Majority of Americans favor 'star wars' plan

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Americans are in favor of President Reagan's "star wars" program to develop a missile defense system although many mistakenly believe that the United States already has weapons to defend against a nuclear attack, according to a poll released yesterday.

The survey of 1,004 Americans was commissioned by the Committee on the Present Danger, a Washington-based organization.

Of those polled, 64 percent said that "the United States currently has a system to defend against nuclear missile attack," while 31 percent thought that statement was false and 4 percent said they did not know.

Sixty-seven percent correctly answered that the Soviet Union has such a system, 29 percent said Russia had no system and 4 percent said they did not know.

Under the 1972 anti-ballistic missile treaty, the Soviet Union is allowed and does maintain a 100-missile system defending Moscow. But the United States scratched a similar system more than a decade ago, relying on the threat of massive retaliation to deter nuclear attack.

Seventy-four percent of those polled said they favored deploying an anti-missile system in the United States with 19 percent opposed and 7 percent with no opinion, the poll said.

However, the poll did not ask questions that are at the heart of debate in Congress over "star wars," formally known as the Strategic Defense Initiative, — such as whether to deploy in the early 1990s or continue research, whether to strictly observe the ABM treaty, which bars tests in space, and how much to spend on the program.

The Committee on the Present Danger has been a consistent advocate for "star wars" and for higher levels of defense spending.

The telephone poll, conducted April 3-5 by Penn and Schon Associates, has a margin of error of 3 percent, according to the committee.

Eighty-nine percent of those polled said they believed that the United States "has more nuclear weapons today than it did 20 years ago," and 91 percent said that the "U.S. nuclear arsenal has more explosive power than it did 20 years ago," the survey said.

Although figures on U.S. nuclear weapons are classified, the number has fallen by 30 percent and the total explosive power by 75 percent over the past 20 years, according to congressional testimony by Pentagon officials.

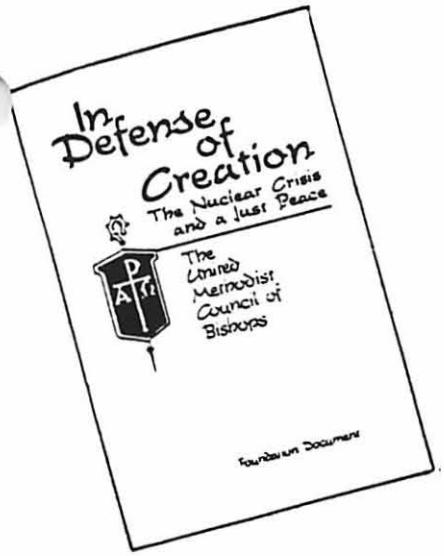
Defense officials say they have reduced the number and power of the weapons in large part because the increasing accuracy of nuclear missiles and bombers makes them more confident of hitting their targets.

Asked what percent of the total U.S. economic output is spent on defense: 5 percent answered less than 10 percent; 23 percent answered 10 percent to 20 percent; 24 percent answered 21 percent to 30 percent; 18 percent answered 31 percent to 40 percent; and 10 percent answered 41 percent to 50 percent.

The current figure is 6.2 percent. Defense spending reached a post World War II peak of 9.1 percent in 1955, with a low of 4.5 percent in the early years of the Carter administration, according to the committee.

Asked what percentage of the federal budget is spent on defense: 6 percent of the respondents answered less than 10 percent; 20 percent answered 10 percent to 20 percent; 23 percent said 21 percent 30 percent; 18 percent said 31 percent to 40 percent; 12 percent said 41 percent to 50 percent; 11 percent said more than 51 percent; and 10 percent said they did not know.

About 27 percent of the federal budget is spent on defense.



IN DEFENSE OF DETERRENCE

An Open Letter to the Council of Bishops

By BRIG. GEN. ROBERT R. RANKINE JR.

I was pleased to be afforded the opportunity to address the Nuclear Crisis Project in July of last year. However, I am deeply concerned after reading the Foundation Document that I did not succeed in communicating the rationale behind the Strategic Defense Initiative (SDI). I, of course, did not expect an endorsement of this complex program. However, the Foundation Document misstates the SDI program's rationale and goals which gravely damages the overall credibility of your important work. [Documents enclosed for Council of Bishops.]

"The risk of war is not based on the existence of arms."

There are two fundamental goals which underlie the SDI. These are the prevention of war and the support of a program for effective arms control. It is however, important to deal first with basic facts. **The risk of war is *not* based on the existence of arms.** Similarly, the arms race is also not caused by arms. **Both war risk and the arms race grow out of fundamental differences between societies.** I share your desire to address these fundamental differences, for that is the only way ultimately to solve our international problems. I also believe that to treat only the symptoms is unlikely to solve the problems, and could actually make war more likely. What we can and must do, however, is seek stability—both stability against war breaking out during an international crisis, and stability against a runaway arms race.

Stability in international crises, which I fear will continue to concern us, can only be provided by some form of deterrence. Deterrence is a complex concept and there are different approaches to it. One of my most serious objections to the Foundation Document is its failure to recognize this complexity and the differing approaches to deterrence. Much of the confusion over the value and moral implications of the SDI stem from confusion over the different roles defensive capabilities might play in each deterrent approach. Whatever the deterrent approach, the objective during a crisis is to convince all parties that the use of military force will not adequately resolve the crisis issue.

