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**THE STRATEGIC DEFENSE INITIATIVE:  
ISSUES FOR PHASE 1 DEPLOYMENT**

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THE STRATEGIC DEFENSE INITIATIVE:  
ISSUES FOR PHASE 1 DEPLOYMENT

SUMMARY

From its inception in 1984, the Strategic Defense Initiative (SDI) was described officially as a long-term technology research program to determine the feasibility of developing defenses against the threat of ballistic missile attack. While SDI was structured to make possible a deployment decision in the early- to mid-1990s, specific deployment goals were undefined. This ambiguity has been substantially reduced now that the Administration has defined, and is pursuing, a first phase SDI concept (Phase 1) consisting of various weapons, sensors, and battle management elements, with deployment decisions in the early 1990s and possible deployment in the mid- to late-1990s.

While no decision has been made to deploy such a system, the Administration's new efforts are bringing important changes to the SDI program and raising various policy issues. A substantial part of the program will now focus on bringing various system elements to a stage where a decision can be made whether to deploy or not. Cost estimates of pursuing Phase 1 demonstration and validation over the next 4 to 5 years range from \$10 billion to \$25 billion. Changes in program direction and purpose are evident in the FY89 defense budget request to Congress.

The stated purpose of the Phase 1 SDI system would be to strengthen U.S. deterrence by moving toward a stable balance between offensive and defensive forces. A Phase 1 SDI system would also provide some population defense, according to the Administration. Their rationale for Phase 1 is multifaceted. It would perform a specific military mission to deny the Soviets their wartime objectives and provide some population defense, compel Soviet operational and doctrinal changes in their ballistic missile forces, and lay the foundation for more effective follow-on SDI deployment phases.

The decision to pursue an initial deployment concept is highly controversial. Critics charge that the eventual system will not be survivable against Soviet attack nor be effective against readily available Soviet countermeasures. Critics still question the feasibility of developing and deploying such a costly system.

Several key policy issues are raised by Administration actions thus far. For example, on the matter of whether a limited SDI system should be pursued and deployed as an element of U.S. strategic policy, many different perspectives are developing. Pursuing an initial deployment concept also raises questions about compliance with the ABM Treaty and continued U.S. commitment to the treaty. Finally, the budget costs of pursuing this effort raise key concerns in this era of declining defense budgets.

## ISSUE DEFINITION

A central national security policy issue that this Nation has faced for the past 40 years, and will face for the foreseeable future, is what strategic posture to adopt vis-a-vis the Soviet Union. Among the many choices the United States must make on strategic policy today is whether to develop a capability to deploy an SDI system. Whatever technologies could ultimately be incorporated in an initial deployment, several controversial policy issues are raised. Given their implications and tradeoffs, the issue for Congress is whether to fund the Reagan Administration's commitment to and schedule for pursuing an initial SDI deployment concept.

This issue brief describes Reagan Administration plans for Phase 1 development and for an initial deployment concept, tracks ongoing actions and program modifications, examines key implications and tradeoffs, and raises some policy options for Congress.

## BACKGROUND AND ANALYSIS

### **Administration Decisions Regarding Phased Deployment**

In July 1987, the Defense Acquisition Board (DAB), the Pentagon body charged with the task of reviewing all Department of Defense (DOD) programs, made a Milestone I recommendation -- the demonstration and validation review -- for the SDI program. The DAB recommendation identified a future Soviet threat (determined by the Defense Intelligence Agency) and approved a set of military mission requirements (determined by the Joint Chiefs of Staff, or JCS) to be addressed by an initial SDI deployment, and approved the concept of phased deployment (defined below). The DAB advanced several major SDI technology programs (consisting of sensors, weapons, and battle management elements) with an accompanying system architecture, as the currently favored candidates for an initial SDI deployment in the mid-1990s. The DAB recommendation was approved by Defense Secretary Weinberger in September 1987, thus bringing SDI formally into the DOD weapons acquisition process.

The Administration defines phased deployment as the incremental deployment of increasingly sophisticated and capable SDI technologies in distinct steps over several decades. While the SDI Organization (SDIO) says that phased deployment is an effort to strengthen deterrence by moving toward a stable balance between offensive and defensive forces, many would argue that President Reagan envisions the eventual replacement of deterrence based on offensive nuclear weapons with defenses. The number of phases would be indeterminate. Phased deployment is seen by the Administration as the most reasonable means to achieve the levels of ballistic missile defense envisioned by President Reagan.

