

Chapter 6
**Crisis Stability,
Arms Race Stability,
and Arms Control Issues**

Contents

	<i>Page</i>
Introduction.	119
Crisis Stability	119
The Current Situation and Future Prospects.	121
Effects of BMD Deployment on Crisis Stability.	123
BMD Deployment and Arms Race Stability.	128
Responses to BMD Deployment	129
Defense Plus Offense	131
Additional Observations	132
BMD Deployment and Arms Control	133
The Importance of a Negotiated Transition.	133
Working Out the Details +	134
Potential Effects of the Absence of a Negotiated Transition	135
Conclusions	136
 Table	
<i>Table No.</i>	<i>Page</i>
6-1. Missile Production: U.S.S.R. and NATO	130

Crisis Stability, Arms Race Stability, and Arms Control Issues

INTRODUCTION

The preceding chapters discussed how adding ballistic missile defense to U.S. forces might affect U.S. strategy. This chapter will address the relation of BMD deployments to three other force posture issues: crisis stability, arms race stability, and arms control. *Crisis stability* is the degree to which strategic force characteristics might, in a crisis situation, reduce incentives to initiate the use of nuclear weapons. *Arms race stability* involves

the effect of planned deployments on the scope and pace of the arms race. *Arms control* has been pursued in the past as a way of trying to enhance these two kinds of strategic stability. If the United States and the Soviet Union decide in the future to deploy new BMD systems, new arms control agreements may be even more important for avoiding serious instabilities, particular during transitional stages.

CRISIS STABILITY

It is widely believed that a nuclear war would be most likely to occur as the result of escalation of a U.S.-Soviet confrontation during a severe crisis. Such a crisis could result from a deliberate act of aggression by the Soviet Union against the United States or its allies, but it could also arise from a dispute triggered by some third-country actions which involve the perceived vital interests of the superpowers. The likelihood that such a crisis would result in nuclear war not only would depend on the political and military situation at the time, but might also be influenced by the nature of the strategic forces deployed beforehand by each side. In addition, crisis instability can also motivate arms race instability by inducing remedial arms acquisitions by one side or the other. Hence, in deciding whether to develop and deploy a new weapon system, an important question is whether the new system will add incentives or disincentives for using nuclear weapons in a crisis. Before we address this question with respect to various

kinds of BMD deployments, the general nature of crisis stability will be described.¹

A decision to initiate a nuclear attack would depend on several factors, including the circumstances leading up to the crisis, the personal attributes of the leaders, their perception of each country's military capabilities and vulnerabilities, their perception of their adversary's incentives and intentions, and the doctrines of the two countries regarding nuclear strategy. Most specialists believe these doctrines differ between the two countries in important ways. For example, the U.S. contingency plans for first use of nuclear weapons contemplate a possible "flexible response" to Soviet aggression; i.e., a relatively small-scale initial use of nuclear weapons with the hope of avoiding escalation to a large-scale nuclear

¹See app. L for a list of references on crisis stability and other aspects of strategic nuclear policy.. App. M lists references to a range of views on Soviet strategic policy.

exchange.² As noted in chapter 4, the declared policy of the United States precludes a preemptive strike.³ The issue here, however, is not whether American leaders would continue this policy in future crises, but whether the Soviets would believe that they would.

On the other hand, Soviet doctrines for dealing with crisis contingencies are thought by many analysts to include the option of launching a massive preemptive attack against all targetable U.S. nuclear forces (ICBM silos, bomber bases, command and control sites, etc.).⁴ The Soviets also place greater reliance than we do on civil defense and air defense to help reduce the damage from a nuclear attack. The Soviets have declared that they will not be the first to use nuclear weapons. But it remains possible that, faced with the prospect of defeat in a nonnuclear conflict they consider of vital importance, the Soviets would decide to initiate a limited nuclear attack. However, if they believed that the escalation process was likely to lead to a full-scale U.S. attack, they might decide to preempt with a massive strategic attack.

Whatever the current Soviet doctrine really is, future crises could face Soviet leaders with decisions on whether to initiate a nuclear attack. In each case, the Soviet leader would have to balance his perception of the risks of striking first against his perception of the risks that the United States might strike first. The smaller he judged the chances of avoiding nuclear war altogether, and the larger he judged the advantages of striking first rather than second, the more incentive he would have

²For a detailed discussion of how command and control vulnerabilities could severely limit U.S. options in a crisis, regardless of declaratory policies and doctrines, see Daniel Ford, *The Button: The Pentagon Strategic Command and Control System*, (New York: Simon and Schuster, 1985). (Also published in *The New Yorker*, Apr. 1 and 8, 1985.)

³For example, the FY 1984 annual report of the Department of Defense states:

Our strategy excludes the possibility that the United States would initiate war. The United States would use its military strength only in response to aggression, not to preempt it. Once an aggressor had initiated an attack, however, the principle of non-aggression would not impose a purely defensive strategy in fighting back.

Caspar W. Weinberger (*Annual Report of the Secretary of Defense to the Congress, Fiscal Year 1984*, Feb. 1, 1983, p. 33.)

⁴See discussion of Soviet strategic doctrine in ch. 4.

to strike first. Hence crisis stability can be increased by force structures that minimize the difference in the results of striking first or second (e.g., by deployment of retaliatory forces that are invulnerable to a first strike). Minimizing this difference for both sides would reduce a Soviet leader's incentive to strike first in two ways. It would not only reduce his perception of the advantages of striking first, but would also reduce his fear that the United States had a strong incentive to strike first.

The analysis below is not intended to imply symmetry between the way American and Soviet leaders would make such decisions, nor is it intended to examine all of the factors that would be involved. It will focus on only one of those factors: how such decisions might be influenced by the nuclear force structures on each side. Crisis stability is not absolute; it is a matter of degree. It is determined by how great a net disincentive for either side to strike first arises from the force structures of both sides.⁵

Weapon systems are considered destabilizing if in a crisis they would add significant incentives to initiate a nuclear attack, and particularly to attack quickly before there is much time to collect reliable information and carefully weigh all available options and their consequences. In the current U.S.-Soviet strategic relationship, crisis stability is enhanced to the extent that each side possesses substan-

⁵It is quite possible that a leader's perception of the degree of crisis stability at a particular time could influence his willingness to risk actions that might cause a crisis to arise.

⁶Some analysts prefer to define strategic stability more broadly than as comprising crisis stability and arms race stability only. For example, Colin S. Gray has proposed a concept of stability which requires that Western governments acquire plausible "prospects of both defeating their enemy (on his own terms) and ensuring Western political-social survival and recovery." See Colin S. Gray, "Strategic Stability Reconsidered," *Daedalus*, fall 1970. Gray suggests that any NATO force structure short of that, such as the current force structure, may be insufficient to deter Soviet attack. He argues that a stable strategic balance is one that would permit the United States to:

Initiate central strategic nuclear employment in expectation of gain . . . Seize and hold a position of 'escalation dominance,' [and] Deter Soviet escalation, or counterescalation, by a potent threat posed to the most vital assets of the Soviet state and by the ability of the United States to limit damage to itself.

Obviously this concept precludes mutual U.S. and Soviet strategic deterrence, which Gray refers to as "strategic stalemate."

tial retaliatory forces that are invulnerable to a first strike. Specifically, the retaliatory weapons and their associated command and control chain must be survivable, and the weapons must be able to reach their targets. On the other hand, weapon systems with a substantial capability to attack the other side's retaliatory forces, such as large numbers of highly accurate MIRVed ICBMs, detract from crisis stability.