A retaliation-based deterrence strategy (known as flexible response, not MAD), has long been the basis the U.S. deterrent. The Foundation Document appears to ignore this fa The United States seeks to maintain sufficient survivable offensive force which can, after suffering an initial

"The arms race is also r caused by arms."

offensive strike, retaliate against th aggressor's *military* forces and capabilities. The threat of retaliatic must be sufficiently credible to convince an aggressor that the fin outcome of an attack and counter-strike would be a worse military situation than before hostilities be Defenses can contribute in this strategy by protecting retaliatory forces. However, the addition of defenses by an agressor (a likely Soviet option), as well, may more than counteract the positive impac of our defense of retaliatory force Despite your assertions to the contrary, the President has made very clear that the SDI is *not* designed to provide protection for just retaliatory forces, or to do so the purpose of enhancing U.S. retaliatory capability.

(continued on page 6, Letter)

"Both war risk and the arms race grow out of fundamental differences between societie

Letter

(continued from page 5)

"SDI will provide compelling reasons for the Soviet Union to agree to radical mutual reducti in offensive forces."

The SDI is related to defense-reliant deterrence. By constructing defenses, the United States would seek to progressively deny the Soviet Union offensive military strategies. At some point the Soviet Union, as well as the United States and other nuclear powers, would find that their nuclear offensive forces have little military utility. It is not the defense of retaliatory forces, per se, which would deter, but the absence of credible military reasons for attacking. This was the original basis for the SDI and has remained such since its inception. Thus, the deterrent basis for SDI is neither warfighting nor building perfect defenses. We envision a situation where both sides are protected by effective defenses. The fact that the Soviet Union is already building strategic defenses clearly suggests that they need not fear being placed in a situation where only the United States has defensive capabilities. On the other hand, the West cannot tolerate the situation where only the U.S.S.R. has defensive options. This would devastate the very balance that has kept the peace. [Document enclosed for Council of Bishops.]

The creation of disincentives against the build-up of offensive arms is a second important aspect of the issue. You cite Ambassador Smith's contention that SDI will be the end of arms control and will result in an unconstrained arms race. An impressive case can be made that the opposite is true. In fact, SDI should help us achieve our goal of deep, equitable, verifiable reductions in nuclear offensive arms. However much we may desire to move away from nuclear offensive strategies, we are limited by the technical realities. To prevent the arms race that SDI critics fear, certain technical requirements must be met. These criteria are the official policy of the U.S. Government, and I am confident that no defenses will ever be deployed which do not meet them.

Defenses can create disincentives against arms competition, and lead to meaningful arms reductions if, as we intend, they are 1) militarily effective, 2) survivable, and 3) cost effective at the margin. I am curious as to why the Foundation Document did not discuss these criteria.

If deployed defenses can effectively eliminate the military utility of ballistic missiles, and if such defenses do not themselves represent an appealing target, then the Soviet Union is not likely to produce more ballistic missiles of questionable value or to seek to develop means to attack the defenses themselves.

Defenses which are cost effective at the margin could maintain this effectiveness against offensive forces structured to overwhelm them. Thus cost-effective defensive possibilities will lead to greater security than is possible with more offensive forces.

Furthermore, because such defenses would decrease the value of ballistic missiles as military instruments of national strategy, the likelihood of successfully negotiating significant reductions in offensive nuclear arms—the President's highest priority—would be increased.

If we have a potential means to enhance the deterrence of nuclear war in the future through SDI, would not the moral course be to pursue the research in order to find out? Most experts and the majority of the U.S. public believe that the United States should pursue a vigorous research effort. This program is all the more essential as a prudent hedge against the long and deep Soviet involvement in strategic defense, an involvement which goes beyond research in some cases. Although there are strong disagreements over the pace and level of funding, I am puzzled why you chose to ignore the rather remarkable agreement on the need for a vigorous research program shared by most SDI critics and advocates alike.

You raise the issue of the costs SDI. The SDI research itself represents less than 2 percent of t U.S. defense budget. Even large differences in the pace and fundin level of the SDI would have insignificant impacts on social just and U.S. economy. In the longer t many, including myself, believe th SDI will provide compelling reaso for the Soviet Union to agree to radical mutual reductions in offen forces. In this event, the costs for such a transition to a safer deterr relationship would be a small frac of the amount which would be sp in the absence of such a transitior Within this context, the SDI represents a hope of greatly redu arms expenditures, a point which believe, in fairness, you should ha acknowledged.

I am pleased to see the Council Bishops' interest in the issues of nuclear weapons and peace. How ever, I must express my dismay t the lack of understanding of the issues shown in the Foundation Document. Whether one believes to be good or bad, professional standards demand that the progr rationale and goals be correctly stated. The Foundation Documen fails to do this and your work su from this failure. I only hope tha you will take the opportunity in future to rectify these serious shortcomings. □

Brigadier General Robert R. Rankine Jr. the Director of Space Systems and Comm Control, Communications in the office of Deputy Chief of Staff for Research, Development and Acquisition at US Air F headquarters, the Pentagon. He is also th chairperson of the administrative board o Calvary United Methodist Church in Arlin. He testified in support of the U.S. Govern Strategic Defense Initiative program at a hearing before the Council of Bishops in 1985.

Scientists Find Corporate Support Building for Deployment of SDI

By John D. Morrocco

Washington—The Administration's Strategic Defense Initiative is rapidly gaining momentum among defense contractors but corporate pressure for its deployment has not become irreversibly entrenched, according to a recently released SDI study by the Federation of American Scientists.

The FAS study ranks the 695 corporations, research centers, government agencies and universities that have received at least one of the 3,325 SDI contracts awarded between March, 1983, and March, 1987, in terms of total dollar amount awarded. To date, Congress has approved $10.2 billion for the SDI program with another $35 billion planned between 1988 and 1992, for a total projected budget of $40.2 billion. Contracts worth $10.2 billion have been signed, of which $5.3 billion has already been obligated.

