described as wedge-shaped devices with a parachute on one end and a sensing probe on the other. After being ejected from a fighter plane over the target area the parachute opens, causing the sensing rod to be pointed down so it will make contact with the ground or a tank in a nearly vertical attitude. When it makes contact it explodes, sending three self-forging slugs out horizontally in different directions and one downward (in case it lands on top of a tank). When dropped amid a concentrated tank formation, many of these slugs will strike targets, causing the interior incineration or spallation which is so deadly to tank crews and destructive to fuel and ammunition. ACMs are now in full-scale development and should go into production during 1983.

WASP. The second element of the WAAM family, the WASP missiles are small mini-missiles weighing about 100 pounds each. They are so small that many can be clustered in a bomb dispenser or on pods under an aircraft's wings -- about a dozen can be carried on a single pod. They can be fired almost simultaneously from several miles away, and they are designed to use a high frequency wavelength to find a tank while flying about five times the speed of sound.

Their armor-piercing warheads would turn the inside of a tank into a fiery inferno or hail of sharp metal.

WASP missiles went into the initial stage of development in July 1981. Hughes Aircraft Company and Boeing Aerospace each have 42-month competitive contracts to develop the concept. The first test firing of the missile equipped with a millimeter wave radar seeker will take place during 1982. It is expected to go into production in 1987.

ERAM. The final concept of the Air Force WAAM program is the Extended Range Anti-armor Munition. This has been described as a clustered, scatterable mine system, but it is more sophisticated than that description indicates. The submunition will be delivered by aircraft and will be designed to be either dropped among armored vehicles or in their path. Sensors and computers in each submunition determine if the vehicle approaching has tracks or wheels -- ERAM will only attack tracked vehicles.

The type designed to be dropped amid a tank formation is being developed by AVCO and is called "skeet." A small platform, containing two skeet, parachutes to the ground and erects an acoustic antenna which rotates to search for tanks. When one is detected a skeet is launched in a horizontal direction toward but over the tank -- like a skeet used for shotgun practice, hence the name. The antenna then seeks out another tank and launches the second skeet. Each skeet has both infrared and millimeter-wave radar sensors as well as a warhead. As the skeet senses that it is over the tank, it explodes to send a self-forging slug downward to destroy the target in the manner previously described.

Honeywell is working on a design to be seeded in the path of a tank column. After parachuting to earth, the weapon, or mine, erects itself to a near-vertical position resembling a small mortar. When it senses a tank approaching it launches a small warhead high towards the target. A parachute opens approximately over the tank and the warhead descends, spinning slowly to scan the area below with its sensors. As the tank is located the warhead explodes, sending a self-forging slug to accomplish the destruction.

ERAM is in development with initial production slated for late 1984 or 1985. The three elements of the WAAM program will soon make tanks virtually obsolete. But that is not the end of Pentagon plans to achieve a total anti-armor capability.

ASSAULT BREAKER

The weapons so far described are being designed primarily to attack tanks on the front lines, with the possible exception of ERAM. ASSAULT BREAKER is an ambitious program for destroying armor moving up to the front from the rear echelon. It is a multi-service endeavor administered by the Defense Advanced Research Projects Agency with the Army and Air Force as agents for various segments. ASSAULT BREAKER is a long-range system designed to complement the shorter range WAAM and SADARM described above. It is a system controlled by a high flying aircraft to locate enemy tank formations while they are far behind the front lines. The three elements are known as the PAVE MOVER control aircraft, the missile, and the submunitions.

PAVE MOVER. High flying command aircraft are being developed under the Air Force PAVE MOVER program which plans to use Boeing 707 airplanes loaded with sophisticated sensing and computer equipment. This aircraft will use information from the new AWACS (Airborne Warning and Control System) planes and acquire its own data by advanced radar. PAVE MOVER will then send coordinate maps to Army missile batteries, all the while remaining safe over friendly territory. Processing equipment aboard the aircraft will con- tinue to track the tank columns and send updated, in-flight guidance corrections to missiles after they are launched. PAVE MOVER will also be able to direct the fire of tactical fighter planes equipped with WAAM.

The Missile. The Army portion of this program is the missile which follows guidance instructions from PAVE MOVER to carry the submunitions to destroy a maneuvering tank column. It is expected that the range will be between 50 and 70 miles.

Two competitive missiles are in development for this role. Martin Marietta's concept uses its Patriot surface-to-air, anti-aircraft missile body and a stellar inertial guidance system to deliver the submunitions. There will also be an air-launched version of the Patriot design.