There are different views regarding the applicability of the above analysis to future Soviet behavior in a crisis. It may be that in the future Soviet leaders would be sufficiently deterred from a preemptive strike if most Soviet cities, industrial facilities, and "soft" military targets remained as vulnerable to a retaliatory strike as they now are. Alternatively, it may be that a successful Soviet strike against U.S. ICBMs only would oblige the United States to choose between surrender and the mutual suicide of a U.S. second strike against Soviet urban-industrial targets followed by a Soviet "third strike" against U.S. cities and industry. Moreover, if the Soviet leaders thought a preemptive strike could destroy most of the U.S. ICBMs, and thus reduce the expected damage to such "hard" targets as Soviet missile silos and military and political command bunkers, their tools of control and power, they might decide to risk the loss of Soviet cities and strike first.⁷

It should be recognized that neither country's strategic nuclear forces are structured to maximize crisis stability, since both sides plan their forces to try to satisfy several other strategic policy objectives as well—objectives which may compete with the crisis stability objective. For example, both superpowers have developed "counterforce" capabilities, designed to reduce damage to themselves if deterrence should fail, and to provide war-fighting ability to try to limit hostilities and "prevail" in a nuclear war. Moreover, their ability to use nuclear forces serves to deter them from conventional attacks on each other,

⁷This option would presumably become less attractive as U.S. SLBM accuracy improved.

on their rival's allies, or in Third World areas susceptible to superpower confrontation. Views of strategic analysts differ on the relative importance of these competing policy objectives for each side, depending on their different assumptions as to, for example, the motivations and policies of the adversary and the feasibility of controlling the course of a nuclear war after it starts.

Moreover, force deployments are sometimes a response not so much to national strategic needs as to strong domestic political pressures to increase military budgets, develop and exploit new weapon technologies, or deploy weapon systems primarily because the adversary is doing so.⁸

The Current Situation and Future Prospects

The U.S. SLBM force is generally considered stabilizing to the extent that a Soviet leader would not think that a Soviet preemptive strike could destroy many of the U.S. SLBMs at sea and thereby prevent massive retaliation from them.⁹ Conversely, to the extent that fixed-base U.S. ICBMs are perceived as relatively more vulnerable to attack, they tend to reduce crisis stability somewhat because of at least some uncertainty on each side as to the importance the other side attaches

⁸For general discussions of such pressures, see: Gordon Adams, *The Iron Triangle: The Politics of Defense Contracting* (New Brunswick, NJ: Transaction Books, 1981); Andrew Cockburn, *The Threat: Inside the Soviet Military Machine* (New York: Random House, 1983); Miroslav Nincic, *The Arms Race: The Political Economy of Military Growth* (New York: Praeger Publishing, Inc., 1982); Marshall D. Shulman, "The Effect of ABM on U. S.-Soviet Relations," *ABM: An Evaluation of the Decision to Deploy an Anti-ballistic Missile System*, Abram Chayes and Jerome B. Wiesner (eds.) (New York: Harper & Row, 1969); Adam Yarmolinsky, "The Problem of Momentum," *Ibid.*; Ernest J. Yanarella, *The Missile Defense Controversy: Strategy, Technology, and Politics, 1955-1972* (Lexington, KY: University Press of Kentucky, 1977).

⁹For discussions of the effects of such pressures on the Strategic Defense Initiative, see: William D. Hartung, et al., *The Strategic Defense Initiative: Costs, Contractors and Consequences* (New York: Council on Economic Priorities, 1985); and Fred Kaplan, "The 'Star Wars' Tent Holds Many Players," *Boston Globe*, Mar. 17, 1985.

¹⁰Views differ on the degree to which this Soviet perception would be affected by the possible vulnerability of the communication links between the submarines and the national command authority.

to such Vulnerability .” As just noted, the views of U.S. commentators differ as to whether the Soviets would think the damage from U.S. ICBMs would be a significant addition to the overwhelming damage they would suffer from a full-scale SLBM retaliatory attack. This damage will extend to hard targets as well when the United States deploys its highly accurate Trident II SLBMs.

There are reasons to believe that current U.S. and Soviet strategic force structures are at least for now fairly stabilizing (although they include some elements that detract from crisis stability). Despite their considerable counterforce capabilities, each side has the ability to inflict ‘devastating retaliatory damage after a full-scale first strike by the other side. Therefore, in a crisis neither leader would rationally perceive that the advantage in firing first outweighed the imperative to make every possible effort to avoid nuclear war altogether, and both leaders would have available the option of taking time to attempt to de-escalate the crisis.

The need to maintain adequately invulnerable retaliatory nuclear forces for decades to come is often cited by those who advocate BMD deployment to protect U.S. ICBM silos. It is therefore relevant to review briefly the degree to which our current retaliatory forces are secure against attack, and the prospects for the future.

Presidential Science Advisor George Keyworth II has stated, “. . . our submarines, while

¹⁰There is considerable controversy as to how many U.S. ICBMs would actually survive a Soviet preemptive attack, given the inherent uncertainties in missile accuracy, missile reliability, and coordination of such an unprecedented, untested, and massive operation. See, for example, Matthew Bunn and Kosta Tsipis, “Ballistic Missile Guidance and Technical Uncertainties of Countersilo Attacks, *Report No. 9*, Program in Science and Technology for International Security, Massachusetts Institute of Technology, Cambridge, MA, August 1983; Matthew Bunn and Kosta Tsipis, “The Uncertainties of a Preemptive Nuclear Attack,” *Scientific American*, November 1983; Les AuCoin, “Nailing Shut the Window of Vulnerability” *Arms Control Today*, September 1984; J. Edward Anderson, “First Strike: Myth or Reality,” *Bulletin of the Atomic Scientists*, November 1981; John D. Steinbruner and Thomas M. Garwin, “Strategic Vulnerability: The Balance Between Prudence and Paranoia,” *International Security*, summer 1976.

Some of these advocates also attach importance to maintaining a prompt hard-target kill capability.

as survivable today as ever, could well be threatened in coming years by the incredibly rapid advances we’re seeing these days in data processing technologies.”¹² According to President Reagan’s Commission on Strategic Forces (the Scowcroft Commission), “. . . ballistic missile submarine forces will have a high degree of survivability for a long time.”¹³ (The Commission also recommended starting research on smaller submarines, each carrying fewer missiles than the Trident, as a hedge against possible Soviet progress in anti-submarine warfare.) Admiral James D. Watkins, the Chief of Naval Operations, has been quoted as follows: “. . . when people ask ‘Aren’t the oceans getting more transparent?’ we say ‘No way, they’re getting more opaque . . .’ So the ability to track submarines—we don’t see that as being a threat to our forces until the turn of the century or later, depending on what kind of breakthroughs we might find at the end of this decade or into the next decade.”¹⁴ According to press reports, Congress has asked the Central Intelligence Agency to carry out a comprehensive study of submarine detectability.¹⁵

The following testimony on this subject was given June 26, 1985, to two Senate subcommittees by Robert M. Gates, Deputy Director for Intelligence, Central Intelligence Agency:

The Soviets still lack effective means to locate U.S. ballistic missile submarines [SSBNs] at sea. We expect them to continue to pursue vigorously all antisubmarine warfare (ASW) technologies as potential solutions to the problems of countering U.S. SSBNs and defending their own SSBNs against U.S. attack submarines. We are concerned about the energetic Soviet ASW research and technology efforts. However, we do not believe there is a realistic possibility that the Soviets will be able to deploy in the 1990s a system that

¹²Speech June 23, 1984, at the University of Virginia.