The Administration has said that each deployment phase would be required to perform a specific military mission, compel changes in Soviet ballistic missile forces, and lay the foundation for subsequent deployment phases. These objectives are important in the context of critically evaluating the merits of an initial SDI deployment.

A Strategic Defense System (SDS) envisioned by the Administration would then be the culmination of several SDI deployment phases. Each phase would seek to improve the initial system and provide additional capability to perform new and more demanding missions. The SDS would consist of an integrated system of battle management; command, control, and communications (C3); sensors; and weapons. According to the Administration, the SDS would be designed to be cost-effective, survivable, and militarily effective, thus staying ahead of any evolving Soviet threat. Further, the SDS would strive to be responsive to U.S. command authorities during peace, crisis, and war.

### The Elements of Phase 1

As approved for advanced development by the DAB, the Phase 1 strategic defense system would consist of numerous space- and ground-based interceptors and sensors. These programs, which have received Milestone I approval, are based on more traditional technologies. See Figure 1. The six candidate SDI elements approved for advanced development include:

- two nonnuclear missile interceptors -- the Space-based Interceptor (SBI) and the ground-based Exoatmospheric Reentry Vehicle Interceptor Subsystem (ERIS);
- three sensor elements -- the space-based Boost Surveillance and Tracking System (BSTS), Space-based Surveillance and Tracking System (SSTS), and Ground-based Surveillance and Tracking System (GSTS); and,
- a Battle Management/Command, Control, and Communications (BM/C3) network that will have to be developed.

In addition, the development of an Advanced Launch System (ALS) -- a new space vehicle -- is considered essential to meet the anticipated launch needs of deploying the space elements of the Phase 1 system in the mid- to late-1990s. But because the ALS is intended to address a broader range of civil and military space launch needs, DAB approval is being pursued separately.

The two missile interceptor systems would be deployed in two layers. The first layer would use the SBI to try and attack Soviet ballistic missiles in space within the first several minutes of their flight but before their warheads are released. The second tier would use ERIS (perhaps supplemented by SBI) to try and attack specific warheads after they had been dispensed from the missile during the midcourse phase of the warheads' trajectory in space. Various sensors would be designed to try and provide for target acquisition, tracking, discrimination, and kill assessment. BM/C3 elements would be required to play a central role in coordinating the system with other strategic offensive and tactical military forces, as well as national diplomatic and intelligence operations.

Currently, the Phase 1 effort maintains an option to include a terminal defense layer (to try and attack during the final minute or two of a warhead's trajectory as it reenters the atmosphere toward its target).

The six candidate technologies approved by the DAB, assuming congressional approval and funding, are to be advanced together to a more coordinated level of testing, development, and integration. As a result, the Pentagon created a new office (Operational Test Organization) for oversight of Phase 1 demonstration and validation.

The DAB also discussed the need to balance and coordinate the development of more mature, near-term technologies with longer-term, more capable technologies. A Milestone I decision on a follow-on to Phase 1 is seen as an important element of a Milestone II decision for Phase 1. The DAB has said it will review the Phase 1 technologies and system concept on an annual basis, starting in April 1988. The stated purpose is to ensure development of an effective and survivable system. While some Members have said that Milestone II could be made in 1992, SDIO now says that the reduced budget available for SDI programs extend that decision to 1993-1994. At any point, other technologies might be substituted or added, depending on technological success, the pace of program funding, and changes in the perceived Soviet threat. Actual deployment of the current Phase 1 system could be underway by the mid- to late-1990s, according to some reports.

The Administration did examine other deployment ideas, but selected this Phase 1 concept on grounds that it best satisfied the JCS mission requirements. One alternative concept, for example, included the deployment of a comprehensive SDI system -- consisting of the most capable and advanced BMD technologies -- all at once over the shortest period of time. Another major concept included deployment of BM/C3 elements, followed sometime later by space- and ground-based missile interceptors. Another major concept consisted of a ground-based weapon system only, with space-based sensors and BM/C3.

#### **The Administration's Case for Phase 1 Deployment**

As mentioned above, each phase of the SDS would be required to meet three broad objectives. According to the Administration, the Phase 1 system would strive to meet these objectives against the perceived Soviet threat of the mid- to late-1990s in the following manner:

(1) **To perform a required military mission.** The specific mission requirements and system reliability was defined by the JCS as SDIO prepared for the DAB review. Although those requirements are classified, it can be said that the major Phase 1 deployment objective is to ensure, albeit with less than 100% effectiveness, the survival of an effective U.S. retaliatory force capability. The purpose is to deny the Soviets their objectives in an initial ballistic missile attack, thus deterring Soviet aggression. The Phase 1 system would contribute (as would all phases of SDS) to the performance of missions traditionally assigned to U.S. and allied strategic forces, including denial of Soviet war aims,

damage limitation, space control, and tactical warning and attack assessment.