The study revealed that in terms of geographical distribution, SDI is based upon a fairly narrow foundation of private firms and research organizations with expertise in ballistic missile defense technology. Unlike the USAF/Rockwell International B-1B program, for example, which won large-scale political support by having subcontractors in virtually every congressional district, work on SDI is concentrated in just a few states. According to the FAS study, more than 45% of the total dollar amount of SDI contracts awarded has gone to firms in California, with the Los Angeles area alone making up nearly 25% of the total.

While the imbalanced geographical distribution dilutes potential political support, the large number of companies working on the program has given SDI a broader corporate constituency than the B-1B within the aerospace industry.

According to the FAS study, industry skepticism about SDI continues to revolve around five major considerations:

- The high costs involved in competing for contracts.
- The poor odds of winning a profitable contract.
- An uncertain business environment owing to constant program restructuring.
- The high risk of program cancellations owing to technical problems or changes in priorities resulting from budget constraints.
- The uncertain future of the entire program given the possibility of an arms control agreement with the Soviet Union.

But corporate interest in SDI remains high as evidenced by the establishment of special SDI divisions and contracting offices within corporations and the acquisition by large companies of smaller firms that specialize in SDI technologies. The recent push for early deployment has renewed industry's interest since it would result in large procurement contracts for an operational system, an arrangement far more lucrative and stable than less profitable and riskier research contracts, the study said.

According to the study, private firms make up the largest group of SDI contractors with 331 separate firms sharing 73% of the total dollar amount of SDI contracts let between 1983 and 1986. Heading the list is Lockheed Corp. with 59 contracts valued at more than $1 billion, followed by General Motors with 97 contracts valued at $730 million.

The next largest group includes 15 federally funded research and development centers that make up 14% of the total dollar amount of SDI contracts. The top three laboratories are Lawrence Livermore (5.1%), Los Alamos (4.2%) and Sandia (2.0%).

Universities make up 6% of the amount of SDI contracts. A total of 350 contracts with an average value of $1 million have been let to 80 universities, with the Massachusetts Institute of Technology's Lincoln Laboratory (3.2%) and the Johns Hopkins University Applied Physics Laboratory (0.9%) topping the list.

Political divisions within the academic community over SDI, however, continue to be one of the main obstacles in creating widespread public support for the program.

Government agencies, with 350 contracts valued at $450 million, constitute the next largest segment of SDI contractors with a 4% stake in the total budget. The National Aeronautics and Space Administration is the largest of these with 16 contracts valued at $194.3 million.

Nonprofit research groups and foreign contractors, both with contracts worth about $1 million each, account for the remaining 2% of total SDI dollars awarded. Among the top nonprofit groups are Riverside Research (18 contracts valued at $22.7 million) and Charles S. Draper Laboratory (14 contracts worth $20 million).

Seventeen foreign government agencies, universities and corporations are involved in SDI projects. Messerschmitt-Boelkow-Blohm of West Germany heads the list of foreign groups with two contracts valued at $39 million, followed by the United Kingdom's Ministry of Defense with eight contracts valued at $11.5 million. □

Top SDI Contractors

Company	Number of Contracts	Total Value Of Contracts 1983-87	Total Obligations 1983-86
Lockheed	59	$1,023,829,473	$310,190,636
General Motors	97	733,739,890	269,761,084
TRW	86	567,151,136	335,244,167
DOE Lawrence Livermore NL	22	552,356,000	363,641,000
McDonnell Douglas	48	485,085,742	226,587,549
Boeing	55	474,742,928	274,815,521
EG&G	4	467,500,000	252,050,000
DOE Los Alamos Nat'l. Lab	38	457,891,000	287,891,000
General Electric	53	420,490,994	60,401,980
Rockwell International	82	368,658,644	163,030,238
MIT	24	352,584,000	168,416,000
Raytheon Co.	20	247,911,289	72,103,089
LTV Corp.	21	227,345,403	105,126,252
DOE Sandia Nat'l. Lab.	19	217,470,000	145,470,000
Fluor	1	197,636,000	2,725,000
NASA	16	194,269,000	194,169,000
Grumman	11	193,298,669	38,975,083
Gencorp Inc.	32	190,684,869	80,193,693
Teledyne Inc.	27	188,620,308	149,493,480
Honeywell	40	150,896,700	46,723,444
Martin Marietta	60	134,229,363	110,041,389
SDI Institute	1	125,000,000	—
Textron	35	118,017,021	58,184,365

Figures are from Federation of American Scientists' study on SDI contracting.

Richard N. Perle

THE STRATEGIC DEFENSE INITIATIVE:

Addressing Some Misconceptions

It has been two years since President Reagan spoke of his vision of a world free of its overwhelming dependence on nuclear weapons, a world free once and for all of the threat of nuclear war. His speech caused two major developments. It launched a major policy and technology review which led to the initiation of an extensive research program known as the Strategic Defense Initiative (SDI). It also initiated an extensive debate in the United States and throughout the world. In view of the important technological and political implications of the SDI, such a debate is both expected and appropriate. Unfortunately, because much of this debate has been based on a number of commonly held myths about the nature of the SDI program in particular, and strategic defenses in general, it has been seriously misinformed. While there are many myths related to the SDI effort, I propose to deal with some of the more prevalent misconceptions.

I will begin with a short discussion of what SDI is not. First, and most importantly, SDI *is not* a system development or deployment program. It is a long-term, broadly-based, research program designed to answer a number of technological questions that must be answered before the promise of emerging defensive technologies can be fully addressed. No decision has been made to pursue development of defensive technologies nor has any decision been made to deploy such a system. These decisions will be made by a future president and a future Congress. Additionally, these decisions should be based on the results of this comprehensive research program and the state of the strategic balance between the United States and the Soviet Union.