¹³*Report of the President Commission on Strategic Forces*, chaired by Brent Scowcroft, Apr. 6, 1983. The recommendations in this report were endorsed by President Reagan on Apr. 19, 1983.

¹⁴The Washington *Post*, Mar. 22, 1985, p. A 10.

¹⁵The Washington *Post*, June 6, 1985, p. A 1.

could pose any significant threat to U.S. SSBNs on patrol. ”

The Scowcroft Commission’s report emphasizes that the U.S. secure retaliatory deterrent does not depend on our SLBMs alone, but on the synergistic capabilities of the triad of SLBMs, ICBMs, and long-range bombers.” For example, if the Soviets should decide to attack U.S. bomber bases and ICBM silos with simultaneous detonations, many of our bombers would have been alerted by detection of the first Soviet missile launch and would have escaped before their bases were struck.¹⁸ If, on the other hand, the Soviets chose to launch their close-in SLBMs against our bomber bases at the same moment as they launched their ICBMs, hoping thereby to reach our bomber bases before the bombers had time to escape, we could launch our ICBMs after the bomber bases were hit but before the Soviet ICBMs could reach our ICBM silos. This would be launch after attack.¹⁹ Of course, neither side can be sure that the other would not launch its ICBMs on warning that the other side’s ICBMs were in flight.²⁰

Soviet strategic forces currently possess considerable survivability, albeit with less redundancy than U.S. forces. The U.S.S.R. has missile-carrying submarines on sea patrol. It has such a large number of ICBM warheads that a substantial number could be expected to survive a U.S. attack on them.

“Unclassified prepared testimony before a joint session of the Subcommittee on Strategic and Theater Nuclear Forces of the Senate Armed Services Committee and the Defense Subcommittee of the Senate Committee on Appropriations, June 26, 1985.

¹⁷To further reinforce the survivability of the ICBM portion of the triad in future years, the Scowcroft Commission recommended development of a small, mobile, single-warhead ICBM. It also recommended continued modernization of the U.S. bomber and air-launched cruise missile force.

¹⁸Under crisis conditions, more bombers than usual would probably be in a state of alert.

¹⁹Views differ on the degree to which vulnerability of the U.S. ICBM command and control chain could affect this scenario. See Daniel Ford, op. cit.

²⁰See Richard L. Garwin, “Launch Under Attack to Redress Minuteman Vulnerability?” *International Security*, winter 1979-80, pp. 117-139.

Effects of BMD Deployment on Crisis Stability

Whether various kinds of BMD deployment would tend to increase or decrease crisis stability depends on:

- the types and levels of BMD deployment on each side (e.g., whether the BMD is deployed to defend cities, strategic forces, or conventional forces);
- the types and levels of air defense and civil defense on each side;
- the types and levels of offensive strategic forces on each side (including those deployed in response to the defensive deployments);
- the survivability of each side’s defensive and offensive systems;
- the perceptions (correct or not) of the top leaders of each side as to the capabilities of each side’s offensive and defensive forces;
- the perceptions (probably very uncertain) of the top leaders of each side as to how the other side would allocate its offenses and defenses as between cities and strategic forces.

It is necessary to assess not only whether, on balance, a particular BMD deployment would do more to increase or to decrease crisis stability, but also whether the net effect of the BMD deployment on crisis stability would be significant in comparison to the effects of the offensive force structures. The analysis of crisis stability with BMD is far more complicated than is the case in the absence of BMD. *For reasons discussed below, we conclude that the net effects that various types and levels of BMD deployment would have on crisis stability are far too complex to analyze adequately within the scope of this study.*

Accordingly, the following discussion will not attempt to reach detailed net judgments. Rather, it will use the examples of BMD capability presented in chapter 5 to illustrate some ways in which certain types of BMD deployment could tend to increase or decrease

crisis stability, and to indicate why a realistic analysis would have to be highly extensive and complex. As in chapter 5, we assume in these examples comparable levels of BMD capability on both sides unless stated otherwise, and we assume that the postulated level of BMD performance is technically attainable and sustainable in the face of the adversary's countermeasures and offensive augmentations. For the time being we disregard questions of technical feasibility and cost.

Level 1: Defense of Some ICBMs

Insofar as the vulnerability of ICBM silos or other hardened, redundant military targets is a destabilizing factor, the ability on both sides to defend some of these kinds of targets should be crisis-stabilizing.²¹

ICBMs have unique properties that some believe make them especially valuable. Currently, they are the only intercontinental-range weapons with enough accuracy to destroy hardened targets within 30 minutes (as opposed to several hours for bombers). Since they are based on national territory, they are potentially the easiest strategic weapons to maintain in an alert status and to communicate with reliably. (As other weapons evolve, these advantages may erode.) In typical analyses, it is usually assumed that a Soviet first strike would be carried out in large part to destroy as many of the U.S. strategic forces as possible, especially the ICBMs and their command chain. The U.S. Department of Defense estimates that currently part of the Soviet SS-18 ICBM force alone could destroy more than 80 percent of the U.S. ICBM silos.²² Thus, judged *solely* by its effect on the ability of the Soviets to confidently destroy U.S. ICBMs in a first strike, U.S. BMD of missile silos could have a stabilizing effect.²³

²¹Some argue that the ability to disrupt a Soviet missile attack on the U.S. nuclear command, control, and communications (C³) system would greatly strengthen deterrence of a Soviet first strike. But unless that C³ system is redundant and attack resistant (in the way that the system of 1000 Minuteman missile silos is), modest levels of BMD protection may not do much to improve its survivability.

²²Soviet *Military Power*, U.S. Department of Defense, 1985, p. 30.

²³A comparable effect might be achieved with a less vulnerable ICBM basing mode.

Views differ on how significant the stabilizing effect would be. On the one hand, those who believe that the threat of retaliation by U.S. SLBMs and bombers might not, for various reasons, deter the Soviets from attacking our ICBMs also believe that the survivability of our ICBMs is an important element in assessing crisis stability. If defenses for ICBMs also increased the potential survivability of the U.S. strategic command and control system, then the credibility of the U.S. ability to retaliate against a Soviet attack might also be somewhat increased. On the other hand, those who believe that the threat of retaliation by U.S. SLBMs and bombers would suffice to deter a Soviet attack on our ICBMs also believe that the uncertainty of success that BMD could add to deterrence of such an attack would be marginal or nil.

It must be remembered, however, that surviving U.S. forces would have to face Soviet defenses against a retaliatory attack. As noted in chapter 5, as long as the Soviets were willing and able to expend more nuclear warheads attacking our missiles than we have warheads on those missiles, the net effect of symmetrical defenses on both sides would be to *reduce* the total size of the potential U.S. retaliation.²⁴ Thus it is not clear that the uncertainties introduced by BMD into Soviet offensive planning would outweigh the fact that they could still use offenses and defenses to reduce the U.S. retaliatory potential.