According to the Administration, the Phase 1 system would strive to thin out an initial Soviet nuclear attack and seek to protect the highest value U.S. assets. It is said that this objective could be accomplished by adopting a 2-tier defense strategy. The goal of the first tier, composed of space-based missile interceptors, would be to attack Soviet missiles randomly after they are launched and before their warheads are released to break up the structure of a Soviet attack. Destroying a missile at this point is considered significant in terms of "killing" many warheads and decoys for the price of one interception. Its significance goes much further, however. In the view of the attacker, his attack becomes uncoordinated and unpredictable, leading to the attacker's loss of confidence in attaining all his objectives.

The stated goal of the second tier, composed of space- and ground-based missile interceptors, would be to attack only selected Soviet warheads that survived the first tier. The warheads to be attacked would be those aimed at targets to be defended. According to SDIO, the uncertainty generated in the mind of the attacker by this 2-tier strategy would be profound in reducing Soviet confidence in a potential first strike attack and in attaining Soviet objectives.

While the primary purpose of Phase 1 deployment is to ensure the survivability of a core deterrent force, the Administration adds that some level of population defense could be afforded in two ways. First, because the objective would be to destroy Soviet missiles randomly in the boost and post-boost stages, many potential targets located near population centers would not be hit. Proponents add that targets near population areas could be defended selectively with the mid-course defense tier. Second, the Administration adds that the Phase 1 system itself would deter the Soviets from starting any war in the first place.

**(2) To compel changes -- operational and technical -- in Soviet ballistic missile forces.** Through deployment of a Phase 1 system, the Administration hopes to reduce the Soviet's confidence in the military utility of their ballistic missile force. According to SDIO, Phase 1 deployment will compel changes (favorable to the United States) in Soviet strategic forces operations and strategy by reducing the confidence of Soviet planners in predicting the outcome of a ballistic missile attack and leaving Soviet strategic planners uncertain of the number of warheads to apply to specific U.S. targets. Such changes will reduce Soviet confidence in their preferred attack strategy and invalidate the possibility of a Soviet first strike.

The Soviets would have two rational choices, according to the Administration. One would be to reduce their emphasis on strategic nuclear ballistic missiles and increase emphasis on their strategic bombers and cruise missiles, which, it is argued, are less destabilizing and dangerous because they are slower than ballistic missiles, cannot be used reliably today as first-strike weapons, and -- in the case of bombers -- can be recalled.

The other choice -- the Administration argues -- is that the development and deployment of a Phase 1 system will provide arms control leverage. SDIO argues that Phase 1 deployment will create incentives for both sides to reduce greatly their offensive forces and move toward greater reliance on defenses. President Reagan has said on many occasions that the ultimate goal is to eliminate offensive nuclear weapons and rely instead on a defense-dominated strategy. The deployment process itself, it is argued, is a strategy to demonstrate U.S. intention to expand defenses in response to any Soviet actions. According to the Administration, "the mere development of the option for phased deployment of strategic defense can help motivate Soviet acceptance of U.S. arms reductions proposals." If such proposals were then accepted, it is argued, phased deployment plans could be adjusted accordingly with less ambitious upgrading.

**(3) To lay the foundation for improved, follow-on deployment phases.** The Phase 1 system is to set the stage for a follow-on deployment in several ways. It will: (1) provide initial protection against ballistic missile attacks and a foundation on which subsequent phases can build and efficiently expand; (2) establish U.S. defensive capability in the most critical portions of a ballistic missile trajectory; (3) put in place an organized military infrastructure; and (4) provide reliable training and operational experience.

No follow-on to the Phase 1 system has been defined. According to Administration officials, a Phase 2 deployment could consist of anything from more effective Phase 1 technologies to more advanced sensors or weapons, such as lasers and particle beams. The Administration asserts that it will maintain program balance, but there is some ambiguity as to how. Some officials have stated that SDIO will allocate half of the SDI budget to development of the Phase 1 concept, and the balance for the technologies of subsequent phases. Other officials assert more generally that SDIO will maintain a balanced program -- one that investigates both near-term systems and technologies and more exotic systems and technologies.