SDI is not based on any single preconceived notion of what an effective defense against ballistic missiles should or would look like. A number of concepts, based on a range of different technologies have been and will be investigated—but no single concept or technology has been identified as the most appropriate. Until more is known about the technological possibilities for providing an effective defense against ballistic missiles, we do not believe that we should commit ourselves to a particular technology or a specific defense system configuration. If, on the basis of an incomplete review of the pertinent technologies, we settled prematurely on a particular system, we could be denying ourselves the use of other technologies which, with additional research, may ultimately prove more effective than the technologies we might choose today.

To achieve the benefits which advanced defensive technologies could offer, they must, at a minimum, be able to destroy a sufficient portion of an aggressor's attacking forces so as to deny him either confidence in the outcome of his attack or the

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ability to destroy a credible portion of the targets he wishes to destroy. The level of defense capability required to achieve these ends cannot be determined at this time. Defensive capability will be extremely dependent upon the size, composition, effectiveness and passive survivability of U.S. forces relative to those of the Soviet Union. Any effective defensive system definitely must be both survivable and cost-effective.

To achieve the required level of survivability, the defensive system need not be invulnerable, but must be able to maintain a sufficient degree of effectiveness to fulfill its mission, even in the face of determined attacks against it. This characteristic is essential not only to maintain the effectiveness of a defensive system, but also to maintain strategic stability.

Finally, in the interest of discouraging the proliferation of ballistic missile forces, a defensive system must be able to maintain its effectiveness against the offense at less cost than it would take to develop offensive countermeasures and proliferate the ballistic missiles necessary to overcome the defense.

Having touched quickly on what SDI is and is not, I would like now to deal individually with some of the misconceptions that have received a great deal of attention in the media and in the general public debate.

Defenses and Stability

Many critics argue that although a fully deployed strategic defense might be an advantageous goal, the transition to such a defense would be destabilizing. The opposite is indeed the case. The initial phases of a defense against the threat of ballistic missiles on the path to a more complete deployment of a multi-layered defense would enhance the stability of our present deterrent.

The security of the United States and of our friends and allies rests on our collective ability to deter aggression, both conventional and nuclear. Our nuclear retaliatory forces help maintain this security and have deterred war for nearly forty years. Yet we have no defenses against nuclear attack by Soviet ballistic missiles. The Soviet modernization of their offensive forces continues at a steady pace and increasingly widens the imbalance in crucial offensive capabilities. In the event that deterrence fails, our only recourse would be to surrender or to retaliate with our offensive forces. President Reagan stressed in his speech that we must find a better way to assure credible deterrence. The SDI offers the promise of finding the technologies to defend against ballistic missiles, so that we will be able to deter war by means other than the threat of devastation.

Our policy has always been one of deterrence and will remain so even if a decision were made in the future to deploy defensive systems. Such systems are consistent with a policy of deterrence both historically and theoretically. While today we rely exclusively on offensive forces for our strategic deterrence, this has not always been the case. Throughout the 1950s and most of the 1960s, the United States maintained an extensive air defense network to protect North America from attack by Soviet bomber forces. At that time, this network formed an important part of our deterrent capability. However, with the advent of con-

tinuously increasing numbers of relatively invulnerable Soviet Intercontinental Ballistic Missiles (ICBM) by the late 1960s, it made little sense to continue to invest in air defenses. Because recent advances in defensive technologies may provide a means of effectively defending against ballistic missiles, there may again come a time when defenses can make a useful contribution to deterrence.

The Strategic Defense Initiative is not being pursued with the intention of acquiring superiority over the Soviet Union through the unilateral deployment by the United States of an advanced ballistic missile defense system. First, even if that was our goal, the fact that the Soviet Union has a major research and development effort investigating similar technologies for several years would make such a goal unachievable. Second, even if superiority were possible, the effort to achieve it through unilateral deployments would be too dangerous and would probably not be a permanent condition. Consequently, if effective defenses against ballistic missiles prove possible, we assume that both the United States and the Soviet Union would deploy such defenses.

Perfect Defenses

Another persistent assumption about ballistic missile defense is that since a single nuclear ballistic missile can destroy a large city, any defense which is not perfect is of little value. This premise is seriously flawed in that it is based on a false view of Soviet military purposes. Based on what we know of Soviet military doctrine, the primary threat to nuclear deterrence has always been that the Soviets could come to believe that, under certain circumstances, they could achieve their military and political goals by preemptively attacking NATO's military forces in order to deny us the ability to retaliate effectively. Direct threats against population centers are deterred relatively easily because such attacks cannot support any useful military or political purpose. Thus, when viewed from the perspective of Soviet military doctrine, and ultimately from that of the Soviet leadership, effective defenses against ballistic missiles can blunt their primary instrument of aggression. As a result, such defenses can have a highly beneficial effect on deterrence and stability in three quite specific ways.

First, by destroying the bulk of an attacker's ballistic missile warheads, an effective defense can undermine a potential aggressor's confidence in his ability to predict the likely outcome of an attack on an opponent's military forces. No aggressor is likely to contemplate initiating a nuclear conflict, even in crisis circumstances, while lacking confidence in his ability to predict a successful outcome.

Second, by effectively destroying attacking ballistic missiles, and thus rendering them "impotent and obsolete" for military or political purposes, such defenses also can eliminate the potential threat of first strike attacks.

Third, by reducing or eliminating the utility of Soviet shorter-range ballistic missiles which threaten Europe, defenses can have a significant and specified impact on deterring Soviet aggression in Europe. Soviet SS-20s and shorter-range ballistic missiles provide overlapping capabilities to target all of NATO Europe. This capability is

combined with a Soviet doctrine which stresses the use of conventionally-armed ballistic missiles to initiate rapid and wide-ranging attacks on crucial NATO military assets throughout Europe. The purpose of this tactic would be to reduce significantly NATO's ability to resist the initial thrust of a Soviet conventional force attack and to impede its ability to resupply and reinforce combatants from outside Europe. By reducing or eliminating the military effectiveness of such ballistic missiles, defensive systems have the potential for enhancing deterrence not only against strategic nuclear war, but against nuclear and conventional attacks on Europe as well.