Both the United States and the Soviet Union are currently taking measures other than BMD deployment to reduce their ICBM vulnerability, such as hardening silos and control bunkers and developing mobile ICBMs. Insofar as these measures are effective for the United States, Soviet offenses will have a reduced "first-strike" capability. Depending on what the ICBM survivability measures are, defenses may also then be a less significant potential element in the protection of ICBMs.

²⁴This would be true *unless* Soviet defenses were strictly dedicated only to defending targets the United States would not be attacking in a retaliatory strike—i.e., empty Soviet missile silos.

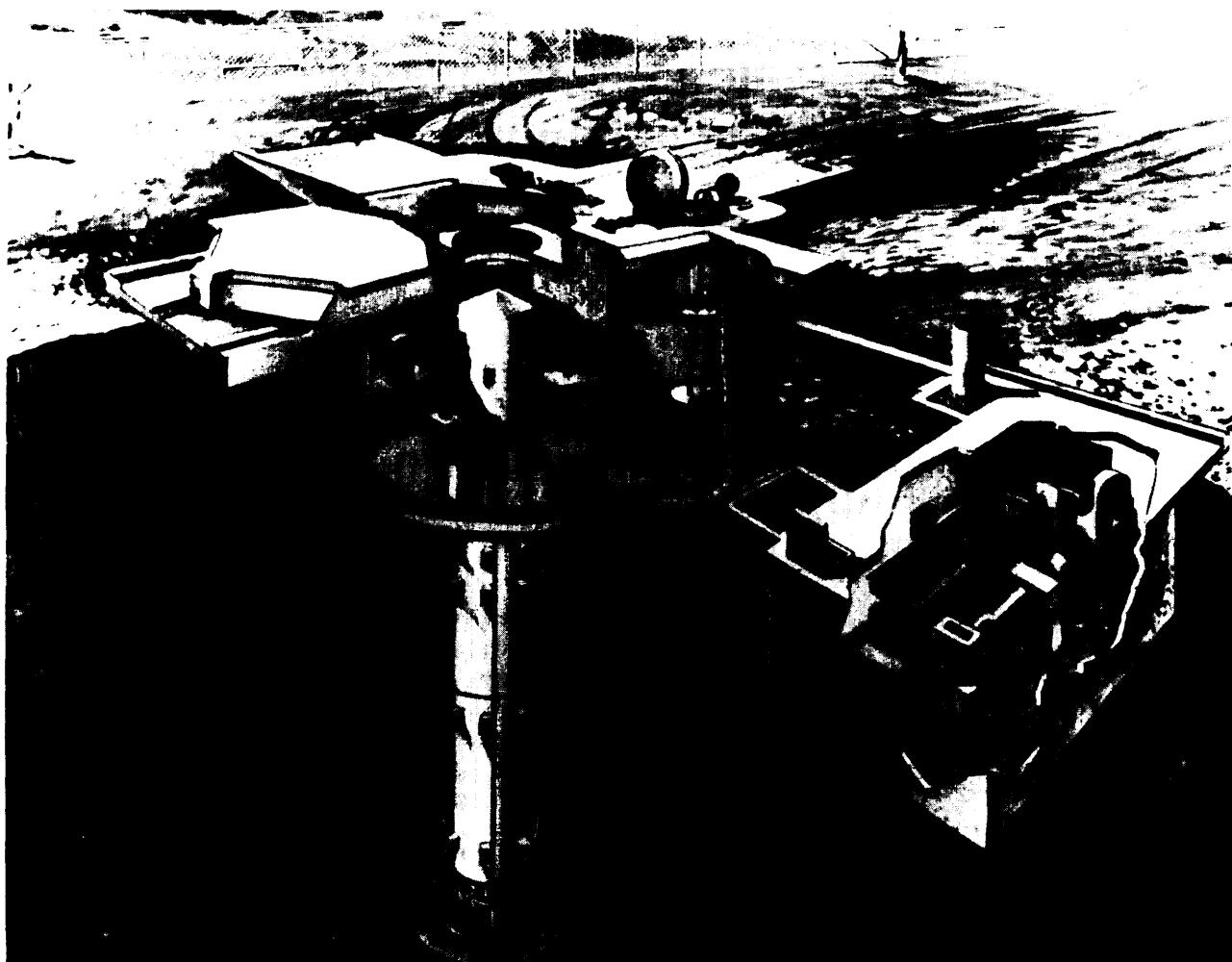


Photo credit: U.S. Air Force

Artist's concept of U.S. "MX" or "Peacekeeper" ICBM to be deployed in silos now housing Minuteman missiles. The Minuteman silo will not be hardened above current levels, but better protection for the new missile will result from the new shock isolation system and the launch canister that holds the missile before launch. This mode of deployment would not appear to substantially reduce the estimated Soviet ability to destroy U.S. land-based ICBMs in a first strike.

In the future, new techniques promising to make silos up to 20 to 25 times "harder" than current levels may offer more protection.

Level 2: Either/Or

(Defenses—including BMD—able to ensure the survival of most land-based ICBMs or a high degree of urban survival against a follow-on (or simultaneous attack), but not both.) As indicated in chapter 5, there would be a far more serious potential for crisis instability if both sides had a "Level 2" strategic defense capability. It ought to be a stabilizing factor that the Soviets would be less certain that an attack on U.S. ICBMs would succeed. On the

other hand, at "Level 2" there would be at least the possibility—not previously available—that a first strike combined with defenses could keep damage from a retaliatory strike to a relatively low level. Worst of all, it is possible that both sides could arrive at a highly unstable situation in which each could have a chance of assuring its own survival by striking first, *and only by striking first*. This situation could occur even if the Soviets and the United States had approximately equiva-

lent defensive capabilities. Under that circumstance, uncertainties on each side about the actual capabilities of the other could be especially high and could intensify mutual suspicions.

We would like to be able to discern the net effect on crisis stability of deploying BMD on both sides, and to identify potential areas of instability to be avoided as defensive and offensive forces evolve on both sides. This would depend partly on speculation as to how future leaders on both sides would weigh various factors when making decisions. It is possible, however, to throw some light on this important issue by assessing a large number of possible cases. That assessment would require a detailed specification of the defensive and offensive capabilities and the options they provide each side, as well as an exploration of the tactical choices each has in allocating its defense and offense under representative circumstances. In addition, because crisis stability depends so much on perception, it would be important to consider how each side might think the other would use its defense.

Level 3: Effective Defense of Most ICBMs, Some Cities

If both sides had ballistic missile and air defenses that could unconditionally deny the other side the ability to destroy most land-based ICBMs in their silos, but could not deny them the ability to destroy many of one's cities *if all the offenses were concentrated on cities*, crisis stability should be quite high. The advantages of attacking first should be marginal, the threat of retaliatory destruction still substantial.²⁵

Level 4: Extremely Capable Defense

At a level of defense at which few or no military targets and few or no cities could be destroyed, there would be little incentive to strike first. An aggressor calculating that he might in some way deliver a few weapons on

enemy territory might have to contend with a risk that the victim might be able to retaliate on a similar level. Striking first would probably not reduce such retaliatory capabilities. Hence crisis stability, strictly defined, would be high. But other kinds of strategic instability could arise from the possibility of nuclear weapons smuggled into U.S. cities with no assurance the the United States could retaliate against such an attack.