A decision to pursue a particular Phase 2 concept would depend in large part on whether or how the Soviets might respond to Phase 1 deployment (whether the Soviets are confrontational or cooperative), any changes in objectives, and further progress in the SDI program.

#### **Criticism of Phase 1**

Since its inception, SDI has proven to be one of the most highly contentious defense programs in history. Much of the controversy, for example, centered on broad critiques of the feasibility of an effective SDI system and the tremendous political challenges SDI posed to U.S. diplomacy. Debate over specific implications and technical problems of SDI deployment has been difficult, largely because of the absence of well-defined deployment goals. Now that the Administration is pursuing a Phase 1 development and deployment concept with a provisionally specified set of SDI technologies for the 1990s, the SDI debate may well sharpen.



The debate over Phase 1 is beginning. In broad terms, some see Phase 1 as an attempt to institutionalize phased deployment and build program momentum before Reagan leaves office. It is also seen by many as overly ambitious, complex, and costly. Still others believe a commitment to Phase 1 means an irrevocable commitment to endless deployments of strategic defenses.

Beyond this, there are few detailed public criticisms available for discussion. Nonetheless, several issues raised by the Administration's pursuit of Phase 1 are likely to receive critical examination. Most SDI critics are likely to question the survivability and military effectiveness of the Phase 1 system, as well as the feasibility of developing and deploying the Phase 1 technologies for the 1990s.

### **Survivability Issues**

Some critics of the proposed Phase 1 system doubt that it will be survivable. They do not believe the system could perform its required mission if the Soviets decided to attack the system's space-based components with ground- or air-launched antisatellite (ASAT) weapons. For example, some argue that the Soviets could use inexpensive sounding (high altitude) rockets with moderately advanced guidance systems to attack some space-based sensors and weapon elements of the Phase 1 system. Conceivably, critics charge, most Soviet missiles could be modified for such a mission. Also, the Administration asserts that the Soviets could have an operational ground-based laser ASAT weapon by the early 1990s.

Many observers might agree that the survivability of individual space-based Phase 1 elements is less important than overall mission survivability (i.e., the system could lose a few elements and still perform its mission). Critics of Phase 1 charge that the system as presently contemplated includes an inadequate number of BSTS and SSTS sensor platforms, so that the loss of only a few of these components would make it unlikely that the Phase 1 mission could be realized.

Some critics argue that the space-based elements of Phase 1 could not survive the effects (e.g., X-rays) of nuclear explosions in space. (The source of these explosions could be Soviet nuclear ASATs or Soviet warheads fused to detonate when attacked by interceptors.) The effects of nuclear explosions in space, they argue, cannot be fully understood without testing in space, which is prohibited by treaty.

### **Military Effectiveness Issues**

Some critics of Phase 1 also question its military effectiveness. They argue that the system could be readily circumvented in many ways that are relatively simple and inexpensive for the Soviet Union to develop, yet difficult and expensive for the United States to counter.

Nearly all observers agree that the most significant potential countermeasure against the boost-phase tier is for the Soviets to reduce the boost time of their ICBMs. While SDI proponents discount this possibility for the 1990s, critics believe this can be readily accomplished by simple modifications. This would reduce the effectiveness

of SBI by decreasing the available time for sensing, target acquisition, and interception. While fast-burn boosters would not be cost-free to the Soviets, they could more quickly replace their force of older SS-17 and SS-19 missiles, for example, with newer, faster burning SS-24s and SS-25s. This would significantly reduce the available SBI launch opportunity at minimum Soviet cost, it is argued. These critics doubt that SBI velocities can be improved upon to deal with this Soviet response; the favorable characteristics of SBI rocket fuels (low cost and storability) give it relatively low performance against fast-burn boosters. To counter fast-burn boosters would require using high-propellant fuels and multiple-stage SBIs. Critics argue that this would create heavier platforms and increase Phase 1 costs prohibitively.

Most observers agree that a key way in which the mid-course tier could be defeated is Soviet development of simple and inexpensive countermeasures. While SDI proponents believe this is not likely to be significant for the 1990s, critics assert otherwise. Suggested counters include: proliferation of Soviet warheads; decoys (e.g., aluminized mylar balloons and other replicas to simulate warheads); aerosol clouds (to simulate warheads); sensor jamming; and anti-simulation techniques (for warhead masking or deception). Because SSTS effectiveness is driven largely by the size of the Soviet threat, increasing that threat significantly with decoys and more warheads, it is argued, renders the mid-course mission ineffective.