The Air-Breathing Threat

Even if defenses prove to be effective against ballistic missiles, many critics argue that a defense could not stop cruise missiles or aircraft. It is true that if we plan to defend against aircraft and cruise missiles, we would have to add air defense systems. In fact, these defensive systems might utilize some of the same technologies under investigation in the SDI program.

The SDI program is focusing on defense against ballistic missiles because these missiles, with their speed, short warning time and great destructive capability, pose a greater threat to stability than do the slower flying, air-breathing systems. Because an effective defense against ballistic missiles is the more difficult technology to achieve, priority is being given to the examination of those technologies that might prove effective against that particular threat.

As our research program continues to progress toward President Reagan's goal of exploiting recent advances in ballistic missile defense technologies, effective defenses against ballistic missiles combined with effective air defenses could reduce or eliminate the military utility of ballistic missiles and other airborne nuclear weapons and thus raise the threshold of nuclear conflict.

Fortress America

Many critics are quick to point out that if the United States and the Soviet Union deploy defensive systems against ballistic missiles, our allies will be defenseless against the threat ballistic missiles pose to their security. This assertion is not correct. From the beginning of our research efforts, President Reagan emphatically stated that no change in technology can or will alter our commitments to our allies. He also clearly stated that our security is inextricably linked to the security of our allies. It is because of this commitment that the SDI program is not focusing solely on the exploitation of technologies to meet the threat posed by ICBMs and Submarine-launched Ballistic Missiles (SLBM). Technologies will also be examined which address the threat posed by shorter-range ballistic missiles against our allies. Since President Reagan's decision, we have consulted closely with our allies to ensure that, in the event of any future decision to deploy defensive systems, Allied as well as U.S. security would be strengthened.

U.S. Unilateralism

One of the most stubbornly held myths about the SDI program is that *only* the United States is

conducting research on technologies which may provide effective defenses against ballistic missiles and that such efforts will force the Soviets down a similar path. Again the opposite more accurately describes the current situation. The Soviet Union has always considered defense to be an important part of their national security policy. In fact, the Soviets have spent nearly as much on defensive forces as they have on building their extensive offensive nuclear capability.

The Soviets have for many years been working on a number of technologies, both traditional and advanced, which have the potential for effectively defending against ballistic missiles. Intelligence information indicates that the Soviet Union is currently upgrading the capability of the world's only operational anti-ballistic missile (ABM) system in existence today—the Moscow ABM defense system. The Soviets are also pursuing research and development on a rapidly deployable ABM system that raises concerns about their potential ability to rapidly break out of the ABM Treaty and deploy a nationwide ABM defense system within the next ten years should they chose to do so. In addition to these ABM efforts, the Soviet Union is also deploying a surface-to-air missile system, the SA-10, and is flight testing another, the SA-X-12, both of which have potential to intercept some types of U.S. ballistic missiles. The Soviets also maintain an extensive air defense network and a large civil defense capability, which combined with their interest in traditional and advanced ballistic missile technologies are clear indications that they consider defense to be an important part of the security of the Soviet Union.

While these developments are indeed significant, of most concern to the United States is the fact that since the late 1960s the Soviet Union has been pursuing a substantial, advanced defensive technologies program which includes research on directed energy weapons. These efforts could lead to the testing of space-based ABM systems in the mid-1990s and deployment sometime after the year 2000. Therefore, rather than encouraging the Soviet Union to pursue a defensive technologies program, the Strategic Defense Initiative is being pursued as a prudent hedge against unilateral Soviet efforts to develop and deploy an advanced defensive system. Unilateral Soviet deployment of such advanced technologies, in concert with the Soviet Union's massive offensive forces and its already impressive air and passive defense capabilities, would have a very serious, adverse effect on U.S. and Allied security.

Treaty Commitments

Another prevalent argument raised against the Strategic Defense Initiative is that the research program violates our current treaty commitments. As directed by President Reagan, the SDI will be conducted in a manner which is fully compliant with out treaty obligations, including the 1972 Anti-Ballistic Missile Treaty and the Outer Space Treaty. Article V of the ABM Treaty prohibits the development, testing and deployment of ABM systems or components which are sea-based, air-based, space-based or mobile land-based. However, Gerard Smith, chief negotiator of the ABM Treaty, reported to the Senate Armed Services Committee in 1972 that the agreement does permit research short of field testing of a breadboard

model or prototype.[1] The type of research envisaged under the SDI program can be conducted within the treaty constraints.

Article XIV of the ABM Treaty allows for amendments and occasional reviews at which time possible modifications to the treaty can be discussed. Only after research efforts have uncovered promising approaches for developing and deploying defenses against ballistic missiles would we consider discussing changes to the existing treaty.

The Outer Space Treaty prohibits the deployment in space of nuclear weapons or other weapons of mass destruction. As in the case of the ABM Treaty, because the SDI contemplates only broadly-based research efforts on the appropriate technologies and is not a systems development or deployment effort, the Outer Space Treaty is not violated by the SDI Program.

Arms Control

Many critics believe that the SDI will discourage and eventually destroy all hope of equitable and verifiable arms control, since ballistic missile defenses will inevitably lead to the proliferation of ballistic missiles in an effort to overcome or saturate such defenses.