Special Cases

City Defense or ICBM Defense.—As shown in chapter 5, defenses that could be allocated to defending *either* retaliatory forces *or* cities would lead to a complex range of possible outcomes of a nuclear exchange. Defenses *able to defend only retaliatory forces* should be relatively stabilizing; they would not raise the prospect of a first strike against missiles followed by an effective defense against a “ragged retaliation. Defenses *able to defend only cities* but leaving retaliatory forces unprotected would be destabilizing, because they would place a premium on striking the unprotected forces, thus increasing the incentive to use those forces before they were destroyed.

The latter situation may not be purely speculative. The U.S. BMD debate has focused mostly on far-term deployments of BMD systems based on advanced technologies. However, if the Soviets were to deploy BMD, they might well elect to begin with extensive deployments of ground-based rocket interceptors of the types they have already deployed around Moscow.²⁶ Each interceptor deployment would be restricted to defending a definite area. Using such technology would oblige the Soviets, in peacetime, to choose among defending their cities (as the system now deployed near Moscow does), defending their ICBM silos, or defending both. If the Soviets chose to defend only cities, whatever inclinations they had before toward preemptive strategic attack could be strengthened: they would have the incentive described above to use rather than lose their ICBMs.

*This situation would be equivalent to one in which neither side had defenses and both sides had deployed most of their offensive nuclear forces in an invulnerable basing mode.

²⁶Soviet Military Power, 1985, op. cit., pp. 46-48.

Asymmetric Defenses.—If the Soviet Union had BMD and air defenses that were substantially more effective than those of the United States, crisis stability would be reduced. In this case, the Soviets might calculate that by striking first, they could sufficiently penetrate U.S. defenses to weaken the U.S. retaliatory response, and then use their own BMD to deal with that response.

Conversely, a substantial U.S. advantage in BMD and air defense capability could cause the Soviets to fear that the United States is more likely to strike first. They might fear such an attack particularly if they believed U.S. defenses to be able to intercept nearly all the Soviet weapons that could survive a U.S. first strike, thus largely avoiding Soviet retaliation. Fearing this, the Soviets might calculate that a Soviet preemptive attack could possibly reduce the ultimate damage that the Soviet Union might suffer, or at least draw down U.S. defenses to the point where remaining Soviet forces could threaten a subsequent high damage attack on the United States. The latter threat, they might calculate, could also induce U.S. leaders to restrain their retaliation for the initial attack.

Alternatively, if the Soviets could be persuaded that U.S. policy would not permit a U.S. preemptive strike, whatever the apparent incentives, then a U.S. advantage in defense capabilities should contribute to stability.

BMD System Survivability.—One criterion for a BMD system which many Administration officials have cited is system *survivability*—the ability of the system to perform at desired levels despite direct attack on its components. We may take it for granted that neither side would deploy a BMD system which could obviously be rendered ineffective by enemy attack. Rather, the question would be about the degrees of confidence on each side about the *continuing* survivability of its own and the other side's defensive systems.

Ambassador Paul Nitze has said, "The technologies must produce defensive systems that are survivable; if not, the defenses would

themselves be tempting targets for a first strike. This would decrease, rather than enhance, stability."²⁷ This point has also been stressed by other Administration spokesmen.

Whether an attack on a defensive system were part of an ICBM attack or not, it could leave the attacked side defenseless. The attacker, on the other hand, would be at least partially defended²⁸ against retaliation—even if the victim of attack launched ICBMs before they could be destroyed. Whether anti-BMD attacks could be prevented from escalating to attacks on silos or cities is difficult to predict.

If both sides had vulnerable BMD systems, the net result of simultaneous successful attacks on both systems could be to leave the two sides in an offensive stand-off similar to the one existing now. However, an extremely unstable situation would arise if each side's space-based BMD system were vulnerable to attack from the other's BMD system and only to that system. Each would then have powerful incentives to "use or lose" his system, to attack before the other side did. The one that struck first might substantially disarm the other side.

It is also important that the capabilities of a BMD system not be subject to degradation from an attack by ballistic missiles or airborne nuclear weapons. A nuclear first strike could be better planned, coordinated, and executed than a retaliatory strike. Even if both sides began with comparable BMD capabilities, the premium on preemptive attack would be high if a first strike had a much higher probability of penetrating enemy defenses than did the retaliation.

Automatic Command and Control.—A space-based BMD system, especially one targeted against missiles in their boost phase, would have to have some form of automated command and control if it is to respond in time to engage its targets. There are arguments

²⁷Speech to the Philadelphia World Affairs Council on Feb. 20, 1985.

²⁸Some believe that there would be virtually no strategic advantage in having a defense of cities that is only partially effective.

that this would be a source of instability, and other arguments that it might be stabilizing.

If the automated system malfunctioned, or if some unanticipated situation arose for which the system had not been programmed, the system could respond in a way that set off a fatal chain of action and reaction in the strategic forces on the two sides. Or, automation might be a stabilizing factor, because having an automated system forces planners to think in advance about what situations the system might have to respond to, and how they would want it to respond. Even if the system were not automated, leaders would still have to respond to the same situations in a very short time, and therefore they should have developed their responses beforehand. However, while many contingencies could be imagined and programmed into the system, there would be some practical limit on the number which would be feasible to include.

Transition Periods.—At present, when each side has thousands of offensive nuclear warheads and essentially no defenses (“offense dominance”), the mutual threat of retaliation provides a relatively high degree of crisis stability. Conversely, if each side were able to obtain virtually perfect defenses against all types of nuclear weapon delivery, there would be a very low probability that even a single nuclear weapon could reach its target, and the situation (“assured survival”) would also be relatively stable. But, as the analysis of “Level 2” of BMD capability in chapter 5 suggests, the transition from the current situation to one of defense dominance could require passing through an interim stage which might be very unstable. Since that interim period might last for many years, there could be a serious risk that a crisis would arise during that period.

BMD DEPLOYMENT AND ARMS RACE STABILITY

The strategic nuclear force postures of the United States and the Soviet Union are shaped by both internal and external factors. The internal factors may be political, bureaucratic, economic, and technological. The chief external factor for each side is the other side’s force posture, both current and forecast: the adversary’s forces may present threats to counter, incentives to reduce disparities, or opportunities to seek strategic advantage. One issue to consider in deciding to deploy a weapon is what kind of reaction it is likely to evoke from the other side. If a deployment on one side is likely to lead to a responding deployment on the other side which is in turn likely to induce a still higher level of deployment on the first side, the first side’s deployment might be seen as “destabilizing” the arms competition.

A destabilized arms competition might not necessarily be a bad thing for U.S. national security. For example, if we and the Soviets entered into a competition in *defensive* strategic systems (e.g., BMD) but the deployments

on the two sides did not lead to *offensive* increases, the race in defensive systems might be self-stabilizing. That is, if each side could reach a high degree of protection against the other’s offenses, the competition might wind down. Alternatively, we might see it to be in our advantage to begin an arms race if we were sure we would “win” at acceptable cost. That is, if superior technology, for example, could give us a permanent strategic advantage over the Soviets, we might want to engage them in a race which would give us long-lasting escalation dominance over them and might even force them into expenditures so heavy as to draw away from their conventional armed strength.

On the other hand, a destabilized strategic arms competition could prove both costly and indecisive. We could spend billions on new weapons but find that our strategic position relative to the Soviets was about the same as or worse than when we started. Moreover, the ongoing competition could lead to deploy-

ments on one side or both that reduced crisis stability as well. In general, past strategic arms control agreements with the Soviets have (at least on the U.S. side) been intended to add at least some stability to a continuing competition.