#### **Feasibility of Phase 1 Technologies**

Another major criticism concerns the inability of the Phase 1 elements to meet their performance goals by the mid-1990s. Even proponents agree that Phase 1 development and deployment will require hundreds of major advances in disparate fields of research and engineering. Critics argue that the probability of all these coming together between now and the mid-1990s is remote. Some would also question whether the Phase 1 effort can be managed effectively and efficiently. They cite other less complex, strategic programs such as the B-1 strategic bomber and the MX missile, which have had numerous problems even after their deployment. Many also express grave concern about starting an arms race and then having to rely upon future unproven and expensive technologies to follow Phase 1; they fear that if such exotic technologies are not available to follow the Phase 1, the risk of nuclear war will actually increase.

More specific technical criticisms focus on the necessity for major improvements in miniaturization of Phase 1 elements to keep down costs. Many do not believe such reductions in weight, size, and power requirements are possible during the proposed time frame for Phase 1.

There is also criticism of the BM/C3 network envisaged, which is described as a highly distributed and decentralized system. Critics believe that insurmountable problems will arise when all the component elements of Phase 1 are eventually integrated. The Administration intends to develop a National Test Facility (NTF) to test and integrate these elements under artificial conditions. Critics question the utility of the analytical product that will then be used to approve Full-Scale

Engineering Development (Milestone II) of Phase 1. What they fear is that Milestone II will be approved on the basis of incredibly complex charts and graphs from the NTF, data and processes that no one will quite fully understand. They also charge that it will be fundamentally impossible to conduct any outside, independent evaluation of the results. Finally, they are skeptical of Phase 1 because it could never be tested realistically.

Critics point out that mid-course discrimination of decoys and warheads is crucial to an effective Phase 1 system; such discrimination is key to the mission of preferential and adaptive mid-course defense. Critics assert inherent problems exist with the Phase 1 mid-course sensors being developed. All sensors are subject to spoofing, interactive discrimination (e.g., the neutral particle beam) to deal with decoys has been postponed to another phase, and the SSTS is almost an entirely threat-dependent system facing major challenges itself in improving resolution.

Another area that will receive critical attention is the development of a new space-launch capability. Some critics argue the infeasibility of building a new launch capability by the mid-1990s to reduce Phase 1 system costs. Other critics argue that entirely new and expensive launch facilities will have to be built to deploy space-based elements of Phase 1 over a short period of time.

In addition to these more technically-oriented issues, pursuing Phase 1 has profound implications for strategic policy, arms control, and the budget. These broader policy issues are examined in the following section.

### **Key Policy Issues for Congress**

The deployment of a Phase 1 system raises significant questions and promises certain controversy regarding future U.S. strategic policy, the ABM Treaty, and costs. As noted, the Administration has made a commitment to pursue Phase 1, which will consume a significant portion of the SDI budget that Congress will consider in the FY89 defense bill. Because the Administration has presented a specific deployment concept and is asking Congress to support significant funding for Phase 1 demonstration and validation for the next several years, most observers would argue that now is an appropriate time to consider whether or how best to pursue the Phase 1 concept. Some of those issues raised in the growing debate are examined briefly in this section.

#### **Strategic Policy and Phase 1 Deployment**

There are a variety of strategic policy options the United States has pursued and might continue pursuing to ensure its security over the next decade and beyond. These options may be put into four categories.

The first includes offensive nuclear force efforts to ensure the military effectiveness of the U.S. nuclear deterrent. Examples are modernization and proliferation of nuclear weapons, and force structure changes (such as decreasing U.S. emphasis on its ICBM force and relying more on nuclear submarines).

The second category includes defense suppression efforts to render Soviet military forces less effective so that U.S. offensive forces can effectively penetrate Soviet defenses. Examples are antisatellite weapons and penetration aids and decoys on missiles.

The third category includes various defensive measures to ensure the survivability of the U.S. deterrent force: passive defenses, such as increased alert rates for nuclear weapon systems, ICBM mobility (Midgetman or MX), and superhardening ICBM silos; and active (strategic) defenses, such as antisubmarine warfare, continental air defense, and many types of BMD.

Finally, arms control efforts can be pursued to reduce the risk of nuclear war, minimize Soviet threats to U.S. strategic nuclear forces, and limit damage to U.S. strategic forces should war break out.

Because each category has advantages and disadvantages, the United States pursues these efforts concurrently to deny the Soviets confidence in achieving their objectives by force. As mentioned, there are a range of options, including deployment of SDI, which the United States can consider. This then raises the question of which options should be emphasized and whether to pursue Phase 1 deployment.