The Vought Corporation concept uses its short-range, battlefield, Lance ballistic missile frame and a laser-gyro inertial guidance package.

Submunitions. There are also two types of submunitions in development. One is the AVCO "skeet" which is functionally the same but smaller than the skeet described for ERAM above. Four skeet are packaged into a cannister approximately 4 inches in diameter by 25 inches long. Many of these cannisters are carried on each missile.

The missile dispenses about a dozen skeet cannisters at approximately 10,000 feet altitude. They fall freely until about 700 feet when a parachute opens to slow the descent. At 100 feet above the ground the chute falls off and fins spin the cannister up to eject the skeet in a horizontal direction. Each skeet wobbles as it spins to search for a tank with its heat-seeking infrared and millimeter- wave radar sensors. When the target is detected a self-forging slug is dispatched on its way. The first full system test of this concept was conducted at White Sands Mis- sile Range during February 1982.

The second type of submunition being considered is a mini-missile under development by General Dynamics. Each missile is the same size as the cannister which holds four skeet. After being released from the missile this Terminally-Guided Sub-Missile, as it is called, uses an infrared seeker to home on the heat generated by a tank. The first test to dispense a sub-missile from its carrier missile took place at Patrick Air Force Base in 1974.

TANK BREAKER

The third generation, man-portable antitank weapon for infantry defense is called TANK BREAKER. It is a rocket about 4 inches in diameter by 43 inches long weighing about 25 pounds. A mosaic of tiny infrared detectors with integral data processing is mounted in the focal plane of the rocket's seeker scope. This sensor guides the rocket to its target during all weather either day or night.

The rocket is mounted in a throw-away container which adds another 10 pounds to the weight. Both Hughes Aircraft Company and Texas Instruments were awarded competitive contracts for the development of TANK BREAKER in July 1981.

STAFF

Another third generation, man-portable antitank system is called the Small Target-Activated Fire-and-Forget (STAFF) weapon. It is described as a 155-millimeter (6.1-inch) diameter recoilless rifle that is fired from the shoulder like a bazooka. Its range is one to one-and-a-half miles, and it is aimed to fly over the tank like the skeet previously described. A millimeter-wave radar looks for the tank and, upon detection, the projectile explodes, driving a slug down at the tank. Whereas TANK BREAKER is all-weather, day-or-night capable, its infrared sensor can be defeated by a smoke screen. The millimeter-wave radar of STAFF overcomes that limitation.

MLRS

The Multiple Launcher Rocket System (MLRS) should also be mentioned when discussing antitank weapons. It is a U.S.-NATO joint effort to standardize the various missiles and launchers used by the United States, Britain, France, and Germany. The common rocket will have modular warheads for anti-material/anti-personnel warfare, antiaircraft defense, scatterable antitank mines, or antitank submunitions. The principle use will most likely be for antitank operations

Twelve rockets can be fired from each reloadable launcher in rapid volley. The system is scheduled for initial operation in 1983, and the U.S. Army alone plans to purchase 276 of these self-propelled launchers and 360,000 missiles by 1990.

Future Antitank Weapons

Before concluding I would briefly like to mention some other antitank weapons that are in the works for deployment farther downstream. One that could be deployed fairly soon will put terminally guided submunitions on Tomahawk cruise missiles. The cruise missile would then essentially fulfill the function of both the PAVE MOVER aircraft and

the delivery missile.

High energy (killer) lasers are also being considered for anti-armor use by the Army's Research and Development Command. Such weapons could penetrate through smoke and other types of battlefield-screening aerosols. Even a mobile, medium-energy laser could damage a tank's "night vision." A device for that purpose is being studied under competitive contracts awarded to Hughes Aircraft Company and TRW.

Another potential in the distant future is the so-called RAILGUN being developed by Lawrence Livermore National Laboratory. It uses a pair of copper rails to electromagnetically accelerate an object and is described as so powerful that it can hurl a bowling ball into space without a rocket. According to Sea Power magazine: "Relatively small railguns, firing projectiles at speeds roughly ten times the speed of the Army's fastest bullet, could blast through the thickest armor of a tank or battleship..."[15]

Some of these ideas sound exotic right now but they could very well become the fourth or fifth generation of antitank weapons. The future does not look good for armored warfare. The tank is rapidly taking its place in retirement alongside the shield and lance.