As noted in chapter 3, many are dissatisfied with the results of arms control thus far. In one view, the strategic arms competition is already unstable, due largely to Soviet initiatives over the past decade. In this view, the Soviet deployment of many accurate ICBM warheads threatens the survivability of the ICBM leg of the U.S. nuclear triad and of the command and control system which would direct a U.S. retaliatory attack. In addition, Soviet air defenses, civil defense activities, and sheltering of key leadership facilities would lessen the effectiveness of a U.S. retaliatory attack. A Soviet breakout from the ABM Treaty would further weaken the deterrent effect of the U.S. threat of retaliation. Responding to Soviet activities, the United States is increasing the accuracy of its own ICBMs and SLBMs, improving its bomber force, and accelerating BMD research. Thus, in one view, the possible destabilizing effects of future BMD deployment on the arms race will have to be considered in the context of the instabilities which will exist in any case.

Responses to BMD Deployment

One can imagine a variety of Soviet responses to U.S. BMD deployments (and vice-versa). Some of these responses might be stabilizing, others more destabilizing. In rough order of increasing destabilization, the range of imaginable Soviet responses follows.

Negotiation

If the Soviets could be persuaded to negotiate the transition to a world in which ballistic missile defenses played an important strategic role, the process might be a stable one. Each side would agree to reduce offensive nuclear capabilities, or at least not to increase them, while building up defenses. The stable

conclusion would be that each side's offensive threat to the other would be reduced and neither felt compelled to try to negate the other side's defenses.

Tacit Stabilization

If the United States began to deploy BMD unilaterally and the Soviets followed suit, there might still be a stable competition. Each might find the reduction in its own offensive capabilities against the other acceptable because the other's was also proportionately reduced. A situation similar to the negotiated one above might be reached, but as the result of mutual unilateral calculations rather than joint decision.

Maintenance of the Offense

The Soviets might decide that it was worthwhile to try to maintain or restore their offensive capabilities by countering the U.S. BMD system. As Presidential arms control advisor Paul Nitze has said:

New defensive systems must also be cost effective at the margin, that is, it must be cheap enough to add additional defensive capability so that the other side has no incentive to add additional offensive capability to overcome the defense. If this criterion is not met, the defensive system could encourage a proliferation of countermeasures and additional offensive weapons to overcome deployed defense, instead of a redirection of effort from offense to defense.²⁹

There are several ways the Soviets could try to maintain offensive capabilities, and some of these ways could lead to a destabilizing arms race. In fact, the Soviets have explicitly announced that they intend to preserve their offensive capabilities in the face of any U.S. defense.³⁰ Possible means of maintaining the of-

²⁹Paul H. Nitze, Speech to the Philadelphia World Affairs Council on Feb. 20, 1985. Emphasis added.

³⁰For example, Soviet General Nikolai Chervov told reporters that to counter U.S. efforts in space, "we will have both an increase in offensive strategic weapons, and correspondingly we will take certain defensive measures. (*The Washington Post*, June 9, 1985, p. 14-1.)

fense, which are not at all mutually exclusive, include:

Deployment of Passive Countermeasures.—Such countermeasures as decoy weapons, deception of BMD sensors, or altered ballistic missile flight characteristics could require the U.S. to respond with additional BMD system components or with technological changes in the BMD system. If corresponding increments of U.S. defense were less costly for the United States to add than the increments of offensive countermeasure were for the Soviets to add, this measure might not be destabilizing—or not for long. The Soviets ought to see that there would be no point in a continued offense-defense competition, because no gains in capability would be possible. On the other hand, if the cost-exchange ratio between defense and offense were somewhat ambiguous, the two sides might go through many expensive rounds of offensive and defensive countermeasure before the futility of further counteractions was obvious. A competition involving defensive systems and offensive countermeasures could be costly, though probably not as costly as one involving defenses and additional offensive weapons. If weapons were cheaper than countermeasures (per warhead penetrating the defense), than one would probably just add weapons.

Active Countermeasures: Attacking the Defense.—If the Soviets believed that vital components of a U.S. BMD system were vulnerable to attack, they might deploy weapons designed to weaken or disable the BMD system. We have noted in the first section of this chapter the potential for crisis instability if ei-

ther side had plausible chances of a successful attack on the other's BMD system. A part of the cost-exchange ratio calculation for a decision to deploy a BMD system would be an assessment of the cost of defending the system as opposed to the cost of attacking it. Unless the Soviets were persuaded early on that the survivability of the U.S. BMD system could not be seriously threatened within the limits of Soviet resources, a costly race of deployments of anti-BMD weapons and anti-anti-BMD weapons might result.

Increasing the Numbers of Offensive Weapons.—Again, the cost-exchange ratio between increments of defense and of offensive countermeasures would have to favor the defense if the race were not to go on expensively, indecisively and indefinitely. It is also possible that the Soviets might decide to try to maintain some level of net offensive capability even at a cost higher than the corresponding U.S. defenses. If, on the other hand, the United States were willing to match Soviet expenditures, the Soviets in the long run would see their net offensive capability decline. In the meanwhile, however, additional Soviet offensive weapons could be destabilizing in another way: if the United States perceived the additional Soviet weapons as upsetting the balance of U. S.-Soviet offensive forces, the United States would have an incentive to respond with offensive additions of its own.

Circumventing the Defense.—If defenses clearly had the advantage over ballistic missiles, the Soviets might try to compensate for their declining strategic nuclear offensive capabilities by deploying other means of deliv-

Table 6-I.—Missile Production: U.S.S.R. and NATO^a

Soviet missile production rates in the 1980s indicate a substantial capability to respond to U.S. BMD deployments with additional offensive missile deployments, should the Soviets choose that option.

Missile type	U.S.S.R.					NATO
	1980	1981	1982	1983	1984	1984
ICBMs	250	200	175	150	100	0
LRINF ^b	100	100	100	125	150	70
SRBM s ^c	300	300	300	350	350	0
SLCMS	750	750	800	800	850	665
SLBMs	200	175	175	200	200	80

^arevised to reflect current total production information. Includes United States, excludes France and Spain.

^bLRINF—Long Range Intermediate Nuclear Forces.

^cSRBM—Short Range Ballistic Missile.

SOURCE: U.S. Department of Defense.



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Defense Plus Offense

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other side's current and future BMD capabilities or of the cost-exchange ratios. As was illustrated in chapter 5, the side with inferior defenses could see its situation as so disadvantageous as to call for substantial efforts to catch up, regardless of cost. But if the defensive and offensive capabilities of the two sides are not well understood by both, one side or both might see the other as having—or seeking—an advantage.

Additional Observations

A Problem of Timing

If the current BMD research and development program demonstrated in a few years that BMD deployments could lead to a safer world, the United States would certainly want to alter the current treaty regime banning all but very limited BMD deployments. But we would want to avoid a breakdown of that regime *before* the research and development program is concluded. This might be true for at least two reasons.

First, the Soviets appear to have maintained a technology base for a large-scale deployment of current-generation BMD systems, and in the short run of a few years they might attain a noticeable advantage in BMD deployments over the United States. This could lead to the kind of crisis instability discussed in the first section of this chapter.