Phase 1 deployment can be examined in this strategic policy context. Currently, three broad perspectives are developing. Each differs primarily over the degree to which nuclear weapons and deterrence should play a central role in the future of U.S. strategic policy. First, there are some who oppose pursuing Phase 1, favoring other strategic policy choices. A second perspective counters that deployment of SDI is desirable and necessary. Others contend that deployment of strategic defenses in some form is but one of many policy options open to serious consideration. Most observers would argue that the policy debate will tend to be dominated by this latter perspective.

Each of these perspectives are examined in the following general discussion. Tradeoff issues are also raised in the context of the current objectives of a Phase 1 system (to perform a military mission, compel changes in Soviet force structure, and lay a foundation for subsequent SDI deployment phases).

### **Competing Perspectives of Phase 1 Deployment**

#### **Pursue Phase 1 as an Element of U.S. Strategic Policy?**

**Yes.** Those who support Phase 1 do so based on different (some would say competing) views of nuclear deterrence. Some firmly believe that offensive nuclear deterrence should be replaced as the basis of U.S. strategic policy and that population defense should be stressed; many in this group believe deterrence is a morally bankrupt concept. Still others argue that U.S. offensive nuclear deterrence is not credible in the face of Soviet strategic modernization and must be strengthened. Debate within this perspective focuses upon whether and how best to replace or strengthen nuclear deterrence with defenses.

For some, the imperative to deploy SDI technologies soon is acute. Many would agree that the Administration's Phase 1 concept should be pursued because it would commit the United States to SDI, permit near-term (within 7-10 years) SDI deployment, and accommodate their different views of offensive nuclear deterrence.

A key issue for those who want to replace deterrence is whether the Phase 1 system would provide enough population protection (as they see it), given the uncertainty over subsequent phases and the future effectiveness of more advanced defensive concepts. A second key issue for these people is whether the Phase 1 system serves only to shore up offensive nuclear deterrence -- to which they object -- or whether Phase 1 deployment is an acceptable and necessary transition to deterrence based on defenses.

A key issue for those who support near-term deployment of SDI to strengthen offensive nuclear deterrence is whether the current concept of Phase 1 represents a premature commitment to pursue limited BMD technologies. A second key issue for these people is whether subsequent follow-on phases of more advanced SDI technologies will be feasible.

**No.** Critics take exception to the military rationale for the Phase 1 concept and make a case that current and prospective U.S. nuclear forces are adequate to deter Soviet aggression against the United States and its allies and deny the USSR its wartime objectives. They assert that nuclear deterrence has effectively eliminated the threat of global warfare, thus ensuring indirectly the protection of the U.S. population against nuclear attack. Moreover, they would contend that survival of U.S. society could not be assured in the face of a determined or irrational adversary. Furthermore, any population defense afforded by Phase 1 deployment would be meaningless given the destructiveness of even a few nuclear weapons. Some might also argue that civil defense measures are less costly and more effective.

Some believe that the U.S. ICBM force is not vulnerable (and that mobile ICBMs are even less vulnerable), and that they do not need to be defended by a Phase 1 system. They add that warheads on U.S. bombers and submarines contribute significantly to deterrence. According to this perspective, development and deployment of Phase 1 technologies is unnecessary and prohibitive in cost. In addition, a Phase 1 deployment is seen as dangerous because it could create incentives for one or the other side to attack first in a crisis.

These opponents would reject the argument that development of a Phase 1 system (and a commitment to phased deployment) would compel the Soviets to rely less on nuclear ballistic missiles. Rather, it is asserted, the Soviets could proliferate their ballistic missile force at less cost than U.S. deployment of SDI. The Soviets, arguably, could also develop and deploy a host of measures to counter the effectiveness and survivability of the Phase 1 system.

Other, less provocative, and less costly alternatives -- such as arms control, mobile ICBMs, and passive defenses, for example -- can lead to

favorable changes (for the United States) in Soviet force structure and strategic stability, according to this view. Therefore, these options should be pursued instead.

**Maybe.** A third perspective is that the U.S. strategic deterrent needs strengthening to remain credible in the eyes of the Soviets, and that the option to deploy SDI in some form should not be dismissed or accepted without critical review. Here, the key issues are which comparable strategic policy goals can be reached at least cost to strategic stability and with greatest effectiveness. On this point, it could be said that the jury is still out.