This is an argument which has served so long as orthodoxy that it no longer accords with reality. Unlike the technologies of the past, recent advances made in the essential technologies of ballistic missile defense may make it possible to develop defenses that can maintain their effectiveness at less cost than would be required to develop offensive countermeasures or to increase the number of deployed ballistic missiles sufficiently to overcome the defense. This is one of the central issues which the SDI research program is examining. If, as now appears possible, these new technologies can reverse the cost advantages that offensive forces have traditionally enjoyed over defenses, they can exert powerful incentives for significant arms reductions. By reducing the military and political value of ballistic missiles (a condition for which offensive countermeasures or proliferation are no cure), such defenses could increase the likelihood of negotiated reductions of the strategic nuclear arsenals of the United States and the Soviet Union.

The pursuit of the Strategic Defense Initiative and equitable and verifiable arms control agreements are not mutually exclusive, in fact, they are mutually supportive. If a decision were made in the future to deploy an effective defensive capability, there would, of course, be broader implications for arms control. In this regard, effective defenses against ballistic missiles have the potential of complementing our policy of pursuing significant reductions in ballistic missiles forces. To the extent that defensive systems can reduce the effectiveness and, thus, the value of ballistic missiles, they also can increase the incentives for negotiated reductions. Should significant reductions in offensive arsenals occur, such reductions, in

1. U.S. Congress, Senate Committee on Armed Services, *Military Implications of the Treaty on the Limitation of Anti-Ballistic Missile Systems and the Interim Agreement on Limitation of Strategic Offensive Arms*, 92nd Cong., 2nd sess. (June - July, 1972), p. 377. At the hearings, "It was understood by both sides that the prohibition on 'development' applies to activities involved after a component moves from the laboratory development and testing stage, wherever performed."

turn, would serve to increase the deterrent potential of defensive systems. A decision to deploy defensive systems would, of course, lead to a rather dramatic change in the structure of U.S. and Soviet military forces that would require the formulation of a new and broader U.S.-Soviet arms control environment than that to which we have been accustomed. Because the United States does not view defensive measures as a means of establishing military superiority and because it has no ambitions in this regard, deployments of defensive systems would be most useful in the context of a cooperative, equitable and verifiable arms control environment that regulates the offensive and defensive developments and deployments of the United States and the Soviet Union. This will be important both in the period of transition from an offense-dominant deterrent to one based on a balance of offensive and defensive forces and in the period following the transition when defensive systems are deployed.

The Prospects for Arms Control

On March 12, 1985 arms control talks between the United States and the Soviet Union resumed for the first time since the Soviets walked out of the talks in December 1983. We believe that the SDI effort played a major role in the resumption of these talks. Both the United States and the Soviet Union agree that offensive and defensive forces are inextricably linked. Consequently, we have agreed to structure the negotiations in three parts: strategic nuclear forces, intermediate nuclear forces, and space and defense issues. Though we agree with the Soviets that the subjects to be dealt with in these three categories are closely related, we do not believe that progress in the negotiations on one or more of these categories should be held up until agreement is reached in all three subgroups.

During the next ten years, the U.S. objective is a radical reduction in the power of existing and planned offensive nuclear arms, whether on Earth or in space. We are now looking forward to a period of transition to a more stable world, with greatly reduced levels of nuclear arms and an enhanced ability to deter war based upon the increasing contribution of non-nuclear defenses against offensive nuclear arms. This period of transition could lead to the eventual elimination of all nuclear arms, both offensive and defensive. A world free of nuclear arms is an ultimate objective to which we, the Soviet Union, and all other nations can agree.

SDI: The Soviet Program

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Address before the Chautauqua Conference on Soviet-American Relations in Chautauqua, New York, on June 28, 1985. Ambassador Nitze is special adviser to the President and to the Secretary of State on arms control matters.

Soviet commentary on the U.S. Strategic Defense Initiative (SDI) research program has been strongly negative. The Soviets have accused us of expanding the arms race into a new area by initiating "the militarization of space." In Geneva, they have demanded a ban on research, development, testing, and deployment of what they call "space-strike arms" and have conditioned progress in the negotiations on offensive nuclear force reductions on prior U.S. acceptance of this ban.

One might conclude from this Soviet commentary that the Soviet Union has no program comparable to our SDI. Such a conclusion would be far from correct.

Soviet Strategic Defense Efforts

Soviet military doctrine stresses that offensive and defensive forces must interact closely to achieve Soviet aims in any conflict. Accordingly, the Soviets are heavily involved in strategic defense, with programs that go far beyond research. In fact, over the last two decades, the Soviet Union has spent roughly as much on strategic defense as it has on its massive offensive nuclear forces. As part of this huge effort, the Soviets have deployed around Moscow the world's only operational antiballistic missile (ABM) system, a system they are currently upgrading with a projected completion date of about 1987. They also have an indepth national air defense force, a vast political leadership survival program, and nationwide civil defense forces and programs.

Further, they have been conducting a number of activities that are inconsistent with and tend to undermine the ABM Treaty. For example, their deployment of a large phased-array ballistic missile tracking radar near Krasnoyarsk in Siberia constitutes a violation of the treaty. We are concerned that, in the aggregate, Soviet ABM-related activities could provide them the basis for deployment of an ABM defense of their national territory, which would also violate the treaty.

Soviet strategic defense programs are not restricted to the more traditional approaches. The Soviets have also been pursuing, since the 1960s, research into advanced technologies for strategic defense. These technologies include high-energy lasers, particle-beam weapons, radio frequency weapons, and kinetic energy weapons. These are the same types of technologies being researched in the U.S. SDI program. Moreover, during this same period, the Soviets have had an active and expanding military space program.

The Soviet version of SDI has been overlooked in the recent public debate. Indeed, taking advantage of the closed nature of Soviet society, Soviet strategic defense efforts have proceeded completely free from debates of the sort that are occurring now in the West over the utility and implications of our program.