Second, it is possible that the U.S. BMD research program may show that effective BMD is not feasible and should not be deployed. But, if in the meantime the ABM Treaty regime limiting BMD had been abandoned, the United States might consider it necessary nevertheless to deploy additions to its offense to counter Soviet BMD, and perhaps to deploy defenses as well, just to maintain the current strategic balance.

Limited BMD Systems

As was noted in chapter 5 and again in the first part of this chapter, BMD systems which

could defend ICBMs or cities but not both would be potentially destabilizing. If the United States did not decide to pursue high levels of BMD capability, but had the limited objective of a defense of its land-based ICBMs, there would still be potential arms race instabilities. *The United States would have to be very careful to configure the BMD system so that its purpose was unambiguously the localized defense of hardened targets.* Otherwise, the Soviets might see the system as the core of a much broader defense, and take anticipatory countermeasures to maintain their own offensive threat. The United States would have to react accordingly, increasing its defensive forces, its offensive forces, or both.³¹ Nor might the United States feel secure if the Soviets were to respond to a U.S. missile-site defense by expanding and spreading the system now deployed around Moscow. Designed to protect selected regions rather than just Soviet missile silos, such an expanded system would degrade the retaliatory threat residing in the ICBMs that the United States was defending. An expansion of U.S. offenses, defenses, or both might be taken in response.

Instabilities With Either/Or Defenses

We noted in chapter 5 and in the first section of this chapter that special instabilities may arise if both sides have what we call “Level 2” defense capabilities—the ability to protect most ICBM silos, or many cities, but not both. The danger is that one side may perceive the other to have the possibility of launching a very effective first strike against the other's retaliatory force and then defending very effectively against a “ragged” retaliation. Such perceptions would lead to very great pressures to remove the possibility of such a strike by increasing offenses to restore the credibility of the retaliatory deterrent.

³¹Since it takes several years to develop and deploy major weapon systems, each side tends to plan and build its systems on the basis of what it thinks is the largest deployment the other side might be able to field several years in the future.

BMD DEPLOYMENT AND ARMS CONTROL

The Importance of a Negotiated Transition

Administration officials have stressed the importance of a substantially favorable cost-exchange ratio between defense and offense as an incentive for the Soviets to agree to negotiate the reduction of offenses.³² Some believe that without such an incentive—i.e., without clear evidence that ballistic missiles are being made economically obsolete by defenses—the Soviets may never agree to deep offensive reductions. On the other hand, it should be noted that if the United States and the Soviet Union could agree that it was desirable to reduce offenses and increase defenses, then a favorable cost-exchange ratio would not be a prerequisite to moving in that direction. Mutual offensive reductions could be the main instrument for increasing the effectiveness of defenses: the less formidable the offensive threat, the less capable the defenses would need to be.

Recently, Administration spokesmen have emphasized the importance of negotiating with the Soviet Union about the transition to a strategic relationship in which BMD plays a significant role. As Presidential national security advisor Robert McFarlane said,

There is a relationship between reductions of offensive systems and the integration of defensive systems because of the potentially destabilizing effect of either side achieving a first-strike capability through possession of both. So our policy must be to first establish agreement between ourselves and the Russians on the value of defensive systems. Once we have reached agreement on that, then we must establish a path for the integration of these defensive systems into the force structure that will be stable.³³

³²As noted earlier, there are likely to be large uncertainties in calculating such ratios, and the two sides may well assess them differently.

³³As interviewed in *U.S. News and World Report*, Mar. 18, 1985, p. 26. In a similar statement, Kenneth Adelman, Director of the U.S. Arms Control and Disarmament Agency, said in February 1985:

We must scrupulously guard against a vicious cycle of defensive efforts—even research for defense-spurring the other side on to more offensive weapons in order to saturate prospective

defenses, and so on, and so on. That snowball effect would undercut stability and weaken deterrence.

There is a degree of paradox associated with the uncertainties that BMD deployment could introduce in the calculations of the two sides. On the one hand, increased uncertainty about the likelihood of successful attacks could increase crisis stability by making the aggressor less willing to gamble on a favorable outcome from a first strike. On the other hand, in the face of growing uncertainty about the effectiveness of its military forces, each side will have an incentive to try to reduce that uncertainty by deploying additional offensive and defensive weapons and countermeasures.

In the absence of coordinated structuring of defenses and offenses on the two sides, the United States would have to anticipate and adapt in advance to a wide range of potential Soviet responses. Even if the cost-exchange ratio between defense and offense favored the defense, the transition period could bring a costly arms competition until the effects of the cost-exchange ratio asserted themselves.

Arms control has been one measure pursued by the United States to try to enhance crisis stability and arms race stability.³⁴ Crisis stability may be enhanced if the United States and the Soviet Union can negotiate force structures or mutual procedures (e.g., the hot line) which might reduce incentives in a crisis to strike. Slowing the arms race may be possible if the two can agree to limit weapon deployments which might accelerate the competition. Arms limitations can also add a certain amount of predictability to the force structure planning on each side, reducing the steps each

defenses, and so on, and so on. That snowball effect would undercut stability and weaken deterrence.

That risk can be reduced and managed through the kind of overall strategic discussions Secretary Shultz launched in Geneva last month and that Ambassador Kampelman will take up further when the arms talks begin again next month. This type of exchange with the Soviet Union—an in-depth dialog about critical strategic relationships, strategic concepts, strategic stability—is indispensable to an effective SDI approach.

(Speech before the International Institute for Strategic Studies, Feb. 13, 1985.)

³⁴For a discussion of the objectives of arms control, see National Academy of Sciences, *Nuclear Arms Control: Background and Issues* (Washington, DC: National Academy Press, 1985), pp. 4-6.

might feel compelled to take in *anticipation* of what the other *might* do in the future.

A negotiated transition to a U.S.-Soviet strategic relationship in which BMD plays an important role would be an arms control arrangement intended, like earlier ones, to enhance strategic stability. The two sides would first need to agree in principle that there should be such a negotiated transition. According to Secretary of State George P. Shultz:

As our [BMD] research proceeds and both nations thus gain a better sense of the future prospects, the Soviets should see the advantages of agreed ground rules to ensure that any phasing in of defensive systems will be orderly, predictable, and stabilizing. The alternative—an unconstrained environment—would be neither in their interest nor in ours.³⁵

Soviet acceptance of such ground rules may not come easily. The public position of the Soviet Union thus far is that BMD deployments (beyond what is now allowed by the ABM Treaty) would evoke an offensive response and make arms control impossible. (See appendix K for various Soviet statements on this subject.)

We do not know whether the Soviet public position is purely propaganda posturing intended solely to undercut the Strategic Defense Initiative. There is general agreement that at least the *initial* Soviet response to U.S. BMD deployments would be to try to restore their own offensive capabilities. The United States might decide to deploy BMD because it believed that it would make further offensive deployments by the Soviets futile. What is difficult to predict is when or whether the Soviets might arrive at the same conclusion. Until they did, they might engage in a substantial offensive build-up.

Once agreement in principle to a negotiated transition had been arrived at, the stages of the transition would have to be defined. The ultimate goal may be to reach a state in which greatly reduced offenses are believed to be highly unlikely to penetrate very effective defenses. Before that stage is reached, area-

sonable intermediate stage would be one in which defenses could prevent offenses from effectively attacking military targets, even though cities might still be vulnerable. A stage to be avoided, however, is one in which the Soviet Union, for example, might be able to use offensive missiles to weaken the U.S. retaliatory force, then defend very well against a “ragged” U.S. retaliation. (See discussion above, p. 125 and in chapter 5). In that stage it would be very difficult for the United States to agree to further offensive reductions when it already feared the possibility of the Soviets defending successfully against a U.S. retaliation.