As stated by the Administration, the military mission of the Phase 1 system is to enhance strategic stability in peace and crisis and preserve a credible strategic force in the event deterrence fails. According to SDIO, the purpose of Phase 1 deployment is to add uncertainty to any Soviet calculations of attack as a phase in an overall change to a defense dominated world. Increasing Soviet uncertainty to strengthen deterrence -- many would point out -- compares readily with U.S. strategic modernization objectives to deploy forces sufficient to convince the Soviets they cannot achieve their principal war aims by a nuclear attack, neutralize the United States, ensure continued Soviet party control in the USSR in the event of war, and limit damage to their warfighting capabilities.

If the Phase 1 deployment goals are comparable with those of strategic modernization and arms control, then questions of cost (in a broad sense) and effectiveness become crucial. Currently, no studies are available analyzing Phase 1 deployment, comparing it with the range of strategic policy alternatives, and assessing the various tradeoffs. Nonetheless, some criticisms of Phase 1 have begun to take shape. One is that limited defenses coupled with effective offensive capabilities can increase the risk of nuclear war, especially in a crisis. Indeed, President Reagan warned of this in his Mar. 23, 1983, so-called "Star Wars" speech, saying that defenses, "if paired with offensive systems, [could] be viewed as fostering an aggressive policy, and no one wants that."

A crucial issue for Phase 1 consideration in the minds of many observers is the current Soviet negotiating proposal to reduce their strategic warheads by half, including in particular half of those on all SS-18 missiles. The Administration has long characterized the SS-18s as the single most dangerous and provocative of Soviet strategic systems. Some have urged that the Administration seriously consider the Soviet offer because it seen as highly competitive with the Phase 1 mission objectives, and it would certainly cost less.

#### **ABM Treaty and Phase 1 Development and Deployment**

Deployment of the Phase 1 elements is incompatible with the ABM Treaty (and its 1974 Protocol), which limit deployment to 100 ground-based interceptors at one site and a ground-based ABM guidance and sensor system. Moreover, many observers agree that the ABM Treaty was designed

to restrict the development of a nationwide defense capability, though this is contested by Administration spokesmen and others.

A key policy issue is therefore whether and when to abandon the ABM Treaty's constraints in pursuit of the President's vision of SDI. Those who agree with the Administration's plans for a Phase 1 system argue that the ABM Treaty should not stand in the way of developing a comprehensive defense system that would reduce the risk of nuclear war and make possible significant reductions in U.S. and Soviet strategic nuclear forces.

Another view maintains that Treaty limits on deployment of ABM systems have averted a potentially costly and dangerous offense-defense arms race. It is asserted that abandonment of the ABM Treaty would only result in a strategic environment made more complex and dangerous with the introduction of the limited capabilities envisaged for Phase 1 deployment. The potential for instability is further heightened by the inherent uncertainty of follow-on deployment capabilities, it is argued.

Still others might suggest that the ABM Treaty could be amended to allow more than the limited deployment now permitted in ways that would retain the Treaty's central purpose of precluding deployment of a nationwide defense capability.

Phase 1 development raises two crucial issues with respect to the ABM Treaty. The first is whether development and testing of some Phase 1 elements is compatible with the traditional interpretation of the ABM Treaty, which prohibits testing and development of ABM components unless they are part of a fixed, ground-based ABM system. Although the Administration has said that SDI research, development, and testing will comply with the traditional interpretation, some people raise compliance questions over particular programs and tests, such as SBI. Some also believe concerns about potential conflicts with the Treaty will increase as Phase 1 proceeds.

The second issue raised is whether Phase 1 development will soon require the adoption of a new (i.e., broader) interpretation of the ABM Treaty, which permits testing and development of ABM systems based on physical principles other than those in use in 1972, regardless of basing mode. The Administration has said that while this broader interpretation is legally justified, it would adhere to the traditional interpretation in conducting the SDI program. Congress also passed legislation having the practical affect of requiring any FY88 funds spent on SDI to be compliant with the traditional Treaty interpretation.

Some argue, however, that the United States should soon adopt the broader interpretation to conduct realistic testing of some Phase 1 technologies. They would add that doing so will save time and money, and reduce technological risk (because of being able to conduct realistic tests).

#### **Budgetary Issues and Phase 1 Deployment**

According to SDIO, current Administration cost estimates of the Phase 1 system range between \$75 billion and \$150 billion (FY88) for the demonstration, validation, full-scale engineering development, and

production of the Phase 1 system. This range of cost, says SDIO, is due to uncertainty in the technical configuration of the hardware and alternative acquisition approaches. These estimates, for the most part, reflect the assumption of "business as usual" and do not reflect reductions for extraordinary breakthroughs, efficiencies, management, or production techniques. Launch costs, argues SDIO, are reduced in accordance with the expectations for the ALS.