I have gone into considerable detail in this paper to describe the extent of U.S. capabilities, along with programs to improve those capabilities, for a non-nuclear defense against Warsaw Pact tanks which have been proffered as a threat that might come swarming over the borders from Czechoslovakia and East Germany. I wish to make the point that, even from a strict military viewpoint, we don't need the massive and uncontrolled destructiveness of nuclear weapons -- even the neutron bomb -- to deter or repel such an invasion. Currently available anti-armor weapons have proved themselves extremely effective against tanks, and the much more capable "smart" munitions are only a couple of years away.

It is possible to confine casualties to combatants with conventional antitank systems. That is in no way possible with even the most selective use of nuclear devices, which would put far more civilians than soldiers on the casualty list, merely from the immediate heat, blast, and radiation. Not to mention the lingering effects of global fallout with its little understood effect on health, future generations, or the environment; nor the environmental effects from ozone depletion and the like. In addition, the almost certain escalation from any use of nuclear weapons to total thermonuclear war makes these weapons a very unstable and dangerous option.

Four former high U.S. officials -- Robert S. McNamara, secretary of defense from 1961 to 1968; McGeorge Bundy, national security adviser from 1961 to 1966; George F. Kennan, ambassador to the Soviet Union in 1952; and Gerard Smith, SALT negotiator from 1969 to 1972 -- have now reversed their stand to advocate a no-first-use policy for nuclear weapons and the elimination of tactical nuclear weapons in favor of conventional munitions. They point out that the risk of conventional aggression with tanks in Europe "was greater in the past than it is today, and it is greater today than it would be under no-first-use, backed by an effective conventional defense."[16]

McNamara later stated that "a policy of no first use is imperative to the survival not only of this country but of civilization."[17] But to be absolutely certain that a no-first-use policy would not be violated by either the United States or the U.S.S.R. if a conventional war should break out, the tactical/theater nuclear weapons would have to be eliminated. As the authors concluded in their Foreign Affairs article: "As long as the weapons exist, the possibility of their use will remain."[18]

Nuclear weapons present a grave danger under any circumstances, but in the case of defending Europe there are less destructive options. It is time the American people question a U.S.-NATO nuclear policy which justifies the neutron bomb and other theater/tactical nuclear systems. Presenting nuclear weapons as an acceptable solution to the overstated tank threat is a blatant exercise in public deception. Our European allies have already perceived the big lie. It is time for the American people to see the light.

FOOTNOTES

[1] Cited in San Jose Mercury, September 24, 1981, p. 4F.

[2] See Gallup Poll in San Jose Mercury.

[3] Stockholm International Peace Research Institute, Nuclear Radiation in Warfare (London: Taylor & Francis Ltd., 981), pp. 68-73.

[4] Baltimore Sun, August 18, 1981, p. 5.

[5] "Washington Roundup," Aviation Week & Space Technology, December 7, 1981, p. 17.

[6] U.S. Secretary of Defense, Department of Defense Report Fiscal Year 1979, February 2, 1978, p. 53.

[7] Joseph C. Harsch, "Neutron Bomb: Why It Worries The Russians," Christian Science Monitor, August 14, 1981, p. 1.

[8] lbid.

[9] Remarks by Harold Brown at El Paso, Texas, Chamber of Commerce, October 9, 1980. Cited in U.S. Department of Defense, Selected Statements, U.S. Air Force, November 1, 1980.

[10] U.S. Secretary of Defense, Department of Defense Annual Report Fiscal Year 1982, January 19, 1981, p. 29.

[11] U.S. Congress, Department of Defense A for 1979, House Appropriations Committee, Subcommittee Hearings, February 22, 1978, part 3, p. 647.

[12] The Defense Monitor (Washington, D.C.: Center for Defense Information, June 1978), p. 6.

[13] Cited by Paul F. Walker, "Precision Guided Weapons," Scientific American, August 1981, p. 37.

[14] U.S. Congress, Department of Defense Authorization for Appropriations for Fiscal Year 1981, Senate Armed Forces Committee Hearings, March 5, 1980, part 5, p. 2695.

[15] "Scoop & Scuttle," Sea Power, December 1980, p. 7; citing Washington Star, November 11, 1980.

[16] Robert S. McNamara, McGeorge Bundy, George F. Kennan, Gerard Smith, "Nuclear Weapons and the Atlantic Alliance," Foreign Affairs, Spring 1982. Excerpted in New York Times, April 8, 1982, p. 14.

[17] Cited in San Jose Mercury, April 8, 1982, p. 1.

[18] Foreign Affairs.