To avoid that and the other kinds of instabilities discussed in this chapter, the two sides would need to agree on the orderly accumulation of comparable ballistic missile defense (and, possibly, air defense) capabilities. They would need to agree on comparable, mutually acceptable, offensive capabilities. Without such agreed levels of capability, each side might see the other as having or seeking military advantages.

Working Out the Details

As with past agreements on offensive and defensive arms, agreements on acceptable levels of offensive and defensive capability would probably have to be translated into agreements on some specifications of the weapons systems each side could deploy. The current ABM Treaty, for example, specifies what kinds and numbers of components of a BMD system, are acceptable. This agreement was possible in part because the BMD systems of the two sides were roughly similar in principle and because the permitted BMD deployments kept actual capabilities almost negligibly small.

Agreements to phase in increasingly higher levels of BMD capability together would be far more challenging. One problem seen in previous arms control negotiations could be particularly severe: that of asymmetries in the forces on the two sides. The United States and the Soviet Union have in the past found it difficult to agree on what mixes of ICBMs, SLBMs, and aircraft on the two sides con-

³⁵Speech in Austin, Texas, Mar. 28, 1985.

stituted equivalent nuclear offensive forces. At least in the early transition stages, force asymmetries could remain a serious problem. As long as the number of ballistic missile warheads that the Soviets could use to attack U.S. missile silos exceeds the number of U.S. warheads in those silos, equal defense capabilities would not have equal strategic significance. Equal defenses would reduce the net number of U.S. retaliatory weapons surviving a Soviet first strike and penetrating Soviet defenses (see chapter 5).

Different technical approaches to BMD and different levels of technological accomplishment would also complicate calculations of equivalence. Moreover, those differences would exacerbate the problem of assuring adequate verification that one side or the other did not have significantly more capable defensive systems. Although President Reagan has suggested the possibility of the United States sharing BMD technologies with the Soviets,³⁶ many are skeptical that this would or should ever happen. They point out, for example, that the more the Soviets knew about the details of a U.S. BMD system, the easier it would be for them to devise effective countermeasures to overcome it.

The two sides might also have difficulty agreeing on which approaches to BMD are acceptable. The Strategic Defense Initiative is currently emphasizing nonnuclear defenses. The kind of system the Soviets have deployed and are currently best prepared to expand uses nuclear warheads. In the longer term, however, perhaps the two sides' technological approaches to BMD problems might converge.

If the two sides were to reach the ultimate stage of deeply reduced offensive missiles and

³⁶In replying to a statement that the proposed U.S. SDI program is seen in Moscow as an attempt by the United States to regain strategic superiority by making the Soviet Union vulnerable to a first strike, Secretary of Defense Caspar Weinberger said:

My response is that is not only totally wrong, but it conclusively proved to be wrong by the President's offer to share this with the world if we can get it. If we wanted a war-winning capability through this means, we wouldn't be talking about sharing it with the world.

(ABC Network television program "The Fire Unleashed," June 6, 1985)

aircraft and highly effective defenses, yet another potential problem would still have to be considered. That is, some residual uncertainties would likely remain about Soviet capabilities and intentions. They might be suspected of working on or actually achieving some effective countermeasure to a key part of our defensive shield. There would always be the possibility of smuggled nuclear weapons, secretly implanted in U.S. cities. The United States, for its part, might have no comparable retaliatory threat. This situation would leave the United States open at some point to Soviet nuclear blackmail.

Potential Effects of the Absence of a Negotiated Transition

The deployment of BMD in the absence of a negotiated transition would mean, in effect, that the United States and the Soviet Union would have abandoned the ABM Treaty but not replaced it with a new arms control regime for BMD. The potential diplomatic and broader arms control consequences of such a course deserve consideration.

Offensive Arms Limitations

Negotiations on offensive arms limitations without regulation of defensive deployments could be extremely difficult. Unless each side was absolutely convinced that it could not afford to deploy offenses that would counter the other's defenses, it would have a strong incentive to increase, rather than decrease, offensive arms levels.

U.S.-Soviet Relations

To the degree that arms competition adds to tension in the U.S.-Soviet relationship (some would argue that the arms competition is solely a result, not a cause, of the tension between the two political systems), a BMD-offense competition could make U.S.-Soviet agreements in other areas more difficult.

U.S.-Allied Relations

To the extent that U.S. allies see the ABM Treaty (or would see its successor) as central

to an arms control process that they wish to sustain, and to the extent that they saw the United States as responsible for its abandonment, U.S.-allied relations could be strained.

Nuclear Non-Proliferation Treaty

Some nonnuclear-weapon states that signed the Nuclear Non-Proliferation Treaty take seriously the obligations assumed in that accord by the nuclear-weapon states to try to make further progress in nuclear arms control. If they saw abandonment of the ABM Treaty (without replacement by a new arms control regime) as a major step away from that promise, then their adherence to the Non-Proliferation Treaty could be called into question. (This risk is discussed further in appendix C.)

In sum, there appears to be a broad and, cumulatively, compelling set of reasons to sup-

port recent Administration emphasis on the importance of a negotiated transition to U. S.-Soviet BMD deployments, should a deployment decision be made. For either side to proceed to deployment of BMD outside the context of an arms control arrangement effectively governing offensive and defensive arms on both sides could lead to serious strategic instabilities. Whether such a negotiated transition is possible remains to be seen. But because both sides plan strategic forces several years in advance, the negotiations would probably have to begin during the research and development stage, not in the stage of first BMD deployments. Indeed, any decision about BMD deployment should take into consideration the realistic prospects for such negotiations. The relationship between research and development and arms control is discussed in chapter 10 of this report.

CONCLUSIONS

A complete analysis of the potential impact of BMD deployments on crisis stability would have to include, *inter alia*, a large and complex exploration of the potential outcomes of nuclear exchanges between the Soviet Union and the United States given various levels and kinds of offense and defense on the two sides. Such an exploration would require highly sophisticated "exchange model" calculations to simulate the possible impact on outcomes of such factors as:

- asymmetries in the offensive and defensive force structures of the two sides;
- uncertainties on each side about the offensive and defensive capabilities of the other side;
- varying degrees of ability on each side to defend certain types of targets "preferentially" (see chapter 5); and
- the differences made by the size of attack and rate of attack defended against on the numbers of warheads each side could intercept.

Such an analysis would require extensive computing resources and many hundreds of

"runs" of the model. Carrying out this analysis would not prove that the net consequences of deploying various levels of BMD would be positive or negative. But it would be one contribution toward such assessments and might help to avoid particularly unstable relationships between the force structures on the two sides. Potential crisis instabilities may not only be risky in themselves, but may induce arms race instabilities, as one side or the other adds new forces in an attempt to remedy what they would consider to be a dangerous strategic disadvantage. Moreover, exploration of the strategic implications of various levels of offense and defense would be an important preparation for attempting to negotiate with the Soviets on a transition to a world of increased defenses and reduced offenses.

Congress may wish to see that credible and thorough strategic analyses have been performed well before it must decide whether to authorize BMD programs beyond the research stage.