Some have suggested that this SDIO cost range is highly optimistic, and that the final costs will actually be much higher. Many point to the need for greatly reduced space-launch costs to keep down the total Phase 1 system deployment costs, which is not included in the SDIO range; they raise serious doubts as to whether such significant cost reductions envisioned for the ALS can be attained.

One budgetary issue raised therefore is simply one of affordability. The Administration contends that the Phase 1 deployment -- when spread out over a number of years, and including cost savings from other U.S. strategic nuclear weapons programs (the need for which it is argued would decline over time) -- is affordable.

Others might argue that the costs of deploying the Phase 1 system cannot be accommodated in an era of declining defense budgets. They contend that competition for funds within the Defense Department will make funding an SDI phased development and deployment program increasingly difficult. At the same time, competition between conventional and strategic forces research and development funds will become keener.

The prospect of reduced funding for the development of the Phase 1 system, some would argue, raises an important issue: Can the Administration pursue the current Phase 1 concept in a fiscally constrained environment? In many cases, DOD weapons programs are "stretched out" over time to reduce near-term costs or to cope with reduced budgets. Should Phase 1 development be stretched out, it might render Phase 1 deployment obsolete because it is intended to deal with a mid- to late-1990s Soviet threat. After the late 1990s, the current Phase 1 system, if deployed, might be incapable of meeting the current mission requirements. Budget constraints therefore could play a decisive role in determining the ultimate fate of the current Phase 1 concept.

A second major issue concerns cost-effectiveness. The Administration has contended, and the Congress has agreed through legislation, that any deployment of SDI must be cost-effective at the margin. This, to many, means that the cost to the Soviets of maintaining a given level of offensive capability would be greater than it would be for the United States to degrade that capability with defenses. Some Administration officials would argue that cost-effectiveness at the margin, however, is more than an economic term. The issue in the minds of many is how and when to calculate cost-effectiveness for deploying SDI: should the Phase 1 system be cost-effective by itself against possible Soviet counters, or should cost-effectiveness criterion be calculated in the context of a more comprehensive, multiphase strategic defense system. Such issues have yet to be resolved.



### Options for Congress

Because pursuing Phase 1 will require funding approval, Congress will play an important role in determining the appropriate goal of the SDI program, as well as any deployment objectives. Briefly mentioned here for illustrative purposes only are some of the options the Congress could pursue in deciding upon SDI funding this year for development and testing of Phase 1 elements.

#### Support the Phase 1 Concept

Congress could endorse the Reagan Administration's plans for the demonstration and validation of Phase 1 elements, urge timely progress toward deployment of Phase 1, continue to fund Phase 1 without necessarily committing to its deployment, or grant the funding request without restrictions on the SDI program, or any of these concurrently.

#### Modify the Phase 1 Concept

Congress could support President Reagan by funding Phase 1 demonstration and validation at the level of the Administration's request, seek to legislate balance (instead of relying on the Administration's assurances to do so) between demonstration and validation of Phase 1 elements and longer-term programs (Phases 2 and 3, for example). Congress might also recommend that these longer-term, more advanced technologies be required to play a role in a different Phase 1 system to be deployed later than currently envisioned.

Congress might also develop and pursue its own set of objectives for SDI through framework legislation and funding; deployment of SDI over the near- or long-term may or may not be a specific goal.

#### Stop or Slow Development of the Phase 1 Concept

Congress might legislate balance between nearer- and longer-term technologies, while reducing significantly the overall SDI funding request in the aggregate to slow Phase 1 development or stop deployment. Congress might also prohibit development and testing of all or some Phase 1 weapons elements, such as the space-based interceptor, to slow Phase 1 development or stop deployment.

Congress might seek to limit the general scope of SDI by approving greatly reduced funding levels and legislating various programmatic restrictions. The purpose of slowing all or some of the SDI program (such as nearer-term technologies) would be to restrict the possibility of deploying SDI for an indeterminate period of time.

### LEGISLATION

#### P.L. 99-145

FY86 Defense Authorization Act. Requires that any strategic defense system deployed in whole or in part be survivable and cost-effective at the margin. Furthermore, funding for the deployment of such a system must be specifically authorized by legislation. Signed into law Nov. 8, 1985.