Let me address the Soviet version of SDI in some detail. While some of the material I will cover is quite technical, I hope it will give you a better appreciation of the extensive efforts the Soviets have been conducting for years.

Soviet Progress in Advanced Defense Technologies

High-Energy Laser Research. The Soviet Union's high-energy laser program began in the mid-1960s and has been much larger than the U.S. effort. The Soviets have built over a half-dozen major research and development facilities and test ranges, including some at the Sary Shagan missile test center where they also do traditional antiballistic missile work. They have over 10,000 scientists and engineers associated with the development of lasers for weapons.

The Soviets have conducted research on the three types of gas lasers that the United States considers promising for weapons applications: the gas-dynamic laser, the electric discharge laser, and the chemical laser. They have also been working on other types of lasers that the United States had not seriously considered for weapons applications until very recently. These include excimer and free-electron lasers.

The Soviets are also pursuing related laser weapon technologies, such as efficient electrical power sources and high-quality optical components. U.S. experts believe the Soviets are generally capable of supplying the necessary prime power, energy storage, and auxiliary components for most laser and other directed energy weapons. As evidence of this capability, the Soviets have developed a very powerful rocket-driven generator, which has no counterpart in the West. The Soviets may have also achieved the capability to develop the necessary optical systems for laser weapons.

The Soviet program has now progressed beyond technology research, in some cases to the development of prototype laser weapons. For the antisatellite—or ASAT—mission, the Soviets already have ground-based lasers at the

Sary Shagan test site that could be used to interfere with U.S. satellites at low altitudes. Soviet programs have reached the point where they could begin construction of ground-based laser ASAT facilities at operational sites. These facilities could be available by the end of the 1980s and would greatly increase Soviet ASAT capabilities. Moreover, they could test prototype space-based laser ASAT weapons by the early 1990s, and, if their technology developments prove successful, they could deploy operational space-based lasers for ASAT purposes in the mid-1990s.

For the ballistic missile defense—or BMD—mission, the Soviets could have prototypes for ground-based lasers by the late 1980s. Testing of the components for a large-scale operational system could begin in the early 1990s. With high priority and some significant technological risk, the Soviets could skip some testing steps and be ready to deploy a ground-based laser BMD system by the early to mid-1990s. The many difficulties associated with fielding an operational system would normally require much development time, however, and initial operational deployment is not likely in this century. The Soviets can be expected to pursue development of a space-based laser BMD system for possible deployment after the year 2000.

The Soviets have also begun to develop several high-energy laser weapons for air defense. These include lasers intended for air defense of high-value strategic targets in the Soviet Union, for point defense of ships at sea, and for air defense of theater forces. Following past practice, they are likely to deploy air defense lasers to complement, rather than replace, interceptors and surface-to-air missiles, or SAMs. The strategic air defense laser is probably at least in the prototype stage of development and could be operational by the late 1980s. It most likely will be deployed in conjunction with SAMs in a point defense role. The shipborne laser will probably not be operational until the early 1990s. The theater air defense laser may be operational sometime sooner and is likely to be capable of structurally damaging aircraft at close ranges and producing electro-optical and eye damage at greater distances.

Finally, the Soviets are developing an airborne laser. Such a laser could have several missions, including ASAT operations, protection of high-value aircraft, and protection against cruise missiles. Assuming a successful development effort, limited initial deployment could begin in the early 1990s.

Particle-Beam Weapons. Since the early 1970s, the Soviets have had a research program designed to explore the technical feasibility of a particle-beam weapon in space. For the ASAT mission, they may be able to test a prototype space-based particle-beam weapon intended to disrupt satellite electronic equipment in the mid- to late 1990s. One designed to destroy satellites could be tested by the year 2000. Early in the next century, the Soviets could have a prototype space-based BMD system ready for testing.

Radio Frequency Weapons. The Soviets have conducted research for decades on sources of high-power radio frequency—or RF—signals and the antennas that would be required to direct and focus the signals on distant targets. These signals have the potential to interfere with or destroy components of missiles, satellites, and reentry vehicles. In the 1990s, the Soviets could test a ground-based RF weapon capable of damaging satellites. A space-based RF antisatellite weapon will probably not be tested until after the year 2000.

Kinetic Energy Weapons. In the area of kinetic energy weapons, the Soviets have a variety of longstanding research programs underway. These weapons use the high-speed collision of a small mass with the target as the kill mechanism. As early as 1966, the Soviets had an experimental gun that could shoot streams of particles of a heavy metal, such as tungsten, at velocities of over 60 kilometers per second in a vacuum. Current Soviet efforts include research and development of electromagnetic railguns to accelerate projectiles to ultrahigh velocities, as well as other advanced systems. These programs could result in the near term in a short-range space-based system useful for satellite or space station defense or for close-in attack by a maneuvering satellite. Longer range space-based systems could be developed as early as the mid-1990s.

The Soviet Military Space Program

In addition to their huge and comprehensive program of research into advanced strategic defense technologies, the Soviets have the world's most active military space program. This program dominates the Soviet Union's overall space effort. For example, in 1984 the Soviets conducted about 100 space launches. Of these, some 80% were purely military in nature, with much of the remainder serving both military and civil functions. By way of comparison, the total number of U.S. space launches in 1984 was about 20.

The Soviets believe in the combined arms concept of warfare in which all types of forces are integrated into military operations to achieve the desired goals. Space systems play a major role in this equation. Soviet space systems dedicated to military missions include satellites that perform reconnaissance, missile launch detection and attack warning, command and control, and ASAT functions. Dual-purpose satellites that perform some civilian functions are used for communications, navigational support, and weather prediction and monitoring.

In the reconnaissance area, the United States has no counterpart to the Soviet ocean reconnaissance satellites, the EORSAT [electronic intelligence ocean reconnaissance satellite] and the nuclear-powered RORSAT [radar ocean reconnaissance satellite]. These Soviet satellites have the mission of locating and identifying U.S. and allied naval forces in open ocean areas and targeting them for destruction by Soviet antiship weapons. Four such satellites were launched in 1984.

In the ASAT area, the Soviets have had the capability since 1971 to attack satellites in near-earth orbit with a ground-based orbital interceptor. Again, the United States has no comparable operational capability. Using a radar sensor and a pellet-type warhead, the interceptor can attack a target in orbit at various altitudes during the interceptor's first two revolutions. An intercept during the first orbit would minimize the time available for a target satellite to take evasive action.

The interceptor can reach targets orbiting at altitudes of more than 5,000 kilometers, but it is probably intended for high-priority satellites at lower altitudes. It is launched from the Tyuratam space complex, where launch pads and storage space for interceptors and launch vehicles are available. Several interceptors could be launched each day. In addition to the orbital interceptors, the Soviets could also use their operational ABM interceptors in a direct-ascent attack against low-orbiting satellites.

Should the Soviets decide to deploy in space extremely large payloads, including components of a space-based ballistic missile defense, they would require space boosters capable of placing in orbit thousands of tons per year. The two new boosters they are developing—a medium-lift vehicle comparable to our

Titan and a heavy-lift vehicle comparable to our Saturn V—will meet this requirement. These boosters should be available as early as the late 1980s.

Finally, the Soviets have ambitious plans for their manned space programs. They plan to replace their current Salyut space stations with large space complexes, which could support 20 or more cosmonauts on a permanent basis. Such a complex would enhance their space-based military support and war-fighting capabilities. Missions could include military research and development, reconnaissance, imagery interpretation, ASAT support operations, and BMD support operations. To ferry cosmonauts to this complex, as well as to place large payloads in orbit, the Soviets are developing their own version of the U.S. shuttle orbiter. They are also experimenting with a test vehicle that is apparently a scale model of a large, manned space plane. This plane's possible missions include reconnaissance, crew transport, and ASAT operations. It also could be used as a manned space station defender.

Soviet Disingenuousness

Considering all of the foregoing, it becomes apparent just how preposterous most criticisms of the U.S. SDI program are. The United States is not expanding the military competition into new areas: the Soviets have been researching the same technologies for two decades. Likewise, the United States is not initiating "the militarization of space"; space has been militarized for many years, primarily by Soviet systems and programs.

This Soviet disingenuousness becomes even more evident when one considers those who are taking advantage of our open society by leading the attack in the Western public arena on the U.S. SDI program. Within a month of President Reagan's 1983 speech that initiated SDI, a letter signed by a large group of Soviet scientists was published in *The New York Times* denouncing the program. A number of the signatories of this letter have, in fact, been instrumental in Soviet programs researching both conventional and advanced ballistic missile defense technologies. Among these are Mr. Y. P. Velikhov, the Deputy Director of the Kurchatov Atomic Energy Institute, who is a central figure in Soviet laser and particle-beam weapon efforts; Mr. N. G. Basov and Mr. A. M. Prokhorov, who are both scientific advisers to laser weapon programs; and Mr. Avduyevskiy, who is responsible for a number of projects researching the military use of space, including a space-based laser weapon. Other signatories have spent their careers developing strategic offensive weapons and other military systems.

Soviet Motives

Why are the Soviets conducting this propaganda campaign? Clearly, they see the potential applications for advanced defensive technologies; otherwise they would not be investing so much effort and so many resources in this area. It is not unreasonable to conclude that they would like to continue to be the only ones pressing forward in this field. At a minimum, they want to keep the United States from outstripping them in such technologies.

In this vein, the Soviet propaganda line against SDI is as predictable as it is hypocritical. The Soviets hope to foster a situation in which we would unilaterally restrain our research effort, even though it is fully consistent with existing treaties. This would leave them with a virtual monopoly in advanced strategic defense research; they see this as the most desirable outcome.

Such a virtual monopoly could be most dangerous for the West. Both sides have recognized for many years that offense and defense are vitally related to each other, that it is the balance between the offense-defense mixes of the sides that is essential to keeping the peace. Unilateral restraint by the United States in the defense area would jeopardize this balance and could, therefore, potentially undermine our deterrent ability.

If the United States proves unwilling to restrain itself unilaterally, the Soviets are prepared to impose an agreed ban on research "designed to create space-strike arms." At worst, a mutually observed ban would leave them where they are today, unthreatened by potential U.S. technological advances and maintaining the only operational ABM and ASAT systems. The Soviets are already positioning themselves, however, to avoid having such a ban apply equally to the research of both sides. They currently deny that any of their efforts fall within their definition of research "designed to create space-strike arms," while asserting that all of the U.S. SDI program fits within that definition. Moreover, even were a research ban to be applied equally to the sides, given its inherent unverifiability and the closed nature of the Soviet Union—and particularly its scientific community compared to ours—the Soviets very well might be able unilaterally to continue their research on a clandestine basis.

Conclusion

We can expect the Soviets to continue to protest strongly and publicly about SDI and alleged U.S. designs to "militarize space," all the while denying that they are conducting similar programs. We must recognize this propaganda for what it is—the key element of an overall strategy to divide the United States from its allies and elicit from us unilateral concessions. By making clear to the Soviets that we have the political will to maintain the necessary military capabilities effectively to deter them—that is, that their propaganda campaign will not succeed in causing us to exercise unilateral restraint—we can establish the necessary conditions for the Soviets to consider a more forthcoming approach to the negotiations in Geneva. In that event, the United States will be prepared, as it is now, for a serious discussion of how—should new defensive technologies prove feasible—our two sides could move jointly to a more stable strategic relationship, building upon the research efforts of both. ■